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## A Lecture ON THE EPILEPSIES.\*

BY

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THE condition commonly called epilepsy, a "disease" characterized by fits, is familiar to every practitioner of medicine and to many a passer-by in the street; it has formed the topic of innumerable dissertations through the centuries, and has been claimed as a therapeutic preserve by each successive variety of healer, from the divine to the psycho-analytic. As has been the case with other common nervous ailments, from time to time there has been a kind of spurt in the race for a panacea, followed only too often by a reaction after the effort; and to-day various rival and mutually contradictory methods for dealing with it are being advocated, the efficacy of no one of which can be confidently and constantly relied on.

To obtain that definiteness of treatment which must always be his goal, the physician must know the nature and etiology of the morbid condition with which he is dealing and the mechanism of production of its symptoms. Now it so happens that while the external manifestation of an ordinary epileptic fit is apparent to everyone, its inward or neural genesis and progression offer problems of great difficulty and complexity, on which the outward phenomena at the best throw but an imperfect light; from them we are compelled to infer a mode of physiological activity our theories of which are largely speculative, while the symptoms themselves are essentially so transient that the opportunity for objective study is very often too brief to be adequately seized. Like some other nervous affections, in fact, epilepsy is a condition superficially easy of diagnosis but etiologically and pathogenically obscure, and wide excursions in neurophysiology and experimental neuropathology have to be taken to gather such relatively meagre data as are at our disposal in this connexion. Foretelling for the moment what may subsequently be alluded to more fully, I may now state that even if a psychogenic origin be assumed, or proved, for one or other of the epilepsies, the physiological problem presented by the clinical symptoms of the fit is thereby left entirely untouched. To say that a given fit is psychogenic provides no solution; in the words of Hughlings Jackson, "all psychological explanations of physical inabilities are merely verbal," and, as anyone can see, a fit in the ordinary sense is a physical thing.

I propose in this lecture to discuss some of the general and physiological questions connected with epilepsy. Our first is concerned with nomenclature and definition.

### What is Epilepsy?

In ordinary parlance, as sanctioned by long usage, epilepsy is understood to be a disease the outstanding symptom of which is the occasional fit. One has only to mention this conception to realize forthwith its thoroughly unsatisfactory nature. There are many nervous states

\* The Annual Harveian Lecture delivered before the Harveian Society at London on April 22nd, 1926.

of organic origin in which epileptic fits are a symptom; on the other hand, the conception is vitiated by the admission into the category of epilepsy of conditions characterized by "attacks" of a class quite different from the fit as usually understood, but supposedly "equivalent" to epileptic fits because of their recurrence, transient nature, the patient's subsequent conscious ignorance of what takes place during them, and so on. The epileptic fit is nothing else than a symptom; no such disease as epilepsy exists, or can possibly exist; even by resort to such epithets as "essential" or "idiopathic" epilepsy we in no sense add a term of differentiating quality, since the pathological element constituting the disease-component (whatever it may be) is not thereby expressed. Further, assuming that a person who suffers from fits is the subject of a disease which may as well be called epilepsy as anything else, we are unable to say where such a diseased state begins and ends. As is known to every clinician, an individual may have one fit only in the course of his life, or a few, at the widest intervals, as in the case of a lady who had an epileptic fit at the age of 14, when her period of reproductive activity commenced, and another at 44, when it closed. To dub such cases epileptic in the accepted and always somewhat grave sense is clearly unwarranted, but the nature of the attacks shows that they cannot be called by any other name if the term is to retain any descriptive value. Other individuals exhibit at the outset attacks justifiably regarded by the clinical observer as faints, which subsequently merge by ill recognized degrees into the epileptic category. And it is scarcely necessary to point out that ordinary major epileptic fits are often for a time the sole discoverable indication that a serious organic diseased cerebral state is developing—vascular, inflammatory, toxic, or neoplastic.

Nor is the problem of delimitation easier in respect of the clinical varieties commonly called Jacksonian or epileptiform, and minor, or *le petit mal*. By objective observation on a single occasion of the outward characters of a series of muscular twitches it is practically impossible in many instances to say if they belong to the category of incipient Jacksonian epilepsy, or are rightly described as myoclonus or paramyoclonus, or as tic; additional data not concerned with the extrinsic features of the muscular contractions are often requisite for an exact diagnosis. Most of us have in recent years become familiar with curious varieties of tonico-clonic "involuntary" movements as a sequel to epidemic encephalitis which some Continental observers are already describing as "striatal epilepsy," as though (vain hope!) the solution of their pathogenesis were thereby facilitated; and many practitioners must know of cases classed by them as *petit mal* in which they have never been sure whether the clinical appearances really justified that terminology.

The truth is, as it seems to me, that we have been content to classify fits by certain extrinsic characters or qualities mainly because of our relative ignorance of the intrinsic features of the disorder of neural function which exteriorizes itself as a fit.

### What Constitutes a Fit?

When we come to examine the connotation of the word "fit" we find ourselves in no less a quandary than in regard to the term "epilepsy," for in the ordinary acceptance of that useful expression it stands for conditions as

widely separable as a convulsive movement limited to a segment, or part of a segment, of a limb, or to a part of the face, and highly elaborated co-ordinated acts of the whole person, sometimes of considerable duration, comprised under the term "hysterical fit." The word cannot even be restricted to phenomena of a hyperkinetic class, for it might legitimately be employed to designate certain attacks of which motionlessness is the prominent feature. In other words, "fit" and "convulsion" are not synonymous, and the expression "convulsive fit" is not tautological.

Since, then, it is used to include attacks which vary enormously in type, degree, and duration, not to mention accompaniments, it might be supposed to have become almost meaningless, yet its appropriateness need not be impaired if adequate restrictions are made, and if we can trace the action of some definite physiological mechanism behind its varied phenomena.

General consent, I imagine, will be given to the view that nerve cells in a state of health store up energy in *potentia* derived from the specific nutritional material they absorb or ingest, and that in functional activity normal movements (the reference is solely to motor nerve cells in this connexion, although of course the view applies to all varieties of cell) are the outcome of liberation of this energy in kinetic form, to the accompaniment of expenditure of cytoplasmic material. Such normal liberation of energy is orderly, moderate, and controllable. We can, however, readily imagine a condition of motor nerve cells brought about by abnormal nutrition, and resulting in the development of a state of high tension and instability, whereby they will discharge suddenly, with an excessive liberation of energy, either when a postulated maximum of disequilibrium has been attained, or when a sufficient stimulus reaches them.

Following the profound discussion of this matter by Hughlings Jackson<sup>1</sup> in his Lumsdalen Lectures of 1890, I believe that the essence of a fit with convulsive movement consists in the exaggeration of a normal physiological process—that is to say, in the sudden, excessive, and yet purely temporary liberation of kinetic energy in a series of motor nerve cells, the visible consequence of which is a sudden and excessive development of many movements at once. On this hypothesis it is clearly possible for any constellation of nerve cells in the nervous system to become highly unstable or overcharged, and to discharge accordingly, so that the term "epileptic fit" might be employed, and legitimately so, for any paroxysmal symptoms attributable to the process outlined above. Nevertheless, at this point clinical expediency steps in, to warn us not to extend the meaning of the term unduly, even if only theoretically. Avoiding, therefore, too inclusive a conception of the word, we are at the same time arbitrarily limiting its designation when we confine "fit" to a hyperfunctioning of motor cells. The clinical characters, on the other hand, of suddenness, disorderliness, "caricaturing," and excessiveness are cardinal features resulting from the physiological process, and without these no symptoms can be justifiably regarded as belonging to the category in its strict sense. This contention will of itself serve to exclude a considerable number of "involuntary" nervous movements which are the sequel to release of neural function. None the less, as already indicated, it is often far from easy to draw clear distinctions between minor types of "involuntary" movement, especially if the characters just mentioned are not conspicuously present.

#### *The Process of Discharge in a Fit.*

Our next question concerns the determination of the discharge, and its radiation or spread. If we take an epileptiform or Jacksonian fit, we must concede that the focus of pathologically altered cells may be very small. For example, a patient may suffer from Jacksonian fits which always commence by twitching of the same thumb and forefinger; between the attacks he may be perfectly able to move that thumb and finger "voluntarily," hence there can be no material structural defect of the corresponding cortical motor nerve cells. Some pathological condition, however, in the immediate vicinity leads at intervals to such alteration in their cellular nutrition that

they become unstable and prone to discharge "involuntarily" once the adequate provocation arises. As already hinted, we can only speculate as to what this stimulus is, but three possibilities suggest themselves: (1) it may be afferent or sensory, setting off the charge as the detonator fires the powder of the cartridge; (2) it may be intracellular, as though there were "spontaneous combustion" when a maximum of tension and instability is reached; (3) it may consist in removal of some inhibitory factor normally restraining the cell from activity. If this third possibility is entertained the problem is merely put a step further back, for we do not know what neutralizes the hypothetical inhibition and leads to decontrol.

Once the "discharging lesion," as Jackson termed it, is in action, the tendency is in the great majority of cases for its effects at once to spread to neighbouring linked physiological groups of nerve cells, so that in the course of a very brief space of time collateral cells are in discharging activity. It is in no sense likely—indeed, it is hardly possible—that these are anything else than healthy and normal, hence the important conclusion is reached that very little of a Jacksonian fit is directly due to the discharge of abnormally nourished neural units, and that by far the greater part of it is produced by consecutive discharges of normal stable cells. If this be granted, the radiation of an epileptiform fit is entirely a physiological phenomenon, and offers proof of the fact (for which there is abundant evidence otherwise) that healthy neural mechanisms may become epileptogenic, without being in the remotest degree diseased.

In the case of the general, or major, epileptic fit the circumstances cannot be materially different. While on occasion a local commencement (turning of head and eyes to one side) is indicative of the cell groups first implicated in the liberation of energy, in many instances universalization of the convulsion is almost immediate, and the fit is said to be severe. The supposition here is that the initial discharge is particularly sudden and powerful, and that many series of bilaterally situated cell groups have become unstable and, as it were, explosive. With a great quantity of this explosive material radiation through various neural levels evidently occurs with extreme rapidity, and Jackson's words contain no exaggeration:

"speaking figuratively . . . there is the mad endeavour of the highest centres to develop the maximum of function of every part of the body . . . and of all parts at once; the phenomena of a very severe epileptic fit show that this endeavour is nearly successful; the patient is almost killed by the paroxysm, and is nearly dead (deeply comatose) after it."

#### *The Neural Site of a General Fit.*

It is of interest from the standpoint of neurophysiology to determine if possible the neural site of a general epileptic seizure, a question closely connected with the further matter of the type of movements in a fit. This latter subject is examined later, and is to be considered in association with what is now stated.

If we agree that the property of excessive and uncontrolled discharge is common to all cell groups on occasion, whatever their neural situation, it follows as a corollary that at any of the physiological levels of the nervous system epileptic phenomena may make their appearance. Owing, however, to the intimate physiological integration of these levels the symptoms can scarcely be confined to one only unless the initial "discharging lesion" is mild in degree and incapable of overcoming such resistance as collateral groups offer to excitation. Thus, as already indicated, in the case of a severe fit the chief feature is the rapid spread of the excitations through various levels and to differing mechanisms. It is probably thought generally, or is at least a tacit assumption, that ordinary major fits are the outcome of discharges of cortical nerve cells throughout the middle physiological level of both hemispheres (the Rolandic motor cortex)—as far, that is to say, as the visible movements of trunk and limbs are concerned. The view held by Hughlings Jackson was that general epileptic seizures begin in the frontal lobes (his "highest level"), whence the underlying process spreads to and implicates the middle level. Whether this is so or not is extremely difficult to decide; no constant symptom referable to release, or stimulation, of function of the

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frontal lobes can be confidently diagnosed; indeed, unless we accept turning of the head and eyes as a frontal symptom (which experimental evidence suggests it may be), no other positive symptom of an ordinary epileptic seizure can be said to have a frontal localization by itself, certainly not the loss of consciousness. It is true that various clinical and pathological data may be taken to indicate (as was discussed at some length in my Croonian Lectures\*) that a large part of the brain in front of the precentral gyri subserves motor functions; but any motor phenomena its excitation might conceivably produce (with the exception of the not constant head and eyes movement already alluded to) are possibly at once submerged by the spread of the physiological process to the middle level centres. (This point is also referred to below under the heading of "Type of Movement.")

As far as the familiar motor area of the Rolandic cortex from the physiological standpoint it is electrically in contact with the anatomical it contains the Betz cells, the pyramidal or corticospinal cells, and the

As far as the familiar motor area of the Rolandic cortex is concerned, from the physiological standpoint it is electrically excitable, and from the anatomical it contains the Betz cells, which are the origins of the pyramidal or cortico-spinal tracts running to the ventral horn motor cells of the spinal cord. These cortico-spinal paths are the chief available routes for cortically initiated movements, and exteriorize themselves via the spino-muscular units, and in the case of the movements of Jacksonian epilepsy this is definitely the kinetic route taken. When, therefore, the limbs and trunk are convulsed in a severe fit, the idea is that simultaneous powerful discharge of whole groups of motor cells in the bilateral Rolandic areas is taking place, the result being at first an absolute contention of movement, resulting in relative muscular rigidity—tetanic contractions strictly comparable to that obtained by faradic stimulation of a cortical motor point as long as the stimulus is kept up.

The question arises, however, whether the motor phenomena of a general epileptic fit may not be produced at other levels than the cortical. I have already said that a "discharging lesion," if of sufficient intensity, will scarcely confine itself to one physiological level, but will rapidly implicate others; hence discharges may conceivably be taking place, in this instance, at the spinal level. It is recognized, further, that epileptic fits can be produced experimentally in decerebrate animals in which the cortical system has been transected and (inter alia) the cortical motor areas and pyramidal tracts put completely out of action. When only the pons, medulla, and cord are experimentally left, fits are still producible, and convulsions may in these circumstances develop *sub finem* just as the respiratory centres are failing. Of course, they are possible only because the spino-muscular units are still intact, as the respiratory units are not. So far as I am aware, living, to be convulsed, but the anatomical paths from medulla to ventral horn cells, traversed by the excitatory tracts, are not with certainty known. In the purely spinal strictly spinal epilepsy—that is, in the purely spinal animal—has not been found experimentally, though there is no theoretical impossibility of its occurrence. In view of these facts and others which are germane but cannot here be detailed, it has been several times suggested, in recent years, that the phenomena under discussion are the result not so much of excitation spreading from higher to lower levels as of removal of inhibition from higher to lower levels, and that the symptoms of the release of function, the motor symptoms—are produced by release of function; that the epileptic process inhibits controlling centres (say, cortical centres), and that "lower" centres are "let go." Hughlings Jackson Lectures<sup>1</sup> have realized this possibility; in his Lumboian Lectures<sup>2</sup> he referred to various "inhibition hypotheses," on which, however, he expressed no decided opinion. It is clear, I think, however, that he was so convinced of the far greater complexity of movement representation in the cerebral cortex that he could not accept the possibility of discharges at low levels being comparable to those of high levels; in his own words:

"it would be marvellous if the centres lowest in rank produced fits produced by excessive discharges beginning in the involved centres, the middle motor cerebral centres. . . ."

Hughlings Jackson's Lectures<sup>1</sup> no exception; in his Lymothian Lectures,<sup>2</sup> however, he expressed "inhibition hypotheses," on which, however, that he decided opinion. It is clear, I think, however, that he was so convinced of the far greater complexity of movement representation in the cerebral cortex that he could not accept the possibility of discharges at low levels being comparable to those of high levels; in his own words:

it would be marvellous if excessive discharges beginning in centres lowest in rank produced fits like those . . . which are produced by excessive discharges beginning in parts of the more involved centres, the middle motor cerebral centres. . . ."

The problem is one calling for contemplation from every angle, otherwise we are in danger of reaching a rash conclusion through neglect of the complexity of the

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factors. Due attention should be given to considerations.

1. While it is agreed that fits of a general kind can be produced in the decerebrate animal, Cobb and Uyenatsu<sup>2</sup> have shown that a much larger dose of a convulsive agent (absinthe, thujone) is required to cause a convulsion in these circumstances than for a similar convulsion in an intact animal, in which the cortex is active, and they conclude that the cortical motor cells are those most easily and readily stimulated by these convulsants. Pike and Elsborg<sup>4</sup> also admit the greater susceptibility of the uninjured cortex to experimental absinthe fits, although their investigations demonstrated the possibility of the occurrence of both tonic and clonic convulsions in animals deprived of both motor cortical areas, provided an interval was allowed for the return of "good locomotor reactions" sufficient to elapse after the initial operation. These fits "did not differ essentially"; and, according to Cobb and Macdonald,<sup>5</sup> "the march of events during a convulsion produced by thujone is very similar to that seen during an epileptic fit." Data of this kind, valuable as they must be acknowledged to be, do little more than substantiate the view already outlined, that in appropriate circumstances healthy neural mechanisms below the level of the cortex may become epileptogenous; they certainly do not validate the conclusion that the neural origin of the major convulsions in intact man cannot be cortical. The motor display of major fits is undoubtedly accomplished through spino-muscular units, but more evidence is requisite before the contention can be sustained that the convulsions of organic cerebral disease are, as it were, allowed to occur by removal of some cortico-spinal inhibition.

The evidence associating the phenomena of Jacksonian epilepsy with focal disease is sufficiently satisfying; that the interrelation; that the interrelation; that the interrelation;

2. The evidence associating the phenomena of Jacksonian epilepsy with local cortical disease is sufficiently satisfying to dispel any doubt as to their interrelation; that the "march" of such fits is in strict accordance with the accepted physiological localization of face, trunk, and limb centres in the cortical motor area, while no representation of an identical kind has been determined in respect of spinal motor centres, is of fundamental significance. Thus I have twice seen Jacksonian fits involving simultaneously the forefinger and thumb, and the corner of the mouth, on the same side, a combination readily explained by the juxtaposition of the corresponding cortical centres, but meaningless and inexplicable were the epileptogenous site at any lower physiological level.

3. Assuming, for the sake of argument, that the phenomena of epilepsy belong to the category of release phenomena, and that cortical disease only removes cortical spinal inhibition, we are faced with the problem that the speculation raises as many difficulties as some may think it appears to dispel. We have to explain the violence and the caricaturing element in the motor discharges, which are altogether unlike those motor phenomena—for example, involuntary flexor spasms—that occur when spinal mechanisms are admittedly liberated from cortical control, as in spastic paraplegia. We have to explain the disorderliness of the epileptic movements, again quite unlike the organized, systematized, scarcely variable movements of released spinal reactions. There is the further difficulty, also, that this postulated temporary release from cortical control is followed by convulsive movements while more permanent release is not.

It seems impossible to avoid the conclusion that there is another element in epileptic discharges than merely temporary cessation of inhibition from a higher level. We must be careful, indeed, as to our use of the term "inhibition"; transcortical "inhibition" is at least as probable as cortico-spinal inhibition, and the phenomena of epilepsy may conceivably result from decontrol and yet have a cortical site. I have gone more fully into this transcortical question in my Croonian Lectures<sup>2</sup> already mentioned, to which the reader is referred.

4. Perhaps the most significant point is whether, as a physiological fact, lower (say ponto-bulbo-spinal) centres are capable of exhibiting in action as elaborate motor manifestations as are derivable from the cortical motor ganglia, if the expression be allowed. I have already cited Jackson's view that it would be "marvellous" if this were

4. Perhaps the most significant point is whether, as a physiological fact, lower (say ponto-bulbo-spinal) centres are capable of exhibiting in action as elaborate motor manifestations as are derivable from the cortical eited ganglia, if the expression be allowed. I have already cited Jackson's view that it would be "marvellous" if this were

the case. Unfortunately, this is a matter in regard to which definite observations are unusually meagre and inconclusive. The question is simply this: Are the tonic-clonic convulsions produced by absinthe in the decorticate or decerebrate animal identical in all respects with those readily caused by smaller doses of the convulsant in the intact animal? Only minute observation can settle the point. In respect of man, my clinical experience has led me to maintain that in conditions approximating to physiological decerebration in man the fits that may be met with are essentially tonic in character, and not tonic-clonic, as in intact man. The data supporting this conclusion have been recorded elsewhere.<sup>2</sup> Such evidence as is available, therefore, in respect of diseased states in the human subject does not warrant the speculation that the march of events in epileptic cases is the same whatever the neural level of the discharges; the elaborate sequence of the complicated phenomena of a major attack is not such as can be explained by implication solely of low physiological levels. This brings us to the subject of the type of movements in epileptic fits.

#### *The Type of Movement in a General Fit.*

The ascertainment of the types of movement to be seen in the case of a general fit is a matter of observation, their interpretation matter for discussion. We have to distinguish, also, changes in the motor symptoms during the course of the fit.

Perhaps it is well, in this connexion, to point out that in the fit our concern is with movements and not with muscles. In my Croonian Lectures I have given reasons derived from personal observation for believing that there may be a representation of muscular units in the cerebral motor cortex, but for our present purpose it suffices to say that the motor display is to be regarded as one of movement.

It is most important, also, to realize that "ordinary," co-ordinated movements may and do occur along with and separate from those that are called "convulsed." For example, apart from the latter, the epileptic patient may, during the fit, make champing movements of the jaws, may smack his lips, spit, make clutching movements at the throat; further, when the convulsive phase is over, and while still unconscious, he may make even more elaborate movements of his limbs, such as plucking at his clothes, etc., all of which movements present the characteristic features of purposive, "voluntary," cortical movements, except that they are outside his voluntary control. It is quite impossible to entertain any other conclusion than that these have a cortical site; their complexity and purposive and deliberate character exclude any other explanation.

Convulsive movements proper cannot be considered as anything else than caricatures of normal movements. They are violent, powerful, disorderly, and generalized, and it is not easy to recognize in them either rhyme or reason. Varying considerably in different individual cases, symmetrical or asymmetrical on the two sides of the body, implicating trunk more than limbs or vice versa, or both equally, they represent a maximum of movement in a minimum of time, and no voluntary mimicry can give other than a faint reproduction of their intensity and severity. The arms may be extended fully and hands clenched, or the former may be flexed; the thumb may be inside the clenched hand, or pressed against the forefinger, or the wrist may be powerfully flexed and the hand more open. The legs may move up and down in violent kicking movements, occasionally in crude alternation, but far more commonly in more or less symmetrical and synchronous flexion and extension. From my personal observation and study of very many hundreds of epileptic fits, both general and Jacksonian-becoming-generalized, I cannot satisfy myself either that all epileptic fits, roughly speaking, are alike, or that any definite scheme or organization of movement is revealed in their manifestations. On the contrary, I follow Hughlings Jackson in holding that a convulsion is a "contention of complex, and also of simplest, movements. In this contention the individuality of each movement is lost."

It is customary to speak of a tonic and a clonic phase

of the convulsions. The former precedes the latter in the average general fit; Jacksonian fits are mainly clonic; a special variety occurs (as already mentioned) in clinical conditions corresponding more or less closely to physiological decerebration, and is known as the "tonic fit," since clonic manifestations are not usually an accompaniment.

The tonic stage of a general fit is one of practically universalized immobility; a number of movements, mutually cancelling each other, are developed with remarkable abruptness and equally remarkable power; the result is a rigid state; a "single big useless movement," as Jackson said, followed at length by a succession of such rigid states, a clonic stage, a series of so-called movements "which do nothing but 'mark time.'" Eventually the patient, exhausted by the severity of this contention of movements, which get slower and slower, sinks into a condition, sometimes not a little alarming, of profound collapse and coma, brief though it may be in reality. On at least two occasions I have seen a condition in all its essentials as closely resembling death as I am ever likely to observe.

Holding these views of the physiological phenomena of a general convulsion, I can scarcely regard with patience various speculations indulged in by some, to the effect that the convulsed movements are identical with those of the foetus in *utero*, and that they represent an attempt on the part of the sufferer to retreat again for shelter from an unsympathetic environment into the stillness of the amniotic fluid. I do not consider that they have any "meaning" whatever; they are of no more "significance" than an explosion of powder. Even in respect of the "march" of movement in a Jacksonian fit, the clinical type of exaggerated, caricatured movement in no way resembles those that are called "voluntary" or purposive, while the "march" of the movements follows anatomico-physiological lines alone and presents no point of comparison, but many of contrast, with the co-ordinated movements of a limb in health.

Summarizing at this stage the conclusions reached, largely on clinical grounds, I may state them as follows:

1. The convulsed movements of a general fit resemble those obtained by totanizing electrical stimulation of the motor cortex (middle level) in their crudeness and severity, and by the action of convulsants on cortically intact experimental animals.
2. In their elaborateness, disorderliness, and violence they do not resemble the involuntary movements known to occur when spinal levels are released by cortico-spinal disease. The reactions of the spinal animal are orderly, systematized, and scarcely variable with variations in the stimuli evoking the reactions.
3. Combinations of movement have frequently been seen in cases of Jacksonian epilepsy which cannot be explained by any known juxtaposition of centres at infracortical levels.
4. Along with the convulsed movements of general fits, "ordinary" movements may occur; these resemble "voluntary" movements, except that the element of "volition" is wanting; their neural site must be cortical, but is certainly not Rolandic. It is therefore conceivable that transcortical decontrol is responsible for some of the discharging movements.
5. As far as man is concerned, fits the origin of which is at some infracortical level are not in all respects identical with those of the ordinary major attack.

#### *The Phenomenon of the Epileptic Aura.*

Consideration of the question of the nature and origin of the epileptic aura is not calculated to lend any support to the view that the manifestations of epilepsy are all essentially infracortical. While not constant (as far as the mind can subsequently recall the initial stages of an attack), it is when present an integral part of the seizure and of localizing value, as every student of the subject is aware. We must keep rigorously in mind the fact that the aura is definable as a sensation, crude or elaborate as the case may be, either referred by the patient to some part of the body or limbs or belonging to one or other of the special senses. Being a sensation, it is a phenomenon of



another order than the convulsive movements; it is a psychical thing, in consciousness, and all that can be said of it physiologically is that we believe it arises during functional activity of some or other central, cortical, sensory mechanism. Because of its being in consciousness its cortical site must be granted (I say nothing here of the speculation that some thalamic activities are accompanied by consciousness of them). In Jackson's clear diction:

"Crude sensations (psychical) and convulsion (physical) are in no way comparable; the comparisons and contrasts are of excessive discharges of sensory elements during which crude sensations arise, with such discharges of motor elements from which convulsion arises."

I do not know that Jackson, who was always conspicuously careful in his choice of words, was justified in claiming the discharge of sensory elements, constituting in consciousness the aura, to be "excessive." On the contrary, it has always appeared to me that, apart from the occasional normal movements accompanying convulsive movements (alluded to above), the aura is the one thing about the epileptic fit which is not disorderly, distorted, or caricatured. Its crudeness or complexity depends on whether a low-grade or high-grade sensory mechanism is implicated, but we rarely, if ever, can say of it that it is confused, or made up of conflicting elements, or that it is of exaggerated intensity, or contains any excessive quality.

The problem of its origination is in reality that of hallucinations in general. A sensory aura is a hallucination, be it of the visual, auditory, muscular, gustatory, olfactory, viscerosensory, or any other sense class. Very valuable data bearing on questions of cortical localization have been furnished by a consideration of the sensory auras accompanying epileptic seizures occasioned by organic cerebral disease, instances of which might easily be provided from clinical experience. But we are concerned rather with the general problem of hallucinosis. The difficulty of deciding whether such phenomena are release phenomena or are irritative or excitative is, in my opinion, verbal rather than essential. Completely ignorant as we are of the process whereby function of a sensory mechanism is accompanied in consciousness by what is called a sensation, and, for that matter, of the point in a given sensory arc at which its activation becomes a conscious thing, we are not in a position to assert that a hallucination arises either because a sensory mechanism is "let go" from the control of some hypothetical inhibition, or because the mechanism is being activated by some usual or unusual stimulus. Even if inhibitory control is at first to be removed (by some equally unknown and speculative process), some excitation might still be necessary to "touch off" the prepared neural unit or system.

That hallucinations are common accompaniments of toxic or toxæmic states in no way helps us in our search for a physiological explanation of their development. When, as in the case of uncinate or temporo-sphenoidal epilepsy, a gustatory or olfactory hallucination is often associated with a visual or visuo-auditory hallucinatory state of a particularly elaborate, if certainly brief and fleeting, character, the most we can say is that this state arises in the course of the development of that abnormal physiological process which underlies all the phenomena of the fit, the aura included. Although all auras are psychical, rendering the separation of a so-called "psychical aura" meaningless, there is no good reason for supposing that this sensory component is in some fundamental way different from the motor components, as far as its development in the course of a fit is concerned, and none for imagining that its type, or recurring character, constitutes proof of the psychogenic nature of the epilepsy. Elaborate hallucinatory manifestations occur in persons who are half-drowned, half-hanged, half-suffocated; the hallucinations of uncinate epilepsy may be, and frequently are, as definite an index to the existence of organic cerebral disease as the twitching muscles of a Jacksonian case; the "déjà vu" phenomenon and the peculiar psychical condition of reduplicative paramnesia can occur as the aura alike of organic and of so-called idiopathic epilepsy. Elsewhere I have analysed these and analogous psychical manifestations of ordinary epilepsy at some length, and to this paper the reader is referred.

### The Question of Consciousness in Epileptic Fits.

Some epileptic attacks are attended by loss of consciousness; others are not. Unconsciousness may supervene at the outset, or develop subsequently; it may be extremely brief in duration, or may continue for some time after all convulsions have ceased. Further, of itself it is no index to the severity of the fit; a severe Jacksonian attack may from first to last involve no loss of the senses, while a petit mal seizure may consist of little else than a transient conscious "blank," an "absence épileptique." With this considerable variability in the interrelation of unconsciousness and motor accompaniments the task of correlating their respective causes is not rendered easy.

The evidence for assigning the former to changes in the cerebral circulation is doubtless familiar to most physicians; it was excellently marshalled by A. E. Russell<sup>1</sup> in his Goulstonian Lectures of 1909, which should be read by all who seek an explanation of the difficult problems which epilepsy offers. Starting with this view, a line of argument in respect of the pathogenesis of epileptic symptoms has been developed by the same author, more or less as follows: Alterations in the general circulation afford an adequate explanation of ordinary fainting fits and syncopal attacks; they also explain the symptoms of more prolonged attacks in which cardiac, vasomotor, and cerebral phenomena can be observed; the suddenness of some faints, and the conversion of faints into fits, suggests the possibility of the epileptic fit itself having some origin analogous to that disorder of the cerebral circulation which causes unconsciousness. To this point I shall revert immediately; for the moment I may say that while transient cessation of that circulation is the most plausible explanation of sudden unconsciousness in epilepsy, certain difficulties remain. Consciousness is absent in negative functional cerebral states, such as concussion and coma; it is also absent during positive, excessive, functional cerebral states—for example, during the period of convulsions. Many clinical instances of the former are unaccompanied by any discharging or convulsive phenomenon whatever; conversely, a Jacksonian patient may exhibit many severe convulsive movements before consciousness is lost. It is undoubtedly difficult to elucidate both negative and positive states by reference to the same process—namely, disturbance of cerebral blood flow. General cerebral anaemia explains too much, as it were; with it the excitability of the cortex certainly diminishes, and absence, not excess, of movement should ensue. On the other hand, we might postulate (though we know no special mechanism for it) a cortical anaemia, producing unconsciousness, with retention of the circulation at lower neural levels, allowing activity of released subcortical neural systems; while such a hypothesis might conceivably provide an explanation of the features of the general fit (though, for reasons given above, I do not consider it can) it will not elucidate those of the Jacksonian variety. In view of the occurrence of degrees of unconsciousness in the epilepsies, and of the fact that negative and positive states do not proceed *pari passu* (as far as we can judge clinically), a simple theory of cerebral anaemia is insufficient for the variability of the phenomena.

### Relation of Epileptic Symptoms to the Cerebral Circulation.

We may, however, in conclusion, pursue this matter a little further. The theory that the paroxysms of epilepsy are a sequel to and determined by contraction of cerebral vessels dates back at least as far as the time of Brown-Séquard. Hughlings Jackson<sup>2</sup> himself favoured the possibility of the paroxysm being caused by a local vascular contraction; he thought that "successions of different movements are developed by contraction of arteries"; "a convulsive paroxysm is developed by a stronger and more continued contraction" of the same arterial branches as, through coarse disease, are imagined to be producing abnormal and persistent changes of nutrition in the distribution of that artery; "it is, I speculate, through the arteries that sequence of movements is developed, whether those movements be spasm passing up the arm and down the leg, or whether they be the orderly sequences of movements in health."

More direct evidence, however, has taken the place of speculation. Russell<sup>1</sup> emphasizes the importance of the facts that the symptoms of the various stages of the epileptic fit are closely mimicked by those following heart-block in Stokes-Adams disease; that uraemic convulsions are indistinguishable from those of epilepsy and are almost certainly due to cerebral oedema, consequent increase of intracranial tension being followed by temporary failure of the cerebral circulation; that in some recorded cases of value temporary cessation of the heart's action (disappearance of radial pulse) has immediately preceded the development of a fit. A number of direct observations of the human cortex during an epileptic convulsion have been made by surgeons (Horsley,<sup>10</sup> Kennedy and Hartwell,<sup>11</sup> Leriche,<sup>12</sup> Horrax<sup>13</sup>). Sudden blanching of the cortex and pial vessels, and arrest of cerebral pulsation, is at once succeeded by pronounced hyperaemia and venous engorgement during the convulsive movements, according to the mean of the recorded observations. Reference might also be made to the apparent association of fits with disorder of the cerebral circulation in certain cases of Raynaud's disease, of which a number have now been reported (see a paper by H. J. Norman<sup>14</sup>).

While it would be unwise to ignore the cumulative effect of these differing lines of evidence, I do not think, after having given much consideration to the problem, that they can fairly be taken as showing anything more than that changes in the cerebral circulation accompany, in all probability, the march of events in an epileptic discharge. In my opinion Russell is justified in concluding that, even if vascular disorder is causal, it only carries the pathology of epilepsy one stage further. But I am not convinced that the association constitutes a causal relationship. The cerebral and general circulation is under the control of a vasomotor centre in the medulla oblongata; alterations in the whole cerebral vasomotor apparatus may be caused by dysfunction of that centre. Sudden loss of consciousness may not be of vascular origin, though accompanied by vascular change; the same pathological stimulus may act both on the bulbar vasomotor centre and on cortical neural elements themselves. That this would appear to be the case in respect of the unconsciousness following trauma is strongly suggested by the recent experiments of Knauer and Enderlen<sup>15</sup>; and although the analogy with epilepsy is remote, it is well not to lose sight of the possibility of the circulatory phenomena of the fit—as observed when the cortex is exposed—being no more than a sequel to a central neural disturbance of function at the level of the medulla.

If, however, we are sufficiently convinced by the evidence sketched in outline above, we should still be at the stage of pure speculation in regard to the question of how transient cerebral anaemia—in some cases only, not in all—causes neural mechanisms to discharge; we should have to imagine a local cerebral anaemia for the phenomena of Jacksonian epilepsy; and I submit that many cases of local and sudden cerebral anaemia, as in monoplegias of embolic or thrombotic origin, are unaccompanied by any discharging phenomena whatever. Nor is the solution of the problem facilitated by ascribing the motor discharges to anoxaemia. Imperfect oxygenation recurring periodically, locally, and seemingly vanishing after an attack—how is such a process to be imagined? And how will any such theory account for the aura of a fit, which, as has been stressed above, unquestionably appears to partake of the nature of a normal, orderly, regularized, non-excessive function of a given sensory mechanism? Is neural activity accompanied by anaemia in the cerebrum of the normal individual?

The truth is that the gulf between the vascular and the neural is almost as impassable as that between the physical and the psychical. In this lecture, intentionally, no allusion has been made to clinical varieties of epilepsy of an unusual kind; if, however, the phenomena of so-called "epilepsia partialis continua" are considered, they may justifiably be used as an argument for the improbability of "discharging lesions" being based on persistence of an abnormal vascular state; they appear to resemble much more those of continuous excitation of a reflex neural arc by a persisting neural stimulus.

It seems to me reasonable to suppose that the crescendo character of the symptoms of the epileptic fit is due to

direct action of a neural system on collateral and lower neural systems; if a vascular factor is involved, I have tried to show the possibility of it itself being of neural origin. In some instances this may have a bulbar locus; in others there is as clearly a transcortical commencement for the attack. We come back, therefore, to the view indicated at the outset: any constellation of nerve cells in the neuraxis may become unstable; hence physiological varieties of "fit" are to be expected. It is evidently more correct, clinically and physiologically, to speak of "the epilepsies" than of "epilepsy," and this fact by itself should lead us to avoid giving our patients the impression that once a diagnosis of epilepsy is made it is tantamount to pronouncing their doom. On the contrary, increasing latitude in our conception of the condition should lead to modification of therapeutic pessimism.

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## DIETETIC CONDITIONS WHICH INFLUENCE THE CALCIUM CONTENT OF SALIVA:

### THE POSSIBLE SIGNIFICANCE OF THESE FACTS IN TUBERCULOSIS.

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#### Introduction.

THE study of the etiology of dental caries and other defects of the teeth has usually centred around the chemical, physical, and bacteriological condition of the mouth, and, among other factors, saliva has been considered of importance in this connexion. However, in spite of the large amount of work by Miller, Röse, Pickering, Marshall, Howe, Bunting, and many others, no relationship has ever been proved between the alkalinity of the saliva and the immunity to caries, as those upholding the acid-decalcification theory of caries might have hoped to establish.

Less work has been done on the calcium content of saliva, yet it is likely to be important. Among other possibilities it may hinder the removal of calcium from the teeth on the production of acid, or it may help in the hardening of the enamel after eruption, if this takes place, or it may aid in the arrest of caries.

The experimental work of May Mellanby<sup>1</sup> has proved that the structure of dogs' teeth, and probably also of human teeth, can be controlled by diet and environment. Foods rich in fat-soluble vitamin (for example, cod-liver oil, egg-yolk, milk, and most animal fats) tend to help the formation of well calcified, regularly arranged teeth, while other foods (for example, cereals, and especially oatmeal) tend to cause the development of badly formed teeth. Thus the total effect of a mixed diet is the outcome of a battle between these different dietetic influences.

On the basis of these facts Mrs. Mellanby and I started, three years ago, a clinical investigation to determine whether there is any relation between diet of the above-mentioned type and dental caries. Some evidence was obtained that a diet rich in fat-soluble vitamin not overburdened with cereal tends to prevent the onset and spread of dental caries more rapidly than does one containing little fat-soluble vitamin and more oatmeal and other cereal. These findings were published in a preliminary note (together with J. W. Proud, L.D.S.) in the *BRITISH MEDICAL JOURNAL* of August 30th, 1924.<sup>2</sup>

The investigation now to be described was carried out with the idea of seeing (1) whether there is any relation between the amount of calcium in the saliva and the rate of development and amount of dental caries, and (2) whether it is possible readily to alter the calcium in the saliva, especially by varying the diet in factors other than the calcium. As the work progressed, it was realized that many of the figures for calcium in the saliva were low compared with those obtained by other workers, and the possibility of this being due partly to tuberculosis was therefore considered.

In regard to the first point. The work carried out by Riise<sup>3</sup> seems to indicate that, if anything, there is less calcium in the saliva of those people with fewer carious teeth; but that, if the amount of calcium in the ingested food is raised, then the calcium in the saliva may be in some cases also raised. Recently P. P. Laidlaw and Spencer Payne have worked out an accurate method for estimating small amounts of calcium,<sup>4</sup> and have also studied the calcium content of the saliva of people whose mouths vary from the point of view of carious teeth. No constant relationship, however, was found between the amount of caries and the calcium in the saliva. As will be shown later, the amount of calcium in the saliva may vary from week to week with small alterations in the diet, and probably also with other unknown conditions, depending on the metabolic state from the natal or even pre-natal period up to the day of observation. It would not be expected, therefore, to find a close relationship between the calcium of saliva, as observed on one or two occasions, and the amount of dental caries at that time. On the other hand, Mrs. Mellanby and I showed (in the paper referred to above<sup>5</sup>) that by raising the amount of fat-soluble vitamin in the diet we were able to delay the spread of caries. I shall now show that by increasing the fat-soluble vitamin in the diet the salivary calcium is raised. There would, therefore, seem to be some connexion between the quantity of calcium in saliva and caries, but to prove this definitely a more prolonged investigation would have to be made.

The second part of this inquiry—namely, the effect of diet on the salivary calcium—has given very definite results which will now be described.

#### Method of Estimating the Calcium.

The saliva was obtained by asking patients to spit into glass tubes three minutes after their mouths had been washed out with water. Various ways of estimating the calcium were employed, and the results recorded were obtained by two methods: (1) the alizarin method described by Laidlaw and Payne (L. & P.);<sup>4</sup> (2) the Kramer-Tisdall method (K.T.).<sup>5</sup> In practically all cases in which estimations were made by both methods the results agreed.

#### The Effect of Small Specific Differences in the Diet on the Amount of Calcium in the Saliva.

The amount of calcium in the salivas of patients having different diets was estimated. The diets were those described in the paper already referred to in the BRITISH MEDICAL JOURNAL of August, 1924.<sup>2</sup> The principal differences between the diets may be summarized as follows:

Diet A contains most milk ( $1\frac{1}{2}$  to 2 pints), cod-liver oil 6 drachms, and an egg daily, but no oatmeal.

Diet B contains least milk ( $\frac{3}{4}$  pint), no cod-liver oil and no egg, but 3 oz. of oatmeal, and olive oil (6 drachms).

It will be seen that diet A contains most calcifying vitamin and diet B the least, and that diet B is also peculiar in containing a large amount of oatmeal.

1. *Diet A.*—Twenty children were given diet A (more vitamin) and their salivas contained an average of 10.63 mg. of calcium in 100 c.cm.

2. *Diet B.*—Nineteen children were given diet B (less vitamin and more cereal) and their salivas contained an average of 4.68 mg. of calcium in 100 c.cm.

The following table gives examples of children fed on diets A and B.

Twelve patients on the ordinary hospital diet, which is intermediate, as regards the amount of calcifying vitamin, between diets A and B, contained an average of 7.79 mg. of calcium in 100 c.cm. of saliva.

DIET A.				DIET B.			
Patient.	Calcium.	Method.	Weeks on Diet.	Patient.	Calcium.	Method.	Weeks on Diet.
B. R.	Mg. 9.50 9.78	L. & P. K.T.	8 28	G. C.	Mg. 6.60 5.43	L. & P. K.T.	104 106
S. H.	9.80 8.49	L. & P. K.T.	15 20	C. W.	4.50 3.18	L. & P. K.T.	12 32
V. P.	11.07 11.63	L. & P. K.T.	16 44	L. E.	5.73 5.84	L. & P. K.T.	8 23
S. R.	12.60 12.49	L. & P. K.T.	52 91	I. R.	2.46 2.62	L. & P. K.T.	23 31

#### Alterations in the Calcium Content of Saliva as the Result of Changes in the Diet Alone.

1. Some patients on admission to hospital were found to have an average of 3.07 mg. of calcium in 100 c.cm. of saliva. Their diets were unknown. They were now given diet A, with the result that the average amount of calcium was increased from 3.07 to 7.07 mg. in 100 c.cm. of saliva—for example, in the case of B. R. the amount of calcium was increased from 4.1 to 9.5 mg. in eight weeks.

2. Some patients who had been having diet B for ten weeks had an average of 4.47 mg. of calcium in their saliva. Later they were given diet A, and then the calcium was increased from 4.47 to an average of 12.07 mg.

3. Other patients on diet B, with an average of 5.15 mg. of calcium in the saliva, were given the ordinary hospital diet, and their calcium was increased, but only to an average amount of 8.95 mg.

4. Some patients on diet A, with an average of 12.02 mg. of calcium in the saliva, were later given diet B, when the amount of calcium was only slightly diminished—namely, from 12.02 to 11.67 mg. These patients were kept on diet B for four weeks only, as when this part of the investigation was attained the conclusion was reached that the general health of the patients on diet B was not so good as that of those on diet A. It is known that vitamin A can be stored in the body, and, presuming that this substance is of some importance in varying the percentage of calcium present in the saliva, it is possible that the quantity stored in the lengthy period during which diet A had been given was not sufficiently depleted to cause an alteration in the amount of calcium in the saliva in the four weeks on diet B.

#### Other Factors in Addition to Diet which might have Influenced the Results given above.

The average amount of calcium in the saliva of the children on admission to hospital was only 4.77 mg. in 100 c.cm. This is low compared with the figures obtained by other workers, which vary between 6 and 12 mg. per 100 c.cm. Therefore, various factors were considered which might be the cause of this low calcium content.

1. *Tuberculosis.*—The children all suffered with tuberculosis of bones or joints, in which varying degrees of decalcification had occurred. It was found that in most cases those children who had suffered from the disease longest had the smallest amount of calcium in their saliva on admission to hospital. The following are examples:

R. I. had had disease of the vertebrae for ten years; it had produced marked bony destruction, and was active on admission; his saliva contained only 0.90 mg. of calcium in 100 c.cm.

H. L. had had tuberculosis of the sternum and tarsus for three years, with sinus formation; his saliva contained only 1.60 mg. of calcium in 100 c.cm.

H. A. had had active disease of the hip-joint with abscess formation, but no bony destruction, for three months. His saliva contained 6.88 mg. of calcium in 100 c.cm.

However, there is no reason to believe that this factor was of primary importance in altering the relative amount of calcium in the salivas of the children in the diet groups; since this disease was common to all, and those children with the least active tuberculosis were usually put on diet B, and those who were suffering most severely from this infection were put on diet A.

2. *Water*.—All the patients were drinking Sheffield water, which has a low calcium content. To test this point the amount of calcium of a few Sheffield persons was obtained and compared with the amount found in a few London residents. The average quantity of calcium in the saliva of the ten Sheffield persons was: adults 8.07 and children 7.19 mg. in 100 c.cm. of saliva. The average quantity of calcium in the saliva of the ten London cases was: adults 10.61 and children 9.34 mg. in 100 c.cm. of saliva. Röse<sup>3</sup> carried out investigations with the idea of relating the extent of caries to the calcium content of the drinking water in different districts. He found that, on the whole, the children living in districts where the water was hard suffered less from caries than those living where the water was soft. The amount of calcium in the saliva of these subjects, however, was often less when the water was hard than when it was soft. Röse states that the full influence of a calcium-rich diet is only seen after several generations. It was found in the present investigation that the addition of calcium phosphate, calcium lactate, and calcium carbonate over a short period to the dietary of patients had no effect on the calcium content of the saliva.

3. *Age of the Patients*.—No definite relation was noticed between the age of the patient and the amount of calcium in the saliva.

4. *Hour of Collection*.—The amount of calcium in the saliva varied slightly at different times of the day in individual persons, but this variation was not constant.

5. *Rapidity of the Secretion of the Saliva*.—It was not found that the percentage amount of calcium varied appreciably with the rapidity of secretion.

6. *Hydrogen-ion Concentration*.—This varied between a pH of 6.5 and 7.5, and bore no relation to the amount of salivary calcium, nor to the degree of dental caries.

#### SUMMARY.

1. The amount of calcium in the saliva is influenced by diet. (a) A high calcium content of the saliva can be produced by a diet having a large fat-soluble vitamin content. (b) A low calcium content can be produced by a diet containing much cereal (especially oatmeal) and comparatively little fat-soluble vitamin, although the amount of calcium ingested in this diet may be the same as, or even greater than, in (a).

2. The calcium of the saliva is not increased by increasing the calcium of the diet over a short period.

3. Tuberculous children appear to have a lower calcium content of the saliva than normal children, and, on the whole, low resistance to the infection is accompanied by low calcium content. This relationship between resistance to infection and salivary calcium requires further investigation before it can be regarded as established.

4. It will be seen that the calcium content of the saliva is controlled by the same factors of special nutrition as those on which the calcification of teeth and bones also depend. If, therefore, caries of the teeth be influenced by the chemical composition of the saliva, then it is evident that the problem of dental caries is at least partially one of general metabolism. This point of view is corroborated by other results showing the relation of diet and caries, published elsewhere.

The expenses of this research were borne by the Medical Research Council and the Dental Board of the United Kingdom, to both of whom I wish to acknowledge my indebtedness.

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## PLEURAL EFFUSION COMPLICATING PNEUMOTHORAX.

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PLEURAL EFFUSION is the most common complication of pneumothorax. If every patient with pneumothorax were examined daily with the x-ray screen there would be seen at some time or other in practically every case a small pool of fluid lying in the costo-diaphragmatic angle. Such small collections of fluid, however, are quickly absorbed; they come and go, and are of no importance. In speaking of pleural effusion I mean cases where the fluid at least covers the diaphragm and lasts more than a week, and I do not include those small transient effusions discovered accidentally by x rays.

Out of 309 consecutive cases in which I have successfully induced artificial pneumothorax for pulmonary tuberculosis an effusion formed in 128 (41.4 per cent.), and of these 47 (36.7 per cent.) are dead. Of the 181 cases in which no fluid formed, 57 (31.5 per cent.) are dead. Of the 128 cases the fluid remained clear in 92, and 27 (29.4 per cent.) of these are dead. In the other 36 cases the fluid was tuberculous pus, and 20 (55.6 per cent.) of them are dead. In time, no doubt, more of these cases will die of tuberculosis, but this applies equally to cases with and without fluid, so that the figures can be taken to show that, roughly speaking, cases which have clear pleural effusion do neither better nor worse than dry cases, but that if a tuberculous empyema forms the outlook is much more serious.

It should be clearly understood that these 309 cases do not include non-tuberculous cases, nor those where artificial pneumothorax was attempted but failed or was only partially successful. I have divided them into three groups: C1, where the disease was unilateral; C2, where there was some disease in the other lung but only slight; C3, where more than one-third of the better lung was affected. The last group consists largely of cases where artificial pneumothorax was induced as a last resort, and so the mortality is very high. Had the patients in this group lived longer many more would undoubtedly have developed effusion.

The following table shows the number of cases in the various groups which developed fluid.

	C1.		C2.		C3.	
	Cases.	No. Dead.	Cases.	No. Dead.	Cases.	No. Dead.
Total ...	125	24 (19%)	175	47 (34.8%)	48	33 (68.7%)
No effusion ...	78	13 (15.6%)	72	22 (30.5%)	31	22 (71%)
Clear fluid ...	36	5 (13.9%)	45	14 (31.2%)	11	8 (72.7%)
Pus ...	12	6 (50%)	18	11 (61.8%)	6	3 (50%)

In my series, effusion in the great majority of cases developed in the first six months and rarely occurred after the first year. The number of months after the induction of artificial pneumothorax when the effusion formed was:

1 to 3 months ...	45 cases
4 to 6 " ...	43 "
7 to 12 " ...	29 "
13 to 18 " ...	5 "
Over 18 months ...	6 "

Various explanations have been given to account for the frequency of pleural effusion in cases of pneumothorax. Irritation of the gas, its temperature, the repeated punctures of the parietal pleura, or the intrapleural pressure have all been described as playing a part in the production of fluid. In my opinion, however, these effusions are true tuberculous exudates, and in my experience they occur with equal frequency whether the gas is heated or not and whether air, nitrogen, carbon dioxide, or oxygen is used. We know that pleurisy is a common complication of pulmonary tuberculosis, and that it often leads to

adherent pleura. If the parietal and visceral pleurae are separated, as they are in cases of pneumothorax, one would expect effusion to form if pleurisy developed. In almost every case of spontaneous pneumothorax (where, of course, the disease has spread to the pleura) effusion develops. The cytology of the fluid is that of a tuberculous exudate, and although at first tubercle bacilli are not usually found, in long-standing effusions they can almost always be demonstrated. In none of my cases has any other organism been found. In my opinion is correct we would expect to find that in cases of non-tuberculous disease artificial pneumothorax would not be complicated by pleural effusion, and this is actually the case. In one of my cases of abscess of the lung a small pool of fluid appeared for a short time, but in none of my other 54 non-tuberculous cases of artificial pneumothorax did any fluid form—a percentage of less than 2, as against 41.4 for the tuberculous cases.

In spontaneous pneumothorax effusion is usually present, being absent in only 4 of my 22 cases, and these 4 all did well. As a rule, the fluid in spontaneous pneumothorax becomes thick tuberculous pus, the lung never re-expands, and the outlook is very serious; 13 of my 18 cases in which fluid formed are dead, and only 2 can be said to have done really well. I think thoracoplasty should be considered early in many cases of spontaneous pneumothorax, for unless the pneumothorax cavity can be obliterated by re-expansion of the lung it will sooner or later become infected, and the outlook is almost hopeless.

The treatment of pleural effusion complicating artificial pneumothorax depends on many factors, and each case must be taken on its merits. If the fluid is left it will usually cause obliteration of the pneumothorax cavity by pleural adherence and fibrosis starting at the bottom of the pleural cavity and working upwards. If this result is desired, therefore, the fluid should be left, but the patient must be kept under careful observation lest too much fluid develops and causes displacement of the mediastinum. Before this happens a sufficient quantity of the fluid must be aspirated. Many cases in which artificial pneumothorax treatment is allowed to terminate in this way do extremely well. As the lung is drawn out a satisfactory fibrosis develops over the diseased areas and the healthy parts of the lung begin to function once more. If, however, it is thought better to prevent obliteration of the pneumothorax cavity and to continue the refills it is very important to keep the pleural cavity dry by aspirating the fluid at each refill. Usually after one or two aspirations the fluid does not re-form. When fluid forms, a lung which was previously partially collapsed will become flattened out, and as the fluid accumulates the pressure rises, but it should never be allowed to rise sufficiently to displace the mediastinum. Sometimes the first indication of the presence of fluid is an unusually high intrapleural pressure. In one of my cases a pressure which was usually negative before a refill was found to be +5+10, and after giving 100 c.cm. of air it rose to +10+15. The pressure may, however, be negative in spite of the fluid, but a small refill will render it positive. For example, in one of my cases with fluid the pressure before refill was -10-6, but it became +17+19 after only 100 c.cm. of air had been given.

In replacing fluid the quantity of gas given must be much smaller than that of the fluid removed; roughly speaking, about one-quarter the quantity is required. In one case 225 c.cm. of fluid was removed and 200 c.cm. of air given, and the pressure was altered from -8-0 to 0+6. In another case where the initial pressure was -17-9, after removing 600 c.cm. of fluid it became -22-13, and after another 200 c.cm. had been removed it was -28-15. On adding 200 c.cm. of air the pressure at once rose to -16-9, another 200 c.cm. made it -10-6, and a third 200 c.cm. sent the pressure to -4-0. In one more case a pressure of +7+14 became -7+4 after removing 1,700 c.cm. of pus. It is not wise to allow the intrapleural pressure to alter too suddenly, and in replacing fluid with gas I think it is best to use two needles, the gas being introduced through one and the fluid flowing out through the other; by this method the pressure can be raised or lowered or kept constant at will. If it is wished to encourage the lung to re-expand the fluid should be removed without adding any gas, or if this is not thought wise

oxygen should be used, as this is absorbed more quickly than air.

If the fluid is purulent the case is very much more serious. The pus should be aspirated and the intrathoracic pressure kept as low as possible in order to help the lung to re-expand. If the lung does re-expand the outlook is hopeful, but if x rays show that there is no sign of re-expansion in the lung then we must face the fact that the patient will probably have a permanent pyopneumothorax and be liable to any of the many complications of that condition. In these cases I have washed out the cavity with saline, normal or hypotonic. I have injected 2 per cent. formalin in glycerin and other disinfectants into the pleural cavity, and in cases where the pus is thick I have injected some modifying fluid and rendered the pus more liquid and easier to aspirate, but the end is the same. If, therefore, the fluid is purulent and the lung fails to re-expand I think the best chance for the patient is to perform thoracoplasty as soon as possible. Before the operation, however, it is necessary to get the patient as fit as possible by washing out the pleural cavity and allowing him a period of rest in bed and good feeding. In most cases a preliminary operation for evulsion of the phrenic nerve is desirable. It is hardly necessary to add that active disease of the other lung is a contraindication to thoracoplasty, but in this case the outlook is almost hopeless. If, however, the better lung shows no sign of active disease I feel strongly that in these cases thoracoplasty offers the best chance to the patient.

## A CASE OF CHRONIC OBSTRUCTIVE JAUNDICE:

FOCAL NECROSES IN THE LIVER: MYELOID TRANSFORMATION OF THE SPLEEN.

BY

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I HAVE recently encountered a case of chronic obstructive jaundice which presents some points worthy of comment. I will relate only the main points of the patient's last illness.

A man, aged 62, had chronic obstructive jaundice (complete obstruction) owing to primary adenocarcinoma of the hepatic duct at its junction with the cystic duct. He died on March 11th, 1926, after having had jaundice for only about one month. He had had occasional haematemesis, but at the post-mortem examination Dr. E. Bock found no lesion in the oesophagus, stomach, or upper bowel to account for it. The adenocarcinomatous growth was small and macroscopically scar-like. No metastases were seen. The liver weighed 2,300 grams (70½ oz.), and the intrahepatic bile ducts were distended with colourless bile. On microscopic examination sections of the liver were found to contain numerous foci, recalling by their small size and their irregular distribution the focal necroses of infectious diseases (enteric fever, etc.). They were distributed in various parts of the hepatic acini and contained necrotic liver cells and bile pigment; in many of them there were also quantities of large phagocytic cells (macrophages), and in some of them there were also collections of polymorphonuclear leucocytes, as if suppuration were threatening.

There had been no fever during life, and an infective origin for the focal necroses can hardly be maintained. It seems to me that these necroses are most probably a minor variety of what Horst Oertel<sup>1</sup> called "multiple non-inflammatory necrosis of the liver with jaundice," an example of which I described with a coloured illustration in 1909.<sup>2</sup> One possibility is that they are merely capillary "cholérhagies" due to overdistension of bile capillaries (apoplexia biliaris hepatis), but biliary focal necroses of a peculiar kind in the liver have been found in the absence of obstructive jaundice.<sup>3</sup>

Another point of interest was the enlargement of the spleen, which I have not yet mentioned; it had been a puzzling feature of the case during life. This splenomegaly had much diminished (as splenomegaly generally does) after haematemesis, but at the necropsy the spleen still weighed 770 grams (27 oz.); it was even enlarged, of



rather firm consistence, and red on section. Some of this enlargement might have been due to congestion, but some of it was certainly due to myeloid transformation. On microscopical examination the splenic pulp, not the lymphatic follicular tissue, was enlarged. In Giemsa-stained sections the pulp was found to contain great numbers of eosinophil cells and erythroblasts and a certain number of myelocytes; a few megakaryocytes were also found (in other sections). A blood count at the end of February, 1926, had given 3,416,000 erythrocytes and 5,450 white cells to the cubic millimetre of blood (of the white cells 89 per cent. were polymorphonuclear leucocytes, 5 per cent. were lymphocytes, 4 per cent. were monocytes, and 2 per cent. were eosinophils), and in a blood film taken on March 10th (the day before death) a few myelocytes were seen.

Since myeloid transformation (metaplasia) was first discovered by Dominici it has probably been more often observed in the spleen than in any other viscus. O. Naegeli, who gives an excellent review of the subject,<sup>4</sup> says that though Itami failed to produce myeloid metaplasia by experimental bleeding, Skornjakoff succeeded in obtaining this vital reaction by allowing sufficient intervals for recovery between the bleedings. Myeloid transformation of the spleen may (though of course it does not always) occur as a vital reaction to anaemias and cachexias of various kinds and various infective and toxic agents,<sup>5</sup> including even mercury perchloride.<sup>6</sup> It has likewise been observed as a compensatory reaction in cases in which the bone marrow has been reduced by osteo-sclerosis.

In conclusion, I must thank Dr. O. Bodo (house-physician) for help in the clinical examination of the case, and Dr. E. Bock, and likewise Dr. J. W. McNee, for help in the pathological and histological examination.

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- <sup>3</sup> A. Rocca: *Fall von berdförmiger biliärer Lebernekrose*, *Virchow's Archiv*, 1912, cxviii, pp. 421-425.
- <sup>4</sup> O. Naegeli: *Blutkrankheiten und Blutdiagnostik*, fourth edition, Berlin, 1923, p. 200-204. Cf. also H. Fischer's excellent monograph, *Myeloische Metaplasie*, Berlin, 1909.
- <sup>5</sup> J. W. McLeod and J. W. McNee: On the Anaemia Produced by the Injection of the Haemolysin obtained from *Streptococci*, *Journ. Path. and Bact.*, Cambridge, 1913, xvii, pp. 524-537. Faany Albrecht: Zur Entstehung der myeloischen Metaplasie bei experimentellen Blutgiftämien, *Frankfurter Zeit. f. Path.*, Wiesbaden, 1913, xii, pp. 239-255.
- <sup>6</sup> McNee: Transformation myeloïde complète de la rate dans une leucémie, *Arch. de Méd. Nat.*, Paris, 1914, lxxv, pp. 347-353.

### THREE CASES OF OBSTRUCTION AT THE VESICAL OUTLET AFTER PROSTATECTOMY.

BY

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A GREAT deal is written about the satisfactory results of prostatectomy, but comparatively little about the unsatisfactory cases. Yet it is by no means uncommon for obstruction at the vesical outlet to recur after a short interval, however carefully and apparently successfully the operation has been performed, and when there has been nothing to suggest malignancy. The following typical cases from my own practice may be of interest.

## CASE I.

In October, 1922, a man, aged 62, was sent to me complaining of difficult and frequent micturition of twelve months' duration. He stated that he was passing urine ten or a dozen times a day, and two or three times at night, the first few hours of recumbency being untroubled. His eye and knee reflexes were normal, and nothing unusual could be palpated in the renal and vesical areas. His urine was free from blood and from any sign of infection, but the residue left in the bladder after micturition amounted to 4½ ounces. On rectal examination the prostate was of uniform consistency, though not so elastic as usual, and the right lobe was definitely enlarged.

I did the ordinary (Freyer) suprapubic prostatectomy, but

experienced some difficulty in enucleating the enlargement, which was more fibrous than usual. I was particularly careful to divide any shelf existing between the prostatic and vesical cavities, and no abnormal symptoms showed themselves during convalescence. The suprapubic wound was completely closed and the patient was passing water by the twenty-second day. He stated that he had to strain more or less to get the urine away, but bougies and catheters passed readily into the bladder.

Five months later he returned complaining of great difficulty and considerable pollakiuria, so much so that he asked for something further to be done. Instruments would not pass owing to definite obstruction at the internal meatus.

I excised the scar tissue, opened the bladder suprapubically and freed it anteriorly, passed a metal bougie by the urethra into the prostatic cavity, put the patient in the Trendelenburg position, and inserted a Thomson-Walker retractor. I found that the internal meatus was greatly contracted, so, while my assistant pushed up the metal bougie, I cut away the intervening tissue with scissors until the instrument entered the bladder. The bougie was then removed, and I completely dissected away the partition between the vesical and prostatic cavities, leaving a large internal meatus. I then passed a big coudé catheter along the urethra, fastened it into the bladder and closed the vesical and abdominal wounds around a small suprapubic tube, which was removed three days later.

The bladder was irrigated with boric lotion and the catheter changed daily for a week, the urethra being irrigated as the instrument was withdrawn. On the eighth, ninth, and tenth days I passed a catheter in order to irrigate the bladder, but did not tie it in. On the eleventh day, when the urethra had had three days' rest, I again fastened a catheter in and continued to do so till the seventeenth day, when the wound was firmly healed and the patient passing urine more freely than for years previously.

I have seen him from time to time since, and introduced urethral instruments with a view to ascertaining whether there was any contraction at the bladder neck. Large coudé catheters pass without meeting any obstruction, and micturition is free.

## CASE II.

In November, 1924, I was asked to see a man, aged 65, suffering from retention, who gave a history of slight difficulty for about a year and great difficulty for two or three months. By rectal examination both prostatic lobes were moderately enlarged, but of uniform consistency. I passed a catheter and emptied the bladder gradually.

I performed a prostatectomy by the Freyer method as in the former case, the enlargement being hard, fibrous, and difficult to remove. Great care was taken to divide any shelf between the prostatic and vesical cavities, and the patient convalesced normally for some time, passing urine by the urethra at stool on the eleventh day. Three days later, and many times afterwards, he micturated independently of defaecation.

On the twenty-second day I found that I could not pass a catheter into the bladder, the point being arrested in the prostatic cavity. Only a small quantity of fluid could be introduced and that very slowly. I tried again on many subsequent occasions, always with the same result. Five weeks after the operation, when I was out of town, the suprapubic wound closed and the patient developed retention. The medical man who was called to see him passed a catheter. He thought the instrument was in the bladder when it was really only in the prostatic cavity, a mistake easily made in these cases. As he could not draw off any urine, he came to the conclusion that he had to deal with a case of suppression, and actually applied the treatment for that condition. After a short interval, however, the suprapubic wound burst open again and discharged a large quantity of urine.

I explored the vesical neck in the way already described, but after a thorough examination failed to find any opening. I completely removed the partition between the prostatic and vesical cavities, inserted a catheter into the bladder by the urethra, and treated the vesical and abdominal wounds as described above. The technique of the after-treatment was the same as in the former case. The patient made a rapid and uninterrupted recovery and has since passed urine without any difficulty.

## CASE III.

A man, aged 50, who had been leading a healthy country life, consulted me in April, 1925. He looked very fit, but complained of slight difficulty for four or five years and great difficulty for a month. He was passing small quantities of urine every hour both by day and by night. He found it very hard to begin the act, and the stream was a mere dribble. There was no haematuria, no sign of infection, and no history of gonorrhoea. The eye and knee reflexes were normal. On rectal examination the right lobe of the prostate was definitely enlarged, the left little, if at all. I passed a catheter, after meeting some obstruction in the prostatic region and drew off 6 ounces of residual urine.

I performed prostatectomy by the open method, as recommended by Sir John Thomson-Walker, and again found great difficulty

in enucleating the enlargement, which the pathologist described as a fibroadenoma without any trace of malignancy. I took great care to remove all the shof between the vesical and prostatic cavities; in fact I took away so much that my assistant was afraid I might open into the rectum.

For a time the patient did very well, and three or four weeks later, when the wound was healed, was passing water without the least trouble. Two months after the operation he began to experience some difficulty, more especially after a tiring day's work. I saw him in August, when he was complaining of great difficulty, the stream being small and intermittent. On passing instruments I encountered some obstruction at the internal meatus, though I managed to get steel bougies through. The dilatation gave him relief for some time, but he returned in February, 1926, when the suprapubic wound had broken down and formed a fistula. He was passing some urine normally with great difficulty, but most of it was coming by the suprapubic route.

I operated again on February 23rd and found a pin-point opening surrounded by dense scar tissue. I removed all the obstructing partition, made a large internal meatus, tied in a big catheter by the urethra and drained the bladder suprapubically. In three weeks the abdominal wound was healed and the patient passing urine without the least difficulty; in fact he does not remember ever micturating so easily and quickly before.

The points of special interest in these cases are:

1. All three patients complained of difficulty as their most prominent symptom before the prostatectomy.
2. The enlargement was in each case of the smaller and more fibrous type, a fact which supports the usually held theory that post-operative obstruction is commoner in this class of case.
3. The rapidity with which the wounds healed and the ease with which the patients subsequently passed water lead me to believe that in dealing with post-operative obstruction it is advisable to tie a catheter into the bladder by the urethra off and on until the suprapubic wound is healed. I have not found that the patient objects to its insertion and retention, if the instrument is changed and the urethra irrigated daily, and a good lubricant used.
4. While there is no doubt that the Thomson-Walker open operation is in the majority of cases greatly to be preferred to the old "blind" method, Case III proves that cicatricial contraction may cause obstruction and difficult micturition even after the more thorough procedure.

## STUDY OF AGGLUTINATION OF THE GONOCOCCUS IN MAN.

BY

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Much work has been done upon the agglutination of the gonococcus by means of the experimental inoculation of animals, and all workers appear to be unanimous that agglutinins are produced; the titre of such serums is high and there is general agreement that a titre of 1 in 1,600 is relatively easy to obtain.

It is on the subject of differentiation of type that divergency of opinion becomes evident. Some workers have been able to differentiate a number of types and subtypes; the precise number varies. Other workers have concluded that it is not possible to distinguish these types with any certainty by means of the agglutination test. A review of the literature has been given by Tulloch.<sup>1</sup>

An attempt to investigate this matter in the human subject presented an initial difficulty in that failure to obtain a positive result might possibly be due to the fact that the patient was infected with a type or strain of gonococcus not present in the polyvalent stock antigen. The only practicable method of overcoming this obstacle was to discard the idea of using a stock antigen and instead to use for each patient his own autogenous strain.

The following technique was therefore employed. Upon a patient presenting himself with a newly contracted urethral discharge a culture was made upon the medium always used in this laboratory and described by me in the *Journal of Pathology and Bacteriology* at various times. Next morning the growth was examined to ascertain that pure culture was possible, and subcultures made. These were incubated for twenty-four hours, examined

for contaminations, and, if satisfactory, made into a suspension of about 2,000 million per cubic centimetre with normal saline. The suspension was then violently shaken for a few minutes to break up any clumps present. The further steps in the preparation varied.

Four methods of treating it were tested. In the first neither antiseptic nor heat was used, the suspension being placed in the ice-chest immediately after shaking. The low temperature is quite sufficient to kill the organism. The second method was to heat at 55° C. for thirty minutes, then place in the chest. The third was to heat as before and afterwards add 0.1 per cent. of formaldehyde before storing in the ice-chest. Lastly, 0.1 per cent. of formaldehyde was added without preliminary heating. Immediately before the actual test was performed a sufficient quantity of antigen was taken from the bulk stock and passed through filter paper or a plug of wool in order to ensure a smooth suspension.

In the case of gonococcal urethritis a period of three or four weeks was allowed to elapse before taking a sample of blood. The purpose of the interval was to allow the patient an opportunity to develop any complications usual to that period—orchitis and so forth. It was thought that a more generalized infection would favour the production of agglutinins.

The test was performed the day after the blood was obtained, which meant that the antigen was then about twenty-four days old. The dilutions ranged from 1 in 10 to 1 in 320. The tubes were incubated at 55° C. for two hours, then put out on the bench at room temperature for another twenty-four hours. They were inspected at frequent intervals. The antigen and serum were stored and the test repeated at the end of a fortnight and again when the serum was six weeks old. This last procedure was to ascertain if any change in the serum took place with age.

The total number of cases examined was 21; they can be conveniently divided into two groups of 16 and 5 respectively.

The first group comprised the patients in whom the organism had been obtained from the urethra. Most of them had developed posterior urethritis, and four of them testicular lesions also, by the time their serum was collected. The result of the tests showed that the serum of every patient in this group was completely negative in all dilutions. Such a result has been obtained by other workers and has been explained on the assumption that agglutinins are not formed where the infection is localized or semi-localized.

The results obtained in the second group are therefore interesting. This group consisted of five cases of gonococcal arthritis. In each case the organism was obtained in pure culture from the joint fluid. Primary cultures are not difficult to obtain provided the fluid is inoculated as soon as it is withdrawn and not left to lie about the ward for an hour or so. The subcultures were made the next morning when the blood was collected and the serum separated. Immediately the antigen was ready for use the test was performed, and repeated at the same intervals as in the first group. The dilutions used were the same. Four of the serums were negative in all dilutions; the fifth was positive in a dilution of 1 in 10. This particular serum was tested again the next day for confirmation. Fourteen days later it was still positive, but was negative when tested at the age of six weeks.

At the present moment an original method of treating the serum is being tried and appears to offer better results in the second group, but the method is still under observation.

### CONCLUSIONS.

1. Agglutinins to the gonococcus are not produced in man when the infection is limited to the genito-urinary system.
2. In a generalized infection such as arthritis the amount of agglutinin produced is so small and uncertain that the agglutination test as ordinarily performed is of no value for diagnostic purposes.

### REFERENCE.

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## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## CARCINOMA OF THE PROLAPSED CERVIX.

We are indebted to Dr. Leith Murray for directing our attention to the extraordinary rarity of this condition. Procidencia is practically confined to women who have borne children—not so much to women who have had hard labours as to women who have had successive pregnancies so rapidly that the uterus has never had time to get back to its normal post-partum size. Carcinoma of the cervix is also admittedly most common in women who have borne children, especially where the cervix has been lacerated in the process. Yet these conditions, individually common in the same class of case, very rarely coexist. It seems, therefore, that cancer is less liable to develop in the prolapsed cervix than in the non-prolapsed, otherwise the associated condition would be more frequent. Perhaps the character of the epithelium changes, making it less liable to a proliferative change. The following two cases may be worth recording. The first case shows carcinoma associated with prolapse, and the second case carcinoma developing soon after a long-standing prolapse was rectified.

## CASE I.

On July 22nd, 1922, I was called to see a widow, aged 72 years, who complained of abdominal pain. Whilst palpating the abdomen I found that the uterus prolapsed for about 3 inches outside the vulva. The cervix was a fungating, foul-smelling, cauliflower-like mass. She had kept the condition secret even from her own family, and she admitted that, although the prolapse was of thirty years' standing, the actual ulceration had existed for only two or three months. She had six children, all alive, and she had been a widow for five years. She was admitted into the Skipton Hospital in August for operation. Mr. Carlton Oldfield of Leeds saw her, and advised vaginal hysterectomy, which he performed on August 26th. She was discharged on September 25th, 1922, and remained quite well until September, 1924. She died on September 20th of that year, of cardiac disease, having shown no sign of recurrence of carcinoma.

## CASE II.

A widow of 53 had four children, the youngest aged 26 years. Her prolapse dated from soon after her last confinement. There was no sign of old laceration, but there was a certain degree of superficial soreness of the cervix due to friction. The uterus could easily be replaced but not retained in position. She was admitted to hospital, and the inflammation of the cervix rapidly disappeared with rest and local treatment. There was no suspicion of carcinoma. An operation for perineal repair, along with ventral fixation, was decided upon, and this was performed on January 28th, 1914. She was discharged on February 28th, 1914. She enjoyed perfect health, and was most comfortable for the twenty months that she remained under my care. She then removed out of the district, but came back to see me early in 1917 complaining of a sanguineous vaginal discharge of two months' duration. Examination revealed inoperable pelvic carcinoma, apparently originating in the cervix uteri.

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## HAEMATOMA OF THE ABDOMINAL WALL.

DR. FOTHERGILL's lecture on this subject, reported in the issue of June 5th (p. 941), covers many interesting aspects of a condition which has received very scanty consideration in surgical literature, apart from the recording of isolated cases. From the point of view of diagnosis, the presence of a haematoma in the abdominal parietes undoubtedly presents many difficulties, and it is especially, I think, when the condition occurs suddenly and acutely that the uncertainty in differential diagnosis between an intra-peritoneal and extraperitoneal catastrophe arises. It seems to me (albeit from a somewhat meagre experience) that there is room for the inclusion of this condition in classifications of the differential diagnosis of acute abdominal conditions.

One case I have particularly in mind which, owing to the dramatic suddenness of onset and the exquisite tenderness associated with the swelling, made diagnosis almost impossible, short of surgical intervention.

Mrs. D., aged 83, was admitted to the Bolingbroke Hospital, S.W., complaining of intense abdominal pain. She was pale, collapsed, and in very obvious distress. The pulse was poor in volume, irregular, and the heart sounds faint. She gave a history of having, in the middle of a game of cards, gone to a cupboard

to take out a joint of meat, and, whilst lifting it out, was overtaken by violent abdominal pain and the sudden appearance of a lump in the lower quadrant of the abdomen. The rigidity of the abdominal wall made palpation very difficult, but the presence of an ill defined tender mass in the left hypogastric region, filling the left iliac fossa, was obvious. It was apparently fixed and hard, with a definite, though irregular, edge.

Both recti were rigid. It was difficult to exclude such conditions as torsion of the pedicle of an ovarian cyst, or of the left kidney or spleen, although actually the shape and position of the tumour negatived all these possibilities.

The swelling resembled nothing that one associates with abdominal viscera. The acuteness of the condition, and, partly, the uncertainty of diagnosis, were considered sufficient to make exploration advisable, in spite of the fact that the patient had been under treatment for several months for auricular fibrillation and chronic asthma and was therefore ill suited for the administration of a general anaesthetic.

Through a paramedian incision, under light ether anaesthesia, I opened the peritoneal cavity and found to my surprise a perfectly normal state of the abdominal viscera and the absence of anything like an abdominal tumour. Further dissection in the parietal wall opened into a large haematoma deep to the left rectus, burrowing between it and the posterior layer of the sheath, and also exposed some torn fibres of the rectus muscle itself. After turning out clot and employing a few deep haemostatic mattress sutures through the rectus the abdomen was closed. Recovery was uneventful and rapid.

Apparently in this case rupture of a segment of the rectus abdominis itself, together with some muscular branches of the deep epigastric artery, had occurred in a frail old lady after a slight effort.

I have notes of four other similar occurrences following some sudden effort, such as vomiting, coughing, etc.

The acuteness of the general condition, associated with pain and an abdominal tumour, serves to show the difficulty which exists in making a diagnosis, and seems to me to emphasize the desirability of remembering the possibility of such an occurrence and of distinguishing it from an acute intraperitoneal emergency.

Altrincham, Cheshire.

H. H. GELLERT.

## British Medical Association.

## CLINICAL AND SCIENTIFIC PROCEEDINGS.

## WITWATERSRAND BRANCH.

## TYPHOID FEVER: MANIFESTATIONS AMONG SOUTH AFRICAN NATIVES.

At the meeting of the Witwatersrand Branch of the British Medical Association on May 20th, held in the lecture hall of the Associated Scientific and Technical Societies Club, a discussion took place on enterica. Dr. A. J. MILNE (M.O.H. Johannesburg) contributed a paper on the public health aspect; Dr. A. Bloom on the clinical aspect and treatment; Dr. M. BLIEDEN on manifestations peculiar to children; Dr. A. S. STRACHAN on the pathology and bacteriology; and Dr. A. Frew communicated a paper by Dr. H. T. H. BUTT and himself on manifestations peculiar to natives. Both can speak with special authority, as each has under his medical care large numbers of mine natives: the former being medical officer to the East Rand Proprietary Mines, Ltd., the latter to the Randfontein Estates Gold Mining Co., Randfontein. The experience of Drs. Frew and Butt is necessarily derived from adult male natives, which somewhat limits the possibility of comparison with whites. Nevertheless they were able to give a very interesting account (summarized below) of the disease as it occurs among the natives on the mines.

In the first place it is to be assumed that typhoid fever occurs in the native territories, as a fair number of natives arrive on the mines with the disease developing or already developed. As to the mines themselves, on some the disease is more or less endemic, with occasional outbreaks that may be described as epidemic. Amongst the 10,000 natives on the East Rand Proprietary Mines during 1922-25 no case was recorded in seven of the forty-eight months; at Randfontein, with 16,000 natives, no case was recorded in eighteen months of the same period. On the East Rand Proprietary Mines the successive annual figures were 42, 46, 40, and 38. At Randfontein they were less uniform—namely, 9, 45, 21, and 36. The prevalence is greatest on the mines with the bucket sanitary system. One source

of infection believed to be of considerable importance is the water tapped underground on the mines, which many natives, despite warnings, persist in drinking. The same applies to the industrial water used for washing down stope faces, etc. Though they may not actually drink this water they see no objection to storing it in their mouths for lubricating the holes they are drilling. Carriers constitute a great difficulty. An attempt is being made to search for these among all the natives who come into contact with food supplies in the compounds; but it is questionable whether the single examination of urine which is suggested will be sufficient.

A very remarkable feature of the disease among natives is that quite frequently a perforation will actually occur before the man feels sufficiently ill to report at the hospital. In one case of sudden death the district surgeon, finding *post mortem* a perforation with its accompanying peritonitis, suspected neglect, until it was proved to him that the native had done a full shift of work the day before and regularly for a week before that. Once a native was picked out with a perforation and peritonitis from amongst a group of discharged "boys" (all male natives of whatever age are "boys"); he was awaiting his turn to be passed out to go home to his kraal. He died in hospital within twelve hours. Most mine medical officers are familiar with such cases, which, with the native's habit of occasional defecation and promiscuous urination underground and on the surface, must contribute considerably to the spread of the disease.

Differences in the symptoms from those observed amongst whites are of interest. Petechiae are of very little importance in diagnosis. They are difficult to recognize on the dark skin, and the native is very liable to various sweat rashes produced by the combination of moisture and heat obtaining underground. Loss of appetite apparently never occurs. The native is always a hearty eater, and must be extremely ill before he turns away from a good meal. That he has lost his appetite is not a confession that a native has been known to make. Splenic enlargement cannot be used diagnostically, for the reason that many natives, particularly those from East Coast tribes, are impregnated with malaria and have chronically enlarged spleens. Phlebitis ("enteric leg") occurs, but not so frequently as in whites. This is in keeping with the rarity of varicose veins amongst mine natives; their venous systems are in good order. The diagnosis must be reached by a process of elimination, with the temperature chart alone pointing the way; and here, also, complications are caused by certain undulant fevers common to most tribes, but particularly the Xosas, probably lice-borne infections. The Widal test is negative as often as positive, even when taken two or three times in cases of undoubted enteric.

Prognosis is graver than in whites, which is to be attributed very largely to the fact that the patient presents himself so much later in the course of the disease. On the East Rand Proprietary Mine the mortality during five years has averaged 33 per cent., never falling below 21 per cent., while at Randfontein the average is even higher—47 per cent., never falling below 33 per cent. This is in very strong contrast with the hospital mortality of 7 to 20 per cent. quoted by Osler.

From time to time prophylaxis has been considered; but the unfortunate mine native already has to undergo much in the way of vaccination and inoculation, and mine medical officers are loath to add further to his discomfort. Apparently there are difficulties in the way of combining the pneumococcal vaccine with T.A.B.

Medicinal treatment runs on the same lines as for whites. Dietetically there is the difficulty of overcoming the reluctance of the native to undergo what he looks upon as a process of starvation. "Laparotomies for perforation have small chance of recovery, as the native can seldom be made to see the necessity for an operation unless he is suffering great pain, and in any case he wants a day or two to think it over, and discuss it with his brothers. Even if you obtain his consent early he still may die, and his brothers have been known to raise a riot in a compound and go on strike because their brother went into hospital with only a headache, and died because his abdomen was cut open."

## Reports of Societies.

### THE FUNCTION OF THE TESTES.

At a meeting of the Section of Urology of the Royal Society of Medicine, held on May 27th, Mr. T. E. HAMMOND (Cardiff) read a paper on the function of the testes after puberty.

After referring to the difficulties experienced in proving whether any changes had occurred, Mr. Hammond gave an account of seven cases of castration in which both testes had been removed for tuberculosis. In none did any reversion to the so-called neutral type take place, and sexual desire and power was retained for some time. He believed that many current views about the function of these glands were based on ideas handed down from the past. He referred to the influence which sex worship had played among all nations, and said that the stigmas fastened upon the eunuchs were not necessarily due to the absence of testes. Eunuchs were in power in the Roman Empire at times that were characterized by debauchery and licentiousness, which prevailed among all the people. Many of the failings of eunuchs at that time were to be attributed to their Oriental extraction and to their upbringing; for character depended more upon heredity and early training than upon an internal secretion. They had been denounced by Gibbon, who seemed to believe that "testes make the man"; in this respect he might be looked upon as a forerunner of the rabid endocrinologist of to-day. In Mr. Hammond's opinion the work of Brown-Séquard had been given too much prominence. The preparation of the testicular extract was not difficult, and, as a hypodermic injection required but little skill, the fact that Brown-Séquard's results had not been obtained by others seemed to be conclusive that the improvement in his cases was due to suggestion. Whenever any effect followed castration in man, it was always attributed to the loss of an internal secretion. The possible action of shock from the operation and the effect of a deformity and loss of power had been ignored. That these factors might have some influence was illustrated by cases that were recorded. As enlargement of the prostate was often associated with impotence or increased sexual desire; these conditions had been attributed to changes in the testes. The urinary symptoms were always regarded as secondary to the prostatic enlargement. In the same way the sexual symptoms were explainable, if they were regarded as secondary to the pressure of the enlarged prostate upon the ejaculatory ducts. That the increased sexual desire was really a sexual irritability was shown by the fact that no relief followed coitus. It was responsible for many of the sexual aberrations seen in elderly men who had previously lived moral lives. In recent years the functions of the testes had received much prominence owing to the claims of Voronoff and Steinach for the rejuvenating action of these glands. In Mr. Hammond's opinion their practice was based on erroneous deductions, and their findings were not conclusive. When the therapeutic activity of the internal secretion of the testis was investigated it would be found that, no matter how the treatment was applied, successes always followed. The affections treated were most varied in their pathology and causation, and were as numerous as those put forward by Coué as suitable for auto-suggestion. Such claims followed all new methods of treatment, and were due to the failure to appreciate a fundamental principle—namely, that with all therapeutic measures faith and hope were of primary importance; but in the process of rejuvenation the greatest factor was not vasectomy.

Mr. Hammond's conclusions were as follows: For years it had been held that without testes no impregnation could take place; and from his series of cases it appeared that this still held true. The power attributed to the internal secretion was probably overestimated. The internal secretion was probably essential for the true development of the secondary sexual characters; when once these were formed, removal of the glands led to but little change. It had some action in stimulating sexual desire and power. It probably had some action upon metabolism.

as shown by the tendency to obesity after castration. It might have some action upon that elusive condition known as general tone. It had not that action upon the mental and physical well-being which had in recent years been claimed for it.

### AMENTIA AND CRIME.

THE annual meeting of the Medico-Legal Society was held on June 15th, with the President, Lord Justice ATKIN, in the chair.

SIR JOHN COLLIE read a paper entitled "A study from a medical and legal point of view of the case of John Perry, executed in 1660." William Harrison, aged 70, steward to Lady Campden, set out to collect rents, and, failing to return, his servant, John Perry, was sent in search of him. Later, Perry made a "confession" implicating his own brother, Richard, and his own mother, Joan, in the murder of Harrison. Although the body of Harrison was not recovered, the three were tried for murder before Sir Christopher Turner at Gloucester Assizes, but the judge refused to convict in the absence of direct proof of death; at the following assize, however, Sir Robert Hyde sentenced the three Perrys to death. To the end the mother and Richard protested their innocence. Sixteen years after the executions Sir Thomas Overbury sent to Dr. Shirley, physician to Charles II, a signed statement by William Harrison, who had returned to his native village sixteen months after the executions, detailing his seizure by highwaymen on the night of the murder. He never saw the Perrys at all.

The fatal error in the case was conviction in the absence of recovery of the body. As to the medical side of the case, Sir John Collie did not believe that any sane man would simultaneously commit the crimes of matricide, fratricide, and suicide. Was John Perry a mental defective? Amentia was more common than was generally supposed. It had been estimated that 20 per cent. of our prison population showed the stigmata or mental deficiency. Tredgold's investigations in Somersetshire led him to conclude that 10 per cent. of mental defectives evinced antisocial tendencies. Many aments could do fairly complicated work, with or without supervision. They could, for instance, take care of animals, but they could not plan. All aments might be divided into two classes—those who lacked wisdom (that is, common sense), and those who lacked moral sense. The first were defective in will power, "facile," wanting in character, unduly amenable to suggestion, and dependent on their environment. They made a living in humble vocations, but they could never control others. They jogged along, or gravitated to a home for defectives or to prison. Those who lacked moral sense did not always lack wisdom, and were, therefore, of greater potential evil to the State. Serious misconduct was one of their chief characteristics. In children it was sometimes difficult to recognize whether the defect was more moral or intellectual. If the children escaped segregation when young, later in life they might exhibit their fatal defect in some cold-blooded murder or terrible crime. This moral insanity was sometimes, apparently, latent, and only awaited its opportunity. Sir John Collie thought that many of these crimes lay at the door of the newspaper proprietors. The lurid details of one crime led in time to others. A visiting J.P. to the Glasgow prison told him that, being struck by the refined physiognomy of one prisoner, he asked him who he was. The reply was, "Hush! I am Morrison." It was a case that had made some little stir; the man had been sentenced to ten years' penal servitude for embezzlement, and seemed proud of it. In a similar case at Broadmoor the man who had committed a terribly cold-blooded murder posed as a hero, proud of himself. The prison doctor, when asked what was the form of mental disease which had saved the man from the gallows, replied, "Moral insanity." If John Perry was a moral defective, why was this defence not set up at his trial? The answer was that the tragedy occurred in 1660, and that even in 1926 such a plea might not always be successful. If Perry was sane he knew he was innocent, and also that his mother and brother were innocent. It might be argued that Perry was an hysteric.

But hysterics scarcely ever came to any harm. The hysterical state would not have lasted so long, and, if present, would not have remained so long unchanged. Had it been an hysterical condition Perry would have broken down either at the trial or at the executions. Again, it might be that Perry suffered from delusional insanity. If this were so his story would have varied much more than it did, and it certainly would not have stood inquiry or cross-examination. After a time Perry thoroughly believed the story he had evolved—it became a true delusion. Lastly, was Perry suffering from dementia praecox, which was most common between the ages of 15 and 30? Perry's story was a typical phantasy, like the charges which girls sometimes made of having been assaulted. It was typical of dementia praecox that its victims were emotionally apathetic. Could apathy be more callous and inhuman than to condemn a mother and a brother to a horrible end and be quite regardless of their appeals? Sir John Collie inclined towards the diagnosis of "moral insanity," but he had not arrived at a definite conclusion.

SIR HARRY STEPHEN said that the story depended greatly on the truth of Overbury's letter to Shirley. Did Harrison really come back? Did Harrison really suffer as he alleged, or was it a put-up disappearance whereby Harrison's son should step into his father's shoes as steward to Lady Campden? The speaker said he always distrusted "confessions." Further, he did not think it always necessary to produce the body where a murder had been committed before a sentence could be passed. Crippen was convicted after a mere fragment of skin had been found.

Lord Justice ATKIN said he had made inquiries at the Record Office, and the assize clerk had, he observed, made an entry against the names of the Perrys: "puts," that is, "puts himself on the county," which meant trial by jury, and "sus," that is, suspended, or hanged. Perhaps research in the parish registers of Campden and Bampton might elicit further facts concerning what he considered "our most horrible judicial tragedy."

MR. BERNARD O'CONNOR, DR. WATSON, MR. ROLAND BURROWS, and MISS LETITIA FAIRFIELD also took part in the discussion.

## Reviews.

### THE SECRETION OF URINE.

THE second edition of *The Secretion of the Urine*,<sup>1</sup> which has just appeared, was almost the last work Professor A. R. CUSHNY did, for he had just completed the revision of the proofs at the time of his sudden death early this year. The first edition of the book appeared nine years ago, and during the interval a considerable amount of research work has been done on the subject, although no very revolutionary discoveries have been made. The present edition gives a full account of all this recent work, but the author concludes that the general result of the work done during the last decade has been to confirm the theory of urinary secretion put forward in the first edition of his book. This theory supposes that the glomeruli act as filters, filtering off the non-colloidal constituents of the plasma, and that the tubules absorb from this filtrate a fluid of practically fixed composition. As a result of this mechanism some substances have no threshold and are entirely excreted, while others have a high threshold (for example, sugar) and normally are entirely reabsorbed, while most substances lie between these extremes and are excreted in varying amounts.

It is pointed out that the experiments of Wearn and Richards, who succeeded in actually tapping the glomeruli of the frog's kidney with fine capillaries, and in analysing the minute quantities of fluid thus obtained, provide direct evidence for the view that the glomeruli act as simple filters. The experiments of Starling and his co-workers on the heart-lung-kidney preparation of the dog, on the other hand, are difficult to explain on Cushny's theory, though

<sup>1</sup> *The Secretion of the Urine*. By Arthur R. Cushny, M.A., M.D., LL.D., F.R.S. Second edition. Monographs of Physiology. London and New York: Longmans, Green and Co., Ltd. 1925. (Med. 8vo, pp. xii + 288; 39 figures. 16s. net.)



ie did not consider that these results offered any insuperable objection to his view.

The fundamental nature of kidney activity has been the subject of controversy for more than half a century, and it is unlikely that Cushty's theory represents the final and absolute truth. It is, however, the first coherent theory of kidney secretion which accords with most of the known facts; it has also the merit of simplicity. Considering the rapidity of the present advance in physiological knowledge it is very satisfactory that the theory should have stood the test of ten years so well.

The first edition of this book was recognized as the clearest summary of our knowledge of the difficult subject of kidney secretion that had appeared, and this new edition fully maintains the reputation of its predecessor. The sudden death of the author in the prime of his life is an irreplaceable loss to medical science.

### MALIGNANCY AND EVOLUTION.

In his latest book, *Malignancy and Evolution*,<sup>2</sup> Mr. MORLEY ROBERTS sets out to justify the claims of philosophy as an engine of research and, at the same time, to plead earnestly for the restoration of the philosopher to a recognized place among scientific workers. Without laboratory training, and dependent for his facts on others, he nevertheless handles his tools as if he had been accustomed to them from youth upwards. In this dexterity Mr. Roberts stands almost alone among "outsiders." There are numerous examples of medical men and of biologists who have turned from medicine and from science to fiction and to letters, but in turning from fiction, letters, poetry, and painting to sound the depths of modern biology Mr. Roberts has broken all precedent. If we follow him through his later work we see him becoming more and more involved in the deeper problems of life, and it becomes plain that he is really a man of science who sought for expression through the medium of fiction and of narrative. He had reached mid-life before he turned to the writings of scientific men in search of facts which would assist him in unravelling the intricacies of human nature and of human behaviour, especially as manifested under the conditions imposed by modern civilization. He studied works on sociology, then on psychology, and later, still in search of further light and to serve him as a porayer of human life, entered the great fields of general biology. He there came to perceive for himself that the animal body—and it was man's body on which he concentrated his attention—was in reality a colossal society of microscopic units.

It detracts in no wise from the merit of Mr. Roberts's intuition that Herbert Spencer had made the same discovery fifty years before him. Like Spencer, Mr. Roberts soon realized that the student of human societies had little or nothing to learn from the professor of biology, but that, on the other hand, the sociologist could provide effective assistance to the professed biologist. The size of the living units which make up a society, Mr. Roberts declared, is immaterial; they may be microscopic in size or they may be as big as elephants; if they are massed into societies there must be an elaborate machinery for the regulation of the conduct of each individual of that society. The rules and conditions which regulate human society are recognized; there must be, Mr. Roberts inferred, a corresponding, if more elaborate machinery for regulating the behaviour of the uncountable millions of units which make up such a vast society as that represented by the human body. He therefore, at an early date, commenced the search of physiological literature for evidence of this machinery; the nervous system was recognized, as it had been by previous inquirers, as representative of central government; the discovery of hormones, the action of endocrines, the results obtained by experimental embryologists, and effects produced by one tissue on another when grown in experimental cultures and the stimulating effect produced on such cultures by embryonic

juice, came, all of them, as grist to his mill. He searched the literature dealing with immunity, with repair, with atrophy and hypertrophy, and with the formation of tumours of all kinds, to see if any parallel were to be found to the conditions which produce rebellion and disorganization in human societies: The process of invasion, the outstanding feature of all malignant tumours, was, he found, present in all living societies. The invasion of one tissue by another is manifested at every stage in the development of the embryo; it is a part of Nature's evolutionary machinery and by no means restricted to the manifestations of malignancy. He has ransacked the literature of evolution and of genetics for conditions which produce structural and functional changes in the animal body, leading on to the modification of one species and the extinction of another. He gives his reasons for believing that pathological stresses and processes are normal parts of the machinery of evolution. Tumour formation, in Mr. Roberts's opinion, is both normal and physiological, for he regards the liver, the pancreas, and every organ in the body as having come into being as a developmental or physiological tumour. The origin of cancer he regards as the same problem as the origin of the placenta; if we could ascertain the conditions which cause the liver to grow out, tumour-like, from the duodenum, we should probably be in a position to explain the origin of an enchondroma growing from the end of the femur. All are but variations of the same problem—the problem of growth. Whoever discovers the machinery of cancer production will, at the same time, throw a flood of light on the machinery of growth—for that which serves the one is the same as serves the other.

Thus the conversion of Morley Roberts the novelist into Morley Roberts the biologist has not been by way of sudden mutation, but by a process of gradual evolution. He strayed into the biological fold in search of facts to aid him in elucidating sociological problems; he ultimately pitched his tent within this fold to apply to the problems of biology his sociological doctrines or laws. In *Warfare in the Human Body* (1920) he enunciated his sociological doctrine of "hostile symbiosis"; in *Malignancy and Evolution* this doctrine is applied to the explanation of all disorders of growth and development, particularly to the elucidation of cancer and of sarcoma. Hostile symbiosis is a basal law, he maintains, in all massed communities. Even in the best ruled and most law-abiding society there is over a rivalry of interest and an unceasing "give and take" on the part of the sections of the community which represent these divergent interests. Even the best of neighbours in the best regulated municipalities have steadily to maintain their rights, tacitly or openly. We may live like gentlefolk, yet we cannot be units of a society unless we are "hostile symbiotes." The relationship between a living cell and all its equally living neighbours, Mr. Roberts maintains, is of the same kind: the epithelium which covers the skin is ready to take advantage of any weakness on the part of its mesoblastic neighbours which make up the underlying corium. Between neighbouring cells and between neighbouring tissues there exists, throughout the entire body, an armed neutrality or hostile symbiosis. Without such a state of matters there could be no adaptation to environment and no evolution of new forms. Thus tumour formation, benign and malignant, is just such growth reactions as are to be expected if Mr. Roberts's theory of hostile symbiosis is right. They are such manifestations as are to be expected if the government of the body fails—the government represented by the nervous system, the endocrines, and those more primitive and numerous substances to which Mr. Roberts gives the name of co-endocrines. Local tissues, he holds, are always ready to break through their normal bounds, being stimulated thereto by excitants or irritants, which may take the form of radiations, toxic substances, or substances introduced from without the body or manufactured within its tissues. Mr. Roberts succeeds in fitting all manifestations of growth, ordered and disordered, within his philosophical scheme of biology. It is a book which the professed biologist and pathologist should not pass by unread.

<sup>2</sup> *Malignancy and Evolution: A Biological Inquiry into the Nature and Causes of Cancer*. By Morley Roberts. London: Evelyn Nash and Grayson, Ltd. 1925. (Demy 8vo, pp. viii + 319. 18s. net.)

## POTT'S PARAPLEGIA.

MADAME LE [sic] DR. SORREL-DEJERINE is the daughter of one distinguished surgeon and the wife of another. Her husband, Dr. Sorrel, is well known for his work at Berek in the treatment of surgical tuberculosis. At the Maritimo Hospital at that place Mme Sorrel has in four years had the opportunity of studying and recording forty cases of paralysis complicating vertebral disease.<sup>3</sup> Of these cases four died, and some of the others left the hospital and were lost sight of. Like previous writers on this subject, Mme Sorrel observes that paralyzes are very rarely due to compression by bone, very often to an abscess inside the spinal column, and only sometimes to pachymeningitis. While most cases of Pott's paralysis tend to spontaneous cure, those that are the result of pachymeningitis are not suitable for surgical treatment and very generally incurable. Such cases begin later in the course of the disease, and develop more slowly than do cases of paralysis due to oedema or abscess.

The author thinks that all operative surgical treatment of Pott's paraplegia is useless, but it is to be noted that a number of the cases recorded were treated with Albee's bone grafts. This operation, while it does not directly react upon the paralysis, favourably affects the suppurative process, and may cause relief of pressure on the cord. The anatomical and pathological aspects of the matter are well dealt with in this book, and the considerations which should guide the surgeon in his prognosis are adequately set forth and considered. The illustrations are good. There is no index.

## DYSPNOEA.

THE fifth of the "Medicine Monographs" series is on *Dyspnoea*,<sup>4</sup> by Dr. J. H. MEANS of the Harvard Medical School and the Massachusetts General Hospital, Boston, who deals with this complicated subject from a sound physiological standpoint, and endorses Meakins's definition of dyspnoea as "the consciousness of the necessity for increased respiratory effort." The causes of dyspnoea are considered to arise at various points in the chain of events which keep the tissue cells in an environment best suited to their normal life. Beginning, therefore, with the basal metabolic rate, the modifications due to exertion, excitement, food, and disease are mentioned, and it is pointed out that in leukaemia the metabolic rate may be as high as in exophthalmic goitre. The laws governing the transport of gases are illustrated by dissociation curves of carbon dioxide and oxygen, and the rate of blood flow both at rest and in work by observations made with Newburgh on the author's own circulation. In the section on the efficiency of the pulmonary bellows the volumes of the anatomical and physiological dead space are discussed and the part played by nervous control is considered. The chapter on dyspnoea associated primarily with increased metabolism deals with the physiological, as in exertion, and pathological forms, as in thyrotoxic conditions.

When dealing with dyspnoea associated primarily with the disturbance of the acid-base balance, the term "acidosis," "much abused not only by clinicians but by physiologists," is defined as a condition in which acids other than carbonic are present in the blood in excess of their usual concentration. The diabetic patient with acidosis rarely has dyspnoea, at least when at rest, and may manifest pure hyperpnoea as in a normal person in moderate exercise; a nephritic with acidosis is, from the frequency of some handicap to ventilation, such as pulmonary engorgement or oedema, more likely to have dyspnoea. In 1914 the author confirmed Professor J. Barcroft's proof that acidosis may occur in cardio-renal disease, but found little if any relation between the intensity of the acidosis and the dyspnoea, a discrepancy which may in part be due to changes in the sensitivity of the respiratory centre. The evidence for Haldane and Douglas's view that Cheyne-Stokes or periodic breathing

is due to oxygen want is recognized as conclusive, though in discussing cardiac dyspnoea the relationship is stated to be far from simple. The dyspnoea of heart disease and of pneumonia are considered separately; the fundamental fault for the first is obviously failure to maintain the adequate rate of blood flow; in mitral stenosis especially there is stagnant anoxaemia of varying degree due to slow blood flow; in cardiac failure there may be arterial or anoxic anoxaemia due to defective aeration in the lungs; in congenital heart disease the most extreme degrees of either arterial or venous anoxaemia occur, due not to changes in the lungs, such as oedema, as in cardiac failure, but to the cardiac malformation. In pneumonia the factors responsible for dyspnoea are increased metabolism, anoxaemia, perhaps acidosis, and the diminished efficiency of the lungs with restricted vital capacity, necessitating rapid shallow breathing, which is not only uneconomical but may increase anoxaemia.

Some remarks on the treatment of the symptom dyspnoea, based on the known morbid physiology, such as the indications for reducing the metabolic rate by rest, for improving the muscular action of the heart by digitalis, and for promoting gas exchange in the lungs by the administration of oxygen, bring this admirable monograph to a close.

## NOTES ON BOOKS.

THE monograph on transfusion of the blood,<sup>5</sup> by Dr. BERNHARD BREITNER, first assistant in Professor Eiselsberg's surgical clinic at Vienna, is in two parts. In the first, which is devoted to the practical side of the subject, the writer discusses the value of transfusion compared with other methods of replacing loss of blood, the determination of blood groups, the dangers of transfusion, the action of transfusion, the various methods, especially those of Oehlecher and Percy, and the indications for the procedure. The second part deals with theoretical considerations connected with blood grouping, including its anthropological significance. The summary of the work is followed by an historical note and an exhaustive bibliography.

*An Explanation of Hydrogen Ion Concentration: The Capillary Method for the Determination of Acidity and Alkalinity in General Practice*,<sup>6</sup> by Dr. H. A. ELLIS, is a small pamphlet whose purpose is explained by its title. The subject is discussed in very simple language, and it is shown how easy it is to determine the reaction of any body fluid by using a capillary set, consisting of a series of capillary tubes filled with indicator dyes at varying hydrogen ion concentrations; spare tubes and dyes are provided, and by means of this method the reaction of a drop of fluid can be estimated in a minute or two.

*The Basis of the Golf Swing*<sup>7</sup> is the title of a book by a medical writer, Dr. JAMES FORREST. The author claims, through his knowledge of anatomy, to have discovered the secret of the golf swing, and so to revolutionize the teaching of the game. There is, however, little, if any, reference to anatomy in its pages, and the author's secret is disclosed in a somewhat complicated dissertation on the use of the wrists and the manner in which they should be turned during the upward and downward movements of the club. His theory of the swing and the use of the wrists is, however, well illustrated by numerous photographs, taken at rest and during a swing. Golfers may or may not appreciate his teaching, but the golfer who endeavours to improve his play by considering how his wrists are turning at the proper moment (backwards, forwards, downwards, upwards, to the left or to the right) will no doubt pass through a bad and distracted phase. His condition will not be unlike that of the centipede on being asked which leg went after which!

Volume 50 of the *Transactions of the American Gynecological Society*<sup>8</sup> is edited by Dr. A. H. Curtis and contains the address of the president, Dr. H. C. Taylor, and numerous well illustrated papers on gynecological subjects.

<sup>3</sup> *Die Bluttransfusion*. By Privatdozent Dr. B. Breitner. Abhandlungen aus dem Gesamtgebiet der Medizin. Vienna: Julius Springer. 1925. (Med. 8vo, pp. 114; 24 figures. G.M.6.90.)

<sup>4</sup> *An Explanation of Hydrogen Ion Concentration: The Capillary Method for the Determination of Acidity and Alkalinity in General Practice*. By Henry A. Ellis, B.A., M.B., Ch.B. Brochure II. London: H. K. Lewis and Co., Ltd. 1925. (Cr. 8vo, pp. 20; 2 illustrations. 1s. net.)

<sup>5</sup> *The Basis of the Golf Swing*. By James Forrest, M.B. London: T. Murby and Co. 1925. (Demy 8vo, pp. xvii+60; 32 photographs. 6s. net.)

<sup>6</sup> *Transactions of the American Gynecological Society*. Vol. 50, for the year 1925. Philadelphia: W. J. Dornan. 1925. (Roy. 8vo, pp. liii+317; illustrated.)

<sup>3</sup> *Contribution à l'Étude des Paraplégies Pottiques*. Par Mme le Dr. Sorrel-Dejerine. Préface du Dr. André-Thomas. Paris: Masson et Cie. 1925. (Roy. 8vo, pp. x+401; 97 figures. 40 fr.)

<sup>4</sup> *Dyspnoea*. By James Howard Means. Medicine Monographs. Vol. V. Baltimore: The Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1924. (Med. 8vo, pp. 103; 22 figures. 11s. 6d.)

## PREPARATIONS AND APPLIANCES.

*Preparations for Cholecystography.*

The discovery by American workers that the gall bladder could be rendered visible to x rays by administration of tetra-iodo-phenolphthalein provided a valuable new method of diagnosis for use in disorders of the gall bladder. At first it was believed to be necessary to give the drug by intravenous injection, but it has since been discovered that almost equally satisfactory results can be obtained if it is given by mouth, provided that it is administered in a capsule, which protects it from the action of gastric juice. This represented a great simplification in technique, and the method is now firmly established in many hospitals.

The British Drug Houses have undertaken the manufacture of tetra-iodo-phenolphthalein and tetra-bromo-phenolphthalein. They supply these drugs in solid form, in solution for intravenous injection, and also in gluten-coated gelatin capsules for oral administration. The dose for intravenous administration is about 3.5 grams, and for oral administration 5 grams. The price of such doses is between 2s. and 3s.

*Nova et Vetera.*

## DALTONISM AND THE ARTS.

In a leading article on colour-blindness in our issue of May 29th (p. 910) we commented on Part II of the Nettleship Memorial Volume of the *Treasury of Human Inheritance*, and Dr. Julia Bell's excellent work on this subject was commended as it deserved. Space forbade any digression into a consideration of the disabilities under which the subjects of dichromic vision suffer, but this branch of the subject is so interesting as to invite discussion, and especially as regards the obstacles which dichromism puts in the way of the painter. To this subject not much attention has been paid by medical writers, yet it is an interesting one.

In 1871 Dr. Liebreich noticed a strange-coloured picture in an exhibition in London. The subject of the picture which attracted his attention was a cattle market. The roofs of the houses and the oxen and cows were painted red in the light and green in the shadow, and from its peculiarities he inferred that the painter was a Daltonian—that is to say, that he suffered from defective sensitiveness for the colours red and green, and from that cause he used these colours in the place of the grey which to him was indistinguishable from red and green except by difference of illumination of the shades in question. Liebreich does not appear to have had an opportunity of verifying his diagnosis by examination of the painter's colour-vision, and it was not till 1903 that a paper was published by Professor Angelucci of Naples<sup>1</sup> in which a number of examples of colour-blindness in painters were cited, in whom the condition had been demonstrated by tests with Holmgren's wools.

Professor Angelucci found<sup>2</sup> that the peculiarity noticed by Liebreich was so constant in the works of Daltonians that he proposed to call it "Liebreich's sign," in honour of its discoverer. Not only did he detect and examine a number of Daltonian painters in Italy, but he formed a collection of paintings by those artists in whom he had established the fact of their defect by the usual tests. Some of these paintings were commissioned by him, and at the same time for comparison he had paintings from the same subjects executed by other painters whose colour sense was known to be normal. It appears probable from his account that some of his patients, if they may be so called, had defects of colour vision more extensive than mere Daltonism, but with this consideration he did not deal.

The diagnosis of Daltonism from the examination of a painting is made more difficult by the fact that after some years' experience its victims learn to know the names of the colours of many objects and employ pigments which are similarly labelled, but this resource is apt to fail in the case of a mixture of colours. One at least of Professor Angelucci's patients attempted to get over this difficulty by buying paints of blended tints ready made. But do what he will, it appears that the Daltonian cannot avoid making the mistake which constitutes Liebreich's sign. Pastel offers greater difficulties than oils, because the

crayons are not labelled with the names of their tints, and this much annoyed one of the artists who had to a great extent evaded his difficulties in oils in the way just indicated. The statement quoted in our leading article of May 29th that dichromic vision is frequently associated with perfectly normal vision for form confirms Dr. Angelucci's experience. Some of his cases would have been in the first rank of skilful technicians but for the quaintness of their colour schemes. Such artists are well advised to restrict their activities to black and white or monochrome.

A somewhat cursory survey of the 845 pictures in oil and water colours now on view at Burlington House did not afford a definite case of Liebreich's sign. To the mere physiologist who is not a painter or an art critic, a certain number of exhibits appear to be freakish as regards their colours, without betraying the definite stigmata of dichromism. Certain landscape painters appear to eschew contrasts of colours or even of shades to such an extent that some of them are obliged to emphasize the outlines of objects with lines of a deeper tint, with the result that the general effect is one of a coloured drawing. There seems no ground for accusing such painters of defective colour vision, for the low tones may be only the expression of the artist's preference; yet it is hardly possible to believe that the colours of a landscape in Spain or Italy are appreciated by them, as they are by most other persons. Some of these pictures give one the impression of having been painted during a partial eclipse of the sun. The use of green in the shadows, which Professor Angelucci associated with undue redness of the high lights, seems to be a favourite with some exhibitors. The subject, however, is a little complicated by the fact that some painters make use of special conventions to produce on the eye of the beholder the massed effect they desire. Thus in the white horses which are represented in the works exhibited by Mr. A. J. Munnings, R.A., bright grass-green is thus employed, and in one case sky-blue. The last picture is subdued and low in tone and contains scarcely any red, but the "Gypsies" on Epsom Downs and the Ascot pictures are full of bright colours. In No. 97 there is light green in the shadows of the King's face and in the Queen's hair, and the under surface of the black carriage front which is in shadow is painted with much green. Perhaps to the amateur eye the most surprising use of colour is seen in the front of the wheeler postilion's jacket in No. 405. Although in the bright light of the open sky, it is in shadow compared with the other side. Here the colours used on the gold-laced scarlet jacket are green, yellow, and (in the shaded arm) puce-purple.

We do not venture to criticize the use of these colours by an artist of Mr. Munnings's experience and distinction, but we mention it as an example of the wide differences which may exist between the impressions recorded by the eye of the painter and that of the man in the crowd. In No. 203 another artist has represented a scene containing much colour, but the linings of the monks' brown hoods, apparently intended to be white, are bright green, and the paper on which the hand of one rests is grass-green. There are a few other pictures in which light or bright green is used in the shadows, which need not be here specified.

In his summary Professor Angelucci says that most Daltonians learn how to distinguish red after long practice so that their faults with this colour are less visible, but it is otherwise with green. He thinks that an abuse of the colour violet also occurs. The completely dichromic use it largely in flesh tints, and those who are blind to the half-tones of red and green use it too much in the shadows. Green in the high lights is often rendered by yellow. An extravagant polychromatism is also characteristic of the Daltonian. The existence of so many dichromic painters in Italian art is explained, he says, by the fact that the colour vision of students was not tested. Had they been properly examined many of the pictures in his collection would not have existed. We have not heard of any such test in the schools of painting in this country. If the distinguished professor of anatomy to the Royal Academy of Arts were to examine the colour vision of the Academicians, Associates, and students of that august corporation the results might be interesting.

<sup>1</sup> Les Peintures des Daltoniens. Par le Prof. A. Angelucci, de Naples. *Revue d'ophtalmologie*, 3e série, 30e année, No. 12, Décembre, 1903, Paris, p. 1.

## GLASGOW UNIVERSITY COMMEMORATION.

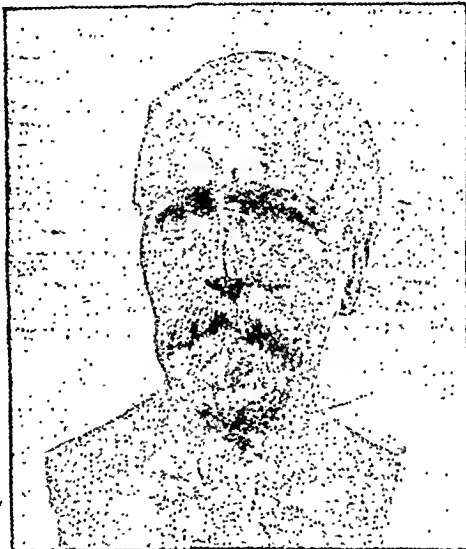
## MACEWEN MEMORIAL.

The celebration of Commemoration Day at Glasgow University on June 23rd was marked by a series of notable ceremonies of medical interest. The chief features of these were the tributes paid to the memory of Sir William Macewen, who occupied the Regius Chair of Surgery for thirty-two years in Glasgow University. It had been originally intended that Professor Harvey Cushing should deliver an oration on the life and work of Sir William Macewen on this occasion, but unfortunately he found himself unable to visit these shores this year. In his absence Professor Archibald Young, successor to Sir William Macewen in the Regius chair, ably carried out the duty, giving in the course of his oration a sympathetically critical analysis of the character of Macewen as presented in his life and work, and offering warm homage to the work of his renowned predecessor and teacher.

## The Life and Work of Sir William Macewen.

Professor Young began with the statement that Macewen's life and Macewen's work were synonymous;

his life was his work, and his work was his life; throughout his life he seemed to have been actuated by the determination, perhaps hardly formulated in his mind but none the less implicit in his conduct, to devote his great powers unceasingly and without rest to making advance in orderly fashion along the line of progress. This was abundantly illustrated by the remarkable list of Macewen's published works, comprising over seventy separate contributions to the literature of surgery, the greater part of which was made up of papers and monographs of such importance and representing such a mass of scientific research and investigation as might have occupied the time and energy of several earnest workers. He referred more particularly to some of Macewen's larger works, which by their inherent merit, their scientific insight, and the irrefutable demonstration of their teaching, might be said to have established themselves as standard or classical presentations of the particular subjects with which they deal. His treatise on pyogenic diseases of the brain and spinal cord, and his works on osteotomy and on the growth of bone, ranked already as classics. His *Atlas of Head Sections* constituted a contribution to the surgical anatomy of the skull and brain which stood out as a permanent addition to scientific knowledge. This atlas was published in the same year as his great work on pyogenic diseases of brain and cord, only five years after the memorable address on the surgery of the brain and spinal cord which he delivered to the British Medical Association in Glasgow in 1888. During this period also Macewen published a number of notable papers in other departments of surgery, so that this must have been almost the busiest period in his life. In attempting to analyse Macewen's character as presented in his life and work, Professor Young made special reference to several traits which seemed to stand out with special clarity. The first was his infinite capacity for taking pains. No amount of trouble was too great if it meant the possible clearing up of a difficulty or the confirming of an observation. No detail of description, provided it was apposite, was ever wittingly omitted from a report or from an argument. Macewen was as meticulous in testing his tools as he was in verifying his facts. This was illustrated in his monograph on osteotomy and in his paper on chronic gut, its method of preparation and behaviour in



WILLIAM MACEWEN.

living tissues. A further trait was his faculty for taking full value out of every part of his work, in whatever line his energies were employed for the time. This was evident even in the earliest years of his medical life, when, in the course of his routine duties as police casualty surgeon in Glasgow, Macewen made observations on such minor problems as then presented themselves. Thus we have his observations on the diagnosis of alcoholic coma, and on wounds in relation to the instruments which produce them, and a further paper on penetrating wounds of thorax and abdomen. The latter probably had something to do with the direction of his thoughts towards the study of certain problems of thoracic surgery, which were to take more definite shape in the later years. These formed the subject of various papers from time to time, and there would appear to be almost a melancholy interest in the fact that what was probably his last published paper dealt with much the same subject, as in 1923, during his world tour on behalf of the British Medical Association, he delivered an address before the Australasian Medical

Congress on the physics of the lungs and pleurae. A third trait in Macewen's character the lecturer referred to without offence as his self-sufficiency. He was not, and could not be, a "co-operator." He had confidence in his own powers, his own resources, and his own judgement. He did not readily accept the judgement of others, and seemed almost to cultivate a spirit of distrust of anything he had not himself put to the proof. Tradition meant little to him; surgical dogma he accepted only where and when his own judgement was convinced by his own observation and deduction. In his teaching of students he encouraged the same attitude of mind, and had much sympathy with what has been called "philosophic doubt." Neither team work nor the team spirit attracted him, but he had the faculty of getting the last ounce of work out of his assistant workers, because he gave the last ounce himself. Another

quality of Macewen's work was its thoroughness and completeness. He was never in a hurry to publish, and when he made his statement it was final. This note of finality was peculiar to much of his work and of his writing; it represented, in as perfect a form as he could give to the world, what was his final position at that stage, one more well set rung in the ladder of advancing knowledge. Macewen, however, would have been the last to claim in respect of any part of his work that it was possible ever to reach finality in research.

Three special aspects of Macewen's work were made the subject of special reference—his share in the development of modern aseptic surgery, his work upon bone, and his pioneer work upon the surgery of the brain and spinal cord. It had been said that Macewen was fortunate in having begun his work exactly at the right time, when "the possibilities of surgery were opening up like great tracts of undiscovered country," but it had also been added that "a genius such as his would have found undiscovered country to explore in any period." He played a great part in commending to his fellows the Listerian doctrine of wound infection and its prevention, and was from the first an ardent disciple of Lister, endeavouring to apply the Listerian doctrine in his work from the earliest period of his career. He, however, travelled farther than the master, and was one of the first to pass on to the development of what seemed to him the natural outcome of Lister's doctrines—namely, the ideal of asepsis and of

aseptic surgery. During the last twenty-five years of his life this was the ideal which pervaded his practice and teaching. In one sense he was fortunate beyond many of his fellows, and than most of the younger surgeons of later times, in that he was appointed a visiting surgeon with charge of wards in the Glasgow Royal Infirmary at the very early age of 29 years, when he was full of vigour and enthusiasm, when he had still the freshness of youth and something of its boldness, even of its daring. He played a large part in developing the practical application of Lister's doctrine, and soon his whole operative technique passed from the purely antiseptic to the aseptic. His reverence for Lister and his work remained with him throughout his life.

Professor Young proceeded to make more detailed reference to the work of Macewen. The surgery of bone constituted a large and important part, and probably was nearer his heart than any other of his scientific interests, for he seemed to have had his mind directed upon some aspect of it at nearly every stage of his professional career. His historic case, in which a new humeral diaphysis was built up step by step by a series of heteroplastic transplants, was first operated on by him as far back as 1878, and he was able to follow out the after-history of it for over thirty years. In his book on *The Growth of Bone*, published in 1912, he was able to give a comprehensive description of the process over that long period along with photographs showing the end-result of this great physiological experiment, and to give his conclusions with regard to the regeneration of bone. He was himself the great protagonist for the view that regeneration of bone was the property of the essential bone cell, especially the active or embryonal form of this, the osteoblast. This great and recurring controversy upon the role of the periosteum in bone regeneration was much with him, both in argument and experiment, through the greater part of his active life. His work on bone, however, found a more useful field of application in the surgical treatment of bony deformities. He set himself the problem of devising some method of dealing with the deformities associated with rickets, a disease which was particularly prevalent in Glasgow. This culminated in his work on osteotomy, which was a personal triumph, and Macewen's operation of supracondylar osteotomy ere long became the operation of universal choice for the correction of genu valgum. For the other deformities suitable operations were devised. It was of interest that he also discussed the causation of the malady which led to these deformities, and though his views on the etiology of rickets did not necessarily deal with, or even foreshadow, the more modern views on the biochemical and other agencies to which many now ascribed its production, yet his conclusions as to the influence of bad hygiene, the want of pure air, the absence of sunshine, the effects of chronic ailments, and perhaps of epidemic diseases acting during the growth period, were still worthy of acceptance even in the light of modern knowledge.

Macewen, however, probably achieved his greatest fame as the pioneer of brain surgery. His address in 1888 to the British Medical Association in Glasgow has become historic, and created a sensation throughout the world as "one of the most remarkable contributions to surgical literature which the present day has produced." Thirty-four years later, when the Association again met in Glasgow in 1922, Macewen, now its President, took as his subject of address practically the same theme, its title being "Brain surgery." This was in fact a masterly survey of his own work during that period, of the more recent developments in brain surgery, and also of the great possibilities of the future. Great as was Macewen's work on the surgery of brain tumours and their localization, it was probably true to say that he stood out more clearly as the pioneer in the diagnosis and surgical treatment of intracranial suppurative conditions. His association with the late Dr. Thomas Barr of Glasgow in this work was one of the most fortunate and fruitful associations in the history of modern surgery, as it led to the laying of the groundwork of most of our present-day procedure in the operative treatment of intracranial abscess, meningitis, and sinus thrombosis.

Of Macewen's powers as an operator the lecturer spoke

briefly. It could not be claimed that he was an operator of heaven-born genius, or that he was gifted with exceptional manual dexterity. He was, indeed, slower than many surgeons of his day, but he seldom troubled himself about the matter of time. As Patrick had said, "He aimed at thoroughness rather than speed and dexterity." It was probably true to say that in certain branches of surgery Macewen had less than the average facility, and less than the average success, but in those branches of the art which he had done so much to advance, and in which he was the unrivalled master, he was *facile princeps*.

The greater part of Macewen's active work of investigation had been carried out prior to his appointment to the Regius chair in the University. What might be called his creative period had been passed before he turned his mind to the duties of a university professor, but he continued to the end imbued with the spirit of research, though he turned his mind definitely and seriously to the duties of teaching. He was successful in making a deep impression on the teaching of surgery in Glasgow, an impression whose influence was felt far beyond the University. His principle of instruction was to make the student of surgery think for himself, and his métier was as a clinical teacher. His ambition was to establish a great clinical school like that of Kocher of Berne, whose method of teaching was strikingly similar. Macewen always put his professorial duties first and spent much time and energy in preparation. He had strong opinions as to the proper method of training the young surgeon, and opposed strongly any attempt to graft the English tradition in teaching upon that in force in Glasgow. He eventually succeeded in obtaining the institution of a well equipped department for the prosecution of the practical part of his operative surgery course, as well as for the purposes of research.

Macewen (Professor Archibald Young concluded) was a great man—one of the world's great men—but, like many great men, he was not without the defects of his qualities. He earned respect, he excited admiration, in virtue of his energy, his industry, his originality of thought, his brilliant research. He kindled in his students and assistants something of the spirit of investigation with which he was himself so richly endowed, but it was extremely doubtful if he ever could be said to have gained, or even if he ever desired to gain, the affection of those who were his most loyal helpers. But these defects served only to bring into more marked relief the greater qualities of the man whose genius was dedicated for so long to the service of Glasgow University, and of the great surgical school of which Glasgow is proud. Truly, in the possession of Macewen this university and this city had one whose fame was world-wide. His clinic was visited by surgeons from all the world, and at one time, indeed, he was almost better known abroad than at home. Abroad his name was one to conjure with, and on more occasions than one he was strongly invited and urged to accept appointments elsewhere; but though all kinds of lures were held out to him he declined, and persisted in his decision to remain in Glasgow. Surely the loss of others was Glasgow's gain. "We remember with gratitude the life and work of Sir William Macewen. The fruits of his work are with us."

#### Presentation of the Bust.

Dr. FREELAND FERGUS, the chairman of the Memorial Committee, in asking the Vice-Chancellor (Sir Donald MacAlister) to accept custody of a bust of Sir William Macewen on behalf of the University, said that in response to an appeal issued by a committee which had been formed for the purpose of perpetuating Sir William Macewen's memory in Glasgow a considerable sum of money had been obtained. It had been determined that the money should be applied to three purposes. In the first place, it was decided to procure a bust of Sir William Macewen for presentation to the University, and it was specially desired that this should be placed where it would be seen by future generations of medical students. Secondly, the committee determined that a replica of the bust should be presented to Lady Macewen. Thirdly, the committee had decided that the remainder of the money should be applied to



## EMPLOYMENT FOR THE TUBERCULOUS.

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the foundation of a Macewen Memorial Lectureship, and arrangements had been made with the University Court to carry out that purpose. Sir DONALD MACALISTER, in accepting custody of the bust (the work of Mr. G. H. Paulin, A.R.S.A.), said that it was a memorial of a great investigator and a great teacher, whose achievements in the beneficent science and art of surgery had enhanced the fame of the Glasgow School of Medicine and had added lustre to the chair once occupied by Lister. He offered the cordial thanks of the University to the pupils and admirers who had enriched the University with this and other cherished memorials of Sir William Macewen.

Among the recipients of the honorary degree of LL.D. at the graduation ceremony were Professor Tuffier, the well known French surgeon, and Dr. A. K. Chalmers, for many years medical officer of health for the city of Glasgow. Various bequests to the Medical Faculty of the University were intimated: from the late Dr. John Hall and his sister Miss Helen Nelson Hall, London, the sum of about £70,000, for the foundation of Tutorial Fellowships in Surgery, Medicine, and Midwifery; from an anonymous donor, £30,000, for the foundation of a Medical Research Fund; also from an anonymous donor, £5,000, for the foundation of a Royal Samaritan Hospital Lectureship in Gynaecology.

## EMPLOYMENT FOR THE TUBERCULOUS.

SOME light is thrown on the difficult question of the employment of consumptives when they have reached the stage of apparent recovery by three documents which have recently come into our hands. It will be profitable to give some account of them.

In October, 1924, the Joint Tuberculosis Council appointed a subcommittee to undertake a comprehensive survey of the question of the employment of consumptives. The subcommittee reported last March. On May 12th of this year the committee of management of the Cambridge-shire Tuberculosis Colony at Papworth presented its report for 1925. And Dr. Bolton Tomson, vice-chairman of the Hastings Tuberculosis Care Committee, has just published a small book entitled *Notes and Suggestions on the Finding of Employment for the Tuberculous by Tuberculosis Care Committees*.

Taking the last of these productions first, it may be noted that Dr. Tomson thinks the problem of finding employment for the consumptive is best solved by permanent colonies, such as that at Papworth, and although, in his words, "conclusions that are self-evident to the expert and the initiated often take long to obtain a general acceptance," it is, perhaps, more than possible that the community will have to shoulder the expense of a colony system. In the meantime Dr. Tomson sets forth the difficulties which care committees have to face, and describes three forms of occupation which can be usefully developed in suitable cases. The difficulties met with in the patients arise in deciding on their physical capacity for work, on their character and their willingness to work if help is granted, on their special aptitude for different kinds of occupation, and on their general education. The man who has occupied a good position, and has exhausted all his savings through the long duration of his disease, is generally a highly satisfactory patient to help. On the other hand, there are few employers who will engage a tuberculous person. Hence most of the sufferers must work on their own account. They should also be at liberty to work when they can and rest when they ought. A further benefit noted by Dr. Tomson arises from "disablement under the National Health Insurance Act, 1924. The author thinks that it would be an enormous advantage if those partially disabled permanently from tuberculosis were allowed to do what work they could, and still receive their weekly payment provided their earnings did not exceed a specified sum. To Dr. Tomson tuberculous persons are a class apart, and to make an exception for them would not establish a precedent. Without payment for work many patients lack the incentive to try what they

can do; they mope about at home, and invariably go downhill. For the man who is not bound by Insurance Act restrictions, and is able and willing to work, Dr. Tomson at once accepts the proposition that a subsidy is required, and that this subsidy must come from the Government. The author then gives details of the three schemes for providing work which he would recommend to care committees. For women he suggests the unpicking and scouring of old woollen or silken hand-made garments, the materials of which can then be made up into fresh garments suitable for the poor. He has found that this employment, though not very lucrative, competes easily with the hard work of charring, and is far more remunerative than home needlework. For men Dr. Tomson suggests rabbit farming and the utilization of waste products, such as old clothes, pig-swill from neighbouring houses, and so on. By this utilization the industry is subsidized and can be made profitable. In each case there is a certain and constant sale for the products. But it is necessary in these employments, as in all others, to select persons who are suitable for the job. Dr. Tomson gives interesting details of the materials required and their cost in each of these occupations.

The employment subcommittee of the Joint Tuberculosis Council consisted of Dr. Jane Walker of London, Dr. D. P. Sutherland of Manchester, Dr. H. Vallow of Bradford, and Dr. J. B. McDougall of Hexham (convenor). Their report is not a model of clarity. This is probably due to the intricacies of the subject; to the distances which separated the members, and to the consequent difficulty they had in meeting; and to the fact that they were not agreed in opinion. The subcommittee investigated eight schemes by which it has been attempted to find employment on an organized industrial basis for consumptive persons. It seems that under these schemes 419 ex-patients, apart from those employed at institutions as nurses, maids, porters, and so on, are now engaged in employment as wage-earners. The subcommittee was convinced of the success of the employment of ex-patients as full-time workers on the staffs of sanatoriums, and no further reference need be made to this class of worker. The concern of the report is with those ex-patients who, having been patched up at a sanatorium, and put through a course of training in work more suitable for their condition than their original occupation, are then in need of remunerative employment. It is stated in the report that at none of the training colonies inaugurated by the Ministry of Health has any serious attempt been made to continue the work at a settlement or on a proper industrial basis. The schemes for this purpose have been private, voluntary or charitable in origin.

The subcommittee was of opinion that schemes for the employment of the tuberculous should have three objects: (1) occupational therapy, (2) vocational training, (3) permanent settlement of ex-patients who had passed through a satisfactory period of training. Dr. Vallow, however, dissented, for he does not believe that the majority of patients would accept these provisions, or that they are financially possible. (The reasons for his belief are not given in his supplementary report.) The subcommittee thought that training colonies and settlements should not be started *de novo*, but that occupational therapy should be begun at a sanatorium, and the departments developed slowly at first. The training should be an integral part of treatment, until by co-operation and efficiency a surplus on trading enabled maintenance and wages to be paid to one permanent settler after another. The raising of any large sum as capital should be delayed as long as possible. Occupational therapy should be directed towards permanent employment; the occupations should not be too numerous, and should be those in which there was an assured market; and the work should be repetitive, as in mass production, rather than highly skilled. In such occupations the period of training could be reduced to a minimum, and the difficulties raised by the question of giving a bonus to those under training ("trainees"—a horrible word—in the report) would be lessened. The subcommittee was of opinion that in forming a settlement the venture should at once be legalized by making it a limited liability company. There should be a small committee of

<sup>1</sup> *Notes and Suggestions on the Finding of Employment for the Tuberculous by Tuberculosis Care Committees*, by W. Bolton Tomson, M.D. London: Baillière, Tindall and Cox, 1926. (Demy 8vo, pp. 27; 3 figures. 1s. net.)

management, with a suitable and enthusiastic director, who in most cases should be a medical man, and should have the largest amount possible of freedom of action. Under him there should be "key" men in the various industries, who should be employed in their original occupations, and, whenever possible, should themselves have been sanatorium patients. Patients should be housed in hostels, and later, as the trading became established, houses should be built for married ex-patients and their families. The provision of such houses, which would cost at least £450 each, might come within the scope of the local council. In the matter of finance the subcommittee drew a distinction between overhead charges and maintenance and wages. The object should be to pay maintenance and wages out of the trading account, whereas the overhead charges should come from another source. Two members of the subcommittee thought that capital should be obtained through voluntary contributions to a central fund; the other two were of opinion that it was the duty of the State or of the local authority to provide employment schemes. It was suggested, also, that as the work was really a kind of treatment, the Ministry of Health should take a share by defraying the cost of maintenance of the employees on an agreed rate. The majority of the subcommittee did not favour this suggestion. The salaries of the medical director and of non-tuberculous instructors should be overhead charges. On the question of the payment of wages and maintenance out of the trading account, various difficulties were found to exist. Thus the subcommittee favoured the use of the permanent settlements for vocational training, and also, possibly, for occupational therapy. But as such labour could not be paid at ordinary wages rates, it became of the nature of subsidized labour so far as the settlement was concerned. Such subsidized labour was stated to be necessary to the success of the settlement, and in many cases the persons under training were paid a bonus. The question arose whether the bonus should be paid in cash after a maintenance charge had been deducted, or should all profits go to the settlement? The subcommittee was of opinion that, whatever the answer, the State should pay a bonus to those whose training extended over a long period. For the trained settlers the rate of wages, if not fixed by trade unions, must be sufficient to enable the ex-patient and his dependants to live in comfort.

As the occupations selected for the settlement must come into competition with business concerns, two of the first conditions of success were found by the subcommittee to be businesslike administration, with successful advertising capacity, and ready markets. Even if these conditions were fulfilled two further difficulties arose. The patients drawn from an area with a suitable market might be quite unsuitable for the occupations selected. Thus the coal-miner had been found to be a very difficult person to fit into an occupation suitable for his working capacity as an ex-patient. Farm work proved to be too arduous in most cases, and it was not always easy to fit ex-patients in these categories with an occupation. In fact, the director of the New York Tuberculosis Association considered that "teaching Chinese to a negro, infusing a Latin-American with a puritanical outlook on life, or inducing statesmanship in a politician are problems equal in toughness to finding a suitable job for a tuberculous person, and keeping that person in that job." The other difficulty arose from the trade unions; but the unions had, after a clearing of the air, pronounced the following decree: "Labour has no objection to the employment of consumptives in colonies provided that certain stipulations which are all 'labour protecting' are agreed to. What it does object to is the possibility that consumptives may be trained and then thrown on the labour market, there to obtain work for which a reduced rate may be paid by unscrupulous employers. Provided the man is employed in a colony and paid the current wage, and the produce not sold at undercut prices in the open market, no objection is raised."

From the rest of the subcommittee's report we gather that the aim of the settlement worker is mainly to obtain additional remuneration, though he is not altogether unmindful of the benefit that accrues to his health; that he is liable to estimate the value of his work in hours rather

than in market value; that the "civilian" married ex-patient with a large family is a great difficulty, but that the ex-service pensioner introduces the problem of the rate of wages that should be paid to him; and that the expectation of life in a settlement is two or three times longer than it is with sanatorium ex-patients. In defence of the cost of establishing settlements the subcommittee urges that the system removes infectious persons from direct contact with the rest of the community; that it enables the maximum productive capacity of the ex-patient to be determined; and that in any case the results are cheaper than frequently admitting into, and discharging from, a sanatorium a tuberculous patient who returns to his own home and work.

The report of the committee of management of the Cambridgeshire Tuberculosis Colony at Papworth is somewhat of a hymn of praise in honour of the ten years' success of the venture. The committee and the medical director, Dr. P. C. Varrier-Jones, have, in truth, much upon which to congratulate themselves. The twenty-five houses, for which a grant of £10,000 was received from the Ministry of Health, are now complete. But they cost more than the Ministry allowed, so that £1,000 had to be found elsewhere. The inhabitants of the institution and village now number 559, including 90 healthy children. A show-room for the sale of furniture has been opened in Cambridge. The enthusiasm of the medical director is abundantly displayed in his portion of the report. "So far as Papworth is concerned, we were not only on the right lines, but our faith has been completely justified." If a village settlement is composed of men "who are prepared to give more than they get," and not of "those who want to get more than they give," "then all will be well." Dr. Varrier-Jones thinks that village settlements are essential in combating tuberculosis; and he enumerates the ideal principles necessary for success. Some experimental medical work has been carried on during the year. Thus trial was given to sanocrysin, but the conclusion was that it had no effect whatever in checking the disease. On the trading side the sound principle has been adopted that the industries are a commercial concern, and trading on "sympathy" is avoided. The social side and the amusements of the settlement are well organized, and the development of the scheme has plainly been very satisfactory. On Monday last His Majesty paid a visit of inspection to the colony.

### EPSOM COLLEGE.

THE annual general meeting of the Governors of Epsom College was held on June 25th, when the chairman of council, Dr. RAYMOND CRAWFORD, presided. A vote of condolence was passed with the relatives of the late Sir Henry Morris, Bt., who, in 1924, resigned the position of treasurer which he had held for eighteen years.

The CHAIRMAN expressed his satisfaction that in the near future there would be representatives of the British Medical Association and the Medical Insurance Agency upon the council of the College. He submitted the annual report of the council, which showed a substantial financial surplus on the year's working; this gratifying result was due to the receipt of several legacies for general purposes and to the zealous support of many old and new friends of the College. The thanks of the governors were due to the honorary local secretaries, the British Medical Association, the Medical Insurance Agency, the Pathological Society of Great Britain and Ireland, the numerous Panel Committees, and the Editors of the *British Medical Journal* and the *Lancet*. The various improvements at the College during the year included the erection of a new chemistry block at a cost of about £10,000, which would be complete and in working order by the end of July; a lower school annexe, costing about £2,500, and providing much needed washing and drying room accommodation; and the reorganization of the heating and hot-water systems at the College, involving an expenditure of about £6,000, but ensuring a considerable annual saving. A committee had been appointed to consider the construction of a more suitable cricket pavilion, at an expenditure of about £2,500, but

it was felt that the council would not be justified in devoting money from the general funds of the College for this purpose owing to the very large sum expended on other improvements. If the committee was able to raise enough money it was hoped also to take in hand the much needed levelling of portions of the playing fields. Mr. Herbert S. Pondobury, who had held the appointment of treasurer since 1924, resigned this office, and in his place Sir William Halo-White was appointed. The War Memorial Fund, which had been instituted by the Old Epsomian Club to enable the nave of the chapel to be rebuilt in harmony with the new chancel, would be closed at the end of the present year. The total cost of enlargement, fixtures, and furniture was about £11,500, and at present there was a deficit of nearly £2,000. A new scholarship had been provided under the will of the late Dr. James Taylor to assist the education of any specially meritorious pupil at the College, and a new annuity had been bequeathed by Miss Mary Elizabeth Dunn. The school library had been completely refurnished and redecorated and adequately equipped.

#### *Pensions and Scholarships.*

The scrutineers, Dr. Seymour Taylor, Dr. E. Climson Greenwood, and Sir Ernest Goodhart, reported the successful candidates to be as under:

<i>Pensionerships:</i>	<i>Votes.</i>
*Thomson, Malcolm E....	6,636
*Staniforth, John W. ...	2,365
†Maitland, Clara B. ...	2,176
‡Alexander, John ...	154
* "Ordinary" pensioners. † "Pugh" pensioner. ‡ "Highett" pensioner.	

<i>The R. R. Cheyne Annuity:</i>	<i>Votes.</i>
Hope, Miss Frances S. J. ...	1,931

<i>Foundation Scholarships:</i>	<i>Votes.</i>
Johnson, Everard S. R. ...	12,490
McDonald, Charles F. ...	12,083
Galpin, Richard J. L. ...	11,066
Blakeway, Michael G. ...	8,692
Williams, Paul G. ...	6,671
Matthews, Guy A. ...	6,562
Adams, John E. ...	6,072
Hudson, Eric J. ...	5,159
Cook, Robert S. ...	4,315
Rew, Kenneth G. R. ...	3,800

## THE HEALTH OF THE NAVY.

### REPORT FOR THE YEAR 1923.

THE statistical report of the health of the Navy for the year 1923 has just been published. It is similar to the report for 1922, of which a notice appeared in the *BRITISH MEDICAL JOURNAL* in September last (p. 523), and contains no features or record of incidents of an outstanding character. Its merit lies in the fact that it presents accurate statistical data for comparison with previous years and with the other services. Continuity of statistics is what it aims at, and rightly so.

#### *Incidence of Sickness.*

The average strength of the Royal Navy for the year under review was 89,100, and of this number 35,650 were on the Home Stations, 23,850 in the Atlantic Fleet, 16,740 on the Mediterranean Station, 1,990 on the North America and West Indies Station, 4,730 on the China Station, 1,740 on the East India Station, 1,570 on the Africa Station, and 2,830 on the Irregular List—that is to say, crews of warships on passage to and from foreign stations, Imperial personnel lent to the Australian Navy, and crews of the New Zealand Division. The returns of sickness and injury from all of these show a marked improvement in the general health of the Fleet. The total number of admissions to the sick list for disease or injury was 42,186, or 473.46 per 1,000 of the average strength, a decrease of 98.57 per 1,000 on the average for the previous two years, and of 85.56 on the rate in 1922. The majority of the admissions were due to venereal diseases (8,295), diseases of the respiratory

system (5,162), of the digestive system (6,662), of the areolar tissue and skin (5,566), and to local injuries (7,986). No other disease or group of diseases exceeded 1,000, and there was a marked freedom from the enteric fevers and Mediterranean fever, which previous to the year 1907, when the use of goat's milk and unboiled fresh milk was prohibited in the Navy, was a source of considerable inefficiency. Sandfly fever, on the other hand, shows no signs of decrease. There was a marked improvement in the incidence of influenza, only 863 cases being recorded, as compared with 4,514 in 1922. Prophylactic influenza vaccine, prepared at the Royal Naval Medical School, Greenwich, was used, inoculation being entirely voluntary, in addition to other preventive measures. The healthiest station was the Atlantic Fleet, with a ratio of 360.62 admissions per 1,000; the most unhealthy the East Indies, with 870.11, and China with 868.07 per 1,000. The ratio on the Africa Station was 659.86 per 1,000; on all other stations it was between 400 and 500 per 1,000.

#### *Invaliding.*

The ratio of invaliding out of the service was 16.03 per 1,000, or 5.79 less than the previous two years' average and 4.23 less than in 1922. In only one station—Africa—was there an increase on the two-year average, a slight one of 2.97; in all others the decrease in the ratio of invaliding varied from 2.29 on the China Station to 9.09 in the East Indies. In a table showing invaliding according to age and length of service the majority, 479 out of 1,511, belonged to the age group 25 to 35; and 605 to the group 5 to 10 years of service; but these figures are of little value without information as to the strengths of the various groups. The chief causes of invaliding were: diseases of the eye, 203 cases; of the ear, 166; gonococcal infection sequelae, 156; tuberculosis, 150; and neurasthenia, 103 cases.

#### *Mortality.*

The total number of deaths in 1923 was 194, equal to a ratio of 2.17 per 1,000. This is 1.35 less than the previous two years' average, and 1.27 less than in 1922. The deaths from disease numbered 125, and from injury 69. The decrease in mortality was general on all stations, being as much as 3.50 per 1,000 less than the two years' average in the East Indies and 3.49 per 1,000 less on the North America and West Indies Station. In the 1922 report a table was given showing the yearly death rates from 1856 onwards. The table is repeated in the report under review, and shows that 1923 has had the lowest death rate on record—2.17 from all causes and 1.40 from diseases alone. A chart showing the fluctuations and eventual remarkable decline in the death rates during the last half-century would be a significant demonstration of the improvement in the health conditions in the Royal Navy. Unfortunately no graphic charts are introduced into these reports.

#### *Comparative Statistics.*

Now that the report of the health of the Royal Navy for 1923 has been published a comparison can be made between it and the health of the Army and Air Force, the reports on which for the same year were published at a considerably earlier period. The following table may consequently be of interest as showing how far the main health statistics of the three forces resemble one another.

1923.	Navy.	Army.	Air Force.
Admission rate per 1,000 ...	473.46	484.0	473.8
Invaliding ... ..	15.03	14.50	12.7
Constantly sick ... ..	21.84	41.52	23.0
Deaths ... ..	2.17	2.84	3.9

These figures are not, however, altogether comparable, as the admission rate in the army excludes officers and the constantly sick includes men treated as out-patients. The R.A.F. constantly sick and admission rates exclude men with less than forty-eight hours' sickness.

The report has also a table of the health statistics of the Royal Marines at headquarters. The strength was 3,710, the admissions 784.09 per 1,000, the invaliding 21.02, and the mortality 3.23 per 1,000.

# British Medical Journal.

SATURDAY, JULY 3RD, 1926.

## THE PROBLEM OF RHEUMATIC INFECTION IN CHILDREN.

### THE ASSOCIATION'S REPORT.

As it exists in this country to-day, rheumatic infection is one of the great infective diseases afflicting the children of the poorer classes. In the harm that it produces it is comparable only with such infections as tuberculosis and pneumonia. Meeting with it here on the grand scale, the British school of medicine has been responsible for most of the important researches into the disease. The foundations were well laid by W. B. Cheadle in his lectures on the rheumatic state in childhood, given in 1888, and since then there has been continuous effort on the part of British physicians to advance against the difficulties of this national problem. It is probably true to say that in no other of the major diseases of childhood has so great a proportion of valuable research been carried out by British workers; and when the special prevalence of the disease in this country is considered it is difficult to escape the thought that the problem of rheumatic infection is one specially set the British medical profession to solve. It is, therefore, with particular pleasure that we devote this week's SUPPLEMENT to the Report of a Special Subcommittee of Inquiry into Rheumatic Heart Disease in Children.

This inquiry owes its inception to the Section of Medicine at the Annual Meeting of the British Medical Association at Portsmouth in 1923. In opening a discussion on the "Etiology and treatment of heart disease in early life," Dr. Reginald Miller referred to the various gaps in our knowledge which prevented our combating in a national way this great national disease. In particular he laid stress upon the fact that—such was our ignorance of the factors in the mass production of the disease in England—we were making, and could make, no organized effort to diminish the prevalence of the infection; yet there was one indisputable but unexplained fact—the class-incidence of the disease—which was likely to throw great light upon this very question, were it looked into. He therefore suggested that a small committee should be appointed to investigate the environmental factors in the production of rheumatism, urging that the possibility of damp houses breeding the disease should be examined.

In taking this line Dr. Miller was doubtless giving expression to what was in the minds of many others, and on the motion of Dr. George A. Allan a resolution was carried asking the Council of the Association to appoint such a committee. The matter was referred by the Council to the Science Committee, which in January, 1924, appointed a Subcommittee "to inquire into the steps which have been, and are being, taken in relation to the prevention, detection, and treatment of cardiac disease in children, and to make proposals in connexion therewith."

Sir Humphry Rolleston consented to act as Chairman of the Subcommittee, and we may here express the Association's gratitude to him. The fact that, amid the many duties of his then office as President of the Royal College of Physicians, he undertook this extra work, gives public emphasis to the importance of the subject under inquiry. The Science Committee

was also fortunate in securing the services of Dr. F. J. Poynton, whose pioneer work in rheumatic infection is so well known. Dr. George A. Allan of Glasgow, Dr. Carey Coombs of Bristol, and Dr. A. P. Thomson of Birmingham were also appointed. Their special interest in the rheumatic problem in these cities enabled the Subcommittee to gather valuable information over a wide field. Dr. Reginald Miller was appointed Honorary Secretary. Sir Thomas Lewis was unable to accept membership of the Subcommittee, but at the invitation of the Chairman gave much appreciated help by attending its meetings.

The point of view of the Subcommittee was, therefore, essentially that of the clinical physician. Although the Report deals with certain aspects of rheumatism which are outside the strictly clinical purview, and much of it must appeal specially to public health workers, yet we regard it as a gain that it is written by those who are themselves actually responsible for the medical treatment and welfare of numbers of rheumatic children. The Preface to the Report is a brief document summarizing the conclusions and proposals of the Subcommittee as a body. The four reports, upon which the Preface is based, are written by the individual members, who are alone responsible for them.

### *Environmental Influences.*

In some respects the first report, which is on the environmental and other predisposing causes of rheumatic infection, is the most important of the four, in that it deals with matters which may lead towards the prevention of the disease. In it Dr. Miller follows up the line of thought of his Portsmouth paper from which we have already quoted. There he said that rheumatic infection was almost entirely a disease of hospital as opposed to private practice; but later work, done in Bath and Birmingham particularly, shows that the class-incidence of the disease is indeed unlike that of any other non-infectious disease. There seems to be a definite rheumatic stratum of society, excluding the well-to-do on the one hand, and, though not so completely, the very poor and semi-destitute on the other. Further, it appears true that it is a disease of towns, especially of industrial towns, rather than of rural districts, and some startling figures are quoted in this connexion. The rheumatic infection is therefore essentially a disease of the children of the artisan or upper poor classes, particularly of those living in industrialized areas. To come back to the question asked at Portsmouth—What is the explanation of this peculiar fact? Tonsillar disease is too widespread to explain it. Living on low-lying sites or near water will not of itself account for it, as witness Dr. W. Attlee's most important experience at Eton College. Attendance at elementary schools, with its resultant exposure to bad weather and epidemics, is, taken alone, inadequate, or rural children would suffer most. Dr. Miller concludes that it is largely a matter of living in damp houses, especially in basements and in ground-floor rooms with no cellars beneath them. Investigations carefully pursued in London, Bath, Birmingham, and Bristol all tell much the same tale—namely, that nearly two-thirds of the children, when first attacked by rheumatic infection, are living in damp rooms. The Subcommittee concludes that this fact has a very important bearing on the problem of the prevalence of rheumatic infection in this country.

### *Bacteriology of Rheumatic Infection.*

Still with the prevention of the disease in mind, the Subcommittee has in Part II applied itself to this question, and the report written by Dr. Carey Coombs

and Dr. F. J. Poynton will be read with interest. It is now over a quarter of a century since Dr. Poynton and Dr. A. Paine advanced the view that the infective agent was a streptococcus. In spite of many failures and difficulties it appears that this view is steadily, though slowly, gaining acceptance. Recent investigations, says the Report, go to support it. It seems likely that the time is approaching when judgement in favour of the streptococcus theory may be given by default—no claimant remaining against it. Even so, so much remains which is obscure that we hope that the centre of activity in rheumatic bacteriological research will not shift away from this country.

#### *The Effect of Tonsillectomy.*

With Part III the Report begins to deal more directly with the treatment of rheumatic infection in children. The effect of tonsillectomy has been studied by others, but their results have been in total disagreement. Dr. Miller, who writes this section, suggests that this is due to their use of a method of investigation which, in this protean disease, is too complicated to give accurate results. Instead of attempting an investigation by a "follow-up" method, he advises the study of a series of cases of active rheumatism in tonsillectomized children, and a comparison of such with that seen in children with unremoved infected tonsils. Applying this method to a series of cases, he finds evidence that the infection is definitely modified by the operation, the heart in particular tending to be spared. No protection seems to be given against chorea, but the outlook as regards carditis is, of course, of prime importance. Figures relating to active rheumatic infection in children whose tonsils have been completely removed can be compiled with fair ease, and it will be interesting to see if the results of the present series are confirmed by others. Proceeding a step further, the Subcommittee has had to face the question of the advisability of tonsillectomy as a routine measure in rheumatic children. The opinion expressed is that to recommend such a step at the present time would be premature; the presumption is, therefore, that with growing opportunity for expert surgical assistance early tonsillectomy should be widely adopted. The Subcommittee has wisely refrained from discussing the different modes of operation, and has referred simply to the "complete removal" of the tonsils.

#### *Organized After-Care.*

Dr. George A. Allan, writing in co-operation with Dr. A. P. Thomson, furnishes an interesting report on what is being done to provide efficient after-care for rheumatic children. Evidently where such facilities are provided the results are encouraging. Although it appears that interest in this work is increasing, the burthen of the report is that it is as yet quite insufficient.

#### *Conclusions and Proposals.*

The proposals of the Subcommittee are succinctly expressed in the Preface, and more fully in the four reports. We will here deal only with the two which are of greatest importance, and which call for a widely organized effort.

First, in the all-important matter of prevention, there is small satisfaction to be obtained from the Subcommittee's expression of opinion that, up to the present, little or no organized effort has been made to prevent the disease. When we consider that, in its prevalence and harmfulness among children, it equals, if it does not surpass, tuberculosis itself, we may well wonder what the public will think of this verdict. The

class incidence of the infection seems to point clearly to the importance of environment in spreading the disease, and this should be susceptible of control. It is for the public health authorities to investigate and to act. It is not enough to say in this connexion that "dampness in houses is a condition which stands condemned, as a result of general experience and in relation to various ailments in addition to rheumatism." Were this so, it is a singular excuse for the damp house; but the Association's report suggests that damp produces acute rheumatism in children in a way more direct than by increasing the general sickness rate. The nation may surely desire some assurance that the new homes of the people will be in this respect an improvement on the old. As regards exposure to wet by attendance at elementary schools, it is clearly an immense undertaking to provide drying facilities for the children, although we believe that in isolated instances such are being established. But it would not be a difficult matter to arrange that, on a single medical certificate, a rheumatic child might for some months be allowed to attend school irregularly even though it cannot yet be classed as "physically defective."

Secondly, there is the question of the provision of prolonged treatment for children with rheumatic heart disease. The need is for more beds where these children can have controlled rest with education. It is their education and the education grant which have proved such difficulties in the past. The movement to provide proper provision for these cases is increasing; it needs organization and guidance. In this connexion we would offer some suggestions. First, these cases are a confession of failure: it is prevention that must be the prime object of our efforts. Secondly, every case of heart disease in a child is essentially a rheumatic rather than a cardiac problem. It belongs to the realm of pediatrics rather than to that of cardiology. Therefore, thirdly, it is essential that these recovery facilities should be worked in close co-operation with the hospitals. In saying this we are but restating the opinion of the combined meeting of the Children's and Public Health Sections at the Association's meeting at Bath last year, where this matter was under discussion.<sup>2</sup> There a strong feeling was expressed against the proposal to set up "cardiac clinics" and "cardiac experts" on the lines of the present antituberculosis movement. Lastly, we suggest that caution is necessary before it is regarded as settled that open-air treatment is wisest for rheumatic children. It is but a short step from overexposure to active rheumatism, probably shorter than obtains in tuberculosis, and the results of open-air schools and other treatment of the same type seem hardly uniform enough to justify as yet the adoption of this mode of treatment as a settled policy.

#### SCLEREMA NEONATORUM.

Sclerema neonatorum is a disease both rare and remarkable. It appears first in medical writings in terse and graphic Latin, "foetus virus, frigidus et rigidus," as recorded by Usembezius of Ulm in 1718. But it was Underwood of the London Lying-in Hospital who in 1770 gave the first good clinical description of the condition. And it is again from London that, in the two recent numbers of the *Archives of Disease in Childhood*, there has appeared a really important contribution to the subject by

<sup>1</sup> *Incidence of Rheumatic Diseases*. Ministry of Health, 1924, xxiii, p. 62.  
<sup>2</sup> *BRITISH MEDICAL JOURNAL*, 1925, vol. II, p. 788 et seq



# THE EPILEPSIES.

JULY 31, 1926]

Harrison and McNee.<sup>1</sup> Between 1770 and 1926 nothing very substantial has been added to our knowledge of the subject. Parrot simplified the confusion of the nomenclature by differentiating sclerema and oedema neonatorum (1877); yet there still remain with us such confusing and ambiguous terms as pseudo-sclerema and sclero-oedema. There has also been a good deal of hard guessing at the cause of the disease: beginning with Usembezius, whose theory was that the mother during her pregnancy had gazed much at statues of the saints, and so had impressed their rigid pose on her infant; the theory of a deficiency of olein in the subcutaneous fat and the raising of its melting point, advanced by Langer (1881); a tropho-neurosis depending on disorder of the heat-regulating centres, the view of Italian writers and supported by Ballantyne; the theory of infection, also put forward in Italy, and in England by Eustace Smith; the theory of disorder of metabolism and of internal secretion.

Hitherto advance in knowledge has been hindered by the lack of two things—an agreed definition of the clinical features of the disease, and accurate microscopic and chemical examination of the morbid tissues. It has been the custom to exclude cases of so-called pseudo-sclerema, but the cases of recovered sclerema reported by Carpenter, Garrod, and Paterson are now generally accepted as cases of true sclerema. Harrison and McNee present five cases of this milder group; four were fatal and one recovered; the second of their cases they themselves admit to be doubtful. They take up and attack the problem of sclerema from the side of histology and chemistry, presenting a careful examination of the morbid subcutaneous tissues by modern chemical and microscopic methods, with control observations on normal fat in young infants.

Paraffin and frozen sections showed definite thickening of the interlobular fibrous trabeculae; atrophy and necrosis of fat cells; and a remarkable deposit of acicular crystals within the cells, also thickly encircling them "like the cover of a ball," and even deposited in thick masses, which appeared as empty clefts in the paraffin sections. There was observed also in the sections definite obliterative endarteritis; an abundant deposit of lime salts in most of the cases; giant cells adjoining the crystalline deposits; and some round-cell infiltration throughout. In all cases the true skin was unaffected; in the most severe case the process of fibrosis extended into the underlying muscle. In the second (doubtful) case the changes were similar but minimal in degree. In two of the cases deposits of lime salts seemed to be visible on x-ray examination; in a third, where lime salts were evident microscopically, they were not shown by x rays. These appearances, occurring in cases of chronic but yet fairly severe and extensive sclerema, are interpreted by the authors as those of chronic inflammation and its sequelae.

The results of the elaborate and carefully controlled chemical examinations were also interesting, and perhaps even more important. They begin with reference to Langer's theory of an abnormal constitution of the fat in sclerema, and to the still earlier theory of the influence of cold; but they go much further, and establish new and important facts in the chemistry of subcutaneous fat, normal and diseased. It has already been established that the melting point of the subcutaneous fat of healthy young infants is

higher than that of adults, and it seems reasonable to ascribe this to the smaller content of olein and the relatively greater content of palmitin and stearin, which is also an accepted fact. This normally high melting point in the fat of healthy infants is still further, but not greatly, raised in sclerema fat. The question therefore arises whether this greater solidity of the fat in sclerema is due to a further reduction in the olein content. Some observers have answered this in the affirmative, others in the negative. Dr. Harrison found no significant reduction of olein in his cases, but nevertheless thinks it possible that a slightly higher proportion of palmitin and stearin might account for the raised melting point of sclerema fat; though the cholesterol content was also increased, he is satisfied that this was not a factor in the raised melting point. With regard to the abundant acicular crystals that were such a prominent feature in the sections, important and definite conclusions were reached. These also are apparent in normal fat cells, and in both cases give similar chemical reactions and are anisotropic to polarized light; they are probably neutral fats of the higher series, and it is unlikely that they are cholesterol compounds; in sclerema they probably exist in crystalline form during life. An excess of calcium and phosphorus was also found in sclerema fat.

The broad result of this careful and controlled analysis is that the chemical constitution of sclerema fat is not greatly different from that of the normal subcutaneous fat of young infants, and that the histological picture indicates a definite process of chronic inflammation. After a very judicious weighing of the evidence Dr. Harrison's provisional conclusions are rather against a primary disorder of chemical constitution and metabolism; he thinks it is probable that the inflammatory changes are primary and determine the abnormal chemical condition of the fat. No evidence of bacterial agency was obtained; but it is hoped that further cases will give opportunity of investigation along these lines. This brief account will serve to show what a valuable contribution to the problem of sclerema neonatorum has been made. By this laborious spade-work some obstinate and disputed questions have been answered, and one or two paths have been cleared which promise further progress towards the final elucidation of the disease.

## THE EPILEPSIES.

The lecture by Dr. Kinnier Wilson published in this week's JOURNAL (p. 1) includes a helpful critical survey of some of the numerous theories which have been formulated to account for the various clinical symptoms to which the term "epileptic" is applied. The views he expresses must carry no little weight, since they are based upon a wide experience of epilepsy in all its manifestations, and also upon a number of clinical researches in the sphere of neurology which have a direct bearing upon the physiology and pathology of convulsive episodes.

There is no disease which merits more attention than epilepsy. The number of cases is not small, and the symptoms included under this heading are of such a kind as to be disastrous to their subjects, and even when manifested in mild form, seriously diminish their social efficiency and opportunities in life. In spite of the vast amount of investigation which has been directed to epilepsy and other apparently related forms of nervous disease, we know but little of their causation, and treatment can thus only be palliative rather than curative. Dr. Wilson fully recognizes this

<sup>1</sup> An Investigation of Sclerema Neonatorum, with Special Reference to the Chemistry of the Subcutaneous Tissues. By G. A. Harrison, B.A., M.D.; with a Histological Report by J. W. McNee, M.D., F.R.C.P. *Archives of Disease in Childhood*, April and June, 1926. London: British Medical Association House, Tavistock Square, W.C.1. Yearly subscription (6 numbers), 25s.; single number, 4s. 6d.

fact; he points out that the physician must know the nature and etiology of the morbid condition with which he is dealing, and the mechanism of production of its symptoms, before he can obtain that definiteness of treatment which must always be his goal. He observes, furthermore, that while the external manifestations of an ordinary epileptic fit are apparent to everyone, its inward or neural genesis and progression offer problems of great difficulty and complexity, on which the outward phenomena at the best throw but an imperfect light. Like some other nervous affections, he adds, epilepsy is a condition easy of diagnosis but etiologically and pathogenically obscure, and wide excursions in neuro-physiology and experimental neuro-pathology have to be taken to gather such relatively meagre data as are at our disposal in this connexion. It is because Dr. Wilson has himself undertaken these wide excursions that we feel he is in a position to contribute something of value to our knowledge of epilepsy. A few comments may be made on his views as to the organic nature of epilepsy, as this aspect of the problem is one of considerable importance in view of the contradictory theories which have been formulated regarding the genesis of epileptic symptoms.

During the last few years much attention has been devoted to the psychogenetic factors entering into the causation of nervous and mental symptoms, and to the possibilities of their cure or amelioration by psychotherapy. The value of these conceptions and modes of treatment must not be underestimated, and it is now generally recognized that formal or informal psychotherapy bulks largely in the treatment of disease, both functional and organic. Even in the treatment of epilepsy the personality has to be considered as well as the disease, and the importance of psychological methods of approach cannot be eliminated. Thus such questions have to be considered as the attitude of the patient to his disease, the avoidance of emotional stress, the provision of suitable occupation, and the elucidation of conflicts. It is quite another matter, however, to ascribe the symptoms in the epilepsies to psychogenetic causes, as has recently been done by some clinicians, especially by those of the psycho-analytic school. According to the theories which have been formulated by these investigators, the epileptic episodes are to be regarded as the outward expression of an inward need, craving, or impulse. A state of inner tension is assumed to be created by an unconscious wish, and the fit is its method of release—a dramatic gesture, as it were, on the part of the unconscious which restores psychic equilibrium. Such theories are not unattractive, though the various speculations to which Dr. Wilson refers in his lecture as to the "meaning" of the fit are not of a kind to carry conviction. In the severe psychoses we know that patients assume postures, and exhibit resistiveness, rigidity, and prolonged states of stupor which are clearly the external expression of ideas or cravings which control the personality. It is most difficult to believe, however, that an epileptic fit is a similar form of "behaviour"—the assumption of a posture or an attitude to life. Dr. Wilson strongly deprecates such a view, and is convinced of the physical or organic nature of epileptic phenomena. Personal observation and study of many hundreds of epileptic fits, both general and Jacksonian-becoming-generalized, have not satisfied him either that all epileptic fits, roughly speaking, are alike, or that any definite scheme or organization of movement is revealed in their manifestations. On the contrary, he follows Hughlings Jackson in holding that a con-

vulsion is a "contention of complex, and also of simplest, movements. In this contention the individuality of each movement is lost." The tonic stage he also regards as a "single big useless movement," followed at length by a succession of such rigid states, a clonic stage, a series of so-called movements "which do nothing but 'mark time.'" Holding these views of the physiological phenomena of a general convulsion, Dr. Wilson is unable to accept the psychological theories of their origin. He does not consider that the movements in a fit have any "meaning" whatever, or that they are of more significance than an explosion of gunpowder. He adds that even in respect of the "march" of movement in a Jacksonian fit, the clinical type of exaggerated, caricatured movement in no way resembles those that are called "voluntary" or purposive, while the "march" of the movements follows anatomico-physiological lines alone, and presents no point of comparison, but many of contrast, with the co-ordinated movements of a limb in health.

Though we recognize the value of studies of the personality in epileptics, the arguments in favour of an organic or physical rather than of a psychological basis of the symptoms in epilepsy would appear to be overwhelming. It seems, therefore, unlikely that the prospects of curing epilepsy by psycho-therapeutic methods, however elaborate and prolonged, are very hopeful. It would also seem probable that investigations along neuro-biological rather than along psychological lines are more likely to lead to a better understanding of this distressing malady, and thus to a more effective curative rather than palliative treatment.

#### THE PRACTICE OF PREVENTIVE MEDICINE.

NEARLY seven years ago, when the Ministry of Health was still in its infancy, there was issued *An Outline of the Practice of Preventive Medicine*, written by Sir George Newman, who was then, as now, Chief Medical Officer of the Ministry. It was called a memorandum, but had many of the features of a good textbook. It was addressed primarily to local authorities and their officers, but also to voluntary workers of all classes and kinds devoting themselves with public spirit to manifold services on behalf of the health of the nation. In commenting upon the first edition we observed that in the section on the prevention and treatment of non-infectious disease opinions and statements were encountered which were novel in an official report. It was perhaps partly on this account that the book made a strong appeal to the medical profession, and that it had a very considerable circulation among its members. It was, we said, to be expected that the author would instance the prevention of heart disease, of rickets, and of dental caries, and we welcomed a short essay on preventive surgery, defined as consisting of two parts—reconstruction by anatomical restoration and re-education of function. In the interval much light has been thrown on the prevention of rickets and on the prevention and importance of dental caries, and the information obtained has been practically applied. So, also, orthopaedic surgery has made great strides, and gradually the whole country has been covered with a network of dispensaries and hospitals. In the matter of the prevention of heart disease we have not got very far, but the subject has been more fully discussed than ever before, and facts and opinions have been brought to a focus in the report of the sub-committee appointed by the British Medical Association, which is published in the Special Supplement to this issue. As we have observed elsewhere, it will, we trust, mark a transition from discussion to action. Incidentally, it may

induced Sir George Newman in any future edition of his essay to transfer rheumatism and the heart disease it produces from the class of non-infections to that of infectious diseases. The original edition of the essay has been for some time out of print, but the demand for it, both in this country and abroad, continues, and it has therefore been thought advisable to issue a new edition.<sup>1</sup> The form remains unchanged, but the opportunity has been taken to add a considerable amount of new matter to the text, and to revise the whole. The sections on rickets, on mental disease, and on dental disease have, for instance, been expanded, as has also that on industrial hygiene; that on alimentary disease seems to have been largely rewritten. Since the first edition was published in 1919 the General Medical Council has revised the medical curriculum, and one of the main objects of the changes made was to ensure that all forms of clinical medicine should be permeated with the idea of prevention; for example, provision is now made for instruction in ante-natal conditions and infant hygiene, and each student is required to undertake the duties of an intern in a lying-in hospital. These facts are duly noted, and all the way through the needs of the student are borne in mind. The essay, therefore, which we are glad to note has been issued at the low price of 1s., may well be bought by students as one of their textbooks; some of them, and these among the best, often get bewildered as to the meaning of the curriculum—they cannot see the wood for the trees. Sir George Newman has a good deal to say which will help them—and help, too, very many men in practice, especially the younger men, who also are inclined to cry, "What is the good of it all?"

#### RESEARCH DEFENCE SOCIETY.

THE annual meeting of the Research Defence Society was held on June 25th under the presidency of Lord Lamington. Both he and Lord Knutsford paid sympathetic tributes to the work of the late Mr. Stephen Paget, the founder of the society. Lord Knutsford said that he did not think he had ever known a truer friend or a more lovable soul. Stephen Paget had been held up by those who opposed him as a man who loved controversy for its own sake. That was not so. No man liked controversy less, but he hated anything that savoured of untruth or misrepresentation, and made war upon it unhesitatingly. His death was a great loss to the society, whose existence he had safeguarded through some difficult times; it was proposed to establish a Stephen Paget lectureship as a memorial. Sir David Ferrier, in presenting the accounts of the society, said that the financial position had much improved during the year, owing principally to a legacy of £1,000 under the will of Dr. John Hall. After the formal business had been disposed of, Dr. J. A. Murray, F.R.S., director of the Imperial Cancer Research Fund, gave an address in which he said that experimental study of cancer started some twenty-five years ago, and its course might be divided into three periods. The first began with the work of Jensen and Borrel on transplantation, and the second was marked by the work of Fibiger and Yamagiwa and their followers, in which the production of cancer *de novo* in normal animals was achieved. The third period overlapped the second, and embraced the work of Peyton Rous, Blumenthal, Gye and Barnard, and others, on the possibility of micro-organisms entering into the mechanism of cancer origins. In general it might be said that the experimental investigations had made the definition of cancerous processes more precise, and had enabled a decision to be made between alternative statements of problems either of which

might otherwise have been taken to be true. Jensen and Borrel at the end of last century showed that cancerous growths could be propagated in series in normal animals of the same kind by the introduction of fragments of original growth under the skin. The constant repetition of the same features in a succession of experiments on transplanted cancer in mice permitted the conclusion that the cancer cell behaved as it did because of differences inherent in it, or permanently imposed upon it, and not because of the peculiarities of the individual in which the growth had arisen. Jensen also observed that an animal which had resisted a first transplantation was more immune to a second transplantation, though when workers began to use this process of immunity for transplanted tumours they found that even very energetic methods of immunization did not avail to stop the growth once it had started. The second period of cancer research concerned itself with the production of cancer *de novo*, not merely with its continuation and transplantation. Cancer might arise from exposure to products of shale or coal distillation, or to physical agents such as heat, ultra-violet rays, and x rays. He described in particular the work on growths produced by tar in mice, and pointed out that the cancerous proliferation did not begin all over the area to which the tar was applied. Cancer was not a direct response to the irritant action of tar. After the process had started the growth still went on though the application of the tar was stopped. The tar evidently set up a condition which made the cancerous change possible. If a tar cancer was produced in an animal, and then removed by operation, a second tar cancer was more difficult to produce; it was true also that a second cancer was more difficult to produce if the first had been a spontaneous cancer which had cleared up. In discussing the third stage of progress Dr. Murray came to the work of Gye and his colleagues. It was still too soon, he said, to express a final opinion on the validity of Gye's views, but it was only fair to say that this was the first time that the microbial formation of cancer had been presented in a form not incompatible with the known facts of cancer structure and behaviour. Dr. Murray said, in conclusion, that it had often been stated, and was likely to be stated again, that the key to the secret of cancer would probably be found in some other direction—in electrophysics, for example, or in chemistry, or embryology, or what not. This suggestion was always presented in a vague form and in rather high-sounding phraseology. He suspected that it arose from a very human weakness which supposed that the cancer problem could be elucidated by going round to the back door. For his own part he did not believe it. Experiment had defined the problems, and it was only by first-hand acquaintance with the facts that a just statement of the position could be kept before the mind of the investigator.

#### SUBURBS OR SATELLITE TOWNS.

Writing in *Barnaby Rudge* of the year 1775, Charles Dickens says of Clerkenwell that although this part of the town was parcelled out in streets and plentifully peopled, "there were gardens to many of the houses and trees by the pavement side, with an air of freshness breathing up and down which in these days would be sought in vain. Fields were nigh at hand. . . . Nature was not so far removed or hard to get at as in these days." The extent of urbanization of London since the days of Dickens has forced itself on the notice of the public, and the London County Council appears to be willing to take steps to preserve the amenities, beauty, and convenience of two sites in Bloomsbury (one comprising the Foundling Hospital), and to retain their residential character. In both these areas are squares which almost daily must have delighted the eyes of the great novelist. The area of these

<sup>1</sup> An Outline of the Practice of Preventive Medicine. A Memorandum addressed to the Ministry of Health by Sir George Newman, K.C.B., M.D., F.R.C.P., Chief Medical Officer to the Ministry. Second revised edition. 1926. H.M. Stationery Office, or through any bookseller. Price 1s. net.

sites, however, is small in comparison with the size of London and of Greater London, which is always extending its growing edge. London requires an increase of 2,000 acres a year to house the normal increase of its population. But the ugly suburbs of the past need not be reproduced; not only must new dwellings be judiciously and hygienically distributed, but the beauty of the country must be saved as far as possible. The preservation of open spaces in advance of development is an urgent problem which, although possibly worse in London, is acute also in other large towns. If land is not ear-marked shortly for the purposes of open spaces the development induced by town planning will increase the price that must be paid for it. There seem to be two alternatives—namely, suburbanization, which, as we pointed out some months ago, must be effectively controlled if the mistakes of the past are not to be repeated, and satellite towns. If prompt action be taken a more or less complete ring of park land for purposes of recreation could probably be provided within nine miles of Charing Cross. Many hold that London is already many times too big, and that the problem of the future extension of the metropolis could best be solved by the creation of satellite towns on the lines of the Letchworth and Welwyn garden cities. By the extension of suburbs which has already occurred, London workers now have to go further and further out, and a longer and longer journey twice a day is necessitated. The expense, the waste of time which might otherwise be spent in healthy exercise, the fatigue induced by travelling in oscillating and noisy trains, the effects of vibration on the central nervous system, the respiratory diseases contracted during inclement weather by waiting on draughty platforms, the spread of communicable diseases by overcrowding in railway carriages—these are some of the drawbacks of the present system. The difficulty created by the fact that workers, including clerical workers in what may loosely be called Central London, need to live far out was very noticeable during the general strike. In a satellite town life might be more like that of the old provincial town, with its larger measure of peace and repose and home life, absence of hurry, the walk to and from work, the midday meal at home, and the quiet, calm performance of the daily task. The satellite town contains not only homes for workers, but factories for them to work in, and commerce and business to engage other members of the family. Fortunately, the problems are being considered; legislation has been promised concerning areas already built on, and in reply to a recent deputation on the need for a comprehensive scheme for the development of London and the Home Counties the Minister of Health expressed the opinion that a plan prepared by impartial experts, and not by a body composed of interested parties, might be generally acceptable; he also promised to convene a conference, if the willing consent of the local authorities could be obtained.

#### THE RENAISSANCE OF MEDICINE IN CZECHO-SLOVAKIA.

The revival of the study of medicine in Czecho-Slovakia since the war is the theme of a special medical supplement of the *Central European Observer*, a weekly journal published in Prague. Dr. Charles G. Reinhoru of Montreal, operator in the first surgical clinic of the Charles University of Prague, gives a summary of the history of the country, which has been known successively as the Moravian empire, the kingdom of Bohemia, and now Czecho-Slovakia. He points out also that near Carlsbad is one of the principal sources of radium; that mineral waters are found at Karlsbad, Marienbad, Franzensbad, Joachimsthal, Pistany, and elsewhere; that a new hygienic institute has been established; and that the gymnastic society, Sokol, is the greatest in the world. Professor Ladislav Syllaba, president of the Czech Medical Society,

writes a historical sketch of the medical profession in Czecho-Slovakia. He shows how the attempts at development in medical science were handicapped by the obstruction of the Government at Vienna, and describes the efforts of the famous physiologist, whose name, it appears, should be written Purkyně, after a measure of freedom had been obtained for the country about 1860. Owing to the opposition of Austria it was impossible to establish a second Czech university until after the war. Now there is a third, as well as numerous medical societies; and many medical textbooks and periodicals have appeared. These developments have been assisted by the Rockefeller Foundation, through which also the new Hygiene Institute was made possible. According to Professor Syllaba, the Czechs desire to have a national science of their own to enable their intellectual life to develop all round, and at the same time they wish to be closely connected with world ideas. One of their difficulties in realizing this ideal is to be found in their language. Further articles in the special supplement deal with the history of Czech surgery, the Czech clinic of obstetrics and gynaecology, the educational work of the Jedlička institute for cripples, the clinic for oto-rhino-pharyngology, the institute of plant physiology, and the Czecho-Slovakian spas and health resorts. The visit of a party of English medical men to some of these spas, in connexion with the annual meeting of the International Society of Medical Hydrology, was described in the *BRITISH MEDICAL JOURNAL* of June 19th, 1926 (p. 1045). The special medical number of the *Central European Observer* is illustrated with photographs of Prague and its institutes and clinics. It was published on the occasion of the visit of the members of the Inter-State Post-Graduate Assembly of America to Prague in June.

#### THE CENTENARY OF LAËNNEC.

The centenary of the death of Laënnec is to be celebrated in France, both in Brittany, where he was born and died, and in Paris, where he lived and worked. Laënnec, who came of a family most of whom practised some profession, and many of them the law, was the son of a barrister, and was born at Quimper on February 17th, 1781. While still working in Paris he acquired and partly rebuilt the manor of Kerlouarnec, at Ploaré, near Douarnenez, which is not very far from Quimper, and to this secluded spot he had retired in June, 1826. His death, which, as is well known, was due to phthisis, occurred on August 13th in that year. The celebration in Brittany is to take place on August 12th. There will be a service in the parish church, and the Bishop of Quimper will preach a sermon; afterwards a procession will be formed to visit the cemetery, where speeches will be made—the first by Dr. Mérel of Douarnenez, the second, in the Breton language, by M. Poulhazau (advocate), and the third by Professor Chauffard (the president of the centenary committee formed in Paris). Then there will be a banquet; after that a visit will be paid to the manor of Kerlouarnec, where the present owner, who is the mayor and a councillor-general, will make a speech. We should imagine that a visit to this part of Brittany, which is close to the sea—in fact, the manor house looks out on the sea—might be very pleasant if the weather is kindly. Apparently English visitors will be welcomed, and can find hotel accommodation either at Douarnenez or at Quimper. Rooms ought to be secured before August 1st. Those who wish to go to the banquet must send a subscription of 20 francs ten days in advance to M. le maire de Ploaré, par Douarnenez (Finistère). The celebration in Paris will take place in December (13th, 14th, and 15th); it is being organized by the Academy of Medicine, which has appointed a committee with Professor Chauffard as president. We are informed that this celebration, which will commemorate both Laënnec's death and the publication of

the second edition of his famous work the *Traité d'Auscultation*, will be attended by many foreign delegates. The treasurer of the Paris celebration is M. P. Masson, 120, boulevard Saint-Germain, to whom subscriptions should be sent.

#### THE VENTILATION OF HUMID WEAVING SHEDS.

WORKERS engaged in cotton weaving have frequently raised strong objections to the artificial humidification of the air in the weaving sheds because of the personal discomfort it entails. Unfortunately it is difficult to abolish it, as it greatly increases the efficiency of the weaving process owing to its influence on the breakages of the warp threads. In Report No. 37 of the Industrial Fatigue Research Board Mr. S. Wyatt, who was assisted in his investigation by Mr. J. A. Fraser and Mr. F. G. L. Stock, has shown that the discomfort due to humidification can be very greatly diminished by installing electric fans in the sheds. Such fans were found to increase the air movement so much that the cooling power of the air, as estimated by the dry katab-thermometer, was raised from 4.2 to 5.6. Expressed in other words, the cooling power of the air was greater at a temperature of 80° F. when the fans were running than at 72.5° when they were stopped. The increased air movement produced by the fans had no significant effect on the number of warp breakages, and, indeed, the output of the weavers was distinctly increased on the days when the fans were running. This effect was specially noticeable on days when the temperature or the humidity was unusually high, the output being increased some 10 to 20 per cent. towards the end of the work spells. A statistical analysis of the results obtained at different temperatures and humidities showed that the highest output from the looms was obtained at a temperature of about 74° and a relative humidity of 77 per cent. Though higher temperatures and humidities reduced the number of warp breakages, yet their adverse influence on the workers themselves was more than sufficient to discount the better physical conditions for weaving. Though the installation of electric fans is rather expensive, it is probable that a number of small fans operated mechanically by the looms could be substituted. The cost of running such fans would be almost negligible, and they would have the additional advantage that they could be switched on and off at the discretion of the individual weaver.

#### THE EMPLOYMENT OF SUGGESTION IN SURGERY.

We have frequently had occasion to mention the publications by Victor Pauchet, surgeon to St. Michael's Hospital, Paris, dealing with practical surgery, and we have recently reviewed his work *Practical Surgery Illustrated*, first in the original French and later in its English translation. An article by him on the use of psychotherapy in surgery has been published in the May issue of *Minnesota Medicine*; in it he recommends the combination of suggestion with certain physical methods, and describes the treatment of a case of extreme gastroparesis in which an operation was inadvisable owing to debility, emaciation, and acidosis. The patient was given a spirometer and was encouraged to record the increasing lung capacity, with the consequent improvement in appetite and general condition. The amount of air exhaled rose from 200 c.cm. to 2 litres in a fortnight, and to 3 litres later; recovery was completed without surgical treatment. Pauchet recommends the use of the spirometer on these lines for such other conditions as salpingitis which necessitate confinement to bed, resulting in muscular atrophy, the accumulation of fat, and diminished will power. He finds suggestion valuable also in pre-operative and post-operative treatment, and emphasizes the importance of removal from the patient's environment of any relative or nurse whose

influence is depressing. Friction and massage should be supplemented by voluntary deep breathing. Pauchet lays stress on the effect of long-standing disease upon the patient's mind and spirits. Continued pain, chronic toxic absorption, prolonged debility, and repeated surgical operations result in changes in the metabolism, endocrine insufficiency, and deterioration of the character and will power. Such patients require mental re-education and respiratory exercises, in addition to the more specialized treatment. Such physiotherapy and psychotherapy, Pauchet adds, will aid the beneficial action of surgical and medical measures if the practitioner recognizes that the action is a personal one, and that the healer, rather than the method of healing, is the essential factor.

#### PAY OF R.A.M.C. OFFICERS.

Much satisfaction will be felt by the publication this week of the Army Order regarding the rates of pay and retiring gratuities of the medical services, the details of which we give in another column. Our satisfaction is all the greater because the British Medical Association was in a considerable measure instrumental in bringing about the change of attitude towards the medical services which His Majesty's Government has now displayed. But we ought also to recognize the influence of the late Director-General, Sir William Leishman, in the fact that effect has now been given to proposals with which, we believe, he was always in entire sympathy. The increases in the rates of pay and retiring gratuities are substantial, as will be readily seen in comparing the new rates with the old rates promulgated by Royal Warrant after the war. But both the old rates and the new rates, as will be observed, are subject to the 5½ per cent. reduction owing to the decrease in the cost of living. The increases in pay do not begin until after six years' commissioned service, but from that time onwards, especially in the rank of major, very much has been done to make the service more attractive. One of the chief grievances, it will be remembered, was the fact that a major, after three years in that rank, or fifteen years' commissioned service, got no increase of pay until he was promoted to the rank of lieutenant-colonel, a promotion which might possibly not take place until he had as much as twenty-four years of service. The new Warrant gives him a steady increase of pay, not only after fifteen years' service, but also after eighteen or twenty years' service. The ranks senior to that of major also participate in very substantial concessions, and this although their case was not so hard as that of the majors. The Director-General's position, however, was not so good as that of other officers of his rank. This has been remedied, and instead of receiving a consolidated pay of £2,500 a year, he is now placed on exactly the same footing as other lieutenant-generals, being granted the pay and allowances of that rank. The retiring gratuities of a major after three and six years' service are now perhaps so great as to induce officers to retire before they become eligible for a pension, but in that case it is hoped that they will only make room for a large influx of junior officers to carry on the duties that are now being performed by those more senior in the service. The British Medical Association held out strongly for the removal of a serious grievance in regard to the retiring pension of an officer after twenty years' service, and it pointed out that it was possible in the future for a major to have to retire on a less pension than £1 a day, which had been granted to him from time immemorial. The new Warrant relieves him of anxiety in this respect, and explicitly states that his pension cannot be reduced below that amount. Although we are not prepared at present to comment further upon the effect of these changes in the Army Medical Services, as there may be one or two points that are still worthy of consideration,



more especially as regards limiting the period during which a lieutenant-colonel remains in that rank before going on half-pay or retired pay, we hope that the concessions now made will bring about a marked change in the number of candidates applying for commissions in the Royal Army Medical Corps. We have still to see how far the Indian Government will accept the new rates for R.A.M.C. officers serving in India. One important point should be noted—namely, the concession by which a newly qualified medical man can hold a hospital appointment for one year before entering the service, counting it as a year of service towards promotion and retirement. Previously this concession was only given after the officer had entered the service. This was one of the points that was strongly brought forward in the evidence submitted by the Association to the inter-departmental committee, and should give special satisfaction to members of the medical profession. As we have been more concerned recently with the grievances of the R.A.M.C. than with those of the other services, we refrain from commenting at present on the concessions granted to the Royal Navy and Royal Air Force Medical Services; but it will be seen that both of these services have also benefited considerably by the recommendations of the committee.

#### MEDICAL CHARITIES AND INCOME TAX.

THE decision of Mr. Justice Rowlatt in the case of two medical charities deserves more attention than considerations of time and space permitted us to pay to it last week (p. 1107). The societies concerned were the Society for the Relief of Widows and Orphans of Medical Men and the Medical Charitable Society for the West Riding of Yorkshire, and the circumstances of the two cases were sufficiently similar to enable them to be argued and decided together. That the matter was one of real importance is indicated by the fact that in the former case alone a sum of about £800 a year was involved. The contention of the societies was that they had become possessed of funds by way of legacy, donation, and subscription which they held for clearly defined purposes—briefly, for the relief of indigent members or their dependants—and that the income derived from their investments had to be, and was in fact, so applied, that those purposes had been recognized by the Court of Chancery as "charitable," and therefore that the societies were entitled to the exemption provided in the income tax Acts for income held on trust and applied for charitable purposes only. Counsel for the Crown relied in the main on the argument that in substance the societies were carrying on provident and benevolent institutions rather than acting as trustees of a charity, the suggestion being that as the grants made to members or their dependants were met in part from subscriptions of themselves and other members, it was to that extent a semi-contractual arrangement for mutual assistance among a definite group of persons, and that consequently the funds were not held on trust "for charitable purposes only." Mr. Justice Rowlatt did not accept that view. As he pointed out, it was true that doctors were invited to qualify for contingent relief by these societies, but the funds were in the hands of trustees who, of course, were bound to discharge the duty of granting relief faithfully. It seemed to him that there was in those societies the element of relief of poverty outside the contractual relief of poverty, and he held that both were charitable. The medical profession, and doubtless other professions too, are to be congratulated on the result of these cases. If income tax were payable on the income of such societies it would grievously cripple the very important and beneficent work they are doing, not merely because it would seriously reduce the income immediately available, but also, it is to be feared, by its effect on future donations and bequests. The modern representative of the old "pious benefactor"

is frequently a shrewd man in his charities as well as in his profession, and it is only to be expected that in selecting the channel by which his benevolence is to seek an outlet he will avoid one which is liable to be tapped to the extent of 20 per cent. for income tax. Such societies do an excellent work in gathering together donations and bequests, as well as subscriptions, into one fund, and then effecting the distribution of the income with care and knowledge; it would have been a matter for keen regret if an adverse decision of the court had impeded their continued and successful activity.

#### OXFORD OPHTHALMOLOGICAL CONGRESS.

THE annual Ophthalmological Congress in Oxford will be held on July 15th, 16th, and 17th. The members will dine together at Keble College on the evening of Wednesday, July 14th, and will start work in the Department of Human Anatomy of the University Museum at 10.15 a.m. on Thursday, when Mr. Philip H. Adams, surgeon to the Oxford Eye Hospital and Master of the Congress, will give a brief opening address; this will be followed by a discussion on sympathetic ophthalmia, introduced by Mr. Malcolm Hepburn, surgeon to the Royal London Ophthalmic Hospital, and Mr. S. H. Browning, bacteriologist to the same hospital. Mr. Hepburn, considering the fear of the older generation of surgeons that sympathetic inflammation may develop many years after an accident, and believing that that is not now the general opinion of ophthalmologists, will urge the necessity for some scientific method by which cases due to sympathetic inflammation and those due to other causes may be distinguished, and that operation can properly be undertaken for the relief of symptoms in the injured eye. Mr. Browning will deal chiefly with the differential blood count in sympathetic inflammation as a guide to the decision whether an eye should be removed. In this discussion Professor Emile De Grosz (Budapest) will take part. The afternoon will be filled chiefly by attending a number of demonstrations, and the annual dinner will take place in Keble College in the evening. On Friday morning addresses will be given by Dr. George Young (Colchester) and Dr. Marion Gilchrist (Glasgow), and Mr. Thomson Henderson, surgeon to the Nottingham Eye Infirmary, will deliver the Doyne Lecture on the anatomy and physiology of accommodation in mammals. At the Oxford Eye Hospital in the afternoon Lieut.-Colonel Henry Smith, C.I.E., I.M.S., will open a discussion on intracapsular extraction of cataract. On the morning of Saturday, July 17th, Dr. T. S. Good, medical superintendent of the Oxford City and County Mental Hospital, will give an address on psychology and the eye, Dr. T. Harrison Butler will speak on inflammation of the eye as seen by the slit-lamp, and Dr. Margaret Dobson on ophthalmoscopy of the macular region by red-free light. During the congress an exhibition of ophthalmological instruments and apparatus will be held in the Department of Human Anatomy. The subscription to the congress is one guinea, which should be sent to the honorary secretary, Mr. Bernard Cridland, Salisbury House, Wolverhampton, who will supply fuller particulars about the congress.

We regret to announce the death, after a brief illness, of Mr. W. H. Clayton-Greene, who retired a year or two ago from the post of surgeon and lecturer on surgery at St. Mary's Hospital, and went to live in Guernsey.

THE Home Secretary has appointed Sir Hugh Anderson, M.D., F.R.S., Master of Gonville and Caius College, Cambridge, to be a member of the Advisory Committee on the Administration of the Cruelty to Animals Act, 1867, in the place of Sir John Rose Bradford, M.D., F.R.S., who resigned from the committee upon his election as President of the Royal College of Physicians of London.

## MEDICAL WORK IN KENYA COLONY.

REPORT FOR 1924.

As is made plain in the recently issued report for the year 1924,<sup>1</sup> the activities of the Medical Department and Medical Research Laboratory in Kenya Colony have been sadly hampered for lack of funds in these hard times. Out of a total expenditure bordering on £2,000,000, the Kenya Legislative Council allotted some £127,000 to the Medical Department for the year, not all of which, for various reasons, was expended; rather more than £12,000 was collected as revenue by the department.

The report gives a full and statistical account of the work done by the whole Medical Department, and contains a quantity of information that should be of great interest to the medical men working in a number of our colonies.

The treatment of yaws and syphilis, two diseases it is generally impossible to distinguish, with intramuscular injections of sodium potassium bismutho-tartrate continued to give good results in the native population, and was highly appreciated by its recipients; over 56,000 cases were treated. Plague, which is endemic in Kenya Colony, was less in incidence than it was in 1923. The report states that in the Central and North Kavirondo districts, where the incidence of plague was greatest, a campaign against rats has been carried out since July, 1921; some five million had been destroyed down to the end of 1923, and over 1,300,000 in 1924. It is unfortunate that it has been found impossible to draw any general conclusions as to the effect of this destruction of rats on the incidence of plague in these districts; there was less plague in them during 1924, but the same was the case in the rest of the colony generally. Malaria is always the cause of a great deal of acute and chronic sickness in Kenya Colony, and 19,000 cases of it were treated in the Government hospitals and dispensaries, with 40 deaths; examination of blood smears in the laboratory showed 308 cases of subtertian, 47 of benign tertian, and 19 of quartan malaria. An interesting series of cases of subtertian malaria, in which the temperature remained normal or subnormal, was observed in the native hospital at Nairobi; it is said that clinically there was little to suggest malaria.

Of undulant (or Malta) fever there were 14 cases; it appears that the bacillus of contagious abortion in animals (*B. abortus* Bang) is capable of infecting human beings with undulant fever, and the report adds that the relationship between the *Micrococcus melitensis* and the *Bacillus abortus* in Kenya requires investigation. For the first time in the history of the colony diphtheria was encountered in 1924, there being 11 cases (6 in Europeans, 2 in Asiatics, and 3 in Africans), with no deaths; the cases were sporadic.

Full details of the provisions made for the health of contract labourers in the colony and of the labour employed on railway construction are given, with figures showing the good effect of these provisions in the case of the latter. The report contains full accounts of the sanitation work, the work in maternity and child welfare, school inspection, the work of the Government hospitals, dispensaries, and institutions generally, that cannot be further noticed here, together with many pages of statistical returns.

The annual report of the Medical Research Laboratory at Nairobi shows that the time of its staff was mainly occupied with routine clinical examinations during 1924; in addition 124,000 doses of plague vaccine, 225,000 doses of sodium potassium bismutho-tartrate for the treatment of yaws, and 123,000 doses of calf lymph were turned out. Specimens from no fewer than 17 cases of malignant disease in natives were received, as compared with 5 in 1923, 5 in 1922, and 2 in the eight previous years. This increase coincides with the opening of new dispensaries and hospitals in the native reserves, and seems to show that malignant disease is not unknown (as is so often stated) among primitive and uncivilized races. Examination of over 250 samples of the milk from native humped cows showed an average of 14 per cent. of solids, of which 4.6 per cent. was fat; the average specific gravity was 1.033. It is of interest to note that up to 88 per cent. of

water was found in specimens of *Podocarpus* timber, a wood much used locally in carpentry and joinery work and distressingly given to warping when set up. Finally it may be mentioned that salts of zinc were found constantly in the water of the Nairobi water supply, and that experiments made by the analytical chemist seemed to show that the zinc came from the lining of the "galvanized" water piping employed, being dissolved by the carbon dioxide contained in the water. Removal of the carbon dioxide by adding a proportion of lime to the water prevented this solution of the zinc lining of the pipes. The occurrence of pipes (from kitchen boilers) blocked with a deposit of zinc carbonate is recorded.

The report, printed by a local firm, is well turned out; and its contents show that, in spite of the obstacles imposed by a restricted finance and the many discouragements met with by scientific workers in newly developed lands, the Kenya Medical Department did admirable work during the period under review.

## England and Wales.

## JUBILEE CONGRESS OF THE ROYAL SANITARY INSTITUTE.

The Royal Sanitary Institute, as already announced in these columns, is celebrating its jubilee by holding an imperial congress in London from July 5th to 10th. The congress is meeting under the presidency of the Minister of Health (the Right Hon. Neville Chamberlain), who will deliver an inaugural address at the Guildhall on the opening day. About one thousand delegates are expected to assemble, representing Government departments, municipal authorities, learned societies, and the universities; many are also coming from the British dominions and foreign countries. The congress is to meet in six sections and seven conferences. One of the sections, that on sanitary science and preventive medicine, is to be presided over by Sir George Newman; another, on school hygiene, by Lord Eustace Percy, President of the Board of Education. The other sections are concerned with engineering and architecture, personal and domestic hygiene, the hygiene of food, and the hygiene of industry. The conferences include one of representatives of sanitary authorities, under the presidency of the Lord Mayor of London, and one of medical officers of health, with Dr. G. F. Buchan, the medical officer of health for Willesden, in the chair. One session of the congress is to take place jointly with the Maternity and Child Welfare Conference, which is being held in London during the same week. The subject for discussion at this joint conference will be midwifery in the homes of the people, and the medical speakers announced are Dr. E. Kaye Le Fleming, representing the British Medical Association, Dr. T. Watts Eden, and Dr. W. Allen Daley, medical officer of health for Hull. The other discussions of the congress—about sixty subjects are set down—cover a very wide range, from concrete houses to the advantages of cremation, and from the trade pasteurization of milk to health administration in relation to Poor Law reform and national health insurance. Several of the discussions will deal with aspects of medicine, and one, which might be very interesting, is on preventive medicine and the press. The discussions are arranged for the mornings, and in the afternoons there are to be visits to various places of sanitary interest in and around London. Several social functions are also planned, and among those who are giving evening receptions or garden parties are the Duke of Northumberland (president of the Royal Sanitary Institute), the Marquess of Salisbury, and the Lord Mayor and Corporation of London.

## BRITISH HOSPITALS ASSOCIATION AT PORTSMOUTH.

At the annual meeting of the British Hospitals Association, which opened at Portsmouth on June 24th, a welcome was given to the delegates by the Mayor, who referred to the strong support by the city of Portsmouth of the voluntary hospital system. Mr. H. L. Eason, medical superintendent of Gny's Hospital, opened a discussion on the suggested pensions scheme for hospital officers and

<sup>1</sup> The Annual Medical Report of the Colony and Protectorate of Kenya for 1924. Nairobi: Swift Press, Ltd. 1926. (Pp. 113, with tables.)

nurses. Referring to the controversy which had been started by the publication of the scheme, he said that it did not seem just for a voluntary hospital, while appealing for funds as a charity, to carry on its work at the expense of its paid servants, particularly since the King's Fund in its revised uniform system of accounts had recognized pensions as a legitimate part of the annual expenditure of a voluntary hospital; but out of 105 hospitals in London which were in receipt of grants from the King's Fund, not more than six had a general pension scheme. The Whitall Committee had come to the conclusion that hospital officers resembled university teachers as regards migration, and that a federated superannuation scheme on the lines of the parallel scheme for university teachers was the correct solution of the problem. After considering various schemes it had rejected all the mutual schemes and decided in favour of the insurance method. Mr. Eason then discussed the scheme of pensions for hospital officers and nurses suggested by the King's Fund,<sup>1</sup> and commented on certain of its features. He thought it essential that hospital officers should have alternative benefits, since a single man at the end of his career might prefer to have a pension, while a married man with a family might, on the other hand, quite rightly desire to receive a capital sum on his retirement, which he could invest for the benefit of himself and his children, satisfying himself with a smaller income during his life in order that a better provision might be made for his family after his death. Mr. Eason then discussed in some detail the question of contributions towards nurses' pensions and the time at which they should start. In conclusion, he referred to the arduous nature of the nursing career, and added that from October, 1918, to December, 1925, 1,466 nurses had required and received assistance from the national fund; special monetary grants had been made in 1,231 cases, and 30,907 weekly grants had been provided. At the present time 170 nurses were receiving weekly grants, and 130 pensions were urgently required, as the nurses concerned were so incapacitated that they could not be removed from the fund. He believed that a claim for additional support for the purpose of providing pensions for nurses would meet with the readiest response from the charitable public.

#### ORTHOPAEDIC AND SUNSHINE TREATMENT CENTRE IN OLDHAM.

The town of Oldham is to have an orthopaedic and sunshine treatment centre through the generosity of Mr. Richard Greenhalgh of the Vulcan Iron Works. Mr. Greenhalgh has purchased a building in Oldham, and has offered it to the corporation on certain conditions. These are: that the benefit of the institute shall be available to the general public of Oldham, Royton, Chadderton, Lees, and Shaw; that gratuitous patients shall not occupy more than 50 per cent. of the working hours of the institute, the other 50 per cent. being devoted to people who pay a fee to cover the net cost of treatment; that the Health Committee of the corporation shall maintain the institute and pay a rent of £10 a year; and that a provisional lease of three years shall be granted to the Health Committee, at the end of which time the usefulness of the institute shall be reviewed. On these conditions the institute will be fully equipped ready for use. Subject to the conditions stated the offer has been accepted by the corporation of Oldham.

#### PUERPERAL FEVER.

The Minister of Health, it appears, is satisfied, as the result of inquiries, that further special facilities are required in London for nursing and treatment of puerperal fever, with a view to reduction in the mortality from this disease. It has been arranged that in future patients with puerperal fever referred to the Metropolitan Asylums Board shall be concentrated, as far as possible, in the North-Western Fever Hospital at Hampstead, the Eastern Hospital at Homerton, and the South-Western Hospital at Stockwell. Special wards with special medical and nursing staffs will be set aside for these patients. An obstetric consultant has been appointed at these three institutions. The medical

officer of health for Hampstead (Dr. F. E. Searse) has informed the medical practitioners in his borough that if they will notify cases to him at the earliest possible moment, and if they desire the patient's removal to hospital, he will arrange immediately for the transfer of the patient to the Metropolitan Asylums Board hospital.

#### THE FORBES FRASER HOSPITAL, BATH.

A further step towards the completion of the Forbes Fraser Hospital, Bath, was taken on June 23rd, when Sir Anthony Bowlby, Bt., F.R.C.S., opened the new nurses' home. He described the general plan of the new hospital on July 26th, 1924 (p. 150), and mentioned the further developments contemplated, including the provision of a nurses' home. The mayor, who took the chair at the ceremony, gave an account of the way in which the money for the home had been raised. The memorial fund donations amounted to £2,563, and Mr. Stanley Wills gave £5,000. As the result of a fête held in the spring, £575 had been received, and donations to the amount of £250 had been collected. A sum of £2,200 was, however, still required for some of the furnishing and other expenses. Sir Anthony Bowlby referred appreciatively to the value of the work of the late Mr. Forbes Fraser, who was largely responsible for designing the hospital scheme and for bringing it into fact; the new nurses' home was intended as a special memorial to him.

#### CARE OF THE MENTALLY DEFECTIVE.

The sixty-seventh annual report of the Royal Eastern Counties Institution for the Mentally Defective at Colchester gives an account of the progress made in 1925, and the improvements and extensions proposed to be undertaken with the help of the county councils of Essex, East and West Suffolk, and Cambridgeshire. It is intended to add about 1,000 beds to the existing accommodation, and a building for 444 will shortly be begun. From the report of the medical superintendent, Dr. F. Douglas Turner, it appears that 1,152 patients were under care during the year 1925, with a daily average of 1,056. Dr. Turner discusses the question of sterilization of mental defectives, and comes to the conclusion that it can serve no useful purpose. He agrees with Sir Leslie Scott, president of the Central Association for Mental Welfare, that a general policy of sterilization would be ineffective; that the freedom accompanying it would harm the defectives themselves; that it would delay institutional segregation, which is the only safe procedure; and that it would fail to provide a safeguard either for defectives or for the community.

Mr. Sandeman Allen, M.P., presided at the annual meeting of the West Lancashire Association for Mental Welfare on June 15th. During the year 660 new cases had been dealt with, and 573 patients in the area were under statutory supervision. The association had assisted in designing work for border-line males in Walton Prison, and, with the help of the Liverpool Society of Handloom Weavers, had started a class for spinning and weaving. An appeal was made for the voluntary side of the association's work, which aims at avoiding deterioration and relapse by arranging holidays and other social amenities. Dr. Stallybrass gave an address on the after-effects of encephalitis lethargica.

The Agatha Stacey Homes at Birmingham assist the State in the care of the mentally defective. The annual meeting was held on June 9th, under the chairmanship of the Lord Mayor of Birmingham. It was stated that the number of mentally defective persons for whom no institution could be found was appalling; and the suggestion was made that by boarding out some of the persons who had passed the "dangerous age" vacancies could be made for girls who needed direct control.

The annual report presented to the meeting of the Incorporated Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded, held at the Manchester Town Hall on June 22nd, stated that during the year the society had added twenty-two acres to its estate, and it was hoped that after certain alterations accommodation for fifty more boys would be provided. There was great pressure for admission of further cases. The accommodation at Sandbridge was fully occupied, the patients numbering 320; some 217 adults had been in the colony from an early age.

<sup>1</sup> BRITISH MEDICAL JOURNAL, 1925, vol. II, p. 1135.

## NURSES' HOME AT THE RETREAT, YORK.

The Retreat, York, was originally established in 1782 by the Society of Friends as a mental hospital, and is an important training school for nurses. A new home for nurses has now been erected at a cost, including fittings, of about £18,000. The building, which is in brick, with a green Westmorland slate roof, stands on an open site, with a rose garden and tennis lawns on the south front, and two hard courts on the west side. It provides accommodation for about sixty nurses and sisters. One wing on the second floor is designed for cases of illness; the ground floor contains separate sitting and dining rooms for the sisters and nurses, and a reading room. Dr. Bedford Pierce, lately medical superintendent, who opened the home a short time ago, referred to the great improvement during the last thirty years in mental nursing. Nowadays each probationer received a technical education, and a great gain in efficiency resulted. The Retreat was almost the first mental hospital to insist that all nurses must take a course of training, and was still the only one which provided that this course should last four years. Owing to the special circumstances of mental nursing the question of general education was even more important than in sick nursing. The nurses should be encouraged to do post-graduate work after registration, and one of the subjects qualifying for a further diploma should be occupational therapy. It was obvious that mental nurses even more than those engaged in general nursing needed reasonable comfort, privacy, and opportunities for study and recreation. Their work demanded perfect fitness of both body and mind, and, therefore, every attempt should be made to give them the best possible environment.

## FIRE PRECAUTIONS IN HOSPITALS.

A memorandum<sup>1</sup> has been prepared by the management committee of King Edward's Hospital Fund for London dealing with fire precautions recommended for hospitals. While the Fund considers that the responsibility for proper provision in case of fire rests with hospital committees, it is thought that notes on the prevention of fire on the lines of those first prepared for the Fund in 1907 would be of service to hospital committees in deciding whether the fire precautions at individual hospitals are adequate. The recommendations relate to the prevention of fire due to oil, gas, electrical appliances, heating pipes, boilers, and open fires, and it is suggested that the obligation of making periodical inspections and reporting possible fire risks should be placed on a competent resident official, who should be specially selected and have charge of the appliances made as to various forms of method of giving the alarm in the memorandum has been drawn up in consultation with Mr. A. R. Dyer, chief officer of the London Fire Brigade.

## Scotland.

## PROBLEMS OF THE BLIND.

At the annual conference of the Scottish National Confederation of Societies for the Blind which was held at Dumfries last month it was reported that an enormous increase had taken place in the number of blind persons under the charge of outdoor societies. In 1920 the number of persons on the rolls of such societies in respect of whom a grant was paid by the Board of Health in Scotland was 3,512; at the end of September, 1925, the number was 5,329, an increase of approximately 52 per cent. The number of teachers had not increased in proportion, for in 1920 there had been twenty whole-time and five part-time teachers, while in 1925 there were twenty-nine whole-time and three part-time teachers. The State and the local authorities under the Act of 1920 have conferred very considerable financial benefits on blind persons and on voluntary agencies for their help, and at the present time the payments made in this way amount to very nearly £100,000 a year. This sum does not include

money paid by Poor Law authorities either for outdoor relief or for technical training, nor does it include the money paid as old age pensions. Dr. Freeland Fergus of Glasgow read a paper dealing with the cause and prevention of blindness. He said that the value of investigations into causes of defective eyesight was chiefly that some forms of eye disease might be found to be preventable. For the last thirty years he had maintained that persons who were going to deal with eye patients should be as thoroughly trained for their work as were medical officers of health. He blamed the General Medical Council for having failed to take any action in this matter. A large number of ophthalmic practitioners were now employed for school work and for panel practice, and all persons so employed ought to have had a special training. He believed that the General Medical Council had been supine in this matter, and he thought, therefore, that the Ministry of Health ought to take the matter in hand; committees to whose care the blind of the community had been entrusted should see to it that this matter was put right. Dr. Fergus referred to the difficulty of treating senile cataract. Out of 121 patients he had found blind from this cause in Glasgow, no fewer than 60 had never been operated upon, and the remaining 61 had been operated upon without success. About 360 senile cataract operations were performed annually in the two Glasgow eye hospitals, and the results in the remaining cases were probably very satisfactory and certainly infinitely better than they were forty or fifty years ago. It was a credit to the public health authorities that only five persons out of 1,200 should have been found blind after small-pox and only one after erysipelas.

The Royal Blind Asylum and School at Edinburgh held its 133rd annual meeting in Edinburgh on June 17th. The Rev. Dr. Burns, chairman of directors, said that the annual report showed that greatly increased interest was being taken in the welfare of the blind, both as regarded the industrial department and the department for technical instruction and education. In the training department twenty-one blind persons had been admitted during the year, and at present fifty-six were being trained. The educational department now had students attending the University and the Provincial Training College to qualify as teachers. The Lord Provost, in moving the adoption of the report, said that the town council had a special interest in the work of the Royal Blind Asylum in virtue of the provisions of the Blind Persons Act of 1920. Last year the city had contributed over £2,000. The financial needs of the institution, however, tended to increase on account of the greater number under training, who came from all parts of Scotland. The directors were at present considering the question of providing a residential home for blind women, for which the need was very urgent.

The annual report of the Scottish National Institution for Blinded Sailors and Soldiers shows that since the institution was founded in 1915 no fewer than 101 blinded ex-service men had been already settled in life, and 30 more were in training. The Lord Provost, who presided at the annual meeting on June 23rd, drew attention to the fact that admissions are still being made and that there is no likelihood of these ceasing in the near future. The after-care men were doing well, some of them exceptionally well, as shopkeepers, boot repairers, poultry farmers, and in other trades to which they had been trained. The institution now owned seven houses with grounds attached, situated in various parts of Scotland, which were occupied by blinded men, and these small holdings were greatly prized by the occupants. These outside men were visited regularly by supervisors who were able to give them and their families help during illness and other occasions of necessity.

## TREATMENT OF RICKETS IN GLASGOW.

At the seventh annual conference of the Scottish National Association of Health Visitors, held under the chairmanship of Lady Leslie Mackenzie, Dr. Lewis Cruickshank of the Board of Health gave an address on the subject of ultra-violet ray treatment. He said that very favourable results had been obtained in tuberculosis and in rickets. Dr. Banks, medical officer of

<sup>1</sup> K.F. 20/26. *Fire Precautions at Hospitals*. London: George Barber, 23, Farnival Street, E.C.4. Price 6d. net, post free.





## Correspondence.

### TUBERCULIN IN THE TREATMENT OF TUBERCULOSIS.

SIR,—In the review of Dr. Camac Wilkinson's recently published book, *The Principles of Immunity in Tuberculosis*, which appeared in the *JOURNAL* of June 19th (p. 1039), no opinion is expressed as to the merits of tuberculin as a diagnostic and therapeutic agent in cases of pulmonary tuberculosis. After giving Dr. Wilkinson's high opinion of it in both respects it is said, "A very different verdict has been pronounced and is widely accepted." Unfortunately, this statement is true. But it does not follow that the very different verdict is the correct one. In my opinion it has been pronounced by people who have used tuberculin wrongly, and widely accepted by others who have not used it at all.

Wrong use of tuberculin is of two kinds: (a) keeping too minute doses (which have no apparent effect on pulmonary tuberculosis) through fear of producing reactions; and (b) increasing the doses by some rule of thumb, instead of adapting the rate of increase to each patient.

It is desirable that those who have extensive experience of the use of tuberculin in pulmonary tuberculosis, and who have taken the trouble to follow up their patients and keep accurate records, should now come forward and make known the results of their experience. I therefore venture to give my own experience in regard to some of the propositions from Dr. Wilkinson's book quoted in the review.

I. "Tuberculin is an invaluable and indispensable agent in the diagnosis of early tuberculosis." Tuberculosis dispensaries were opened in county Down in January, 1913. In all cases of suspected tuberculosis that have come for examination to these dispensaries, if tubercle bacilli were not found in the sputum, the tuberculin test by subcutaneous injection has been applied. Six doses are given with negative result before the case is pronounced non-tuberculous. When the six doses have produced no reaction I have great confidence in assuring the patient that he, or she, is not suffering from tuberculosis. This, of course, does not imply that the person cannot subsequently suffer from tuberculosis. In my experience of thirteen years as chief tuberculosis officer for county Down, about 1 in 80 of the patients thus entered as non-tuberculous have afterwards been found suffering from tuberculosis—usually several years afterwards. Of those who were classed as tuberculous because they reacted to the test doses, the symptoms and signs pointing to the lungs as the seat of disease, and who then received at least three months' tuberculin treatment, nearly all made a good recovery.

II. "Pulmonary tuberculosis can be cured with certainty by tuberculin." This statement needs some qualification. According to my experience it is true, or very nearly true, in the cases referred to above, where the diagnosis of pulmonary tuberculosis has been decided by test doses of tuberculin given subcutaneously, if the physical signs be such that the case can be classified as Turban-Gerhardt 1 or 2. Of all such cases diagnosed in the three years 1913-15 by me or my assistants, 86.5 per cent. were alive and at work, or fit for work, in March, 1926. Cases in which there were no physical signs, which I label T.G. 0, are not here included. In cases classed as T.G. (Turban-Gerhardt) 1 or 2, in which tubercle bacilli were found in the sputum, the prognosis is not nearly so good; but the results are in favour of tuberculin treatment, as will be seen from the following table:

Table showing the percentage fit for work in March, 1926, of cases diagnosed as pulmonary tuberculosis in 1913-15.

(T.G. 1 or 2. Tubercle bacilli in all cases.)	
Treated with tuberculin at dispensaries at least three months; not at a sanatorium	30.4 per cent.
Treated in a sanatorium at least three months; not treated with tuberculin	11.1 per cent.
Treated at neither sanatorium nor dispensary	4.3 per cent.

III. "The use of tuberculin in proper doses as a diagnostic agent is entirely free from danger." With this statement I am in thorough agreement.

IV. "Treatment by tuberculin in many cases allows the patient to attend to his ordinary calling, and has therefore a decided economic advantage." This is also in accordance with my experience.

I can hardly agree with Dr. Wilkinson on one point, however—namely, that "three months' training, notably at a tuberculin dispensary," is necessary for medical practitioners who desire to use tuberculin in the treatment of pulmonary tuberculosis. In a little book on the subject which I published in 1918 I laid down directions by which any intelligent person can estimate how to regulate the dosage in any particular case. When I get a new assistant who has had no previous experience of the use of tuberculin, I put this little book in his hands and tell him to read and re-read it carefully. Then I get him to accompany me to our dispensaries for a week or so, after which I usually find that he can be trusted to carry on by himself.

Several general practitioners in county Down now employ tuberculin treatment in domiciliary cases, pulmonary as well as non-pulmonary, under my direction, with benefit to their patients, using the little book and occasionally asking for guidance.—I am, etc.,

JOHN R. GILLESPIE, M.A., M.D., D.P.H.

Knock, Belfast, June 22nd.

SIR,—Tuberculin has been used as a therapeutic agent in the Dorset County dispensaries since 1914. The cases are for the most part pulmonary, but it is also now and then given to non-pulmonary cases.

It is given on the lines advocated by Dr. Camac Wilkinson—namely, the intensive method, which starts at extremely minute quantities of P.T.O. tuberculin and finishes off, if possible, at 1 c.cm. old tuberculin, human. A few cases are even carried on to bacillary emulsion (B.E.).

The success of this treatment depends on three most important conditions—namely: (1) the earliness of recognition of the onset of disease and freedom from secondary infections; (2) the careful technique and skill of the administrator in properly timing his doses, gauging them according to the strength reserves of his patient, and always avoiding making any overdraft thereon; (3) the conscientious co-operation of the patient himself. This is a *sine qua non* for success, but, alas! too often not obtained. In giving test-dose inoculations, the preparation known as T.A.F. tuberculin is given in preference to old tuberculin.

In my opinion all doubtful cases should be tested, for tuberculin demonstrates, like nothing else, the disease in its earliest stage. Even where the test conditions are not fulfilled a tuberculin sensitiveness may show an equally tuberculous susceptibility calling for suitable prophylaxis.

The great majority of pulmonary patients quite easily tolerate the initial doses of P.T.O. The few who cannot usually show their idiosyncrasy very soon and are then given some other form of treatment. The same may be said of secondarily infected cases. Those of the first class, however, equally soon show improvement, and, moreover, feel it. The delicate, peaky look becomes altered to a harder and more natural expression. The sputum is at first increased in quantity, may possibly have a streak or two of blood in it, and it may then be possible to find tubercle bacilli for the first time. One noticeable effect of this is that the cough, which has been hacking and incessant, becomes greatly relieved. In favourable cases, as the course proceeds, the cough and sputum gradually lessen, the pulse slows down and the temperature runs more evenly. It is at this stage that repeated warnings have to be given to some patients, who foolishly think they are sufficiently well to relax care and precaution. As often as not the result is a bad set-back for the patient and a disappointment to the physician. The danger of this, however, decreases with the increasing tolerance of the bigger doses of tuberculin. In fact, a case that has completed the course and reached 1 c.cm. of O.T. seldom causes me much anxiety if I know that he is carefully regulating his life. His acquired immunity, in fact, is always working on his behalf.

Personally I am convinced that the intensive tuberculin administration so alters the general system as to check the advance of tuberculous disease, and that this checking

power is proportionate to the degree of tuberculin immunity obtained. This process of immunizing the system against tubercle is in principle not different from the prophylactic inoculations against other diseases, save that we are dealing with a much more powerful toxin, and more care is therefore necessary in giving it. Its very potency, however, better lends itself to stimulating the body cells to antibody formation and therefore to a more lasting endurance thereof. Indeed, in the present state of our knowledge, it is difficult to see what other method can or will be employed for this purpose, so like is it to Nature's own method.

In conclusion—I am tempted to say something about tuberculin prophylaxis.

If tuberculin can help a patient to throw off the disease by the raising of his body resistance, why should it not be possible to raise adequately the resistance of anyone who has only the tuberculous diathesis before he is attacked? Indeed, it is sometimes difficult to tell where diathesis ends and the disease begins. I am of opinion that herein lies the greatest value of tuberculin, in that it will be found to prevent the onset of tuberculosis in the same way that immunizations are secured against other diseases. I have noticed how well sickly, pretuberculous children tolerate tuberculin and improve in health. Some conclusions can be drawn from these cases in saying how long this artificial immunity lasts.

I do not wish to give the impression that every case does well or that the tuberculin course is always smooth sailing. It is often full of difficulties and set-backs, according to the complicating circumstances of the patient's life, and the physician has to exercise the utmost care in overcoming these opposing forces. It must be confessed that in not a few cases he fails. Nevertheless, when it can be given, there is, in my opinion, nothing to equal it in value. It seems to make the body put up a better fight and to hold more stubbornly the front line against the advance of tuberculous disease than anything else.—I am, etc.,  
County Offices, Dorchester, June 26th.

H. C. MANNING.

#### THE SPAHLINGER TREATMENT.

Sir,—Pace Dr. Jenkins (BRITISH MEDICAL JOURNAL, June 26th, p. 1103), I have never suggested that the memorandum issued by the Science Committee professes to "favour" the Spahlinger "remedy." What it does "favour" is a trial of the "remedy" under approved conditions. The difference between the two positions is a wide one, though Dr. Jenkins does not seem to appreciate it.—I am, etc.,  
London, W., June 29th.

C. O. HAWTHORNE.

#### POST-ENCEPHALITIS LETHARGICA.

Sir,—With reference to the correspondence on our paper entitled "Hyescino in post-encephalitis lethargica," we would like to point out that Dr. W. S. Dawson has interpreted our views correctly in assuming that we used the term "hysterical" as synonymous with "functional." We note with interest that Dr. Dawson's experience of psychotherapy in these cases coincides with ours.—We are, etc.,

P. K. McCOWAN,  
J. S. HARRIS,  
S. MANN.West Park Mental Hospital, Epsom, Surrey,  
June 26th.

Sir,—Dr. Moll's advocacy in the JOURNAL of June 26th (p. 1079) of the treatment of post-encephalitic Parkinsonism by nicotine has interested me greatly, and because it is important I may perhaps be pardoned for drawing attention to some points in the action of the drug.

He ascribes the benefit obtained to depression of the sympathetic pre-spinal reflex are subserving plastic tone. It has been shown by Langley that nicotine acts on the peripheral ganglion cells of the autonomic system and not on the preganglionic fibres, for the action may be obtained after these have degenerated. Further, the action is one

of transitory stimulation followed by depression of these cells, and clear evidence of this stimulation may be obtained from the preliminary fall in pulso rate which Dr. Moll describes, a change which must be due to stimulation of the parasympathetic cardiac ganglia.

A rather more important action of nicotine is the pronounced stimulation of the medulla and spinal cord, adequate evidence of which action may be obtained from the case histories reported. Since the increase in plastic tone is in the nature of a "release phenomenon," this stimulation is worth some consideration. Lastly, may I amplify Dr. Moll's account by drawing attention to the fact that nicotine is a very poisonous substance, nearly as toxic as prussic acid, and therefore care is necessary in its use?—I am, etc.,  
University of Edinburgh, June 28th.

G. A. MASON.

#### ASEPTIC RESECTION OF THE COLON.

Sir,—The report of the proceedings of the Subsection of Proctology of the Royal Society of Medicine (JOURNAL, June 19th, p. 1050) leads me to suggest that surgeons should try using the crushing clamp hot, instead of cold (or warm). This used subsequent haemorrhage is much less likely to occur. Straight from the ordinary boiling sterilizer is possibly hot enough, but I have tried making it still more so in a flame. This must not be overdone, though, or the tissues will splutter and splash through violent boiling of the moisture in them.

A clamp heated by boiling water may easily be too hot for the surgeon's hands, and so require to be held in a towel; and, of course, care must be taken not to touch the wrong tissues with it.—I am, etc.,  
Doncaster, June 24th.

W. REGINALD WILSON.

#### REORGANIZATION OF THE UNIVERSITY OF LONDON.

Sir,—It is obviously you who are angry, not I. You have strenuously supported the removal of the University to the Bedford site; I have strenuously opposed this scheme since its inception by the Haldane Commission in 1911, because of the conditions implied in their report; the scheme has now definitely and finally failed after fifteen years of conflict. I leave it to your readers to judge which of us two has reason to be complacent.

Indeed, you are so angry that you most unpardonably misrepresent the facts of the offer of the site. The site was not "a gift" at any time, but was offered in exchange for property, the greater part of which is in the possession of King's College; after anxious, and certainly prolonged, deliberation, King's College refused to give up its part of the property, so coveted by the Government, and could not be compelled to do so. The Senate consequently notified the Treasury in June, 1925, that the exchange, insisted upon by successive Chancellors of the Exchequer, could not be effected. But it also expressed its eagerness to receive the University purposes. The Treasury took no notice of this. The property, King's College refused to give up its part of the property, so coveted by the Government, and could not be compelled to do so. The Senate consequently notified the Treasury in June, 1925, that the exchange, insisted upon by successive Chancellors of the Exchequer, could not be effected. But it also expressed its eagerness to receive the University purposes. The Treasury took no notice of this. The property, King's College refused to give up its part of the property, so coveted by the Government, and could not be compelled to do so. The Senate consequently notified the Treasury in June, 1925, that the exchange, insisted upon by successive Chancellors of the Exchequer, could not be effected. But it also expressed its eagerness to receive the University purposes. The Treasury took no notice of this.

upon the Bedford land had expired, and the gift, asked for by the Senate, was no longer feasible. I leave it again to your readers to judge whether these facts support your statement that the gift (?) of the Bloomsbury site was countenanced by the University.

You seem to suggest that the only friends I have in opposing the appointment of a departmental committee and its renewed attempt to revolutionize the constitution of the University are the Duke of Bedford's trustees. Why these irrelevant and innocent persons should be dragged into the argument I do not understand—the departmental committee expressly avoided any recommendations concerning the site. You must be unaware of two facts which sufficiently refute your suggestion. First, a resolution was passed, without a dissentient voice, at a record meeting of Convocation held on October 14th, 1924, with 809 members present:

"That this House protests against the appointment of a departmental committee on matters connected with 'London University,' and further against the omission of any representative of Convocation from its personnel."

And secondly, at a special meeting of the Senate on October 9th, 1924, a resolution containing the following words was passed unanimously:

"The Senate is of opinion that such changes in the organization of the University, as are necessary, may be more readily effected by amendments promoted by the University than by a statutory revision of the University as constituted by the Act of 1893."

I think I may therefore claim that my position, in which you regard me as being solitary, is the position of both the Senate and of Convocation, who by statute have the final claim to speak for the University as a corporate body.

The Universities of Oxford and Cambridge were left undisturbed for about a century prior to the recent Statutory Commissions which have reported upon them. The University of London within the last forty years has suffered no less than three Royal Commissions and two departmental committees. Is there any reason to suppose that the present departmental committee, with its reference indicating that its inquiry was to be based upon the Haldane report, has found finality of wisdom as compared with its predecessors, so recent in time, so much more impartially constituted, and without any restriction of reference to a gravely discredited report?

In conclusion, since you compare the three Universities—Oxford, Cambridge, and London—it may interest your readers to know that the relative number of graduates upon the parliamentary roll for these three Universities is: Oxford 11,339, London 11,997, Cambridge 16,621. London in this respect has thus already passed Oxford and is rapidly overtaking Cambridge. It will also probably interest your readers to know that, of the 376 Fellows of the Royal College of Physicians of London, who are elected for professional distinction from its members scattered all over the world, 149 are graduates of London University, 97 of Cambridge, and 51 of Oxford. These facts, I submit, do not seem to justify your criticism that the University has mismanaged its affairs while it has had control of them. In size and in prestige it has made the most astonishing progress, notwithstanding the continual turmoil engendered by these too frequent interferences with its constitution.—I am, etc.,

E. GRAHAM LITTLE.

House of Commons, June 25th.

### THE ELECTRICAL TREATMENT OF TIC-DOULOUREUX.

SIR,—Dr. W. J. Turrell's communication on the electrical treatment of tic-douloureux (June 12th, p. 989) is a step forward to the understanding of a disease of still doubtful pathology, and it supplies a valuable therapeutic contribution.

His reference to the statement of a surgical colleague is perhaps a little severe. I remember the article well to which he refers, and my only criticism of it is that the Hartley-Krause operation is obsolete, as there are safer and simpler routes of approach to the ganglion and its immediate connexions. In my recent paper on the radical treatment of trigeminal neuralgia, published in your issue of May 8th and 15th, I omitted to state that I had employed the constant current in the treatment of the post-operative paraesthesias that arise. The result has been immediate, and I shall certainly employ it for subsequent cases.

Dr. Turrell's results will be gratifying to all readers, though a careful study of the reports of his cases does not convince me that the constant current alone is curative. If tic-douloureux is a sympathetic phenomenon, as I firmly believe, then the constant current is a most valuable palliative, as it is in arteriospasm elsewhere. But does it cure? I think the complete cure of tic, in the light of our present knowledge, is the combined task of the electrotherapist and surgeon. I have looked for some communication from the electrotherapist in connexion with the treatment of angina pectoris.

Electrotherapy as a remedial measure for those troublesome post-operative intestinal symptoms associated with pylorospasm of infants has yet to prove or disprove its

value. These troublesome and difficult symptoms, considered by many to be infective, are, I am sure, vegetative in origin and are only part of a general vegetative unbalance.—I am, etc.,

BASIL HUGHES, D.S.O., F.R.C.S.

Bradford, June 14th.

### RECOVERY AFTER MASSAGE OF THE HEART.

SIR.—In his article on recovery after massage of the heart in the *BRITISH MEDICAL JOURNAL* of April 24th, Mr. Girling Ball attributes his patient's recovery to massage of the heart, ignoring his own significant admission that 10 minims of adrenaline were injected into the heart muscle. It appears to me that the recovery may have been at least partially due to the latter procedure, as certain features of his case (very rapid pulse and extreme restlessness) so curiously resemble the case I relate below.

A Hindu boy of 15 was operated on by me at the Nasik Civil Hospital in June, 1924, for resection of a rib. The anaesthetic given was chloroform; early in the operation he stopped breathing. I immediately passed my left forefinger over the back of the tongue to ensure a clear airway, and at the same time a few motions of artificial respiration were carried out, but the boy remained pale and flaccid; he was then found to be pulseless and no heart sounds could be detected. Ten minims of adrenaline 1 in 1,000 were immediately injected into the apex of the heart through the fourth space, and artificial respiration continued. Within two minutes pulsation was visible in the neck, the heart beat became more and more rapid, and respiration returned. The operation was postponed, and the boy carried on a stretcher at once to the ward for restorative treatment. In a few minutes he had become acutely maniacal, shouting out and throwing himself about the bed. His pulse was counted several times in the neighbourhood of 190, and in spite of digitalin did not fall till next day, when he was very apologetic for being so noisy!

An operation was done later under cocaine, and he left the hospital "relieved" some weeks later.—I am, etc.,

W. C. SPACKMAN, M.B., B.S. Lond.,  
Major, I.M.S.,

Civil Surgeon and Superintendent, Medical School,  
Ahmedabad, India.

May 19th.

### OBSTETRICS IN GENERAL PRACTICE.

SIR.—The letter of Dr. James Cook in the *BRITISH MEDICAL JOURNAL* of June 26th (p. 1101) leads me to ask what Dr. Kerr has to say to the following extract from the 1925 report of the Coombe Lying-in Hospital, Dublin, as reported in your issue of June 19th (p. 1059).

"The morbidity rate was 4.5 per cent. (32 cases). . . . In 24 of these patients no vaginal examinations were made, there was no laceration of the perineum, and no operative intervention necessary."

And is it in midwifery only that "young and inexperienced men" muddle along?—I am, etc.,

J. C. L. DAY.

Rhyl, June 26th.

### ATOPHAN DERIVATIVES IN RHEUMATISM: A CAUTION.

SIR.—On page 90 of the *Epitome* in your issue of May 29th the successful treatment of rheumatism and gout by injections of atophanyl is referred to. Certainly it is stated that not more than twenty injections should be given, but I should like to utter a caution on the subject of atophan derivatives. I have had personally two fatal cases of toxic jaundice following the use of atoquinol in rheumatoid arthritis, and I know of several others. The similarity between the symptoms in these cases and in those hepatic toxæmias produced by other ring compounds suggests that this is more than a coincidence. I hope that further data of these cases will be published later, but it has been suggested to me that I ought to call attention to the subject at once, so that we may be on our guard. It would be interesting to know if others have had similar unfortunate experiences.—I am, etc.,

London, W., June 28th.

W. LANGDON BROWN.

## Universities and Colleges.

## UNIVERSITY OF OXFORD

## Honorary Degrees.

At the Eneacnia on June 23rd, presided over by the Chancellor of the University (Viscount Cave), a number of distinguished persons were presented for honorary degrees in the Sheldonian Theatre. Two of the recipients were medical men. The degree of D.C.L. was conferred on Lord Dawson of Penn, G.C.V.O., M.D., physician to the London Hospital; and that of D.Sc. upon Sir Walter Morley Fletcher, M.D., F.R.S., secretary of the Medical Research Council. According to custom each of the honorary doctors was presented to the Chancellor by the Public Orator, Mr. A. B. Poynton, M.A., Fellow of University College. The Latin text of the speeches with which Lord Dawson and Sir Walter Fletcher were introduced is printed below, and we are much indebted to the Public Orator for the English translations appended.

## Lord Dawson of Penn.

Adest vir artis medicae peritus, et quidem Regis ipsius e medicis, qui inter Londinenses per totam vitam et clinica diligenter exercenda et morbis hominum investigandis, priscae Meneis sapientiae haud immemor, insignem laudem meruit. Idem ut in Gallia militum valetudinariis a belli principio impigre operam navavit, ita docendo, scribendo, praecedendo etiammune artis medicae studia illustrat. Nuper inter proceres adlectus unus ex Aesclepiadis Eupatridarum consiliis interest. Nos academiæ hand ignari sumus quantum referat malorum principis obstare. Senatore tam prudenti, moderato, erudito confisi speramus fore ut progenies nostra, legum auxilio corroborata, ex tertio gradu pumilionum ad summum gradum Milonum evadat. Praesento vobis virum honoratissimum qui publicae sanitati sanam doctrinam adhibet, Bertrand, Baronem Dawson de Penn, illustrissimum ordinum Balnei et SS. Michaelis et Georgii Equitem Commendatorem, neonon illustrissimi ordinis Victoriani Magnae Crucis Equitem Commendatorem, ut admittatur ad gradum Doctoris in iure civili honoris causa.

[This is an eminent Physician, indeed one of the King's Physicians, who, not forgetful of the wisdom of old Meneius,<sup>1</sup> by a life spent in London in the diligent practice of clinic and the investigation of human disease, has won distinguished honour. From the beginning of the War he rendered active help to the military hospitals in France, and even to this day he continues to add distinction to medical studies by teaching, writing, and lecturing. He has lately been called to the House of Lords, and is the only member of the guild of Aesculapius among the Peers. We, members of the University, know well how important it is to stop mischief at the beginning. We trust that by the help of a senator so wise, tactful, and learned, the population of our country, with a tonic of sound laws, may rise from the third grade of pygmies to the highest grade of athletes.<sup>2</sup> I present to you one who applies sound learning to national health, the Right Honourable, Bertrand, Baron Dawson of Penn, K.C.B., K.C.M.G., G.C.V.O., that he may be admitted to the honorary degree of Doctor in Civil Law.]

## Sir Walter Fletcher.

Sequitur tertius Cantabrigiensis, rerum naturae indagator, qui periclitantibus accuratissime factis exposuit quas vires in animantium corpore elementa mutant, eum musculi conducuntur, languent, alimentis recreantur. Cum juvenis olim et peditum perniciat et mentis viribus insignis fuisset, multas et insignes partes in Academia et Collegio omnium magnificentissimo peregit, procurator, praefector, morum studiorumque moderator. Tum, cum ad summam dignitatem in Biochemia proficunda pervenire potuisset, ultro se patriae ad munus gravissimum suscipiendum obtulit. Exquisitoria artis medicae studia propagantibus accessit hortator animosus, administrator prudentissimus. Nec tenues rivos ex immensis illis pecuniis quas viri magni ad levandos aegros legarunt, ad nos Oxonienses deduxit. Si monumentum benevolentiae quaeritis qua sororeulam suam, Academiam nostram prosequitur, ad Parcum via patet; jamque regiae molis architectus supremam manum imponit. Itaque praesento vobis virum animi magnitudine et abstinentia insignem Walterum Morley Fletcher, illustrissimi ordinis Imperii Britannici Equitem, Regiae Societatis adscriptum, Collegii Sanctae et Individuae Trinitatis inter Cantabrigiensis socium, ut admittatur ad gradum Doctoris in scientia honoris causa.

[Here follows a third son of Cambridge, a researcher in Natural Science, who by most careful experiments discovered and expounded the chemical changes which take place when the muscles are contracted, grow weary, and are revived by nourishment. As an undergraduate he was remarkable not less for speed of foot than for force of mind, and he played many parts with distinction, both in the University and in his own most magnificent College, as Proctor, Lecturer, and Senior Tutor. Then, when he would certainly have risen to the highest honours in Biochemistry, as Professor, he offered his services to the country in a most responsible position. He became Secretary of the Council of Medical Research, and was both a spirited adviser and a wise administrator. By no means slender are the streams which he has diverted to Oxford from those splendid funds which great men have bequeathed for the relief of human suffering. If you

seek for evidence of his kind feeling towards his little sister of Oxford, the way to the Park lies open, and the architect is just putting his finishing touch to the kindly edifice. And so I present to you one who is eminent, both for the grandeur of his conception and his self-sacrifice, Sir Walter Morley Fletcher, K.B.E., F.R.S., Fellow of Trinity College, Cambridge, that he may be admitted to the honorary degree of Doctor in Science.]

Both Lord Dawson and Sir Walter Fletcher were also among the distinguished guests at the Gaudy held the same evening at Christ Church.

The Welsh Memorial prize for the study of human anatomy, and in particular of the art of drawing in relation thereto, has been awarded to R. E. Adam, scholar of University College. The work of J. C. L. Green, B.A., Balliol College, is highly commended.

## UNIVERSITY OF CAMBRIDGE.

At a congregation held on June 26th the following medical degrees were conferred:

M.D.—F. B. Smith.  
M.Chm.—T. M. Thomas.  
M.B., B.Chm.—N. T. Glynn, C. C. Halliwell, K. Fletcher-Barrett.  
B.Chm.—A. C. Copley, J. B. Ellison, F. W. Roques.

At a congregation held on June 29th the following medical degrees were conferred:

M.D.—F. A. Phillips, F. H. Young, C. H. Whittle, J. M. Smith.  
M.B., B.Chm.—L. P. Marshall.  
B.Chm.—F. A. Phillips, H. M. Woodman, J. A. S. Brown, H. B. Trumper.

\* Admitted by proxy.

## UNIVERSITY OF LONDON.

## Appointments and Resignations.

SIR WILLIAM BEVERIDGE, K.C.B., M.A., LL.D., B.C.L., Director of the London School of Economics, has been elected Vice-Chancellor for 1926-27, in succession to Professor E. A. Gardner, Litt.D. A cordial vote of thanks was passed to Professor Gardner for his services during his term of office.

The appointment of Dr. Major Greenwood to the University Chair of Epidemiology and Vital Statistics, tenable at the London School of Hygiene and Tropical Medicine, has been formally confirmed by the Senate. The foundation stone of the new home of the school will be laid by the Minister of Health at 3.30 p.m. on Wednesday next, July 7th, and though the school is in being it is not expected that the new building will be ready until the year after next. It is for this reason, presumably, that Dr. Major Greenwood has been appointed professor as from August 1st, 1926. While a member of the staff of the Lister Institute of Preventive Medicine Dr. Greenwood was appointed (January, 1915) Reader in Medical Statistics. In October, 1920, he was appointed a medical officer to the Ministry of Health.

Professor W. W. C. J. has been appointed to the University Chair of Bacteriology and Immunology at the London School of Hygiene and Tropical Medicine. He was Director of the Institute of Pathology at Charing Cross Hospital from 1911 to 1922, when he was appointed Professor of Bacteriology in the University of Manchester and Director of the Public Health Laboratories.

Mr. P. A. Buxton, M.A. Camb., L.R.C.P., M.R.C.S., has been appointed as from August 1st to the University Readership in Medical Entomology, tenable at the London School of Hygiene and Tropical Medicine. He graduated B.A. Camb. in 1914 (First Class, Natural Sciences Tripos, Parts I and II), and was a Fellow of Trinity College from 1916-21. From 1917-19 he was entomologist to the Mesopotamian Force, and from 1920-21 demonstrator in the zoology department at Cambridge. From 1921-24 he was medical entomologist to the Palestine Government and from 1924-25 leader of the expedition from the School of Tropical Medicine to the South Pacific. Since March, 1926, he has been Director of the department of medical entomology at the London School of Hygiene and Tropical Medicine.

The title of Reader in has been conferred on Mr. T. E. in respect of the post of lecturer in the School of Pharmacy of the Pharmaceutical Society of Great Britain since 1920.

The resignations of Professor A. J. Clark from the University Chair of Pharmacology, tenable at University College, on appointment to the Chair of Materia Medica in the University of Edinburgh, and Dr. G. V. Aurep from the University Readership in Physiology, tenable at the same college, on appointment to a Lectureship in Physiology in the University of Cambridge, were accepted as from July 31st.

## Dunn Exhibition in Physiology.

The Dunn Exhibition in Physiology was awarded to Mr. G. G. Paine, an internal student, of St. Mary's Hospital Medical School, in the place of Mr. D. F. Ogborn, who was originally awarded the exhibition and has since been drowned in a boating accident while saving the life of another.

## LONDON HOSPITAL MEDICAL COLLEGE AND DENTAL SCHOOL.

On June 28th the Minister of Health distributed the prizes to students of the London Hospital Medical College and Dental School, and gave an address on the subject of research. He made special reference to the

<sup>1</sup> Author of the famous parable about the belly and the members: cf. *Liv. ii. 32*, §§ 8-12.

<sup>2</sup> Milo of Croton: cf. *Cicero, de Senectute*, § 27.

with a view to ensuring the early detection of disease. More co-operation was required, and treatment to be complete must be a matter of team work. Professor William Wright, dean of the College, in presenting the annual report, said that during the year 583 students had been in attendance, 103 had taken medical or dental degrees or diplomas, and 39 had obtained post-graduate degrees or diplomas. He referred to the anonymous gift of £50,000 received during the year, which had been applied to the endowment of the Freedom Research Fund, the whole of the income being devoted to medical research. Lord Kintford, proposing a vote of thanks to the Minister of Health, pleaded for greater support for the London Hospital, which would enable it to carry on more extensive research work. Lord Dawson, seconding the vote of thanks, said that it seemed to be inevitable that a large development in industrial medicine would come; employers would find it necessary to increase medical services for their employees in the interests of both parties, and the proportion of private medical work would diminish. There would also be an increase of clinics and hospitals in the future.

#### LONDON SCHOOL OF MEDICINE FOR WOMEN.

Sir John Ferguson, president of the Institute of Bankers, distributed, on June 25th, the prizes and certificates won by students at the London School of Medicine for Women, and addressed the students on the importance of the medical work to be undertaken by women. Lady Barrett, the dean of the school, who presided, gave a report of the very successful year that had passed, and anticipated even better results in the future. Out of twenty-five distinctions awarded by the University of London during the last twelve months, no fewer than eight had been won by students of the school.

#### UNIVERSITY OF DURHAM.

The following candidates have been approved at the examinations indicated:

M.D.—R. Mansoor, J. H. Saint (awarded gold medal), Margaret Scoresby-Jackson, E. A. Welsh, T. H. Blouch, C. R. Smith.  
M.D. (for practitioners of fifteen years' standing)—V. P. Norman.  
M.B., B.S.—S. McD. Selby, H. Roscobloom, G. Y. Fergetter, W. B. Allan, R. Y. Carter, M. Coll, A. D. W. Cooke, Dorothy E. Crisp, Mabel Dodds, J. de-sio S. Dunlop, F. P. Forrest, W. L. Folthorpe, H. Gass, H. D. Golder, R. A. Goodall, C. V. Harrison, Dorothy Hopkinson, J. H. Horsley, Grace O. Howie, D. S. Jackson, E. E. Kendall, R. A. V. Law, J. A. Livingston, G. M. Macintyre, F. McGuckin, G. P. McEabb, Grace E. McVie, A. D. Miller, H. Morris, M. A. Phillips, Mabel Popham, R. H. Robinson, Phyllis Routledge, F. G. Sinclair, R. C. F. Smith, M. M. Szaman, Charlotte M. Thomson.  
The Phillips Scholarships have been awarded to S. McD. Selby and H. Roscobloom.  
B.H.S. and D.P.H.—Madge Hopper and G. Wilson.

\* With second-class honours.

#### UNIVERSITY OF WALES.

The following students of the Welsh National School of Medicine have been approved at the examination indicated:

M.B., B.Ch.—D. J. Davies, T. E. Davies, Marjorie M. Doggan, Dilys Jones, D. R. Owen, H. G. St. M. Rees.

#### UNIVERSITY OF GLASGOW.

The following medical degrees were conferred on June 23rd:

M.D.—J. K. Rennie, G. M. Wishart, W. P. Grieve, W. K. Anderson, J. S. Bizett, D. Robertson.  
Ph.D. in the Faculty of Medicine.—A. McLeod Watson.  
\* With honours. † With commendation.

#### UNIVERSITY OF DUBLIN.

At a special meeting of the Senate of Trinity College held on June 29th the honorary degree of Master in Surgery was conferred on Sir Berkeley Moynihan, Bt., LL.D., F.R.C.S.

#### UNIVERSITY OF CAPETOWN.

At the graduation ceremony on July 3rd, 1925, the following were admitted to the degrees of M.B., Ch.B.:

G. F. Brown, G. H. G. du Toit, D. Epstein (with honours), Janet E. Masterton, B.A., J. S. Palm, S. Poyser, Elizabeth M. Reitz, J. D. K. Reitz, T. Richter, J. Smarth, R. E. Stevenson, R. V. S. Stevenson, J. H. Symington, D. R. Truter, F. D. J. Viljoen.

At the graduation ceremony on December 15th, 1925, the degree of M.B., Ch.B. was conferred on the following:

B. W. F. Bishop, F. A. Dounolly, G. F. Eagle, P. C. Eagle, H. P. Forster, J. A. P. J. Kritzing, M. W. Mills, M. E. Pimstone, B.A., M. K. Tucker, G. F. van der Merwe, F. D. du T. van Zyl, D. H. R. Vollet, E. W. Watts, C. Weinberg.

At both ceremonies the degrees were conferred by the Vice-Chancellor, Principal Sir J. Carruthers Beattie, Kt., D.Sc.

The roll of medical students for 1925 shows the following numbers in each academic year; the number in parentheses indicates the corresponding total during the half-year ended December 31st, 1925:

First year ...	63 (54)	Fourth year...	27 (24)
Second year ...	63 (34)	Fifth year ...	24 (25)
Third year ...	46 (42)	Sixth year ...	29 (20)
Total ...	253 (200)		

#### ROYAL COLLEGE OF SURGEONS IN IRELAND.

On his retirement from the Presidency of the Royal College of Surgeons in Ireland, Mr. Robert C. B. Maunsell has been presented with a salver by the members of the Council as a mark of their appreciation of the admirable manner with which he carried out the important duties of his office during the years 1924-25.

#### SOCIETY OF APOTHECARIES OF LONDON.

The following candidates have passed in the subjects indicated:

SURGERY.—A. M. El-Mishad, W. E. Ivers, L. Schapera, A. D. Shubsachs, C. H. Spencer.  
MEDICINE.—E. A. Strond.  
FORENSIC MEDICINE.—R. V. Cookes, J. E. Howard, D. Jacobson, B. Lamort, T. C. Pain, J. Pattis, L. Schapera, E. A. Strood.  
MIDWIFERY.—S. B. Browning, W. O. R. Fischer, J. H. Gillatt, M. N. Nicolson, M. Pettigrew, M. Stinesbeck.

The diploma of the Society has been granted to Messrs. R. V. Cookes, W. O. R. Fischer, J. E. Howard, B. Lamort, A. M. El-Mishad, M. N. Nicolson, M. Pettigrew, and A. D. Shubsachs.

### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

In the House of Commons this week the chief business has been the Coal Mines Bill, permitting for a period of five years an extension of the working day in coal-mines to eight hours. The Parliamentary Medical Committee met on June 30th to hear Mr. Wilfred Buckley, President of the National Clean Milk Society, and also two inspectors of the Ministry of Health, on the regulations about the use of preservatives and food-stuffs. These regulations come into force next January.

The report of the Select Committee on nursing homes has been drafted, and will be considered by the Committee on July 6th. Its issue is expected within a week thereafter.

#### Smoke Abatement Bill.

As briefly announced last week, the Smoke Abatement Bill, which has already passed through the House of Lords, was read a second time in the House of Commons, on the motion of the Minister of Health, on June 22nd. It had been formally read a second time in the House of Commons, but there seems to have been some irregularity and the vote was rescinded so that the Minister might explain the aims and objects of the bill. In so doing, Mr. Neville Chamberlain began by recalling that in 1920 a departmental committee had been appointed under the chairmanship of Lord Newton to advise what measures could be taken to mitigate the emission of smoke and other noxious vapours. The committee reported in 1921, and since then four bills had been introduced; that now before the House was more or less founded on its recommendations. Public opinion had progressed steadily during the past few years in the direction of demanding cleaner air. While this might be due to some extent to the introduction of the bills, it was still more the result of advances in medical knowledge and the recognition of the vitalizing effects of sunlight. Even now, he doubted whether those who habitually lived in towns fully realized the extent to which they were deprived of those essential factors. It was estimated that the people who lived in the country got 20 per cent. more sunlight than those who resided in towns. The emission of smoke must necessarily mean a waste of fuel. The Newton Committee declared that about 2,500,000 tons of soot escaped into the atmosphere every year in this country from domestic fireplaces, and another 500,000 tons from industrial works. That represented a very substantial sum. An inquiry made in Manchester in 1918 comparing the cost of washing in that town with the cost in Harrogate showed that the inhabitants of Manchester, in order to keep clean, had each to spend 7½d. more every week than the inhabitants of Harrogate. It was estimated that Manchester

100,000 more in washing in order to keep  
Apart from the damage done by smoke  
it was only necessary to look round the  
buildings to see the effect of acid soot  
when it was deposited on even the most durable kinds of stone.  
The pollution of the atmosphere by smoke was at once costly, wasteful, and highly injurious to human health. When, however, they came to consider in what way the law should be amended in order to diminish this evil, differences of opinion began to arise, and this bill had not escaped criticism. Those who might be called smoke consumers thought that it was not sufficiently drastic and would do little to improve matters, while the smoke producers expressed the view that its provisions were so drastic as to be likely to cause serious injury to at any rate some of the industries of the country. He hoped that the bill was striking a happy medium, while he realized that at this moment, above all others, nothing should be done to add fresh obstacles to British industry. But he believed that a great deal could be done to prevent the emission of noxious vapours without doing any injury to industry. If he had not entirely succeeded in carrying out his intentions he would only be too happy to hear in Committee any representations which might be made. Mr. Chamberlain described the provisions of Clause 1 of the bill, which amended the provisions of the Public Health Act, 1875, relating to smoke nuisances, so as to include other kinds of smoke besides black smoke, and extended the definition of the



word "smoke" to include "soot, ash, grit, and gritty particles." The clause increased the penalties for the commission of offences so that it would be a serious matter for manufacturers to break the law. It was proposed to allow temporary exemption to certain processes which could not at present be carried on satisfactorily in this country without the emission of smoke. Though private dwellings were the greatest sinners, he did not think it wise to include them, since in the present stage of knowledge it would be too great an interference with private liberty. The solution of the smoke difficulty lay in two directions. One was to make it as easy and cheap as possible for people to use gas and electricity. The other was in the production of smokeless fuel. A section of the Department of Scientific and Industrial Research had for some years been investigating fuel and making tests for private individuals. Although the problem had not yet been solved, progress had certainly been made. If, in the course of a year or so, a smokeless fuel was obtained which could be used in the open grate and which was sufficiently cheap and practicable to commend itself to the ordinary man and woman, it might be possible to amend this bill and to allow local authorities to exercise control over the burning of raw coal in grates. Until that time came, however, it would be best to leave the matter where it stood.

Dr. Salter said that he gave a general support to the bill, but with no great enthusiasm. He was concerned at the numerous loopholes and opportunities for evasion. Any amendments accepted by the Minister of Health in Committee ought to strengthen and not weaken the bill. The two greatest scourges of working-class life to-day were chronic rheumatism and chronic bronchitis. These two groups of diseases caused a greater loss of working time than almost all the others put together. Tuberculosis was receding fast into the background as one of the great disabling influences in working-class life. The discovery that most forms of chronic rheumatism took their origin in dental sepsis had led to a great deal of dental attention being given under the National Health Insurance Act and in other ways for the prevention of chronic rheumatism, but practically nothing was being done for the prevention of chronic bronchitis. The figures of the Ministry of Health showed that these two groups of diseases were getting worse every year. Chronic bronchitis had been clearly traced to soot and dirt in the atmosphere, and he welcomed the bill in so far as it would mitigate these diseases.

Dr. Fremantle said that the Ministry of Health appeared to have the impression, which was growing outside as well, that fireplaces should be abolished. Personally, he did not agree. The open fireplace was superior to closed heating systems which prevailed in America and other places abroad, because it provided ventilation. It was also adaptable to the needs of the individual. He hoped that it would be possible to insert in the bill later on some provision giving local authorities power to see that grates in new houses were of a kind which conserved heat and consumed smoke.

The bill was read a second time.

#### Bills.

The Rag Flock Act (1911) Amendment Bill was read a second time in the House of Commons on June 23rd.

In the House of Commons, on June 28th, Mr. A. V. Alexander introduced a bill to amend the Dentists Act, 1921, and it was read a first time.

**International Information as to Tropical Diseases.**—On June 28th Mr. Amery said the Bureau of Hygiene and Tropical Diseases, the Imperial Bureau of Entomology, and the Imperial Bureau of Mycology constantly received from all parts of the empire and foreign territories information on the problems of tropical disease affecting man, animal, and plant. This information was summarized in the periodical reviews, published by these bureaux, and distributed to subscribers, including the Governments of the overseas dependencies. In research on human tropical disease valuable work was done by the health organization of the League of Nations, through which knowledge of the progress made in that direction was widely distributed between the different Governments represented in the League.

**Women Nurses for Male Insane Persons.**—On June 28th Mr. C. Edwards asked the Minister of Health whether he was aware that at the Hellingly Asylum the East Sussex County Council employed female nurses in attendance on insane male patients; and whether, in view of the moral and physical dangers thus involved, he would take steps to prevent this practice. Mr. Chamberlain said female nurses were so employed. He was unable to accept the assumption upon which the second part of the question was based. Medical superintendents who had had experience of the practice of nursing male patients by women nurses were practically unanimous in thinking that this was desirable in certain types of cases, and that no risk to the nurses arose. He did not, therefore, propose to take any action.

**Foot-and-Mouth Disease.**—In a reply, on June 16th, to Mr. W. Thorne, Mr. Guinness (Minister of Agriculture) said that in the instances of foot-and-mouth disease in imported carcasses of pigs which brought about the Order prohibiting the import of fresh meat from the Continent, lesions of foot-and-mouth disease were only found in carcasses which had not been scraped or scalded. Scraping and scalding might make the discovery of the lesions difficult, but the carcass would be capable of introducing the disease to this country. The Ministry of Agriculture had no evidence that Chinese pork was capable of disseminating foot-and-mouth disease in this country. Chinese pigs were imported in calico cloths which, under the Packing Materials Order of 1925, must be thoroughly sterilized before further use. The certificate of the United States Government accompanying "box" loins of

pork imported into this country provided all the necessary guarantees for safeguarding the public health. Answering Mr. Kennedy on June 17th, Mr. Guinness said that the Ministry of Agriculture inspected all imports of frozen meat, but not from the point of view of foot-and-mouth disease. There was no evidence that that disease could be conveyed in frozen meat. The danger was chiefly in the blood. They were taking steps with the Argentine Government to see that proper precautions were observed to prevent the slaughter and export of animals suffering from foot-and-mouth disease.

**Anthrax and Shaving-brushes.**—Mr. Chamberlain stated, on June 24th, that one case of anthrax caused by an infected shaving-brush had occurred this year. It was not fatal. Steps had been taken to deal with any future consignments of shaving-brushes from this source, and the matter had been referred to the Government of the country of origin for appropriate action.

**Puerperal Septicæmia.**—In reply to questions, Sir Kingsley Wood stated, on June 29th, that the report made by one of the medical officers of the Ministry of Health on the Kingston Nursing Association's home, where eight deaths from puerperal septicæmia had occurred during the last six months, showed that there had been grave laxity in administration and in the district midwifery practice associated with the home. He intended to address a communication to the Nursing Association and send copies to the County Council and the Kingston Town Council. In reply to Dr. Fremantle, who asked whether steps would be taken to ensure the speedy passage of the Midwives and Maternity Homes Bill, Sir Kingsley Wood asked for notice.

**Disinfectants on Merchant Vessels.**—The President of the Board of Trade has stated that disinfectants approved for use on board merchant vessels were submitted for approval and were tested chemically by the Government laboratory and bacteriologically by the Lister Institute. If they did not come up to the required standards they were not approved. The list of approved disinfectants was continually under revision, the officers concerned having been instructed to take samples from time to time. Where a sample was found not to conform to the required standard the name of the disinfectant was removed from the approved list. He would, however, have the list examined as suggested by Mr. Cluse.

**Veneral Disease in the Army.**—The Secretary of State for War has stated that during the last three years for which complete statistics were available the incidence of venereal disease in the army had decreased from 74 per 1,000 of the strength in 1921 to 47.8 per 1,000 in 1924. His medical advisers considered that this reduction was mainly due to the very effective preventive measures that had been and were still being employed.

**Insurance Funds.**—Mr. Chamberlain, in a reply to Sir Gratian Doyle, on June 24th, gave the following particulars concerning National Health Insurance in England and Wales: Total accumulated funds at December 31st, 1925, £113,000,000. Total payments made during the year ended December 31st, 1925: by insured persons, £11,970,000; by employers, £12,800,000; by the State, £7,220,000. Number of insured persons: Male, 9,395,000; female, 4,550,000. Total benefits paid during the year ended December 31st, 1925: For sickness benefit, £9,335,000; for disablement benefit, £4,514,000; for maternity benefit, £1,489,000; for medical benefit, £8,449,000; for additional benefits not included above, £761,000.

**Artificial Light Treatment.**—On June 28th Sir K. Wood told Captain Fraser that, according to the information in the possession of the Ministry of Health, provision had been made for artificial light treatment at, or in connexion with, maternity and child welfare centres in the following metropolitan boroughs: Bethnal Green, Islington, St. Pancras, Deptford, Kensington, Shoreditch, Greenwich, Poplar, Southwark, Hackney, St. Marylebone, Stepney, Westminster. Where the prior approval of the Ministry was obtained to the arrangements, and a contribution was desired, the usual grant of 50 per cent. was being paid towards the net cost of the installation and of the first year's running expenses.

**Driving Licences.**—Colonel Ashley, on June 24th, told Sir Gerald Strickland that the general question of the issue of driving licences to persons suffering from physical disabilities was under his consideration in connexion with the promised bill for the better regulation of road vehicles. Commander Kenworthy asked whether the Minister was aware that deaf men were extremely intelligent and had excellent sight. Colonel Ashley said that as he was slightly deaf himself he subscribed to this statement.

#### Notes in Brief.

The report of the Chief Inspector of Factories for 1925 cannot be issued before the end of this month.

The Minister of Health is advised that local authorities already have power under the Public Health Acts to deal with ponds, ditches, and other places where nuisance arises through the breeding of mosquitos. On the information at present available he doubts whether further legislation is required.

On March 31st last 13,663 blind persons in England and Wales between 50 and 70 were in receipt of old age pensions, under Section 1 of the Blind Persons Act, 1920. About 8,880 blind persons over 70 were in receipt of old age pensions under the Old Age Pensions Acts.

The Home Secretary hopes to introduce the bill to amend the Factory Acts this month.

From January to May, 1926, 734,132 cwt. of condensed skimmed milk were imported into the United Kingdom. The Minister of Agriculture is advised that the temperatures to which this milk was subjected at the factories did not suffice to destroy the virus of foot-and-mouth disease and the tubercle bacillus.

## The Services.

## MEDICAL BRANCHES OF THE SERVICES.

## IMPROVED TERMS AND CONDITIONS.

As a result of the recommendations of the Interdepartmental Committee on the Medical Branches of the Fighting Services, before whom the British Medical Association gave evidence early this year,<sup>1</sup> substantial increases in the rates of pay and retiring gratuities, and improved conditions of promotion and retirement for officers of the Royal Army Medical Corps, Army Dental Corps, and the Royal Army Veterinary Corps, are embodied in a Royal Warrant issued by the War Office on June 29th (A.O. 196, 1926). A further Army Order revises the scales of pay and retired pay for the Army Nursing Services. Simultaneously the Air Ministry has announced improvements in the conditions of service and emoluments of medical officers of the Royal Air Force, and of members of the R.A.F. Nursing Service. The Admiralty also is issuing this week an Admiralty Fleet Order prescribing improved terms and conditions of service for medical officers R.N., dental officers R.N., and members of Queen Alexandra's Royal Naval Nursing Service. We understand that revised terms and conditions of service for officers of the Indian Medical Service are likely to be issued shortly.

The changes, generally, will take effect from July 1st, 1926, or (in the case of naval officers) "as soon afterwards as the necessary arrangements can be made." They were foreshadowed by the Prime Minister in his statement in the House of Commons on June 15th (reported in our issue of June 19th, 1926, p. 1068), that the Government had considered the report of the committee appointed last autumn to consider questions relating to pay and other matters affecting recruitment of medical officers and nurses in the medical branches of the fighting services, and had decided to give effect to the committee's recommendations as from the first day of this month.

## ROYAL ARMY MEDICAL CORPS.

The following table, extracted from the Army Order, contains the old and the new rates of pay for officers of the R.A.M.C. The revised rates are identical with those recommended by the British Medical Association in its Memorandum of Evidence.

Old Rates.		RATES OF PAY.		New Rates.	
		£ s. d.		£ s. d.	
Lieutenant ...	...	1 2 0	Lieutenant ...	1 2 0	
Captain ...	...	1 7 0	Captain ...	1 7 0	
Captain, after 6 years' commissioned service ...	1 8 0		Captain, after 8 years' commissioned service ...	1 10 0	
Captain, after 10 years' commissioned service ...	1 11 0		Captain, after 10 years' commissioned service ...	1 12 6	
Major ...	1 15 0		Major ...	1 17 6	
Major, after 15 years' commissioned service ...	2 0 0		Major, after 15 years' commissioned service ...	2 2 6	
			Major, after 18 years' commissioned service ...	2 5 0	
			Major, after 20 years' commissioned service ...	2 10 0	
Lieutenant-Colonel ...	2 10 0		Lieutenant-Colonel ...	2 17 6	
Lieutenant-Colonel, after 20 years' commissioned service ...	2 12 6		Lieutenant-Colonel after 3 years' service as such ...	3 2 6	
Lieutenant-Colonel, after 25 years' commissioned service ...	2 15 0				
Colonel ...	3 5 0		Colonel ...	3 10 0	
Major-General ...	4 15 0		Major-General ...	4 15 0	
Director-General ...	£2,500 a year		Director-General ...	6 0 0	(plus Lieutenant-general's allowances)

## Additional Pay.

An officer of the R.A.M.C., employed at the War Office as Assistant Director-General, Assistant Director, or Deputy Assistant Director-General, will receive additional pay at 5s. a day instead of 2s. 9d. as at present.

## Time in Civil Hospital Appointments.

An officer of the R.A.M.C. commissioned after holding a resident appointment of not less than one year in a civil hospital may be granted an antedate not exceeding one year in respect of the period spent in such an appointment provided that the interval between the termination of the hospital appointment and the date of entry into the service shall not ordinarily exceed six months. The antedate will count as commissioned service for the

purpose of increments of pay, promotion, retirement, retired pay, and retiring gratuities.

## Retiring Allowances.

An officer of the R.A.M.C. will be eligible to retire with a gratuity of £1,000 after seven years' service instead of after eight and a half years'. An officer of the R.A.M.C. who, after three years' service as a major is eligible to retire with a gratuity of £1,800, or after six years' service as a major with a gratuity of £2,500, will be eligible to retire with £2,800 in lieu of £1,800 and £3,500 in lieu of £2,500. An officer serving as a medical officer in the R.A.M.C. on September 13th, 1919, will be eligible on retirement as a major after twenty years' service for retired pay at a daily rate of £1 if more favourable to him than the rate assessed under the ordinary scale for medical officers. An officer who has retired as a major since September 13th, 1919, after completing twenty years' service shall be entitled to benefit under this provision with effect from the date of retirement.

In any case in which transfer from the rates of pay hitherto in force to the new rates involves a loss of emoluments, the officers may continue in receipt of the rates of pay hitherto in force until such time as, on account of increment or promotion, the new rates are equal to or exceed the old rates.

The revised rates of pay and additional pay (but not charge pay) sanctioned in this Warrant will be subject as from July 1st, 1926, to the deduction of 5½ per cent. which was made to the old rates as from July 1st, 1924, and will further be subject to revision in respect of subsequent variation in the cost of living, in the same manner and to the same extent as the rates introduced from July 1st, 1919.

## MEDICAL OFFICERS R.N.

The following are the revised terms and conditions for naval medical officers announced by the Admiralty.

**Increase in Establishment of Surgeon Captains.**—The maximum number of surgeon captains authorized to be borne will be increased from sixteen to twenty. Two surgeon captains will be appointed to the R.N. Hospital, Haslar, as Professors of Medicine and Surgery respectively, on instructional duties connected with the general courses described below. The appointment of Director of Medical Studies, Naval Medical School, R.N. College, Greenwich, will in future be held by a surgeon captain, and a surgeon captain will be appointed to the R.N. Hospital, Malta, as second in charge.

**Specialists' Allowances and Appointments.**—The number of specialist appointments will be increased from forty-six to sixty, and the new appointments will include specialist posts in Medicine, Surgery, Radiology, and Hygiene. The allowance payable to holders of specialist appointments will be increased from 2s. 6d. to 5s. a day, as from July 1st, 1926.

**Charge Pay.**—The grant of charge pay will be made as from July 1st, 1926, on the following scale for medical officers in charge of hospitals and sick quarters: Surgeon rear-admirals and surgeon captains 10s. a day; surgeon commanders 5s. a day.

## Professional Courses.

(a) **General Courses.**—Every officer below the rank of surgeon captain, except when he has just vacated an appointment at a home hospital or is due to take his promotion course, will be appointed, if his services can be spared, once in every four years to the R.N. Hospital, Haslar, for a course of instruction of not less than four months' duration in clinical medicine and surgery and allied subjects. At the end of the course, instead of being placed on unemployed time, the officer will be appointed for duty at one of the R.N. Hospitals at Haslar, Chatham, or Plymouth, unless or until he receives an appointment elsewhere.

(b) **Specialist Courses.**—Every officer selected to hold a specialist appointment will, provided his services can be spared, undergo a course of not less than six months' duration in his special subject at a civil hospital in London or other teaching centre, and will subsequently undergo a course of three months' duration in that subject every four years while he is employed as a specialist.

(c) **Senior Medical Officers' Courses.**—The existing senior medical officers' courses will to a large extent be superseded by the general and specialist courses described above, and their number will, therefore, be capable of reduction without detriment to the professional opportunities in the service, but the reduction will not be made until the new courses have been in operation for some years.

The institution of general and specialist courses will necessitate an increase in establishment, and they cannot therefore be put into full operation until this increase has taken place, but the new arrangements will be inaugurated as soon as possible.

## Time in Civil Hospital Appointments.

In the case of officers entering the naval service on or after July 1st, 1926, the following rules for counting time in hospital appointments will apply:

An officer who enters the Service on or after July 1st, 1926, and who has held, for a period of not less than one year before the date of his entry into the Service, a resident appointment as medical or surgical officer in a civil hospital after becoming a qualified medical practitioner, to be eligible, at the discretion of the Admiralty, to have his seniority antedated by not more than one year, provided that the appointment is one recognized by the Admiralty for this purpose, but this concession will not ordinarily be granted where the interval between the termination of the hospital appointment and the date of entry into the service exceeds six months. The period of not less than one year in a "resident" appointment may, at the discretion of the Admiralty, include a period of not more than six months spent in a "non-resident" appointment recognized by the Admiralty.

<sup>1</sup> The Memorandum of Evidence submitted by the Association was printed in the SUPPLEMENT to the BRITISH MEDICAL JOURNAL of January 30th, 1926, pp. 34-36.

The increase of seniority allowed under the above conditions will not render an officer eligible to receive pay before the date of his actual entry into the Naval Service, but the time concerned shall reckon for increase of full, unemployed, and half-pay while on the active list and retired pay or gratuity on retirement or withdrawal, provided, in the case of a gratuity, that the officer has completed three years' full-pay service in the Royal Navy—that is, exclusive of the time spent as resident medical or surgical officer in a civil hospital.

In the event of a temporary officer, or an officer entered for short service, being transferred to the permanent list on or after July 1st, 1926, he may be granted the above concession, at Admiralty discretion, under similar conditions to those applicable to candidates who may enter the permanent service direct, except that the time shall not count for gratuity on retirement or withdrawal.

A candidate who is over the normal age limits for entry may be entered, notwithstanding, provided that the period of antedate for which he is eligible brings him, if deducted, within the ordinary limits.

#### R.A.F. MEDICAL SERVICE.

The Air Ministry announces a number of improvements in the conditions of service and emoluments of medical officers of the Royal Air Force.

The communiqué states that the Air Council attaches great importance to attracting into the service the best type of medical man, since on the capacity of the medical service depends to a peculiar degree the safety and efficiency of the Air Force. The duties of a medical officer in the Air Force include not only the prevention and treatment of those ordinary diseases to which the personnel of any fighting service are liable, but the special study of the mental and physical stresses imposed upon the aviator in diverse circumstances and climates. The work to be done, therefore, has a high professional interest, and, with the improved conditions detailed below, the Ministry hopes that applicants of the best quality will be forthcoming.

#### Short-Service and Permanent Commissions.

Entry into the medical branch is by means of a short-service commission for three years on the active list extensible to five years. Entry into the service, therefore, does not commit the entrant to a permanent career, but leaves him free to return to the civil profession and the service free to choose the best officers for retention. Permanent commissions are granted by selection to officers holding short-service commissions, and in order that all short-service officers who desire to remain in the service may have a reasonable opportunity of doing so it has been decided that so far as practicable every entrant shall have a 50 per cent. chance of a permanent commission. Further, in order to assist short-service officers who pass to the reserve after five years to set up in private practice the gratuity issuable on leaving the active list has been increased to £700, the gratuity after three years' service remaining at £350 as hitherto.

#### Increase of Pay.

Increases of pay of from 2s. to 11s. a day have been granted in all ranks above flight lieutenant, and the scale in force from July 1st, 1926, is shown in the following table. The rates in the first column are "standard," and are liable to the extent of 20 per cent. to periodic variation according to the cost of living. The current rates are shown in the second column, and in the third the total yearly emoluments at current rates if allowances are drawn in cash in lieu of provision being made in kind. The cash allowances included are at current home rates for unmarried officers. Married officers over 30 years of age receive higher allowances.

Rank.	"Standard" Rate of Pay per Diem.	Current Rate of Pay per Diem.	Current Rate of Pay and Allow- ances per Annum.
Flying Officer ... ..	£ s. d. 1 4 0	£ s. d. 1 2 8	£557
Flight Lieutenant ... ..	1 6 0	1 4 6	£603
Major ... ..	1 8 0	1 6 6	£545
Major ... ..	1 10 0	1 8 4	£578
Major ... ..	1 14 0	1 12 2	£760
Major ... ..	1 18 0	1 15 10	£327
Major ... ..	2 0 0	1 17 10	£364
Major ... ..	2 4 0	2 1 6	£351
Major ... ..	2 8 0	2 5 4	£1,001
Major ... ..	2 10 0	2 7 4	£1,037
Wing Commander ... ..	2 15 0	2 12 0	£1,135
Wing Commander after 2 years	2 17 0	2 13 10	£1,166
Wing Commander after 4 years	3 3 0	2 19 6	£1,270
Wing Commander after 6 years	3 10 0	3 6 2	£1,463
Air Commodore ... ..	4 0 0	3 15 8	£1,691
Air Vice-Marshal ... ..	5 0 0	4 14 6	£2,103

Promotion to flight lieutenant occurs after two years' satisfactory service, and to squadron leader after ten years' service, reducible to eight years in exceptional cases. Promotion above squadron leader is by selection subject to minimum periods of service. The Director of Medical Services, if (as at present) an air vice-marshal, will receive the pay and allowances of his rank.

#### Retiring Allowances to Permanent Officers.

The gratuities issuable to permanent officers have been increased to £1,500 after ten years' service, and £2,500 after fifteen years' service. After twenty years' qualifying service officers are eligible for retired pay, the amount depending on age and length of service, and in the case of senior officers on rank. The maximum rates of retired pay are, subject to certain conditions, as follows, the rates for air commodores and air vice-marshals being new:

Rank.	"Standard" Maximum Rate.	Current Maximum Rate.
Air Vice-Marshal ... ..	£1,010	£954 10s.
Air Commodore ... ..	£950	£893
Group Captain ... ..	£900	£850 10s.
Wing Commander ... ..	£800	£767
Squadron Leader ... ..	£500	£472 10s.

#### House Appointments in Civil Hospitals.

To attract into the Service graduates who have had the valuable experience provided by a hospital appointment it has been decided, subject to certain conditions, to allow doctors who have held a resident appointment in a recognized civil hospital for not less than one year—of which, however, half may have been spent in a non-resident appointment—to enter the Air Force with one year's antedate counting for purposes of seniority, promotion, retired pay, and retiring gratuity. Service pay will not be issuable for the period spent in a civil hospital nor will the time count towards the gratuity payable to short-service officers on transfer to the reserve.

#### Course of Instruction on Entry.

Every officer on entry will in future receive eight weeks' instruction in the medical problems connected with flying and in his other Air Force duties.

#### Opportunities for Professional Study.

With a view to enabling permanent medical officers to take at least one general or specialist course at a civil or a service medical school it has been decided to allow study leave up to nine months in all to officers during the first sixteen years of their service. So far as possible officers will be allowed such leave when convenient to themselves, and their wishes as to the choice of subject and place of study will be consulted.

#### DIRECTOR-GENERAL A.M.S.

THE War Office announced on June 25th that Major-General Sir Matthew H. G. Fell, K.C.B., C.M.G., has been appointed Director-General Army Medical Services, in succession to the late Lieut.-General Sir William B. Leishman, K.C.B., K.C.M.G.

Major-General Fell served in France and Mesopotamia during the great war, and was eight times mentioned in despatches. In 1918 he was lent to the Air Ministry, and acted as Director Medical Services R.A.F. till 1921. Subsequently he became Inspector Medical Services of the Army (1921-22), and Deputy Director Medical Services (1922-26), serving in Turkey, in the Northern Command, and in Egypt. He returned from Egypt to take up the appointment of Deputy Director-General Army Medical Services, in succession to Major-General Pollock, on June 1st, the day before Sir William Leishman died.

#### CHIEF MEDICAL ADVISER TO THE COLONIAL SECRETARY.

THE following circular letter has been addressed by the Secretary of State for the Colonies to officers administering the various colonies. It announces the appointment of a Chief Medical Adviser and defines his duties.

Downing Street,  
15th June, 1926.

Sir,

I have the honour to inform you that I have for some time had under consideration the question of the creation of a post at the Colonial Office of Chief Medical Adviser to the Secretary of State whose duties will be to advise me generally on all medical and sanitary matters arising in connection with the Colonies, etc. The need for such an appointment has become increasingly apparent in view of the importance of ensuring continuity of policy in medical administration and co-ordination of progressive action between different services.

2. The Lords Commissioners of the Treasury have sanctioned

the creation of this post for a period of three years in the first instance, with a salary at the rate of £1,500 per annum, and I have appointed Dr. A. T. Stanton, M.D., M.R.C.P., M.R.C.S., M.C.P. and S., D.T.M. and H., D.P.H., since 1921 Director of Government Laboratories in the Federated Malay States, to be my Chief Medical Adviser in the Colonial Office.

3. The duties attaching to this post are more particularly as follows:

(1) To advise the Secretary of State generally on all medical and sanitary matters in the Colonies and Protectorates, and for this purpose to have access to all necessary departmental documents.

(2) With a view to the improvement of sanitation in the Tropical Dependencies, to ensure, so far as is possible, continuity of policy, co-ordination of action between different administrations, and the introduction of new ideas in the work of the Colonial Medical Services.

(3) To maintain a personal liaison and co-operation with other Government departments and other bodies in relation to health work in the Colonies, and to keep in touch with the medical schools in the United Kingdom.

(4) To preside over the Colonial Advisory Medical and Sanitary Committee.

(5) To advise the Secretary of State on all questions relating to the personnel of the Colonial Medical Services.

(6) To assist in the interviewing candidates for appointment as Medical Officers in the Colonies, and to be a member of the sub-committee on Colonial Medical appointments.

(7) To advise on all changes in the regulations and conditions of the employment of Colonial Medical Officers.

4. To remove any possibility of misunderstanding I would point out that, as will be apparent from the foregoing summary of the duties of the Colonial Medical Adviser, the post will be solely of an advisory character with no executive functions, and will in no way affect the responsibility of the Governor and the Head of his Medical Department in regard to the administration of medical matters in each Colony.

5. The Colonial Medical Adviser will be accommodated at the Colonial Office, and a suggestion has been made that the Heads and senior members of the Colonial Medical Services should be encouraged to call upon him during their leave. Such a practice would, I think, have the advantage that it would establish close personal relations between the Colonial Medical Adviser and Colonial Medical Officers, and I have to request that the desirability of taking advantage of this suggestion may be brought to the notice of senior members of the Medical Department who are serving under your administration.

6. The actual date on which Dr. Stanton will take up his duties is not yet determined, but it is expected that he will be available for duty in August next.

I have the honour to be, Sir,

Your most obedient, humble servant,  
L. S. AMERY.

#### DEATHS IN THE SERVICES.

Colonel George Arthur Hughes, D.S.O., Army Medical Service (ret.), died on April 13th, aged 74. He was born at Clonmel, the son of the late James Hughes of Curragh Privern, Rathormac, County Cork, and was educated at Trinity College, Dublin, where he graduated B.A., M.B., and M.S. in 1875. He entered the army as surgeon in 1889, became colonel on March 25th, 1904, and retired on August 26th, 1905. He served in Afghanistan in 1878-80 (medal); in the Boer War 1899-1902 (384-85); in the Ashanti campaign of 1895-96 (384-85); in the Nile campaign of 1898-99 (384-85); and in the Nile campaign at the battle of Khartoum, was mentioned in dispatches, and received the medal, the Egyptian medal with a clasp, and the D.S.O.

The death of Lieut.-Colonel Reynolds Peyton Hetherington, R.A.M.C. (ret.), last November, aged 71, has only recently come to our notice. He was educated at Trinity College, Dublin, where he graduated M.A. in 1876, M.B. in 1878, and M.D. in 1897. He entered the army as surgeon in 1881, became lieutenant-colonel after twenty years' service, was placed on half-pay in 1907, and retired in 1909. He served in the Egyptian war of 1882 (medal with clasp); in the Nile campaign of 1884-85 (clasp); in Burma, with the Irrawaddy and North-Eastern columns, in 1891-92 (medal with clasp); and throughout the South African war, 1899 to 1902, in operations in Cape Colony and in the Orange Free State (Queen's and King's medals, with two clasps to each).

Brevet Colonel Henry Charlesworth, C.M.G., R.A.M.C. (ret.), died at Ealing on June 5th, aged 74. He was the son of the late Mr. M. Charlesworth of Longnor, Staffordshire, and was educated at Middlesex Hospital, taking the L.S.A. in 1872 and the M.R.C.S. in 1873. He entered the army as surgeon in 1875, became surgeon lieutenant-colonel after twenty years' service, and retired in October, 1902. He served in the Afghan war in 1878-80, and received the medal. He also accompanied, as medical officer, two special missions to the Sultan of Morocco in 1887 and in 1899-90. He received the C.M.G. in 1902, for services outside South Africa, in the South African war. After retirement he served as recruiting officer at Nottingham (1902) and in London (1909). He rejoined for service in the late war, and was employed on the north-east coast of England, and received the Order of St. John of Jerusalem for his services, as well as a brevet-colonelcy.

#### Obituary.

##### EDWARD HICKLING BRADFORD, M.D.,

Boston, Massachusetts.

THE death on May 7th of Dr. E. H. Bradford of Boston, Massachusetts, which we recorded in our issue of May 29th, removes a notable figure from the dwindling group of pioneers of modern orthopaedic surgery.

Edward Hickling Bradford was born in 1848, a direct descendant of a former governor of the State, and a member of that aristocracy of culture and service which has distinguished New England. He graduated at Harvard in 1869, in which university he was afterwards to become the first professor of orthopaedic surgery, in the chair endowed by the Buckminster Brown bequest. Having spent two years in Europe, he left general practice to take up orthopaedic surgery, which he studied under Taylor of New York. On returning to Boston he worked with Dr. Buckminster Brown, whom he afterwards succeeded as surgeon to the House of the Good Samaritan, the pioneer institution in Boston for the treatment of bone and joint disease, in children. He became successively surgeon to out-patients at the City Hospital and surgeon to the Children's Hospital, until his work at the latter institution absorbed his attention. To this hospital he finally became surgeon-in-chief. His long connexion with it was concurrent with the gradual foundation and world-wide repute of the Boston school of orthopaedic surgery. Many visitors from Europe will associate his personality more than that of any one other surgeon with the work that was originated and performed there. His valuable work on the pathology and treatment of congenital dislocation of the hip-joint, both by bloodless and open methods, and his simple but valuable frame for the treatment of Pott's disease, are only specimens of the many improvements which he introduced into the practice of his specialty. One of the outstanding textbooks of orthopaedic surgery was produced by him in conjunction with the late Dr. R. W. Lovett, and Bradford and Lovett's *Orthopaedic Surgery* has been for years an authority, and has reached its fifth edition.

Personally Dr. Bradford was one of the most modest and unassuming of men. Despite physical afflictions—he lost an eye and was permanently disfigured by a bicycle accident, and in his old age became almost totally blind—he maintained an equable and cheerful outlook on life and learnt to read Braille in his old age. Speaking to a friend about his loss of sight he said: "I was tempted to take a despondent view of life, but soon, however, on reflection, I realized that all this was but incidental and superficial compared with the resources of life. I found that life was a very rich opportunity which I had only half explored. I found that life itself could be nothing more than a temporary aspect of that spiritual experience in which I might prepare myself for larger service. This reflection returned to me not only courage but enjoyment of life." His calm and confident belief was not destined to be interrupted by suffering or illness. He died of a sudden cerebral haemorrhage, probably before he could be aware of any disturbance, at the age of 78.

His influence on the Boston school will long continue, and his actions smell sweet and blossom in the dust.

Dr. ROBERT B. OSGOOD of Boston writes:

Professor Bradford was one of America's greatest surgeons and one of the most admirable of men. He will be remembered as a pioneer in the renaissance of orthopaedic surgery, as a public servant in many civic and military positions of responsibility, as a great teacher, and as former dean of the Harvard Medical School. His courage was as constant as his initiative was strong. Many institutions and undertakings owed their inception and development to his vision and guidance. Honoured by his university and his colleagues, beloved by students and patients, his spirit was yet most gentle and humble. He accepted great personal handicap in the loss of sight as a challenge to explore life more fully, and he found endless resources and great happiness. Rarely has a man left a more stimulating record or presented to the world an example more worthy of emulation.



Dr. ALEXANDER BUTLER died suddenly at his residence in Harrogate on June 12th. He was educated at the High School of Glasgow and graduated at Glasgow University. He commenced practice in Kilmacalm, but shortly afterwards moved to Port Glasgow, where he resided for nearly thirty years. Dr. Butler took an active part in the educational work of that town, being chairman of the educational committee. It was owing to his efforts that one of the merchant princes there erected a cottage hospital for the district. He also acted for over twenty years as surgeon to the Royal Garrison Artillery Corps. At the beginning of the Boer war he volunteered for service in South Africa, and was gazetted captain in the regular army. At the commencement of the great war he was a major in the Territorial Force, and very early went out to France. His work lay at various advanced stations, some of them within the firing line. Being invalided home with trench fever he afterwards acted officially at numerous home stations during the period of the war. He held the rank of colonel, and received the long service Territorial medal. Dr. Butler was an antiquary and anthropologist of no mean order, and had an extensive knowledge of Shakespeare combined with great literary ability. He was engaged in finishing a book on the antiquities of Fountains Abbey, which will be of great interest to the historian, and he had done much research work in the neighbourhood of Harrogate and Knaresborough. The world is the poorer for the loss of such men as Dr. Butler.

We regret to report the death of Dr. CLAUD ANTHONY HOLBURN of Darlington on the evening of June 16th. While reversing his car he capsized into a ditch and was killed outright. Dr. Holburn was only 40 years of age, and was just becoming well established in his practice, which he had started on leaving the R.A.M.C. after the war. He received his medical education at Sheffield, where he obtained the Kaye scholarship in 1904-05. He took the diplomas of M.R.C.S., L.R.C.P. Lond. in 1908. His former appointments included those of house-surgeon to the Sheffield Royal Hospital, assistant house-surgeon to the Chesterfield and North Derbyshire Hospital, and anaesthetist to the Hospital for Women and Children, Leeds. Dr. Holburn was a member of the Darlington Division of the British Medical Association. He leaves a widow and three young children.

Dr. LAURENCE McNABB of South Shields has died, after an illness of several months, at the age of 59. Dr. McNabb was a native of North Ireland, who received his medical education at the University of Durham, where he took the degree of M.D. After holding junior staff appointments at the Newcastle Infirmary and at Preston he served as medical officer to the Harton Institution, under the South Shields guardians. Dr. McNabb then entered private practice, and became district medical officer and public vaccination officer under the Poor Law authority. He was one of the managers of St. Bede's Roman Catholic School, South Shields. He took a keen interest in sport, and was one of the oldest members of the South Shields Golf Club. He leaves a widow, two sons, and five daughters.

Dr. HORATIO W. A. COWAN, who died on May 28th, was well known in London as a most energetic and thoroughly up-to-date practitioner. He was born in Inverness, and received his medical education at Aberdeen University, where he graduated M.B., C.M. in 1895. Afterwards he studied at St. Bartholomew's Hospital, and while acting as assistant to a practitioner also found time to hold clinical appointments at the Throat Hospital, Golden Square, Moorfields Eye Hospital, and the Brompton Hospital. He served for a time in the Royal Navy, passing out of Haslar first of his year. The want of professional work in the service made him retire after two years, to start in practice in Fitzroy Square, London, where he continued until his death. He was a most sympathetic practitioner, who never grudged time or work in the

interests of his patients. All who knew him soon recognized, beneath his quiet manner, the sterling character of the man and the solidity and soundness of his judgement in medical matters, founded on a deep and wide acquaintance with clinical medicine and medical literature. Dr. Cowan will be greatly missed by colleagues, patients, and his many friends. He was a most hard and industrious worker, often doing two or three men's work; especially during the war, when, in addition to being a voluntary medical officer to the Flying Corps, he acted as skin physician at Middlesex Hospital. These excessive demands on his strength probably undermined his resistance, and paved the way for the onset of the cardiac condition which was the cause of his sudden death. Outside his professional life Dr. Cowan had many interests; both motoring and yachting attracted him. He will indeed be missed by a large circle of friends and by many who have been under his care. He leaves a widow, one daughter, and a son, who is succeeding him in practice.

We regret to announce the death of Dr. SYDNEY GWENFRED MOSTYN, medical officer of health for Darlington, at the age of 59. He was killed in a motor accident on June 22nd while touring near Fort William in the Western Highlands. Dr. Mostyn received his medical education at Oxford and St. Bartholomew's Hospital, graduating M.B., Ch.B. in 1902; he obtained the M.R.C.S., L.R.C.P. diplomas in the same year, and the D.P.H. Camb. in 1903. In 1902 he became medical officer to the Infectious Diseases Hospital at Newcastle, and two years later received the appointment of medical officer of health for the county borough of South Shields. In 1911 he was appointed medical officer of health for Darlington, where he organized the first health week in that city two years later. Dr. Mostyn, who was a Fellow of the Society of Medical Officers of Health, the Physical Society of London, and the Royal Sanitary Institute, was very popular in Darlington, where he was an active member of the Rotary Club and the Darlington and Teesdale Naturalists' Field Club.

Dr. JOHN WILSON of Lanchester, county Durham, died on June 18th at the advanced age of 91. He was born in Scotland, and studied medicine at Glasgow University, where he graduated M.D. in 1860. After practising for a short time in his native country he became assistant to the late Dr. George Renton of Blackhill. He subsequently removed to Lanchester, where he was appointed medical officer under the Lanchester board of guardians, which post he resigned in 1914 after fifty-two years' service. In 1884 Dr. Wilson was appointed to the Commission of the Peace for the county; for many years he acted as chairman of the Lanchester bench. High tributes were paid to Dr. Wilson's work and character at the sitting of the Consett petty sessions on June 21st. He is survived by one daughter and four sons.

The following distinguished foreign medical practitioners have recently died: Dr. Brugnattelli, professor of obstetrics and gynaecology in the Sassari faculty of medicine; Dr. Aguilar Jordan, a well known paediatrist of Valencia; Dr. T. Wyder, formerly professor of gynaecology at Zürich; Dr. C. Ruggi, professor of gynaecology at Berlin; Professor F. von Soxhlet, the inventor of the well known apparatus for the sterilization of milk; Professor J. Kyrle, a Viennese dermatologist; Dr. S. Patellini Rosa, professor of social eugenics at Milan; and Dr. Edouard Moutard-Martin of Paris, a specialist in diseases of the chest.

THE LATE SIR HENRY MORRIS.—Mr. W. A. Maggs writes: In 1877, when I entered as a student at the Middlesex Hospital, Mr. Henry Morris (later Sir Henry) was the lecturer on anatomy. Both by his own personality and by his intimate acquaintance of the subject he was accustomed to keep the class well in hand, and thoroughly interested; indeed, he seemed to make the dry bones speak. His handsome presence, fine voice,



emphatic and lucid style, attracted his hearers, who soon became eager listeners, and, more important still, learners. If by chance one ever felt drowsy on these occasions it was not the fault of the lecturer, but due to a badly ventilated and overheated theatre, crowded with students. Anatomy lectures in those days were given at 4 o'clock, and followed immediately a large class held in the same theatre. His lectures on clinical surgery, delivered without a note, were really a delight as well as a profit, and I vividly recall, even at this distant period, some of them, and notably one on Caesarean section, in which he pleaded eloquently for its justification. His surgical operations, performed under a dense cloud of carbolic spray, were most carefully, skilfully, and deliberately executed, never hurriedly or with perturbation; and those involving a fine dissection—as, for example, a tumour in the anterior triangular space—showed him a master of his craft. His character and straightforward manner were an inspiration to his pupils, and all who had the privilege of coming under his influence, will hold him in respectful and grateful remembrance as a great surgeon, anatomist, teacher, and orator.

## Medical News.

THE University of London Bill was read a second time in the House of Lords on June 29th after a brief discussion, in the course of which the Archbishop of Canterbury expressed the hope that the position of the theological colleges would not be detrimentally affected. The bill is a Government measure, but is likely to be strenuously opposed in the House of Commons. The University of London Graduates' Association, of which Dr. Graham Little is president, has just issued two fly-leaves, calling upon graduates to bring pressure to bear upon M.P.s to procure the rejection of the measure. The chief grounds of objection seem to be the proposal to constitute a council to take on some of the functions of the present unwieldy Senate, and a fear that the interests of external students may be imperilled.

THE Minister of Health has issued a circular (698) to sanitary authorities and medical officers of health instructing them that it is not necessary for persons who have been in contact with a case of small-pox to abstain from their usual occupations, except when additional precautions are necessitated—as, for example, in the case of laundries or common lodging-houses, when the business or habits of the inmates of a house in which small-pox has occurred make it difficult for proper medical observation to be maintained. He finds that some local authorities when dealing with outbreaks of small-pox still think it necessary to quarantine in their homes the inmates of dwellings invaded by the disease, with the result that authorities are faced with claims for compensation for loss of wages. He therefore states that there is no legal authority for the payment of compensation in these circumstances, and it should not be expected that the Minister would be willing to sanction any such payment under the Local Authorities (Expenses) Act, 1887, in a case in which he was advised that the steps taken by the authority were not necessary for the protection of the public health.

THE KING has sanctioned the following promotions in and appointments to the Order of St. John of Jerusalem: As *Knights of Grace*, Captain C. A. Coventon, R.A.M.C.(T.A.), Dr. H. H. Bashford, Lieut.-Colonel J. C. Strathearn, M.D., F.R.C.S.Ed. As *Esquires*, Dr. Meredith Young, Dr. W. R. Bates, O.B.E., Major R. Brierecliffe, O.B.E., M.B., Major J. A. Henderson, R.A.M.C.(T.A.), Dr. R. A. Clegg, Colonel J. J. Pratt, F.R.C.S., Major J. S. Mather, R.A.M.C.(T.A.).

THE eighty-fifth annual meeting of the Royal Medical Psychological Association will be held at the house of the British Medical Association, Tavistock Square, on Tuesday, July 13th, and three following days. Lieut.-Colonel J. R. Lord, C.B.E., M.B., will be inducted as president in succession to the late Sir Frederick Mott, and on the afternoon of Tuesday (13th) will deliver his presidential address on the clinical study of mental disorders. On the morning of July 13th Dr. G. A. Auden will present a clinical study of the madness of Ajax as conceived by Sophocles. On Wednesday morning, July 14th, two papers will be read—one on encephalitis lethargica by Dr. R. L. Mackenzie Wallis, and the other by Dr. C. Farran Ridge on symptoms referable to the basal ganglia in dementia praecox and epidemic encephalitis. In the afternoon the association will meet at the London County Hall, when Dr. Shruball will read a paper on educational adaptation of the individual child, and the medical examination rooms, laboratories, and other departments will be visited. On Thursday morning, at the British Medical Association House, a discussion on psycho-analysis and its development will be opened by Dr. W. H. Potts, and in the afternoon the Maudsley Lecture, which is to be a preliminary

survey of the problem of the prevention of insanity, will be delivered by Professor George Robertson, President of the Royal College of Physicians of Edinburgh. After this Dr. F. H. Stewart will read a paper on Mendelism in bacteriology. In the evening the annual dinner will be held at the Victoria Hotel, for the commemoration of the charter. On Friday morning papers will be read on some forensic aspects of epilepsy by Dr. W. Norwood East, and on the prison psychosis by Dr. H. T. F. Young. In the afternoon a visit will be paid to the Horton Mental Hospital, Epsom, where demonstrations will be given by Colonel S. P. James, M.D., and Mr. P. G. Shinto, illustrating the infection of mosquitos and other points relating to laboratory work in connexion with the treatment of general paralysis by malaria. Afterwards Dr. Nicol, in charge of that department at the hospital, will give a clinical demonstration, and various departments of the institution will be visited.

THE St. Bartholomew's Hospital War Memorial will be unveiled by H.R.H. the Prince of Wales, President of the hospital, on Thursday, July 8th, at 3 o'clock.

THE extension of the dental school of Gny's Hospital will be opened on Thursday, July 8th, at 3 o'clock, by the Right Hon. F. Dyke Acland, Chairman of the Dental Board of the United Kingdom.

THE Fellowship of Medicine and Post-Graduate Medical Association announces that Mr. Cairns Forsyth will give a clinical demonstration on Monday, July 5th, at 2.30 p.m., at the Royal Waterloo Hospital, and on Thursday, July 8th, at 3 p.m., Mr. MacCallan will give one in ophthalmology at the Royal Eye Hospital. Both demonstrations are open to the medical profession, without fee. Beginning on July 19th, a two weeks' vacation course will be held at the North-East London Post-Graduate College (Prince of Wales's General Hospital, Tottenham). The West End Hospital for Nervous Diseases will hold a late afternoon course from July 19th to August 11th in the out-patient department, at 73, Welbeck Street, W. There will be a series of demonstrations on eye diseases by members of the staff at the Royal Eye Hospital from July 12th to 24th, at 3 p.m. daily. Practical courses in obstetrics and child welfare are arranged to take place at the City of London Maternity Hospital; the duration of each course is one week. Practical courses in anaesthetics can be arranged at any time to suit post-graduates' requirements. Copies of all syllabuses, of the general course programme, and of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

A MEETING of the Society of Superintendents of Tuberculosis Institutions will be held at 122, Harley Street, W., on July 5th, at 3 p.m. Dr. S. Roodhouse Gloyne will open a discussion on unsolved pathological problems associated with tuberculosis, and Dr. F. R. G. Heaf will read a paper on sedimentation tests.

GENERAL medical practitioners are invited to the annual meeting of the Maternity and Child Welfare group of the Society of Medical Officers of Health, at Caxton Hall, Westminster, on July 6th, at 5.30 p.m.; they will also be welcomed at the subsequent dinner at the Florence Restaurant, Rupert Street, at 7.30 p.m., tickets for which may be obtained from Dr. Margaret Emslie, 1, Upper Montague Street, W.C.1.

FROM July 19th to 23rd a congress of chemists will be held in London, in association with the annual general meeting of the Society of Chemical Industry. A large number of other chemical societies are co-operating in the congress. Sir Frederic L. Nathan will give the presidential address on "Industrial efficiency and the elimination of waste," and Lord Balfour will deliver the Messel Memorial Lecture. Papers will be read on a large number of subjects; at a joint meeting of the Bio-Chemical Society and the London section of the Society of Chemical Industry, Dr. H. H. Dale will read a paper on "The experimental study and use of hormones," and Dr. J. W. Trevan a paper on "Biological assay of hormones." Many entertainments and excursions have been arranged. Inquiries about the congress should be sent to the General Secretary, Society of Chemical Industry, Central House, 46 and 47, Finsbury Square, E.C.2, from whom a preliminary programme of the meeting can be obtained.

THE Association of Special Libraries and Information Bureaux (General Secretary, Mr. G. W. Keeling, 38, Bloomsbury Square, W.C.1) was formed to make available, to all who wish to use it, scientific and other special information to be found in periodicals and libraries. With the assistance of the Carnegie United Kingdom Trust, the association is compiling a directory of sources of specialized information in Great Britain and Ireland. The British Medical Association is represented on the council of the new association by its intelligence officer, Miss A. L. Lawrence. Associate membership is open to anyone interested.

DR. W. W. KEEN calls our attention to the omission in our annotation on American medical libraries (BRITISH MEDICAL JOURNAL, May 22nd, p. 878) of any allusion to the library of the College of Physicians of Philadelphia, to which, however, we have made references on several previous occasions. This library now contains over 150,000 volumes. The report for the year 1925 shows that there has been considerable expansion. A number of interesting medical classics have been added, as well as many current medical publications. Dr. Keen has presented to the library a transcript and photostat negative of a letter written by William Harvey, probably in 1631, to Viscount Dorchester; and proof copies of the portraits of Sir James Mackenzie and Sir Clifford Allbutt received from the editor of the BRITISH MEDICAL JOURNAL. The library committee recently sold the entire collection of duplicates in its possession to the medical school of the University of Otago, New Zealand, at a nominal price, for the formation of a library in that university.

Dr. J. P. J. POWELL, on his retirement after thirty-five years of practice at Sennybridge, near Brecon, has been presented by his friends and patients with an illuminated address, a silver tea and coffee service, a cabinet of cutlery, and a cheque for over £300.

THE following have been elected Fellows of the Royal Sanitary Institute: Colonel Harold P. W. Barrow, C.M.G., D.S.O., O.B.E., late R.A.M.C., Dr. J. J. Buchan (M.O.H. Bradford), Miss Josephine L. D. Fairfield, C.B.E., M.D. (Divisional Medical Officer, Public Health Department, L.C.C.), Dr. James Fenton (M.O.H. Kensington), Dr. William Hanna (Deputy M.O.H. Liverpool), Dr. J. F. C. Haslam, M.C. (Tropical Diseases Bureau), Dr. J. J. Jervis (M.O.H. Leeds), Lieut.-Colonel G. R. Leighton, M.D. (Medical Officer (Foods), Scottish Board of Health), Dr. R. St. J. MacDonald (Department of Hygiene, McGill University, Montreal), Dr. A. T. Nankivell (M.O.H. Plymouth), Dr. H. P. Nowsholme (M.O.H. Croydon), Dr. Harvey Sutton (Department of Public Instruction, Sydney, N.S.W.), Sir Edward N. Thornton (Union Health Department, Pretoria, S.A.), Sir Malcolm Watson (Klang, F.M.S.), Dr. J. B. Wilkinson (M.O.H. Oldham), and Dr. W. J. Wilson (Professor of Hygiene and Public Health, Queen's University, Belfast).

Dr. F. E. FREMANTLE, M.P., has been appointed a deputy lieutenant for the county of Hertford.

THE following appointments have recently been made in the Spanish medical faculties: Dr. Dámaso Rodrigo Pérez de Madrid, professor of children's diseases at Valencia; Dr. Fernando Casadésos y Castells, professor of oto-rhino-laryngology at Barcelona; Dr. Vidal Jordau, professor of children's diseases at Valladolid; Dr. Pedro Ara y Sarriá, professor of descriptive anatomy and embryology at Valencia; and Dr. Antonio García Tapia, professor of oto-rhino-laryngology in the Madrid Faculty of Medicine.

THE Carlo Forlanini Foundation has offered a prize for an original work on the morbid anatomy, pathology, or treatment of pulmonary tuberculosis, which must be sent in by December 31st, 1926. Further information can be obtained from the Director, Ospedale Maggiore, Milan.

THERE has recently been a considerable increase in the number of abortions in Germany. Thirty or forty years ago there were only nine or ten abortions in every hundred pregnancies, whereas at present the proportion is 40 per cent., and 89 per cent. of them are criminal. The birth rate has fallen from 36.9 to 21.6 per mille.

THE following subjects will be discussed at the section of medical electrology and radiology of the French Association for the Advancement of Science, to be held at Lyons from July 26th to 31st under the presidency of Professor Cluzet: (1) Radiodiagnosis of affections of the thyroid, introduced by MM. Béclère and Porcher of Paris; (2) Roentgenotherapy of epitheliomata, introduced by M. Coste of Lyons; (3) Electro-radiological treatment of neuralgia, introduced by MM. Zimmern and Cotteuot of Paris; (4) Present technique of radium treatment of cancer, introduced by M. Réchov of Bordeaux; (5) Present technique of ultra-violet ray therapy. Further information can be obtained from Professor Cluzet, 106, Rue de l'Hôtel de Ville, Lyons.

PROFESSOR H. SELTER of Königsberg has succeeded Professor Kisskalt in the chair of hygiene at Bonn, and Professor Theodor Brugsch, director of the second medical clinic at Berlin, has succeeded Professor Jaksch in the chair of internal medicine in the German university at Prague. Professor Stoeckel of Leipzig has succeeded the late Professor Bumm in the chair of obstetrics and gynaecology at Berlin.

AMONG the subjects to be discussed at the Dermatological Section of the German Association of Natural Research, to be held at Düsseldorf from September 19th to 26th, are herpes zoster and varicella, introduced by Professor Lipschütz of Vienna, and malaria treatment of the early stages of syphilis, introduced by Dr. Benig of Essen.

PROFESSOR CHRISTIAN BAEUMLER, whose name stands eighth on the list of Fellows of the Royal College of Physicians of London, recently celebrated his sixtieth birthday at Freiburg in Baden, where he had become professor of medicine at the university and director of the medical clinic in the autumn of 1876; he retained these appointments until not very long ago. The reception took place in the aula of the university. The medical faculty of the university arranged a lunch in the town for Professor and Mrs. Baemler, and among those present were all the official personages of the university and town, many of the professor's former assistants, some of whom had specially come from abroad for the occasion, and a number of the medical practitioners of Freiburg and their wives. Professor Baemler was house-physician at the German Hospital in London from October, 1863, to 1866, and assistant physician from 1867 to 1872. He remembers his work in London with the greatest pleasure and has very often referred to his medical experiences there in conversation and in his lectures and published writings on a variety of medical subjects. At the German Hospital he contracted typhus fever and was the first to suggest the correct diagnosis of his illness; this fact was related long afterwards by the late Sir Hermann Weber, with whom he was on close terms of friendship. Sometimes the two made Alpine tours together in Switzerland and Tyrol, and both enjoyed to the uttermost the open-air exercise and beautiful scenery.

THE Council of the Medical Women's International Association will hold its next meeting in Prague on August 26th. Following this there will be meetings and social events to which any medical women will be welcome. The agenda of the open meeting includes discussions on (1) tuberculosis and pregnancy, (2) women police surgeons. It is hoped that some members of the Medical Women's Federation of Great Britain will find it convenient to include Prague in their holiday itinerary. Any further particulars may be obtained from the secretary, Miss M. I. Robertson, M.B.E., 28, Weymouth Street, W.1.

FROM 1900 to 1925 inclusive 7,134 medical students, including 527 women, have been enrolled in the four Dutch universities of Leyden, Utrecht, Groningen, and Amsterdam. During the same period 4,201 students, including 239 women, became graduates.

THE date of the third International Congress for Life Saving and First Aid to the Injured, which is to be held at Amsterdam, has now been fixed for September 7th to 11th. The honorary president of the congress is Prince Henri of the Netherlands. The Duke of York is president of the British section of the congress. There are to be eleven sections, dealing with subjects appertaining to first aid in the emergencies of various activities in life. The St. John Ambulance Association and the National Fire Brigades Association are to send teams for international competitions in life saving and first aid. It is intended to form parties to travel from England to the congress, and reduced rates are offered. Dr. D. A. Coles, Professor E. L. Collis, Sir Thomas Oliver, and Dr. Theodoro Thompson are the British members of the Permanent Committee. The secretary of the British section is Miss M. A. Harvey, 7, Cambridge Street, Hyde Park, W.2.

THE fifth congress of the International Union against Tuberculosis will be held at Washington from September 30th to October 2nd, when the principal subjects for discussion will be tuberculous infection in the adult, the anatomical structure of the tubercle, and the relation between milk and tuberculosis. The congress will be followed by the annual general meeting of the American Society for Combating Tuberculosis, to which members of the congress will be invited.

PROFESSOR R. CRUCHET, who has hitherto held the chair of general pathology and therapeutics, has been appointed professor of children's diseases in the Bordeaux Faculty of Medicine.

A CHAIR of otology has been founded at the Athens Faculty of Medicine, with Professor S. Oeconomos as its first occupant.

*The World's Children* is the monthly journal of the Save the Children Fund, and is described also as the "English-speaking organ of the Declaration of Geneva." In the June number the Bishop of Gibraltar describes the work of the Anglo-Serb Children's Hospital in Belgrade, which is maintained by British exartry through the Save the Children Fund. The hospital owes its origin to the energy of Dr. Katherine Maephail, who after the armistice devoted herself to the relief of sick and starving Serbian children; 40,000 children have been treated since the foundation of the hospital. The rest of this number of the journal consists in descriptions of the activities of various bodies on behalf of children throughout the world.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **The Editor, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

**ORIGINAL ARTICLES** and **LETTERS** forwarded for publication are understood to be offered to the **BRITISH MEDICAL JOURNAL** alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring **REPRINTS** of their articles published in the **BRITISH MEDICAL JOURNAL** must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to **ADVERTISEMENTS**, as well as orders for copies of the **JOURNAL**, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the **BRITISH MEDICAL JOURNAL** are **MUSEUM 9861, 9862, 9863, and 9864** (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

**EDITOR** of the **BRITISH MEDICAL JOURNAL**, *Antiology Westcent, London.*

**FINANCIAL SECRETARY AND BUSINESS MANAGER** (Advertisements, etc.), *Articulate Westcent, London.*

**MEDICAL SECRETARY**, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bucillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

### QUERIES AND ANSWERS.

**Dr. D. M. MACDONALD** (Aruside, Westmorland) asks for references regarding the use of selenium in cancer of the lung.

#### THE ADMINISTRATION OF OXYGEN.

**Dr. E. P. POULTON** (London, W.) writes in reply to "Oxygen," who asked for advice as to the best way of administering oxygen (*JOURNAL*, March 20th, p. 553): Haldane's apparatus, or a more satisfactory modification of it devised by Dr. Davies, and made by Siebe, Gorman and Co., Westminster Bridge Road, S.E., will certainly ensure the patient getting a sufficient concentration of oxygen, but this method is extremely wasteful. I am at present experimenting with a closed circuit form of apparatus in which any degree of concentration of oxygen may be administered, while there is no waste of oxygen at all. This apparatus is being made by Down Bros. In acute cases a moderately successful way of giving oxygen is a nasal catheter which is passed through to the back of the nose. It is certainly much the simplest method of giving it, as it requires no special apparatus, but it is impossible to obtain high percentage by this means.

#### CAUSE, PREVENTION, AND TREATMENT OF WHOOPING-COUGH.

**Dr. P. F. JAMES** (Merthyr Tydfil) writes: The focus of infection in whooping-cough is probably the sublingual fossa, the virus irritating the sensory filaments of the glossopharyngeal nerve, causing contraction of the middle constrictor and stylopharyngeal muscles, constriction of the pharynx, irritation friction, prolonged paroxysmal coughs, whoops, and vomiting. The pulmonary gaseous diffusion is unbalanced; the blood is supersaturated with carbon dioxide and deficient in oxygen. The cyanosis produces paresis of the nerve centres in the medulla and elsewhere, relaxation of the constriction, and termination of the cough. Recumbency would account for the nocturnal frequency of the cough. A le junction of the frenum linguae of the mouth. Treatment should be the weak tincture of iodine (B.L.) lightly on alternate days with the children and the witness of ment. Treatment in institutions on these lines, with controls, would be desirable, and it is with a view to suggesting this that I am recording my personal experience.

The lesion to which Dr. James alludes has, of course, often been noted in describing the symptoms of whooping-cough. At one time, as pointed out by a correspondent in the **BRITISH MEDICAL JOURNAL**, March 8th, 1879 (p. 348), sublingual ulcer was looked upon as pathognomonic of the disease. The correspondent had found it so often absent in whooping-cough, and yet present in patients with severe cough, as in cases of catarrhal pneumonia, that he had come to the conclusion that ulcer of the tracheum was caused by the tongue being projected over the lower incisor teeth—in fact, he regarded the ulcer as a complication of the disease from which the child was suffering. In a paper on whooping-cough by Drs. D. Paterson and J. M. Smellie (*BRITISH MEDICAL JOURNAL*, May 6th, 1922, p. 713) it is stated that sublingual ulcer was present in 18 per cent. of 62 cases in which it was looked for, and usually developed during the second or third week of the disease.

#### TUBERCULIN TREATMENT OF TUBERCULOSIS.

"**TUBERCULOSIS OFFICER**" writes: I note with interest the proposal of Dr. Camac Wilkinson to reopen his tuberculin dispensaries. May I ask if any investigation was made as to the treatment by the officers of the Ministry of Health, and, if so, what was the verdict as to the efficacy of the treatment?

Our correspondent probably has in mind the inquiry made in 1923 at the request of the Ministry of Health by the Medical Research Council. The matter was referred to at some length in our issue of December 8th, 1923 (p. 1107). It appears that three medical men were deputed by the Medical Research Council to visit Dr. Camac Wilkinson's dispensary, but did not have the advantage of meeting him. The report of the visitors was not, so far as we are aware, published and was described as confidential, but we were informed that, in their opinion, Dr. Camac Wilkinson's system of treatment "did not appear to have claims over other methods of treating tuberculosis, either with or without tuberculin, which would justify its general adoption." To this Dr. Wilkinson replied by the publication of an essay on the tuberculin dispensary for the poor. We did not then feel that the information in our possession was sufficient to justify the expression of a decided opinion. So far as we are aware, nothing further has happened since then until the publication of Dr. Wilkinson's book, recently reviewed (June 19th, p. 1039) in our columns. As the report was never published we do not know how thorough the visitation was, but we are inclined to think that in view of the increased interest now taken in treatment by tuberculin the time has come when the matter should be reopened. Letters on tuberculin in the treatment of tuberculosis will be found at page 35.

#### INCOME TAX.

##### Sale of Share in Practice.

"**NORTHERNER**" sold a half-share in his practice in January, 1925, and his partner paid him a sum down in October and another instalment in December, 1925. How should their returns be made for the year ending April, 1926?

A declaration should be made on the appropriate form, which the assessor or inspector will supply, setting out the average profits of the practice for the three years prior to April, 1925, and also the basis of division of the partnership profits. Then each partner should make a separate declaration setting out his share of the partnership profits, as shown in the other form, and any other income he may have. The payments made by one partner to the other for the purchase of the share in the practice are capital payments and do not affect their income tax returns.

#### Expense of Books.

**A. W. M.**, who holds an appointment in the navy, asks whether he understands correctly that there is an income tax allowance of £10 10s. for books and £7 7s. for medical publications.

There is no such standard allowance by law, the legal position being that a taxpayer is allowed against the assessment of the emoluments of employment expenses "wholly exclusively and necessarily in the performance of the duties of the office." It may be that there is a departmental rule to make the allowance quoted to persons holding such appointments as "A. W. M." holds, but we have no knowledge of it. If there is such a rule it would be convenient and not unreasonable. Anyhow, we advise our correspondent to claim that allowance when sending in his return.

#### Motor Car Replacement.

"**A. M.'s**" motor transactions have been as follows:

October, 1921—Purchased x for £241
March, 1925—Sold x for £25
March, 1925—Purchased y for £284.

The then cost of an x car would have been £133. It will be seen from the above that "A. M." could have replaced his old x by a new one at a net cost of £133—£25=£108; he actually expended £284—£25=£259, thereby obtaining a car that suited him better, but claimed that he should be allowed to treat as replacement expenditure that sum less the increased outlay (£284—£241=£43)—that is, £216.

"A. M." might refer to our reply to "J. A. S." in our issue of April 3rd last. The matter is one for the adjudication of the district commissioners, but there are strong arguments available to support the view that only £108 is allowable. We believe that the correspondent to whom we replied in April succeeded in obtaining from his inspector of taxes a larger allowance than was at first agreed to, and "A. M." may perhaps obtain some equitable compromise by discussion. We cannot recommend him to take his claim to the point of appealing personally to the Commissioners.

## Agents' Fees.

"McL." recently held a six months' assistantship. He has been assessed for those earnings, but the inspector refuses to allow a deduction for the fee charged by this agent through whom he took up the post.

"\* If "McL." habitually takes up temporary assistantships we consider that he has grounds on which to claim that he is carrying on his profession in that way and is chargeable under Schedule D; in that event we think he has a good claim to the deduction on the ground that it is a normal and recurring expenso attributable to his earnings. If, however, he is assessable (as normally practitioners who not as assistants are assessable) for earnings of "employment," then the Schedule E rule applies and the inspector's view is correct—that is, that the expense was incurred not "in the performance of the duties" of the employment but anterior thereto, and, further, were not "necessary" so far as the terms of his contract of employment were concerned.

## Residence in the United Kingdom.

"X" left his employment in a hospital in England in July, 1923. During 1924-25 he was resident in England as his father's (non-paying) guest. In 1925-26 he was in England five months as his father's guest, spending the remaining seven months travelling with a patient. Can he be held to have been "domiciled" in England for 1925-26?

"\* The material question is one of residence rather than domicile. "X" is liable to income tax as a British resident for 1925-26 unless he can show that when he came back to the United Kingdom he did so for a temporary purpose, and not with the intention of establishing a residence here. The question of intention is fundamental, and it is therefore impossible to answer the question specifically.

## LETTERS, NOTES, ETC.

## STERILIZING THE TYMPANUM.

"PUNCTILIOUS" writes: In your issue of June 12th there is a valuable and in some respects instructive contribution by Dr. Smurthwaite on "The treatment of throat and ear cases in children," which shows the magnificent results achieved by him in connexion with "the Gloucester scheme for the extension of medical services." The gratifying success attained is no doubt largely due to the fact that the work has been entrusted to the hands of a zealous and really expert specialist.

There is, however, at least one point in Dr. Smurthwaite's paper which, in my opinion, ought not to be allowed to pass unchallenged. In mentioning the well known technique usually carried out at the conclusion of the submandibular mastoid operation in children he states that "the middle ear is made thoroughly aseptic" (the italics are mine) "by syringing through the aditus at the time of operation." It would be highly informing to be told exactly how Dr. Smurthwaite thinks this magical and immediate sterilization of the tympanum can be accomplished. I only know of two methods (neither often employed, I imagine) by which even some approach to sterilization can be brought about, and that is either (1) by thoroughly swabbing out the suppurating middle ear with some escharotic fluid, such as deliquesced pure carbolic acid or pure chromic acid, or else (2) by means of ionization. Syringing with the aseptic solutions usually employed will obviously not sterilize the middle ear aseptic right off the reel, as Dr. Smurthwaite would infer, as surface lavages cannot reach the septic organisms embedded in the tissues.

I fancy the explanation of the appearance of the misstatement by Dr. Smurthwaite which I have quoted is to be found in the fact that he forgot to submit his original rough draft to careful revision. There is further internal evidence of this, for several inaccuracies have crept in, such as writing of "the drum" when the context shows that the drumhead (that is, the tympanic membrane) was in his mind; again, he writes as if the tonsillar sinns (or fossa) was the same thing as the bed of the tonsil; and yet again he implies that the reverse guillotine technique of Whillis and Pybus is the same as that of Sinder.

Although Dr. Smurthwaite's paper is unfortunately marred by these instances of careless writing and misleading statements, they do not affect the great value of the practical work he has so successfully carried out.

## SALT AND CANCER.

Mr. FREDERICK T. MARWOOD, J.P., of Lancashire, a layman who has taken great interest in the causation of cancer, has sent us a reprint in pamphlet form of an article, "Salt and cancer," he contributed to the *Medical Officer* of January 9th last. Mr. Marwood is a modest person, who says that he is neither a Jenner nor a dairymaid; but that as jewels are sometimes found in dustbins, something of service might be found in the dustbin of his mentality. The article contains little except Mr. Marwood's view that salt is a powerful chemical, which has been recommended for removing ink stains and iron-mould and for cleaning baths, and that, therefore, in excess it may cause

serious trouble to our internal organs. This possibility Mr. Marwood supports by statistics showing the salt consumption in various countries compared with the incidence of cancer among the inhabitants. Cancer, it appears, is almost unknown among the Eskimos, while the death rate is very high in the United Kingdom, the United States, and other countries. Mr. Marwood probably appreciates the trickiness of statistics, but as the proceeds of his chief work, *What is the Root Cause of Cancer?* go to the British Empire Cancer Campaign, no doubt that body will see that due note is made of Mr. Marwood's evidence.

## HERBALISTS AND ACUTE APPENDICITIS.

Dr. RICHARD E. M. TAUNTON (Hanwell, W.) writes: In an advertising booklet I have recently received from a firm of "herb specialists," of which many thousands are distributed annually, is an article on "Appendicitis or Inflammation of the Vermiform Appendix." It commences by stating that "in the olden days appendicitis was known as inflammation of the bowels and the deaths from this cause were few. People knew exactly what to do, especially those who were subject to the complaint." It then goes on to say that "the remedy is very simple and it is one which certainly should be tried in every case before an operation is consented to." The symptom of pain in the right iliac fossa is described, and the article then continues as follows: "On the first appearance of these pains the patient, if an adult, should take a dessertspoonful of olive oil. Two hours afterwards another dessertspoonful should be taken. This is often sufficient, but it will be more speedily effective if half an hour after taking the first dose of olive oil a wineglassful of an infusion of elder flowers and peppermint is taken. At the same time it would greatly ease the pain if hot fomentations were frequently applied to the part. If the disease is attacked by these means at the commencement the appendicitis has usually entirely disappeared after twelve hours. It will readily be admitted that this treatment if successful—and this is generally the case—is far preferable to a long and tedious period spent in recovering from an operation." Such advertising literature as this must have no small bearing on the mortality from appendicitis, especially in the many cases in which there is a normal pulse and temperature and the pain is only slight, and yet on opening the abdomen within a very few hours of the commencement of the pain an acutely inflamed and suppurative appendix is found. Furthermore, it dissuades the patient from seeking advice at an early stage of the disease.

## "SAFETY FIRST" IN PHOTOGRAPHY.

BURROUGHS WELLCOME AND Co. have issued a useful little book entitled *Safety First in Photography*. After a brief history of the development of photography there is a description of the Wellcome Photographic Exposure Calculator, remarks on rules for development with the aid of tabloid developers, and condensed tables of time and temperature for a number of well known developers. The use of tabloid desensitizers will, it is said, prevent the fogging of plates and films. After one minute's treatment in the dark in a solution of desensitizer, the plates or films can be developed by candle light. The book is illustrated with reproductions of photographs showing the effect of the use of tabloid products in developing, toning, and intensifying.

## THE ART OF ADVERTISING HEALTH.

ADVERTISEMENT is, of course, a fine art, and there is no reason why it should not be employed in the cause of health. The Wesleyan and General Assurance Society of Birmingham has a Health Service Bureau, which issues leaflets with a view to inducing its policy holders to prolong their lives. Three, which have been issued recently, are entitled "The care of the teeth," "Rheumatism," and "Whooping-cough." The first is adorned with a picture of a crocodile having its teeth cleaned by small birds, and the title, "The crocodile lives 200 years; if you wish to enjoy long life, keep your mouth clean." The second leaflet announces "3,000,000 weeks of work lost annually to the insured population through rheumatism." After such headings the plain statement, "Whooping-cough," seems almost an anti-climax. The advice contained in the leaflets seems sound, and the necessity for consulting the doctor and dentist is duly emphasized. As pathology and pessimism are eschewed, the leaflets should be useful if read by those for whom they are intended. It is stated that 660 medical officers of health and 120 education authorities use the leaflets for distribution.

## ERRATUM.

THERE is a regrettable printer's error in what is possibly the most important word in the notice of an appliance for bedridden patients with incontinence which has been devised by Messrs. W. B. Hilliard and Sons of Glasgow (*BRITISH MEDICAL JOURNAL*, June 19th, p. 1041). The word "piecer" in the sixth line should have been "piercer," which is descriptive of the principal novelty of the appliance—a rigid metal tube, which is made sharp-pointed so that it may easily pierce (perforate) a mattress.

## VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 41, 42, 43, 46, 47, and 48 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 44 and 45.

A short summary of vacant posts notified in the advertisement columns appears at page 53.



## Association Notices.

### NOTICE OF ANNUAL GENERAL MEETING.

#### NOTICE CONVENING MEETING.

NOTICE IS HEREBY GIVEN that the Annual General Meeting of the British Medical Association will be held in the Mechanics' Hall, Nottingham, on Tuesday, July 20th, 1926, at 2 p.m. Business: (1) Minutes of last Meeting; (2) Appointment of Auditors; (3) Report of election of President for 1927-28.

ALFRED COX, L. FERRIS-SCOTT,  
Medical Secretary. Financial Secretary and  
Business Manager.

### NOTICE OF EXTRAORDINARY GENERAL MEETINGS.

NOTICE IS HEREBY GIVEN by Order of the Council that an Extraordinary General Meeting of the British Medical Association will be held in the Mechanics' Hall, in the City of Nottingham, on Friday, the 16th July, 1926, at 4.45 o'clock in the afternoon, when the following Resolution will be proposed as an Extraordinary Resolution, namely:

That the Articles of Association of the British Medical Association be altered in manner following, namely:

- (1) By adding to paragraph (a) of Article 10 the following proviso, namely:

"Provided that no such representation shall be entertained if made by a Division or Branch within an area outside the United Kingdom for which a Federal Council has been formed under the Articles and By-laws where that Federal Council has been invested with the powers of paragraph (c) of this Article."

- (2) By deleting the whole of paragraph (b) of Article 10 and inserting in place and stead thereof the two following new paragraphs, namely:

"(b) The Council shall have power, on the application of the Branches within an area outside the United Kingdom for which a Federal Council has been or is being formed under the Articles and By-laws, to invest that Federal Council with the powers of the next succeeding paragraph of this Article."

"(c) (i) The Council of each Branch not in the United Kingdom, having a membership of not less than thirty and not being within the area of a Federal Council invested with the powers of this paragraph, upon the representation of any two members of such Branch, and

"(ii) Any Federal Council invested with the powers of this paragraph, upon the representation of any Branch within the area of that Council,

shall have power at a Special Meeting of the Branch Council or Federal Council (as the case may be), convened at not less than one month's notice, and after due inquiry of which not less than twenty-eight days' notice in writing, specifying the time and place at which he may be heard in his defence, shall have been given to the Member, to expel from membership of the Association any member of such Branch whose conduct shall be held by the Branch Council or the Federal Council (as the case may be) to be such as to render him liable to expulsion under paragraph (d) of the last preceding Article."

- (3) By inserting in original paragraph (c) of Article 10 immediately after the words "Branch Council" the words "or of a Federal Council."

- (4) By inserting in original paragraph (e) of Article 10 immediately after the words "Branch Council" the words "or by a Federal Council."

- (5) By relettering original paragraphs (c), (d), and (e) of Article 10, (d), (e), and (f) respectively.

Should the above Resolution be passed by the requisite majority it will be submitted for confirmation as a Special Resolution to a further Extraordinary General Meeting, and such meeting will be held at the British Medical Association House, Tavistock Square, London, W.C.1, on Tuesday, the 3rd day of August, 1926, at 2.30 o'clock in the afternoon, for the purpose of considering and, if thought fit, confirming such Resolution as a Special Resolution accordingly.

Dated this 21st day of June, 1926.

By Order of the Council,

L. FERRIS-SCOTT,  
Financial Secretary and  
Business Manager.

British Medical Association House,  
Tavistock Square, London, W.C.1.

### BRANCH AND DIVISION MEETINGS TO BE HELD.

**BIRMINGHAM BRANCH: COVENTRY DIVISION.**—A special meeting of the Coventry Division will be held at the Coventry and Warwickshire Hospital on Tuesday, July 6th, at 8.30 p.m. Agenda: Correspondence; instructions to representatives.

**CAMBRIDGE AND HUNTINGDON BRANCH.**—The eighty-second annual meeting of the Cambridge and Huntingdon Branch will be held at the Icknield Hall, Letchworth, Herts, on Thursday, July 8th, at 1 p.m. Agenda: Annual report and election of officers. At 1.30 members will be entertained at lunch by the President-Elect, Dr. Hyslop Thomson, and the Chairman of the East Herts Division, Dr. Norman Macfadyen. After lunch Dr. Hyslop Thomson will deliver his presidential address on the diagnosis of disease in relation to preventive medicine.

**CAPE OF GOOD HOPE (WESTERN) BRANCH.**—A meeting of the Cape of Good Hope (Western) Branch will be held on Friday, July 30th, when Professor M. R. Drennan and Professor W. A. Jolly will introduce a discussion on the heart.

**EAST YORK AND NORTH LINCOLN BRANCH.**—The seventieth annual meeting of the East York and North Lincoln Branch will be held in Powolny's Banqueting Rooms, King Edward Street, Hull, on Saturday, July 10th, at 1 p.m. Luncheon at 1.30, at which Dr. D. R. Moir will take the chair and deliver his inaugural address.

**LANCASHIRE AND CHESHIRE BRANCH: LIVERPOOL DIVISION.**—A meeting of the Liverpool Division will be held at the Liverpool Medical Institution on Wednesday, July 7th, at 4 p.m. Agenda: Instructions to representatives to Annual Meeting; an appeal by Dr. R. W. MacKenna for greater support to medical charities.

**NORFOLK BRANCH.**—The annual meeting of the Norfolk Branch will be held at the Norfolk and Norwich Hospital on Wednesday, July 7th, at 3.30 p.m. Agenda: Report of Branch Council and annual statement; induction of the new President, Mr. William Henry Fisher, M.S., M.B., B.Ch., by the retiring President; appointment of a President-Elect and two Vice-Presidents. Address by Mr. Aleck William Bourne, M.B., B.Ch., Cantab., F.R.C.S., obstetric surgeon, St. Mary's Hospital and Queen Charlotte's Hospital, on the scope of Caesarean section. Tea will be served in the hospital grounds, by the kind invitation of Dr. and Miss Fisher, at 4.15.

**OXFORD AND READING BRANCH.**—The annual meeting of the Oxford and Reading Branch will be held at the Royal Berkshire Hospital, Reading, on Friday, July 9th, at 3.15 p.m. Agenda: Election of officers. Discussion on exophthalmic goitre: (a) Surgical treatment, Mr. Romanis; (b) Medical aspects, Dr. Gardiner-Hill; (c) Cardiac complications, Dr. Cassidy. Cases will be shown by Sir Stewart Abram, Mr. Seeretan, Dr. Esther Carling, and Dr. Lambert. In the forenoon the Collier Golf Cup will be competed for at Huntercombe against bogey. Members may choose their partners, but must play at three-quarters of lowest handicap. Cards to be handed to the secretary before the clinical meeting.

**SOUTHERN BRANCH: WINCHESTER DIVISION.**—A meeting of the Winchester Division will be held at the George Hotel, Winchester, on Wednesday, July 7th, at 3 p.m. The business includes instructions to the divisional representative. At 5.30 a British Medical Association Lecture on the diagnosis and treatment of placenta praevia will be given by Dr. J. D. Barris, F.R.C.P., F.R.C.S., physician accoucheur, St. Bartholomew's Hospital. A large attendance is hoped for; non-members will be very welcome.

**YORKSHIRE BRANCH: SHEFFIELD DIVISION.**—A general meeting of the Sheffield Division will be held at the Church House, St. James's Street, Sheffield, on Friday, July 9th, at 8.30 p.m. It is especially desired that all members will endeavour to attend. Agenda: Annual Report of Council, which will be presented as follows: *Science*, Dr. Barnes; *Medical Ethics*, Dr. Russell; *Medico-Political*, Dr. Forbes; *National Insurance*, Dr. Helm; *Puerperal Morbidity and Mortality*, Mr. King.

## Naval and Military Appointments.

### ROYAL NAVAL MEDICAL SERVICE.

SURGEON REAR-ADMIRAL A. MACLEIN, C.B., D.S.O., is placed on the retired list at own request, in order to facilitate the promotion of more junior officers.

Surgeon Commander P. F. Alderson is placed on the retired list with the rank of Surgeon Captain.

Surgeon Commanders J. McA. Holmes, D.S.O., to the *Pembroke* for R.N. Hospital, Chatham, temporary additional; A. R. Schofield to the *Iron Duke* and as Squadron Medical Officer on recommissioning; J. G. Boal to the *Victory* for R.N. Hospital, Haslar.

Surgeon Lieutenant Commanders A. C. Shaw to the *Pembroke* for R.N. Hospital, Chatham; A. G. Bee to the *Frida*, additional for R.M. Infirmary, Plymouth; A. W. North to the *Ambrose*.

Surgeon Lieutenant C. H. Savory to be Surgeon Lieutenant Commander.

Surgeon Lieutenants R. R. Baker to the *Iron Duke* on recommissioning; J. H. B. Crosbie to the *Agamemnon* (July 14th) and to *Cretanion* (undated).

Surgeon Lieutenant (short service) D. H. Kernohan has transferred to the permanent list.

Dr. W. T. Donovan has entered as Surgeon Lieutenant and appointed to R.N. Hospital, Haslar, for course.

### ROYAL NAVAL VOLUNTEER RESERVE.

Probationary Surgeon Lieutenants L. D. Nelson and D. R. Burbury to R.N. Hospital, Haslar, for twenty-eight and fourteen days' training respectively.

### ROYAL ARMY MEDICAL CORPS.

Colonel F. F. Carroll, D.S.O., half-pay list, and Colonel N. H. Rees, late R.A.M.C., retire on retired pay.  
Captain W. Bruce, O.B.E., relinquishes the acting rank of Major.  
R. L. J. Le Clezio to be temporary Lieutenant.



## ROYAL AIR FORCE MEDICAL SERVICE.

Flight Lieutenant A. E. Barr-Sim is promoted to the rank of Squadron Leader.  
Flight Lieutenants (Honorary Squadron Leader) G. A. Menden to No. 29 Squadron, Duxford; R. L. C. Fisher to No. 32 Squadron, Kenley.  
Flying Officer H. W. Corner is promoted to the rank of Flight Lieutenant.  
Flying Officers E. J. Jenkins to Station Headquarters, Birmaham Newton; M. J. Marren to No. 3 Squadron, Upavon; S. F. Heatley to School of Technical Training (Men), Manston; P. H. Perkins to R.A.F. Depot, Uxbridge.

## REGULAR ARMY RESERVE OF OFFICERS.

## ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel H. M. Nicholls, having attained the age limit of liability to recall, ceases to belong to the Reserve of Officers.

## INDIAN MEDICAL SERVICE.

Colonel Francis H. G. Hutchinson, C.I.E., to be Major-General, vice Major-General Thomas Henry Symons, C.S.I., O.B.E.  
Lieut.-Colonel C. B. McConaghy, an Agency Surgeon, on return from leave, is posted as Legation Surgeon, Nepal, and ex officio Assistant to the British Envoy at the Court of Nepal.  
Captains to be Majors: William Peat Hogg, M.O., V. R. Mirajkar, M. M. Khan.  
Captain T. A. Doran is appointed to officiate as Executive Officer, Kirkee Cantonment, in addition to his ordinary duties, vice Captain F. R. Bailey, granted privilege leave.

## SUPPLEMENTARY RESERVE OF OFFICERS.

## ROYAL ARMY MEDICAL CORPS.

Captain S. P. Wilson, from General List, T.A., Manchester University Contingent, Sen. Div. O.T.C., to be Lieutenant.  
Lieutenants to be Captains: W. G. Burns and A. R. Balmain.

## VACANCIES.

BEDFORD COUNTY HOSPITAL.—Assistant House-Surgeon (unmarried). Salary £130 per annum.  
BOURNEMOUTH: ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House-Surgeon (male, unmarried). Salary at the rate of £120 per annum.  
BRIGHTON: ROYAL SUSSEX COUNTY HOSPITAL.—House-Surgeon (male). Salary £150 per annum.  
BRISTOL: CITY AND COUNTY OF BRISTOL.—Assistant Tuberculosis Officer. Salary £600 per annum.  
BRISTOL ROYAL INFIRMARY.—Surgical Registrar.  
CAPE TOWN: DIVISIONAL COUNCIL OF THE CAPE.—Medical Officer of Health (male). Salary £1,100 for first year, rising to £1,200 for the third year.  
ESSEX COUNTY HOSPITAL, Colchester.—Assistant House-Surgeon (male). Salary £150 per annum.  
HALFAX: ROYAL HALFAX INFIRMARY.—First House-Surgeon (male, unmarried). Salary £250 per annum.  
HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.3.—(1) Resident Medical Officer; salary £500 per annum. (2) House-Physicians; honorarium £50 per six months.  
HUNTERFELD ROYAL INFIRMARY.—Two Junior House-Surgeons. Salary £150 per annum.  
IPSWICH: COUNTY BOROUGH OF IPSWICH.—Assistant Medical Officer of Health and Assistant School Medical Officer (woman). Salary £600 per annum.  
KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION.—Assistant Resident Medical Officer at the South Wales Sanatorium, Talgarth. Salary £200 per annum.  
LONDON HOSPITAL, E.1.—Gynaecological Surgeon.  
LONDON LOCK HOSPITAL, Harrow Road, W.9.—House-Surgeon at the Female Lock Hospital. Salary at the rate of £150 per annum.  
METROPOLITAN ASYLUM BOARD.—Medical Superintendent in the Infectious Hospitals Service. Salary £300 per annum.  
MIDLAND MISSION HOSPITAL, Austin Street, E.1.—Honorary Emergency Surgeon.  
OXFORD: WINDFIELD ORTHOPAEDIC HOSPITAL, Headington.—House-Surgeon (male). Salary at the rate of £100 or £150 per annum, according to experience.  
ROCHESTER: ST. BARTHOLOMEW'S HOSPITAL.—Honorary Pathologist.  
ROTTERHAM HOSPITAL.—Junior House-Surgeon (male). Salary £150 per annum.  
ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Ventnor.—Junior Medical Officer (male). Salary at the rate of £300 per annum.  
SCARBOROUGH HOSPITAL AND DISPENSARY.—Two House-Surgeons. Salary at the rate of £125 per annum.  
SHREWSBURY DISPENSARY.—Vacancy on the Medical Staff.  
STOCKPORT INFIRMARY.—Resident House-Physician. Salary £175 per annum.  
VICTORIA HOSPITAL FOR CHILDREN, Tite Street, S.W.3.—(1) House-Physician. Salary at the rate of £100 per annum each.  
AND LEXTON CHILDREN'S AND GENERAL HOSPITAL.—(male). Salary £100 per annum.  
Hammersmith Road, W.6.—Resident Assistant per annum.  
WILLESDEN GENERAL HOSPITAL, Harlesden Road, N.W.10.—Casualty Officer (non-resident).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

## APPOINTMENTS.

GAWNE, E. S., M.R.C.S., L.R.C.P.Lond., D.P.H., D.M.R.E.Liverp., Medical Superintendent, Townley's Hospital, Bolton.  
ROBINSON, James S., M.B., B.Ch.Dub., F.R.C.S.Edin., Honorary Surgeon and Orthopaedic Surgeon, Cheltenham General and Eye Hospital.  
CHURCH CROSS HOSPITAL.—House-Surgeon: R. A. Fitzsimons, B.Sc.Lond., M.R.C.S., L.R.C.P. House-Physician: J. Powell Evans, M.R.C.S., L.R.C.P.  
CRYSTING FACTORY for the Rothsay for the Wiveliscombe, D., Ch.B.Glas., D.P.H.Camb., Agertwood, M.B., Ch.B.Vict.

## DIARY OF SOCIETIES AND LECTURES.

VICTOR HORSLEY MEMORIAL LECTURE by Mr. Wilfred Trotter, M.S., F.R.C.S.: The Insulation of the Nervous System. British Medical Association House, Tavistock Square, W.C.1, Fri., 5 p.m.

## POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.—Special Demonstrations. At Royal Waterloo Hospital in Clinical Surgery: Mon., 2.30 p.m. At Royal Eye Hospital, Southwark: Thurs., 3 p.m. Hospital for Diseases of the Skin, Blackfriars, S.E.: Afternoon Course in Dermatology, Tues., 2.30.  
CANCER HOSPITAL, Fulham Road, S.W.3.—Fri., 4.30 p.m., Cachexia of Malignant Disease and its Treatment.  
CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn Road, W.C.—Fri., 3 p.m., Indications for the Radical Mastoid Operation.  
NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, 5.—Mon., 10 a.m., Surgical; 10.30 a.m., Gynaecology and Ear Operations; 2 p.m., Medical, Surgical, Operations; 6.30 p.m., Venereal Department.  
Surgical, Throat, Nose, and Ear Clinics, Operations; 3 p.m., Demonstration of Illustrative Cases of Mental Disease at the Colney Hatch Mental Hospital, New Southgate, N.11. Wed., 10.30 a.m., Operations; 2 p.m., Medical and Eye Clinics; 3 p.m., Pathological Demonstration of Tumours of the Breast; 5.30 p.m., Venereal Department. Thurs., 10.30 a.m., Dental; 2 p.m., Medical, Surgical, and Throat, Nose, and Ear Clinics, Operations (Surgical and Gynaecological). Fri., 10.30 a.m., Eye Operations; 2 p.m., Surgical, Medical, and Children's Clinics, Operations; 6.30 p.m., Venereal.  
GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At Western Infirmary: Tues. and Thurs., 3 p.m., Clinical Gynaecology; Mon., 9.15 a.m. and Tues., 2.30 p.m., Dermatology. At Royal Hospital for Sick Children: Daily (except Sat.), Medical Diseases of Children.

## British Medical Association.

OFFICES, BRITISH MEDICAL ASSOCIATION HOUSE,  
TAVISTOCK SQUARE, W.C.1.

## Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager, Telegrams:—)  
MEDICAL SECRETARY (Telegrams:—)  
EDITOR, British Medical Journal, London. (Telegrams:—)  
Telephone numbers of British Medical Association and British Medical Journal, Museum 9861, 9862, 9863, and 9864 (Internal exchange, four lines).

SCOTTISH MEDICAL SECRETARY: 6, Drumsheugh Gardens, Edinburgh. (Telegrams:—Associate, Edinburgh. Tel.: 4561 Central.)  
IRISH MEDICAL SECRETARY: 36, South Frederick Street, Dublin. (Telegrams:—Dacillus, Dublin. Tel.: 4737 Dublin.)

## Diary of the Association.

JULY.

- 6 Tues. City Division: Metropolitan Hospital, 9.30 p.m.  
Coventry Division: Coventry and Warwickshire Hospital, 8.30 p.m.  
7 Wed. Liverpool Division: Liverpool Medical Institution, 4 p.m.  
Norfolk Branch: Annual Meeting, Norfolk and Norwich Hospital Mr. A. W. Bourne on the Scope of Casuarina Section, 5.30 p.m.  
Winchester Division: George Hotel, 3 p.m. B.M.A. Lecture by Dr. J. D. Barris on the Diagnosis and Treatment of Placenta Praevia, 5.30 p.m.  
8 Thurs. Cambridge and Huntingdon Branch: Annual Meeting, 1 p.m. Lunch, 1.30.  
9 Fri. Oxford and Reading Branch: Annual Meeting, Royal Berkshire Hospital; Reading: Discussion on Exophthalmic Goitre, 3.15 p.m. Branch Council, 2.45.  
Sheffield Division: Church House, St. James's Street, 8.30 p.m.  
10 Sat. East York and North Lincoln Branch: Annual Meeting. Powolny's Banqueting Rooms, Hull; 1 p.m.; luncheon, 1.30.  
16 Fri. Annual Representative Meeting, Nottingham, 10 a.m.  
17 Sat. A.R.M.  
19 Mon. Council Meeting (Nottingham).  
20 Tues. A.R.M. Annual General Meeting.  
21 Wed. Council Meeting.

## BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcement of Births, Marriages, and Deaths is 2s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

## BIRTHS.

GARRATT.—On June 26th, at Myrtle House, Dunstable Road, Luton, to Winifred Mary, wife of Frank Garratt, M.R.C.S., L.R.C.P., a son.  
MENON.—At St. Winifred's, Church Street, Edmonton, N.9, on June 19th, 1926, the wife of M. P. Kesava Menon, M.B., a son—Asoka.  
POSTON.—On June 27th, at Mrs. McCubbin's Nursing Home, Withington, Manchester, to Margaret (née Macmillan), M.B., the wife of Richard L. Poston, M.D.; Thorncliffe, Fallowfield, Manchester, a son.

## MARRIAGE.

PANTON—HEATH.—On June 24th, at St. Mary's Church, A., by the Rev. R. Main, assisted by the Rev. P. A. Pantan, M.D., Ch.M., F.R.C.S. Eng. and Edin., Dr. J. E. Pantan, and Mrs. W. A. Bridson of Bolton, to Kathleen Ann, only daughter of Mr. and Mrs. Robert Heath, of Vernon Lodge, Brooklands, Cheshire.

## DEATHS.

CROWTHER.—On June 11th, at his residence, Marloes, Russell Road, Lee-on-Solent, John Woodward Crowther, M.R.C.S., L.S.A.  
MACLAY.—At Bamburgh, suddenly, on June 26th, Neil MacLay, M.B., Ch.M., of 2, Fenham Terrace, Newcastle-on-Tyne, aged 53 years, dearly beloved husband of Mary MacLay.

## A British Medical Association Lecture

ON

## ANGINA MINOR.

DELIVERED AT HASTINGS, JUNE 1ST, 1926,

BY

JOHN HAY, D.L., M.D., F.R.C.P. LOND.,

PROFESSOR OF MEDICINE, LIVERPOOL UNIVERSITY; SENIOR PHYSICIAN  
AND PHYSICIAN IN CHARGE OF HEART DEPARTMENT, LIVERPOOL  
ROYAL INFIRMARY.

ANGINA MINOR is a condition of some practical importance, and I trust that its consideration will help to crystallize our ideas; for there is still, in spite of much writing and talking, a certain haziness as to the significance of some of the pains and discomforts located in the precordial and substernal regions.

Up to December 31st, 1925, I have careful notes of 472 patients suffering from angina (309 up to July 31st, 1925, and 163 to December, 1925), mostly private patients; and it is on a careful scrutiny of these records that I base my remarks.\*

One outstanding feature of the study of medicine to-day is the much greater attention paid to symptoms than to the physical signs of disease. In the latter part of the nineteenth century it was the physical signs of heart disease which occupied the minds of the profession, and the aim was to correlate the physical signs with the gross present. This attitude dominated

Now with the swing of the pendulum the cross-examination of a patient is often considered even more important than the physical examination, and both are made with the object of obtaining a clear conception of the functioning power of the organ at fault, whether that organ be the heart, the kidneys, the pancreas, the liver, or any other viscus. For an organ may be gravely inadequate and yet present few, if any, objective signs of disease. It is here, in the assessing of the functioning power of the kidneys and pancreas, to give but two instances, that biochemistry has come into its own.

## EARLY SYMPTOMS.

Symptoms are the earliest manifestations of disease more often than physical signs. There is some subjective deviation from the normal, such as discomfort, pain, exhaustion, or lassitude. The elucidation of the meaning of such deviations from the normal and their prognostic significance was the aim underlying all the work of the late Sir James Mackenzie. He, more than any other man, focused the attention of the world of medicine on the subjective aspect of disease. Of all subjective sensations pain is the most arresting, and is of the nature of a protective reflex. We are saved from destruction by the pain which we deplore. This is true even if we may have to admit that on occasions the anguish proves too great for the human mechanism, and becomes, in fact, the lethal factor precipitating the end which it is its function to avert. Peculiarly is this the case in patients suffering from angina pectoris, and it is essential that we should be familiar with the earliest manifestations of this condition or symptom complex, in order that our patients may have the benefit of a correct and early diagnosis, so that their lives may be ordered aright and their days lengthened.

"By angina pectoris I have in mind an arresting form of cardiac pain, substernal rather than submammary, in which the patient is conscious of a sense of oppression, or constriction, which may reach a high grade of intensity, even a condition of intolerable anguish. This pain has certain well recognized lines of radiation and is often induced by effort or emotion. There are in addition characteristic associated symptoms not invariably present—notably the sense of impending death, and indescribable anguish of mind accompanied by varying vasomotor disorders, such as cold sweats and deathly pallor." (Bradshaw Lecture, BRITISH MEDICAL JOURNAL, November 24th, 1925.)

With few exceptions, the full-blown stark anginal seizure cannot fail of recognition. It is otherwise with the earlier manifestations when such are present, and it is these less

\* I gladly acknowledge the great courtesy of the medical men in charge of these patients, a courtesy which has enabled me to keep in touch with the after-histories.

obtrusive indications which I wish to discuss—symptoms which are often not recognized as anginal in nature, and in consequence their ominous significance is overlooked.

In 1905 Sir James Goodhart, in the Cavendish Lecture, said, "Angina is common among us if we are on the look-out for the milder forms," and with this opinion I entirely agree. Angina minor has been labelled the "petit mal" of angina, and Sir James Goodhart referred to it as "larval." Both terms indicate that there is an essential relationship between the mild and the grave forms. It is merely a question of degree, for both are true angina.

Minor angina has also been called "fractional," because the patient may only manifest "one, or at any rate only a fraction, of the essential characteristics of the major anginas; that is, it may lack some of those characteristics always associated in our minds, and in those of the general public, with angina."

Minor angina may be, and often is, a premonitory symptom, but one full of significance to the understanding clinician. Most patients who suffer from major angina will, when carefully questioned, give a history indicating that for some years previous to the first major attack there were larval or minor manifestations, anginal in nature.

Again, both major and minor may alternate irregularly in the same patient, or the minor may come as an aftermath or echo of a previous major attack. In such a case, the diagnosis being then beyond question, an opportunity is given of studying the more elusive symptomatology of the milder disease fortified by the knowledge of its real significance.

## CAUSE AND CHARACTER OF THE SYMPTOMS.

In angina minor, as in angina major, the symptoms result from cardio-vascular inadequacy, for the heart is in difficulties. Of these symptoms the commonest is substernal discomfort or pain on exertion or exposure to cold. This varies in degree and also in character. It is described by the patient as "a sense of oppression," "tightness," "constriction," a "feeling of weight," sometimes merely as "emptiness."

The site of the sensation is substernal, often in the middle or upper third, but it may be most marked at the lower third of the sternum, and sometimes even in the epigastrium, in "the pit of the stomach." This peculiar feeling is most commonly referred to by the patient as "indigestion," and not seldom he has been treated as a "dyspeptic" for years before the nature of the discomfort is revealed by an attack of angina major. These patients not uncommonly develop the habit of air swallowing, and an attack of angina minor simulating indigestion is accompanied by repeated attempts to "bring up the wind." When a sufficiency has been swallowed it is belched up, with undoubted relief to the patient. Such a sequence confirms the patient, and at times even his doctor, in the view that flatulence is the correct interpretation of the symptoms. And this view is still further corroborated by the fact that any exercise following immediately upon a meal—more particularly breakfast—is extremely likely to precipitate an attack.

The pains of angina, major or minor, are neither stabbing nor intermittent; they are continuous and persistent and have a crescendo and diminuendo quality, increasing in intensity if the effort which induced them is continued, and tending to cease when the patient rests.

The statement that anginal pain is an indication of myocardial exhaustion or evidence of myocardial failure seems to me to require modification, for cardiac failure may advance to an extreme degree without anginal pain, and definite anginal pain will sometimes disappear as cardiac failure becomes more pronounced.

The first manifestation of cardiac inadequacy may be pain, followed by dyspnoea if the effort is continued; yet at a later date in the same patient dyspnoea is the earliest sign of cardiac embarrassment, pain only manifesting itself if the patient persists in the effort. This may, of course, be due partly to variations in the threshold of pain, but I do not believe that that is the full explanation.

The causes which induce anginal pain have this characteristic—they are such as to bring about a rapid strain on the arterial side of the circulation and especially on the left ventricle. The two common exciting factors are effort and exposure to cold. In a large proportion of anginal patients there is either a lesion of the coronary arteries or persistent hyperpiesis; in the first, the supply of blood to the myocardium ceases to be adequate when the heart is called upon for an increased output; in the second, the left ventricle and the aorta are carrying the heavy load of a raised blood pressure.

Effort and exposure to cold, and at times excitement, result in a sudden strain, and the response to this strain is manifested in terms of pain. After a short rest and a more gradual resumption of the effort the myocardium sometimes accommodates itself to the altered conditions, and may even tolerate the effort with comfort. It is, in fact, a matter of readjustment.

During an attack of angina major, in addition to the terrible crushing agony substernal in site there are accompanying pains or unpleasant sensations which may be felt in the back between the scapulae, in the shoulders, arms, neck (suprasternal notch), jaw, even in the face and eyes. So in milder angina these radiated pains are to be noted, and they may prove of the greatest help in recognizing and assessing the significance of indefinite substernal discomfort.

The difficulty in diagnosis is increased when there is an entire absence of complaint of pain or tightness in the chest. In most instances, however, cross-examination will elicit the presence of some such substernal discomfort if the effort inducing the attack is unwisely persisted in. As an example of this the following case may be quoted.

## CASE I.

In December, 1923, a man, aged 69, complained of severe neuralgic pain in the neck. The pain was crushing in character and situated in the suprasternal notch. It had occurred on several occasions in the two months before his visit. The teeth had been suspected and one extracted, but the pain recurred. It was brought on chiefly by exposure to cold, and also (although not so noticeably) by walking or effort. It was relieved by a hot drink or by going into a warm room. It did not radiate either into the back, or shoulder, or arms, but if he persisted in walking, or in whatever effort he was undertaking at the time, he developed an aching pain behind the manubrium. This important fact was only extracted by persistent cross-examination. Pain was also brought on by getting out of a warm bath and during the unavoidable exposure while drying himself.

He was firmly convinced that the trouble was in his throat, and he had seen several throat men, who had been unable to give him any relief. His throat was normal. There was some arterio-sclerosis, such as one would expect in a man of his age, and the blood pressure was normal.

I class this man as an angina minor of an eccentric type. Two other rather similar cases will further illustrate this point.

## CASE II.

A man, aged 65, was first seen by me on March 13th, 1925. He complained that he had to stop when walking because of a peculiar feeling in the epigastrium. Persistence in walking caused salivation. Occasionally he experienced a sense of pressure in the chest behind the sternum, as if something within was pressing outwards. These symptoms were always more easily induced after a meal. He was a spare man, and was never seriously ill. There was a moderate degree of arterio-sclerosis. Blood pressure 185/110 mm. Hg. The symptoms were first noticed six years before he consulted me, but had been much worse during the last nine months.

On April 27th, 1926 (a year later), his condition was satisfactory, but he was still liable to the above symptoms.

The following is an interesting example of eccentric angina of a minor grade.

## CASE III.

A male, aged 59, first seen on March 17th, 1924. In this patient walking induced an aching neuralgic pain in both gums, first the lower jaw and then the upper. The pain was more liable to come on when he went out into the cold air or "of an evening with the little dawg." Pain, first felt in the jaws, was next experienced in the epigastrium—"like unto indigestion"—and was associated with a feeling of complete exhaustion and collapse. All these symptoms vanished in a minute or two if he stood still.

He first noticed pain in the jaws three years previously, and on the advice of his doctor every tooth in his head was removed. This was followed by considerable improvement, although the pain in the jaw was still occasionally felt after effort. Six months ago, however, it was as severe as ever.

On examination there was no evidence of valvular disease; there was very marked emphysema, and the voluminous lungs made it impossible to determine the size of the heart. He had definite arterio-sclerosis; a blood pressure of 160/85 mm. Hg; cardiac rhythm normal.

These three cases are exceptional, but they serve as examples of erratic manifestations of angina minor.

A more common form of related or erratic pain is a dull ache or cramp in the shoulder or arm. This is usually described by the sufferer as neuritis or rheumatism, and when it occurs—as it not infrequently does—without much, if any, pain in the chest, it is misleading and its significance tends to be overlooked.

The most important feature in all these erratic or eccentric anginas is that the pain, wherever it may be localized—neck, face, wrist, shoulder—is brought on by effort or exposure to cold, and is relieved by rest and warmth. The "indigestion" and the "rheumatism" in the arm or shoulder are both dissipated by cessation of effort.

It is to be remembered that accompanying these substernal sensations of angina minor there is sometimes a peculiar psychical disturbance—an uncanny intangible sense of foreboding, a vague dread, a recognition that there is something fundamentally wrong, an apprehensiveness which may persist long after the symptoms have disappeared. This peculiar anxiety, which does not indeed attain to the *angor animi*, the sense of impending death, accompanying the major seizure, bears no relation to the degree of pain or discomfort, but is most suggestive and characteristic; Sir Clifford Allbutt regarded it as adding definitely to the gravity of the prognosis.

## EXAMPLES OF ANGINA MINOR.

As fairly typical examples of angina minor I will relate briefly the following cases.

## CASE IV.

A man, aged 64, complained of gripping pain of moderate intensity and a sensation of pressure, unaccompanied by any dyspnoea. The pain was substernal, at the level of the third space, and covered an area the size of a crown. It was induced by walking and ceased at once when he stood still. If he persisted, pain and numbness appeared in the left forearm and hand. He had suffered in this way for two years, and had been under continuous treatment for "indigestion."

## CASE V.

In another patient, a man aged 56, the first indication of trouble dated back to December, 1920, and consisted in pain across the chest at the level of the nipples, brought on by walking up a slight incline. If he stood still it subsided. It ceased to trouble him, but recurred in March, 1921, when it was looked upon as "indigestion," but, as his doctor said, a diagnosis made "with mental reservations." A fortnight later he had five attacks of severe angina arising in the same area, and accompanied by pain extending from the tip of each shoulder down the arms to the thumbs. He thought he was dying during the acme of the attack, and was left emotional and depressed.

## CASE VI.

In April, 1923, a male, aged 52, complained of dull aching pain in the upper chest. The pain was situated just below each clavicle in the nipple line. When the pain was more severe it was accompanied by an uncomfortable feeling down the inner side of each upper arm and in the front of the forearm. It sometimes attacked him in the bathroom when dressing, and was described by him as an intense heartburn, a "hot pain." He often suffered on the way to the station in the morning, and the pain would last about ten minutes. It was relieved by rest, by the eructation of wind, and at times by stretching his chest. This pain was never agonizing. He had first noticed it in 1921 after an operation for rupture. He soon recovered and led an active vigorous life without discomfort.

The pain recurred two weeks before he consulted me in 1923, and I then found a heart moderately enlarged; blood pressure 180/100 mm. Hg; no valvular disease; no dilatation of the aorta; aortic second sound accentuated; only a moderate degree of arterio-sclerosis. Heart rate 72 and regular. He was a thin, spare, active man, and experienced no dyspnoea on exertion. I classed him as a case of angina minor. He improved considerably under treatment, but was always liable to pain if he hurried, especially after breakfast.

In October, 1924, he was awakened at 5 a.m. by very severe substernal pain radiating into the armpits. The pain extended the whole length of the sternum and radiated into the shoulder and into the arms. The blood pressure had fallen to 150/85 mm. Hg, and a soft mitral systolic murmur had developed.

I did not see him again. He died suddenly in March, 1926, in a cab, five years after the first appearance of the minor angina. With the exception of the severe attack of pain which awakened him in October, 1924, he gave no history of anything which could be called a major attack.

## CASE VII.

A heavily built, florid man, aged 60, first noticed slight substernal pain six years ago at the age of 54. It was mid-sternal and was brought on by walking, especially if the day was cold. Although a medical man he did not attach any importance to this suggestive symptom until 1924—that is, two years ago. Then the pain became more severe and for the first time extended into both arms and forearms.

In November, 1925, he suffered from a frank agonizing attack of anginal pain which lasted some hours and mainly affected the lower third of the sternum.

On examining him, shortly after his attack, there were no objective signs of disease, except slight enlargement of the heart which extended 4½ inches to the left of the mid-line. The sounds were normal and the blood pressure 140/90 mm. Hg. Heart rate 72, regular. There was little, if any, dyspnoea on effort. The attacks were relieved at once by rest or a draught of whisky.

This patient died in a major attack in February of this year. Major angina was present for four years before the true significance of the symptoms became apparent.

## CLASSIFICATION.

Following Sir James Mackenzie, I think the most satisfactory classification is that into two groups; (1) anginal pain due to some essential disease of the cardio-vascular system, which he has termed primary angina; and (2) the second group in which all evidence of such cardio-vascular disease is absent, but where there is some factor outside the circulation which has caused a lowering of the threshold to pain, or which has depreciated the efficiency of the myocardium. The neurasthenic group, I think, might be viewed as belonging to the secondary anginas.

The chief pathological changes in the primary anginas are diseases of the myocardium, with or without frank coronary narrowing; arterio-sclerosis, with or without high blood pressure; and lastly, valvular disease, more particularly of the aortic orifice, often associated with aortitis. In this group the myocardium is frankly handicapped, and it is clear that, with the exception of the syphilitic cases and those with high blood pressure, treatment cannot be expected to produce much change in the pathological condition, which is progressive in character.

In the secondary group of anginas the possible adverse factors are numerous, including subinfectious or other causes of toxæmia. The nervous instability of the climacteric is associated with the lowering of the threshold to pain. Prolonged worry, anxiety, overwork, or any factor causing neurasthenia, may bring about a similar sensitiveness to painful stimuli.

It is well to remember that in a patient with definite cardio-vascular disease correctly classed as primary angina there may be present in addition conditions which would in themselves cause secondary angina, and in prognosis such possibilities must be carefully reviewed.

## INVESTIGATION OF THE PATIENT.

After careful cross-examination of the patient in regard to the pain, and after having decided that it is cardiac in type and entitled to the designation of angina minor, he must then be investigated in order to determine the presence or absence of cardio-vascular disease.

The whole cardio-vascular system must be passed under review in order to determine first whether a diagnosis of primary angina is justifiable, and the extent of the damage. Any enlargement of the left ventricle is significant. This is most marked in patients with unduly high blood pressures, although it is found also in those suffering from free aortic regurgitation, and again sometimes in the absence both of raised blood pressure and aortic regurgitation. The fair inference in the latter case is that there is depreciation of the myocardium, probably due to coronary disease.

When there is valvular disease it is practically always the aortic orifice that is affected. In an analysis of 309 cases of angina pectoris made in 1923, only 35 showed disease of the valves, and, with one exception, the aortic valves were damaged. There was definite aortic regurgitation in 26, and some degree of aortic obstruction in 10 patients. Only one suffered from frank uncomplicated mitral stenosis. If there is an aortic leak it is often slight and the patient does not present the typical clinical picture of free regurgitation. The symptoms in such patients are not those of valvular disease with cardiac failure, they are the symptoms of angina, and not to be distinguished from

the symptoms found in those other anginal patients in whom the aortic valves are competent.

Arterio-sclerosis is a common feature, as is to be expected when the age incidence of angina is remembered, and the condition of the arteries should be noted, especially those of the retina; and when possible the aorta should be x-rayed.

It is important to note the height of the blood pressure. It is unduly high in about half the cases. In 40 per cent. I have found it at or over 180 mm. Hg, and some amelioration of the symptoms is to be expected when the hypertension is modified. A marked rise in the diastolic pressure is of especial significance. Any drastic reduction of a raised blood pressure is, however, unwise in the interests of the patient, even if such a reduction can be brought about and maintained.

It is rare to find any change in the fundamental rhythm of the heart. Premature beats are not uncommon. Auricular fibrillation or the disorderly rhythm when it occurs may diminish the intensity of the pain, or even abolish it, but this is not invariably the case. In the following patient, on the contrary, the advent of fibrillation was accompanied by an increase in the liability to pain.

## CASE VIII.

A man, aged 71, complained of gripping pain in the chest, brought on by walking. He had first noticed it five weeks before consulting me in January, 1925. It extended from the second rib to the xiphisternum and out as far as the nipples. On one occasion it was accompanied by "rheumatic pain" in the front of the left upper arm from the shoulder to the elbow. The pain came on four or five times a day; it was always induced by effort, and there was no dyspnoea. The heart was normal in size and free from valvular disease. The blood pressure was 140 mm. Hg, systolic. The rhythm was regular with an occasional premature beat.

He did well under treatment until May, 1925, and then the pain recurred and was more easily induced than in 1923. It also spread down to the finger-tips. In July, 1925, the only difference to be found on physical examination was that the auricles were fibrillating, and that the ventricular rate had increased to 120 per minute.

In this man the appearance of fibrillation was accompanied by an accentuation of the pain and not, as is more commonly the case, by an amelioration of the symptoms. He died in November, 1925, in a typical attack of agonizing angina.

If space permitted I could quote other similar cases, but these will suffice.

In the examination it is of importance to determine the factors which induce the pain, more particularly the nature and severity of the effort—that is, to estimate the amount of cardiac reserve; not only the cardiac response to effort should be noted, but the constancy of that response. It is satisfactory to find in any patient that there are days when he can do with ease that which on another day causes pain, for such patients prove more amenable to treatment.

There is something sinister about an anginal pain which invariably appears at the same fixed point on ascending an incline—at the same lamp-post, so to speak—and yet it is even more ominous when there is a steady diminution of the distance that can be walked without pain or discomfort.

When there are apparently no clear evidences of cardio-vascular disease, a careful survey should be made of the patient to discover, if possible, anything which may be lowering the threshold to pain. First, any toxic cause, such as a grumbling appendix, oral sepsis, sinus disease, or some pulmonary, renal, or alimentary disorder; further, worry, anxiety, overwork, or insufficient sleep, are quite likely factors. When some such cause is responsible for lowering the threshold to pain, it persists between the attacks of pain, and in consequence the patient is not normal even when quite free from angina. He is found to be toxic, or depressed and irritable, and shows the usual indications of nervous exhaustion.

When possible, as a final feature in the examination, it is well worth while to take an electro-cardiogram. This may reveal evidence of myocardial damage which might otherwise escape recognition. I will refer later to its value in prognosis.

## DIAGNOSIS.

In the absence of syphilis or valvular disease of the heart, primary angina is rare under the age of 45, and it is

## ANGINA MINOR.

unwise to make such a diagnosis in the young if neither aortic disease nor an abnormal blood pressure is present. In fact, the diagnosis must be made on the character of the pain and not on the physical findings. Too often a correct diagnosis of angina is refused because on physical examination either nothing abnormal is found or there is only a moderate degree of enlargement. It must be remembered, before an increase in the size of the heart, emphysema masks an increase in the size of the heart, and also makes it difficult to recognize any abnormality in the heart sounds.

Pain in the region of the heart is a common complaint in most patients with valvular disease, and in many others, especially in young males presenting the symptoms of the "effort syndrome" (the D.A.H. of army days). But this pain, though cardiac in origin, is not entitled to the label "angina." In this group the pain is submanimal and often felt directly over the cardiac thrust. It may be stabbing, or an ache, and the skin and muscles of the adjacent areas are often tender on palpation, especially directly over the apex beat. Hyperaesthesia is much more noticeable in these patients than in the anginas.

Although usually induced or aggravated by exercise, the pain is often quite independent of effort and frequently occurs when the patient is in bed; and it may be accompanied by troublesome palpitation. If the pain does extend into the arm it is nearly always diffuse, and frequently the whole arm, and often both arms. It is less likely to have the segmental distribution or the characteristics of anginal pain. Occasionally it extends from head to foot, limited to the left side, and when the pain is bad there may be great nervous excitement—sometimes even nervous rigors—followed by a condition of prolonged nervous prostration. This is in great contrast to a primary angina, where cessation of an attack as a rule leaves the patient comfortable and free from physical distress.

The following is an example of cardiac pain which presents the characters of a secondary angina and which had been looked upon as major.

## CASE IX.

A nurse, aged 30, was examined on April 9th, 1926. She was tall, with red hair, and a healthy complexion, and was alarmed and anxious about her heart. She complained of pain just to the left of the sternum in the fourth intercostal space. It was as if something was pressing hard on the chest. It caused her breathing to stop, and radiated into the left arm, involving the whole arm from shoulder to wrist in a cramp-like pain. The pain was induced by effort, or annoyance. Examination showed a heart normal in size and sounds, free from any indication of disease. Blood pressure 125/75 mm. Hg. Heart rate regular. The heart sometimes raced at 100 to 120. Ever since she has been liable to two and a half years before. Ever since she has been liable to vasomotor blotching, and her hands have been blue and cold in the winter. In addition to dyspnoea, she becomes dizzy and faint on climbing the stairs, she wakes in the night with a sensation of shortness of breath, which sometimes lasts for ten to thirty minutes. The attacks are always worse after she has been nursing a "bad case," and also after a period of excitement, but not while excited.

There are certain features in this patient which are very suggestive, and indicating that there are factors outside the heart; the vasomotor system is unstable, and the effect of any nervous exhaustion is noticeable.

## THE OUTLOOK IN ANGINA MINOR.

The prognosis is admittedly difficult when the patient is afflicted by major angina; it is doubly so when the symptoms are of the slight, transient, mild degree present in angina minor. The great danger is that of a wrong diagnosis. The original element in the complaint is wrongly interpreted, until the "grand mal" stage arrives, and the diagnosis is "writ plain for all the world to see."

In angina minor the prognosis must be based on a consideration of the same facts as in angina major. It is the integrity of the myocardium and the soundness of the arterial tree that matters, and, of course, primary angina of the minor type is more serious than secondary angina minor.

The more reasons there are for believing that the threshold for pain is below normal, the better the outlook, and when the causes for the lowered threshold to pain can be removed there is still further reason for a tempered optimism. Subinfections, mental worry and strain, insuffi-

cient sleep, and factors of this kind can be treated, removed, or neutralized. The prospect brightens in so far as this can be carried out satisfactorily.

It is not wise to venture on any prognosis when the pain dates from a recent pyrexial attack such as influenza. The myocardium may take some months to recover from the transient toxæmia, and during the convalescence the symptoms may be misleading. Persistence in the liability to pain and discomfort in spite of treatment with it there is factory feature, especially if combined with the liability clear evidence of cardiac embarrassment accompanied by enlargement of the heart. A high blood pressure, peculiarly enough, does not appear to add to the gravity of the prognosis. My figures for all anginas gave the average duration of life from the first appearance of pain as four and a quarter years in the high pressure cases (180 mm. Hg and over), and three and a half years in the group with pressures under 180 mm. Hg. As in many of these patients there was a year or two when the symptoms were of the mild minor type, before major angina developed, I feel inclined to view the minor angina with low blood pressure as probably less satisfactory than when the pressure is high.

When there is a clear history of syphilis the prognosis should be guarded until a full course of antisyphilitic treatment has been carried out, for occasionally the improvement to attacks was diminished and the duration of life prolonged by vigorous antisyphilitic treatment in anginas of syphilitic origin. My experience definitely corroborates this. Potassium iodide in massive doses is not enough; the patient should have two courses of intravenous arsénobion and prolonged mercurial treatment.

The family history is always worth considering when reviewing the prognosis. The tendency to hyperpæsia is sometimes a family characteristic, and in such families death is common from angina, cerebral hæmorrhage, or cardiac defeat. The tendency to hyperpæsia is sometimes common from angina, cerebral hæmorrhage, or cardiac defeat. With such a family history the expectation of life is poor over 50, and the mere grumbling of angina minor is exceptionally ominous. At times the electro-cardiograph findings indicate a speedy exit, especially when they reveal the presence of a branch bundle lesion. Even when there is no evidence of a branch bundle lesion other well recognized deviations from the normal may be met with which have a sinister significance. The following case is of interest in this connexion.

## CASE X.

In May, 1925, a medical practitioner, aged 60, complained of a "raw feeling" across the upper sternum, described by himself as pleurodynia, which he did not view with any apprehension. This sensation was noticed on going out of the house. Exposure to cold or damp would bring it on, but in a warm room he felt no discomfort. It did not interfere with his breathing. He had never been ill in his life, and this was the first time he had ever consulted a doctor. He had only noticed this queer sensation for four weeks.

On examination the pulse was 84, regular, not perceptibly collapsed. Arteries just palpable. Blood pressure 170/55 mm. Hg. The heart was 4 inches to the left of the mid-line; there were no thrills. Over the aortic area I heard a to-and-fro bruit, and the aortic second sound was not audible. A soft diastolic murmur conducted towards the apex could just be heard. The urine was normal. On May 22nd an electro-cardiogram demonstrated a right branch bundle lesion. The blood pressure had dropped to 135/55 mm. Hg. The heart rate was 84, regular and normal.

On June 7th he had an attack of major angina which killed him in a few minutes. The total duration of life from the first indications of minor angina was only eight weeks.

## TREATMENT.

My remarks on treatment must be brief. In the *Lancet* of November 8th, 1924, I discussed this fully, and the general principles indicated there apply with equal force to the minor form of angina, and, it might be added, with a fairer prospect of satisfactory response.

A damaged heart necessitates a sheltered life, and the reasons for the restrictions advised should be frankly explained to the patient. His full co-operation is imperative, and he must face his limitations and live within them. The efficiency of the myocardium must be maintained by adequate rest, a regulated life, and such medicinal measures as hæmatinics. When syphilis is an etiological factor, appropriate and efficient antisyphilitic treatment is, of course, imperative.



Since the work of the heart bears a relation to the body weight, an attempt should be made to bring the bulk of the body, when it is excessive, within normal limits. Careful dieting to obtain this result should be carried out and the results noted. An abnormally high blood pressure can sometimes be modified with definite relief to the overloaded myocardium.

Much can be done in the secondary anginas when by meticulous cross-examination the cause of the lowered threshold to pain has been discovered. All possible sources of persistent low-grade infections should be investigated and radically treated—dental sepsis, sinus disease, abnormal intestinal conditions, pyelitis, chronic appendicitis, etc.

An attempt must be made to eliminate worry and make sure of sleep. For this a mixture of ammonium bromide and phenazone is especially helpful. In the readjustment of the patient's life, factors giving rise to mental strain and irritations should be obviated as far as possible.

As my last word, may I lay stress again on the very great importance of an early diagnosis when the symptoms, though but slight and elusive, are both ominous and sinister. An accurate diagnosis *then*, followed by wise treatment, offers some chance of arresting, or at any rate of retarding, the development of the pathological changes responsible for angina.

## THE ACTUAL PLACE AND FUNCTION OF THE TUBERCULOSIS DISPENSARY IN THE TUBERCULOSIS SCHEME.\*

BY

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When the council honoured me with the request to open this discussion I accepted with alacrity. The fascination of tuberculosis has held me a bondsman throughout my professional life. The range of interests is always widening. In offering a few thoughts for your consideration it will be my endeavour to do so briefly and simply, in the hope that it may stimulate members of the Conference to give us freely of their experience.

### Forty Years Ago.

It is difficult to-day for the man in middle life—and still more for the younger man—to realize the attitude of mind towards tuberculosis which prevailed forty years ago and previously among both doctors and laymen. What was then accepted as care and treatment is now hardly imaginable.

The victim of tuberculosis—so-called consumption—was for the most part recognized too late. He was generally expected to die. The treatment meted out to him was empirical, unphysiological, and usually futile. The vain attempts at protection tended to hasten the end. With the death of the patient the interest that had been kindled by his illness was extinguished.

Speaking of the expectancy of life of the consumptive patient, Dr. C. J. B. Williams, in his treatise on *Pulmonary Consumption* (1871), says, with reference to the first ten years of his practice, 1830-40: "My general recollection of the histories of the developed disease at that time is that of distressing tragedies, in which no means used seemed to have any power to arrest the malady; and life was rarely prolonged beyond the limit of two years, assigned by Laënnec and Louis as the average duration of the life of a consumptive."

### Conception of Tuberculosis Dispensary (1887).

Let me try to recall some of the circumstances and events which led to the remarkable alteration of outlook and action which now prevails.

It is some forty years since, following on the discovery of the essential cause of tuberculosis, its infective nature came to be admitted. While engaged in laboratory

work on tubercle, and attached to a general medical dispensary, it was home in an me that acceptance of the infective nature of the disease carried with it far-reaching consequences. It seemed clear that, the infective nature of tuberculosis being granted, the principles which had been effectively applied in relation to other infective conditions were, with appropriate modifications, applicable to tuberculosis likewise.

Apart from a few special hospitals devoted to diseases of the chest, the chief avenue to care and treatment open to the poorer citizen suffering from tuberculosis forty years ago was by way of the out-patient department of a general hospital or similar medical institution. What happened daily in out-patient departments amounted to this—that the patient, suspected to be suffering from what was then spoken of as consumption, was examined for the presence of certain recognized signs of chest disease; when such were ascertained to be present, the sick man was accorded a prescription for his cough or other chief symptom, and commonly for cod-liver oil, and was invited to report himself from time to time for similar consideration and treatment. Occasionally he was passed on for admission to hospital, when such facilities were available. The number of special beds at that date was extremely scanty, and he was not very warmly welcomed in the general wards. The demand on beds was out of all proportion to the number of tuberculous applicants, with the result that even the small percentage which attained admission enjoyed the available benefit for a relatively short period. There was little serious effort to ensure anything more than amelioration or arrest of existing symptoms. The infective nature of the disease hardly came under review; nor were the facts of the illness linked in any close fashion with the conditions of the patient's home and household.

All this was radically wrong. It involved a disregard of the natural history of the disease, its infective origin, its widespread distribution, its lengthy course, its protean manifestations, its dependence on environmental conditions, its tractability when efficiently handled for a sufficient period, and many other facts which we now regard as commonplaces.

Reflection on such lines led me to press for a wider conception and fresh line of procedure. The proposal culminated in the establishment of the tuberculosis dispensary in 1887.

### Purpose and Programme.

The essential purpose was the creation of a centre towards which patients suffering from this infective disease, and the friends of patients, and the public, could readily turn for every sort of direction and help, and from which there would radiate information of many kinds for the guidance of individual patients, households, and the community as a whole.

The original aims of the tuberculosis dispensary have been often detailed. They are so well known that on the present occasion there is little need to recapitulate them in detail. They constituted the first attempt to hunt down the infection, to discover the haunts and methods of the invader, and to raid him on his own territory. The principles and methods were incorporated in the well known circular of the Local Government Board of Scotland, dated March 10th, 1906, which reproduced in *extenso* a paper given by me to the International Congress at Paris in 1905. The principles and methods were frankly accepted in 1905 by the Departmental Committee on Tuberculosis (1912), which adopted the programme of the Edinburgh Tuberculosis Dispensary as a model for the tuberculosis dispensaries of the country.

The Departmental Committee, in describing the functions of the tuberculosis dispensary, affirmed that it should serve as (1) receiving house and centre for diagnosis; (2) clearing house and centre for observation; (3) centre for curative treatment and supervision of ambulant cases; (4) centre for the methodical examination of contacts and the investigation of environmental conditions; (5) centre for continuous care of patients—so-called "after-care"; (6) information bureau and educational centre. The Departmental Committee placed the tuberculosis dispensary

\* An address introductory to a discussion at the twelfth annual Conference of the National Association for the Prevention of Tuberculosis, Glasgow, July 1st, 1926.

as the first unit in the tuberculosis scheme and confirmed the view

"that the tuberculosis dispensary should be the common centre for the diagnosis and for the organization of treatment of tuberculosis in each area, at which the various bodies and persons connected with the campaign against tuberculosis should be brought together. The aim should be that no single case of tuberculosis should remain uncared for in the community. . . . The tuberculosis dispensary should be linked up to those institutions (hospitals, sanatoria, farm colonies, open-air schools) for which it will act as a clearing house."

#### Larger Results.

For the moment we are less concerned with the original purpose but rather with results which have emerged and developed from the continuous application of the methods proposed. Forty years constitute a period of sufficient length to enable us to appraise the significance of the activities.

At the outset you will allow me to say that, great as seemed the possibilities at the start, appreciation of their extent and value has grown with each succeeding year. A few of the more conspicuous developments may be cited.

1. *Widespread Distribution of tuberculosis.*—The tuberculosis dispensary has demonstrated, as no other agency could, the extensive ramifications of tuberculosis throughout the area served by the dispensary. It has collected living proof of the universality of tuberculosis throughout the community. A comparison of maps showing the distribution of tuberculosis, taken at successive intervals throughout the area, demonstrates that the more an area is thoroughly investigated, the more is the population found to be permeated by the tuberculous taint. It has shown further that different portions of a given area differ in degree of saturation. It has thus thrown a flood of light on the influence of environment as a factor in the production and maintenance of tuberculosis.

2. *Spread through Households.*—By the systematic examination of households—the "march past" of the taint—it has afforded incontrovertible evidence of the spread of the disease throughout a household from a primary source of infection.

3. *Infection in Childhood.*—It has emphasized the frequency with which tuberculosis is contracted in childhood. In household after household it has determined the existence of tuberculosis in the majority of the children by systematic search in one family circle alone.

4. *Heredity.*—Its investigations have dealt a serious blow at the doctrine of heredity—fondly cherished as that the natural history of the disease. The investigations offer strong support to the applicability of the views based on the observations of Bang and others in cattle, to the effect that the tuberculous mother very seldom produces offspring already tainted by tuberculosis, and that the offspring of such mother is saved from the risk of infection from her, while, conversely, the risk of early contraction of tuberculosis is accentuated in proportion as close contact with the infected mother—or with other infected member of the group—is maintained. Tuberculosis is thus seen to be a family or household disease, not because of hereditary transmission, but because of the abundant opportunities afforded for the transmission of infection from one infected individual to the other members. This risk exists in high degree in the earliest years of childhood.

5. *Recognition at Earliest Moment.*—The system of examining contacts has not only detected many cases that otherwise would have been missed. It has also afforded opportunity for the very early detection of infection as it occurs in successive additions to the household. It has shown how it is possible by careful observation to register in a growing family the actual advent of infection in successive children. In this way it has rendered possible the practice of anticipatory treatment—that is, of treatment, antigenic or other, which has in view the raising of the resistance of the infected individual with a view to preventing the worse consequences of such infection.

6. *Continuity of Observation.*—The dispensary has thrown a flood of light—by its continuity of treatment and care—on the natural history of tuberculosis. It has

enabled the observer to follow the child from the moment of recognized infection throughout a long period of years. In this way it has been possible in my own experience to observe the same infected individual throughout twenty to thirty years and longer.

7. *Natural History of the Disease.*—By this means it has been possible to construct a picture of the successive manifestations which most commonly repeat themselves in the evolution of tuberculosis. It has shown that in the vast majority of cases there is a gradual extension—just as in the experimental animal—from the point of primary infection by way of the lymphatic system, until the deeper viscera are successively involved. The dispensary has thus served to illuminate the relation of pulmonary tuberculosis and the more likely points of entrance of infection, and has relegated for the most part a relatively late visceral involvement.

8. *Continuity of Infection.*—Observations at the dispensary have shown, not only the continuity, but the varying manifestations of the tuberculous process in the same individual throughout a long series of years. It has revealed the ebb and flow in the progress of infection throughout a long life. It has shown how cases in the so-called third stage of pulmonary disease—with cavity formation which used to be regarded, and is still regarded by many, as the terminal picture—may yet live and go comparatively strong for thirty years or longer. It has illustrated how a cavity, especially when it occurs in young subjects, may, during the process of growth and development, gradually contract and finally disappear.

9. *Necessity for Long Supervision.*—By continued observation on ambulant patients and on those who have undergone sanatorium or other institutional treatment, the dispensary has proved how essential is the prolonged maintenance of such supervision, and how valueless may be the result of short periods of residential treatment—as, for example, the classic three months in a sanatorium, mere snippets in relation to the time limit necessary for the establishment of sound and effective arrest by the necessary histological changes.

10. *Economy in Treatment.*—Continuous, prolonged supervision at the dispensary has demonstrated how much can be done for tuberculous patients by ambulant treatment. From the records abundant proof may be had of how health may be maintained successfully without much expenditure. By means of weekly, fortnightly, or monthly guidance received at the dispensary, large numbers of patients may be kept on their feet and successfully treated without recourse to the sanatorium, or following on sanatorium treatment—and this at a minimum of cost.

11. *Housing: Reform in the Home.*—By a sound system of domiciliary visitation, the dispensary has succeeded in reforming homes and households, reducing the effects of unhealthily environment and recreating insanitary houses after the image of the sanatorium. In this direction the dispensary's educational value to a community through doctor and nurse can hardly be overestimated. These examples of the far-reaching activities of the tuberculosis dispensary might be multiplied. They are cited merely as illustrations. Others will emerge in the course of the discussion from able men who, in town and county, have had many years' experience in developing and refining this significant instrument of preventive medicine.

What the Tuberculosis Dispensary should not be. In drawing these desultory remarks to a close, a few words seem desirable on the other side of the picture—namely, what a tuberculosis dispensary should not be.

The establishment of the tuberculosis dispensary as a reaction from the comparatively ineffective out-patient department of the past. Splendid work has been effected by tuberculosis officers in different parts of the country; yet visits to not a few dispensaries, and extended inquiries in different directions, constrain me to the view that the ideal of the dispensary and its great possibilities are not realized everywhere.

It is unfortunately common to find that the tuberculosis dispensary concerns itself solely or chiefly with cases of

## HYPOGLYCAEMIA DUE TO INSULIN IN CHILDREN.

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pulmonary tuberculosis, although these constitute for the most part a late manifestation of the infection. Even then the investigation of the patient lacks reality and thoroughness. The idea of using the pronounced case of infection as a clue to the earlier—the conception of hunting down the infection in the households of the area with a view to its eradication—is overlooked or ignored. The opportunity of the dispensary as a field of fresh observation in many directions is entirely lost. With so limited an outlook the work tends to become routine.

Such procedure cannot be expected to lead us very far towards the final goal. As I ventured to say on a previous occasion:

"The calm repose of the physician who, stethoscope in hand, decides for or against a cavity in the lung, and then contents himself with prescribing cod-liver oil, and perhaps a chronic pectoral mixture, must be disturbed. His cerebration and locomotion both require stimulation, so that he may be led to anticipate the disease by earlier diagnosis, and to determine the potentialities of contagion in the home. With the study of the detected he must leave no stone unturned which may throw light on patient's life-history and environment, which must the physician concern himself with the health of the rest of the household, causation or maintenance of disease. Chiefly must be 'The whole family—or as many members as possible—must be scrutinized with scientific suspicion. The patient will not be sent home merely rich in weighty counsel. He will be followed to his home by doctor and nurse with trained eye and skilled finger, prepared to observe and sift every fact and to hold a critical 'march past' of the household. That is the way to raid the haunts of the tubercle bacillus effectively."

### Searchlight Installation.

Ernest Renan compared the human conscience to a light-house with recurrent flashes of illumination which guide the uncertain mariner on the sea of life. I like to think of the tuberculosis dispensary as a searchlight installation in the vast tubercle-tainted plantations of our communal life.

In proportion as the installation is complete and the operators are understanding, results will surely follow. The instrument suffuses with light the area of operations so that no facet of the problem remains in shadow. It superilluminates every case of tuberculosis and ensures a just appreciation of its character and bearings. The penetrating ray enters the home and, linking effect with cause, brings the means of healing and the assurance of prevention to each of the dwellers.

And, throughout the area thus illuminated, watchful observers "battling with custom, prejudice, and disease," may yet snatch further triumphs and gather new facts and ideas of which, to-day, we hardly dream.

## HYPOGLYCAEMIA DUE TO INSULIN IN CHILDREN.

BY

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It is not widely known that the level of blood sugar at which symptoms of hypoglycaemia occur is decidedly lower in children under 12 years of age than in adults. There is some variation in the level at which symptoms arise following insulin administration in adult diabetics. This is observed not only when comparing one patient with another, but also in repeated observations on the same patient. In my experience the level of blood sugar when hypoglycaemic reactions occur in the adult usually lies between 60 and 80 mg. per 100 c.c.m., though very occasionally values as high as 100 and even 110 or 130 mg. or as low as 50 mg., have been encountered at the time of the reaction. Anomalous results (outside the range of 60 to 80 mg.) have been experienced too often now to be explicable solely on the basis of analytical errors. It is possible that the rate of fall of the blood sugar is of more consequence than the actual level in determining the onset of symptoms, though I have not uncommonly met with rapid falls (for example, from 328 to 53 mg. per 100 c.c.m.

in five hours) without resultant symptoms. Another possible explanation is that it is the concentration of sugar in the central nervous system that matters, and this sugar content of the peripheral blood may be either above or below this critical value in certain circumstances.

In eleven diabetic children, aged 1 to 11 years, treated with insulin, twenty-eight analyses out of some hundreds showed a blood sugar of less than 50 mg. per 100 c.c.m. without any concomitant clinical symptoms of hypoglycaemia. The lowest value was 28 mg., and the average of the twenty-eight analyses 39 mg. In three additional records (29, 44, and 45 mg. respectively) there were slight symptoms only. On thirty occasions in the above cases values between 50 and 59 mg. were found in the absence of symptoms. Typical examples follow. All analyses were made by Maclean's method, and in duplicate.

Case 1.—Male, aged 1 year and 2 months. Blood sugar on admission 442 mg. per 100 c.c.m. On the third day of insulin treatment the blood sugar was 32 mg. four hours after the morning injection of 10 units, but there were no signs of hypoglycaemic reaction. Before the injection of 24 oz. of milk daily. 244 mg. The diet at this time consisted of blood sugar was reduced to 244 mg. On six subsequent occasions the blood sugar was 23 and 49 mg. per 100 c.c.m. some three to five hours after 6 units of insulin, without any signs of a reaction. On another occasion there were definite signs of hypoglycaemia. The baby was pale and slightly drowsy. He tended to fall forward, burying his head in the clothes. Blood analysis yielded the figure 44 mg. sugar per 100 c.c.m. Five grams of carbohydrate (orange juice) restored the patient to normal.

The low levels of blood sugar are striking in this baby. As in adults, the level at which clinical signs occur is not a fixed point. On one day there were definite signs with a blood sugar of 44 mg., on another no signs of a reaction with a blood sugar of 32 mg.

Case 2.—Female, aged 2 years and 1 month. The daily diet contained 37 grams of carbohydrate, 31 grams of protein, and 50 grams of fat; 10 units of insulin were given daily. There were no signs of hypoglycaemic reaction on seven occasions on which the blood sugar varied from 32 to 49 mg. per 100 c.c.m. There were slight but definite signs (pallor and extreme hunger) on one occasion when the blood sugar was 29 mg. per 100 c.c.m.

Case 3.—Male, aged 3 years and 3 months. The blood sugar was 46 and 49 mg. per 100 c.c.m. respectively on two occasions when there were no signs of a reaction.

Case 4.—Female, aged 4. Blood sugar 38 mg. per 100 c.c.m. there were no signs of clinical symptoms.

Case 5.—Female, aged 6. No symptoms when the blood sugar was 49 mg. per 100 c.c.m. accompanied by clinical symptoms.

Case 6.—Female, aged 9. Slight symptoms with blood sugar of 45 mg. per 100 c.c.m. Symptoms relieved by 5 grams of carbohydrate (orange).

Case 7.—Male, aged 11. Fixed diet of 60 grams of carbohydrate, 70 grams of protein, and 140 grams of fat daily. He was given 8 units of insulin half an hour before breakfast, and 5 units a quarter of an hour before tea. The blood sugar results are shown in the following table. There were no signs or symptoms of hypoglycaemic reaction throughout. The boy walked to the laboratory from the ward, and "played about" in the intervals between the collections of the samples of blood.

Date.	Blood Sugar, mg. per 100 c.c.m.					12 Hours after Evening Dose.
	Hours after Morning Dose of Insulin.					
	1½	2½	3½	5	6	
1925.						
April 19th ...	63	60	55	137	12,	—
April 25th ...	—	53	—	62	—	53
April 27th ...	—	43	—	61	—	—
April 28th ...	—	35	—	108	—	—
April 29th ...	Morning dose reduced to 5 units.					53
May 1st ...	—	61	—	108	—	—
May 4th ...	—	59	—	—	156	—

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It will be seen that in children the blood sugar may fall some 20 to 40 mg. below the "adult hypoglycaemic level" and yet be unaccompanied by signs of a reaction. It is well recognized that the general level of blood sugar in children is lower than that of adults, and therein may lie the explanation of these observations.

There is another point of practical importance. The hypoglycaemic reaction is not nearly so well defined in children as in adults. In the younger children and infants,

\* Working on diabetes with a grant from the Medical Research Council.

of course, we are dependent solely on objective signs, and even the older children often are not able to describe their subjective symptoms as well as adults. In children the first signs of a hypoglycaemic reaction are often pallor, an unusual quietness, lassitude, and a tendency to doze whilst undisturbed; when examined, fretfulness and a greater tendency than usual to weep or cry are noted. None of these signs can be regarded as characteristic, for any or all of them may occur apart from hypoglycaemia. Sweating may or may not occur, but when it does it can hardly be regarded as a characteristic sign, sweating being not at all uncommon even in healthy children owing to excess of (bed) clothes, etc. Some writers consider that an increase in pulse rate is a valuable sign, but in my experience this is by no means constant and is not trustworthy.

#### Treatment.

The treatment of hypoglycaemia is well established—the administration of glucose or of other rapidly absorbed carbohydrates. The dose of carbohydrate depends on the degree of hypoglycaemia. In very mild attacks it is sometimes unnecessary even to give sugar. The patient may recover spontaneously or a cup of berril or hot weak tea may suffice. In more severe but still mild reactions 5 grams of carbohydrate as orange juice (45 c.cm. or  $1\frac{1}{2}$  oz.) or as orange quarters (50 gm. or  $1\frac{1}{4}$  oz.), or as one lump of cane sugar dissolved in water and flavoured, if desired, with lemon juice, are ample. If the symptoms have not obviously improved in fifteen to twenty minutes the 5 grams of carbohydrate should be repeated. Sometimes symptoms occur shortly before a meal is due; it is then often sufficient to give the meal or part of it a quarter or half an hour before the prescribed time. The exact details of treatment in any given case will depend on circumstances—whether the patient is at home or under close observation in an institution, the availability of blood-sugar determinations, etc.—but it should be an absolute rule to avoid treating hypoglycaemia with excessive amounts of carbohydrate and so rendering the patient hyperglycaemic. Of course, severe hypoglycaemic reactions demand larger doses of carbohydrate—for example, 15 grams as cane sugar (3 cubes); it may be necessary to give 15 to 20 grams of glucose by stomach tube, and this method can often be employed successfully even though the patient be semiconscious. Intravenous injection of glucose should be reserved for emergencies.

One practical point, sometimes forgotten, is that the sugar should invariably be administered in solution to ensure rapid absorption, and this is particularly important when hypoglycaemic symptoms are marked. One of my adult patients awakened one night with severe symptoms, and promptly swallowed with some difficulty two lumps of cane sugar. At the end of fifteen minutes the symptoms were worse, so she took some more lumps of sugar, and this was repeated till fifteen lumps in all had been devoured. The symptoms still persisted and she became very frightened. Fortunately she was then given some brandy and water, whereupon she came round in ten minutes. In the morning, of course, she was markedly hyperglycaemic (blood sugar 430 mg. per 100 c.cm.).

In children variation in the amount of exercise is a real difficulty, and not seldom accounts for hypoglycaemic reactions. Thus on several occasions I have been consulted by a parent who noted that her diabetic child had attacks of giddiness at the beginning of his holidays. The child played strenuous games in the garden in the holidays, whereas during term time he was seated at his lessons. Avoidance of severe exercise during the period two to five hours after insulin had been administered promptly caused the attacks of giddiness to cease. Adult diabetics soon learn to provide for unusually strenuous exercise by reducing slightly the dose of insulin, or by increasing the carbohydrate in the meal prior to the exercise; but it is much more difficult to make similar preparations in the case of children. The visit of a friend may result in a vigorous romp or in some quiet game; nobody can prophesy what will happen, least of all the child. The interference, unfortunate but absolutely necessary, with the spontaneous life of these little patients is one of the factors which make them so odd for their years.

## AN AID TO THE RADIOGRAPHY OF THE MAXILLARY ANTRUM.

BY

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THE following method is suggested as an aid to the diagnosis of cases of choanal polypus and new growth of the antrum, where an ordinary x-ray photograph often is of little use.

It can be ascertained in these cases whether a choanal polypus is coming from the antrum, and, if it is, whether



FIG. 1.—Skilogram of normal antrum injected with lipiodol.

it is attached in the usual situation or not. If new growth is suspected, the wall from which the growth is coming may often be decided.

Lipiodol (iodine in poppy-seed oil) is injected with the Watson-Williams syringe (the ordinary Lichtwitz cannula and a Record syringe may be used) into the antrum. Since lipiodol is opaque to x rays, the less opaque growth or

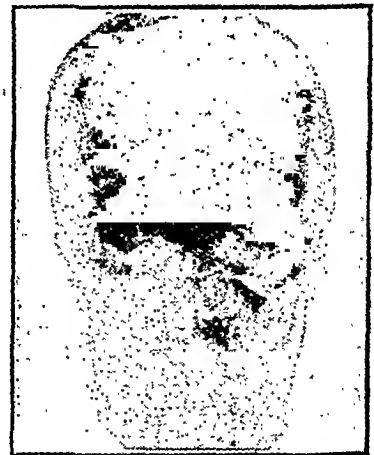


FIG. 2.—New growth of maxillary antrum. Lipiodol seen in outer part of antrum outlining the growth; wool seen in nose.

polypus is outlined by the dark shadow of the injected lipiodol. If a lateral and an antero-posterior view are taken a fairly accurate idea of the position and extent of the growth can be obtained. The method is excellent also for giving an outline of the sinus and showing the extent of alveolar recesses.

Puncture is made, after cocaineization, through the inferior meatus of the nose, the middle meatus having previously been packed with wet wool extending as far back as possible in order to prevent the lipiodol from escaping by way of the normal and accessory ostia if these

are not already closed by the disease. Sodium bromide was at first tried instead of lipiodol, but it was found that it was very apt to soak the wool and escape. It is also as well to apply a piece of wet wool to the puncture hole in the inferior meatus as soon as the needle has been removed, to prevent escape of lipiodol in this situation.

The lipiodol may be removed with the Watson-Williams syringe, the needle of which can be placed in the puncture hole formerly made. In other cases, as the antrum will be opened surgically later, the lipiodol may be left in situ till the operation, as it is sterile when injected.

The accompanying figures are reproductions of antero-posterior x-ray photographs; they show a normal maxillary antrum injected with lipiodol, and an antrum containing an epithelioma. In the latter the lipiodol has filled those parts of the antrum not occupied by the growth. The pieces of wool in the nose are well seen.

## PINNING THE FRACTURED ULNAR STYLOID PROCESS IN COLLES'S FRACTURE.

BY

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MANY patients who have suffered Colles's fracture complain, months afterwards, far more of weakness of the wrist-joint and pain over the ulnar styloid process than of the radial fracture. An x-ray examination of these cases shows that this is caused by a fracture and separation of the ulnar styloid process.

There is no doubt that the successful treatment of Colles's fracture depends upon accurate reduction of the radial fracture; but there are many cases, especially those of impacted fracture of the radius, in which reduction is difficult and is not always accomplished successfully without open operation, and it is in these cases that separation of the ulnar styloid process is the cause of pain and weakness in the wrist-joint, often many months after fracture. This after-result of Colles's fracture impressed me so much that I began to pin the fractured styloid process of the ulna.

Although the fractured radius may be accurately replaced, yet if x-ray examination shows the styloid process of the ulna to be still separated, open operation should be performed in order to get good bony union of the fractured surfaces, and not the fibrous union which would otherwise result. It is by this means that pain and weakness of the wrist-joint can be prevented.

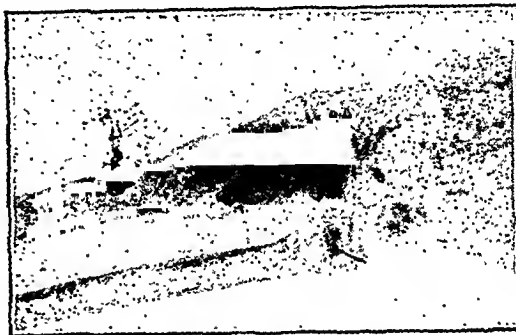
Anatomy textbooks state that arising from the styloid process of the ulna is the strong internal lateral ligament of the wrist-joint, which is attached to the rough non-articular border of the cuneiform bone, some of its fibres being prolonged to the pisiform bone. It seems to me that if this strong internal lateral ligament of the wrist-joint is rendered useless by want of accurate approximation of the fractured ulnar styloid, where this separation is shown by x-rays to be present the only thing to do to prevent resultant pain and weakness is accurately to approximate the fractured surfaces and pin them into position and ensure sound bony union.

In those cases of impacted Colles's fracture where reduction is impossible because the fractured lower end is caught up in the pronator quadratus muscle and open operation is necessary, then, should there also be a complicating fracture of the ulnar styloid, this too should be operated upon. Hence it seemed to me common sense that the fracture of the ulnar styloid process should not be overlooked. I have devised an open operation which is, I understand, original—it is very simple and takes only a few minutes to perform.

A vertical incision is made directly over the fractured ulnar styloid, and the fractured surfaces are exposed. They are found separated by several millimetres (as shown by the skiagram), and frequently the distal end of the fractured styloid process is so pulled upon by the strong internal lateral ligament that it is rotated as well as separated, and its base tilted upwards and towards the extensor surface of the forearm, proving that without

open operation bony union is even more impossible than it is with simple separation. (The x-ray picture will not show this tilting of the fractured tip of the styloid process.) With the thumb and index finger of the operator's left hand the fractured styloid process is accurately replaced, and, being thus held in position, an ordinary straight bayonet-shaped needle is, with a hammer, driven through the fragment into the lower end of the ulna in a direction downwards and slightly towards the flexor and radial side of the forearm. When the needle has been driven sufficiently far to fix the styloid fragment the needle is cut off with wire-clippers, the fascia replaced, and the wound sewn up. The forearm is placed on an ordinary Carr's splint for seven to ten days, after which the splint is discarded, the stitches removed, a firm bandage applied, and massage and passive movements started forthwith.

This operation is very simple and takes only a few minutes to perform, and I maintain that where, with separation of the fractured surfaces, this fracture complicates a Colles's fracture, the pinning of the styloid ulnar process should always be performed, and will prevent resultant pain and weakness of the wrist-joint. But at the same time it must be understood that accurate radial reduction is the first and foremost object in the treatment of Colles's fracture.



The x-ray photograph is from a recent case which I consider typical, because after accurate radial reduction there remained separation of the ulnar styloid process. The patient was a lad aged 16, and I feel confident that without open operation and pinning of the ulnar styloid he might have had a permanently weak wrist which would have interfered seriously with his efficiency in after-life; whereas he now has firm bony union of the fractured styloid process and as strong a wrist-joint as he had before his accident, without any pain, weakness, or deformity.

## CONGENITAL ABSENCE OF THE PECTORAL MUSCLES.

BY

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PARTIAL or complete absence of the pectoral muscles is a condition comparatively frequently met with, and in a series of cases of congenital absence of muscles collected by Bigs<sup>1</sup> loss of the pectoralis major (usually the pars sternocostalis) and of the pectoralis minor together was the commonest abnormality to be present (28 per cent. of the total); absence of the pars sternocostalis of the pectoralis major alone is the next most frequent type of abnormality, and was present in 9 per cent. of the cases. These figures are probably too high, owing to the fact that in the ordinary routine examination of patients this abnormality is very readily noticed, while the detection of most of the other muscular defects requires a more detailed examination.

A case of complete absence of both pectoral muscles on the one side is recorded by Severn,<sup>2</sup> but the absence of both major and minor is a very rare occurrence—usually the clavicular part of the pectoralis major remains, and often undergoes considerable hypertrophy. Absence of the



pectoralis minor unaccompanied by defect of the pectoralis major is said never to occur,<sup>2</sup> while only one case has been recorded where the condition has been bilateral.<sup>4</sup>

Heredity does not apparently play a very strong part in its production, since only once has the condition been noted in more than one member of a family—a case of father and two sons with this abnormality<sup>5</sup>—though other defects of development in the same family, such as accessory fingers or "webbed" toes, are occasionally met with. The pectoralis major is in some cases replaced by a fibrous band over which the skin becomes rolled, giving rise to a sickle-shaped fold which forms the anterior wall of the axilla.

Defects in the nipple and breast on the affected side are often present; both may be completely absent,<sup>6</sup> or the breast alone may be absent, with a rudimentary nipple, which is usually displaced upwards and inwards, as in the case described in this paper. There may also be a falling in of the chest on the affected side, due to defects in the cartilaginous portion of the second and third ribs; this portion may be markedly attenuated, or may be completely absent, its position being taken by a strong fibrous band.<sup>7-11</sup>

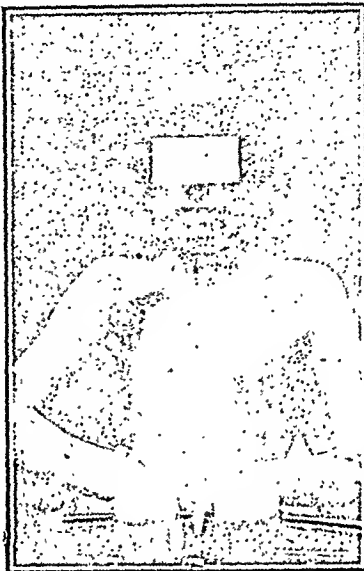
The amount of disability produced by the condition is, as a rule, extremely slight, as is seen by the case described by Burke<sup>12</sup> of a good left-handed baseball pitcher who had this abnormality on the left side, by the man recorded by Bruus<sup>13</sup> who was an expert turner, and by the student described by Stinzig<sup>14</sup> who was an excellent left-handed fencer, using his arm with the defect in preference to the other. In the case of the girl described in this article, with the abnormality on the right side, this arm was much stronger than the other, and she was able to throw a tennis ball twice as far with her right hand as with her left.

The most widely accepted view with regard to the origin of the condition is that advocated by Lewis,<sup>15</sup> who has shown that the pre-muscle mass from which the pectoral muscles are developed is situated in the lower cervical region in the early embryo and anterior to the first rib. As the embryo gets older the mass spreads out in the shape of a fan and moves downwards, becoming attached to the clavicle early and later to the ribs, sternum, and

abdominal fascia, while at the same time it becomes differentiated into major and minor muscles. He believes that the condition is due either to (1) failure of attachment and subsequent atrophy of the pectoralis minor and pars sterno-costalis of the pectoralis major; or to (2) lack of complete differentiation between the muscles. Probably both factors play a part in its production, but in favour of the latter view is the fact that there is always marked hypertrophy of the pars claviculæ when present in addition to hypertrophy of the deltoid.

The case here described was that of a girl, aged 13 years, with absence of the pars sterno-costalis of the pectoralis major and the pectoralis minor on the right side. The condition is best demonstrated by getting her to put her arms straight forward and pressing her hands together. There is considerable hypertrophy of the clavicular portion of the pectoralis major and of the deltoid on that side. The muscle is not replaced by a definite fibrous band, the anterior axillary fold being formed by the clavicular part of the muscle. The breast on the right side is absent, and the ribs in that position are merely covered over with skin and subcutaneous tissue. The nipple is rudimentary, and is situated higher and nearer the middle line than on the other side. The ribs are normal, and x rays show no abnormality of the bony thorax; no scoliosis is present. There is no loss of power on the affected side owing to hypertrophy of the deltoid and clavicular part of the muscle.

It is of interest that she has also wasting of the left thigh and calf with some shortening—the result of an attack of acute anterior poliomyelitis when 2 years of age.



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## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## THE VALUE OF ANATOMICAL DETAIL.

THE following case may be of interest as it serves to illustrate one of those finer details of anatomy which are apt to be forgotten and which sometimes assume considerable importance.

A married woman came to see me suffering from a wound on the dorsum of the right hand, a bowl having fallen from a height of about three feet on to her hand, splitting it open. The wound was comparatively clean cut, about one inch in length, and extended transversely across the extensor tendon of the middle finger, one inch from the metacarpo-phalangeal joint. On probing the wound it was found that the extensor tendon had been severed. In spite of this the patient could still extend the finger, although the movement was very slow and caused considerable pain. There was no apparent contraction of the extensor digitorum communis during the movement of extension. The patient was sent to hospital for treatment, but the diagnosis arrived at there was "extensor tendon half-cut." The treatment adopted was a skin stitch and finger splint. As I had informed the patient that the tendon was completely severed she naturally wished to have this little difference of opinion settled, and at her request I made an exploratory incision under local anaesthesia. I found the tendon completely severed, the proximal end having been drawn up the sheath for a distance of two inches. The sheath was opened and the tendon withdrawn in the usual way. The severed ends were then trimmed up and stitched together and the hand put up in a band and forearm splint in full extension.

sion. Passive movement was commenced on the second day and active movement on the seventh. The splint was removed on the fourteenth day and the patient now has full use of her finger.

The point of interest lies in the fact that in spite of complete severance of the tendon the finger could still be fully extended.

The anatomical detail apt to be overlooked is that from the extensor tendon of the ring finger fibrous slips pass to the adjacent tendons. The slip going to the middle finger is inserted just proximal to the metacarpo-phalangeal joint. Before stitching the severed ends together the patient was asked to extend her fingers, and it could then be seen that it was this slip which was responsible for the function remaining. In addition, the insertions of the tendons of the lumbricals and interossei would also contribute in some degree to the movement of extension.

Glasgow.

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## HUNTINGTON'S CHOREA.

WITH respect to the commentary by Dr. Grimby and Dr. Wilson on two cases of Huntington's chorea (*BRITISH MEDICAL JOURNAL*, May 8th and 15th, p. 820), and having regard to the pathology and rarity of the disease, I desire to record the cases of two patients who died within a day or two of each other in April last at the South Yorkshire Mental Hospital. One was a female and one a male, and

while the clinical symptoms were very similar and typical histories were obtained of several other members of the family having been insane and having chorea, yet the pathological pictures macroscopically were very different. The brain of the woman was small and firm, there was no thickening of the pia-arachnoid, the ventricles were only slightly dilated, the cerebro-spinal fluid was only slightly in excess, and there was apparently no wasting of the grey matter or basal ganglia; the brain of the man was large and very soft throughout; there was marked thickening of the pia-arachnoid, which was also adherent; the ventricles were very greatly dilated and the subarachnoid and ventricular fluid in great excess; there was marked frosting of the ependyma of the lateral and fourth ventricles. The grey matter and the corpus striatum were brown, very soft, and considerably atrophied, especially the caudate nucleus. In the brain of the woman the cerebral arteries were in good condition; in the brain of the man they showed numerous rings of sclerosis. Other details are as follows:

*Case 1.*—A woman, aged 41 on admission on June 22nd, 1921; no occupation. Several members of her family had been insane and had chorea, including her father and two uncles. She was imbecile and had previously been in mental hospitals for five years. She had delusions of persecution; the chorea was then only slight, but gradually became more severe, rendering her unable to do anything for herself and making her speech unintelligible. She died five years after admission.

*Case 2.*—A labourer, aged 52 on admission on November 25th, 1925. One brother and one sister had chorea and died insane. One brother had chorea and committed suicide; one brother is living but has chorea; one brother and one sister are living and healthy. The father had chorea and committed suicide. Two paternal uncles and a paternal grandmother had chorea and were insane. The patient had suffered from chorea for many years; he was imbecile and had latterly become irresponsible, mischievous, violent, and obscene; on admission he could give no account of himself, and the choreiform movements affected the whole body, including the face, and made the speech an unintelligible jargon. He died five months after admission.

In each case the terminal cause of death was a rapidly spreading inflammation, starting, in the case of the female, in an ischio-rectal abscess, and in the male in a boil of the gluteal region. As to the rarity of the disease during the last twenty years, I have been able to find mention of only two other cases at this hospital.

I am indebted to Dr. W. Vincent, medical superintendent, for permission to publish these cases.

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### POISONING BY TOBACCO APPLIED TO THE SKIN.

THE case of tobacco poisoning following inunction, reported in the JOURNAL of April 24th (p. 739) by Drs. Jones and Morris, calls to mind a case that I saw in Italy in 1918.

Whilst "resting" in a small village behind the line I was asked one evening to see an Italian soldier lying sick in a farmhouse in which some of our men were billeted. I gathered that the man was home on short leave, and would have returned to his unit that day had he not been taken suddenly ill.

I found a young man lying in bed obviously ill, drowsy, flushed, and irritable. He complained of sore throat, headache, and diarrhoea. His temperature was 101° and the pulse over 100. The fauces, soft palate, and pharynx were all very red, but free from membrane. There was a generalized erythema on the trunk and limbs. No paresis was noted.

He was handed over at once to the nearest Italian military authorities, who, in reply to my request for a diagnosis, informed me that the case was one of tobacco poisoning, the method of administration being that usually adopted in this particular form of malingering.

The method was as follows: two *foscani* (cheap Italian cheroots of great potency, usually cut in half and smoked by the poorer classes), having stood some hours in a glass of water, were placed at bedtime one in each axilla and held in position by a puttee or bandage. In some cases, in order to make more certain of the effects, the man drank the water in which they had stood. The following morning he generally went sick, and so escaped duty.

Unlike the case reported by Drs. Jones and Morris, the nicotine had not been removed from the tobacco by combustion, and consequently it was the probable cause of the vasomotor upset.

London. S.W.

J. NISSEN DEACON.

## THE BLOOD VESSELS OF THE HUMAN SKIN.

AN ABSTRACT OF THE CROONIAN LECTURES, DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON,

BY

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THE Croonian course delivered before the Royal College of Physicians of London by Sir Thomas Lewis consisted of four lectures given on June 8th, 10th, 15th, and 17th. It dealt with work done in collaboration with Drs. Grant, Love, and Zotterman, and was intended to stimulate interest in the study of human physiology as opposed to animal physiology; the results considered refer to man only.

The description given by Spalteholz of the arrangement of the vessels in the skin was adopted as the anatomical basis for the observations.

The colour of the skin is mainly due to the blood contained in the superficial venous plexuses. The capillaries may contribute in small part to this colour, particularly in such regions as the palms of the hands and soles of the feet, as they are more numerous in these sites than in others. The contention of Spalteholz that all the blood to the skin passes through the capillaries in the papillae is in accordance with one of their functions—namely, the dissipation of heat.

The chief methods available for the study of these vessels are:

(1) Direct observation through the microscope as employed by Lombard. The skin at the base of the nail is very suitable for such observation. The capillaries here lie horizontally; the arterial loop is seen to be finer than the venous and the subpapillary venous plexus can be made out dimly; the blood flow and the red and white corpuscles can be distinguished. The capillary loops vary in size and in conformation in one field of vision and become larger as ago advances. It is important to remember that the vessels visible in this way form only a limited proportion of the total and that they are all endothelial structures. The horny layer of the skin is an obstruction to the view, and after its removal by blistering the picture becomes much clearer; arteries can be seen to come up and divide and the capillaries to join the subpapillary venous plexus. Blistering, however, is not justified for physiological observations, since it alters the normal state; physiological observations are therefore confined chiefly to the tips of the capillary loops.

(2) Estimation of skin temperature by means of a specially constructed thermo-electric couple; alteration of the skin temperature indicates a corresponding alteration in the blood flow.

(3) Observations of skin colour, from which an estimate of the relative rates of blood flow can be made.

The reactions of the skin vessels to injury are of great importance and interest. Light and heavy stroking of the skin with a blunt instrument results in the appearance of the well known white and red lines respectively. The white line is due to the active contraction of the minute skin vessels—capillaries and venules—while the red line is but an element of a much more complex reaction. The development of the red line is accompanied by the appearance of a surrounding and brightly coloured irregular flush and is followed, if the injury has been sufficiently severe, or in a susceptible subject (urticaria factitia), by the formation of a wheal along the line of stroke. The red line itself is due to the active dilatation of the capillaries and venules, and also possibly of the terminal arterioles, and is independent of the nervous system. The surrounding flush is due to an independent and widespread dilatation of the arterioles brought about by a local axon reflex. The wheal is due to an outpouring of fluid from the vessels as a result of a local change in the permeability of the vessel walls, an increase of permeability which is independent of the dilatation and is uncontrolled by the nervous system.

The mechanism of this triple reaction to mechanical injury has been elucidated by studying the effect of the introduction of histamine into the skin. The physiological

properties of this substance have been worked out by Dale; it is found to be produced at the bowel, the lungs, and the liver, and is coming to be regarded as a normal metabolite. In the minute concentration of 1 in 30,000 histamine pricked into the skin produces the same triple reaction as mechanical injury. This evidence suggests that there is a fundamental and common cause at work, and it can be shown that this common factor is the presence of a diffusible substance in skin—histamine introduced on the one hand, and on the other a diffusible substance released in the skin by the mechanical injury and having a histamine-like action on the vessels and nerves. The evidence for this release of a diffusible substance by mechanical injury depends on showing that certain phenomena of the histamine reaction, which can only be interpreted as due to the presence of histamine in the skin, are exactly reproduced in the stroke reaction. Thus, for example, if the skin is stroked with the circulation arrested, the red line remains so long as the circulation is arrested and the local reaction is all the time increasing in breadth. If the circulation is not arrested then the red line fades slowly. Histamine produces identical phenomena, and in this case their meaning is clear—the histamine is diffusing out from the site of puncture. The clear correspondence of the course of events in the two cases is evidence that when the skin is stroked some diffusible substance is released. In similar manner it can be shown that the surrounding flush and formation of oedema in the stroke reaction also depend on this release of a diffusible substance in the skin.

This triple reaction, however, can be produced, not only by stroking and by the introduction of histamine, but also in a variety of other ways. It is produced by cold or freezing, by burning heat, the galvanic current, by ultra-violet light, by the application of such chemicals as hydrochloric acid, sodium hydrate, morphine, atropine, mustard oil, cantharidin, and many others. It is also produced by peptone and by antigen in those patients with hypersusceptibility to the protein concerned. Again, it is held that a common factor is at work; one property is common to all these stimuli—they produce tissue damage and by their action release a substance, identical in all cases, which sets in motion the mechanism of the triple reaction. At the moment it is not justifiable to say that this substance is histamine, but it is histamine-like.

These observations warrant the formulation of a more general law that every form of injury to the skin reaching a certain grade of severity calls forth a series of nervous and vascular reactions dependent on the same fundamental and natural chemical stimulus; in other words, there exists in the skin a single mechanism of defence against injuries of all kinds. Further, histamine pricked into the skin produces this triple reaction; introduced in greater quantity into the circulation it results in histamine shock. Slight injuries of all kinds produce this triple reaction; more severe injuries result in conditions closely akin to histamine shock—for example, wound shock and burn shock. There is a whole series of gradual transitions from the small daily injuries which pass almost unnoticed to the state of severe shock. The differences are quantitative, not qualitative; the defence mechanism, if excessive, is deleterious. It is another aspect of the conflict between the cell as an individual and the well-being of the body as a whole.

In the investigation of the action of heat and cold on the vessels of the skin numerous other points of interest arise, and special apparatus has been devised for applying these physical agents to the skin, and for registering the temperatures attained at the skin surface and subcutaneously. It is found, for example, that though the real freezing point of skin is probably very nearly that of normal saline ( $-0.6^{\circ}\text{C}$ .) yet the highest temperature at which the skin has been frozen is  $-2.2^{\circ}\text{C}$ ., and at this temperature it is not easily done; it is difficult enough at  $-10^{\circ}$  or  $-15^{\circ}\text{C}$ . At  $-20^{\circ}\text{C}$ . on some occasions freezing has not occurred—this is presumably the phenomenon of supercooling well known to physicists. Certain factors predispose to supercooling, chiefly the relative moistness of the skin and its content of grease. It is a factor of importance in considering why Arctic explorers may frequently be exposed to winds of  $-20^{\circ}$  or  $-30^{\circ}\text{C}$ .

without invariably suffering frost-bite—the skin is naturally protected by supercooling, a protection enhanced by the grease which remains on the skin from lack of facilities for washing.

Finally, it has been shown that histamine punctured into the skin causes the production of a wheal, but if the circulation be arrested before the introduction of histamine and the arrest be maintained for fifteen minutes there is no whealing or only very slight whealing after the release of the circulation. If the circulation is released after only five minutes' occlusion whealing is full: the period of occlusion required for the prevention of whealing is shortened if the skin is warmed and prolonged if the skin is cooled. The failure to wheal is due to the loss of the increased permeability of the vessels first developed; it is not the result of the absence of histamine, as fresh histamine may be put into the spot which has failed to wheal after fifteen minutes' occlusion and still no wheal appears. To this phenomenon the term "refractoriness" has been applied. Refractoriness may be demonstrated, not only after the introduction of histamine, but in several other ways—for example, in the case of a wheal readily on stroking the skin. By the arrest of the circulatory arrest the development of a wheal over the line of stroke may be prevented, though the red line develops, and, moreover, histamine punctured into this red line fails to produce a wheal. Again, if a wheal is produced by freezing or by ultra-violet light and allowed to subside, the damaged area is found to be refractory to stimulation in this sense. Recovery from refractoriness in these last cases is gradual, extending over days. The refractoriness refers to the phenomenon of permeability alone, but, in addition, the vessels in a refractory area have lost their power to contract, for example, to adrenaline and pituitrin; there is no evidence, however, that refractoriness and the unresponsiveness to adrenaline and pituitrin are the same phenomenon.

Refractoriness and unresponsiveness of the skin vessels to pituitrin and adrenaline are both found in a variety of clinical conditions. Thus, if the skin of the red reticulum seen in erythema ab igne be tested, the vessels fail entirely, or almost entirely, to react to histamine, and with adrenaline there is no blanching, or very little. The same phenomena are displayed by the vessels of the telangiectasis resulting from exposure to x rays, etc., of the port-wine stain, and of the skin of the faces of those who have long been exposed to the weather. As to the cause of refractoriness, no complete explanation is yet possible.

## Reports of Societies.

### HEALTH OF THE PROFESSIONAL WOMAN.

At a meeting of the London Association of the Medical Women's Federation, held on June 8th at the House of the British Medical Association, with Dr. CHRISTINE MURRELL, President, in the chair, Dr. LETITIA FAIRFIELD gave an address on the health of the professional woman.

Dr. Fairfield said that excessive sickness among women compared with men was a recognized feature of all statistical tables; especially between the ages of 45 and 65 the female morbidity rate was much higher than the male rate, though the female death rate was lower. This excess of sickness gave some grounds for differences in pay where work was equal, and it was therefore important to analyse its causes. The health of professional women was less easy to investigate than that of the working classes, but in the speaker's work for the London County Council she had been able to survey a wide range of cases and to make some interesting comparisons between men and women of the teaching profession. The rules of the L.C.C. were that every teacher away for more than three days had to have a certificate from her own doctor. If the absence lasted more than a month the case was referred to a Council medical officer, and the teacher was asked to see the medical officer with reference to sick leave. In cases of absence due to debility, headache, or neurosis action was taken after more than three days' absence. Dr. Fairfield's

aper dealt with 900 cases, of which nervous cases formed large proportion; pulmonary conditions also figured largely. Recurrent bronchitis among elderly teachers accounted for many of the absences, but phthisis was rare. No cardiac after-effects of influenza she had found very severe, and rheumatism affected more women than men teachers. In the indigestion group appendicitis accounted for many cases. The improvement in the condition of the youth and teeth of teachers during the last ten years was most remarkable. Out of 900 cases there were only 12 in whom untreated pyorrhoea was even a probable cause of ill health, and only in 2 was dental treatment resisted. In Dr. Fairfield's opinion the most urgent health measure needed in the country was increase in facilities for dental treatment of the whole nation. As to constipation, it was curious that those who suffered from constipation were nearly all large fruit-eaters; it seemed to her that among many town dwellers the consumption of vegetables was decreasing while that of fruit was increasing, and that no change was not advantageous from the point of view of intestinal stasis. Mild enteroptosis was often to be seen where the diet did not appear to be faulty, but the improvement in physical training of girls was doing much to combat this abdominal flabbiness. The chronic dyspeptic cases seemed to be diminishing. As to diseases which might be termed "occupation diseases," laryngitis with no obvious lesion was common among teachers; excision of tonsils in quite elderly people might help this condition. Exophthalmic goitre, although not common, was very serious when it occurred among teachers; teaching would seem to be the worst kind of occupation for sufferers from this condition. They should be advised to seek other occupations, since they were ill suited to cope with children. A group of cases in which a large discrepancy between men and women was apparent on the surface was that of anaemia and debility. The evidence of medical certificates would suggest that it was three times as common among women, but when these cases were carefully investigated the typical signs of anaemia appeared to be absent, and it was probable that this term was used loosely in giving certificates for short absences. As to the diseases peculiar to women, in Dr. Fairfield's experience the phobia of the menopause was much more serious than the menopause itself. Only 11 cases of ill health among the 900 cases were found on investigation to be really due to the menopause, though many cases were attributed to it, in one instance over a period of eight years. Functional nervous disease was commoner in women than in men, the proportion being 4 to 3. The severity of an alleged cause for functional nervous disease appeared to be in inverse ratio to the severity of the disease. In her opinion the general practitioner should treat these cases, being in a position to know the circumstances and surroundings of the patient.

Dr. ELEANOR LOWRY suggested that the occupational laryngitis might be caused by bad voice production, sinus trouble, or excessive smoking. Dr. JUSTINA WILSON, from her experience at the National Hospital for Diseases of the Heart, confirmed the much greater incidence of rheumatic heart disease in women. Heart disease following influenza appeared to be very deadly to the heart muscle. Dr. MARY KIDD agreed that vegetables rather than fruit were needed to prevent constipation. It was unfortunate that vegetables were so expensive nowadays, and also that considerable time had to be spent in cleaning and cooking them, which the woman worker living alone could ill afford. Dr. RUTH YERNEY deplored the lack of cheap institutions for cases of functional nervous disease, since many such patients could only be treated away from the home circumstances which had contributed to the breakdown. Dr. MINA DOBBIE said that practitioners ought to inquire how working women spent their leisure and holidays. Often it was found that they looked after aged relatives from a sense of duty, and were quite grateful to practitioners who forbade them to do so. Dr. ROBERTS suggested that a possible cause of neurosis in elderly teachers was a sense of failure in not having advanced further in their profession and a lack of anything to look forward to. Dr. PEAKE pointed out that the effects of the menopause might not be immediate—for example, flushings could occur long after

the actual cessation of menstruation. Dr. A. SHEPPARD pointed out that in some banks the compulsory retiring age for women was as early as 45. The President pointed out that the other duties outside work performed by most professional women would account for some of the excess of functional nervous disease. Neurasthenia, in her opinion, was always the result of emotional overstrain. There was a need for well run nursing homes in psychological institutions where the practitioner could continue to treat the patient.

## Reviews.

### PANEL PRACTICE.

THE author of this small book, *On the Panel: General Practice as a Career*,<sup>1</sup> is a panel doctor who, for obvious reasons, prefers to remain anonymous, and who, we are told, is a country practitioner with a panel list of about 2,500 insured persons and a private practice worked by himself and a partner. The early part of the book deals with the general management of a panel practice. A typical day's work of a country panel practitioner is described in detail, including surgery attendances and visits, and many common-sense hints are given on how to manage patients so as to gain their confidence. Great stress is laid on the necessity for careful examination and the desirability of obtaining a second opinion whenever there is doubt about diagnosis; in this connexion the author states that he often finds himself at a loss owing to the absence of any provision for free consultant advice. He is evidently one of the great number of insurance practitioners who treat their panel patients as conscientiously and as carefully as their private patients. He finds that 2,500 panel patients in addition to private patients are as many as he and his partner can attend to properly, and adds that he "does not advise anyone to go in for panel practice unless he has really good health." In common with most insurance practitioners, he often finds difficulty in the giving of certificates of incapacity, and laments the absence of an authoritative definition of "fitness for work" and "fitness for light work only." The Ministry of Health memorandum on the term "incapable of work," which is quoted in full, was not, he thinks, written with sufficient care.

It is clear throughout the book that the author has formed a high opinion of the advantages conferred on the working classes by national insurance, the chief being the facility for obtaining medical treatment whenever required; the uninsured population, apart from the wealthy classes, suffer enormously, he considers, through their inability to pay for medical attendance. He strongly advises the extension of medical benefit to the wives and children of the insured. Under medical benefit he would also include consultant and specialist treatment and hospital treatment; he calculates, however, that the cost would be almost prohibitive, and suggests that the approved societies might pay part and the patients the rest. The difficulties in the way of this are not overlooked, and there is something to be said in favour of the suggestion for cottage hospitals, where needed, at which general practitioners, including those on the panel, may become proficient in various specialisms. Here again the question of cost arises, and with the extension of the benefits to nearly three times the number of the present insured the increased demand for the services of the doctors, already overworked, can, he thinks, only be surmounted when preventive medicine has materially reduced the general sickness rate. A great part of the book is taken up with the discussion of questions like these, which are perhaps as much political as medical.

The book can be recommended as a practical guide, full of homely advice, for medical men commencing general, and especially panel, practice, while those parts that deal with the scope of national health insurance are evidently the outcome of personal experience and deserving of careful consideration.

<sup>1</sup> *On the Panel: General Practice as a Career*. By a Panel Doctor. With a Foreword by Dr. C. M. Wilson. London: Faber and Gwyer, Ltd. 1926. (Cr. 8vo, pp. viii + 294 6s. net.)

## THE THYROID GLAND.

THE Beaumont Foundation Lectureship Committee of the Wayne County Medical Society has been fortunate in securing two such authorities as CHARLES H. MAYO and H. W. PLUMMER to lecture on *The Thyroid Gland*,<sup>2</sup> for at the Mayo Clinic during the period 1892-1925 there have been 14,505 cases of adenomatous goitre and 8,223 of exophthalmic goitre, and during the year 1924 the total number of cases of goitre, simple and exophthalmic, submitted to operation was 1,785, with a mortality of 10, or 0.58 per cent. Of the two parts of this pamphlet, which is rather highly priced, the first, of a general introductory character, dealing with the anatomy and physiology of the thyroid, the etiology and distribution of goitre, the metabolism in exophthalmic goitre, and a few pages on the parathyroids, is by Dr. Charles Mayo. In the second part, headed "The function of the thyroid," Professor Plummer states that this is to maintain 14 mg. of thyroxine in the body, or to elaborate 0.33 mg. of thyroxine daily; he classifies goitre as exophthalmic and as endemic, the latter being divided into diffuse colloid and adenomatous, and the adenomatous again into those with and those without hyperfunction. The view expressed is that the most essential factor in the etiology of endemic goitre is a relative or absolute deficiency in iodine; this leads to hypothyroidism in the first instance, and then stimulation of the thyroid produces diffuse hypertrophy and colloid is stored in excess.

It is maintained that in many cases continued stimulation of the thyroid combined with unknown factors results in adenomatous formation, and that relatively late in the history of the thyroid changes this adenomatous tissue becomes excessively active. Of adenomatous goitres removed from patients under 30 years of age 5 per cent. were functionally overactive, while, in patients over 60, 60 per cent. were in this state. Colloid goitres, it is stated, can be rapidly diminished when thyroid is administered; Professor Plummer believes that when given to patients with adenomatous goitre iodine may initiate hyperthyroidism. In considering the relation between the two, the manifestations of an excessively functionally active adenoma are said to be reducible to physiological terms, whereas those of exophthalmic goitre cannot. In 1912 Plummer suggested that in hyperfunctioning adenomatous thyroids (toxic goitre) there is merely an excess of thyroid secretion, whereas in exophthalmic goitre there is in addition an abnormal secretion with a special affinity for nervous tissues; later he thought that there might be a third toxic agent causing exophthalmos and ocular symptoms. Remarkable and rapidly beneficial results obtained by administration of Lugol's solution in exophthalmic goitre are described, and the appropriate dose discussed. The operative mortality of exophthalmic goitre was reduced by the Lugol treatment from 3.5 to 1 per cent. For these reasons alone it is worth while for every practitioner to read this compact lecture.

## PLASTIC SURGERY OF THE NOSE.

At a time when plastic surgery is making such rapid advances and the literature of the subject is becoming more and more extensive, *Plastic Surgery of the Nose*,<sup>3</sup> by Dr. J. EASTMAN SHEEHAN of New York, is welcome in that it represents an attempt to treat in detail a single branch of the work.

The introduction, which is excellent, contains arguments for the recognition of procedures for the repair of nasal disfigurements as belonging to dignified surgical practice, and emphasizes the necessity for specialization in this delicate type of surgical work. We cannot accept the opinion that an external central columellar incision is the best for practically all plastic procedures on the nose. Most patients object—quite justifiably—to a nasal opera-

tion which leaves any external scar, and it is not encouraging to be informed that "even a bad scar, so placed, can readily be eliminated." The edges of such an incision—necessarily limited in length—are very liable to be damaged by the extensive manipulations carried out through it; the scar is frequently bad, and even a good columellar scar is usually very visible. Stress is laid on the disastrous results of paraffin injection for contour correction. Cartilage is advocated in preference to bone or artificial material for the restoration of the nasal bridge: the arguments in its favour are well known.

A useful chapter describing the anatomy of the nose is followed by an exhaustive list of the conditions for which surgical intervention may be indicated. Preparation of the patient is dealt with in considerable detail; the strenuous local treatment advocated seems to us excessive, for by irritating the delicate lining of the nose it is likely to defeat its own object. Reduction of a hump-nose is taken as a typical operation for description. The hairpin retractors and the angulated knife used are worthy of note. Special methods of bandaging and various means of minimizing oedema and bruising are discussed at length. Infection is mentioned, and it is admitted that the columellar incision may require opening for drainage purposes. The advantages of an intranasal incision in such a contingency are here again made obvious. It is better to dispense with the special pads and bandages recommended for maintaining correction after operations undertaken for straightening the crooked nose. If the operation has been sufficiently radical any tendency to displacement of the corrected bridge line can be readily corrected by painless digital manipulation from day to day as the bones are resetting; external appliances are very liable to become deranged and to maintain rather than correct displacement. It is difficult to understand how small sections of the lateral cartilages of the nose are removed with the precision described when the incision is made so far away from them. For depression of the nasal bridge a hinged cartilage graft—well known in this country as the Gillies method—is advocated. Dr. Sheehan recommends fixation of the columellar portion of the graft by a catgut suture.

The instructions for dealing with a variety of conditions ranging from "protrusion of the septum" to "twisted tip" are rather scanty and indefinite; operations on these deformities are among the most difficult of all plastic procedures. Such sentences as "The mesial crus is partially excised towards its middle, and excisions are made from the lateral crus if the conditions and the plan of repair call for such excision" do not guide the operator very far. The usual type of submucous resection for deflected septum is described—but why should it be made through the external columellar incision when the usual intranasal route gives such excellent access and results? In the chapter on deformities of the alae the instructions are again scanty and difficult to follow, but an ingenious method of cartilage grafting of the maxillae for the correction of "dish-face" is well worthy of note.

Rhinophyma, paraffinoma, recent injuries, the syphilitic nose, various methods of rhinoplasty, methods of skin grafting, forms of skin flap, and "occasional disfigurements" are fully dealt with. The necessity for and the means of supplying lost lining in dealing with syphilitic affections of the nose are discussed, and acknowledgement is made of the pioneer work of Gillies on this subject. In planning flaps for complete rhinoplasty the author appears to be a little optimistic about the depth of hair-free skin available on the average forehead, for it is difficult to understand how the flaps pictured as taken from the central portion of the forehead in a vertical direction manage, when turned down, to reach the tip of the new nose and, in some cases, even to form a new columella. The appendix on anaesthesia overlooks the chief advantage of the two-tube form of intratracheal anaesthesia (introduced into this country by Magill) which lies in the ability to pack off the pharynx completely without interfering with either the inspiratory or expiratory airway.

The volume is well printed and beautifully and lavishly illustrated.

<sup>2</sup> *The Thyroid Gland*. By Professor Charles H. Mayo, M.D., and Professor Henry W. Plummer, M.D. Beaumont Foundation Annual Lecture Course, IV. London: Henry Kimpton 1926. (61 x 9½, pp. 83. 8s. 6d. net.)

<sup>3</sup> *Plastic Surgery of the Nose*. By J. Eastman Sheehan, M.D., F.A.C.S. With a Foreword by John F. Erdmann, M.D., F.A.C.S. New York: P. B. Hoeber, Inc. 1925. (8 x 10½, pp. xix + 249; 177 figures. 10 dollars net.)



## TUBERCULOSIS IN GERMANY.

THE first of two volumes of a handbook<sup>1</sup> on the care of the tuberculous has reached us. It is a collection of articles by different authors on the tuberculosis problem, edited by Dr. KARL H. BÜMEL of Halle. Ranging over a wide field, its keynote is the administration and organization of treatment centres. More than a hundred pages are devoted to the legal aspects of the disease, to the duty of the doctor to his patient and the State, to the punishments that await his folly or recalcitrance, and to the question of notification.

One of the most valuable contributions is the chapter on statistics. Unfortunately, owing to the lack of compulsory notification of tuberculosis in Germany, these are confined to the mortality figures, but in these alone and in their comparison with the figures of other nations is to be found most interesting matter for reflection. During the war the deaths from all forms of tuberculosis rose considerably, reaching their highest point in 1918, when 2.3 deaths per 1,000 living occurred. In 1921 the mortality rate had fallen to 1.37 per 1,000, but during the following years it rose slightly. These figures must be considered in relation to the change in the distribution of the numbers in the different age groups. Thus the proportion of children in the 0-5 age group in 1919 was under half that in 1910, whereas the proportion of the population in the age groups between 30 and 70 had risen considerably. It is interesting to note that there is no relation between the tuberculosis mortality and the total mortality from all causes; that in many States the mortality amongst females is higher than amongst males; that the mortality in the large towns is less than in the towns of medium size, and that in 1921 9.4 per cent. of all deaths amongst males and 10.2 per cent. amongst females were due to tuberculosis.

The latter part of this volume deals chiefly with occupational tuberculosis, tuberculosis in children, and differential diagnosis. The book is full of information, and should appeal to historians, medical statisticians, and clinicians alike.

## GALLIPOLI.

A few years ago someone said of Gallipoli that it would go down to history as a disgrace to British statesmanship and British strategy: and the late Walter H. Page described it as "a horrible tragedy, where the best soldiers in the world were sacrificed to politicians' policies."

Sir GERALD ELLISON, in his *Perils of Amateur Strategy*,<sup>2</sup> exposes the circumstances which led to so trenchant an indictment of what, apart from politics and strategy, brought out, at the expense of thousands of lives and infinite suffering, the finest and most heroic qualities of the fighting forces of the British Empire.

The amateur strategy which he attacks was the decision of the Cabinet, at the instigation of the then First Lord of the Admiralty, to undertake an expedition against the Dardanelles fortress, an undertaking which naval and military experts had previously regarded as bound to fail. There is a prefatory note by Lord Esher, but it should be read after and not before the rest of the book. He disagrees with General Ellison's main argument, but accepts his conclusions. He defends Mr. Churchill against the accusation of being an amateur strategist. It is difficult, however, after reading what General Ellison has to say, to avoid the feeling that the whole conception and launching of the expedition, with its lack of secrecy and, consequently, of the element of surprise, savours strongly of amateur strategy.

The principle that strategy begins where politics ends has been laid down by the authorities on war from time immemorial; and it was this principle which was ignored. Mr. Churchill's own words illustrate this. In his book *The World Crisis* he writes that "the distinction between

politics and strategy diminishes as the point of view is raised. At the summit true politics and strategy are one." General Ellison's comments on this are: "ergo, quite obviously, the politician is fully qualified to deal with strategy. Hence amateur strategy! Hence Gallipoli!" These words express in a nutshell what he endeavours to expose in the pages of his book.

Within three months of war being declared, a War Council, of which the Chief of the Imperial General Staff was not a member, eclipsed and swept away the original conception of a General Staff. We are told that the system, by which politicians have the power to interfere with strategy, still exists and may lead to disasters similar to that of Gallipoli unless a new system of strategical control is adopted. General Ellison's proposal is that the Committee of Imperial Defence should have two distinct sections—a policy section and an operations section, the latter formed of the chiefs of the staff of the three fighting services.

If such a solution, for avoiding the perils of amateur strategy, is realized, it is to be hoped that due regard will be paid in the operations section to the medical aspects of a campaign; for neglect of these may prove as perilous to the nation as amateur strategy. There was at one time a medical section in the directorate of military operations; and history records how valuable it was in connexion with preparation for war between 1905 and 1914. We may ask why it has not been resuscitated since the war.

There is much food for thought in General Ellison's book. It will no doubt arouse a considerable amount of criticism and controversy, which the medical services will follow with interest. What they desire most, and would welcome wholeheartedly, is that due consideration should be given to the medical aspects of a campaign in determining its strategy.

## NOTES ON BOOKS.

MR. BORRADALE'S *Manual of Elementary Zoology* has now reached its fifth edition,<sup>3</sup> and considerable parts of the introductory chapter and of those dealing with reproduction and sex, and the relation of animals to the world, have been rewritten. We reviewed the third edition on October 30th, 1920 (p. 668), and it only remains to call attention to the comprehensiveness of a very valuable book which aims at providing information for medical students.

The volume of *Collected Papers by the Staff of the Henry Ford Hospital*<sup>4</sup> in Detroit, Michigan, represents the scientific writings by the members of the hospital staff since its foundation in 1915 down to the end of September, 1925; the majority of the papers have appeared during the past two years. One appendix is devoted to a short account of the history and equipment of the hospital, and articles dealing with technical appliances are grouped in a second appendix.

"Les Petits Précis"<sup>5</sup> is a series of small books edited by Dr. A. CANTONNET, the object of which is to supply the French medical student and practitioner with the indispensable minimum of knowledge in each specialty in medicine. Thus in Dr. Paul Halbron's book on infectious diseases in fewer than two hundred pages an up-to-date but inevitably fragmentary account is given of thirty-two diseases, including not only the common acute infectious diseases prevalent in Europe but also plague, cholera, dengue, sleeping sickness, and papataci fever. A list of the diseases notifiable in France is appended. Other volumes of the series of fifty-four which have reached us are *Tuberculoses ostéo-articulaires et ganglionnaires*, by Drs. E. SORREL and A. DELAHAYE; *Grossesse et Accouchement Pathologiques*, by Dr. J. LEMELAND; *La chirurgie infantile*, by Dr. A. MARTIN; *Le Cancer*, by Dr. G. JEANNERET; *Oto-rhino-laryngologie*, by Dr. L. BALDENWECK; *Rayons x et corps radio-actifs*, by Dr. A. LAQUERRIÈRE; *Examens de laboratoire*, by Dr. A. BEAUVY; and *Dermatologie du praticien*, by Drs. G. LACAPÈRE and H. MONTAUDR. The books are of handy size, small and light, so that it is easy to carry one about in the pocket for

<sup>1</sup> *Handbuch der Tuberkulose-Fürsorge*. Erster Band. Herausgegeben von Dr. Karl Heinz Bümel. München: J. F. Lehmann. 1925. (Roy. 8vo, pp. viii + 457; 45 figures on plates, 51 figures in the text. M.24; bound, M.27.)

<sup>2</sup> *The Perils of Amateur Strategy, as exemplified by the attack on the Dardanelles Fortress in 1915*. By Lieut.-General Sir Gerald Ellison, K.C.B., R.C.M.G. London: Longmans, Green and Co. Ltd. 1926. (Cr. 8vo, pp. xxvi + 152; 2 maps. 5s. net.)

<sup>3</sup> *A Manual of Elementary Zoology*. By L. A. Borradaile, Sc.D. Fifth edition. Oxford Medical Publications. London: H. Milford, Oxford University Press. 1925. (Cr. 8vo, pp. xvi + 670; 458 figures. 15s. net.)

<sup>4</sup> *Collected Papers by the Staff of the Henry Ford Hospital*. First series, 1915-25. New York: P. B. Hoeber, Inc. 1926. (Med. 8vo, pp. xxi + 631; illustrated. 8 dollars net.)

<sup>5</sup> "Les Petits Précis." Bibliothèque dirigée par A. Cantonnet. Paris: A. Maloine et Fils. 1925 and 1926. (42 x 61; illustrated. 8.50 fr. each volume.)

# PREVENTION OF TUBERCULOSIS.

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refreshing one's memory in a particular specialty. But the condensed style in which each subject is treated is not conducive to pleasure in reading. In several volumes there are quite good illustrations, some rather comic, as in the cave-man drawing of the head of a person undergoing anterior rhinoscopy.

It demands a measure of courage amounting almost to temerity to write verse for children. There are two reasons: First, in the matter of substance, it is extremely difficult for even the most patient and sympathetic of us to find out what and how a child is thinking, and we have all of us forgotten. Secondly, in the matter of form such a title as *Child Verses* and *Poems* compels comparison with Robert Louis Stevenson's *The Child's Garden of Verses*, a little masterpiece in form and substance. The medical writer who has just put out under a pseudonym the small volume, whose full title is quoted above, has the necessary sympathy, and sometimes the necessary simplicity, but sometimes spoils all by long words, though we will admit that "peppermint-drop" is not a really truly long word; it comes at the end of four stanzas on three gnomes, and was a suitable reward for their daring. In another piece are two happy couplets describing the discourteous stare with which a young child examines a new acquaintance; they may be quoted as an example of the author at his best:

"Some think because so long I stare  
I keep no thoughts behind my hair,  
But smile I will not as I should  
Unless I find them bright and good."

The drawings by Cecile Walton are also good. The book contains some other poems, and we commend it to all child lovers.

*Caravanning*,<sup>10</sup> by J. HARRIS STONE, with its numerous attractive illustrations and beguiling narrative, will tempt many a reader, hitherto a stranger to this form of recreation, to consider whether the present vogue of gathering in groups in fashionable resorts cannot be profitably replaced by a more romantic and healthy activity. The author's description of caravan life is full of practical detail; useful hints are given for almost all conceivable emergencies, and the restful leisure of a holiday spent in this way is very clearly indicated. The variety of caravans available is such as to meet all tastes and pockets.

*The British Goat Society's Year Book for 1926*<sup>11</sup> is the sixth issue of a popular and useful annual. A short account is given of the second International Goat Congress in Switzerland last September, when seventy delegates from ten different countries were present. A tabulated statement of the yield of milk of all the goat herds for the two previous years is reprinted by permission of the Minister of Agriculture and Fisheries and the Central Council for Milk Recording Societies; it indicates the steady extension of this industry in Great Britain. As in previous numbers of the *Year Book*, there is to be found in this issue a large variety of articles dealing with many aspects of practical goat-keeping and research in goat-breeding. The numerous illustrations are a pleasing feature of the volume, the practical value of which will commend it to all interested in goat-keeping.

<sup>9</sup> *Child Verses and Poems*. By Austin Priestman. Illustrated by Cecile Walton. London: A. H. Stockwell, Ltd. 1926. (Cr. 8vo, pp. 96; illustrated. 4s. net.)  
<sup>10</sup> *Caravanning*. By J. Harris Stone, M.A. Cantab., F.L.S., F.C.S. Third edition. London: The Caravan Club of Great Britain and Ireland. 1926. (Demy 8vo, pp. 45; illustrated. 6d.; post free 7d.)  
<sup>11</sup> *The British Goat Society's Year Book for 1926*. London: T. W. Palmer, 10, Lloyd's Avenue, E.C.5. (Demy 8vo, pp. 163; illustrated. 1s. 6d.)

## PREPARATIONS AND APPLIANCES.

**Vitreosil Spatula.**  
VITREOSIL is the name given to pure silica fused by an electric process in the works of the Thermal Syndicate, Ltd. The substance possesses great resistance to acids and heat, so great that it can be used, for working purposes, up to 1,100° C. or higher, and it is unaffected by any acids except hydrofluoric, and at a high temperature phosphoric. At high temperatures, also, caustic alkalis and certain metallic oxides affect it. Dr. J. Barker Smith (Herne Hill) has designed a small spatula of this material for the scar test, for detecting sugar in urine, blood, tears, and other secretions (BRITISH MEDICAL JOURNAL, March 27th, 1926, p. 602). It is said that when the droplet of urine is evaporated, charred to a cinder, and the silica disc plunged into water, rubbing with the finger-tip will leave a residue or "phantom char" when sugar is present. The procedure is also accompanied by an odour of caramel.

## NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

THE twelfth annual conference of the National Association for the Prevention of Tuberculosis was held in Glasgow on July 1st, 2nd, and 3rd. The Hon. Sir ARTHUR STANLEY, G.B.E., presided at the various sessions of the conference. The delegates were welcomed by the Right Hon. Lord Provost Sir MATTHEW W. MONTGOMERY, LL.D., who spoke of the valuable and beneficent work which had already been done by the association.

### Non-pulmonary Tuberculosis.

At the first session of the conference on July 1st, a discussion on the provision for the care of non-pulmonary tuberculosis was opened by Dr. A. S. M. MacGREGOR, medical officer of health for the city of Glasgow, and Mr. JAMES TAYLOR, consulting surgeon of the Glasgow Corporation hospitals and sanatoriums. Dr. MacGregor said that the field for the treatment of non-pulmonary forms of tuberculosis was as yet only partially covered, and the principal question at the present time was the form the facilities for treatment should take. A serious result of delayed treatment was the destruction of bone, which led to crippling and deformity. The excellence of the results obtained were impaired by the late arrival of patients in the institutions provided for treatment. Mr. James Taylor expressed the belief that the improvement of housing conditions and the provision of plenty of air and sunshine for the people as a whole, although it might entail great initial expenditure, would go a long way towards cutting down the sums that were yearly spent on the maintenance of tuberculosis hospitals. Dr. J. G. JOHNSTONE, medical superintendent of the Heatherwood Hospital, Ascot, quoted statistics to show that there was not sufficient bed accommodation or sufficient after-care organization throughout the country for treating non-pulmonary cases of tuberculosis. It was generally agreed, he said, that surgical tuberculosis, compared with the pulmonary type, was eminently arrestable. The records of most special hospitals dealing with these cases showed that 80 or 90 per cent. could be arrested. He had found, however, that only about 45 per cent. of cases applied for treatment at the hospital within one year of the appearance of the disease, while the remainder had suffered for a long period, some of them for as much as seven or eight years. He was not to be taken as asserting that these years; as had been totally without treatment during these years; as a rule, they had had some kind of treatment in a general hospital or at a tuberculosis dispensary, but their state on admission to hospital with the disease far advanced, and crippling deformities developed, was not at all satisfactory. The fact, too, that the surgeon, who treated in hospital a patient coming from a remote district, could not know the result did not make for progress in the treatment of the disease. After-care in such cases had to be continued for several years after in-patient treatment, but the shorter the period for which the disease had already lasted, the shorter also would be the period of treatment, and the better the end-result. Another aspect of the problem was the financial one. It was found that the average cost of arresting the disease in cases discharged from hospital was: for the spine £262, for the hip £309, and for the knee £198. It was hoped in the near future to institute, in connexion with the Heatherwood Hospital, a series of clinics in the metropolitan area and some of the home counties areas, and he thought this was an object deserving of the fullest sympathy and earnest endeavour. The Central Committee for the Care of Cripples had formulated a national scheme whereby each authority or group of authorities should institute a central hospital and a system of clinics in the outlying districts. Such hospitals should be staffed with a competent orthopaedic surgeon, trained sisters, and nurses specially trained in after-care methods. It was advisable also to effect a liaison with a general hospital, as it was often desirable to obtain the advice of members of other branches of the profession. Dr. J. H. PAUL (Millport) described in detail the work of a voluntary institution at Millport in Buteshire, which had proved that real open-air treatment was possible in winter as well as in

summar, even in Scotland. Dr. W. B. KNOBEL, divisional medical officer, London County Council, said that in London no child was kept waiting a single day for treatment of surgical tuberculosis, but the County Council had difficulty in getting cases at an early stage. Professor Sir ROBERT PULLER said that this form of the disease was not confined to the poor; non-pulmonary tuberculosis prevailed all over the world among the high and the low, and many of the richest and noblest families had been afflicted by it. The nature of the disease made treatment difficult.

#### *The Tuberculosis Dispensary.*

At the afternoon session, "The actual place and function of the tuberculosis dispensary in the tuberculosis scheme" was treated in a paper by Sir ROBERT PULLER, which is given in full at page 55 of this issue. Dr. LISSANT COX, central tuberculosis officer, Lancashire County Council, who followed, said that the tuberculosis dispensary system, which was to-day in operation, was a distinctive feature of British work, and was carried out by 350 tuberculosis officers; it earned unstinted foreign praise wherever the matter was studied. In the larger administrative areas the tuberculosis officer ought to be a specialist doing this work alone, and should not be employed on other public health work. The same thing might be achieved in the smaller areas if they would combine to provide a whole-time tuberculosis officer. It was necessary that each consultant tuberculosis officer should have a small laboratory at the chief dispensary for the area, with a trained laboratory worker attached; the officer should have his own x-ray apparatus and take his own skiagrams; this would enable him to follow his patients throughout their illness, and to build up his knowledge of x-ray appearances, so that he could correct and modify his opinions in the light of the development of the cases. While x-ray examinations should not take the place of other methods, they rendered the facilities for diagnosis better. In the past too much emphasis had been laid on treatment rather than on prevention, which was the real and ultimate goal. Much should be done by the dispensary in obtaining better notification of cases, and so reducing the chances of infection. Much also could be done by education, especially through the dispensary nurses; as the result of dispensary work in Lancashire the number of persons per 100,000 dying from consumption had fallen from 107 in 1918 to 67 in 1925. Dr. W. B. KNOBEL said that an important question was whether, under the dispensary organization, the greatest number of cases possible was being detected in the early stages of the disease. In spite of many years of working and propaganda, three-quarters of the cases were in a more or less advanced stage of the disease when they first came under these schemes. This was so serious a criticism that he considered it was a question whether the dispensaries were organized on the right lines, and he suggested that it was desirable that more reasonable propaganda, distinguishing between infective and non-infective cases, should be before the public. Dr. WILLIAM BRAND (Camberwell) said that there was a cry from the sanatoriums to give them early cases, and those who were in charge of the centres of diagnosis in the dispensaries must comply with this. With the full co-operation of the general practitioner in a district, the diagnosis of contacts might be greatly simplified. The dispensaries should not, however, attempt too much; their main function was the organization and supervision of home treatment of tuberculosis in each area. Dr. J. McCALLUM LANG (Lanark) said that a classification of dispensary patients according to age and sex was of interest in assessing the value of dispensaries as a means of detecting tuberculous disease in its early stages. In the middle ward of Lanarkshire, with a population of 237,000 persons, mainly industrial but partly agricultural, 65 per cent. of the tuberculous cases were children under 15 years of age. More adolescents must be induced to present themselves at the dispensaries if the primary duty of procuring a diagnosis in the earliest detectable stages was to be accomplished. There was no age at which vaguely suspicious symptoms demanded more careful consideration than between 15 and 25 years. The dispensary played a valuable part also as a "clearing-house"; for, of all the patients who presented

themselves for examination, only 44 per cent. were found to be tuberculous. The dispensary thus prevented the over-notification of tuberculosis, for he considered that in areas with no dispensary facilities many suspects were formally but wrongly notified as cases of tuberculosis. The educative function of the dispensary should also be kept well in view. The dispensary had, too, its part to play in the examination of contacts, but it should be remembered that this function was also discharged by the school medical service and by the national health insurance system.

#### *Experimental Studies in Tuberculosis.*

At the morning session on July 2nd a paper on experimental studies in tuberculosis with reference to the origin of pulmonary tuberculosis was read by Dr. C. H. BROWNING, professor of bacteriology in Glasgow University. The problem of pulmonary tuberculosis, he said, was the essential problem of tuberculosis in the adult. It must not be imagined that whenever the tubercle bacillus reached an individual the result was tuberculosis, for the chances were that in most cases nothing, or at least very little, would happen to the human host. The credit for throwing doubt on the early doctrine that inhalation was the sole cause of pulmonary tuberculosis belonged to the Norwegian physician Andrvord. Though tuberculosis might be acquired by inhalation of infected material, it was by no means certain that it was the only method by which tuberculosis of the lungs arose. Tuberculosis in European countries might be described as an endemic disease—that was to say, it was continually smouldering; and it might be considered that the relatively chronic form in which pulmonary tuberculosis existed in the adult was probably to be attributed in great part to this smouldering fire of tuberculosis. Referring to laboratory experiments on mice, Professor Browning said that this animal was very suitable for investigation because, like the European population, it was relatively resistant and might go on for a year or two after tuberculosis infection had been imparted to it. Out of some 300 mice inoculated by way of the abdominal cavity, 7 or 8 per cent. showed at death massive pulmonary lesions due to tubercle bacilli and nothing else. In a feeding experiment the result was also very striking, for in 11 out of 20 animals which had received tubercle bacilli with their food pulmonary lesions of large size were the only evidences of tuberculous disease. There thus appeared to be an affinity between the tubercle bacillus and the lung, and it appeared from these experiments that the tubercle bacillus might reach the lung by other routes, leaving little or no trace of the path which it had pursued in entering the body. It must, therefore, be assumed that the origin of lung tuberculosis was to be summed up in the word "inhalation." In the present state of knowledge administrative measures devoted to the prevention of pulmonary tuberculosis must not be stereotyped, since it was not possible to say which of the various factors played the largest part in the production of the disease.

#### *Treatment by Artificial Sunlight.*

Dr. ALEXANDER SMITH (Robroyston Hospital, Glasgow) said that enthusiasm for the treatment of tuberculosis by artificial sunlight, as for any new therapeutic procedure, was apt to exaggerate its possibilities, but light irradiation could play a useful and important part in the treatment of tuberculosis. Heliotherapy was difficult to carry out in these islands because of the fitful appearances of the sun and the relatively weak actinic value of its rays coming from skies blotted out by clouds of smoke. The systematic treatment of tuberculosis by artificial sunlight had been commenced in Glasgow in January, 1925; two 75-ampere and three 20-ampere lamps, running at 70 volts of continuous current, were used. Treatment consisted of a general light bath, the patient being naked except for short pants. An initial exposure to the carbon arc lamp of twenty minutes was increased every fourth day by five minutes. With the tungsten arc a shorter exposure of about two minutes, gradually increased to twenty minutes, was sufficient. The duration of exposure to the mercury vapour lamp was also short—between two and four minutes, gradually increased. The intensity of the reaction produced varied considerably, and careful supervision of the

treatment was therefore necessary: Protection of the eyes was also very necessary, because intense conjunctivitis sometimes developed eight or ten hours after the exposure, often during the night; it subsided, however, in a day or so, leaving no traces. Many cases of gland lesions had been treated, some of them complicated by ulcers and sinuses, and in all improvement had rapidly resulted. Over fifty cases of bone and joint tuberculosis had been treated, with excellent results; not only chronic sinuses healed, but in many cases there had been restoration of mobility and function in the joint, and x-ray plates had shown a return to normal of the bony structure. Cases of visceral tuberculosis required careful selection and constant supervision during treatment because a violent focal reaction, with increase of pulse rate and elevation of temperature, sometimes resulted. Cases of tuberculous mesenterica were often greatly benefited, and sometimes large palpable gland masses diminished steadily under artificial sunlight treatment. Pulmonary tuberculosis had been treated in twenty patients, and though an increase of pulse rate had sometimes been noticed no ill results had followed, and practically all the cases had gained weight. He thought that in early cases great benefit might be derived from the tonic effects of the light.

#### *The Smoke Problem.*

Ex-Baillie W. BROWNILL SMITH, O.B.E., described the attempts made by the Glasgow gas department to introduce the use of gas for commercial heating and to provide smokeless fuel for the use of the citizens.

#### *Inspections and Demonstrations.*

On the afternoon of July 2nd visits were paid to corporation housing schemes, hospitals, and sanatoriums, and on July 3rd a demonstration was given by Dr. FERGUS L. HENDERSON of radiograms of the chest in tuberculosis and allied conditions, and various sanatoriums and dispensaries devoted to work in connexion with tuberculosis were visited.

#### *Annual Meeting.*

At the twenty-seventh general meeting of the National Association for the Prevention of Tuberculosis held at the close of the afternoon session of the conference on July 1st the annual report was adopted, on the motion of the Hon. Sir ARTHUR STANLEY, who was in the chair, seconded by Sir ROBERT PHILIP. The chairman referred to the special appeal about to be made to raise £100,000 for a three years' intensive campaign of popular education regarding the cause and prevention of the disease and for rendering communal and individual aid and making provision for the after-care of patients. In the evening a reception was held by the Corporation in the City Chambers, at which Lord Provost Sir Matthew W. Montgomery and the magistrates received the guests, and addresses were given in the banqueting hall.

### TWENTY-FIRST ANNIVERSARY OF THE UNIVERSITY OF SHEFFIELD.

On July 1st and 2nd the University of Sheffield celebrated its coming of age. King Edward VII opened the University in 1905, and the present celebrations were attended by Princess Mary. Glorious summer weather prevailed, and the thinning of the customary veil of smoke gave the city a strangely unfamiliar appearance, and justified the remark in a local paper, that Sheffield was one of Nature's beauty spots spoiled by being converted into an industrial city.

The University buildings are pleasantly situated on the lower slopes of Weston Park. In the park, a stone's throw from the entrance to the University, is the beautiful war memorial erected to the memory of the 8,814 non-commissioned officers and men of the York and Lancaster regiment who fell in the war. July 1st, the anniversary of the opening of the battle of the Somme, is the day of Sheffield's saddest memories; ten years ago a battalion recruited in this city was almost obliterated at Serre. An undertone of sadness mingled, therefore, with the dominant

chord of congratulation and jubilation. The ceremonial programme included the unveiling by the Chancellor of a war memorial in the University Library to the students who gave their lives in the war, and the laying of the foundation stone of a new sports pavilion on the University playing fields at Norton, given by a former Pro-Chancellor, the late Sir Albert Hobson, as a memorial to his two sons.

On Thursday morning, July 1st, the representatives of learned societies and other bodies were welcomed in the Firth Hall of the University by the Chancellor, the Marquess of Crewe, British Ambassador to France, and by the Vice-Chancellor, Sir Henry Hadow. The gathering was a most distinguished and brilliant one, and emphasized, as so many gatherings in recent years have done, the unification, geographically speaking, of the whole world. Saskatoon, Hong-Kong, Calcutta, Capetown, as well as many other distant places, sent delegates, and the University of Paris honoured Sheffield by sending representatives. The university spirit is evidently one of the factors contributing towards the evolution of the international—and inter-racial—mind. Sir Walter Fletcher represented the Medical Research Council, Professor J. S. Haldane was one of the delegates from Oxford University, and Dr. J. G. Adami came from the University of Liverpool.

Professor Bower, who represented the Royal Society, referred in his speech to the valuable influence of universities in great industrial cities, such as Sheffield, Manchester, Leeds, Liverpool, and Birmingham, in endowing their citizens with a wider outlook and the corporate spirit. The Marquess of Crewe, sounding a similar note, suggested that the infusion of the university spirit into industry would go far to remedy our industrial troubles. In the afternoon Princess Mary attended a Degree Congregation in the Victoria Hall, and received an honorary degree; as did also Sir Austen Chamberlain, Professor P. F. Frankland, Sir Hugh P. Allen, Miss Emily Peurose, and others.

On July 2nd the Marquess of Crewe, unveiling the war memorial, referred to the belief that, in spite of all its horrors, war as a cleansing fire might have a regenerating effect on nations. It was to be hoped that the last war had produced a hatred and horror of war such as had never existed before; this feeling was nowhere more profound than in France.

The delegates then attended the laying of the foundation stone of a gymnasium for the University by Mrs. H. K. Stephenson, and visited the applied science department of the University in St. George's Square, where new research laboratories for engineering and metallurgy were opened by Sir Robert Hadfield. The Marquess of Crewe referred to the good work of Sir Robert Hadfield in promoting a cordial understanding between the leaders of the steel industry in England and France, and Sir Robert Hadfield, touching on the question of unemployment, said it would be alleviated when, by increased output per man, the cost of production was brought down to an economic level. This increase in production depended on the enlightened goodwill of the worker himself; without this all other measures must be vain. Next came the use of every improvement in processes, materials, and plant, and in devising and adopting these the students of the University would play an important part. The visitors later made a tour of the finely equipped workshops and laboratories.

In the afternoon, after the opening of the Hobson Memorial Pavilion at the University playing fields, a cricket match between Sheffield and Liverpool Universities ended in a victory for Sheffield, and a conversation in the University in the evening concluded the programme for the day. An interesting series of demonstrations and exhibits in the laboratories of the medical school was given. In the department of pathology Dr. Godfrey Carter, professor of medical jurisprudence, gave a demonstration on the recognition of old blood stains; Dr. E. F. Skinner illustrated blood grouping for transfusion; Professor Douglas dealt with the factors in the acquisition of immunity; Mr. Froggatt, in the new laboratory for mechanical dentistry opened last year, showed the melting, rolling into plate, and drawing into wire of gold scrap.

In the physiology department demonstrations were given of the isolated, beating heart of the frog and of the rabbit, and the spectroscopic appearance of the blood in different conditions. The anatomy department furnished anthropological demonstrations by Mr. J. H. Cobb and Dr. F. Barnes of the bones of primitive man and the crania and skeletons of various living races. Professor Patten showed some interesting exhibits from his ornithological collection, and models in the anatomical museum were exhibited by Dr. Eric Stacey.

The Medical School of Sheffield is much older than the University; it dates back to 1828, and is looking forward to celebrating its centenary two years hence. For this reason it has been content to occupy a somewhat less conspicuous place in the present celebrations than might otherwise have been the case.

## SCOTTISH BOARD OF HEALTH.

### ANNUAL REPORT FOR 1925.

THE annual report of the Scottish Board of Health for the year 1925, which has just been issued, contains some new features, dealing especially with pneumonia, venereal diseases, rickets, and the value of the "health week." The question of medical certification of incapacity for work under national health insurance also receives special treatment.

The total death rate for Scotland in 1925 was 13.4 per 1,000 persons living, which is 1.0 less than for 1924, and 1.4 less than the mean of the rates for the last ten years. The death rates from pulmonary and non-pulmonary tuberculosis are the lowest yet recorded. On the other hand, the common infectious diseases in the sixteen large towns show a slight increase in total incidence during 1925, although there was a decrease in the death rate from these causes per 1,000 persons living. The infantile mortality also appears to have been considerably lowered. The death rate of children under 1 year of age was 90.5 per 1,000 births during 1925, which was lower than that of any previous year, excepting 1921 and 1923. It is pointed out that this progressive decline in the infantile mortality does not yet represent the full saving in health and life of infants that might be effected. The report refers to the findings of the Hospital Services (Scotland) Committee, presented in January, 1926, and states that of the additional 3,500 beds for general hospital work which the committee considered were required 1,000 are needed for the insured population. With regard to the housing shortage, the report states that the number of houses completed with State assistance for the working classes during 1925 was over 8,000, and that while this was an advance on the figures for the two preceding years it was not so great as was expected. The number under construction on the last day of the year was 13,311, and it is therefore expected that during 1926 a greater number will be completed than in any year since local authorities undertook this matter. The Milk and Dairies (Scotland) Act, 1914, was put into operation on September 1st, 1925, along with the Tuberculosis Order, which will have the effect of eliminating the dairy cows that give tuberculous milk.

### Housing.

The report states that a production of 20,000 houses a year is required in Scotland, and that it is regrettable that less than one-half this number have been finished during 1925. A conference of the larger local authorities was held in Edinburgh in July, 1925, at which the serious nature of the situation was discussed and a committee of local authorities appointed to investigate the causes of delay. A report issued in November, 1925, attributed the delay to the more stringent conditions of trade unions in Scotland and to the difficulty experienced by local authorities in borrowing money for housing purposes, as well as to a shortage of building trade labour. In December the Prime Minister announced that the Government had resolved itself to erect in Scotland 2,000 houses of the steel type, which did not require in their production and erection more than 10 per cent. of skilled building

trade labour, and at the close of the year active steps were being taken to put this scheme into operation. At the same time, the promotion of schemes by ordinary methods of construction was being pushed forward. On December 31st there were 63,937 houses completed, in course of erection, or immediately contemplated with the aid of the Government subsidies. Returns furnished by local authorities showed that 1,852 houses had been erected by unassisted private enterprise during 1925. A special grant had been made by the Treasury to enable local authorities to erect a small number of houses in different parts of the country for the purpose of demonstrating the value of steel houses, and in all twenty-four demonstration houses of the Weir and Atholl types had been allocated for this purpose. Local authorities had in all cases reported that the tenants had been perfectly satisfied with the comfort of steel houses, which were quite cool in the summer months and warm in the winter, little or no difference being presented between the steel house and the stone or brick house. Some difficulty had been experienced in regard to the housing of farm workers. Excepting to the extent that such workers might occupy houses provided by local authorities in villages adjoining the farms, it had not been practicable to provide houses for them through the agency of the local authorities. It had been urged from time to time that grants should be made available to owners of property in rural areas towards the cost of improvement and repairs in existing houses, as this would be a more economical method of providing suitable accommodation than the erection of new houses, and this proposal had engaged attention during the year. With regard to slum clearance during the year, the Board of Health had confirmed five improvement schemes and one reconstruction scheme in the burghs of Buckhaven, Dunbar, Dundee, Leith, Leven, and Perth. With the assistance of the slum clearance grant, thirty-six local authorities were proceeding with schemes which involved the closure of 7,904 houses, to replace which 7,450 houses were being constructed. It is pointed out that considerable difficulty is found in rehousing the tenants from insanitary areas, as tenants are often unwilling to remove to the new houses provided for them, despite the fact that the new rents are often lower than those previously paid.

### Venereal Diseases.

During the year 1925 the number of venereal treatment centres had been increased to forty-five. With regard to syphilis, it is stated that if a case is treated before the parasites have become generally diffused through the body, and if treatment is vigorously carried out, a cure may be anticipated with confidence; that in the next stage, while a cure is still to be expected, the success of treatment cannot be promised with the same assurance, and the duration of treatment is more protracted, although immediate palliative results are the rule. The most important feature in treatment is, therefore, that it should be commenced at the earliest possible date. It is pointed out that the use of mercury as a remedy has not been displaced by the introduction of arsenobenzol products, but that of recent years bismuth has, to a considerable extent, replaced the use of mercury compounds, while potassium iodide in certain circumstances is still found to achieve results that cannot be produced by any other preparation. The accepted standard of cure is that the blood of the patient must give negative responses to Wassermann tests for a period of two years.

In the treatment of acute anterior gonorrhoeal urethritis irrigation by warm solution of suitable antiseptic conveyed by means of a siphon is recommended. The antiseptic preparations mentioned are potassium permanganate (1 in 8,000 to 1 in 4,000), zinc sulphocarbolate (1 in 4,000), mercury oxycyanide (1 in 4,000), silver nitrate, and mercuriochrome. The report states that the value of treatment by vaccines is still in doubt. It is believed that between 35,000 and 70,000 new cases of gonorrhoea occur in Scotland annually, and that a large proportion of them receive no satisfactory treatment. It is believed further that, of all the grave maladies, none has been more neglected and none has had its dangers less clearly realized:



A certain amount of propaganda for instruction had been arranged by individual local authorities, and the bulk of this work had been efficiently carried out by the Scottish Committee of the British Social Hygiene Council, to whom a grant of £800 was paid towards the cost of an approved programme during 1924-25. The Council's activities, at the suggestion of the Board of Health, had been especially directed to those areas in which least advantage had been taken of the public facilities provided for treatment.

#### *Pneumonia.*

The report observes that while far more public interest is devoted to tuberculosis than to pneumonia, the annual deaths from pneumonia in Scotland average between 6,000 and 7,000, while the deaths from pulmonary tuberculosis are under 4,000. The death rate from most of the acute diseases has fallen in the last seventy years, but pneumonia forms an important exception. The mean death rate from pneumonia in the period 1921-25 was roughly 70 per cent. higher than in the period 1855-60. With regard to the reasons for this increased death rate, it was suggested that a number of conditions formerly diagnosed as tuberculous are now regarded as pneumonia, and that epidemics of influenza have undoubtedly affected the pneumonia death rates in some years. It is estimated that since one out of every five persons suffering from pneumonia dies of the disease, there must be between 30,000 and 35,000 cases in Scotland in an average year, apart from cases of secondary pneumonia following measles and whooping-cough. Of the four varieties of pneumococcus recognized in pneumonia, Type I is responsible for about one-third of the cases of acute lobar pneumonia, but Type III is the most fatal. Certain local authorities (Glasgow, Aberdeen Burgh, and Aberdeen County) had undertaken to admit to their hospitals any pneumonia patients whose doctors recommended removal. It is suggested that hospital treatment is the ideal to be aimed at wherever possible, and that, with modern methods of transport, it is safe to remove to hospital a patient suffering from pneumonia up to the fourth or fifth day of the illness, except where signs of cardiac embarrassment are present. In the city of Glasgow the number of cases admitted to hospital during the year was 3,034, as compared with 476 cases in 1919. A serum is now available for the treatment of pneumonia due to the pneumococcus of Type I, but its efficacy is still a matter of doubt. The object of removing cases to the local authority's hospitals has been to increase largely the number of beds available for pneumonia patients.

#### *Rickets.*

A special investigation of rickets was made during the year by the Board of Health. Returns made by child welfare centres showed that in seven burghs among 15,114 children attending for the first time there were 683 cases of rickets, or 4.5 per cent., among all such children. In three out of these seven areas the percentages were as high as 10.5, 15, and 54.6 per cent. Returns received from school medical officers showed that out of 179,502 children examined in twenty-two areas, 1,623 were recorded as having had "slight" rickets and 2,359 "marked" rickets. The total percentage for rickets in these areas was thus 2.2. Out of 3,742 children examined on entering school at Aberdeen, 39.9 per cent. of the boys showed traces of rickets and 34.7 of the girls, or more than one in three of the 5-year-old children. Somewhat similar results are yielded in the schools of other areas. The medical officer of health for Glasgow is quoted as having stated that among children between the ages of 6 months and 10 years examined in Glasgow hospitals, 40 per cent. were suffering from rickets. With regard to the influences connected with the production of rickets, returns from Dundee appear to indicate that the percentage of children with rickets was precisely the same—namely, 50 per cent.—no matter what the size of the house from which they came. With regard to feeding, among 290 cases of rickets, 172 were breast-fed for six months or more, 40 were partly breast-fed and partly bottle-fed, and 92 were bottle-fed. The Board considers that it has been fairly well established that vitamin A is a growth-promoting and not a

rickets-preventing vitamin, the latter being now known as vitamin D and having a distribution similar to vitamin A but being distinct from it. The explanation of the value of ultra-violet light treatment in cases of rickets was probably to be found in the fact that cholesterol, when exposed to ultra-violet rays, acquired antirachitic properties. The report gives details of the results obtained by the latter means at the Carnegie Clinics at Motherwell and elsewhere.

#### *Maternity Service and Child Welfare.*

While the infantile mortality rate is on the whole decreasing there is little indication that puerperal mortality is on the wane. The Registrar-General's returns are quoted as showing that the death rate of mothers per 1,000 births, which was 5.1 in 1865, had risen to 6.1 in 1915 and was 6.2 in 1925. Maternity service and child welfare schemes are now in existence for areas including 92 per cent. of the total population of Scotland. Broadly, therefore, thirteen out of every fourteen of the women and children in Scotland have available to them the services of the local authorities. These schemes differ in completeness, but their extent may be gathered from the fact that the total number of visits made by health visitors during the year was 632,202; of these, 22,561 were to expectant mothers and the remainder to children; of the latter, 67,680 were first visits to newly born infants. The number of health visitors employed by local authorities was 141 whole-time visitors and 417 part-time health visitors. In all there were 186 maternity and child welfare centres in operation, at which there was a total number of attendances of 315,437 during 1925. The number of children who attended for the first time was 20,365, and the number of women who attended for ante-natal consultation was 8,178. The number of centres under the schemes at which special treatment is provided was forty-seven. About one-third of the births occurring in the areas for which figures are available were attended by midwives, and in approximately 5,000 out of these 30,000 births the midwives called upon the assistance of a medical practitioner in emergency.

#### *The Food Supply.*

The report indicates that considerable developments took place under the Sale of Food and Drugs Acts during 1925. The Milk and Dairies (Scotland) Act came into operation on September 1st, 1925, as did also the Tuberculosis Order by the Ministry of Agriculture, and the Preservatives in Food Regulations (Scotland) were introduced on August 17th. In terms of the Dairies Act, all dairy cows in Scotland would be subject to veterinary inspection at least once every year, although in towns and cities veterinary inspection of cows will be carried out with much greater frequency. Local authorities had already shown great interest in the supply of clean milk, and the system of licences for the sale of higher grade milk had made definite progress. Only two preservatives (sulphur dioxide and benzoic acid) will be allowed in food after January 1st, 1927, and the staple articles of diet, such as milk, butter, cream, eggs, meat, and fish, will be entirely free from preservatives after the regulations come into operation. The total number of samples of foods submitted to public analysts was 7,635, and of these 778 were found adulterated or not up to the proper standard, the greater number of these (604) being samples of milk.

#### *Health Weeks.*

Of the systematic efforts made to educate the public in communal and personal hygiene the holding of a well organized "health week" is commended. The central feature of a health week should be an exhibition of a varied character, including exhibits connected with all the medical services provided by the local authority and by voluntary agencies, such as the Red Cross Society, St. Andrew's Ambulance Association, etc. It is suggested that a section should be devoted to child welfare, another to tuberculosis, and another to food, cooking, and invalid diet. Reference is made to a very successful health week held in Aberdeen in October, 1925, at which the average attendance was 3,500 each day.

*Insurance.*

In the year 1925 the number of persons insured with approved societies was approximately 1,659,000. Of these, many thousands received sickness benefit under medical certification. During the year 22,515 cases, which had been medically certified, were contested and referred to medical referees. Of these, 41 per cent. were confirmed, 21 per cent. were not confirmed, and 38 per cent. failed to appear. Records had been kept of these examinations, and some classified results are presented in the report. It appears that there was a special tendency for patients to desire to remain as long as possible on the sick list in cases of anaemia, debility following pregnancy, and various rheumatic affections. In the case of anaemia, 90 per cent. of the referred cases had been found capable of work on examination. In one region special attention had been concentrated on heart disease as the cause of incapacity for work. Among 3,000 heart cases, 285 patients (9.5 per cent.) had been found to be incapacitated by heart disease of some sort.

The report concludes with some general remarks upon such subjects as the welfare of the blind, the organization of consultative councils, the remuneration of medical officers, and the examination and certification of nurses.

## ROYAL SANITARY INSTITUTE.

### JUBILEE CONGRESS.

THE jubilee congress of the Royal Sanitary Institute opened in London on July 5th and continued for the four following days. Some hundreds of municipalities were represented, as well as Government departments and professional organizations. The British Medical Association was officially represented by Dr. H. B. Brackenbury and Dr. I. W. Johnson. The events of the week began with a luncheon, over which the DUKE OF NORTHUMBERLAND presided. Sir ARCHIBALD GARROD, Regius Professor of Medicine at Oxford, in proposing "Success to the Congress," recalled the sanitary conditions of the eighteenth century, at the time the Institute was founded, and said that there was no department of science which could compare with preventive medicine in its achievements during the last half-century.

### *Inaugural Address by the Minister of Health.*

The representatives assembled at the Guildhall for the inaugural address by the President of the Congress, Mr. NEVILLE CHAMBERLAIN, Minister of Health. Owing to his duties at the House of Commons, where he was expected to introduce the Boards of Guardians (Default) Bill, Mr. Chamberlain could not remain more than a few moments, and he contented himself with giving a welcome to the representatives, and saying that he and his colleagues at the Ministry regarded themselves as partners with sanitarians in the great work of preventive medicine. During the period covered by the Institute's activities the science of sanitation had been taken at a bound from the Middle Ages to its present efficiency.

Mr. Chamberlain's inaugural address, which was read for him by Mr. I. G. GIMMON, one of the assistant secretaries of the Ministry, was a summary of sanitary progress since the passing of the Public Health Act, 1875, which still stood, he said, although there had been subsequent enactments, as the foundation of public health legislation. That Act was itself a consolidation, and the time was ripe for a fresh consolidation, and measures to that end were being taken. After reviewing the present situation with regard to infant mortality and other matters, he said that there was some danger lest, because conditions were so much improved, precautions should be relaxed. The precaution of vaccination, for example, was not observed to nearly the extent that was desirable, and there was room for further education of public opinion on that subject. Turning to the directions of future effort, Mr. Chamberlain referred to the need which still existed, particularly in many rural districts, for simple measures of sanitation adapted to local means and circumstances. The Smoke Abatement Bill, to which the House of Commons had given

a second reading, offered another opportunity for progress. A further field was the supervision of milk and other food supplies; here it was necessary to walk circumspectly lest severity be created by the zeal for purity. With regard to housing, since 1919 more than 670,000 houses had been built, over 413,000 of them with assistance from the Exchequer, and, with the same assistance, a further 224,000 were in course of erection or had been authorized. He had some further measures in contemplation dealing with rural housing. He also touched on the scheme of Poor Law reform which he had circulated for consideration. It was vitally important that the health work now undertaken by Poor Law authorities should be brought into closer relation with that which was done by other bodies. He hoped also that some means would be found of bringing the work of the great voluntary hospitals into closer relation with the work done by public authorities, though he had a strong conviction with regard to the need for maintaining the voluntary character of the hospitals, and would do nothing to impair that character. Finally, he spoke of the need and appreciation of research, saying that he regarded it as necessary that among the medical profession and health workers there should be that general attitude of mind which fostered research, and among the general public a greater appreciation of the value of such work. The reason why English preventive medicine had always been in the forefront was because of the existence of a well informed public opinion.

The vote of thanks to Mr. Chamberlain was proposed by Professor A. BOSTOCK HILL, chairman of council of the Institute, and was spoken to by Sir MATTHEW NATHAN, Professor L. FRIDERICIA, representing the Home Office of Denmark, who said that the modern sanitary movement was born in England, as Denmark was happy to acknowledge, Colonel C. A. GILL, I.M.S., who spoke on behalf of the dominion and colonial representatives, and Alderman EDMONDSON, mayor of Carlisle, on behalf of the municipal authorities.

### *The Preventive Aspects of Medicine.*

The Section of Sanitary Science and Preventive Medicine was opened with an eloquent address by Sir GEORGE NEWMAN, the President of the Section. He described disease as a disharmony within the body which had to be avoided or corrected. The germs of disease were important, but he begged people not to go "germ-mad." The essential thing was the health and resistance of the body. Progress depended more upon social evolution than upon the advance of sanitary science as such. It depended more upon wisdom than upon knowledge. Knowledge and wisdom, far from being one and the same, had oftentimes no connexion. Knowledge was the mere material upon which wisdom built. Lord RIDDELL delivered an amusing essay in this Section on the press and preventive medicine. In the discussion that followed one or two useful points were elicited. Mr. H. LESSER, chairman of the London Insurance Committee, said that his administrative work had made him mourn at the smallness of the proportion of the insured population who realized that national health insurance was an integral part of preventive medicine. Dr. SHADICK HIGGINS, medical officer of health for Capetown, said that in South Africa there was no difficulty in getting the press to publish whatever the medical department wanted. The difficulty was rather for the medical officer of health to prove himself equal to the occasion, and take advantage of the facilities offered. Sir GEORGE NEWMAN remarked that neither the public health officers nor the officials in Whitehall could "deliver the goods" unless there was an educated people.

At the Mansion House on the same morning, at a conference of representatives of sanitary authorities, Dr. G. CLARK TROTTER dealt with a similar subject, "Public health propaganda in its practical aspects." He gave an account of various forms of publicity, and stressed the importance of distinguishing the reasoned and authoritative advice on health from the mass of camouflaged advertising propaganda with which the country was at present flooded.

The first of the technical papers in the Sanitary Science Section was by Major A. G. R. FOULERTON, who spoke of

the place of bacteriology in preventive medicine, and traced the work done in the recent war in shielding the British Army from infections. Dr. A. F. THOMPSON spoke of the place of inheritance in preventive medicine. The factor of inheritance, he said, unlike that of environment, was little appreciated, but although not much was known of the mechanism whereby it was brought about the fact of inheritance was obvious and indisputable. He did not think it could be questioned that even susceptibility and immunity to the action of micro-organisms was largely a matter of inheritance. While far from deprecating efforts directed towards the improvement of surroundings, he pointed out that there existed in the community a very large number of persons in whom innate tendencies to physical defect and ill-health were so marked that, whatever the environment, their offspring were likely to be similarly handicapped. This led up to a plea for a place for eugenics in the science, practice, and teaching of preventive medicine. The final paper of this session was by Dr. H. P. NEWSHOLME, who spoke of the influence of the healthy mind in preventing bodily ill-health. His argument was that preventive medicine could not be wholly preventive until it included the mind in its province.

In the Section of School Hygiene Professor WINIFRED CULLIS and Dr. LEONARD HILL opened a discussion on the recommendations made to the Board of Education Advisory Committee with reference to the introduction of physiology into schools, and this was followed by a discussion on cecals and catarrhal conditions, opened by Dr. CLIVE RIVIERE, followed by Dr. A. I. SIMES and Dr. L. R. LEMPIERE.

#### *The Rheumatic Child.*

Papers on rheumatism were contributed by two members of the special subcommittee of inquiry into heart disease in children, set up by the British Medical Association, whose report was published as a special SUPPLEMENT to the last issue of the BRITISH MEDICAL JOURNAL. Dr. CAREY F. COOMBS said that the report in question included a comprehensive summary of the institutional provision available in this country for prolonged treatment of rheumatic infection. This was a tale of fragmentary and imperfect effort, which made a poor show when compared with the generous accommodation afforded in America for children suffering from such conditions. There existed an American Heart Association which had done great things on behalf of cardiac invalids in general and the rheumatic child in particular. In the earlier stages of cardiac rheumatism a certain percentage of recoveries could be claimed. He knew of no way in which that percentage could be increased except by prolonged and efficient institutional treatment. The treatment of rheumatic children in a school hospital would help to teach the public, as well as the profession, what were the principles of defence against this infection. The other paper was by Dr. F. J. POYNOR, who laid stress upon the gravity of the condition of acute rheumatism in the young, the need for further study of its causation, and of the associated nerve strain, and the environmental, dietetic and epidemiological factors. He was convinced by clinical and experimental evidence that the tonsils were a site of access of this infection. Statistics would not shake him in this belief, but it was not to be supposed that that was the only site. Another step in prevention to which he looked forward was the establishment of a central institute for the study of "rheumatism." It was a wasteful policy to be content with isolated investigations. A properly organized institute could do continuous work, train investigators, and collect information.

Sir GEORGE NEWMAN said that it was high time something definite was done about rheumatism, and he rejoiced that it had a place in the programme of the Congress. Progress in preventive medicine did not lie in repeating the old shibboleths about environment, but in a new grasp and understanding of the group of diseases which invadated the people. Dr. IZOD BENNETT spoke of the intestine in relation to the occurrence of chronic rheumatism, and blamed the widespread use of preserved foodstuffs for the invasion of the bowels by dangerous micro-organisms. Dr. REGINALD MILLER dealt with the environmental factors producing the rheumatic child, and quoted the facts elicited

by the British Medical Association's subcommittee, of which he was secretary. Dr. JAMES WHEATLEY (Shropshire) and other medical officers of health joined in the discussion, which chiefly concerned the questions of bad housing, damp soil, and other predisposing factors.

#### *Midwifery in the Home.*

On Wednesday morning a joint session was held with the Maternity and Child Welfare Conference, under the presidency of Lady FORSTER OF LEPF, when the subject for discussion was midwifery in the homes of the people.

Dr. T. WATTS EDEN, in opening from the consultant's point of view, said that the conduct of labour was a surgical procedure; it might be of the simplest surgical character, or developments might occur to transform it into a major surgical operation. The surgical requirements which must be regarded as the minimum of safety in the home included the services of a trained midwifery nurse. No doctor ought to be expected to attend a confinement without the help which such a nurse could give him. It was a national disgrace that "handy women" were still allowed to ply their evil calling. These unclean anachronisms, reminiscent of the bad days which produced Sairey Gamp, were one of the most potent influences in maintaining the high rate of puerperal sepsis. The public attitude in recent years had been a little unfair to doctors, especially to the family doctor. Not all the emergencies of confinement were capable of being foretold by the most careful medical supervision. Assuming an adequate degree of care and skill on the part of the doctor and nurse, they were no more to be held blameworthy for the casualties of midwifery than for the unfavourable termination of a medical or surgical illness.

Dr. W. ALLEN DALEY (M.O.H. Hull), speaking of the need for better training of the midwife and of the doctor in midwifery, said that between 1,000 and 2,000 preventable maternal deaths still took place in this country every year, and thousands of cases of chronic ill-health resulted from bad midwifery. There should be collaboration between the private doctor, the private midwife, and the local authority's medical and nursing staff.

Dr. E. KAYE LE FLEMING (British Medical Association) said that the conditions under which the general practitioner had to perform his duty often varied widely from the ideal. In many cases they made ordinary (not to speak of surgical) cleanliness impossible. But the very difficulties which the general practitioner encountered, and his wide experience single-handed, developed his skill, resource, and independence, and made him a real specialist in midwifery. No case gave the general practitioner more anxiety than a maternity case which developed complications during the puerperium. The speaker dissented from some popular conclusions based on the statistics of puerperal fever. Apart from the unreliability of figures taken from selected areas and relating to an ill defined condition, a large number of these cases arose when labour had been apparently normal, and free from interference by nurse or doctor. On the other hand, cases in which many factors favouring sepsis were present frequently ran a normal course. Some unknown factor must be invoked to explain the complication—possibly an unrecognized influence tending to diminish the normal personal resistance to infection. Speaking generally, after an experience of twenty-five years in town and country practice, he was convinced that there had been the same steady advance in the treatment of maternity cases as in medicine and surgery generally and in public health. This had been assisted by the quickening of the means of communication, the advance of the general standard of cleanliness in the home, the steady replacement of the "handy woman" by the trained midwife, and the earlier recognition of complicated cases, with the provision of hospital accommodation for them. It was along these lines that continued improvement must be looked for. More ante-natal and post-natal clinics must be established, the former especially to detect cases of possible pelvic malformation and independent disease.

A large number of speakers joined in the discussion, including some from overseas. Dr. DICKINSON (New York) said that in New York it was the object to ensure, not indeed one bed for every maternity case, but one bed in an obstetric institution (or at least attendance by an

obstetrician of skill) for every first confinement. Dr. C. N. BENTLEY (Bengal) said that in the Indian province he represented, with the same population as Great Britain and Ireland, one and a half million births took place in a year. Only one-half the children born reached the age of 8 years. No fewer than 35,000 infants and nearly 10,000 mothers died of tetanus within a few days of delivery. The reason for this appalling death rate was ignorant midwifery. Dr. LEON JONA (Victorian Branch of the British Medical Association) said that he looked forward to the day when midwifery would be in the hands of specialist practitioners only. As regards nursing, he believed conditions in Australia were better than in Great Britain.

#### CONFERENCE ON MATERNITY AND CHILD WELFARE.

The fourth English-speaking Conference on Maternity and Child Welfare was held in London from July 5th to 8th, and was attended by over seven hundred delegates, the majority of them from public health authorities. The Conference was opened by Sir H. KINGSLEY WOOD, M.P., Parliamentary Secretary to the Ministry of Health, who gave a number of figures illustrating recent progress in the prevention of infant mortality. He deplored the fact that maternal mortality had shown practically no diminution during the last twenty years. Moreover the lessened infant death rate appertained almost wholly to infants after the first month of life. It was the object of the Ministry of Health to create an informed public opinion with regard to maternal mortality, and in this connexion he was glad to say that the number of ante-natal centres had increased during the last two years from 564 to 641, and the number of infant welfare centres from 2,011 to 2,218. The services of trained midwives were now available for nearly 70 per cent. of the rural population.

DAME JANET CAMPBELL introduced the subject of the health of children of from 1 to 5 years. She showed that there had been a general downward tendency in the rate of mortality of children of this age, though there was still room for improvement. Health visitors at present concentrated on the infant, and the little being whom she called the "ex-baby" was likely to be neglected. Competent health visiting, with its many occasions for teaching the mother the importance of mental and physical hygiene, would do more than anything else to raise the standard of health among pre-school children. She also suggested special sessions at infant welfare centres at which children up to 5 years of age might be examined by the doctor two or three times a year. There should also be increased facilities for the treatment of certain defects, such as orthopaedic conditions. The remainder of this discussion was chiefly taken up by the recitation of American experience by three or four visitors from the States.

#### Conception Control Teaching at Welfare Centres.

A discussion, which was so eager and animated that it took double the time allotted to it on the programme, was on a question which was set out as: "Should medical officers be free to give information on birth control at centres in individual cases?" but which might be more accurately stated as: "Should women as a right receive information on conception control from medical officers at welfare centres?"

Dr. MARGARET EMSLIE, maternity and child welfare medical officer for Croydon, maintained the affirmative, with certain reservations. Her view was that individuals did stand in need of such advice, and that the centre doctor was the best person to give it. She agreed that it would be calamitous if the infant welfare centres became associated in the public mind with the question of conception control *per se*, and she was strongly against miscellaneous instruction; the instruction should be given only in the individual case, and there only on medical grounds or where medical and economic considerations could not be dissociated. She begged those who were hostile to this proposal to give its supporters credit for a moral position. Dr. MARY BLAIR, medical officer of the Hammersmith Centre, took a different view. Whatever the merits of conception control, the infant welfare centre was essen-

tially a health centre, not a resort for the diseased and defective. If it was urged that a woman with phthisis should expect to receive advice on conception control at the centre, the answer was that such a woman had no business there at all; she ought to be under the tuberculosis authorities. Dr. BLAIR maintained that at the centres what should be taught was the ideal, not the expedient thing. The whole atmosphere of the centres would be lowered if this information were imparted, though she did not think there would be any harm in teaching restraint and continence and knowledge as to certain times in the reproductive cycle. But conception control could not be taught without teaching mechanical methods, which would be very unfortunate from the point of view of the influence of the centre. These speakers were followed by two working-class women, each of whom took a different view of the subject. Dr. ERIC PRITCHARD, who was in the chair, agreed with Dr. BLAIR. Dr. LETITIA FAIRFIELD also spoke strongly in opposition to the proposal. She said that speakers on the other side began with the assumption that a doctor by virtue of her medical degree should be allowed a wide discretion as to the giving of this advice. But was it right that a woman should allow a doctor to say that she had too many children or not? The infant welfare movement would be broken from top to bottom by any such introduction if it came to be regarded, as it would be, as an attempt to remedy economic ills. She admitted the hard cases, but such cases ought not to be allowed to govern the principle. What would very frequently happen would be that a woman who had had a bad first confinement would go down to the centre and receive this advice, and afterwards settle down into the neurotic mother of an only child. Dr. BRUCE DENLOR took an opposite position, but he said that he would be satisfied if such teaching as was suggested by Dr. BLAIR were given at the centres. The fairly even division of opinion among the speakers was reflected in the audience. Cries of protest were made when one medical officer of a clinic declared that behind this demand was a desire to shirk motherhood, and she was answered by another speaker, who said that it was because working women were beginning to realize the dignity of motherhood that they desired to be taught conception control and the spacing of families. If such teaching were not given, the resort of many of these women would be to the criminal abortionist.

#### BIRTHDAY HONOURS.

The following honours have been conferred on members of the medical profession, on the occasion of His Majesty's birthday. Owing to the general strike publication of the list was deferred from June 3rd to July 3rd. To all the recipients, and in particular to Dame Mary Scharlieb and Sir Alexander MacCormick, we offer the congratulations of their colleagues.

##### K.C.M.G.

Colonel Sir ALEXANDER MACCORMICK, Kt., M.D., F.R.C.S.Ed., Honorary Consulting Surgeon, Prince Alfred Hospital, and Surgeon, St. Vincent Hospital, Sydney. In recognition of his service to the Commonwealth of Australia.

##### D.B.E. (Civil).

Mrs. MARY ANN DACOMB SCHARLIEB, C.B.E., M.D., M.S., Consulting Gynaecologist, Royal Free Hospital.

##### Knighthood.

ALFRED HENRY EVANS, M.R.C.S., L.S.A., J.P., Member of the Unionist Association of the Tamworth Division since 1895, and President and Chairman since 1920. For political and public services.

##### C.B. (Military).

Surgeon Captain REGINALD ST. GEORGE SMALLRIDGE BOND, M.B., F.R.C.S., R.N.

Major-General ROBERT STRICKLAND HANNAY, C.M.G., D.S.O., K.H.S., Deputy Director of Medical Services, Southern Command.

##### C.M.G.

JOHN OWEN SHIMORE, M.B., Ch.B., Director of Medical and Sanitary Services, Tanganyika Territory.

##### O.F.O.

ERNEST CLARKE, M.D., F.R.C.S., Consulting Surgeon, Central London Ophthalmic Hospital.

## WAR MEMORIAL HOSPITAL AT ANDOVER.

**C.I.E.**  
Colonel KRISHNAJI VISHNOO KURDAY, I.M.S., Inspector-General of Civil Hospitals, Central Provinces.  
Lieut.-Colonel THOMAS WILLIAM HANLEY, I.M.S., District Medical and Sanitary Officer and Superintendent, Medical School, Madras.

**C.B.E. (Civil).**  
Colonel GEORGE WYKEHAM HERON, D.S.O., O.B.E., R.A.M.C. (ret.), Director of Department of Health, Palestine.

**O.B.E. (Military).**  
Temporary Captain WILLIAM BLIGH, M.D., R.A.M.C.  
Lieut.-Colonel HENRY ROBERT BROWN, I.M.S.  
Major WILLIAM EOAN, D.S.O., M.B., R.A.M.C., Deputy Assistant Director of Medical Services, Scottish Command.  
Major CHARLES HENRY HASLER HANOLD, M.D., R.A.M.C., Assistant Instructor, graded as Deputy Assistant Director of Hygiene, Aldershot.  
Captain (local Major) JOHN WRIGHT MALCOLM, M.C., M.B., R.A.M.C., attached Iraq Levies.

**M.B.E. (Military).**  
Captain WILLIAM DANIEL ARTHUR, R.A.M.C.

**O.B.E. (Civil).**  
ANANDRAI KESHAVAL DALAL, F.R.C.S., Professor of Clinical and Operative Surgery, Grant Medical College, Bombay, and Surgeon, Jamsctjee Jeejeebhoy Hospital, Bombay.  
DIOBY MACKENZIE MACPAIL, M.B., C.M., Medical Officer, District 1, St. Lucia, Windward Islands.  
WILLIAM MACLACHLAN McDONALD, M.R.C.S., L.R.C.P., Medical Officer, District 2, Antigua, Leeward Islands.  
FRANK EDRED WHITEHEAD, M.R.C.S., L.R.C.P., Director of Military and Sanitary Services, Nyasaland Protectorate.

**M.B.E. (Civil).**  
Major JOSEPH HENRY ARNOLD DONNELLAND, I.M.D., House-Surgeon, Jamsctjee Jeejeebhoy Hospital, Bombay.  
Major HENRY CLEMENT CRAGGS, I.M.D., Military Assistant Surgeon, Madras.  
ALAKH BEHARI ARORA, Medical Officer of Health, Lahore.

## WAR MEMORIAL HOSPITAL AT ANDOVER.

FIELD-MARSHAL VISCOUNT ALLENBY formally opened the War Memorial Hospital at Andover on June 30th. The building, which has just been completed, is erected on open land to the north of the town on a gentle slope to the south-south-west. The main wards projecting to the south form a wide sheltered and screened court for the use of patients. Every room in the hospital gets the full sun except those where it is not desirable, such as the operating room, the x-ray room, and the kitchens and offices, which have all been planned along the north side, with easy access to the patients' quarters on the south.

The main central corridor has been kept low to allow cross-ventilation to the private wards on the south side, and this has permitted considerable economy in construction. Heating is by a low pressure hot-water plant, though all wards have open fires in addition. The cooking will be by gas. The building is lighted by electricity. The main wards have been designed to give 100 superficial and 1,050 cubic feet per patient, and the private wards considerably more. All the windows in the wards are of the metal Austral type, and above them are additional windows of the hopper type, giving ventilation at the ceiling level.

The two ward kitchens have been placed in such positions that they serve also as duty rooms to two wards in each case. There are large sun verandahs at the south end of the two main wards.

To be Honorary Member of the Civil Division of the Order of the British Empire.  
HALIM ABU RAHMEH, Medical Officer, Department of Health, Palestine.

**Kaisar-i-Hind Medal (First Class).**  
Miss AGNES SCOTT, M.B., Chief Medical Officer, Women's Medical Service, and Secretary, Countess of Dufferin's Fund.  
JOHN DAVID O'DONNELL, M.B.E., V.D., F.R.C.S.Ed., Chief Medical and Sanitary Officer, Kolar Gold Fields, Mysore.  
Major JOSEPH ALEXANDER H. HOLMES, I.M.D., Senior Assistant Surgeon, British Station Hospital, Quetta.

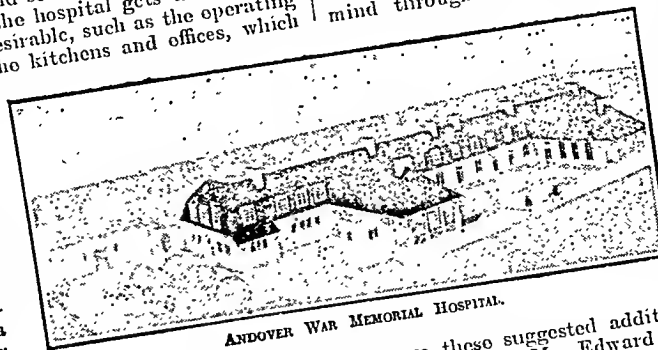
**Companion of the Imperial Service Order.**  
Major HERBERT WILLIAM V. COX, I.M.D., Civil Surgeon, Punjab.

**NAVAL PROMOTIONS.**  
The following promotions are announced in connexion with the King's Birthday honours:

**Royal Naval Medical Service.**—Surgeon Commanders to be Surgeon Captains: HERBERT R. H. DENNY, JOHN S. DUNDING, O.B.E., ARTHUR R. THOMAS, C.B.E., F.R.C.S., PERCIVAL T. NICHOLLS, JAMES MCCUTCHEON, M.B.  
**Royal Naval Volunteer Reserve.**—Surgeon Commander to be Surgeon Captain: ROBERT J. WILLIAM, M.V.O., O.B.E., V.D., M.B., M.S., F.R.C.S. Surgeon Lieutenant Commanders to be Surgeon Commanders: FRANCIS H. WATSON, M.B., GEORGE H. S. MILLS, M.B. (Surgeon Commander, Emergency List, R.N.).

The name of Miss Agnes Hunt, of the Hospital for Cripples, Gobowen, near Oswestry, also appears among those upon whom the honour of D.B.E. is conferred. Over a quarter of a century ago (1900) she established on a small scale at Baschurch, near Shropshire, a hospital for cripple children in which the principle of open-air treatment was from the first carried out. She has from the beginning the help of Mr. (now Sir) Robert Jones; with the assistance of other surgeons who volunteered the services, visited the hospital periodically to perform operations which were found to be necessary, especially in cases of bone and joint tuberculosis. The hospital grew, and Miss Hunt organized a system of local clinics, by which cases requiring treatment were discovered. Afterwards the hospital was removed to a more commodious building near Oswestry. The principles for which Miss Hunt worked have been extended to other counties, and the Central Committee for the Care of Cripples was established. In congratulating Miss Hunt we congratulate also the medical profession, of which she is so beloved and distinguished a colleague.

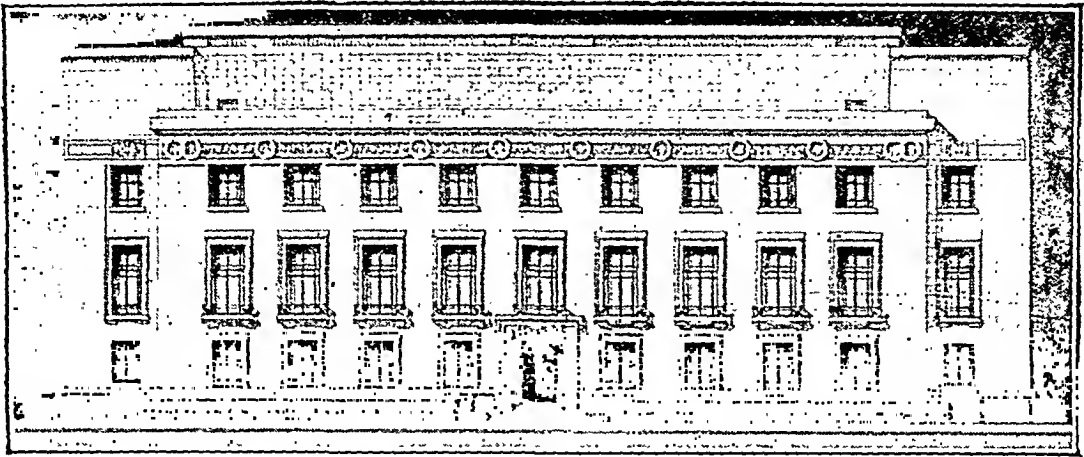
The concrete foundations are laid on the solid chalk and all the outside walls are of hollow construction, being built of 9-inch internal brickwork, 2-inch cavity, and 4½-inch exterior brickwork, rendered in cement on the outside. The general character of the building is shown in the accompanying illustration from a drawing exhibited at the Royal Academy. The total cost of the building, providing twenty beds and three private wards, has been £16,000. The possibility of future additions has been kept in mind throughout, and the building can be readily extended at three separate points. The most pressing addition will probably be a maternity ward and a children's ward to the south-east at the end of the main corridor. The men's and women's wards can be extended considerably in length without affecting any other portions of the building. It is hoped that the administrative portions will be found sufficiently large to serve these suggested additions without alterations. The architects are Mr. Edward Maufe, M.A., F.R.I.B.A., and Mr. Leslie Moore, M.C., F.R.I.B.A., of Raymond Buildings, Basingstoke.



ANDOVER WAR MEMORIAL HOSPITAL.

H.R.H. the Prince of Wales paid a private visit on June 29th to the hospital on his way to the railway station from Enham Village Centre, and made a careful inspection, at the end of which he expressed the opinion that was a very fitting memorial and that the town was to be congratulated on the possession of such an up-to-date hospital.





LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE. MAIN ELEVATION—KEPPEL STREET FRONT.

## THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

FOUNDATION STONE LAID BY THE MINISTER OF HEALTH.

The foundation stone of the London School of Hygiene and Tropical Medicine was laid by Mr. Neville Chamberlain, Minister of Health, on the afternoon of July 7th.

Rather more than five years ago a committee was appointed by the Ministry of Health, with the Earl of Athlone as chairman, to investigate the needs of medical practitioners for further education in medicine in London. A memorandum was furnished to the committee by the British Medical Association, and in May, 1921, a report was issued by the committee advocating the establishment of a post-graduate medical school in London, and also of an Institute of State Medicine, both to be in association with the University of London. The committee's recommendations were published in the *SUPPLEMENT to the BRITISH MEDICAL JOURNAL* for July 16th, 1921 (p. 25). An expert committee, of which the Minister of Health was chairman, was appointed to consider the recommendation as to an Institute or College of Hygiene: the chief difficulty in the way of its realization was financial. The matter was placed before the Rockefeller Foundation, and in February, 1922, the Rockefeller Trustees generously offered two million dollars (£400,000) towards the cost of building an Institute or School of Hygiene in London on the understanding that the British Government would accept the responsibility of providing for the staffing and maintenance of the school when established; the cost of this was estimated at about £25,000 a year. A second donation of £4,000 yearly was subsequently promised by the Rockefeller Trustees to provide for the payment of a director and an administrative staff charged with the duty of making all necessary preliminary arrangements regarding the building and the scope of its work. Dr. Andrew Balfour was accordingly appointed Director at the end of October, 1923. During the long period that has elapsed since the original decisions were taken we have referred more than once to the great importance of the principles underlying this project, and we therefore welcome the opening of the last stage in the creation of an institution which will, we believe, have a powerful influence on the development of scientific hygiene and preventive medicine in the British Empire and beyond.

### DESCRIPTION OF BUILDING.

Before proceeding to a description of the building it appears desirable to state very briefly the requirements which had to be met, and which, together with the extent and form of the site and the funds available, determined the architectural form which the School is to assume. The building to be erected has been designed by Mr. P. Morley Horder, F.R.I.B.A., and Mr. Vernon O. Rees, A.R.I.B.A.

Provision had to be made for teaching hygiene in all its branches, for instruction in tropical medicine, and for

research work in both these subjects and in any of the ancillary sciences. The balance had to be maintained equally between teaching and research. Both are essential, both are important, and careful and sympathetic consideration had to be given to both. As a result, it was finally decided to provide for research one-sixth of the total space available for instructional purposes. This may be regarded as a liberal allowance when it is remembered that the space devoted to teaching includes a big lecture theatre, numerous roomy classrooms and general laboratories, a library, a very large museum on two floors, tutorial rooms, and other accommodation. The number of students which the School is intended to accommodate is 250. Of these, it is considered that 100 will be engaged upon the study of tropical medicine—a figure based on the present attendance at the courses given in the Tropical Division at Endsleigh Gardens, where there has of late been an average of nearly seventy each session. The remaining figure, 150, representing students studying for diplomas or degrees in public health, has intentionally been placed very much on the safe side. At present there are only about forty-five students attending courses in London for the diploma in public health, but it is noteworthy that a recovery has taken place from the marked fall in numbers which followed the introduction of the new regulations of the General Medical Council, and there seems little doubt that this increase will continue, although it may be many years before there are as many as 150 aspirants for a public health qualification.

Meanwhile, however, the space provided will not be wasted, for there is likely to be, before very long, a surplus of research workers who can occupy to good effect some of the accommodation for ordinary students. If by the time that more accommodation is required for teaching purposes it becomes necessary to add to the size of the School this could be done, as care has been taken to see that its foundations and walls can carry another story.

The building—of which the foundations have been laid, while a start has been made upon the steel structure—will be situated between Gower Street and Malet Street, adjoining the large and lofty premises which form Messrs. Bourne and Hollingsworth's hostel. It will front south upon Keppel Street, and it is hoped that at least the frontage, which contains the main entrance, as shown in the illustration, will be of Portland stone. This Keppel Street elevation will be enriched by a wide fringe composed of wreaths and of the names of some of the great pioneers in hygiene and in tropical medicine. Finality has not yet been reached as regards these names. Over the main entrance there will be a large panel on which the handsome and interesting seal of the School will be engraved. There will be side entrances from Gower Street and Malet

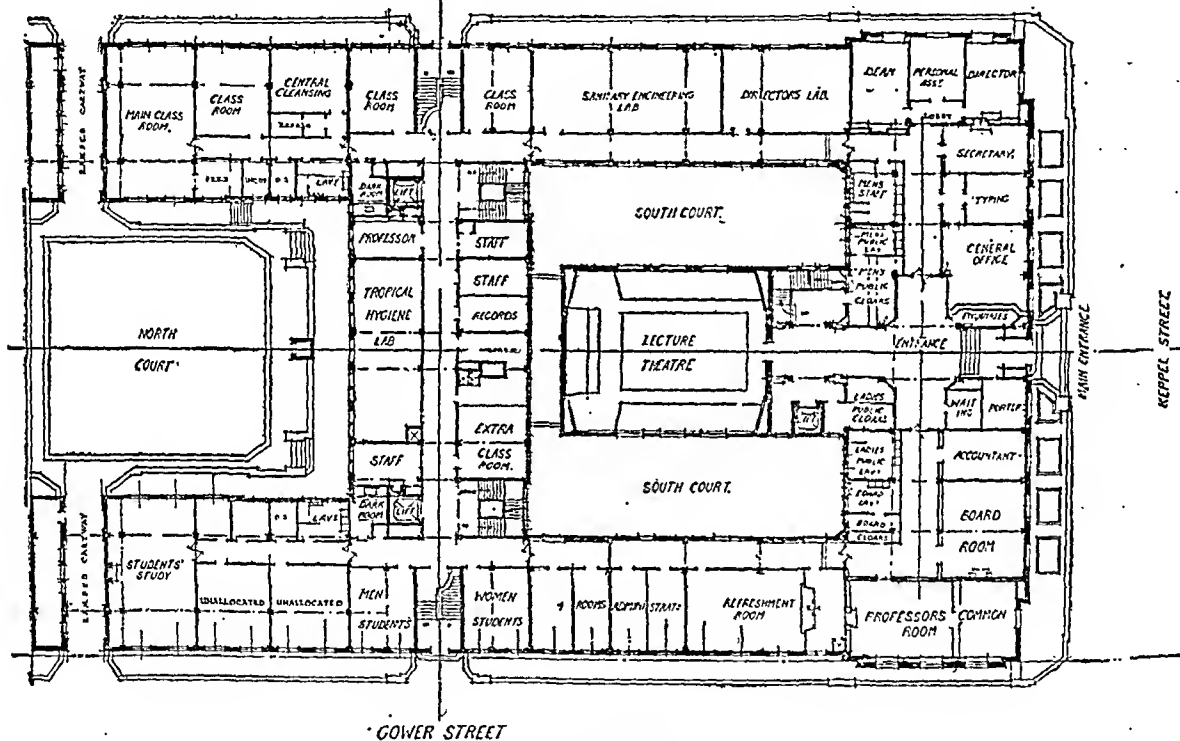
Street, with subsidiary entrances to a north court. The elevations to Gower Street and Malet Street will be simple and severe, the only relief to their severity being the emphatic size and projection of the main side entrances. The plainness of the wall surfaces will be somewhat relieved by carving. The general shape of the building is that of a letter H with the Keppel Street front closing one end (the southern end of the H) and the cross-bar dividing the enclosed space into two nearly equal courts, one of which, the northern, is not overarched upon, while the other, the southern, is partly occupied by the lecture theatre. This arrangement provides a building well ventilated and lighted, and it will be easy to find one's way about it, in view of the manner in which the different sections are grouped. The ventilation is by natural means, except in the case of the lecture theatre.

The provisional scheme of studies provided for six main divisions—namely, those of Applied Physics, Physiology, and Principles of Hygiene; Chemistry and Biochemistry; Immunology and Bacteriology; Medical Zoology, including

the "panel system" of heating. This is a modification of the old Roman hypocaust method, and has many advantages, while its disadvantages and difficulties can, it is believed, now be discounted. This, it may be said, is the first occasion where the panel system will be employed for the general warming of a large building of this type; but it is believed that the innovation will justify itself. Accordingly special steel boilers with piping, valves, pumps, and other accessories will be supplied for this purpose.

In the lecture theatre there will be a mechanical system of ventilation, and the fresh air introduced will be steam-heated. There will be an adequate supply of electricity for both light and power. Gas and hot and cold water will be distributed throughout the building, and steam under pressure through the greater part of it. Full inquiries were made as to the desirability of establishing plant for compressed air and vacuum, but it was eventually decided not to do so, partly on the score of expense, and partly because it is now possible to make adequate local provision—that is, in the laboratories themselves—for such services. A dis-

MALET STREET.



GROUND FLOOR PLAN.

Parasitology and Comparative Pathology; Epidemiology and Statistics; and finally, the Principles and Practice of Preventive Medicine, General Sanitation, and Administration. This grouping has been retained, but, in addition, the fact that the clinical pathology of exotic diseases forms a most important part of tropical medicine has been recognized, and a special laboratory has been devoted to the joint needs of this subject and of certain branches of tropical hygiene, with which, of course, tropical pathology is intimately associated.

#### Basement.

The only true basement is represented by the boiler house, which is wholly below ground level. There the heavy engineering plant will be placed, and, for its domestic hot-water supply, the School will be served by steam-heated boilers (calorifiers), while the boilers supplying the steam will have furnaces designed for burning coke, but capable of easy conversion for oil fuel. A water-softening system will be used in connexion with the boilers for the steam plant.

After long and careful consideration, some experimental trials, and the inspection of premises where the system is in vogue, it has been decided to warm the building by

tilling apparatus and ammonia refrigerating plant will be provided, but, while cold incubator rooms will serve certain of the divisions, others will be supplied with small refrigerators.

The basement, which is really a half-basement, communicates on either flank with useful cellar vaults in Gower Street and Malet Street. On the Malet Street side ten of these will have tiled walls, and will be utilized for the exhibition of working models in connexion with the museum. The basement will be well lit on its outer aspects by windows extending above pavement level and on its inner aspects by windows looking out on the north and south courts. On the Keppel Street front there is extensive provision for museum storage, some of which may eventually be adapted for actual museum exhibits. The storage rooms are flanked on the east side by an x-ray department which will form part of the Division of Applied Physiology, as will the constant temperature room, from which it is separated by the main photographic section. Each division will, in addition, have its own facilities for photographic work. On the west side of the museum storage are situated reserve laboratory storage, the kitchen, dry canteen, and various mess rooms. It is not intended to provide anything more than light luncheons for

the non-professional staff and teas for the staff generally, as there are many good restaurants and tea-rooms in the immediate vicinity of the School.

In the centre, behind the museum storage rooms, is the lower part of the lecture theatre, which has accommodation for 250 students. Behind it again come the lecturers' room and the preparation room. From the latter, cinema, epidiascope, and lantern work will be conducted, so that no space will be taken up in the theatre by cumbrous apparatus. Special attention has been paid to the question of acoustics, the elimination of draughts, adequate lighting, and facilities for rendering the theatre dark. The upper part of the boiler house and the engineers' shop are in the rear of the preparation room and lecturers' room.

Library and publication stack rooms are accommodated in the basement, as are large cloak-rooms and lavatories for men and women students. On the east side of the north court is situated a large post-mortem room, with an adjoining preparation room. It is hoped here to conduct autopsies upon animals dying in the Zoological Gardens, which often exhibit the lesions of diseases met with in the tropics. At present the School is in close touch with the Zoological Society of London, a member of its staff being pathologist to that society, and it is hoped to make the most of this association. A lobby separates the autopsy room from the laundry.

On the west side of the north court, are grouped the goods reception store and issue rooms, together with the carpenters' and metal workers' shops. Elsewhere in the basement are placed the distilling room, the room for large centrifuges, safes for chemicals and valuables, the telephone exchange, and the fans for air extraction. The chamber housing the latter will be insulated to deaden noise.

#### Ground Floor.

The main entrance on Keppel Street will lead into a fine entrance hall, which communicates directly with the stair hall. The latter gives immediate access to the lecture theatre—a convenient arrangement which, on occasions when the theatre is used for "outside" lectures or demonstrations in the evening, or indeed at other times, prevents the audience from wandering about the building and incidentally increasing the work of the cleaning staff. Cloak-room and lavatory accommodation, both for the staff and the general public, are provided at the back of the entrance hall.

The whole of the front block, facing Keppel Street, with the exception of the Gower Street corner, will be used for general administration, the Board Room receiving special architectural treatment, as it will be panelled in oak and ebony. The Gower Street corner houses the professors' common room and writing room. The eastern wing of this floor, facing Malet Street, contains, from south to north, the Director's laboratory and a Laboratory of Sanitary Engineering, which is intended to be partly a classroom, wherein students studying public health will be taught to read and perhaps to prepare plans, will become conversant with the principles of town planning, and will work with rough models of filters and other sanitary appliances with which they should have some acquaintance, if only to enable them to discuss questions of sanitary engineering intelligently with members of the engineering profession. Still further along will come the premises devoted to Division VI—General Sanitation and Public Health—and these extend also into the cross-bar of the H. Ample provision has been made in the way of classrooms, as much of the instruction must perforce be of a theoretical nature, the student getting his practical instruction under medical officers of health and others, both in urban and rural districts.

In the cross-bar facing north, and thus assured of good lighting, is the Laboratory of Tropical Hygiene, already mentioned, wherein the clinical pathology of the tropics will also be taught. It is appropriately flanked by the private laboratory of the clinical pathologist and the room of the lecturer on tropical hygiene. The western wing of the ground floor, facing Gower Street, contains common rooms for the professors and men and women students,

and a room for the service of tea and light refreshments. At the north end is a large students' study room, where silence will be enforced. Elsewhere the accommodation here has been held in reserve until it is found how best it can be utilized.

#### First Floor.

The Library, which will be a large and imposing room 33 feet wide by 120 feet long, is given the place of honour in the front of the building. To its left lie the offices of the Bureau of Hygiene and Tropical Diseases, which it is proposed should continue, as at present, a tenant of the School. It is indeed possible that a closer association will eventually develop. Hence the term "Publications Department" has been inserted in the plans. Behind the offices of this department comes a range of fine large rooms devoted to this important branch of informative and propaganda work. Immediately behind the Library access is provided to the flat roof of the lecture theatre, which will be laid out as a garden court. The west end of the Library is bounded by an ample periodicals room, for it is intended that the current literature shall be separately housed and made readily available for consultation. This room communicates with the Library, and both can be thrown open, together with the above-mentioned roof-garden, on the occasion of large social or scientific gatherings.

A so-called small conference room, which can, however, accommodate over a hundred people, lies to the immediate north of the periodicals room, and to its north again come a spare room and the laboratory for the visiting staff. The rest of this, the west wing, is entirely occupied by the Division of Epidemiology and Statistics, and contains a laboratory, card-index room, study rooms, dark room, and quarters for the staff. The whole of the cross-bar of the H is devoted to the Division of Applied Physiology, as is the northern half of the east wing of the building. This division is likely to be closely concerned with the problems of industrial hygiene, and so, in addition to the x-ray department and constant temperature room in the basement, it is provided with a large cross-lighted laboratory, a range of fine research rooms, mostly facing north, a gas room, and a gas chamber. In one of the research rooms the string galvanometer will find a place. A room has been set aside to serve as a reprint library and for the use of typists, while there are the usual staff quarters, a dark room, a hot incubator room working at 37° C. and 22° C., and a refrigerating chamber or cold incubator room. As in all the large divisions, there is a central cleansing department. Lavatory accommodation for men and women is, as on all the floors, tucked into the angles which the north court makes with the cross-bar of the H.

#### Second Floor.

Here the lower story of the Museum, which will be devoted to hygiene, runs the whole length of the Keppel Street front. In the roof there are three open wells admitting light from above, while it is well lit on the south by windows looking out on Keppel Street, and less fully on the north by . . . There should, however, it is important to secure as much wall space as possible. The Museum has been granted 15,000 feet of floor space, but in all probability this will eventually be found insufficient to illustrate adequately the huge subjects with which it will be concerned.

The rest of the building on this floor is divided between the Division of Chemistry and Biochemistry and that of Bacteriology and Immunology. The latter has been given the larger share, for there are likely to be more research workers in bacteriology, but there is no great difference in the space allocated to each. Chemistry and Biochemistry are housed in the east wing and eastern portion of the cross-bar of the H; Bacteriology and Immunology are on the western side.

The large laboratory of the Chemical Division in the north-east corner of the building can accommodate 70 students, and the Biochemical and Nutritional laboratory can take 35. It is hoped that special instruction will be given on the subject of nutrition, and that research will be carried out, not only on the nutritional value of

foodstuffs, but on their money value. The best food for the least money is a problem requiring close attention in this and other countries. The biochemist must have his experimental animals alongside him, so a roomy and well ventilated animal house has been sandwiched in between the Biochemical Laboratory and the Museum. Access to it is obtainable from the laboratory. The Chemical Division has its quota of staff and research rooms and a fine classroom with 90 seats. A special balance room takes the place of a refrigerator chamber, but a hot incubator room is provided, as is a dark room. If found advisable, one of the other rooms can be converted into a laboratory for special combustion work.

The chief feature of the Division of Bacteriology and Immunology is the large bacteriological laboratory, which can hold 90 students and has cross lighting and ventilation. There are smaller general laboratories in this division, which also contains a good-sized classroom, media, sterilizing, and washing-up rooms, hot and cold incubator chambers, research laboratories, and the inevitable dark room.

#### *Third Floor.*

The upper story of the Museum, which will be devoted to tropical medicine and hygiene, runs the whole length of the Keppel Street front and has roof lighting, which, as stated, is communicated to the lower story by three open wells in the floor. In close touch with this part of the Museum are the Museum offices and preparation rooms in the west wing. The rest of the floor is wholly given up to the important Division of Medical Biology and will accordingly absorb the greater part of the work of the old London School of Tropical Medicine, now continued at Endsleigh Gardens as the Tropical Division of the present School. Part of the accommodation will be common to the whole division—as, for example, the large laboratory on the Malet Street side with working room for 86 students. This should be a very fine laboratory as, in addition to cross-lighting, it has a weaver roof. Other rooms which will be shared by the four departments constituting this division are the two large classrooms, the preparation room, the seminar room, the advanced demonstration room, the reading and reprint room, and the insectarium and aquarium.

In the advanced demonstration room, as in the tropical hygiene laboratory on the ground floor, there will be sliding partitions so that the room can be turned at will into working cubicles or used for general demonstration purposes. The rest of the space—that is, that between Malet Street and the north court and that between Gower Street and the north court—is more or less equally distributed between the Departments of Helminthology, Comparative Pathology, Protozoology, and Entomology, and is represented by staff rooms, preparation rooms, hot incubator rooms, and so forth. There are some special features, such as a joint dissecting room for helminthology and comparative pathology, a room for housing the helminthological collections, a faeces room, adequately ventilated, and a stock room for entomological specimens. There is, fortunately or unfortunately, one spare room in this division, and it is to be hoped it will not prove an apple of discord.

#### *Fourth Floor.*

This is a recessed floor occupying only the cross-bar of the H and the southern portion of the Gower Street front. Towards Malet Street lie the caretaker's quarters, towards Gower Street the artist's room and cinema preparation room. Between stretches part of the animal quarters, with exercise court and all conveniences. From the artist's room there runs south a special range of mice quarters. A separate heating plant will be provided for the animal quarters. A raised sloping area on the Malet Street side of the roof of the third floor will be covered with slates and will be used for the collection of rain water, which, after being filtered in a special way, will be led by pipes to the aquarium.

#### *Fifth Floor.*

This is represented by additional accommodation for animals and provision for water tanks and fan chambers. Like the fourth floor, it is recessed from the wall line of the main building and is of no great extent.

#### LAYING OF THE FOUNDATION STONE.

Sir ALFRED MOND, Bt., M.P., Chairman of the Board of Management, recounted the circumstances of the Rockefeller benefaction, and then went on to describe the building as a workshop where skilled labourers would pursue their tasks for the betterment of the human race. The simple dignity of the frontage was a key to the fundamental purposes of the school. After announcing that the Board of Management had made representations to the Senate of the University of London for the appointment of professors to two of the new chairs, he paid a high tribute to the assistance afforded by Sir Cooper Perry, whose impending retirement from the principalship of the university happily did not involve the severance of his connexion with the school, for he was vice-chairman of the Board of Management.

The Hon. W. G. A. ORMSBY-GORE then spoke on the relation of the work of the tropical division of the school to the dominions and colonies. Ever since he had been at the Colonial Office it had appeared to him that British trusteeship for the great tropical possessions made it necessary to be up and doing in the matter of health and sanitation. Britain had all round the world a belt of tropical possessions, and from all those which he had visited, alike in East and West Africa, he had come away with the idea that, both from the point of view of the welfare of British officials and traders, and from that of the native populations, there was a great task ahead. At present the mortality and sickness rates in many areas were appalling. He paid a tribute to two great men, to whom the building would be in some sense a monument—namely, Mr. Joseph Chamberlain and Sir Patrick Manson. Only those who had visited the tropical empire realized the debt which humanity owed to Manson, whose example and tradition would be perpetuated in the school.

The Right Hon. NEVILLE CHAMBERLAIN (Minister of Health), before laying the stone, said that the ceremony marked the commencement of a building in which the two great English-speaking nations shared. To him also it was a great gratification, within a few days of the ninetieth anniversary of his father's birth, to add another stone to the fabric which Joseph Chamberlain founded in 1899. The linking up of the London School of Tropical Medicine with the wider field of preventive medicine was a recognition of the fact that, whilst the study of tropical diseases was still, and probably must always be, the work of the specialist, it formed only a branch of the much wider application of a science covering every clime and every people. Sir Cooper Perry had called his attention to the need of the school for further permanent hospital facilities, and he hoped shortly to appoint a committee (of which Sir Alfred Mond had kindly consented to act as chairman) to go into that matter. Mr. Chamberlain then gave a brief history of the school and what it owed to the Rockefeller Foundation. He touched also upon some of the principal departments of the work—the study of physiology as applied to hygiene, of bacteriology and immunology, of medical biology, of epidemiology and vital statistics, and, finally, sanitary science and public health in general.

Mr. Chamberlain then laid the stone, after which Dr. Andrew Balfour, director of the school, handed to him and to Mr. Ormsby-Gore replicas in silver of the school seal. A telegram was sent to the Rockefeller trustees, conveying the Minister's cordial greetings, and adding that, "The British and American flags fly side by side at the dawn of a new era of preventive medicine."

Among those present at the ceremony were:

Sir Humphry Rolleston, Bt., Sir John Bland-Sutton, Bt., Sir George Newman, Sir Cooper Perry, Sir Holburt Waring, Sir Walter Fletcher, Sir Leslie Mackenzie (Scottish Board of Health), Sir John Robertson (Birmingham), Sir Arthur Robinson (Ministry of Health), Sir Malcolm Delevingne (Home Office). The British Medical Association was represented by Dr. H. B. Brackenbury (Chairman of Representative Body), Mr. Bishop Harman (Treasurer), and Dr. Alfred Cox (Medical Secretary).

Previous to the stone-laying, Sir Alfred Mond entertained a large party to luncheon at the Carlton Hotel.

# British Medical Journal.

SATURDAY, JULY 10TH, 1926.

## MALARIA RESEARCH IN ENGLAND.

WE have before us the Report on the First Results of Laboratory Work on Malaria in England,<sup>1</sup> by Colonel S. P. James and Mr. P. G. Shute. If this hors d'œuvre is an earnest of the feast of good things to follow we must look forward to a period of serious mental digestion; the food for thought provided is ample in quantity and rich in quality. The account given helps considerably to elucidate certain points which are obscure in the epidemiology of malaria, and opens up new views of the directions in which anti-malarial measures should be undertaken.

The employment of infected mosquitos in the treatment of general paralysis to overcome the objection to direct inoculation of blood from patient to patient has afforded an excellent opportunity of studying malaria contracted in a natural way and the conditions and circumstances governing infection of mosquitos. Pure strains of the benign tertian parasite were used, and *Anopheles maculipennis* as the vector. Of 2,630 female mosquitos used 530 were found ultimately available for infection of 145 patients, of whom 109 developed the disease. It was found that the mortality of *A. maculipennis* kept in artificial "tropical" conditions at 24° C. was high—about 50 per cent. during each seven to ten days of life. At 22° C. it was less, but the time taken to become infected was longer, and fresh feeds of blood were needed daily or every other day. If a temperature of 26° C. was maintained with a view to obtaining quick infection nearly all the mosquitos died before the salivary glands contained sporozoites—that is, before they became infective. At a low temperature, such as 4° to 6° C., infected mosquitos lived up to two and a half months and retained their infectivity. These facts may help to explain the absence of new cases during very hot seasons, and also, since the oöcysts are arrested in development but not killed by the low temperatures, the recrudescence of cases in the spring.

The authors found, further, that a surprisingly small number of persons who suffer from malaria are infective to anopheles. Some with induced malaria were not infective at any period of their course, and the strikingly infective patient was a rarity, while repeated feeds on an infected patient were needed to infect the mosquito. Since this occurred under the most favourable artificial conditions it is thought probable that "95 per cent. of potential malaria-carrying mosquitos will never play that role." Hence, it is concluded, much of what is done in the way of antimalarial measures is wasted effort.

Further, it would appear that malaria is a disease which does not spread unless a number of special conditions are fulfilled, and is probably to a large extent a "household" disease, and should consequently be dealt with in the houses of the people as much as, in fact more than, in their environment.

Interesting results were obtained relative to what has been erroneously termed "immunity to inoculation." Great caution must be exercised to avoid confusing immunity with diminished susceptibility or

increased resistance to infection, because patients differ much in this respect. It is suggested that this difference may perhaps be ascribable to some simple cause, such as modifications in the blood as regards alkalinity, or a change in the content of lecithin or other bodies, and not to the presence of "immune bodies" in the blood.

The clinical observations are also of vast importance in showing that the classical description of benign tertian malaria cannot stand in the case of the induced disease. The course is divisible into three stages. In the initial stage, lasting for two to five days, there was gradually increasing irregular fever, remittent in character at first, later intermittent, but without any rigors. In the second, or developed, stage, in 80 per cent. of cases there was for ten days or more a quotidian fever with daily rigor, even if infection had been conveyed by a single bite. The third, or terminal, stage was characterized by the type of fever changing from the quotidian to the tertian. The incubation period was usually twelve days, but in many it was ten days; it might be as short as seven or as long as twenty-three. The parasites were not as a rule found in the peripheral blood till the second or third day of fever. In a second attack from a new infection, even after a prolonged interval, the temperature was of the true tertian periodicity. If, therefore, a patient showed a typical tertian temperature from the start, this very fact was a strong indication for inquiry as to a history of previous malarial attacks.

In the treatment of general paralysis it was found that a rigor on alternate days was followed by greater benefit than when a rigor occurred daily. This objective was usually attained by allowing the primary attack to continue for four or five days, then giving a small dose of three to five grains of quinine to bring about a temporary check, and waiting for a relapse. Under these conditions the temperature was nearly always of the true tertian character, with rigors on alternate days.

Future reports will be awaited with keen anticipation.

## ORTHOPAEDIC CENTRES FOR WALES.

SIR ROBERT JONES, whose energy and enthusiasm led to so much being done for the soldier crippled in war, has not ceased to direct attention to the needs of crippled children. On July 1st he delivered an address at a meeting arranged in London (at Carnegie House) by Sir John Lynn-Thomas, who will act as honorary secretary of the Welsh Branch of the Central Committee for the Care of Cripples then inaugurated. Lord Kenyon presided, and many medical officers of health and others from Wales were present. A message was read from the Prince of Wales in the course of which he expressed a hope that an alliance might be made with the hospital in Cardiff which bears his name (the Prince of Wales's Hospital for Limbless and Crippled Soldiers). Sir Robert Jones said that crippled children were in exactly the same position as the soldier who had suffered damage to his limbs in warfare. The child must be seen early, and it must have rest at the onset of the disease. To meet these requirements there must be plenty of hospital beds so that there might be no waiting list, rapid evacuation must be avoided, and there must be provision for after-care in order to secure continuity of treatment. To achieve this ideal treatment three things were essential—open-air hospitals, skilled staffs (medical and

<sup>1</sup> Report on the First Results of Laboratory Work on Malaria in England. By S. P. James, M.D., (Ret.), assisted by P. G. Shute, Laboratory Assis. Publications of the League of Nations—III, No. 1, 1925.



nursing), and after-care clinics. The hospital must be in the country; the staffs must be specially trained; the hospital must be thoroughly equipped for physiotherapy, and with ultra-violet rays, and so on. The after-care clinics should be within twenty miles of the hospital. Such schemes were already in existence in Oxfordshire and Shropshire; Wales was a difficult problem; but it was well to remember that it had a well organized tuberculosis scheme. Although the charter of the Welsh Memorial Association did not allow non-tuberculous cripples to be brought under the same control as the tuberculous, Sir Robert Jones hoped that both sides would come together for the purpose of distributing crippled patients to appropriate hospitals, and that they might arrange to divide certain expenses between them. Schemes might be started in one of two ways—either mainly by voluntary effort with State aid (a method which Sir Robert seemed to favour) or as a municipal scheme. He urged that Wales should get to work as soon as possible, that the centres already in existence at Cardiff and at Gobowen, near Oswestry, which was also serving some of the eastern counties of the principality, should be developed, and a third centre established in Bangor for Northern Wales. Meanwhile the headquarters should be at Cardiff, an admirable centre for a start because of the existence of the Welsh National Medical School. Cardiff would need an open-air hospital of at least 100 beds in addition to the Prince of Wales's Hospital. There should be clinics in various centres, the localities to be determined after careful consideration. In their establishment and supervision the help of Miss (now Dame) Agnes Hunt should, if she were willing to give it, be obtained. A body of whole-time orthopaedic nurses, fully trained if possible, should be got together and a skilled medical staff appointed. Provision should be made also for the treatment of adult cripples. Sir Robert Jones called particular attention to the need for full fellowship and accord with the local medical practitioners, who must always be the first line of defence. As a first step in starting a scheme, a meeting should be called by local committees to which the doctors and the chief people of the neighbourhood should be invited; and school doctors, medical officers of health, and general practitioners should always be welcomed at the hospitals. An advisory board for the selection of sites would be a great advantage.

It is probable that the medical profession will agree that such schemes as Sir Robert Jones outlined should have a voluntary basis, although it may not be possible entirely to do without the aid of the State or the County Councils. The health and education authorities are now so much concerned with the welfare of the patients who come under these schemes of treatment that it is only natural that payments by these authorities should form a large item in the hospital receipts. Thus, in the financial statement of the Wingfield Orthopaedic Hospital, near Oxford, of which Mr. Girdlestone is clinical director, it appears that receipts on account of services to patients, presumably paid chiefly by local authorities, amounted to £18,000 out of an income of £21,000. But the hospital remains a voluntary hospital with a voluntary staff, and with a committee which includes a large number of voluntary members. Many of the members represent other voluntary hospitals and voluntary bodies, such as the British Red Cross Society, while local authorities are represented by members appointed by the county councils and boroughs. The after-care clinics have energetic local ladies as honorary secretaries; the funds are raised locally through subscriptions, entertain-

ments, and patients' payments. A scheme such as this appears to retain as far as possible under modern conditions the voluntary principle; probably the principle has advantages in economy, possibly in efficiency, and certainly in freedom and sympathy, over less flexible schemes administered by public authorities.

There can be little doubt that early experiments in organization are best conducted by private effort, especially under existing economic conditions; and the reference made to Sir Robert Jones's enthusiasm by one of the proposers of the vote of thanks sufficiently indicated the damping effect of the official mind when it is a matter of balancing the enthusiasm of the pioneer against the care of the public purse. At the same time the ultimate cost of public administration almost invariably tends to become excessive.

A cordial vote of thanks was accorded to Lord Kenyon for presiding, to Sir Robert Jones for his address, and to Sir John Lynn-Thomas, the honorary secretary of the new Welsh branch, to whose enthusiasm the inauguration of the branch is largely due.

### ST. KILDA.

To many of us the name of St. Kilda raises up only recollections of Boswell and of Dr. Johnson's speculations in epidemiology, but the island is interesting from a medical point of view on account of the former terrible mortality among newborn children therein and the occurrence of what is known as boat-cough. In former numbers of this JOURNAL these subjects have been discussed, and full accounts of the place and its inhabitants have appeared from time to time.<sup>1</sup> Situated in the Atlantic some sixty miles to the westward of the greater Hebridean islands, the St. Kildeans have until lately been in the world but hardly of it, for throughout the winter months the island is inaccessible. No doubt the popularization of wireless communication will, if it has not already done so, much modify their isolation. In 1912 a trawler brought the news to Aberdeen that the islanders were starving. The Admiralty at once ordered a warship to call and relieve their most pressing wants, and a London daily paper, scenting a "scoop," chartered a steamer and engaged a surgeon and others to take food and necessaries to them. No time was lost, but when they arrived at St. Kilda the journalists found that H.M.S. *Achilles* had been before them, and that there was no starvation or distress to be relieved. A full and interesting account of the island and its people, as they then were, appeared in this JOURNAL soon afterwards (1912, i, 1249) from the pen of the surgeon in question, Dr. C. J. Gordon Taylor.

Starvation has not in the past been a great danger to the islanders, who rely chiefly on a plentiful supply of seabirds for their food, but slow extinction threatened them in the last century through the excessive infantile mortality from tetanus or trismus nascentium. Dr. John E. Morgan stated<sup>2</sup> that in the ten years 1830 to 1840 there were 65 births and 64 deaths, of which 33 deaths at least were due to the "eight-day sickness." The population amounted to 105 in 1830, but it has since declined to about 80, at which figure it appears to be stationary. The people are strong and healthy despite their necessarily consanguineous marriages; they are not subject to dangerous epidemics, and but for a few casualties incidental to rock-climbing in the taking of seabirds they run few risks.

<sup>1</sup> BRITISH MEDICAL JOURNAL, 1895, ii, p. 160; 1912, i, pp. 1201 and 1239.

<sup>2</sup> BRITISH AND FOREIGN MEDICO-CHIRURGICAL REVIEW, January, 1892, p. 176.

More than thirty years ago Dr. G. A. Turner, in his presidential address to the Glasgow Obstetrical and Gynaecological Society,<sup>3</sup> told how the infantile mortality from tetanus was done away with. The owners of the island had done their best, and a Gaelic-speaking nurse from Glasgow had spent some months in St. Kilda, during which the babes of whom she had charge survived, but after she left no successor could be found. Then the minister, the Rev. Angus Fiddes, stepped into the breach. He took a course of training under Dr. Turner, and returned to St. Kilda to assume the duties of monthly nurse. He seems to have rather misunderstood some of his instructions, for he nearly starved the newborn infants, and stupefied them with two grains of chloral daily; but despite this, cleanliness and iodoform won the day. Since 1891 no deaths from trismus nascentium have occurred.

Before the discovery of the tetanus bacillus there were many speculations as to the cause of trismus nascentium. It is interesting to note that in 1846 Marion Sims attributed it to displacement of the cranial bones, especially the occipital, a pathology which seems to have been favoured by earlier writers, for Quiney in the eighteenth century stated that overlapping of these bones caused convulsions and death. The discovery of the bacillus does not seem even yet to have set the question at rest. It has only altered it, so that now the problem is to find how the organism reaches the umbilical cord from the soil or some other breeding place.

In a recent most interesting article on "The tragedy of St. Kilda"<sup>4</sup> Dr. G. Gibson of the General Board of Control, Scotland, suggests that probably the umbilical cord was dressed with fulmar oil, and that this contained the specific organism. The fulmar petrel (sometimes wrongly called a gull) is almost the staff of life to the St. Kildians. It furnishes a large part of their diet, some 150 to 200 being salted annually per head of the population for winter use. It is not a pleasant creature. Known to whalers and fishermen as "the greedy molly-mawk," and alluded to by Dr. Gibson as a "winged skunk," it suggests the midshipman's characterization of certain savages, for it has "no manners and its customs are beastly." One of these is when annoyed to squirt some of the oily contents of its stomach into the intruder's face. This habit is taken advantage of by the islanders, who dexterously divert the oil into a receptacle, such as the dried stomach of a gannet, in which they store it for use. Dr. Gibson does not attempt to prove that one use of the oil was as a dressing for the umbilicus, nor, further, that it usually contains living tetanus bacilli; and we think that until he has made such demonstrations his suggestion must remain no more than an ingenious speculation. It is to be remembered that trismus has been a scourge of lying-in hospitals and other places where fulmar oil is unknown. Not only in the islands near Iceland, but in such places as Demerara and Dublin, it has caused shocking mortality. In the beginning of the nineteenth century 18 per cent. of the children born in the Rotunda Hospital died of trismus, as was pointed out by Dr. C. R. Macdonald in 1886 in considering this question in our columns.<sup>5</sup> There are doubtless many ways by which the bacillus might be conveyed to the umbilical cord, but until its presence is proved in the stored fulmar oil it is unnecessary to inquire whether that oil was formerly used as an unguent for the navel.

The "boat-cough" from which the St. Kildians suffer after they are visited by strangers seems to be a febrile catarrh, and is no doubt analogous to the "shore-cough" to which in the old sailing-ship days seamen so often fell victims when they first landed from long sea voyages. When the Dreadnought Seamen's Hospital Society maintained an out-patient dispensary in Well Street, London Docks, a large share of the medical officer's time was devoted to the treatment of such catarrhs. A similar course of events has been noticed in children's hospitals where some of the patients spent their whole time in the open air. When brought into a ward for operation or some other purpose these children commonly suffered from catarrh, from which they had been free while outside.

#### THE PRESERVATION OF THE EYESIGHT OF CHILDREN.

THE letter of Dr. W. Oliver Lodge of Bradford (p. 93) opens up a large field for consideration. He rightly points out that there are many defects of eyesight which are discovered too late for the effective prevention of serious consequences. The conditions which give rise to these defects, or the defects themselves, may be present in early infancy, and certainly exist when the children come first to the elementary schools. Defects arising from cataract are generally recognized early, often by the parents; squint is such an obvious deformity that it calls for immediate attention in every civilized community, and it certainly gets it at least as soon as the child goes to school. But there are other defects—high degrees of astigmatism, early myopia, and suchlike errors of refraction—which may not give obvious notice of their presence. These, Dr. Lodge claims, should be discovered by the systematic examination of infants' eyes so soon as they go to school, and their discovery should not await the age of 7 years, when the first routine examination of physique, including vision, is undertaken by the school medical officers. That there is a large amount of undiscovered defective vision in the infant schools is certain. In a discussion held by the Ophthalmological Society in 1919 papers were read by Dr. James Korr, Dr. William Sym, and Mr. Bishop Harman in which this subject was dealt with. The last named gave the findings of the routine examination of the eyes (with an efficient cycloplegic) of all the infants, to the number of 368, in a good class London elementary school within the ages of 4 and 7 years. Allowing a liberal error of refraction as within the "average," he found that no less than 35 per cent. had such high errors of refraction that medical attention and some form of easement of the educational regime was undoubtedly necessary. The most obvious medical treatment would be the provision of spectacles to correct the errors of refraction. But such a proposition opens up a wide question as to practicability. Would the most enthusiastic desire to see one-third of the infants wearing glasses? And if the infants had the glasses, how long would they remain in effective use? Besides, there is the large question of expense—both that involved in the necessary medical examination of large numbers of infants, and the cost of providing and replacing spectacles. It would appear that the necessities of such a situation would be far better met by making the education of infants meet for the infants rather than to attempt to make the infants able to undertake some educational regime, a scheme possibly evolved apart from consideration of the tenderness of the eyes of infants, be they "average" or worse than average. The opening phases of infant education are as difficult and need as much care and thought as the polishing of the finest minds of the public school or the university;

<sup>3</sup> *Glasgow Medical Journal*, March, 1895.

<sup>4</sup> *Caledonian Medical Journal*, vol. xiii, No. 2, April, 1926, p. 50.

<sup>5</sup> *BRITISH MEDICAL JOURNAL*, July 24th, 1886, p. 160.

indeed, the risks involved in infant education are the greater, for the younger the subject the smaller the power of resistance, and lack of care may give an unhappy twist to budding mind and body which may be irrecoverable. But, apart from this, there is much to commend added attention to the eyesight of the infants in our elementary schools.

#### PUBLIC HEALTH IN CHINA.

In a nation with wide-flung empire, such as ours, it is perhaps not easy to arouse interest in the health activities of a foreign country so distant as China. Nevertheless, our trade interests in Eastern Asia are very great; the health of the workers employed by British merchants is of importance; and the functions of such bodies as the Manchurian plague prevention service and of the sanitary bureau which controls maritime quarantine have international aspects. There is now arising in China a body of cultured medical opinion, trained abroad, which desires to improve the sanitary condition of the country, and to establish a public health service modelled largely on that of England. For promoting this object an Association for the Advancement of Public Health in China has been formed; and the association has addressed a memorandum to the British Boxer Indemnity Commission. As the Boxer rising in 1900 is probably hardly remembered now, it may be recalled that China is paying an indemnity to the Western nations which took part in the suppression of the trouble, and that portions of that indemnity are being used by some of those nations to assist in the development of China. Hitherto the British have applied these funds largely to education; but the trouble stirred up by Chinese students last year led the Government to send out a commission under Lord Willingdon to inquire on the spot as to the best direction in which to apply the indemnity. It was to this commission that the Association for the Advancement of Public Health in China presented its memorandum, which, if sometimes stiff in expression and over-elaborated, is written in very good English. It appears that in China a certain amount of machinery exists for public health purposes, but it is unorganized and mainly in the hands of the police. A sanitary service with skilled medical directors and a personnel of sanitary inspectors does not exist. The Chinese doctors, in their memorandum, ask that a portion of the Boxer indemnity, previously devoted to education, should now be applied to what they call "demonstrations" for a period not exceeding five years, and to the training of a sanitary personnel. By "demonstration" they appear to mean that a city should be selected as a centre and should be used experimentally as a sanitary area, with the approval and assistance of its local authority. The association suggests three such centres—one in Peking, one south of the Yangtze, and one in Szechuan. In these areas, it suggests, experiments should be made in the introduction of public health measures. The "demonstrations" should cover administration, vital statistics, communicable disease, and general sanitation; the personnel should be trained locally in connexion with the work of each area. The diseases against which the health work should be specially directed would be tuberculosis, small-pox, plague, cholera, and the gastrointestinal diseases due to soil pollution. It is stated in the memorandum that the present lack of stability in government in China affects only the national and provincial governments, and that the initiation of successful public health work depends upon the local governments, which are unaffected. In an appendix to the memorandum an account is given of the lamentable condition under which the Chinese labourer lives, with horrible descriptions of the bad housing and feeding and lack of medical attention and nursing found in some of the places visited. The

memorandum ends with an appeal to the British Boxer Indemnity Commission to help to deliver the workers from their misery, and thus to stop the progress of Bolshevism. It should be a source of satisfaction that distinguished members of the National Medical Association in China should turn to this country for help in preventive medicine. Great Britain, they say, was foremost to recognize the importance of public health, and modern industrialism originated in Great Britain. Their proposal seems to merit serious consideration by the Foreign Office and the Government.

#### PROPOSED POST-GRADUATE HOSTEL IN LONDON.

THERE has long been a feeling that medical men who come to London for post-graduate study have no opportunity of meeting their teachers and fellow students socially. This was one of the original aims of the Fellowship of Medicine, established by Sir St. Clair Thomson and the late Sir John MacAlister as an organization independent of the Post-Graduate Association. For various reasons, including financial considerations, the Fellowship did not make all the progress that was desired, and after a short experience strengthened its position by amalgamating with the Post-Graduate Association. Many of those who have given attention to the organization of post-graduate medical education in London believe that there is need for a special hostel in London at which graduates taking the courses now arranged by the combined Fellowship of Medicine and Post-Graduate Association could reside. It will be remembered that rather less than a year ago the Minister of Health appointed a committee "to draw up a practical scheme of post-graduate medical education centred in London," and, although we have no direct information, it is probable that one of the subjects which will be discussed by that committee will be the establishment of such a hostel. Meanwhile, in order to test the extent of the need, arrangements have been made to provide a central place of residence for post-graduate students where they will be received at rates varying with the requirements of the visitor. The hostel will be under the supervision of a president, a director, and a treasurer, who will form the committee, working in conjunction with a board of vice-presidents drawn from the metropolitan and provincial schools and three or more members chosen by the post-graduate members themselves. The suggestion was brought before the Council of the British Medical Association at its last meeting, and the Medical Secretary was appointed to take part in the preliminary arrangements and to assist in giving the scheme a start. The managers of the Imperial Hotel in Russell Square have agreed to place at the disposal of the committee a bedroom with writing table for each member; a reading room which will be available all day and every day; a dining room where breakfast and dinner can be taken apart from the general guests of the hotel; and a lecture room which is to be at the service of the hostel from 9 p.m. every day. It is hoped that the members of the committee will take frequent opportunities of dining at the hostel, and that after dinner informal discussions may take place on subjects of medical interest. A preliminary meeting was held on Tuesday last, when Sir D'Arcy Power, K.B.E., F.R.C.S., took the chair and explained the objects of the hostel as set forth above. He expressed the hope that it would be found possible to work with and by the Fellowship of Medicine, which was doing such excellent work in post-graduate teaching. He attributed the inception and carrying out of the scheme to Mr. A. P. Bertwistle, F.R.C.S.Ed., formerly of Leeds and now of London, and read a number of letters of approval from leading members of the profession. Further particulars may be obtained from Mr. Bertwistle, 4, Spital Square, Bishopsgate, E.1.

## OPEN-AIR LIFE IN WINTER.

EXPOSURE to cold increases basal metabolism. Hence, in part at least, the sense of well-being induced in the physically fit by outdoor sports. Hence, too, in part at least, the usefulness of the open air in the treatment of the sick. Its value to those who come between these two classes, being neither wholly fit nor yet actually diseased, is well shown in a recent report by Dr. S. G. Moore, medical officer of health for Huddersfield. In it he summarizes in an interesting way the effects of treating 62 sub-par Huddersfield children, aged from 5 to 13 years, for periods between October 17th, 1925, and March 29th, 1926, at a residential open-air school, the Cinderella Holiday Home at Honley. Clothing suitable to withstand the winter cold was provided, but no medical treatment was given. Artificial sunlight was started in some cases, but was discontinued after four days owing to an outbreak of scarlet fever in the home. A number of the children for various reasons went out of residence, but it was possible to make serial observations on 39 (20 boys for sixty-six days and 19 girls for eighty-two days). All these on admission were anaemic, debilitated, and mentally dull. They soon became bright, alert, and full of vitality. All, with a few exceptions, showed increased chest expansion on discharge. The increase in weight of both boys and girls during the periods of treatment, calculated for age groups on an annual basis, was greatly above the corresponding annual figure for the average Huddersfield child of the same age. On the other hand, the increase in height, similarly worked out, was in boys below the Huddersfield average, though in some of the girls it was above it. For the boys the average percentage of haemoglobin on admission was 76.8, on discharge 82.8; for the girls—on admission 77.37, on discharge 83.37. Both sexes had an increase of 6 per cent., but both were still below the normal 87 per cent. for children. For the boys the average red cell count on admission was 4,672,625, on discharge 4,760,800; for the girls—on admission 4,512,631, on discharge 4,985,263. The increase for girls was greater than for boys, but both sexes still fell short of 5,500,000, the normal count for children. Enlarged glands, if present, were in all cases cured or improved, and enlarged veins of the trunk in all cases but one. It is clear from Dr. Moore's account that these children derived much physical and mental good from their winter life at Honley. Their increased chest expansion and the disappearance of enlarged trunk veins suggest gain in respiratory capacity. Their disproportionate rise in weight is evidence alike of their initial disability and of the extent to which it was redressed. As the daily average of bright sunshine in the neighbourhood of Honley during the six winter months is under two and a half hours, it may be surmised that keen fresh air and good food and clothing were the principal factors in producing these results.

## FOOD PRESERVATIVES.

THE control of the use of preservatives in food still rightly excites a great deal of interest both among the medical profession and the public. The new proposals are strongly opposed by certain members of the trade, and upon a matter of this kind the opinion of Professor E. Mellanby, F.R.S., of Sheffield, is most valuable. We may therefore recall some of the arguments used by him in an address he gave last autumn to the National Council for Domestic Studies. He divided food preservatives into three classes: (1) formaldehyde and hydrofluoric acid and their derivatives; (2) boron preservatives and salicylic acid and its salts; (3) benzoic acid and sulphurous acid and their salts. All these substances, he said, were toxic to some people in certain doses, and, while they prevented putrefaction, none of them were completely protective against organisms of the salmonella group and their toxins, which are respon-

sible for many outbreaks of food poisoning. On this point Professor Mellanby expressed the opinion that there was a double danger in food preservatives: first, that they prevented the hoisting of the danger signal of putrefaction; secondly, that they failed to inhibit with equal efficiency the growth of the more common food poisoning micro-organisms. Of the two departmental committees appointed to consider food preservatives, that which sat from 1889 to 1901 brought about the rejection of the first group of preservatives, formaldehyde and hydrofluoric acid. The departmental committee of the Ministry of Health, appointed in 1923, recommended the rejection of the second group, the boron preservatives, so that after 1927 the only preservatives allowed should be benzoic and sulphurous acids and their salts. Boric acid and other substances of the group were, he said, very popular with manufacturers, probably because they were tasteless, odourless, and, when added in quite a small proportion, delayed putrefaction, although they did not prevent to the same degree the development of the Gaertner bacilli. From the commercial point of view, boric acid was better than common salt for preserving meat; it did not withdraw the water or spoil the shape, nor did it produce discoloration, and the meat was less stringy and tough. Boric acid was used, however, in so many foods that many people were taking comparatively large quantities daily, probably from 8 to 30 or even 40 grains. There was no doubt of the toxicity of boric acid in large quantities, and even in small quantities in susceptible people. The drug could produce nephritis in animals, so that it was possible that boric acid might be one of the causes of Bright's disease in normal individuals. No doubt many people lived to a hearty old age in spite of consuming boron preservatives; but Professor Mellanby thought it probable that the drugs might cause some disturbance of health, evidenced by dyspepsia, rashes, and possibly renal disease. Coming to the third group, Professor Mellanby observed that benzoic acid was rapidly excreted as hippuric acid, and that sulphurous acid was converted to a sulphate, and so merely formed part of what many people took daily as a purgative. Nevertheless, he argued for the prohibition of the use of all preservatives, and believed that later on another committee would sit and the third group would go. Transport and cold storage would improve greatly, and the need for chemical preservatives would be as little necessary in England as it was now in the United States. One argument used by Professor Mellanby was that as all these substances prevented the reproduction and growth of bacilli they were likely to have a detrimental effect on human beings, who were made of the same material as bacilli. If they were poisonous in large quantities, it was only safe to believe that they were harmful to health in smaller quantities, especially when taken continuously. Benzoic acid, although it could be taken with a certain amount of impunity up to 8 grains a day, would cause death if taken in large quantity; and there was no doubt that sulphites acted as gastric irritants. Again, if the same foodstuff from one source was in some cases adulterated with preservatives and in others unadulterated, it was plain that it could not be claimed that preservation was essential. None of the butter from New Zealand and Australia imported into the United States was allowed to contain preservatives; yet some of the butter imported from the same sources into this country was preserved. Finally, Professor Mellanby pointed out that during the last forty years, coincident with the use of food preservatives, there had been a development of a number of diseases, the colossal importance of which the average layman did not grasp. Cancer, of which so much was heard, was unimportant from an economic standpoint compared with many other diseases to which we were liable. Of these, diseases of the alimentary canal were pre-eminent. The mortality from intestinal diseases had greatly increased in recent years. Thus,

between 1880 and 1919 deaths in quinquennial periods at Guy's Hospital due to peritonitis had increased progressively from 176 to 285; those from gastric ulcer from 0 to 83; from duodenal ulcer from 0 to 38; and from appendicitis from 9 to 91. These increases were the more serious since the standard of food and hygiene had improved greatly during these years, while abdominal surgery had advanced beyond all estimates. If food preservatives were not connected with this serious state of affairs, it was strange that the development of the two things should coincide.

#### VENTILATION AND HEATING IN FACTORIES.

THE Industrial Fatigue Research Board has issued a report by Dr. H. M. Vernon and Mr. T. Bedford, assisted by Mr. C. G. Warner, entitled "A physiological study of the ventilation and heating in certain factories." Up to recently the investigation of the effect of atmospheric conditions on efficiency and fatigue has been confined to industries in which the atmospheric conditions have been rendered to some extent abnormal, either through the heat produced in manufacture or owing to the technical requirements of the process. In 1923 the Research Board decided to investigate the physiological aspects of ventilation generally. The first report, which was published recently (by H. M. Vernon and others, 1926: "Methods of investigating ventilation and its effects"), dealt with the theoretical side of the problem. The present report contains the results obtained under practical conditions, and has a more direct industrial interest. The authors state that the work of Dr. Leonard Hill has shown that it is not usually the chemical purity of the air in a room that needs investigation, but rather the adequacy of the degree of air movement and the suitability of temperature. The requirements in a workroom are as much air movement as possible without "draughts," and an atmosphere which keeps the head relatively cool and the feet relatively warm. Generally speaking, the air should move in an upward direction. Where possible a natural system of ventilation is preferable to any artificial system. The authors had an opportunity of testing a system of natural ventilation combined with occasional artificial ventilation in a newly built boot and shoe factory at Kettering; and a large part of their experimental work was conducted in this factory. The hot-wire anemometer, the thermopile, and the kata-thermometer were among the instruments used in the experiments. The conclusions are summarized at the end of the report. The investigators are thoroughly in favour of employing natural, as against artificial, systems of ventilation, though they realize that it may be frequently impossible to avoid artificial aids. Natural systems are less expensive, more pleasant, and more healthy. In winter cross-window ventilation is often insufficient, so that some form of exhaust is necessary. The extraction of air should never, in ordinary circumstances, be at floor level, as this increases air movement round the feet of the workers. The investigators favour a height of seven to eight feet above the floor for air extraction, as this increases air movement at the head level of the workers. If natural window ventilation, coupled with moderate fan exhaust, cannot be applied satisfactorily, ventilation must be induced by mechanical means. A plenum system is satisfactory if the hot air is discharged at floor level and not overhead. In dusty processes of manufacture, when floor discharge would be inadmissible, the ducts might be made to discharge against horizontal deflectors a few inches above the floor. The openings of the ducts should not be more than six inches in diameter, in order to avoid draughts. The authors lay the greatest stress on starting the source of heat as near the floor as possible, or under the floor, and keeping the hot air or

radiators at a relatively low temperature, in order to avoid a large temperature gradient in the heat of the workroom. In this respect Dr. Vernon and his colleagues cannot sufficiently condemn overhead steam pipes, except when some overhead piping is required for checking down draughts of air from skylights.

#### "THE CANCER REVIEW."

WITH a view to increasing the co-operation between clinicians and scientists who are engaged in any form of cancer research, the British Empire Cancer Campaign has begun the publication of a new journal, the *Cancer Review*. It will consist wholly of abstracts and reviews of the current literature dealing with cancer. The management committee, which includes the directors of the Imperial Cancer Research Fund, the Cancer Hospital Research Institute, and the Lister Institute, as well as Mr. Sampson Handley, Mr. Lockhart-Mummery, Professor Lazarus-Barlow, and Dr. Major Greenwood, was under the chairmanship of Sir William Leishman until his death, and Dr. Francis Cavers, the general editor, is assisted by a committee of eight members representing different lines of cancer research. The first number of the new review contains 127 abstracts, which are grouped under the headings: general, experimental and biochemical, clinical and pathological, radiological, and statistical. It is thus rendered possible for each reader to recognize at a glance those abstracts which are likely to be of more particular interest to him. An alphabetical index of authors is provided also, so that the progress of research work in all lands, as shown by the publication of articles, can be watched. The *Cancer Review* will undoubtedly receive a warm welcome from all who are interested in the prevention and treatment of this disease, whether from the standpoint of therapeutics or pathology. It is hoped that through it the co-ordination of the work of cancer research centres throughout the world will be rendered closer, and the danger of overlooking or underestimating the results of individual researches will be substantially decreased. In the short introduction to this first number there is a request that all articles, books, and journals dealing directly or indirectly with the problems of cancer may be sent as they appear to the editor of the *Cancer Review*, at 19, Berkeley Street, London, W.1.

PROFESSOR THEMISTOCLES ZAMMIT was presented, on June 24th, with an illuminated address and his portrait in oils on the occasion of his retirement from the office of Rector of Malta University, which he has held since 1920. Dr. Zammit, who was born in 1864, graduated M.D. at Oxford, and for nearly forty years has been engaged in the service of the Government of Malta as public analyst. He was a member of the Mediterranean Fever Commission in 1904-7, and has held the chair of chemistry in the University of Malta since 1905. He has been curator of the Malta Museum since 1903, and his work in this connexion has received world-wide recognition. He was elected an honorary Fellow of the Royal Anthropological Institute of Great Britain and Ireland in 1919, and contributed in 1924, in collaboration with Dr. Charles Singer, to the *Journal* of the Institute an interesting paper on Neolithic representations of human form found in the islands of Malta and Gozo. He received the C.M.G. in 1911, and the University of Oxford conferred upon him the honorary degree of D.Litt. in 1920. In 1921 he was elected to the executive and legislative councils of the Malta Government. He was a member of the Malta Branch Council of the British Medical Association from 1917 to 1923, when he was elected president of the Branch.

<sup>1</sup> Medical Research Council, Industrial Fatigue Research Board. Report No. 35. London: H.M. Stationery Office, or through any bookseller. 1925. 3s. net.

<sup>2</sup> The *Cancer Review*. Bristol: John Wright and Sons, Ltd. Subscription (ten numbers), 30s. per annum; single numbers, 3s. 6d. net; double numbers, 7s. net.



# NINETY-FOURTH ANNUAL MEETING of the British Medical Association, NOTTINGHAM, 1926.

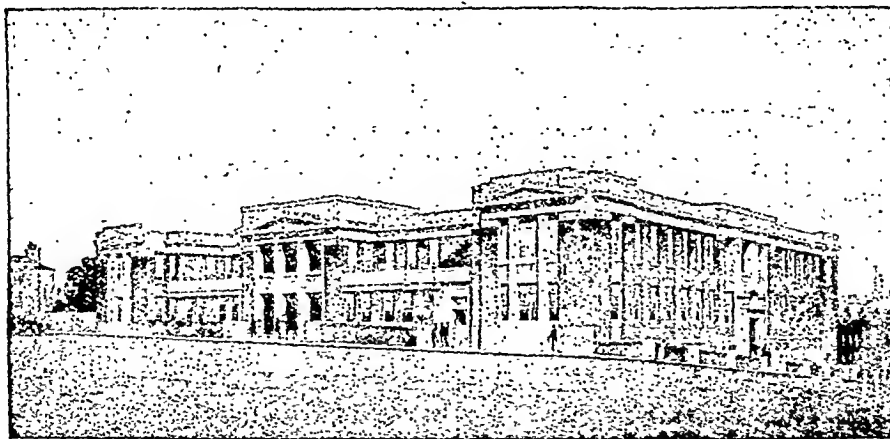
**T**HE ninety-fourth Annual Meeting of the British Medical Association will be held at Nottingham this month under the presidency of Mr. R. G. Hogarth, C.B.E., F.R.C.S., senior surgeon to the Nottingham General Hospital, who will deliver his address to the Association on the evening of Tuesday, July 20th. The Annual Representative Meeting, for the transaction of medico-political and administrative business, will open on the previous Friday, July 16th. The sectional meetings for scientific and clinical work will be held on Wednesday, Thursday, and Friday, July 21st, 22nd, and 23rd. The names of the officers of the thirteen Sections are published in the SUPPLEMENT this week, together with the provisional programme of arrangements for the Annual Meeting. On the last day of the meeting (Saturday, July 24th) there will be excursions to places of interest in the neighbourhood. The article printed below is the fifth of a series of descriptive and historical notes on Nottingham and the neighbouring country. The earlier articles appeared in the JOURNAL of December 5th, 1925 (p. 1081), January 23rd, 1926 (p. 158) March 20th (p. 541), and June 5th (p. 957).

## THE MEDICAL INSTITUTIONS OF NOTTINGHAM.

THE city cannot claim to have any hospitals with very ancient foundations, but is well provided with modern ones, both charitable and otherwise. History, however, does tell of one institution, the Hospital of St. John the Baptist, which was in existence in 1208, but is long since defunct. It is interesting to note that among its various duties was the "care and reparation of the Bridge of Nottingham." The earliest of the modern foundations is the General Hospital, which will stand comparison with most institutions of the kind. In addition there are the

in 1781 by His Grace the Duke of Newcastle and the Corporation of Nottingham. The cost was £5,861, and the hospital contained 44 beds. Ten more beds were added in 1784. In 1854 the hospital was added to considerably, the main building being raised a story and the chapel and day wards erected at a total cost of £4,872. In 1878 divisions 6 and 7, adjoining Park Row, containing 51 beds in all, were built.

In 1900 the Jubilee Wing was opened, having been erected by public subscription to commemorate the Diamond Jubilee of Queen Victoria. The wing, which is circular,



Architectural drawing of new building (Ropewalk Wing) for the Nottingham General Hospital.

various special hospitals mentioned below, the fine Poor Law hospital at Bagthorpe, and several others, and it is most satisfactory to note the increasing co-operation between the staffs of the various hospitals, which is so essential for the advancement of science and the treatment of disease.

### GENERAL HOSPITAL.

This hospital stands in a high position overlooking the park, in close proximity to the castle, and commands wide prospects towards the south. The site is historically famous, as it was here that Charles I raised his standard at the outbreak of the civil war. The hospital was established in 1782, two acres of land having been given for the site

contains three floors for patients, the ground floor being utilized as cubicles for a portion of the domestic staff, while the basement is used as store rooms, etc. There are in this wing 79 beds, 48 being for male surgical cases and 31 for children.

The further extension of the hospital was delayed on account of the great war, but in 1919 steps were taken to increase the accommodation. The first step was to erect a nurses' home. The cost of this was defrayed by a public subscription as a Nottingham and Notts War Memorial. The total cost was £75,000. There are at present 131 bedrooms, each nurse being provided with a separate room. As the hospital is a recognized training school for nurses, the home is suitably equipped with classrooms, where the

probationer nurses receive two months' preliminary training under a tutor sister before entering the wards. There are also recreation and sitting rooms for the sisters, staff nurses, and the nurses in training, and hard and grass tennis courts are provided. The home, which may be considered one of the most modern of its kind in the kingdom, was opened by H.R.H. the Prince of Wales on August 1st, 1923.

The new buildings now in course of erection at the corner of Park Row and the Ropewalk, known as "the Ropewalk Wing," consist of a new out-patient department, with large waiting hall, consulting rooms, etc., new x-ray, orthopaedic, electrotherapeutic, and massage departments, together with operating theatres and 40 beds for ear, nose, and throat cases. The total cost will be about £90,000. The buildings communicate with the hospital by a subway under Park Row. The heating, lighting, etc., will be supplied from the present hospital plant. Although it will be some months before the premises are in actual use, they are sufficiently advanced in construction to be fit for inspection.

#### NOTTINGHAM AND MIDLAND EYE INFIRMARY.

It was not until 1859 that, with the growth of the mining and textile industries, Nottingham decided to provide itself with a special institution dealing with affections of the eye, and the Eye Dispensary was opened in Parliament Street. In earlier times sufferers used to bathe their eyes with the waters of certain local springs and wells, hence the name "Rag Spring." This first institution was soon found to be too small, and within a few months a move was made to St. James's Street; here it assumed its present title, and secured the services of Dr. Bell Taylor as one of its first honorary surgeons, an association which remained unbroken till his death fifty years later.

In 1860 six beds for the treatment of in-patients were added, and good work was done in what would now be regarded as hopelessly insanitary surroundings, until, in 1912, a handsome new building was erected on the Ropewalk. Even this has recently had to be extended, and now includes a wing of paying beds for those unable to afford the usual nursing home charges, in addition to the forty ordinary beds. It is well equipped with modern appliances, such as the giant magnet, slit-lamp, etc. It draws on a population extending as far as Skegness in the east and Burton-on-Trent in the west, and deals with about 700 in-patients and 30,000 attendances yearly.

#### COLLIN'S TRUST MATERNITY HOSPITAL.

This hospital, in Waverley Street, takes its name from Abel Collin, a generous citizen of Nottingham, who lived in the reign of Queen Anne. The hospital was started by the trustees of his charity with funds which they allocated for the purpose, aided by a grant from the Ministry of Health, as, apart from the wards in the Poor Law hospital and nursing homes, there was no maternity hospital in Nottingham. The project was under consideration before the war, but it was not until near its end, when the need of safeguarding the pregnant mother and her child became more urgent, owing to housing and other difficulties, that a small beginning was made by the purchase and equipment of a house in Waverley Street to admit 12 mothers and 12 babies. There, since June, 1919 (the first case to be admitted was for contracted pelvis and had Caesarean section performed), with many difficulties owing to limited accommodation, the work has been carried on, including ante- and post-natal clinics and training of midwives, the hospital having been

recognized as a training school by the Central Midwives Board since 1920. After many delays a new hospital at "The Firs," Sherwood, for 32 mothers and 32 babies, has been nearly completed, and when funds permit it will be possible to extend the accommodation so as to admit 60 mothers and 60 babies, as was planned in the original scheme.

#### NOTTINGHAM HOSPITAL FOR WOMEN.

This hospital was opened in a private house in Castle-gate nearly fifty-one years ago. The real founder was Miss Catherine Woods, a great-aunt of the present Bishop of Winchester. She had been brought up in Quaker traditions of usefulness to her kind, and it was while visiting in the wards of the General Hospital that some of the women patients gave her the suggestion of a small, homely hospital for women only. Perhaps then—we do not know—as in other hospitals of the time, the babies and children were nursed in the women's wards. At all events there arose between those unknown women and Miss Woods the idea of a hospital on lines which have now become those of the most modern of these institutions. There were to be no recommendations, and therefore no temptation to admit a patient for any reason other than her need and fitness for treatment. Those who wished to befriend a patient could pay her modest fees for a part or the whole of her stay.

To complete the anticipation of modernity, some years later a private department was begun. These patients under the care of the hospital staff paid a sum

covering the full cost to the hospital, which made no profit out of them. The nursing home had not yet been born in Nottingham, and these private beds have been an unspeakable boon.

Meanwhile the Samaritan Hospital for Women was started in Raleigh Street in 1885, and has for thirty-nine years done a great amount of splendid surgical work. In 1924 the two hospitals contracted a happy marriage, and their life under one roof waits only for the building of the new hos-

pital. Last year 537 in-patients were treated in the combined hospitals, with 531 operations. Out-patients numbered 8,528, of whom 2,112 were new.

For many years a building fund had slowly been accumulated, and some years ago an admirable site with a good house in Peel Street was purchased. The site is central, yet, overlooking the Arboretum, sure of quietude and fresh air. It is let to a nursing home until the hospital is ready to build. The committee now waits only for a little better times to complete the plans and to appeal to the public to help those who have worked hard to help themselves.

#### NOTTINGHAM CHILDREN'S HOSPITAL.

The institution of a children's hospital must be placed to the credit of a noble band of philanthropic workers who were intimately associated with the management of the Nottingham General Hospital, and who, about 1869, came to the conclusion that the provision for free medical treatment of children suffering from various ailments and diseases was altogether insufficient. Probably the Rev. and Hon. C. J. Willoughby, rector of Wollaton, should be placed first, then the Rev. Henry Seymour, rector of Holme Pierrepont, and associated with them was the Rev. James Matheson, minister of Friar Lane Chapel, Mr. Abraham Cam, solicitor, acting as honorary secretary, Mr. T. C. Hine being the architect.

After deliberation they decided to purchase the house of the late Alderman Knight in Postern Street and Amberley Street, which was altered and adapted. Sister Mary



Children's Hospital, Nottingham.

Mellicent was the foundress and first sister-in-charge, the hospital being opened in July, 1869. When more room was needed Mrs. Violet Jacoby, mother of Sir Alfred Jacoby, M.P., in 1878 spent about £800 in making the necessary additions. When the removal to Forest House, as mentioned hereafter, took place, the property above described was sold to Sir Charles Seely, Bt.; presented to the General Hospital, and connected therewith by a bridge crossing Postern Street.

Sir Thomas Birkin, Bt., having purchased the estate of the late Edwin Patchett in 1899, presented to the committee of the Children's Hospital the house and grounds known as Forest House, which is situated in the healthiest part of the city, stands high, is open on every side, and is very conveniently situated. This valuable gift required a considerable sum to be spent in alteration and adaptation.

In the year 1870 the total income of the hospital was £391, the in-patients for the year numbering 37, the out-patient attendances being 98. To-day the expenditure is approximately £7,600 per annum, the in-patients numbering 600 and the out-patient attendances being approximately 120 a day.

The hospital is equipped with separate modern operating theatres for in-patients and out-patients, with up-to-date x-ray plant, ultra-violet ray lamps, and massage and electrical departments.

As the present premises are inadequate and somewhat out of date, a new hospital is being erected by the generosity of Mr. and Mrs. J. D. Payer. Unfortunately the building is not completed, but it will be sufficiently far advanced for inspection by those attending the Annual Meeting of the British Medical Association in July. When completed the building will accommodate about eighty in-patients, and will be equipped on the most modern and up-to-date lines. The design is the work of Mr. J. Rigby Poyser, L.R.I.B.A., architect, of Nottingham, in consultation with Dr. D. J. Mackintosh, C.B., of Glasgow. The out-patient department is to be considerably increased and the old house modernized; this will make an admirable residence for nurses and staff.

#### NOTTINGHAM AND NOTTINGHAMSHIRE HOSPITAL FOR DISEASES OF THE THROAT, EAR, AND NOSE.

This hospital, in Shakespeare Street, was founded in 1888 by the late Dr. Donald Stewart. It has a very large out-patient department, between 2,000 and 3,000 new patients being seen every year. There are 14 beds, which are kept continually occupied; nearly 400 operations are performed there annually. The board of this hospital was one of the first to realize that tonsil and adenoid operations should be kept in hospital for at least thirty-six hours after the operation is done. Patients pay a small sum towards the upkeep of the hospital, which is also supported by voluntary contributions from private friends, workmen's clubs, etc.

#### NOTTINGHAM UNIVERSITY COLLEGE.

The foundation stone of the University College was laid on September 27th, 1877, by the Mayor, Alderman J. W. Bowers. The College was opened on June 30th, 1881, by H.R.H. the Duke of Albany, and the first session began on October 1st of that year. All provision for the higher education of adults was gathered into the College, and facilities for day and evening studies were afforded to all without distinction. The College was affiliated to the Universities of Oxford and Cambridge in 1883. From its foundation until 1903 it was governed by a committee of the town council. On August 27th of that year a Royal Charter of incorporation was granted, vesting the College in a court of governors consisting of the City Council, with a president and vice-president elected by them.

The present technical schools were opened on January 12th, 1893, by the Master and Wardens of the Drapers' Company of the City of London.

New university buildings are now being erected in University Park, at a cost of £250,000. This has been made possible by the great generosity of Sir Jesse Boot, Bt., who has not only provided the site and very large sums towards

the cost of the buildings, but has given to the city and laid out at a cost of hundreds of thousands of pounds the park itself, which provides a beautiful setting for the new buildings.

The College prepares for degrees of the University of London; and for diplomas in commerce, social study, geography, chemistry, pharmacy, physics, education (elementary and secondary), engineering, mining and mine surveying, hosiery manufacture, and dyeing and finishing. It is divided into four faculties: the Faculty of Arts, including departments of English, history, classics and philosophy, modern languages, education, extramural education, and music; the Faculty of Economics and Commerce, including the departments of law and social study; the Faculty of Pure Science, including the departments of chemistry, metrology and physics, mathematics, biology and bacteriology, geology and geography; and the Faculty of Applied Science, including the departments of engineering, technology, mining, and textiles.

There are four halls of residence connected with the College: Mapperley Hall and Waverley House for men, Cavendish House and Hollygirt for women. During the session 1925-26 there were 722 day students and 2,036 evening students in attendance. The social side of the College is in the hands of the students' "Union," which has the control of all clubs and societies. The tennis ground, with ten courts, is situated in Elm Avenue, and the athletic ground in University Park, where provision is made for cricket, hockey, netball, tennis, and football (Rugby and Association).

The Scientific Sections of the Annual Meeting of the British Medical Association will meet in the theatres, classrooms, and laboratories of University College.

#### LONDON HOSPITAL MEDICAL COLLEGE.

##### PRIZE DISTRIBUTION.

The distribution of prizes to students of the London Hospital Medical College and Dental School took place, as briefly announced in our last issue, on June 28th. The Chairman of the College Board, Lieut.-Colonel W. Manborough Pryor, presided, and the proceedings began with the reading by the DEAN (Professor William Wright) of his report on the work of the college during the past year. In noting some of the principal honours and distinctions won by past and present students and members of the staff, the Dean mentioned that a very distinguished son of the London Hospital, Sir Neville Howse, V.C., a former Minister of Education and Health in the Australian Government, had just been appointed by that Government to be its High Commissioner in London. A year ago he had been able to announce that during 1924-25 the college had received three donations each of £10,000, to be applied respectively to the promotion of medical research, the building of a new clinical theatre, and the reconstruction of the Pathological Institute. The present year had been signalized by a munificent gift from an anonymous donor of £50,000, which had been applied to the endowment of a "Freedom Research Fund," the whole of the income being devoted to medical research. With the new hostel for resident medical officers, and the prospective building of a new cardiological department, the year 1926 would take its place architecturally also as one of the most important and eventful in the history of the London Hospital.

##### Address by the Minister of Health.

The Right Hon. NEVILLE CHAMBERLAIN, Minister of Health, after distributing the prizes to successful students, gave an address on the organization of medical services. After touching on the great variety of choice and great diversity in the possible careers of those who had studied at the hospital, he thought there would nevertheless be amongst them all many common thoughts, common ideals, and common associations which would, in spite of everything, preserve in them a spirit of comradeship. Above all, there would be that attitude of mind which, as he sometimes thought, distinguished members of the medical profession from ordinary people and made them, to a

certain extent, a people apart. No one who had been in intimate contact with any practising surgeon or physician could doubt his fundamental seriousness of outlook. He did not mean that doctors had no sense of humour: God forbid! their worst enemies had not accused them of that; but inevitably there must be in them a serious vein. They must feel that their calling was something beyond a mere means of earning one's livelihood, that they had a purpose in life which was neither selfish nor superficial; and as far as he had been able to observe it, without an exception practically, they conscientiously strove to achieve that purpose. And so he could not help feeling that, in speaking to medical students, he was addressing men who would be inclined to listen sympathetically to any consideration of the problem which lay before a Minister of Health: a problem not concerned with the cure of the individual, but rather with the much wider task of trying to improve the general health of the people. There were a good many factors at work in the solution of that problem, and every student, no matter what branch of the profession he took up, could give a helping hand to the Minister, and make his contribution towards the solution of this problem. Take, for instance, the prevention of disease; in many cases the conditions of life—not in the big towns alone, but in the smaller villages, and even right in the country—were simply manufacturing factories of disease; and while certainly everything possible must be done to combat the results, it would be at once cheaper and more effective if the source of the trouble could be destroyed. Then, again, how important it was to ensure the early detection of disease and the right treatment of its first beginnings. The doctor who had completed his studies at college or medical school should not think that thereby he had finished his education; it was only too easy, in the remoteness perhaps of a country practice, to get behind the times, to get out of date, to acquiesce in a certain lethargy, when there was but little competition and hardly any criticism. Again, medical knowledge nowadays had got so wide and so complicated that it was more than any one man could possibly assimilate, so that treatment, to be complete, should be a matter of team work. And, still from the point of view of the Minister of Health, hardly too much stress could be laid upon the continual prosecution of research. But research was not one of those things which lent itself to mass production.

In conclusion, Mr. Chamberlain said that his object in making these remarks was to bring to the minds of those who were beginning their careers the idea that they had something more before them than the treatment of individual cases; that, in fact, whatever branch of the profession they might adopt, they were all parts of a great army whose objective lay beyond the section of the enemy immediately in their face. The process which he, as Minister of Health, at the present moment was trying to advance was an endeavour to make better use of the forces at their disposal. The organization of medical services in this country was far from perfect. The heavy artillery, in the shape of institutions, was not only inadequate in quantity, but often badly sighted. The intelligence was understaffed, and the results were not always available to the fighting units. There was insufficient co-operation between commanders, and the rank and file were not always in complete touch with their officers. It was the task of the Minister of Health to try to remedy these defects; to correct anomalies; to adjust the machinery, so that it might be better adapted to changing conditions. That was a difficult and sometimes painful process, and so the Ministry was subject to frequent criticism. He hoped that his hearers, as they went through life, would take a broader view; that they would sympathize with the Minister, whether it be himself or his successor, who was struggling against inertia and against prejudice, against want of faith and want of money, and that they would try in their respective spheres to lend him a helping hand. With that idea in the back of their minds they would find their own life more interesting and their own work more satisfactory, because they were not only doing the work which immediately lay before them but contributing also in their own way to the general benefit.

#### *Lord Knutsford on the Hospital's Ideal.*

LORD KNUTSFORD, in proposing a warm vote of thanks to Mr. Neville Chamberlain, said that those to whom he had given the prizes were recruits in the work which he had made his own. As chairman of the hospital he entirely sympathized—they all did—with what Mr. Chamberlain had said: that their duty did not end with simply curing the sick people in their wards who came to them for help; they had to try to find out the causes of sickness, and their work in this direction had only been limited by their means. The ideal of the hospital was not to increase its beds, but to make that terribly long waiting list impossible—to make the beds unnecessary because they had tackled disease at an earlier period and the vast community they served would not need the hospital as much as it did to-day. Until 1924 they despaired of being able to do any preventive work at all. That great hospital, the largest in the country, had only £25,000 for the endowment of medical research. But since then a change had come. The Dunn trustees had given beautiful laboratories: Mr. Williams had helped to endow them. Lord Bearsted had given a clinical theatre with a lectureship attached; and Mr. Bernhard Baron gave the pathological institute, which would soon be built. Lastly they had the magnificent donation from the "Freedom Research" donor, to which the Dean had referred.

#### *Lord Dawson on Medical Practice of the Future.*

LORD DAWSON or PENN, physician to the hospital and chairman of the Medical Council of the College, in seconding the vote of thanks, said that the Minister had pointed out in the course of his interesting speech the changes that were coming over medicine, or rather, in the practice of medicine. And it was true, both as regards hospitals and as regards practitioners, that those changes were likely to be wide and deep. The hospital, or rather teaching hospitals, whatever changes might befall them, as long as they clung to the ideals by which they had become great, were likely to live, to stand for the welfare of the country in the same sense as they had done in the past. They would remain, as now, national institutions. It was interesting to reflect that certain changes would take place in the methods of practitioners' work. The centre of gravity was drifting away from disease and towards health. The doctor of the future would study early disturbances of function. His time would be concerned more with the threshold of disease. And, further than that, in addition to his work with individual patients, he would probably be thrown in contact with groups of people resembling each other, either in their attributes or their occupations. Apart from clinics, which were multiplying the land over—for example, those that concerned school children or maternity or tuberculosis—it seemed to Lord Dawson inevitable that there would be a large development in industrial medicine. It was inconceivable that the employers of labour could do anything but increase medical services in connexion with their large businesses, not only to the advantage of their employees, but to the economic advantage of themselves. That opened up a field of great interest. The doctor would have to concern himself with the lives of the people he had to look after; he would study them in relation to their work and in the environment of their employment, and an indirect result would be a diminution of practice in the surgery and the home. In short, the doctor would gradually move towards the study of the beginnings of disease and curative medicine. Apart from gratitude to the Minister for coming there that day to give them his encouragement, they valued his presence as an emblem of the unity of medicine. Another way in which medicine must alter was by an increase of clinics and hospitals; institutional provision for the sick would increasingly supplement the care of the sick in their homes. In that connexion, it seemed important for each to think out the functions that he would perform in these institutions. Primary hospitals of the future would play an important part in every local community, and doctors who practised in that community should have access to them. It might be asked, Did not all this mean changes in the curriculum? Changes in the curriculum were bound

to occur from time to time. The medicine of to-day was very different from that of fifty years ago. But although there would be a reframing of the curriculum, there would be no extension of its length. In conclusion, Lord Dawson said that there never was a time when medicine presented a wider outlook of interest and usefulness. Those on the threshold of their careers would long remember that occasion and recall the gratitude felt by them all to Mr. Chamberlain for his presence and the vision and inspiration of his speech.

In acknowledging the vote of thanks, Mr. CHAMBERLAIN said that Lord Dawson always brought to the consideration of any question, not only his great professional ability and experience, but also a width of view and a statesmanship which made him simply invaluable to the Ministry of Health. As for Lord Knutsford, the popular idea was that he owned the London Hospital! It was certainly true that he had provided most of the capital for it. When he had got his £100,000 an unremunerative but useful position would be open to him as liaison officer between the Ministry of Health and the Chancellor of the Exchequer. (Laughter and cheers.)

## Union of South Africa.

[FROM OUR CORRESPONDENT IN CAPE TOWN.]

### THE 1926 CENSUS.

THE preliminary results of the census recently completed have been published. Since 1921 the white population of the city of Capetown has increased from 55,000 to 60,000, while the non-European increase is from 51,000 to nearly 59,000. The inhabitants of Greater Capetown, which comprises Capetown proper and suburbs, excluding the separate municipalities of Wynberg and Simonstown and certain smaller areas which have their own local governing boards, now number 268,709, compared with 185,763 in 1921. That the non-European element has increased more rapidly than the European is proved by the fact that the rise in the white population amounts to 9,000, as compared with 14,000 in the case of the coloured community. The preliminary figures for Kimberley show that since 1921 the white population has decreased by 1,409, the respective totals being 21,607 and 20,198. At Stellenbosch, on the other hand, a remarkable increase in the European population of the district has occurred, from 11,411 in 1921 to 13,188 (males 6,596, females 6,592). The town of Stellenbosch numbers 4,422 Europeans as against 3,701 five years ago.

### HOSPITAL NEEDS OF CAPE TOWN.

At a meeting of the Cape Hospital Board on May 26th a memorandum by the chairman, Mr. M. C. Vos, was submitted dealing with certain points raised in a resolution recently passed by the board calling for investigation into means of extending hospital accommodation and treatment while awaiting completion of the proposed new general hospital at Groot Schuur. The matters dealt with in the memorandum may be classified as follows: Out-patient departments and free dispensaries; district nursing service; extension of existing hospital accommodation; convalescent homes; and new maternity home.

The memorandum points out that there are in existence out-patient departments at the New Somerset Hospital and at the Woodstock Hospital, as well as the Capetown Free Dispensary. To all intents and purposes only the urban area proper and the immediately adjoining suburbs of Woodstock, Salt River, and Observatory are thus catered for. It is proposed, therefore, to establish a new dispensary at Wynberg, and, if possible, another at Claremont. Even more urgent is the claim of a very large area comprising the suburb of Maitland and its neighbourhood, where there is a large poor community. To meet the expense involved it is suggested that the Provincial Administrator be requested to sanction a loan, failing which certain moneys belonging to the Capetown Free Dispensary for capital expenditure exclusively—about £5,700—be drawn upon, provided some agreement can be arrived at with the committee of the Free Dispensary. The District

Nursing Service consists of eight district nurses working under the charge of a superintendent of district nurses. The necessity of devising some means for making the service as effective as possible is another subject to be considered, but whether by increase in the number of nurses or by redistribution of areas supplied is not stated. The new General Hospital, which in the first instance is to contain 300 beds, to be increased later to 500, will not be completed for at least five years, at the expiration of which period it may prove to be inadequate to supply the needs of the by then greater population. The solution of this problem would appear to be the immediate increase in the number of beds at the existing hospitals under the control of the board. The ward in which the male V.D. patients are housed at the New Somerset Hospital is in a sad state of dilapidation, and should be closed, cleaned, and renovated. To provide for the efficient treatment of such patients negotiations are already in progress with the medical officer of health for the city with a view to the necessary accommodation being provided at the City Hospital, where, too, clinical teaching to students will be carried on. A proposal to provide a new casualty ward at this hospital, at an estimated cost of £1,200, is under consideration. More extended additions to it are not contemplated, however, as the buildings are eventually to be demolished. At the Woodstock Hospital, by utilizing the nurses' quarters at present situated in the hospital building itself, and providing additional accommodation in the nurses' home, an addition of twelve beds may be reckoned on. At the Rondebosch Hospital two new wards for non-European patients have already been erected. When these are occupied the quarters vacated could be made to furnish twelve additional beds. The suggestion has been made to build at the Wynberg Hospital an entirely new block for coloured patients with accommodation for thirty beds, and adjoining it a new ward with ten beds for coloured children. Part of the existing building might then be utilized as quarters for the house-surgeon, an office recently created, and also for a dispensary. The net increase in beds under this scheme would be twenty-two, entailing an expenditure of about £5,000. The Simonstown Hospital is adjudged large enough for its present requirements, serving as it does an outlying district with a limited population. With regard to convalescent homes, it is recommended that beds should be added to those at present existing, and that an adequate staff of trained nurses should be provided so that cases requiring further treatment may be transferred from the hospitals to make room for more urgent cases. The average stay of patients at the New Somerset Hospital should in this way be reduced from thirty-two to eighteen or twenty days. The erection of a new building at the Eaton Convalescent Home to accommodate from thirty to forty cases is contemplated. Lastly, while in no way intended to compete with the new maternity block at the hospital to be erected on the Groot Schuur site, the provision of a new maternity home in District 6, the slum quarter of the city, is an urgent need, and should be used for the training of midwives.

Speaking generally, the proposals suggested to relieve the present congested state of the hospitals and provide additional accommodation, etc., will involve an expenditure of approximately £20,000, and in this way the period of five years until the new hospital is built would be tided over. At the same time it must be borne in mind that these additions will be of a permanent nature and will be required to meet the demands of a growing population. As the New Somerset Hospital has been sold for £100,000, and as it would be possible to raise this money immediately from the Provincial Administrator, the chairman, with reference to his memorandum, suggested that a portion of this sum should be utilized to enable the board to proceed with the improvements outlined.

### APPOINTMENTS.

Dr. Robert Sharp, honorary medical superintendent of the Woodstock Hospital, has been appointed acting medical superintendent of the New Somerset Hospital, in a part-time capacity, at the salary of £1,000 per annum. Dr. Sharp is to devote four hours a day to the duties of the



office. Owing to the fact that, for the time being, he is a paid official of the Cape Hospital Board, Dr. Sharp has had to relinquish his seat on the board, his membership of the committee of the Woodstock Hospital, and also his appointment as honorary medical superintendent of the last-named institution. Dr. Z. J. de Beer has been appointed district surgeon for the area of Woodstock in succession to Dr. Robert Sharp. Major F. W. Cluver, South African Medical Corps, has assumed command of the Wynberg Military Hospital, vice Major van der Spuy, who has been promoted to command of the military hospital at Roberts's Heights, Pretoria.

#### GOLF.

The competition for the Jones-Phillipson cup, held under the auspices of the Cape of Good Hope (Western) Branch of the British Medical Association, and open to all medical men resident in the area, was decided on the course of the Royal Cape Golf Club on May 19th. The winner proved to be Dr. W. P. Mulligan, who returned a net score of 77. The competition was first held in 1923, when a floating trophy was presented by Mr. C. E. Jones-Phillipson, then president of the Branch. The first holder was Dr. G. B. Wilkinson of Seapoint; in 1924, and again the following year, Mr. E. Barnard Fuller, a past president of the Branch, carried off the honour.

## England and Wales.

#### A SUSSEX ORTHOPAEDIC CENTRE.

ON the day following the inauguration of the Welsh Branch of the Central Committee for the Care of Cripples (see p. 79) a party of about fifty medical officers of health and other representatives of local authorities in Wales paid a visit to Chailey in Sussex to inspect the Heritage Craft Schools and Homes for Crippled Children. Sir Robert Jones, who is chairman of the medical board at Chailey, and Sir John Lynn-Thomas, the honorary secretary of the newly formed Welsh organization, acted as hosts. The visitors were received by Mrs. C. W. Kimmins, who founded this work more than twenty years ago and is now its honorary secretary, and by Dr. Murray Levick, the medical director. The schools, which contain 150 boys and 70 girls, rose to the occasion, the Welsh dragon fluttered at every point of vantage, and the cripples—a brave deed, since they were English—delighted their guests by singing Welsh songs. There was much to see, and hardly time to appreciate the glorious scenery, between the east and west downs, in which Chailey is set. The hospital block, provided by Sir Jesse and Lady Boot, with the wards, open-air balconies, and light-treatment rooms planned in a single unit, was first visited. The combined method of treatment which is given was demonstrated by the staff. Dr. Murray Levick mentioned also some good results which had been obtained in infantile paralysis, even in muscles which gave no response to the interrupted galvanic current. The treatment consisted of general irradiation by "artificial sunlight" (or by real sunlight when this was available), local treatment of the affected muscles by rays from long-ray lamps passed through red filters, electrical treatment, re-education of the voluntary stimulus, and instrumental support for the paralysed muscles which, often at an early stage, can be abandoned, and, finally, massage. Out of doors, stretched on canvas couches, the children were seen receiving their sun treatment, combined with school lessons, the prone and supine positions being alternated at regular intervals under the direction of a nurse while the lessons proceeded; in the gymnasium some boys suffering from advanced kyphosis were taken through physical drill and deep-breathing exercises. The visitors were also bidden to admire the craft work produced in the Lord Llangattock workshops, where the cripples are taught the subjects of the elementary school curriculum as far as possible through the medium of their craft, working in wood as other children work in copybooks. After a visit to the beautiful little church, where a tablet records the names of a considerable number of ex-patients from Chailey who served in the war,

the party went to the girls' school on the other side of the common, where, on the lawn, Miss Margaret Morris illustrated her system of exercises which has been selected as most suitable for the crippled girls. Here also children of quite tender years, as young as 2, were shown receiving sun baths. The party then journeyed to Lewes for luncheon, at which messages welcoming the Welsh visitors were read from the patron, H.R.H. Princess Louise, the Bishop of London, the president, and Sir George Newman, K.C.B., M.D. Two Labour members of Parliament for South Wales, Colonel Watts Morgan and Mr. William Jenkins, expressed the thanks of the visitors to Sir Robert Jones and Sir John Lynn-Thomas for an interesting day, and said that they and others would not rest until they had in the principality some equivalent to Chailey. Sir Robert Jones said, in response, that Chailey might be called the public school of crippleddom in this country, and everyone who came within its influence went out to preach its gospel. Sir John Lynn-Thomas, who also spoke, mentioned that it was while he was stationed in the South of England during the war that some part of this work—that at Tidemills, which was to be visited later—came under his observation, and stirred an enthusiasm within him which had never died down. In the afternoon, before returning to London, the visitors proceeded to the marine annexe at Tidemills, and saw how the principles of combined school and cure were being applied.

#### MEDICAL WOMEN'S FEDERATION.

The annual general meeting of the Medical Women's Federation was held on June 17th, under the chairmanship of Miss Frances Ivens, the retiring president. It was agreed that £100 should be given to the Dame Louisa Aldrich-Blake memorial fund as a contribution to the proposed scholarship fund. The federation was asked to invite contributions from its members, the whole sum collected to be handed over to the memorial in the name of the federation. Dr. Christine M. Murrell was elected president, Dr. Ellen B. Orr and Dr. Clara Stewart vice-presidents, and Dr. Jane Walker honorary treasurer in place of the late Dame Louisa Aldrich-Blake, who had held that office since the foundation of the federation. These, together with Miss Frances Ivens, Lady Berry, honorary secretary, and Miss Mabel Ramsay, elected from the council, compose the executive committee for the coming year. Dr. Frances Braid of Birmingham reported that a bed at the Taylor Memorial Home for Incurable Diseases had been dedicated to the memory of Dr. Mary Sturges as a memorial from the federation. The aviation subcommittee reported that the various qualities which produced the "flying aptitude" were found in women as in men. It had specially considered the question of menstruation and pregnancy in relation to women's fitness for flying and for receiving aviation certificates. In this connexion it had examined the results of recent research into the effect of menstruation on the various processes of the body, especially the work at the London School of Medicine for Women, under the direction of Professor Winifred Cullis, which showed that there was no change during menstruation in basal metabolism, pulse rate, or blood pressure, and also that the cost to the organism of a certain amount of work and the recovery rate from work was the same both during menstruation and the intermenstrual time. The subcommittee had concluded that normal menstruation was no bar to flying, and considered that the searching and repeated medical examinations already in force in regard to those holding certificates would be sufficient to prevent unfit persons from undertaking flights.

The national corresponding secretary of the Medical Women's International Association reported that the medical women of Canada, and still more recently those of Mexico, had formed associations which had joined the International Association. She reported the rapid growth of the German Medical Women's Association, which now numbered 650 members, issued a quarterly journal, and published a list of members with the type of practice undertaken by each. A meeting of the council of the International Association would begin on August 26th in Prague. At the request of the British Medical Association Miss Mabel Ramsay and Miss Louisa Martindale

were appointed to serve on the Special Committee to consider the report of the Royal Commission on the Insurance Acts. A new standing committee on public health was formed to watch public health developments, including posts advertised. An invitation to hold the next meeting of the council at Leeds was accepted. On June 17th Miss Ivens gave a dinner at the Welbeck Palace Hotel, and on the 18th a lunch was given at the London School of Medicine for Women by the dean, Lady Barrett, at which many of the women members of the school and hospital staff were also present. On the evening of the 18th a conversazione was held by the London Association of the federation in the Hastings Hall of the British Medical Association House. Sir James Berry gave a lecture on Greek temples in Sicily, and Lady Berry described scenes and episodes of travel in various climes, under the heading "Scattered recollections." Both lectures were illustrated by lantern slides from photographs taken by Lady Berry.

#### BIRMINGHAM MENTAL HOSPITALS.

The Asylums Committee at Birmingham is reviewing the administration of the institutions under its control, and has recently submitted a scheme for greater unification to the Board of Control. It is proposed to make Dr. T. C. Graves, medical superintendent of the Rubery Hill and Hollymoor Mental Hospital, chief medical officer of the various institutions, though he will continue to reside at Rubery. Dr. Forsyth, assistant superintendent at Rubery, becomes medical superintendent at Win-on Green, a position now vacant by the retirement of Dr. Cecil Roserow after twenty-three years' service. Dr. Elizabeth Selkirk, for many years on the staff at Winson Green, has been appointed medical officer in charge of Hollymoor, and so becomes the only lady superintendent of any large mental hospital in this country. The three mental hospitals have about 2,250 patients under their care.

#### STERILIZATION OF MENTAL DEFECTIVES.

The Mental Hospitals Committee of the London County Council has considered a resolution which has been adopted by the Worcestershire County Council urging the Government, in view of the increase in the number of mental defectives, and the heavy cost of maintaining and extending institutional treatment, "the effect of which is usually most unsatisfactory," to take such compulsory measures as it might deem best for preventing the spread of this condition by sterilization, by compulsory segregation, or by other measures. The London Mental Hospitals Committee states that it has more than once considered whether sterilization by surgical operation might be resorted to as a prophylactic against mental deficiency, but it had concluded that there were too many practical difficulties to permit of the endorsement of any proposal to make such a measure possible. That was still its opinion. So far as compulsory segregation was concerned, this was available at present in certified institutions for cases that could be dealt with under the Mental Deficiency Act. The committee is not aware of any serious justification for the opinion that the effect of institutional treatment is usually most unsatisfactory, and adds that it is difficult to see what other measures are ever likely to be enforceable.

#### LEEDS SCHOOL OF DENTISTRY.

Twenty-one years ago the members of the Leeds and District Section of the British Dental Association decided to start a dental hospital for the treatment of patients who could not afford to pay fees and for the training of dental students. The hospital was equipped through the generosity of these dental surgeons and their friends, and was carried on for some years in the public dispensary, but as its work grew it became necessary to find new premises. This was made possible by two other public bodies—the authorities of the General Infirmary, who made room for part of the work, and the board of guardians, who provided accommodation in the East Leeds Infirmary for the rest of it. A few years later this latter portion of the work was transferred also to the General Infirmary, in which the whole of the activities of the dental hospital and

school have since been carried on. With the expansion of the hospital the training of dental students has also increased, and the institution now forms a combined dental hospital and school of great value to the county. There are now fifty-three students undergoing training in the school, and during last year 9,210 patients received treatment, entailing 28,350 visits. At an early stage the dental committee in charge of the hospital came to an arrangement with the university by which students could read for a degree or a diploma in dental surgery by combining courses in the university with their practical work in the hospital. In 1914 this arrangement was developed into a scheme of amalgamation by which the dental school became a department of the university within the Faculty of Medicine. The university now takes full responsibility for the whole of the educational work of the school, while the hospital work forms a department of the General Infirmary. For some time it has been clear that new premises would again have to be provided. The provision of a building for this department had therefore to be included among the urgent needs in respect of which the university issued its appeal for £500,000. A site, valued at about £8,000, has been provided by the General Infirmary authorities, the Dental Board of the United Kingdom has promised a grant of £5,000 contingent on the balance of the cost of the building being obtained from other sources, the honorary staff of the dental school have subscribed £2,000, and contributions have been received from other dental surgeons. The building, which will provide accommodation for 150 students and pupils, is to occupy a site on the north side of Blundell Street, adjacent to the medical school and the General Infirmary, and conveniently situated for the university.

### Scotland.

#### VICTORIA INFIRMARY, GLASGOW.

THE thirty-eighth report of the governors of the Victoria Infirmary, entitled as hitherto "annual," covers on this occasion a period of fourteen months, terminating December 31st, 1925, the financial year previously ending October 31st having been altered to coincide with the calendar year.

The total number of cases admitted during the period was 5,001; the mortality, excluding deaths within forty-eight hours, was 5.8 per cent. There were in addition 4,494 minor surgical cases, including accidents, and 2,268 patients were treated for diseases of the throat and nose. The average daily number of patients was 288, and the average length of stay in hospital 23.8 days. Contributions received from patients in recognition of services rendered amounted to £666. Employees' contributions for the year to December 31st totalled £11,006. The Bellahouston Dispensary, in a populous district of the south side of Glasgow near the docks, treated 37,661 patients for diseases of the eye, ear, nose and throat, and skin, as well as for medical, surgical, and gynaecological ailments. This dispensary, which does so much for a crowded neighbourhood, should receive more financial aid from local sources. Progress is being made with the new wing of the infirmary, which, when opened, will involve an additional annual expenditure of £14,000. The governors have purchased a piece of ground at Thorntonhall, in the country near Glasgow, for an auxiliary hospital. These extensions are amply justified by an average waiting list of 450. The Victoria Infirmary continues to render notable service to the community and merits every support.

#### GLASGOW EAR, NOSE AND THROAT HOSPITAL.

The annual general meeting of the Glasgow Ear, Nose and Throat Hospital was held on June 9th. Dr. Robert T. Moore, Lord Dean of Guild, who presided, said that Glasgow had one of the best equipped institutions of this kind in the United Kingdom, but an annual income of £7,000 was required to carry on the work. One of the directors, who desired to remain anonymous, had given an adjoining building to the institution. Dr. R. M.

## CORRESPONDENCE.

Buchanan, President of the Glasgow Royal Faculty of Physicians and Surgeons, in moving the adoption of the report, said that the activity of this hospital was specially necessary in the atmosphere of Glasgow for the prevention of the serious disability which resulted from loss of hearing. He congratulated the directors and subscribers on the splendid new hospital they had provided, which made such a notable and valuable addition to the hospitals of the country.

## ROYAL HOSPITAL FOR SICK CHILDREN, GLASGOW.

During the year ending December, 1925, the "record" number of 6,452 patients received treatment in the wards of the Royal Hospital for Sick Children, Glasgow, and an appeal by the directors for £75,000 to provide urgently necessary additions and extensions to the hospital was fully successful in less than six months. Completion of the extensions to the nurses' home, administrative offices, maids' quarters, and kitchen will enable further work to be begun, including the provision of departments for outpatients, orthopaedic work, and treatment by x rays and heliotherapy. The forty-third annual report of the hospital contains also the information that, in consequence of a generous gift, it will now be possible to extend the country branch of the hospital at Drumchapel. When this has been done the hospital and country branch will contain more than 400 cots, and will be one of the finest institutions of the kind for children in existence. Other gifts during the year include an electro-cardiograph, the equipment of a small dental department, various mercury and vapour are lamps to form the nucleus of a heliotherapy department, a microphotographic apparatus for use in the laboratory, and a small x-ray apparatus in the operating theatre block. An appeal is made in the report for the endowment of a university lectureship and a research department in connexion with the pathology of the diseases of infancy and childhood, which would enable full advantage to be taken of the special resources of the hospital. Although the general income considerably increased during the year, there was a serious falling off in legacies, and the expenditure of the hospital exceeded the income by nearly £4,000. The contributions of employees in public works and warehouses showed an increase over the previous year of £360.

## Correspondence.

REPORT ON RHEUMATIC HEART DISEASE  
IN CHILDREN.

SIR,—I am very unwilling to appear ungracious by offering any criticism of the report of a committee which voluntarily has undertaken the laborious and tiresome task of a statistical survey for the benefit of their less energetic colleagues; I venture to do so solely in the hope that while the data before the committee are still more or less in hand, one more piece of work may furnish something like a definite set of conclusions to their labours.

Those who daily are concerned with the question of tonsillar sepsis are, of necessity, alive to the fact that this is merely one element in oral sepsis; and they are compelled to feel that statistics of tonsillectomy which do not include at least the rheumatic subject who is most closely connected with the dental factor must be misleading.

In the case of the rheumatic subject who is most closely connected with the dental factor must be misleading. Under my constant observation, a person devoid of tonsils, on three separate occasions, at long intervals, attacks of acute pain, swelling, and redness of the wrist have at once subsided, without other treatment, on the extraction of teeth from infected sockets. Such an experience is not exceptional.

Dr. Reginald Miller would be doing a great service if now, while he is in touch with his tonsillectomy cases, he would scrutinize their dental condition and history. In addition to the major problem, he possibly will find in the teeth an explanation of the interesting class incidence of rheumatism to which he alludes in his important contribution to the report on environmental and other predisposing causes of rheumatic infection.—I am, etc.,  
E. B. WAGGETT.

Charing Cross Hospital, July 2nd.

## THE EPILEPSIES.

SIR,—Dr. Kinnier Wilson, in his lecture on the epilepsies (July 3rd, p. 1), refers to the evidence for and against the causal factor being anoxaemia due to temporary failure of cerebral circulation; he points out certain difficulties in the way of accepting this theory, although at present there is no better. It is significant that he records the occurrence of hallucinations resembling an aura in persons half-drowned, half-hanged, or half-suffocated. In all these conditions there is oxygen deficiency in the tissues.

Failure of the circulation and anoxaemia are only two of the many ways in which the processes of oxidation in the cell may be hindered; thus there may be a normal supply of oxygen in the arterial blood reaching the neighbourhood of the cell, and yet the cell may not be able to use it normally; this occurs in cyanide poisoning.

As a result of recent physiological experiments dealing with tissue oxygen tension, tetany, and convulsions, I came to the conclusion that tetany and convulsions, however produced, were due to interference with oxidation in the nerve cell and that the violent contractions in tetany and convulsions were purposeful—that is, to increase the oxygen tension in the cells. I found that muscular contraction, however produced (for example, by exercise or by convulsions), caused a marked rise of oxygen tension in the tissues.

I would suggest tentatively that similar conditions exist in the epilepsies—that is, they are due to interference with cell oxidation processes—and that the violent muscular contractions represent an effort on the part of the body to remedy the defects.—I am, etc.,  
J. ARGYLL CAMPBELL.

ELECTRICAL TREATMENT OF TIC-DOULOUREUX  
AND ANGINA.

SIR,—Dr. Turrell's success in the treatment of tic douloureux is confirmed by my own experience. I have treated with gratifying results several cases, the most striking being that of a lady, aged 50, who had suffered on and off for twenty years; during the last three years her complaint had grown steadily worse until her condition was pitiable. She came to me for treatment at the beginning of November, 1924. She was in almost constant pain, paroxysms being set up by almost any movement or attempts to masticate. Practically every treatment had been tried and surgical measures were suggested, but advised against by the surgeon consultant. I treated her with ionization, thrice weekly, for a month. From the commencement she began to respond and the attacks diminished in frequency and severity rapidly until at the end of twelve treatments she was quite free from pain. She remained free for two weeks, when she thought she felt mild signs of the pain returning, so she had six more treatments. Since then she has had no return of pain and is quite free in spite of the fact that all through last winter she went out in the coldest weather, which had not happened for years previously. Other cases have shown equally good results.

Dr. Basil Hughes appeals for a communication on the treatment of angina, and I am pleased to give my experience in these cases. Although I have had the opportunity of treating only six, the results have been so encouraging that I consider the treatment has great possibilities. These cases have been treated with diathermy—through the heart, placing one electrode over the cordial area, and the other on the back.

The first case was a man aged 64, with symptoms of two years' standing, increasing in severity until he came to me in May, 1924. At that time he was averaging eleven or twelve attacks a day. He was unable to lie down, but slept propped upright with pillows. He had consulted Dr. John Hey of Liverpool, who suggested that diathermy should be tried. He received three treatments a week for six weeks. After a fortnight's treatment he was much improved and could sleep lying down and walk better, and the attacks diminished until at the end of a month he only had occasional mild attacks. After six weeks' treatment his attacks had ceased. I saw him again in December, 1924, and he was still free from attacks and has remained so until recently, when I have lost sight of him. Up till then he was living the normal life of a man of his age.

I have treated three other severe cases since, with equally good results, and two milder cases. The one failure was a gentleman of 74, who improved so much after two weeks' treatment that he gave it up for five weeks and refused to attend regularly, having six more treatments at intervals. Recently he had a recurrence and died, but the treatment was incomplete and very unsatisfactory, and this in no way negatives the success in those cases who received sufficient treatment. These results certainly justify an extended trial of this method, which is convenient, simple, and, in experienced hands, absolutely safe.—I am, etc.,

JOHN N. DYSON, M.R.C.S., L.R.C.P.

Southport, Lancs, July 4th.

### A PLEA FOR OPHTHALMIC EXAMINATION IN INFANCY.

SIR,—Many common refractive errors and visual defects are either congenital (that is, present at birth and of no earlier origin than conception) or hereditary (that is, reproduced from ascendants during development or life). Some improve. A few remain stationary. Others, from inherent tendency or adverse environment, deteriorate. For lack of fostering in infancy, visual faculties may fail to develop. Many older children find their preparation for attractive careers arrested, owing to processes which might have been foreseen, if not prevented.

So dimly are these facts realized by the laity that an infant's eyes are rarely examined unless there is some glaring defect. Damage is often done before intervention is possible by public bodies, which have shouldered enormous burdens in respect of the treatment of visual defects. An observant family practitioner is in a unique position with regard to those children he has known from infancy; is it not his duty to initiate, not later than the third year, such steps for the preservation of vision as experience dictates?

Congenital distortion of the cornea (astigmatism) interferes with the development of the form sense. Children with over three dioptries of astigmatism rarely see well until glasses have been worn for some time. The first indication that a high degree of astigmatism is present may be the onset of nystagmus. Hypermetropia is also congenital, and as sustained accommodation without convergence is fatiguing an illness such as measles may be followed by squint. Squint impairs children's prospects, gives anxiety to parents, and causes loss to school authorities whose grants are based on attendances. The vision of a squinting eye deteriorates and nature adapts structure to function in the extraocular muscles, hence the treatment is tedious. It is possible to recognize a predisposition to squint, and to cultivate binocular vision by prescribing glasses and simple fusion exercises. If one eye has already become lazy it may be stimulated by applying atropine to the other. By increasing susceptibility to external affections, hypermetropia predisposes to the formation of superficial opacities, which impair vision more commonly than all the diseases of the deeper structures put together.

Myopia doubtless arises from strain imposed during education, but the process is cumulative—spread over successive generations. Consider the following case.

A girl, aged 9, whose father and two sisters were short-sighted, complained on returning from school of having lost the sight of one eye. Both eyes were myopic and there was a retinal detachment in the left. After a period of rest the child was sent to live with relatives in the country, and received oral instruction only. Two years later the retina was completely reattached, but vision was permanently impaired.

What of the next generation? Surely their eyes should be kept under observation from infancy. Cataract in infancy is often a familial defect. In advanced cases the longer operation is postponed after the tenth month the greater the danger of permanent nystagmus. The severity of interstitial keratitis may be reduced by treatment, the need for which can often be recognized in infancy. Ophthalmic examination at any period may throw light on obscure disturbances of general health.

Eugenic intervention is impracticable; moreover, defects would continue to arise from the same causes as have operated in the past. When the late W. E. Forster, introducing compulsory education in the House of Commons,

observed, "We must not forget that in trying to do good it is possible to do harm,"<sup>1</sup> he was concerned mainly with spiritual dangers, but his warning should also be applied to physical conditions. It is as important to provide a system of education whereby good vision may be protected as to provide special institutions to which those with bad vision may be relegated.

Ophthalmic examinations under a cycloplegic should be instituted in infancy and repeated at regular intervals; no defects would be found in the majority, but in the minority such conditions as would result in modifications of the normal curriculum and the cultivation and preservation of vision by various means, including prescription of glasses, medical treatment, or, in rare instances, surgical intervention.

Some effect may be expected in this generation, but it is only among our children's children that the full measure of success can be achieved. We ought not to abate our efforts on this account.—I am, etc.,

W. OLIVER LODGE.

Bradford, March 14th.

### "ATOPHAN DERIVATIVES IN RHEUMATISM."

SIR,—Dr. W. Langdon Brown's letter in your issue of July 3rd (p. 37), calling attention to the toxicity of atophan derivatives, is of great importance. I very often prescribe these drugs, and always with caution, because of the slight or moderate toxic symptoms they not infrequently produce. But I have had three cases of severe poisoning going on to the development of jaundice, and in one case associated with repeated vomiting. These symptoms may arise in spite of the simultaneous administration of sodium bicarbonate, and they are not the result of large doses. In my experience they are sometimes due to a personal idiosyncrasy, for one of these patients developed the symptoms on two separate occasions, and on the second occasion after taking only one or at most two half-gram tablets. Another patient never took more than ten tablets in a week and developed the symptoms of hepatic disturbance after taking only thirty tablets. Further, in my experience no one preparation on the market is less likely than another to cause these toxic symptoms.—I am, etc.,

London, N.W.1, July 2nd.

GEOFFREY EVANS.

SIR,—Dr. Langdon Brown, in your issue of July 3rd, rightly emphasizes the need for caution in the administration to patients of atophan derivatives. He mentions two fatal cases of toxic jaundice following the use of atoquinol. In the *BRITISH MEDICAL JOURNAL* (1923, i, p. 148) I recorded a case in which the ingestion of  $7\frac{1}{2}$  grains of atophan three times daily was followed by intense urticaria and subsequent jaundice. K. Schroeder had previously pointed out the liability of atophan derivatives to give rise to toxic symptoms, such as gastro-intestinal disturbance, urticaria, and albuminuria, but so far as I am aware jaundice had not been reported.—I am, etc.,

London, W.1, July 6th.

C. WORSTER-DROUGHT, M.D.

\*\* We have received a communication from Messrs. Schering, Ltd., regarding Dr. Langdon Brown's reference to two fatal cases of toxic jaundice following the use of atoquinol. They state that atoquinol is not an atophan derivative, since atophan is a trade name applicable only to products emanating from the Schering Laboratories. They add that atophanyl is a solution of the sodium salts of phenylethanol-carbonic acid combined with sodium salicylate, whereas atoquinol is described as allyl-phenylcinchonin ester; the two preparations, therefore, differ materially.

### HISTORY OF MEDICINE.

SIR,—Your issue of June 26th (SUPPLEMENT, p. 244) contains notice of a motion by the Brighton Division to be made at the Annual Representative Meeting that the Council should be instructed to consider the desirability of instituting a Section on the History of Medicine at the Annual Meetings of the British Medical Association. The same project has presented itself as desirable to the Edinburgh and Leith Division, and this Division some time ago

<sup>1</sup> 3 Hansard, cxcix, 438.

forwarded a recommendation expressing a desire that a Section on the History of Medicine should be formed for the meeting which is to take place at Edinburgh in July, 1927. It seems to be particularly appropriate that the Section should be initiated at the Edinburgh meeting, seeing that this medical school was, I believe, the first in Great Britain to provide for instruction of medical students in the history of their profession by instituting a lectureship on history of medicine in 1908. The fact that considerably over 1,000 students have attended this optional course at Edinburgh since its commencement is sufficient evidence of the increasing attention which this subject is now receiving in Great Britain. If other Divisions will follow the lead of Brighton and press for the formation of this Section it will no doubt come into being and prove a much appreciated feature of the Annual Meetings of the Association.—I am, etc.,

JOHN D. COMRIE,

Edinburgh, June 30th.

Chairman, Edinburgh and Leith Division.

### APPEALS FROM THE GENERAL MEDICAL COUNCIL.

SIR,—It is significant that two Divisions of the British Medical Association—Hastings and Bournemouth—have given notices of motion for the forthcoming Annual Representative Meeting relating to the right of appeal from disciplinary decisions of the General Medical Council.

It is hoped that this subject will receive due consideration by the Representative Body exclusively upon its merits, and entirely unprejudiced by any recent clamour of the lay press, or the public, or certain malcontents within the profession, however misinformed or well informed. The standard of professional ethics has always been jealously guarded by the General Medical Council, and rightly so—indeed, it may be granted at once that the Council exhibits a constant endeavour to perform its duties impartially and with every indication of care and good judgement.

Nevertheless the fact remains that, functioning as a domestic tribunal only, and as a court of first instance, from which no appeal lies, it is thus quite remote from modern conceptions of the administration of justice, which latter are characterized by the fullest protection for the claims of the accused.

Take, for example, those cases of alleged misconduct in which the General Medical Council directs an inquiry, though there is an absence of any outside complainant: here we have the anomalous position of the Council acting as prosecutor and judge, a condition of affairs certainly alien to British ideas of justice; and yet under existing conditions no higher court possesses any jurisdiction to interfere. In the legal profession a right of appeal lies to the barrister who has been disbarred, as also to the solicitor who has been struck off the roll; *a fortiori* the claim of the medical profession, for surely a medical tribunal can scarcely be considered so competent an authority as a legal in determining points of law, and the value of evidence, its relevancy, competency, admissibility, or weight. Such intricate and involved questions in the ordinary courts are the province of an experienced judge to determine and direct.

It is conceivable that the Council might periodically be tempted in its zeal to exceed the bounds of wisdom and justice in placing members' liabilities much beyond those of the general public, and the very existence of an appeal tribunal would certainly exert a salutary effect. The Court of Criminal Appeal, for example, was created in 1907, in order to confer the same rights in criminal as in civil offences, and it has amply vindicated and enhanced the soundness of this principle of appeal in cases of alleged miscarriage of justice in the lower court.

In the Memorandum of Evidence placed by the British Medical Association before the Royal Commission on National Health Insurance (vide *BRITISH MEDICAL JOURNAL*, SUPPLEMENT, February 28th, 1925, para. 40, clauses 3, 4, and 5) it is laid down with reference to conduct of practitioners detrimental to the service, or giving false certificates, that appeal to the courts should be possible, and, in the case of proposed removal from the service, a further right of appeal. With such a recent

precedent embodying this principle in disciplinary procedures connected with national health insurance, the Council of the Association will only be acting consistently in demanding application of the same principle to decisions of the General Medical Council, especially since the penalty involved, of possible erasure from the *Register* altogether, is so much more severe.

After all, the practitioner we ought to safeguard is not the one persistently guilty of misconduct; but the honest man of integrity and good character, who has committed some foolish error of judgement perhaps, or offended unwittingly and unintentionally; the former will not in the least object to removal from the *Register*—indeed, he will probably enjoy being a free lance entirely, and certainly will not be likely to seek any appeal.

An excellent case might be presented for the Hastings motion (omitting the words "if and when"), which also suggests a general revision of the whole status, constitution, and disciplinary powers of the General Medical Council. But if the Representative Body is not disposed to support this at the moment, it should at least recommend the Bournemouth motion, which is concerned with the right of appeal only.—I am, etc.,

Bournemouth, July 3rd.

WALTER ASTEN.

### OBSTETRICS IN GENERAL PRACTICE.

SIR,—Professor J. M. Munro Kerr of Glasgow University, under guise of an address on preventive medicine as applied to obstetrics (June 12th, p. 977), launched what really amounted to an attack on the general practitioners of these islands. Among his audience were probably the sons and daughters of general practitioners, and for these young people to have to hear it said that their fathers sometimes conducted midwifery in houses where "every sense of decency is violated," and "whose hands are often imperfectly cleansed and who seldom wear rubber gloves," must, to say the least, have been disconcerting. Perhaps it is merely the professor's method of encouraging his students to wash their hands!

Professor Kerr said that: (1) "Puerperal infection can be prevented by special preparation of patient, surgeon, and nurses," yet, in the recent annual report of the Coombe Lying-in Hospital (see *BRITISH MEDICAL JOURNAL*, June 19th, p. 1059) the statement appears that among the cases of puerperal sepsis that occurred twenty-four of these had had no vaginal examination, no laceration of perineum, and no operative intervention whatsoever, and all of these, no doubt, had been suitably prepared.

(2) Cases of sepsis occurring in maternity hospitals are due to "autogenous infection" (blessed words!) or to some prior infection. Might not the general practitioner, with equal justice, be allowed similar pleading when accused of causing sepsis?

(3) "Because a confinement upsets the rest of the work of a busy general practitioner he is inclined to hasten the delivery." I can assure Professor Kerr that if he and others like him had their way the general practitioner would soon cease to be busy, unless, indeed, filling up forms for the medical officer of health.

(4) Amongst "remedial measures" he advises "rubber gloves for midwives and nurses." This sounds childish, and one wonders how long these same rubber gloves would stay sterile in some of the back streets of our large cities, where mostly midwives work.

(5) Again (para. 4), "It is little short of a disgrace that at the present day the student on graduation is unfitted for the practice of midwifery." Surely a libel on these young men and women who qualify from our medical schools.

In your review, Sir, of this lecture you strike the nail on the head when you suggest that an improvement in housing conditions is much more likely to lead to a diminution of puerperal morbidity, and so would say any man in touch with the realities of the situation.

It is a pity, though, that the utterances of professors should bring discredit—as they are certain to do—on a large body of hard-working men endeavouring to do their duty in difficult circumstances.—I am, etc.,

VINCENT P. NORMAN, M.D. Durh.,

Bradford, Yorks, June 28th.

F.R.C.S.E.



## Obituary.

JOHN THOMSON, M.D., F.R.C.P. ED. AND LOND., LL.D.,  
Consulting Physician to the Royal Hospital for Sick Children,  
Edinburgh.

THE announcement of the death of Dr. John Thomson of Edinburgh has caused profound regret to a large number of friends and old pupils, for his qualities had endeared him to everyone with whom he came in contact. His health had been failing for over a year and he had been compelled considerably to curtail his usual activity. He died on July 2nd at his house in Edinburgh.

John Thomson was the son of Mr. Thomas Thomson, W.S., of Edinburgh, and was born in that city in 1856. He received his early education at the Edinburgh Academy, and then entered the University of Edinburgh, where he graduated M.B., C.M. in 1881. During the winter of 1881-82 he was resident to Professor Annaudale, and in the following winter house-physician to Sir Thomas Fraser. He subsequently proceeded for a course of post-graduate study to Berlin and Vienna, and became senior resident in the Hospital for Sick Children, Great Ormond Street, London, which gave him a definite bent towards the study of children's diseases. In 1887 he became a Member of the Royal College of Physicians of Edinburgh, and was elected a Fellow in 1888. In 1891 he took the degree of M.D. of Edinburgh University, and at a subsequent date, on retiring from the post of clinical lecturer on diseases of children to the University, the honorary degree of LL.D. was conferred upon him. Dr. Thomson's eminence in the subject to which he had devoted his professional life was recognized by the Royal College of Physicians of London, who this year created him a Fellow under the special by-law which permits the election of persons not members of the College who, in the opinion of the Council, have distinguished themselves in any branch of the science or practice of medicine.

Dr. Thomson was a member of the Edinburgh and Leith Division of the British Medical Association. He had filled the offices of secretary, vice-president, and president respectively of the Section of Diseases of Children at the Annual Meetings of the Association in 1898 at Edinburgh, in 1900 at Ipswich, and in 1914 at Aberdeen.

His outstanding position as an authority on various aspects of diseases of childhood was recognized by his appointment to the staff of the Royal Hospital for Sick Children, Edinburgh, to which, on his retirement, he was made consulting physician, and to be university lecturer on the diseases of children. He was also consulting physician to the Royal National Institution for Mentally Defective Children at Larbert, and an honorary member of the American Pediatric Society.

His principal published work, to the composition of which he had brought an immense amount of thought and study, was the *Guide to the Clinical Study and Treatment of Sick Children*. This appeared first as a small textbook for practitioners and senior students in the year 1898, when much less attention was paid to this department of medicine than it receives at the present time. By 1908, a second edition was required, when the book had reached twice the size of the original volume, and when the third edition appeared in 1921 it had developed into a very comprehensive manual. The fourth edition was completed towards the end of 1925. Thomson was, before all things, a bedside student, and his book, the fourth edition of which was translated into French and Spanish, dealt mainly with those aspects of diseases which are peculiar to childhood or show characteristic differences when they occur in early life; it was a most valuable contribution

to clinical medicine, partly because of the simplicity of its style and partly because it is a record of personal experience and close individual bedside study. Many other observations on subjects connected with diseases of children issued from his pen. One of his early works was a translation of Henoeb's *Lectures on Children's Diseases*, for the New Sydenham Society. *Congenital Obliteration of the Bile Ducts*, a monograph which appeared in 1892, was a record of original observations which later came to be recognized as of great importance. His interest in the condition of mental defect in children was manifested by a clinic which he conducted for many years for children suffering from mental defect, and which was of very great value to the poorer classes of the community. Articles on infantilism, congenital stridor, and many other subjects were contributed to various medical journals and systems of medicine and of diseases of children, and each of these is of permanent value for the record of acute clinical observation that it contains.

Nothing, perhaps, better revealed John Thomson's character, his knowledge, and his sympathy, than the little book he wrote three years ago "for the mothers of babies who are long in learning to behave like other children of their age." He called it *Opening Doors*, and, as we said of it at the time, it was pervaded by that indefinable charm we find in a work of art and could scarcely hope to discover in a book of medical advice. Every line revealed his insight into the mother's feelings. He not only told her how to strive to open the doors of her child's mind, but gave her comfort and encouragement as well. Though the advice was couched in simple language, it was given by a man with a profound knowledge of children. He interested himself also in physical defects, and was one of the principal founders of the Edinburgh Crippled Children's Aid Society.

It is chiefly as a skilful practitioner, however, that Dr. Thomson's name and personality will live among those who came into personal contact with him. He was, all his life, a sedulous taker of notes on cases, and he has been frequently known, at meetings for medical discussion, to produce a volume of closely written notes bearing on some case under discussion, and to describe in detail the original cause of the malady as noted by him during the patient's childhood ten or twenty years previously. Every call upon his time and his professional skill was answered with care and punctuality. He always found ample time to give to those who needed his skill, whether the patient was rich or poor. In him great ability was combined with a devotion to the advancement of medical knowledge on its clinical side, and few have been more respected for their painstaking labours or held in greater affection by their patients than was Dr. John Thomson.

In 1887 Dr. Thomson had married Isabel MacPhail, daughter of the Rev. Mr. MacPhail of Benbecula, by whom he is survived, as well as by three sons, of whom one is a member of the medical profession, and by two daughters. A funeral service was held in St. Andrew's U.F. Church, Edinburgh, on Monday, July 5th, and the interment took place at the Dean Cemetery in the presence of a large gathering, at which the medical profession was largely represented.

In response to our request, Dr. G. F. STILL, physician to the Hospital for Sick Children, Great Ormond Street, and professor of diseases of children at King's College, has sent us the following tribute to Dr. Thomson's memory:

With the passing of John Thomson of Edinburgh, British medicine, and, indeed, medicine the world over, is the poorer. In the particular department of medicine he had



DR. JOHN THOMSON.

(Photograph by Swan Watson, Edinburgh.)

taken for his own Thomson's influence was world-wide; his writings were known and read, not only in English-speaking countries, but in some of those parts of Europe where the work of British physicians often receives little attention. To the medical student of to-day Dr. John Thomson is probably best known as the writer of a book on disease in children, which, under the title *Guide to Clinical Study and Treatment of Sick Children*, appeared first in 1898, and, in much enlarged form, reached its fourth edition last year. Unique, however, as that book is in its excellence, it was not the source of Dr. Thomson's reputation. He was well known and already regarded as an authority upon disease in children before its appearance. His writings on congenital hypertrophy of the pylorus, and on pyelitis in infants, had drawn general attention to affections which, although previously described, were still unknown to most medical men. One of his earlier publications, in 1892, was a monograph on congenital obliteration of the bile ducts, a careful study, in which, as in all his writings, he showed a wide familiarity with the work of other observers in this country and abroad. He was greatly interested in mentally deficient children, and by his writings, accompanied as they usually were by admirable photographs, he did much to familiarize the profession with the appearances of mental defect in the infant. To those who knew Thomson his writings were the more valuable because of that unswerving truthfulness in statement which was one of his characteristics. In his speech, as in his writings, he was minutely accurate, and it was perhaps partly the constant effort at exact accuracy which gave a certain slowness and hesitancy to his speech at times.

In his later years there came increasing recognition of his services to the study of disease in children. He was made an honorary member of the American Pediatric Society, and also of the Canadian Society for the Study of Diseases of Children; the University of Edinburgh conferred the honorary degree of LL.D. upon him, and the Royal College of Physicians of London elected him a Fellow. But Thomson's ambitions were not for place or position, but for the service of others; for years it was his hope to write something that might be a help to the mothers of mentally defective babies in their task of training these children, and the outcome of his observations over many years was a little booklet called *Opening Doors*; it is worded with wonderful simplicity and in such a way as to avoid mention anywhere of mental deficiency. This was his last mother should be discouraged thereby. This was his last publication, and it was a great satisfaction to him when, some months ago, symptoms of serious illness began to threaten him, that he had accomplished his wish. Thomson's ideals were high. On one occasion, when some point of supposed difficulty had arisen as to the right course between two practitioners, Thomson, who was appealed to, replied that he did not think there was any real difficulty if the simple course were adopted of doing what one would wish done to oneself. This was the spirit of his life, and there was a gentleness with him which won the confidence of children. Alas! that he is gone from us; he will be missed indeed.

"Farewell, kind heart! and if there be  
In that unshored immensity  
Child-angels, they will welcome thee."

We owe to Dr. LEONARD FINDLAY, Professor of Pediatrics in the University of Glasgow, the following estimate of Thomson's eminence as a clinical investigator and teacher:

Through the death of John Thomson medicine, and especially that branch which deals with the diseases of children, has lost one of her greatest ornaments. For many years he has kept alight the torch of British pediatrics, and has made Edinburgh a Mecca for all students in that field of medical science. His was a name that was known in all corners of the earth where diseases of children are studied. The offering of a personal tribute to John Thomson gives an opportunity for the opening of the floodgates of sorrow at the loss of one of the greatest influences in the life of the present writer.

To know and to possess the friendship of John Thomson

was a great privilege. I well recall the first time that I met him. It was some fourteen years ago when, having heard that I purposed taking up the special study of diseases of children, he sought me out during the course of a medical meeting to give me good advice and words of encouragement. This was a most characteristic act on his part, for he was a true missionary, and was always searching for recruits for pediatrics. By his innate gentleness and charity and keen desire to help and encourage workers as true and faithful disciples. He seemed specially fond of the young worker just as he was of the young patient. He had the gift of mingling praise and criticism in such a proportion as to get the best out of everybody. Quite recently he was in great part responsible for instituting a clinical club comprising those interested in pediatrics in Scotland, and though he was much the eldest of the members he was the mainstay and director of our energies. It is this great gift which Thomson had for associating with the younger generation which gives us some comfort at this time, since we know that his great influence will still live and be perpetuated.

Thomson was a true physician. Perhaps this aspect of his character was best exemplified in his work among mentally defective children, which during his later years was undoubtedly nearest his heart. Here he laboured for years developing educational methods for the betterment of these helpless patients and dispensing comfort and encouragement to their parents. I think that of all his work this was the part of which he was most proud, if one could ever speak of Thomson being proud about anything he had done. John Thomson, of course, was a great clinician, and at the bedside his acuity of vision and ripe experience were an inspiration. Though not a laboratory man himself, he appreciated the great help that might accrue from this side and never lost an opportunity of becoming acquainted first-hand with such work. He was a wonderfully keen observer, and had the faculty of correlating his clinical observations with phenomena in other branches of medical science.

Never was there a man who had a finer nature. His charity and humility made him the most beloved of men. Thomson never spoke ill of anyone, and no one, I am sure has ever heard anyone speak ill of him. One could spend the whole evening in his company discussing many branches of medicine, and often those fields which he had made specially his own, and the work of others who held opinions diametrically opposed to his, without ever hearing from him anything but careful consideration of and praise for their efforts to solve a problem. Though he believed strongly in his own views, he was not infatuated with them, and always admitted the possibility of other explanations. He was of a most equable disposition, and never showed the least impatience while discussing views which quite apparently he could not believe to be true. It was from associations such as these that one learnt to appreciate the bigness of his heart and mind, and it is the memory of such associations which will bring home to his friends the great loss they have sustained.

We are indebted to Professor LORNA SMITH, Professor of Pathology in the University of Edinburgh, for the following tribute to his friend's memory:

In the death of Dr. John Thomson the Edinburgh Medical School has lost one of its leaders, a physician of high distinction, a teacher and colleague universally beloved, and a man who had supported and guided many movements for the betterment of the community. His personality drew to him a band of workers in his own and neighbouring fields of medicine, some of them ripe in experience like himself, who were eager to hear his criticism of their work, many of them students and disciples anxious to follow the teaching he gave. He won the hearts of all, and each carried away something of his enthusiasm and insight.

Though he had wide interests he concentrated his energies on clinical medicine, and one of the great lessons of his teaching is to be learned from his method of work. He held that the clinical observer should above all seek opportunities for wide experience. The man who desires

to obtain proficiency in clinical medicine must study multitudes of cases, so that his judgement in diagnosis and prognosis may be sure. At the same time, the physician must keep abreast of the advances of medicine in all fields, and he must be ready to apply in his practice the results of laboratory investigation. The ideal Dr. Thomson cherished was constant study and endeavour to widen experience, and he would point out that too often men cover up their deficiency in real medicine by a display of kindness and consideration for their patients. This appearance of virtue he utterly condemned.

In his early years he was appointed on the staff of the New Town Dispensary. In that office he found the opportunity for clinical study which he desired. The clinic in diseases of children held by him drew patients in large numbers. Mere numbers, however, did not satisfy him, and his investigations carried him far into pathology and therapeutics as well as anatomy and physiology. He often recalled the time he had spent in the dispensary, and he seemed to regard this as the most fruitful period of his professional life. When wards in the Royal Hospital for Sick Children were put in his charge, his work in them was a continuation of what he had begun in the dispensary. His work in the district was a demonstration of scientific zeal and enterprise. While he was working on the treatment of diseases of the thyroid gland I had the good fortune to accompany him on his visits in the district, and can never forget this great investigation, carried out in circumstances which might have been held to make accurate observations impossible.

In this way he attacked many problems in medicine, and contributed to them all. He had a special interest in the subject of mental deficiency, and at the Children's Hospital he held for many years a clinic in the subject. To advance the knowledge of this very obscure branch of medicine was a very characteristic interest. His purpose was to study the conditions of failure in mental and bodily development in all its phases, and to give guidance to the mothers of the patients. He was a pioneer in this method of dealing with the subject, and he was the first to include in his care of these difficult patients the necessary instruction of the parents.

I have referred only to his professional work, but in the background of his life there were many other interests. He was an angler who had a sportsman's acquaintance with the streams and lochs of his native country. He was a reader of many kinds of books. At one time his interest led him into the study of old French poetry. Lately he attended with great enjoyment the meetings of the English Association, and to his intimate friends he would reveal a sensitive spirit of literary appreciation and criticism. He had, above all, broad sympathies. He was accessible to all, and the serious attention he gave to what was put before him would sometimes embarrass the careless advocate of an ill considered opinion. Every form of sincere human endeavour after truth, and the teaching of the past as well as the present, appealed to him. Nothing narrow in regard to religion, or literature, or any human activity found a place in his conception of life.

#### W. H. CLAYTON-GREENE, C.B.E., M.B., F.R.C.S.,

Formerly Surgeon and Lecturer on Surgery, St. Mary's Hospital.

As briefly announced in our last issue, the death of Mr. William Henry Clayton-Greene occurred on June 30th, at his home in Guernsey, whither he had retired nearly two years ago. He started his medical career at Cambridge, and having won an open scholarship to St. Mary's Hospital in 1898, took the M.R.C.S., L.R.C.P. in 1900, and the M.B., B.Chir.Cantab., and the F.R.C.S.Eng. in 1901. In the following year he was appointed surgical registrar to St. Mary's Hospital, and from then onwards he remained connected with it till the date of his retirement. He became surgeon to out-patients in 1905, and full surgeon in 1911. In addition, he was on the surgical staff of the French Hospital from 1903 to 1918, and of the Hampstead General Hospital from 1907 to 1910.

On the outbreak of war he joined the staff of Lord Tredegar's steam yacht *Liberty*, specially converted into

a hospital ship; but it was soon seen that hospital ships with the fleet would have little value, and he returned to London. He was on the Admiralty emergency list of surgeons willing to go at short notice to any ports where large numbers of naval wounded were expected, and later, in 1915, joined the surgical staff of King George V Hospital, under Colonel (later Major-General Sir) Murray Irwin, A.M.S. Later, when the Great Central Hotel was converted into the Prince of Wales's Hospital for Officers, he was on the active surgical staff there. After the war he became consulting surgeon to the North Herts and South Bedfordshire Hospital, and honorary surgeon to the Radium Institute, in the activities of which he always took a keen and sympathetic interest.

In 1907 Mr. Clayton-Greene became dean of the Medical School of St. Mary's Hospital, and continued in that office for four years. He was an examiner in surgery for the Conjoint Board, the Universities of London and Cambridge, and an examiner in anatomy in the Primary Examination for the Fellowship of the Royal College of Surgeons. His best known writings include the editing of *Pye's Surgical Handicraft*, and the section on diseases of the tongue in *Choyce's System of Surgery*.

Mr. Clayton-Greene gained a great reputation both as a surgeon and as a teacher. As a surgeon he was a peculiarly acute observer of details, and thereby a good diagnostician; he possessed a brilliant technique, was quick, neat, and eminently safe and sure. Although he wrote little, and attended scientific meetings but rarely, his name was known widely outside London, and, indeed, abroad as well. As a teacher he was in the direct line following such great men as Edmund Owen and Herbert Paget, and it was not difficult to trace their influence on his methods. From his earliest days at St. Mary's he rapidly gained an ascendancy among students which he never lost. There will be many who will never forget their experiences when in that select band—"the front row"—nor incidentally will ever forget the things he taught them. His teaching was so direct, so forceful, so devoid of unnecessary or confusing description, that it remains with many of his students as clear to-day as when they heard it years ago. In 1921, when the system of clinical units was in its infancy, the authorities of St. Mary's Hospital started, on their own initiative, and without outside support, a medical and a surgical unit. Of the latter Mr. Clayton-Greene took charge for one probationary year, during which its success was emphatically demonstrated and his great gifts as a teacher given full opportunity.

To those who knew him intimately he revealed a charming personality, a loyalty which nothing could shake, and a devotion to little children which was probably the strongest—though the most unsuspected—thing about him. He certainly did not suffer fools gladly, and the lazy and the inefficient dresser was sent about his business in a manner which left him no illusions about the work during the period of his office. One of the strongest traits of his character was punctuality; he could always be relied upon to be just ahead of time, and so skilfully did he order his doings that even the uncertainties of surgical practice rarely made him deviate from his announced time. To serve him as a dresser, a house-surgeon, or as his assistant was the most stimulating experience, for he set himself such a high standard that it was almost impossible not to try in some small way to follow that standard also; and those who did so may have had a very strenuous time, but they enjoyed every moment of it.

During the latter part of the war he pricked his finger on a splinter of bone, while operating on a bad war wound. He went down with a terrible streptococcal infection, and in turn his life, his arm, his forearm, and his finger were despaired of. He saved them all. He suffered also from an unrecognized diphtheria, and had a transitory typical diphtheritic palsy. These experiences, in addition to very hard work, left their mark upon him. For many reasons he came to the conclusion in 1924 that he would prefer to retire. There can be little doubt that at the age of 49, with an already high position in the surgical world of this country, he had everything at his feet; and yet he preferred to go, preferred to retire when young enough to enjoy his possessions. He went to live in Guernsey, where,

in lovely surroundings, he made surgery his hobby and his recreation in life, and did just enough to maintain his interest. His illness was of less than a week's duration, and at the early age of 51 he passed peacefully away.

R. M. H.-J.

We are indebted to another friend and former colleague for the following personal appreciation:

The sudden death of Mr. Clayton-Greene has come as a great shock to a large circle of friends, both in the medical profession and among the general public. No rumour of his illness had reached us from Guernsey, and the paragraphs appearing in only one or two morning papers on July 3rd were all the more stunning because they found his friends quite unprepared. Less than two years ago he surprised us all by giving up prospects which, to a man with ordinary ambitions, must have seemed the brightest; but "Clayton" was never a man with ordinary ambitions, and it was a real desire for quietness and leisure that took him away from the turmoil of London to the peace of Guernsey.

It is nearly thirty years since I first met Clayton-Greene, and every year our friendship has only served to deepen and confirm my first impressions of him. One could not be with him for more than a very short time without realizing that one had to deal with a man of very marked individuality and of more than average ability. Others can speak of his technical skill as a surgeon, of his wonderful teaching powers, of his intimate and detailed knowledge of everything which bore on the science of his profession. Only to those who lived with him was it given to know what anxious thought he gave all the time to every case under his care, and how much of his life he gave to his patients. To be house-surgeon to Clayton-Greene was the ambition of every first-class student, and no better training in efficient workmanship could be found. True, he did not suffer fools gladly, and he was unsparing in his condemnation of any slackness or inefficiency which in any way endangered the success of an operation or militated against the comfort of a patient.

There have been great surgeons who have been able to put completely out of their minds any case except when it was immediately before them, who, when they have done all that their skill can do, can go away with an easy mind. Others equally great seem to have their cases always before their eyes and always in their minds, and it was to this second class that Clayton-Greene belonged. As his fame grew he began to get an unduly large proportion of cases of great severity, and there is little doubt that the strain of dealing with these cases was the main cause of his giving up his surgical practice in London.

In little things he could be brusque and offhand in manner, but in the more serious matters of life he had a depth and sincerity of feeling that, once experienced, formed an unbreakable bond of friendship and love. Few men have more deeply impressed themselves on their generation, and seldom has a man been so much missed as "Clayton" has been at St. Mary's. It is some consolation to know that his two years at Guernsey have been years of happiness, to know that he never regretted giving up, and to know how greatly he was loved and esteemed in the island. To his widow and children we offer our deepest sympathy in their great loss, and the knowledge that his memory will be held dear by the many colleagues, students, patients, and friends who owed so much to him and loved him so well.

JOHN MUNRO MOIR, M.D., V.D.,  
Inverness.

THE death took place at his residence in Inverness, on June 29th, of Dr. John Munro Moir, one of the oldest and most respected practitioners in the North of Scotland. Dr. Moir had been ailing for some time, but had until recently been able to do a considerable portion of his usual work. He studied in Aberdeen, taking the degrees of M.B., C.M. there in 1876, and proceeding to the degree of M.D. in 1878. He settled in practice in Inverness early in life, and became one of the leading practitioners in that city and throughout the North of Scotland.

Despite a very busy life in medical practice, his interests

were wide, and he had found leisure for many other social activities. For a time he acted as a member of the Inverness Town Council, and he took a very intimate and active interest in the work of the British Medical Association. Dr. Moir had been a member of the Association for almost fifty years, having been elected in 1878. For a number of years he acted as honorary secretary and treasurer of the Northern Counties of Scotland Branch, and the esteem in which his work for the Association was held by his fellow members was evidenced by his election as president of this Branch in 1898, an honour which was again conferred upon him in the year 1924-25. He was elected chairman of the Inverness Division in 1914, and held this post through the years of the war till 1919. His outstanding position in one of the departments of medicine to which he had paid particular attention was recognized by his election as vice-president of the Section of Medical Sociology at the Annual Meeting of the Association held in 1914 at Aberdeen. In addition to his interest in the local work of the Association, Dr. Moir played a considerable part in its central organization. Thus, he acted as representative of the Northern Counties of Scotland Branch between the years 1904 and 1907, and again from 1913 to 1918. During a great part of this time he was also a member of the Council of the Association, acting in this capacity from 1907-8 to 1910-11, and again from 1912-13 to 1917-18. The committees of the Association on which he served included the Organization, Journal, and Medico-Political Committees, and at the time of his death he had been for some years a member of the Scottish Committee. Dr. Moir was consulting surgeon to the Northern Infirmary at Inverness, honorary physician to the Northern Counties Institute for the Blind, and a medical referee under the Workmen's Compensation Act. For many years he had taken an active interest in volunteering, and held the Volunteer Decoration. On the formation of the Territorial Force his activities were transferred to this organization, and he ultimately attained the rank of lieutenant-colonel in the Territorial R.A.M.C. During the war he rendered valuable services in connexion with the work of the depot of the Cameron Highlanders at Inverness.

He will be much missed in the North of Scotland, where he was greatly respected as an energetic, unassuming, and skilful practitioner, and where his work in connexion with the organization of the medical profession was highly appreciated by his fellows.

We regret to record the sudden death, on June 20th, at his residence in Worthing, of Dr. ALLAN GORDON RUSSELL CAMERON. He was born in 1868, and was the son of Mr. Donald C. Cameron of Wakenaam, British Guiana. He received his early education at University College School, and was afterwards a student at St. Mary's Hospital. He obtained the diplomas of M.R.C.S., L.R.C.P. in 1891, and in the following year graduated M.B., B.S. at Durham University; in 1895 he took the D.P.H. of Cambridge. In 1896 he was appointed to the infectious hospitals service of the Metropolitan Asylums Board, and in 1901 was instructed by the board to make a special investigation into the subject of "return" cases of scarlet fever and diphtheria. On this important and difficult question he submitted a very valuable report, and as a result certain recommendations with a view to the attainment of a higher standard of efficiency in protecting the public from infection were made by the medical superintendents and adopted by the board. During his service under the board Dr. Cameron was granted leave for service in India in connexion with plague administration, for which he received the special thanks of the Government. In 1905 he was appointed county medical officer of health for West Sussex and chief school medical officer to the West Sussex Education Committee. In 1913 he became deputy medical officer of health and chief tuberculosis officer for the county of Durham, and held these appointments until his retirement in 1923 on account of ill health. Dr. Cameron took a prominent part in the work of the Society of Medical Officers of Health, and was an ex-president of the Northern and Southern Branches. His death will be deeply felt by his many friends, who held him in high regard for his exceptional qualities both of mind and character.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons read the Boards of Guardians (Default) Bill a second time on July 5th by 341 to 124. The Minister of Health explained that the bill had been brought forward in consequence of the policy pursued by the West Ham Board of Guardians. He repeated that the Government intended to introduce next year a general measure for reform of the Poor Law system, whereby boards of guardians would be abolished and their functions transferred to other bodies. The bill provided that the Minister of Health, when convinced that a board of guardians had exceeded its functions, could supersede them by appointed persons. On the same date the House approved the continuance for another month of the Regulations made under the Emergency Powers Act. The Report stage of the Finance Bill was commenced on July 6th, and on the following day the House considered Supplementary Estimates for expenditure consequent upon the recent general strike and the coal stoppage.

On July 6th Dr. Edgar Collis, Talbot Professor of Preventive Medicine in the Welsh National Medical School, Cardiff, addressed the Health and Housing Committee of Unionist Members of Parliament at the House of Commons. Dr. Fremantle was in the chair. Professor Collis said the coal mines were the Cinderella of public health. Health provisions underground were not made by the Government, by local authorities, or by employers, nor was there a demand among the miners for such provisions. He himself had not given evidence before the Royal Commission about this aspect of the coal problem because he did not wish to bring health regulations in mines into a political controversy. The health conditions in the mines in South Wales and Lancashire were not so good as in those of Nottinghamshire and Derbyshire. Nowhere was there a supply of drinking water underground, nor such provision for obtaining and taking food as was found in factories. He thought it would be possible to arrange a system whereby food was sent down the shaft and a place arranged where men could eat it. From the ordinary point of view the life of the miner was specially healthy, but in deep pits, with temperatures above 70°, heavy work threw an enormous strain on him, and a man might lose 10 lb. weight in a single day. Dr. Collis doubted whether in these deeper pits an increase in working hours would mean increase in output. Much absenteeism in mines was due to diseases such as rheumatism, which might not keep a surface worker away from a factory, but which made work at the face dangerous for a man who could not move quickly. The miners also had their occupational diseases, such as "beat-elbow" and "beat-knee." He alluded to the fact that miners were never taught how to do their work. By the use of the metronome and motion study a more efficient rhythm had been obtained experimentally, and men who had been taught this had been found to be still using it months afterwards.

### Coal Mines Bill.

In the course of the debates on the Coal Mines Bill some references were made to questions of health. Dr. Watts, speaking as a general practitioner who for twenty-five years had worked in an industrial and mining area of Lancashire, said that the miners' calling was the healthiest of occupations in the country—far healthier than the cotton trade; but he admitted that it was a dangerous occupation. Mr. Barr said that the returns of the Registrar-General of Births and Deaths did not support this, and Mr. Lee asked whether it was not true that only the healthiest men took up mining. Mr. Jenkins produced a miner's pay ticket which, he said, showed that the colliery doctor's payment was secured by the owners deducting the money from wages. Dr. Watts retorted that at the present time nothing could be taken from the pay of the miner in that way, because he was insured under the National Health Insurance Acts. Mr. Jenkins said that the payment of 8d. a week was in addition to that. Mr. Paling said that official returns of the Mines Department showed the number of fatal and other accidents occurring in the mines in each complete year before and after the introduction of the Eight Hours Act and the Seven Hours Act respectively, and the number of persons engaged in the mining industry during each such year. The average killed each year (after allowing for the three months off in 1921) in six years under the Seven Hours Act was 1,147. The figures were 1,407 under the Eight Hours Act, or 260 fatal accidents more per year under the Eight Hours Act than under the Seven Hours Act. Sir Arthur Steel Maitland (Minister for Labour) said that as far as the facts justified any inference of that sort, it was that always in the last hour of work there had been somewhat of an increase in the accident rate, but that increase, if anything, had been rather greater with a seven-hour day, possibly under greater pressure, than it had been with an eight-hour day. The only conclusion that could quite safely be drawn on the question of accidents was that year after year the accident rate had diminished, partly through care, partly through more appliances, partly through general overseeing. At the close of the debate Colonel Lane-Fox (Parliamentary Secretary, Mines

Department) dealt with the figures about accidents which Mr. Paling had cited. He said that during the eight-hour period the figures were certainly higher, but the end of the eight-hour period coincided with the time when stone dusting came in, and there was a marked reduction in coal dust explosions. In the first period there were 150 deaths per annum from accidents due to explosions, but during the second period there were fewer than 20. That showed that a large proportion of the accidents were due to explosions and not to fatigue or the physical condition of the men.

The bill was read a third time by 332 to 147.

### Bills.

The Report stage of the Bethlehem Hospital Bill, which had come down from the House of Lords, was taken in the Commons on June 30th.

The Royal Assent was given on June 30th to the Criminal Justice Amendment Act, Imperial War Graves Endowment Fund Act, and to several Acts confirming hospital charity schemes.

On July 6th the House of Lords read the Mines Bill a second time by 176 to 17. In the preceding debate Lord Arnold said half the miners worked in seams 4 ft. or less in height, often in very high temperatures. He contended that the miner's occupation was very unhealthy.

**Ventilation of Houses.**—Replying, on July 1st, to Commander Kenworthy, who drew attention to the sanctioning of houses with no chimneys or adequate flue outlets from the bedrooms, Mr. Chamberlain said he could not agree that efficient ventilation must be provided by chimneys or flues. Model by-laws issued by the Ministry of Health provided that adequate means of ventilation should be provided for every habitable room.

**Incidence of Venereal Diseases.**—On July 5th the Minister of Health informed Dr. Vernon Davies that he was advised that the returns from the treatment centres indicated that there had been a considerable reduction during the past five years in the incidence of venereal diseases, and particularly of syphilis, among the civilian population. One of the objects of the centres was to render the patients non-infective with a view to preventing the spread of venereal diseases, and he was advised that this part of the work of the centres had contributed specially to the decline in the incidence of these diseases. The recorded mortality from syphilis, and other conditions due to syphilis, had fallen considerably since the institution of special measures for the treatment of venereal diseases.

**Mental Defectives.**—On July 5th Sir K. Wood, in reply to Sir C. Rawson, said that he had received representations from local authorities with regard to the increase of mental defectives in the country and the increasing cost of maintaining and extending institutional treatment, but the Minister of Health was not aware of evidence to indicate that the incidence of mental defect was increasing. Though the cost of maintaining and extending institutional treatment was heavy, the Minister could not accept the suggestion that it was usually either unsatisfactory or ineffective. The Mental Deficiency Act of 1913 already provided machinery by which defectives could be segregated or placed under guardianship or supervision. The absence of sufficient institutional accommodation was hampering the operation of the Act, and local authorities had been urged to make further provision.

**Venereal Disease in the Navy.**—On July 1st Mr. Davidson informed Dr. Vernon Davies that the incidence in the navy at home and abroad of syphilis and gonorrhoea during the years 1922, 1923, and 1924 (latest figures available) was as follows:

	Ratio per 1,000 sick daily.		
	1922.	1923.	1924.
Syphilis (first record) — —	0.70	0.56	0.53
" (latest record) — —	1.16	1.02	0.84
Gonorrhoea (acute) ... — —	3.17	2.89	2.68
" (sequelae) — —	1.28	1.29	1.23

He regretted that no statistics were available of the number of cases in which preventive measures were adopted.

**Invaliding from the Navy.**—Mr. Bridgeman, on June 30th, replying to Major Hore-Belisha, who asked what procedure was followed in the case of men invalided from the navy who desired to question the decision of the medical officer, said that all representations made by the rating prior to the medical survey were carefully considered by the board of survey. These and any further representations made by him or on his behalf subsequent to the invaliding were carefully investigated by the medical authorities at the Admiralty, in conjunction with the rating's medical history and with reference to conditions of his service. Any medical report which might be the basis of the complaint was referred to and taken as evidence, subject to further investigations or other evidence.

**Substitution of Margarine for Butter.**—Sir Kingsley Wood, on June 30th, in reply to Mr. Lansbury, who asked if the Minister of Health had consulted his medical advisers before recommending the West Ham Guardians to substitute margarine for butter in the dietaries prescribed for patients in the institution at Whipps Cross, said that the Minister had not recommended the West Ham guardians to make the substitution suggested. The dietary of this institution was supervised by the medical officer of the institution. With regard to the dietetic value of margarine Sir K. Wood referred to the special report on "Diet in relation to normal nutrition," issued by the Ministry in 1921.



**Areas affected by the Coal Strike.**—On July 1st the Minister of Health stated, in reply to Sir H. Brittain, that he was keeping in constant touch, through his general inspectors, with the areas affected by the coal stoppage. In reporting to him they had, at his request, paid special attention to the condition of the children. A large amount of assistance was being given by the supply of meals and other food, and there was no evidence of malnutrition of children.

**Invaliding in the Air Force.**—On July 1st Sir P. Sassoon informed Major Hore-Belisha that when an airman was dissatisfied with the decision of a board of medical officers (normally three) that his disability was not directly attributable to service, and appealed to the Air Ministry, he was asked to furnish the grounds of his appeal if not already given in his letter, and in particular any evidence additional to that considered by the board. On receipt of the information the decision of the invaliding board was reviewed in the light of all the facts and of any further evidence available, and if the case appeared to warrant it a further board would be held.

#### Notes in Brief.

Mr. Neville Chamberlain stated that a veterinary qualification, though desirable, is not essential for the examination of imported meat from the public health point of view.

The new Milk and Dairies Order will come into operation on October 1st. Its terms have been settled, and copies should be available in the course of a week or so.

On July 6th Dr. Haden Guest introduced a bill to provide for minimum rates of wages and hours of labour in industries protected from foreign competition, and it was read a first time.

The death rate per 1,000 among all labour, surface and underground, in the gold mines in the Gold Coast is approximately 8.5. No reliable figures are available as to the sickness rates.

The Committee considering the liquor control system in the Carlisle area is still taking evidence, but may consider its report in the autumn.

## Universities and Colleges.

### UNIVERSITY OF OXFORD.

At a congregation held on July 3rd the following medical degrees were conferred:

M.D.—W. V. Robinson, H. S. Soutar.

M.Ch.—H. A. B. Whitelocks.

B.M.—T. H. Sellers, R. W. A. Simmons, D. Lurie, G. H. Crisp, A. V. Clemmey, R. A. Hamilton, F. J. Sale, C. R. Croft, G. P. Therold, H. E. Cuthbert, W. R. Wood, O. R. Tisdall, Rosa S. Wordsworth, Margaret N. Jackson, Constance L. Pattullo.

### UNIVERSITY OF CAMBRIDGE.

The following candidates have been approved at the examinations indicated:

M.Ch.—T. M. Thomas

M.B.—B. Cunn. (Part I), S. J. Armstrong, B. Blaxill,

Elliot, R. W. B. Ellis, J.

G. J. Gross, M. J. Har,

D. P. Lawson, R. Marul

J. Morris, C. G. E. Pl

Walke

(Part

ology.

W. F. Cooper, R. K. De

A. B. Eddowes, J. R. E.

H. J. Heathcote, G. C.

S. Lev-Simpson, W.

H. E. Nelson, H. W. Nicholson, F. B. Parsons,

L. A. Richardson, F. W. Roques, K. G. Salomon, G. Simon,

R. E. Smith, A. W. Spence, R. S. Starkey, B. G. Tait, H. B. Trimmer,

V. B. Wigglesworth, J. G. Wigley, H. L. Wilson, F. G. Winterton,

A. T. Worthington, H. R. Yougman.

### UNIVERSITY OF LIVERPOOL.

The following candidates have been approved at the examinations indicated:

M.D.—R. G. Cooke, C. W. Healey.

M.B.—CH.B.—18<sup>th</sup> R. G. Walsley, 24<sup>th</sup> R. M. Ainsworth, 25<sup>th</sup> F. Galloway,

26<sup>th</sup> F. Murgatroyd. (Part II): Grace A. Austin, B. Brickman,

G. E. Church, J. L. Clegg, D. Coburn, R. F. Corlett, J. C. Edwards,

Elliot, M. Gelling, E. H. Glynn, A. J. Goss, Dorothy H. Gough,

J. Halton, D. G. Henry, B. S. Jarvis, T. A. Jermy, A. N. Jones,

C. Kaufman, A. T. Krajewski, J. S. Logan, D. B. Macaulay,

W. A. McCurdy, J. C. McFarland, G. McLoughlin, J. Morgan,

G. W. Paton, H. E. Pearson, Mary T. Penrice, D. E. P. Pritchard,

A. V. Russell, M. R. Sheridan, Mary A. Silcock, N. P. Slade,

I. Thomas, G. D. Thompson, J. E. Wallace, Kathleen M. Ward,

A. K. Wilcox, Nora M. Wilson. (Part I): J. G. Hattingh, B. E. Jackson,

G. W. Phillips, J. Williamson. (Part II): S. W. Adler,

A. B. Anderson, T. Bleazard, W. S. Brindley, H. O. Calvey, A. N.

Cameron, 6<sup>th</sup> J. E. Cameron, S. Canter, E. Cohen, P. R. Craddock,

W. S. Creer, A. Dala, A. Dodd, T. L. Dowell, W. J. Eastwood,

Lilian W. Edwards, Ralph M. Fennell, J. J. Graham, Elsie A.

Griffiths, G. T. Harris, 6<sup>th</sup> D. Irvine, K. Jilani, B. N. Johnson,

G. V. Jones, I. Kossew, 6<sup>th</sup> T. Lasker, Thoresa J. Lee, J. L. Lewis,

F. E. Lomas, J. McHugh, T. C. Newman, J. Pasvolaky, J. W. Pickup,

E. E. Prebble, C. Rigby, N. W. Riley, G. L. Roberts, J. B. Rushton,

M. Silverstone, V. J. M. Taylor, J. P. Thomas, S. L. Tunnicliffe,

A. J. Walsh, E. N. Wardle, P. H. Whitaker, A. L. Williams,

R. L. Wanne.

D.P.H.—W. E. Haigh, J. E. Power, J. A. Scott, A. E. Wall.

DIPLOMA IN TROPICAL HYGIENE.—W. J. Aitken, N. High-Peacock,

T. Cullen, E. G. A. Don, H. P. Fowler, D. Lennox, A. G. Mackay,

F. Oppenheimer, S. A. Talib, N. S. Turnbull.

1 First class honours.  
2 Second.  
3 Dist.

4 Distinction in surgery.  
in midwifery.  
in public health.  
toxicology.

### UNIVERSITY OF BIRMINGHAM.

DR. LAURENCE BALL, assistant to the chair of medicine and physician to Queen's Hospital, has been appointed to be joint Professor of Medicine. Professor Leonard Gamgee, M.S., F.R.C.S., has been elected the representative of the University on the General Medical Council, in succession to Sir Gilbert Barling, Bt., resigned. At a congregation held on July 3rd the following medical degrees were conferred:

M.D.—Gladys M. Evans, V. G. Williams.

M.B.—CH.B.—Marjorie E. Crump, A. P. Downie, Margaret L. A.

G. Green, Joan E. Greener, G. S. Hall,

A. J. Lea,

Neale,

de N. U.

Near,ng,

Nellie Wilkes.

### UNIVERSITY OF LEEDS.

At a congregation of the University held on July 3rd the Vice-Chancellor conferred the following degrees:

M.D.—A. L. Taylor (with distinction), D. R. Allisoo, P. Rosenbloom.

CH.—

M.B.—

Harfall,

ngworth,

itric M.

erman,

hinker.

\* With second-class honours.

### UNIVERSITY OF DUBLIN.

At the later summer commencements in Trinity term held on June 29th the following were among the degrees conferred:

M.Ch. (honoris causa).—Sir Berkeley G. A. Moynihan.

M.D.—F. J. O'Meara, W. B. J. Pemberton, G. P. T. Saunders,

A. H. Thompson, R. B. Jackson, W. J. Powell.

M.B.—B.Ch.—B.A.O.—G. T. L. Archer, Henrietta Armstrong, D. Brett,

H. A. Brittain, H. O. Evelyn E. Cooney,

J. Craig, G. E. Dodds, E. Hadden,

E. H. Hall, G. R. L. Lowther,

J. G. McDowell, D. St. C. Mackenzie, Isabella K.

M'Nelly, E. E. Malono, R. H. Mitchell, C. G. Nel, H. Nelson,

H. M. Nevin, Kathleen I. Purdy, M. A. W. Roberts, E. E. Satchwell,

S. Smyth, R. T. P. Tweedy, C. H. Wilson, T. F. M. M. Woods.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

#### ELECTION TO THE COUNCIL.

At a meeting of the Fellows on July 1st four Fellows were elected into the Council to fill the vacancies occasioned by the resignation of Mr. James Sherron, C.B.E., and Sir Charles Ballance, K.C.M.G., C.B., and by the retirement in rotation of Mr. Walter G. Spencer and Mr. Ernest W. Hey Groves. The result of the poll was as follows:

	Votes.	Fellows.
ERNEST WILLIAM HAY GROVES	532	2
GROHORE GARY TURNER	426	3
VINCENT WARREN LOW, C.B.	398	38
VICTOR BONNEY	361	8
FRANK LEST C.B.E.	306	27
	270	11
	264	10
C.B.E.	259	1
	222	5
inc.	221	5
	181	18
	172	4

In all, 1,100 Fellows voted (including 184 Fellows resident out of the United Kingdom), 1,036 sending their ballot papers through the post and 4 voting in person. In addition, 2 voting papers were found to be invalid. Mr. Low becomes substitute Member of Council for Mr. Sherron until July, 1933, and Mr. Bonney becomes substitute Member of Council for Sir Charles Ballance until July, 1930.

### ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

At the monthly business meeting of the College held on July 2nd the following candidates, having passed the Final Qualifying Examinations under the conjoint scheme of the Irish Royal Colleges of Physicians and Surgeons, were duly admitted to the Licences in Medicine and Midwifery of the College:

Sybil Atkinson, Henrietta Carson, J. J. Fant, J. E. Harris, J. A. Hynes, P. Kennedy, W. Kingsberg, J. Molloy, L. P. F. Nolan, W. O'Connor, J. O'Neill, T. S. Osborne, J. Owens, Catherine A. Quinn, C. Whitehead.

At the same meeting a letter was read from the secretary of the Committee of Management stating that P. Moran and N. K. Henderson had passed the examination for the Diploma in Psychological Medicine.

A letter was also read from the secretary of the Executive Council, Saorstát Éireann, forwarding a copy of a draft Order which has been prepared for the purpose of adapting the charters of the College in accordance with Section 1 of the Adaptation of Charters Act, 1926, and asking if the College has any observations to make thereon.

The College unanimously approved the draft Order.

## Medical News.

A CONGRESS of chemists has been arranged by the Society of Chemical Industry in connexion with its own forty-fifth annual meeting. The congress, which will be held in London, will open on Monday, July 19th, and continue until Friday, July 23rd. A joint meeting of the Biochemical Society with the London Section of the Society of Chemical Industry, to be held at the Hotel Great Central on Tuesday, July 20th, will be devoted to a discussion on hormones; it will be opened at 11 a.m. by Dr. H. H. Dale, F.R.S., with a paper on the experimental study and use of hormones. He will be followed by Dr. H. W. Dudley, who will deal with the chemistry of the pituitary gland and of insulin; by Mr. F. H. Carr, who will discuss the commercial production of hormones; by Dr. H. A. D. Jowett, who will speak on the history of adrenaline; by Professor G. Barger, F.R.S., whose subject will be recent progress in the chemistry of thyroxine; and by Dr. J. W. Trevan, who will explain the biological assay of hormones.

Nature states that at an extraordinary general assembly of the International Research Council on June 29th the Executive Committee agreed to omit from the statutes words which have limited membership to allies and neutrals. On the motion of the president of the Royal Society a resolution was unanimously adopted deciding to invite Germany, Austria, Hungary, and Bulgaria to join the International Research Council, and the unions attached to it.

DR. R. M. COURTAULD, a Cambridge medical graduate, has given an endowment to Pembroke College for the purpose of establishing a studentship in physics and cognate subjects. The student appointed will be called the "Stokes student," in memory of Sir George Gabriel Stokes, formerly Master of the College. No distinction of sex will be made in awarding the studentship, but if a man is appointed he will be required to become a member of the college. Preference will be given to graduates of the university. Candidates must be between the ages of 23 and 30, and must have shown capacity for research in mathematical or experimental physics, or in cognate subjects. The student will be expected to devote himself to research in Cambridge unless permitted for a limited time to conduct his researches elsewhere; he may give a course of lectures each term. The value of the studentship will be between £400 and £450 a year, and the tenure will be for three years, with possible renewal for a further five years.

FROM January 3rd to February 20th 2,359 fatal cases of plague occurred in the Dutch Indies.

THE annual general meeting of Fellows of the Royal Society of Medicine was held in the Barnes Hall, 1, Wimpole Street, on July 1st. The President, Sir St. Clair Thomson, in introducing the annual report of the Council, drew attention to some of the outstanding events of the session, more especially the important developments in regard to the library. Dr. R. H. Cole expressed the gratitude of the Society to Sir St. Clair Thomson for his gift of a presidential chain and badge of office, and a warm vote of thanks to the outgoing president for his generous services was carried on the proposal of Dr. Robert Hutchison and Mr. Walter Spencer. The president for the ensuing year, Sir James Berry, and the other officers were declared duly elected. The Council of the Society has awarded the William Gibson Research Scholarship to Miss Alice Bloomfield, who will hold it for two years.

THE North-East London Post-Graduate College is holding at the Prince of Wales's General Hospital, Tottenham, N.15, a special vacation course from July 19th to 31st. It will include as on previous occasions practical demonstrations of clinical and "side-room" methods each morning from 10.30 to 12.45, demonstration of groups of selected illustrative cases from 2 to 2.45 p.m., general hospital work, in-patient and out-patient clinics, operations, demonstrations in the special departments of the hospital, and at 4.30 p.m. each day a clinical lecture, the opening lecture of the first week being by Dr. T. Watts Eden on ante-natal care as it affects the child in utero, and that of the second week at 3 p.m. by Lieut.-Colonel L. W. Harrison on the diagnosis and treatment of syphilis, to be illustrated by cinematograph films. On the Saturday morning at 11 there will be demonstrations of cases illustrating the diagnosis and treatment of the infectious fevers, at the North-Eastern Fever Hospital, St. Ann's Road, N., and of typical cases of mental disease at the Colney Hatch Mental Hospital, New Southgate, N. Luncheon will be obtainable in the neighbourhood of the hospital, and tea will be provided in the hospital each day at 4 p.m. The fee for the course is 5 guineas, or 3 guineas for either week. The names of those wishing to attend should be sent (by Friday, July 16th, if possible) to the Dean of the College or to the Secretary of the Fellowship of Medicine, at 1, Wimpole Street, W.1.

A MEETING of the Biochemical Society will be held this day (Saturday) at Oxford beginning at 2.30 p.m. Two demonstrations will be given and a number of papers will be read.

THE Fellowship of Medicine has arranged a clinical demonstration in surgery by Mr. Roeyn Jones at the Royal National Orthopaedic Hospital, on July 12th at 2 p.m., and one in ophthalmology at the Royal Eye Hospital on July 14th at 3 p.m. by Mr. Griffith; both demonstrations are open to medical practitioners without fee. A late afternoon course will be held at the West End Hospital for Nervous Diseases from July 19th to August 12th. Practical courses in obstetrics and child welfare have been arranged at the City of London Maternity Hospital; the duration of each course is one week. Practical courses in anaesthetics can be arranged. From August 9th to 14th there will be an intensive course at the Brompton Hospital; an all-day course in diseases of children at the Queen's Hospital from August 16th to 28th; and an all-day course at Queen Mary's Hospital in medicine, surgery, and the specialties from August 23rd to September 4th. Copies of all syllabuses may be had from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

THE annual dinner of past and present students of St. Mary's Hospital Medical School will be held at the Connaught Rooms, Great Queen Street, London, W.C., on Monday, October 4th, at 7.30 p.m.

A COMPLIMENTARY dinner was given to the president of the London and Counties Medical Protection Society, Sir John Rose Bradford, K.C.M.G., M.D., F.R.S., on June 29th at the Grand Hotel to celebrate his recent election to the presidency of the Royal College of Physicians of London. Dr. C. M. Fegen, chairman of council, occupied the chair and was supported by the vice-presidents and members of council, including the legal officers of the society.

AT the general meeting of the People's League of Health, on July 5th, the Lord Mayor announced that the King and the Prince of Wales were subscribers to the £100,000 endowment fund which the league was endeavouring to obtain. Lord Burnham, speaking on the general work of the league, emphasized the importance of co-operation between the various nations in matters relating to health in order that higher standards of humanity might be secured. Professor Edgar Collis, Dr. A. F. Tredgold, and Professor W. E. Dixon dealt with the aims and objects of the league from the physiological, psychological, and public health aspects. Resolutions were passed in favour of the provision of periodical medical and dental examinations for insured persons, and advocating an inquiry by the Government into the influence of the dole on the national health and character.

IN our issue of June 12th we announced that the Manson medal of the Royal Society of Tropical Medicine and Hygiene had been awarded to Professor Ettore Marchiafava of Rome. The formal presentation was made at the meeting of the society on June 17th by its president, Dr. Andrew Balfour. The Italian Ambassador and Baron San Severino also spoke on this occasion.

EIGHT deaths from puerperal septicaemia having occurred during the first six months of this year among patients attended by nurses on the staff of the Kingston District Nursing Association, questions were asked in Parliament, as mentioned in our issues of June 19th (p. 1069) and July 3rd (p. 40). The Minister of Health has now written to the chairman of the Kingston Association expressing his concern and sympathy with the relatives and friends of those who died, and stating that the inquiry by one of the medical officers of the Ministry indicated the existence of grave laxity on the part of the superintendent in the administration of the nursing home and of the midwifery practice. The same nurse had access to infected and non-infected patients, and a nurse suffering from septic infection had remained on duty in spite of her manifest unsuitability to continue in attendance on maternity patients. The Minister thinks there can be little doubt that this nurse acted as a carrier of virulent infection, and that both she and the superintendent cannot be exonerated from blame. He adds that he cannot escape the impression that the medical care in more than one case did not seem, so far as the evidence shows, to have been in accordance with the principles of sound midwifery practice. He expresses approval of the action taken by the Kingston Association in closing the maternity home temporarily and suspending the district midwifery practice, and he suggests that when maternity work is resumed the superintendent and the nurse concerned should be replaced by others, and that an entirely new midwifery staff should be appointed. The Minister refers to the long record of good and successful work by the association and is sure that its valuable public service will not be allowed to lapse. He suggests that it might be advisable for the committee to consider affiliating its association to the Surrey County Nursing Association.

THE eighth annual meeting of the Mental Hospitals Association will be held in the Council Chamber of the Guildhall, London, on Wednesday, July 14, at 11 a.m.

THE thirteenth congress of French-speaking alienists and neurologists, which will be held in Geneva and Lausanne in the first week in August, will coincide with the centenary of Pinel's death, and will have as presidents one of his descendants (Dr. Semelaigne of Paris) and Professor Long of Geneva. The following subjects will be discussed; Schizophrenia, introduced by Professors Bleuler of Zürich and Chando of Paris; *Babinski's sign, its causes, mechanism, and significance*, introduced by Professor Claude; the treatment of mental diseases by work, introduced by Professor Ladame of Geneva and Dr. Demay of Clermont. The subscription for members of the congress will be 30 French francs.

A FURTHER series of tours has been arranged by the *Bruxelles-Médical* for the autumn. From August 31st to September 21st a cruise to the Canary Islands will include visits to Bilbao, Vigo, Oporto, Las Palmas, Almeria, or alternatively Casablanca and Tangiers and Marseilles; the charge to medical practitioners for the complete journey will be £26. Visits to the French ports are being organized during August and September lasting fifteen to eighteen days at the cost of 1,800 francs. Two Mediterranean cruises for university students will be organized in August and September, visiting Egypt, Palestine, Turkey, Greece, and Italy; the charge for the first cruise of twenty-six days will be 1,800 French francs, and for the second—lasting thirty days—2,100 francs. Further information may be obtained from the *Bruxelles-Médical*, at the Belgian office of the Compagnie Française de Navigation, 29, Boulevard Adolphe Max, Brussels.

THE thirty-sixth French Congress of Surgery will be held at the Paris Faculty of Medicine, under the presidency of Professor J. L. Faure, from October 4th to 9th, when the following subjects will be discussed: (1) Pathology of the semilunar cartilages, introduced by MM. Mouchet of Paris and Tavernier of Lyons; (2) Conservative operations in inflammatory diseases of the adnexa, introduced by MM. Gervais de Rouville of Montpellier and Moquet of Paris; (3) Treatment of active gonococcal arthritis, introduced by MM. Michel of Nancy and Mondor of Paris.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

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## QUERIES AND ANSWERS.

### INCOME TAX.

#### Deduction for Cost of Professional Rooms.

"A. R." has for many years been allowed to deduct two-thirds of his rent and rates as incurred for professional purposes; the local inspector of taxes has now informed him that he will be allowed one-third only in future.

\* Two-thirds was the old *maximum* proportion. The test is what is reasonable in the circumstances of each case, and it has to be admitted that that is usually excessive in the case of a provincial town. If, for instance, "A. R.'s" combined rent and rates amount to £150 per annum, it is unlikely that £50 only

(or any amount near that figure) would reasonably cover the non-professional portions of the house and garden. But whether one-third is enough we cannot say. It may be worth while pointing out to the inspector that the garage is wholly (or almost wholly) used for professional purposes and that the ground floor, where presumably "A. R." has his waiting and consulting rooms, is always reckoned by valuers to be by far the most valuable portion of a house.

#### Private Use of Car.

"H. L." explains that (excluding holiday running, which is separately recorded) he uses his car privately to the probable extent of 300 miles a year, and that on that basis the inspector of taxes proposes to disallow his claim to expenses to the extent of from £20 to £50, according to the total amount expended in the year.

\* It must be admitted that any expense which "H. L." has incurred for non-professional purposes cannot properly be deducted in his income tax return, and that it is not uncommon for the taxing authorities to insist on the exclusion of such expenses. At the same time the amounts suggested seem excessive on the mileage basis quoted. (Perhaps "H. L." has not made it clear to the inspector that his holiday expenses have not appeared in his original claim?) There are some expenses (cost of garaging and licence, for instance) which are not increased by private use of a car, and we are of opinion that the whole of such expenses should be allowed.

## LETTERS, NOTES, ETC.

### DUPUYTREN'S CONTRACTION.

DR. T. M. ALLISON (Newcastle-on-Tyne) writes with reference to the annotation on "The machine and the man" (p. 839): I regard Dupuytren's contraction as a gony fibrosis; I have never seen it except in a person who drinks beer, not necessarily to excess. The use of certain tools may irritate the hands, but the contraction, in my opinion, only occurs in gony subjects.

### CALCIUM IN OVARIAN INSUFFICIENCY.

"OBSERVER," referring to the recommendation by Crainichian of calcium in ovarian insufficiency (*Eptome*, June 26th, 1925, para. 652), asks what evidence there is of a deficiency of calcium in hypofunction of the ovaries; an excess of calcium might, he thinks, readily lessen the function of the ovaries, as well as that of the thyroid. Our correspondent adds: We know that the ovaries stimulate calcium metabolism, and also (as has been shown by Professor Dixon) the secretion of the pituitary body; but how calcium could stimulate the ovaries requires some explanation. In the treatment of osteomalacia the removal of the ovaries has long been practised. There is no use in introducing huge doses of calcium lactate into the digestive tract unless its absorption can be ensured, and it is known that only a small amount of calcium (fortunately) can be introduced into the system. If it were otherwise many patients would become like Lot's wife.

### HAFFKINE'S PROPHYLACTIC FLUID.

WITH reference to the proposed improvement of Haffkine's prophylactic fluid by using the clear filtrate and rejecting the sediment, Dr. S. MALLANATH (Hyderabad, Deccan) writes: Up to the present it has been generally thought that the protection produced by Haffkine's fluid is due to the action of dead plague bacilli and their products, and hence it is directed that the bottles be well shaken before use, so that both dead bacteria and their products are used in inoculation. In 1900 I formed and published conclusions based on clinical and experimental observations to the effect that the filtrate of Haffkine's fluid, when free from sediment containing dead plague germs, was not only efficacious in producing immunity, but that it was better than the whole fluid, since it did not cause indurations at the site of injection (**BRITISH MEDICAL JOURNAL**, 1900, i, p. 1155). These indurations or lumps generally last for three or four months and are slowly absorbed. They contain sterile pus, as I have demonstrated. I have shown also that rabbits inoculated with whole Haffkine's fluid lose weight during the absorption of these indurations. Finding that the filtrate has a better protective power and does not produce hard lumps, my usual procedure in using Haffkine's fluid is as follows. The bottles, after being well shaken, are set aside for some days with the pointed ends directed upwards. After a few days the fluid becomes quite clear, and at the bottom there is an ash-coloured sediment, which consists of dead plague bacilli. I withdraw the clear supernatant fluid and use it for injections, rejecting the sediment. With this procedure I have obtained better results and less reactions without producing any induration. One great advantage in using the filtrate, or clear supernatant fluid, only, is that contamination can be easily detected, since it causes turbidity in the fluid; in such a case the bottle should be rejected.

### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 39, 40, 41, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 86.

## Victor Horsley Memorial Lecture

ON

## THE INSULATION OF THE NERVOUS SYSTEM.\*

BY

WILFRED TROTTER, M.S., F.R.C.S.,  
SURGEON, UNIVERSITY COLLEGE HOSPITAL.

WITHIN a few days it will be exactly ten years since Victor Horsley died. The circumstances of his death, however lamentable they may seem to us who lost him, were not, perhaps, very different from what he himself might have wished. He was at work in the direct service of his country, he was using his whole strength in the relief of suffering, while his mind and body kept unabated their astonishing and characteristic vigour. In commemorating this great man our attention is attracted to three separate aspects of his life. We think of him as a physiologist and as a surgical pioneer, and we think of the personality which lay behind and informed these and all the activities of his crowded years.

His work for science and for surgery has long been incorporated with the general body of knowledge and has its lasting place. For his personality there is no such lodgement, and those in whose memory it lives so vividly are already, after the passage of even ten years, a heavily reduced company. I therefore gratefully accept this chance to make my small record of a man who in my knowledge of men was unique in this—that he combined an inflexible belief in his own standards and a truly apostolic zeal in all public affairs, with a disposition that was in its essence boyish and simple and in every private relation easy and mild and kind.

## METHODS OF INVESTIGATION IN NEUROLOGY.

The pioneer work of Horsley in the surgery of the central nervous system has had and must continue to have important remote and secondary effects upon the development of neurology. Whenever a region of the body has been made accessible to surgery, a new insight into its pathology has resulted from the fresh experience that has been acquired of morbid processes in the living and especially of the earlier stages of disease. This has been abundantly shown in the case of the abdomen and in the case of the thorax. In that of the central nervous system it is perhaps as yet less obvious, but it is already unmistakable and will become increasingly so as experience accumulates.

While most of us would no doubt agree that important practical knowledge is to be acquired in this way, there are probably few who look to it with much hope for the discovery of principles of general scope and fundamental significance. As a possible source of any wide expansion of neurological theory it is just and natural to look to laboratory methods and the study of animals rather than to methods of the bedside and to the study of man himself in his reactions to injury and disease. In the familiar and not always philosophically made comparison between the experimental and clinical methods it is usually, however, overlooked that the latter has of necessity a virtue which is in some degree its special possession. The student whose material is man is drastically handicapped by the limited extent to which experiment is open to him. He must take his problems as he finds them, and deny himself the help of almost all the preliminary simplifications which are the essence of the laboratory worker's advantage. At the same time, however, the conditions of his work impose upon him a knowledge of his material at once so intimate and so wide as to constitute a situation probably unique in the whole field of science. When we consider the intensity of watchfulness which the quite ordinary practice of neural

surgery calls for and obtains it must be obvious that the behaviour of the human brain in the various circumstances of injury and disease is far better known than that of any other animal. Indeed, one of the characteristic difficulties of the clinician comes from this very abundance of the stuff of observation, and he is likely to be overwhelmed by its bulk and rendered inattentive by its familiarity, losing amongst details his sense for larger groupings, and amidst the everyday his eye for the significant. Nevertheless the history of science shows that one important source of general ideas has been just this very circumstance of a close intimacy with a large range of observed facts.

The familiarity with the behaviour of the central nervous system that has been possible since it has been accessible to surgical exploration and treatment is capable of reacting in an important way on our attitude to neurological theory.

## THE ABSTRACT METHOD IN NEUROLOGY.

There are few departments in biological science in which what we may call abstract methods of thought are more naturally and inevitably used than they are in neurology. By abstract methods I mean methods in which the single or grouped items of experience are for convenience of thought represented by abstracted summaries of themselves or symbols, which have a handiness for working on in the mind that the raw undigested facts cannot possess. The discovery of the uses of abstraction was an event of fundamental importance in the evolution of science, and in the early Greek natural philosophers we can see with what exultation was welcomed the extension it gave to the powers of the mind. Perfectly legitimate and indeed indispensable as the method is, it is obviously not applicable to all material of inquiry with equal ease and safety. With what certainty and precision the qualities of number, space, and motion allow of abstraction is seen in the noble achievements of mathematics, physics, and astronomy—achievements which, through their most recent extensions in atomic and in stellar physics, have finally established the overwhelming prestige of the method and its effective leadership in science.

When, however, we make living matter and living organisms the subject of study we find that though we can by no means dispense with the use of abstraction it is far less effective in application and has disadvantages which it does not seem to possess in the inorganic world. In biological inquiry an abstract conception, though professedly no more than a convenient summary of experience and constantly subject to the censorship of facts, is apt to acquire a quasi-vitality of its own through which it loses its immediate dependence on experience and comes to dominate instead of serving. The danger arises not so much from the extreme cases of conceptions which easily show as flagrantly inconsistent with facts, but from ideas primarily good and sound which have been endowed with a prestige that in their very nature they could not deserve. That an overvaluation of the abstract conception as an implement of research can deceive even the very elect could be shown by many eminent examples. The biological writings of Herbert Spencer are perhaps as good an instance as comes readily to mind, and it is easy to trace in them how this very weakness has led within a few years to their greatly diminished influence. To find so distinguished a man in a state of reprobation may well make humble people look anxiously to their own doctrines; and indeed which of us, for example, can ask himself without a qualm what is the *exact* meaning he attaches to the abstract conception of evolution which has dominated the biological world for half a century?

When we turn to neurology we find the currency and influence of abstract conceptions very great—as, for example, in the theory of aphasia, in Hughlings Jackson's interpretation of cerebral functions, in Mounkoff's doctrine of diachesis, and so forth. All these are doubtless, in their essence and originally, good and valuable conceptions; it is another matter, however, how far their function as professed summaries of experience is kept distinct from their charm as mere intellectual patterns. It is thus peculiarly necessary for neurology to submit itself to the

\* The second Victor Horsley Memorial Lecture, delivered at the House of the British Medical Association on Friday, July 9th; Sir John Bland-Sutton, Bt., F.R.C.S., was in the chair.

discipline of frequent returns to the comparatively primitive and clumsy method of direct and concrete thinking. Such efforts should, I think, be guided by two principles. The first is the obvious one that a constant and docile reference to experience is indispensable. The second is perhaps less obvious and is less simple to state; it accepts the free use of hypothesis as essential to neurological progress, but it enjoins that in drawing up our necessarily more or less abstract conceptions of the nature and working of the nervous system we should incline to the use of ideas of a definitely biological type, and should as far as possible avoid concepts that in their very nature can have no direct resemblance to what actually happens in the body. In giving to our neurological ideas this concrete and realistic tone we shall always depend to a great extent on an intimate familiarity with the appearances and behaviour of the actual nervous tissues. The knowledge of this kind we possess to-day may well be regarded as having in great part grown out of Horsley's work.

The surgical neurologist is perhaps fortunately placed for considering the nervous system in an attitude of mind at once general and concrete; while he lacks the special knowledge of the anatomist, the physiologist, and the pathologist, he is also free from their special preoccupations; while the behaviour of the nervous tissues in injury and disease is a matter of familiar knowledge, it is prevented from becoming commonplace by the narrow margin of safety within which he works and the serious consequences that follow when it is exceeded. Thus is almost forced on him the development of views which, whatever they may lack in the way of abstruse detail, will at any rate always tend to be strictly realistic.

#### INJURIES TO THE LIMITING STRUCTURES OF THE NERVOUS SYSTEM.

In illustration of this general point of view I propose to call attention to a small group of facts which while they are of more or less common knowledge are perhaps more especially within the observation of the surgeon. They are concerned with the responses of the nervous system to certain injuries.

##### *Division of a Nerve.*

It is a very old observation that when a mixed peripheral nerve is cut its central end becomes swollen into a bulbous mass of dense fibrous tissue. It seems sometimes to be thought that this is only an occasional result of a nerve section and is especially to be looked for when persistent pain has followed the injury. This is, of course, not the fact. The bulbous end is the invariable and inevitable result of a nerve section to which it is the necessary and so to say physiological response. When we inquire into the exact nature of this so-called amputation neuroma we find that in immediate consequence of the section the nerve fibres ramify and grow out from the cut end so that there issues from this a veritable spray of fine naked axis cylinders. The result of this invasion is to call forth an energetic response from the adjacent non-neural tissue leading to the formation of a peculiarly dense fibrous material that resists the spread of the nerve fibrils and finally encloses them in an impenetrable capsule. Within this limiting substance the growth of axis cylinders continues, but since there is no exit it can result only in the formation of an intricate and aimlessly convoluted network.

##### *Breaches of the Spinal Theca.*

It occasionally happens, usually perhaps in connexion with the avulsion of a spinal nerve, that a subcutaneous laceration of the spinal dura occurs. More commonly the surgeon has an opportunity of studying the effect of breaches of the theca in cases where a laminectomy with incision of the membranes has to be followed by a second similar operation after some weeks or months. We find then that wherever the cerebro-spinal fluid has been able to escape into the tissues it has been everywhere walled off by a dense impervious membrane, so that, according to the extent to which the fluid has made its way, there will be a more or less complicated series of cyst-like spaces

communicating with the intrathecal cavity. It is the wall of these cystic extensions of the theca that is of interest, for it shows all the characters of the normal dura. It is of a dense, fibrous substance, its inner surface is smooth and glistening, and its outer surface, instead of merging with the surrounding tissues like a scar, is easily separable from them along a well marked line of cleavage.

##### *Regeneration of the Cerebral Dura.*

It is not uncommon for a second cerebral operation to be necessary in a case in which the dura mater has already been opened or removed. If the second operation is done after an interval of about six weeks or more it will be found that the gap, however large, that was left in the dura at the first operation has been closed by the formation of a new membrane having all the characters of normal dura as above described. Among such characters the most striking, and perhaps the most conclusive of the nature of the new membrane, is its differentiation from the overlying scalp, so that the latter can be stripped away from it with ease and without bleeding. It is interesting to note that at one time a great deal of surgical ingenuity was expended on evolving a plastic surgery of the dura, in which gaps were closed by the insertion of fascial grafts. Such grafts were always remarkably successful because a new dura would have formed quite naturally and equally well without them.

Here we have a group of three well defined facts established by countless observations and capable of confirmation at any time. They bring evidence from different parts of the nervous system disclosing even to superficial consideration a clear common tendency. The conclusion to which all point is that breaches of the normal coverings of the nervous tissues allowing contact between the latter and other tissues of the body, result of necessity in energetic local reactions. The obvious function of such reactive processes is to re-establish the normal discontinuity between neural and somatic tissues and to break the contact that has caused the disturbance.

We have met, then, with a mechanism of a definitely physiological type which may well prove to be concerned with the very nature of the nervous system. Our next inquiry will naturally be, What is the immediate agent of the reaction we are concerned with? In the case of the divided nerve it seems clear that the escaping naked axis cylinder is the actual irritant substance; in the case of the spinal theca it is evident that the cerebro-spinal fluid is the effective agent; in the case of the cerebral dura it is probable that in ordinary conditions with an intact arachnoid, fluid exuding through this is the excitant, though the contact of the brain itself is doubtless also effective. It is seen, then, that there is a common property possessed by naked nerve fibres, by cerebro-spinal fluid, and almost certainly by the brain substance itself, which enables these to set up in the somatic tissues an energetic reaction the tendency of which is to insulate the one from the other. There is evidence that the neural side of the contact, while effective as an irritant, does not contribute to the newly formed tissue which, whether in the form of the fibromatous material of the bulbous nerve or in that of the extemporized dura, is of purely non-neural origin though obviously a highly specialized material and no mere scar.

##### FUNCTIONAL EFFECTS OF BREACHES IN INSULATION.

When we see such well defined mechanisms for the sealing of breaches in neural insulation we naturally should expect to find such breaches to be of great functional importance and capable of causing serious disturbance in the tissues unnaturally brought into contact. There is in fact evidence that some effect on function is produced, but it is not to the mere prevention of this that we can look to explain the actual existence of these mechanisms themselves; that seems to depend, as we shall see, on some far more fundamental causation. The chief evidence of disturbed function is seen in the case of the divided nerve. Here there are symptoms suggesting persistent excitation of the cut end. These are always present from the first, but they vary greatly in intensity. The sensation of the presence of the limb after an amputation is universal, and it always lasts for several weeks. Not uncommonly it is



painful, and then it tends to be more persistent and may last for years. The facts suggest that the exposed nerve fibres of the stump are excited by contact with the tissues, and that in the bulbous end the stimulation effect gradually dies down until a state of equilibrium is established in which the new tissue sealing off the nerve end is practically as inert towards the nerve as is its normal sheath.

It is natural to suppose that after a wound of the brain which allowed a scar of non-neural origin to come into close contact with the brain substance a state of excitation might be set up. The frequency of traumatic epilepsy in cases of direct scarring of the brain is perhaps suggestive, but I know of no evidence that allows us to take the case beyond a mere suspicion.

On the somatic side of a breach of neural insulation there is no disturbance of function beyond the mere reaction already described. It is, indeed, characteristic of this that it is always and only strictly local. There is nothing in the way even of a diffuse or spreading fibrosis; the new tissue, whether it be an amputation neuroma or a new segment of dura and although it is of somatic origin, becomes sharply differentiated from the tissues it is derived from, and can be separated from them easily without cutting. We see, therefore, that although breaches of neural insulation are immediately dealt with by energetic, effective, and highly specialized mechanisms, the actual disturbances of function produced by such breaches do not seem to be very important.

#### INSULATORY ARRANGEMENTS IN THE NORMAL NERVOUS SYSTEM.

If the evidence I have cited bears the meaning I have given it and we can regard as of high importance to the body the maintenance of neural insulation, then we can look for confirmation in normal structure and expect to find dispositions in relation to the nervous system which are insulatory in function. From the nature of the reaction we have seen to be set up by breaches of insulation we may infer that the influence against which insulatory mechanisms are provided is chemical in kind, and this inference may serve as a guiding principle in the search.

#### *Insulation of the Peripheral Nerves.*

Beginning our survey with the peripheral nerves we may at once dismiss from consideration the medullary sheath, which, whatever its physical insulatory function may be, is clearly not in question as a chemical insulant, since non-medullated nerves lie as peacefully and as inert in the tissues as the medullated. The case is different, however, with the neurilemma. Here we have a sheath common to all nerves outside the central axis, and continuous without a break from spinal cord or brain to end-organ. The motor nerve fibre is clothed from within the central nervous system to the muscle fibre, where the neurilemma completes the sealing off of unnatural contacts by becoming continuous with the sarcolemma itself. The sensory fibres are similarly clothed throughout their length; at their peripheral termination they enter end-organs all of which throughout a great variety of structure show—with one suggestive exception—so marked an encapsulatory arrangement that one cannot but think that here the need for insulation must be especially vital. The one sensory nerve fibre which is known to terminate in an end-organ which is not of a strongly capsular type is the fibre that serves the sense of pain. This fibre ends in a free arborization in the tissue to which it is distributed, and this terminal part is uncovered by neurilemma. It cannot but strike us as significant, though I shall not take up the point further at the moment, that this anomaly of a sensory fibre making naked contact with the somatic tissues should be a character of the fibre concerned with pain, a form of sensibility that in itself is so profoundly anomalous.

The view that the neurilemma is the chemically insulating structure we are looking for is confirmed by the fact that within the central nervous system, where insulation is otherwise provided, it is defective or altogether absent. A point further suggestive of the importance of insulation in the

peripheral nerves is the evidence we have that there is an upward drainage along their trunks, so that the products of their metabolism are probably kept from contact with surrounding tissues and are conveyed into the central theca.

#### *Insulation of the Central Nervous System.*

When we turn to the central nervous system we find that the method of individual insulation no longer prevails, but that the whole mass of the central axis is protected as one unit. Plainly, of course, it is the meninges which are chiefly concerned. Of these we have already seen that the dura has so important a function that accidental defects in it are repaired with very remarkable rapidity and completeness. The *mechanically protective* function of the dura, which doubtless has its importance, can scarcely be regarded as explaining its peculiarly impervious texture, its double endothelial surface, and the marked line of cleavage that separates it even when newly formed from the surrounding tissues. All these, however, acquire meaning when they are regarded as evidence of its *chemically insulatory* capacity. Effective as the dura doubtless is in its way, it deals only with one relatively small part of the problem of insulation. If we are right in supposing that all neuro-somatic contacts are inadmissible and that the blood and blood vessels belong to the somatic side of the frontier, the nutrition of so large a bulk of nervous tissue as the central nervous system must involve dispositions altogether unique in the body, and we should expect, in regarding the circulatory mechanisms of the part from this point of view, to meet with features of a very special kind.

The cerebro-spinal fluid and its circulation, the existence and disposition of the multiple membranes of the brain, and the absence of a recognizable lymphatic system in the ordinary sense of the term, constitute a picture which is unique, and has admittedly defied thorough explanation. Let us consider it in relation to the avoidance of undue contact between neural and non-neural elements.

#### THE CEREBRO-SPINAL FLUID.

Let me briefly review the strange facts of the physiology of the cerebro-spinal fluid as they are now known. The cerebro-spinal fluid is an extremely dilute secretion profusely poured out by the choroid plexuses of the cerebral ventricles. It flows through the central cavities of the brain and issues therefrom through the roof of the fourth ventricle into the subarachnoid space. Through this so-called space, which has rather the structure of a cellular sponge-work, it courses partly into the spinal canal, but chiefly upwards and forwards over the brain, to escape into the venous circulation through the arachnoid villi that project into the various lateral extensions of the superior longitudinal sinus. As is well known, any obstruction to the flow in any part of this intricate course downwards within the brain and upwards outside of it inevitably leads to an accumulation of the fluid and to hydrocephalus. Such obstructions are easily produced and common.

The cerebro-spinal fluid with its circulation, whatever function it may be there to perform, shows itself, then, to constitute a weak spot in the cerebral organization that as it were invites pathological attack. That the cerebral apparatus should contain an arrangement in some ways so seriously disadvantageous, suggests that the mechanism must have some deep functional significance that is indispensable to the physiology of the body.

There is no lymphatic system in the ordinary sense in the brain or spinal cord, and no flow outwards through the cerebro-spinal envelopes of anything corresponding with lymph occurs anywhere. It seems clear that products of nervous metabolism find their way into the cerebro-spinal fluid in the subarachnoid space; there is, in fact, strong clinical evidence that this fluid has a definite toxicity for the rest of the body, for when it is liberated into the tissues high fever is apt to occur during the short period before absorption is arrested by the inevitable reaction in the tissues that produces encephalitis. It is thought that metabolic products reach the cerebro-spinal fluid along the so-called perivascular lymphatics. These remarkable structures are

tubular extensions of the subarachnoid space which accompany and enclose the vessels that penetrate the brain to their finest ramifications. The interpretation of their meaning has long been regarded as a great difficulty, but if we accept the view that somatic structures like the blood vessels cannot be admitted to direct contact with the nervous tissues it is natural to regard the perivascular lymphatics as mechanisms to insulate the blood vessels from this contact. It may be assumed from what we know of the nourishment of tissues in general that there is some kind of leakage from the cerebral tissues comparable with lymph as found everywhere else and presumably of a not dissimilar concentration. This fluid will find its way to the subarachnoid space, presumably by the perivascular channels. The disposal of such a material may well be regarded as an exacting task. It is impregnated with products of nerve metabolism and is an ominently "neural" fluid capable of producing energetic reactions in any somatic tissue it meets. Thus there can be no question of its entering the blood stream in the relatively high concentrations that are satisfactory for lymph, and Nature meets the case by providing for its being heavily diluted before it is allowed to join the somatic blood in the cranial sinuses.

The most characteristic feature of the cerebro-spinal fluid as it exudes from the choroid plexuses is its remarkably low solid content. It is by far the most watery secretion produced by the normal body, and one might almost say it is an attempt by Nature to secrete pure water. It contains a small amount of the diffusible substances of the blood, but practically nothing else. So strong is the tendency to keep the fluid watery that the choroid plexuses have a truly astonishing impenetrability to drugs and other foreign substances circulating in the blood. Even the bile pigments in cases of jaundice fail to find a passage. This fluid, practically amounting to nothing but water, is secreted in large quantities; on rare occasions I have had the experience of seeing as the result of accident what was perhaps a large fraction of the total secretion of cerebro-spinal fluid discharged on the surface. The amount of fluid escaping has been very large and the consequent inanition correspondingly profound. The normal function of this great flow of water we may suppose with some confidence to be to flush through the whole subarachnoid space and to dilute the products of cerebral metabolism to such a degree that the resulting fluid can be safely admitted to the general blood stream. This view gets some confirmation from the evidence we have that the fluid in the subarachnoid space has a larger solid content than the fluid in the ventricles.

It is interesting to reflect that the source of this mysterious secretion which has given so much difficulty to the chemical physiologist may turn out to be no more abstruse a thing than Nature's nearest approach in the animal body to a spring of plain water; if this should be so, it may also remind us of the small and amusing coincidence that one part at any rate of the tortuous channel through which the fluid runs—the *aqueduct of Sylvius*—has since the very early days of anatomy borne a singularly exact and appropriate name.

In our review of certain aspects of the nervous system we have found reason to regard as of fundamental importance the preservation of an impenetrable barrier between the whole of the nervous system and the rest of the body. This barrier we have seen to be made up of a number of highly special structures and mechanisms. Its function is on the whole to prevent contact between the neural and the non-neural, but is also in certain places to permit it. These places are only two: first, where the motor nerve end comes into contact with the muscle fibre, and secondly, where the naked arborization of the pain nerve meets the tissue in which it is distributed. The nervous system is thus kept apart from the body, as we may say, in order that when the two are permitted to meet the reaction shall be the more energetic. It is in fact, then, of the very essence of nervous tissue that it should be different from the other tissues, so that it can irritate and be irritated by them. This necessity for a certain "strangeness" of the nervous system may possibly throw some light on its curious embryology. The origin of the nervous system, as

an epiblastic tube originating on the surface of the body and then sinking into its substance, has been investigated chiefly from the morphological point of view, and great ingenuity and research have been expended on it. It may be worth suggesting, however, that the problem has also a functional side, and that the epiblastic origin of an organ that is ultimately to be deeply embedded in mesoblastic tissues possibly has the function of contributing its strangeness, and therefore its effectiveness, to the nervous system as a whole. This quasi-hostility between neural and somatic, between brain and body, is a suggestive and perhaps a disturbing thought, but we shall not attempt here to follow it out.

#### NEURAL INSULATION IN PATHOLOGY.

It is more convenient at the moment to consider certain pathological evidence that has some bearing on the conclusions we have already reached.

That the central nervous system differs from other organs in having a certain inaccessibility has long been recognized in connexion with syphilis. The difference between the strictly extraneural mesoblastic infection of the meningeal gumma on the one hand, and the intraneural parenchymatous infection of general paralysis on the other, shows that the frontier between the two regions is as sharply marked pathologically as it is physiologically. Moreover, the relative inefficacy of antisyphilitic treatment in the parenchymatous infection reminds us that the frontier is also impassable for many drugs.

The dura and arachnoid are in some sense intermediate tissues, for they show a certain tolerance for both neural and non-neural contacts, the arachnoid having slightly greater affinities for the former, and the dura perhaps for the latter. That they are, however, fundamentally non-neural in their behaviour, and probably also in their nature, is suggested strongly by their relations to certain tumours. The glioma is probably the one truly neural tumour that affects the central nervous system. Although it behaves within the brain as a malignant infiltrating growth, its spread is restrained by the neuro-somatic barrier, so that while in exceptional cases it may affect the meninges and skull by pressure atrophy it can never invade them or extend to the tissues of the body. On the other hand, the so-called "dural endothelioma," which is relatively so common as a growth involving arachnoid and dura, frequently shows the power to infiltrate the skull and overlying parts as a malignant neoplasm; but although it may press deeply into the brain it never invades it, being restrained as effectively in the one direction as is the neural glioma in the other. The behaviour of these two tumours has long been familiar, but seems always to have been accepted as very much a matter of course. It is perhaps more reasonable to regard it as one of the most significant anomalies in the whole of pathology.

Our final pathological illustration takes us back to the peripheral nerve. We have already seen that this is the only part of the nervous system where a breach of insulation produces immediate and definite disturbance of function. The neurilemma seems fortunately, however, to be an exceedingly effective barrier between neural and somatic tissues. There is clinical evidence that a relatively slight subcutaneous injury can lead to the formation of a neuro-fibroma presumably through damage to the neurilemma; but this is a rare event of little practical importance, and failing gross injury the insulatory mechanism is wholly satisfactory. That this is the result of effective restraint rather than inertia on the side of the nervous system is perhaps shown by that fortunately rare complaint multiple neuro-fibromatosis or Recklinghausen's disease. In this condition it has been shown that every fibromatous formation, localized or diffuse, contains nerve fibrils which presumably by their irritant qualities, have given rise to the fibrosis, much as might a foreign body or a micro-organism of highly attenuated virulence. It seems clear that it is the presence on a large scale of nerve fibrils outside their normal insulating sheath which is the proximate cause of the morbid state. It may be doubted whether the neural leakage is a primary manifestation or is due to an essential weakness or collapse of the insulating

function of the neurilemma. Whether the failure of this sheath is primary or secondary, absolute or relative, no one who has seen a severe case of the disease can doubt that any general collapse of the peripheral insulatory mechanism makes the life of its unfortunate subject almost insupportable.

#### INSULATION AND THE PHYSIOLOGY OF PAIN.

I have already called attention to the remarkable fact that there is one kind of sensory fibre which ends in a free arborization in naked contact with the tissues. Our last task in dealing with the insulation of the nervous system is to examine a little more in detail the striking anomaly that in their end-organs the pain fibres make this unique exception to the rule that sensory fibres are insulated up to and including their end-organs.

This anatomical uniqueness of the pain fibre in its end-organ is matched by the uniqueness of the physiological characters of pain sensibility, and it is very natural that we should desire to correlate these two anomalies. Pain sensibility is remarkable in three respects: first, in the quality of the sensation itself; secondly, in its threshold of sensitiveness; and thirdly, in the nature of its appropriate stimuli. (a) The sensation of pain is peculiar in that it has a sudden and as it were explosive way of bursting into consciousness, in that it calls urgently and often irresistibly for some kind of motor response, and in that it is in its very nature distracting so as to be incompatible with quiet contemplation or steady judgement. (b) The threshold for pain stimuli is remarkably high, so that in comparison with other forms of common sensibility the stimulus has to be relatively energetic to call forth the characteristic sensation. (c) The stimuli that call forth pain sensations are remarkable for being very miscellaneous. In every other kind of sensibility but pain, the normal response is to a single well defined physical change—pressure is evoked by weight, touch by movement, cold by loss of heat, warmth by access of heat. The ordinary stimulants of pain, on the other hand, such as pressure, pin-pricks, cold, heat, and the electric current, make up a thoroughly odd class, the members of which show no common character. They are all capable of producing the characteristic sensation before, and usually long before, an intensity of stimulation is reached that can be shown to be harmful. That many of the stimuli would be harmful in greater intensities can scarcely, therefore, be regarded as forming a common physical basis, but must rather be explained as merely a consequence of the normally high threshold.

When we consider these peculiarities we can hardly regard them as those of a highly differentiated mechanism, but rather as those of one relatively crude. All sensibility may well have been of this kind in organisms to which the distracting explosive qualities of the sensation would be no detriment. If we look upon the peculiarities of pain as an evidence of crudity rather than of differentiation it is relatively easy to correlate them with the uninsulated end-organ of the pain fibre, which we must regard as less differentiated and cruder than the complex end-organs of the other fibres. Pain sensibility would thus owe its special character to being the function of a nerve fibre of a peculiar kind, which while relatively insensitive responds in an exaggerated way when its threshold is reached. Presumably these characters are to be associated with the uninsulated end-organ, and we may suspect that it is this lack of insulation which gives to the fibre its characteristic features of blunt sensitivity and emphatic response.

We possess a possible source of further light on this problem in the phenomena that accompany the recovery of function in sensory nerves after division and immediate suture. It is well known that this process, as observed under experimental conditions in the human subject by at least three independent groups of investigators, is accompanied by remarkable modifications in all forms of sensibility. It is impossible to refer to these modifications in detail, but it gives them in a broadly approximate way—and I speak from actual personal experience of them—to say that they are generally in the direction of the peculiarities shown by normal pain; in other words, the modified sensations compared with the normal are more explosive and more urgent, they have a higher threshold,

and they call for some kind of motor response. The explanation of these and the other modifications that are to be observed during recovery of sensory nerves has differed with different investigators. It is far too much a matter of detail to discuss these differing hypotheses here, but there is one criticism to be offered of some that is relevant to the general attitude we have tried to support. This criticism is that there has been a tendency to approach the problem in too abstract a way. It has been assumed that the question is one of the mere return of functions that are present in the normal and in the form in which they are then present—modifications in the character of sensation being ascribed to such factors as the order of return and the rate of return of different functions, and the modification in character of one form of sensibility to the presence or absence of another. This is to assume that the processes and incidents of regeneration itself have nothing to say to the problem; and that the struggle between the advancing nerve fibres and the reaction they arouse from the line of suture onwards can be ignored. To take it for granted that the naked growing fibres can pass through this difficult and prolonged ordeal without any alteration in their function, and to limit the problem in this way to strictly and exclusively neural factors, seems to me a method less concrete and practical than the case demands.

An alternative hypothesis, which is at any rate more comprehensive and more simple, can, however, be put forward. The general tendency of all forms of sensation yielded by a regenerating nerve to develop a certain resemblance to pain reminds us that regenerating fibres resemble pain fibres in a lack of complete insulation. It is probable, therefore, that imperfect insulation tends to render all fibres less sensitive than normal, but more apt when effectually stimulated to respond in an exaggerated explosive way. With the advance of regeneration the fibres serving touch, heat, and cold, become once more connected with end-organs, and then their insulation, by the junction of the neurilemma with the capsule of the end-organ, can be completed. The completely insulated fibre, having lost its temporary resemblance to the pain fibre, becomes once more sensitive to the finer stimuli and ceases to yield exaggerated responses.

The process of regeneration thus seems capable of causing a regression of function in all kinds of nerve fibres to a cruder type that in the normal is represented only by pain. This regression occurs because during regeneration insulation must necessarily be defective. According to this hypothesis normal pain and the sensibility of regenerating nerves give us an insight into the ancestry of common sensation. Primitive sensibility of all kinds we may suppose to have been like pain in us; it had a relatively high threshold, but it was effective because its sensations were urgent and explosive and, of course (also like pain in us), were exactly localized. Among such sensations fine discrimination was plainly impossible. With the development of the completely insulated nerve and end-organ the fibres thus equipped became capable of yielding sensation to finer and to specialized stimuli, and of a quality no longer explosive but able to be submitted to discrimination; at the same time the large number of pain nerves remained in their primitive state to warn the body of strong stimuli by urgent sensations among which there was no power and no need for discrimination because their function was to excite immediate response.

The great and manifest difference between the vertebrate and the invertebrate nervous systems is that the former is centralized and the latter is scattered throughout the body. The facts I have quoted and the inferences I have drawn suggest the hypothesis that, side by side with centralization and rendering it possible, insulation also must have proceeded. Insulation on the one hand must have been made increasingly necessary by the growing differentiation of neural from somatic tissues, and on the other hand must have helped to sharpen this very difference. It is not, therefore, surprising that a function so fundamental is not only recognizable in the structure and behaviour of the normal nervous system, but is also evidently at work in morbid processes and constitutes at once a help and a limitation to the work of the surgeon.

SPIROCHAETOSIS ICTERHAEMORRHAGICA  
IN NORFOLK.

BY

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DURING the last fifteen months we have seen four cases in Norfolk presenting the clinical features of spirochaetosis icterohaemorrhagica. Though the actual presence of the spirochaete was only proved in one, the symptoms and course of the disease were so similar and distinctive in all that we think we may assume the identity of their affection. The organism is acknowledged to be elusive, and we had no opportunity for animal inoculation. A closely studied series of eighteen cases in East Lothian has been described by G. L. Gulland and G. Buchanan,<sup>1</sup> but in England we find the record of only one case, by Dr. Philip Manson-Bahr.<sup>2</sup>

The cardinal symptoms of the disease are so few and so constant as manifested by our patients that a brief account of each will be given.

## CASE I.

A man living in the outskirts of North Walsham, who had retired and occupied himself in his garden, was in good health until December 9th, 1924. On that day he felt exhausted and unable to eat. For the next few days he remained in bed on account of this sense of prostration.

On December 13th he was seen by Dr. J. Shephard and later by Dr. D. Hart and one of us. The temperature was 101°, the pulse was 80, and the tongue was dry. On the following day jaundice was perceptible; the temperature was 99° and pulse 70.

On December 15th the temperature was 97.6° and pulse 60. But the jaundice had increased and the tongue was more dry.

On December 18th no urine was passed; the excretion had been diminishing previously. Haematemesis recurred every few hours.

On December 19th the condition was obviously grave; no urine was passed and haematemesis persisted. The temperature was 97, pulse 60, and the blood pressure 120.

On December 20th death took place somewhat suddenly. There had been suppression of urine for three days and melaena occurred. The liver and spleen had never been palpable.

## CASE II.

A tramp, aged 26, was admitted to the Norwich Poor Law Infirmary on May 3rd, 1925. He had been taken suddenly ill four days previously with prostration, headache, and dizziness.

On admission he was jaundiced, with epigastric tenderness, vomiting, and slight fever. The urine contained albumin and bile, but leucin and tyrosin were not present.

On May 6th jaundice was more marked, the tongue was dry, and he was drowsy. On May 10th there was epistaxis, and on May 13th he gradually sank and died.

Widal's reaction for the typhoid group was negative. No spirochaetes or other organisms were found in the urine, but the examination was not made of freshly passed urine. Blood drawn from the liver after death showed no spirochaetes.

## CASE III.

A farmer, aged 57, living in an isolated house a few miles from Fakenham, whose previous health had been good, was taken ill with general pains and chilliness on December 16th, 1925.

On December 17th he was seen by Dr. E. W. Palin, who found a temperature of 102°, pulse 100, and tenderness in the upper abdomen. During the next three days there was no marked change.

On December 21st no urine had been passed, and the bladder was found to contain only one drachm, which was free from albumin. The temperature fell to 98°, pulse 80. The next day slight jaundice appeared and there was frequent vomiting, the contents becoming coffee-ground.

On December 23rd the jaundice had deepened and there were haematemesis and melaena. On December 24th there was also free epistaxis. After three days' suppression some non-albuminous urine was passed.

During the next few days the urine was excreted, but the jaundice deepened and haemorrhage from the stomach, bowel, and nose persisted.

He died on December 27th. After his death his wife remembered that on December 10th he had been scratched or bitten on the face by a rat. No mark, however, was left.

## CASE IV.

A fowl-dealer, aged 55, from Hindolvestone, was sent to the Norfolk and Norwich Hospital by Dr. G. S. Keeling of Attleborough on January 23rd, 1926.

On January 14th there had been sudden onset of illness with general pains and rise of temperature, though an exact record

was not kept. On January 18th there was epigastric pain, relieved by vomiting, and hiccup. On January 19th jaundice was noticed; the liver and spleen were not enlarged.

On January 23rd the temperature was 97°, with pulse 92. The urine contained albumin and much blood. There were petechial haemorrhages about the skin. On January 26th profuse epistaxis occurred.

On February 2nd spirochaetes were found in the urine. From February 3rd to 18th the evening temperature was 99.4° to 100°, but gradual improvement was taking place, and on February 25th he was discharged convalescent.

In their important account of the disease Dawson, Hume, and Bedson<sup>3</sup> give as noteworthy features of spirochaetosis icterohaemorrhagica the following:

"A sudden onset with gastro-intestinal symptoms and high fever, the marked prostration, the occurrence of melaena and haemoptysis, the presence of haemorrhagic herpes, the appearance of jaundice on the fifth day, the fall of temperature at the end of eleven days, and the finding of typical spirochaetes in the urine."

Our four cases conformed closely to the above description in most particulars, but not in all. Our patients were attacked suddenly and prostration was extreme. With remarkable punctuality jaundice appeared on the fifth or sixth day. Haemorrhage from various parts occurred later with remission of fever. Herpes was absent in our cases. Renal symptoms were much more prominent. In two cases there was suppression of urine, though in one of these the excretion was re-established before death. Dawson, Hume, and Bedson refer to the fact that French authors "lay considerable stress on the evidences of renal insufficiency."

This suppression of urine obviously contributed largely to the fatal termination, and moreover prevented the confirmation of the diagnosis by the detection of spirochaetes in the urine. In our other cases there was albuminuria and in one of these there was haematuria. In Case iv the patient's general condition was very different from that of the others; he was never very ill, and haematuria was the chief renal affection.

The greatest contrast was in the gravity of the disease as we met it, for whereas Dawson, Hume, and Bedson estimate the mortality as from 4 to 5 per cent. amongst their cases seen in France during the war, of our four cases three died. There has been a remarkable disparity of mortality figures amongst foreign observers. We did not have the opportunity of using the antispirochaetal serum prepared for the Medical Research Council.

Dr. David S. Brough, assistant pathologist to the Norfolk and Norwich Hospital, kindly supplies us with the following information with regard to Case iv.

**February 2nd.**—A catheter specimen of urine was found by dark-ground illumination to contain spirochaetes in centrifuged deposit. They were numerous and as many as eight or ten could be distinctly seen in one field. Their spirals were more open and less regular than those of *S. pallida*, and their movement was slow and aimless. Some of the spirochaetes showed a certain amount of hooking of their ends. Spirochaetes continued to be found on each of the three following days, but at the end of five days had disappeared. Observations were made to ascertain the length of time during which spirochaetes could be recognized in the urine after its passage. It was found that at the end of twenty-four hours the spirochaetes were becoming granular and somewhat blurred, and after seventy-four hours were no longer to be recognized. Spirochaetes were not found in the blood.

**Van den Bergh's Test.**—Serum: (1) Biphase reaction; (2) faint indirect action; (3) no direct action.

**Blood Count.**—Red blood cells 3,500,000 per c.mm., white blood cells 14,600, haemoglobin 42 per cent., colour index 0.6. Differential count: polymorphs 78 per cent., lymphocytes 16 per cent., mast cells 3 per cent., mononuclears 3 per cent.

To verify our idea that this disease is rarely recognized as a cause of death in England we applied to the Registrar-General, who informed us that in the four years 1922 to 1925 there had been seven deaths in England classified as spirochaetosis icterohaemorrhagica in addition to our own cases.

There was no possible connexion between our four patients. They were all country dwellers, but none had been working in particularly damp places, nor was it clear that their areas were especially infested by rats, the recognized carriers of this disease.

## REFERENCES.

- <sup>1</sup> BRITISH MEDICAL JOURNAL, 1924, i, p. 313. <sup>2</sup> Lancet, November 18th, 1922. <sup>3</sup> BRITISH MEDICAL JOURNAL, 1917, ii, p. 345.

# THE THYROID AND MANGANESE TREATMENT IN ACUTE PNEUMONIA.

BY

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Two papers on the thyroid and manganese treatment were published in the *BRITISH MEDICAL JOURNAL* last year. The introductory one (March 7th, p. 443) reported a series of cases, presumably of toxic origin, which had shown improvement enough to suggest that the method explained therein might prove useful.

The second (December 26th, p. 1209) was chiefly concerned in describing its influence in the treatment of abnormal blood pressures. An early verdict was asked for on this subject; and it is more than favourable, inasmuch as others have reported that the thyroid and manganese cachets are often successful in lowering high tension. This was not known when the paper was published, and these reports have come from as far as Central Africa.

Both papers were founded on facts observed by others besides myself, and so far no one has controverted them. On the other hand, confirmatory evidence is accumulating and an extension of the treatment has been suggested to other diseases. The present paper is to show the unusual effects which have been obtained when using it in the treatment of acute pneumonia.

What I have to say will be told in narrative form, and, as far as possible, free from details, because no one yet knows why potassium permanganate, held in aqueous solution and injected into the rectum, should give such good results. Besides which, it is undesirable to try the patience of readers with debatable points of a treatment for pneumonia so definite, so practical, and so obviously successful. The explanation will have to be thrashed out in laboratories and hospitals in this and other countries where team work is available.

How has it become possible to state categorically, and with no fear of contradiction, that ordinary pneumonia, unaccompanied by intercurrent affections, or occurring at too advanced an age, is one of the easiest diseases to arrest and cure? Mainly by the cordial co-operation and work of five doctors and two ladies—Drs. Kerr, Farr, and Pennington of Ellesmere Port, Dr. Hanratty my assistant, and myself; helped by the able services of Miss Jeans, matron of the Whitby Cottage Hospital, Ellesmere Port, and her assistant, Miss Barret. Had it not been for the untiring zeal of these two ladies much of what follows could not have been written until months had elapsed. By the courtesy of this group of observers I have been allowed to see some of their cases whilst under treatment, and I have before me notes, histories, and many of their temperature charts which, with our own, together with one from Dr. Grace of Chester, and another from Dr. Pirrie of Maldon, Essex, comprise forty cases.

I will not weary my readers by taking these cases seriatim, or by attempting to classify them, this being unnecessary when all of us have been using a single agent which has controlled every case of undoubted pneumonia treated with it from the age of 6 months to 71 years. Half of them were above the age of 18 and half below; the majority were cases of lobar pneumonia, and two deaths occurred—one a lady aged 60, and the other a man aged 71, both of whom died of intercurrent diseases, seven days after a lysis had been brought about in the first case and two days after a crisis had been induced in the latter. (See Dr. Graco's and Dr. Pirrie's abbreviated reports at the end of this paper.)

It was in March, 1924, that the first case of acute pneumonia was treated by this method.

A youth, aged 16½ years, received half a pint of the standard solution twice daily, beginning on the fourth day of the disease. His was a moderately severe case, with extensive involvement of the left lung. His temperature had reached 103.2°, with all the usual symptoms of distress and a moderate amount of rusty and adhesive sputum. Soon after the first injection had been given and retained he said he felt more comfortable, and could cough up the expectoration more readily. A few hours after the second injection his temperature dropped to 101.2°, and the rusty sputum

suddenly disappeared, never to return. His cough lessened rapidly, the expectoration became frothy and white, and still less difficult to get rid of. Greater relief followed the third injection, and thirty-six hours after beginning the treatment his temperature fell to normal. He was also given a thyroid tablet 1½ grain (dry 1/10 grain) twice daily, and this dose was continued for two weeks, but the injections were stopped on the eighth day. Convalescence was rapid and less exhaustion was observed than is usually seen after pneumonia.

The next case was that of a girl aged 12½ years, suffering from double pneumonia. She was the first to come into the hands of Miss Jeans and Miss Barret. She was treated in a similar way, beginning on the fourth day. Quick relief was experienced, but the temperature did not reach normal until the end of three days. Here again there was less exhaustion than is usual after an illness of such severity.

The third case was a man, aged 24, who had a small localized patch of pneumonia at the base of the left lung; he was sent to the same hospital, where he received two injections on the second day of the disease, three-quarters of a pint of the standard solution being given on each occasion. On the morning of the third day his temperature was 103.2°, but seven hours after the third injection it fell by crisis to normal, and remained normal. He wanted to get up the next day, declaring he had only had a chill and that it was absurd to say he had been suffering from pneumonia. But being assured that there were still signs of pneumonia in his lung he consented to stay in bed ten days, though all crepitations had gone by the third day after the crisis. Treatment was continued for a week.

These three cases suggested that potassium permanganate might have a true specific action on the organisms of pneumonia, so Drs. Kerr and Farr used it in a child aged 4 years in the last stages of pneumococcal meningitis, who was occupying a bed in the Whitby Cottage Hospital. This case was reported in my paper of March 7th, where it was described how the child did well and walked out of the hospital some three months after commencing treatment.

These two doctors, being now thoroughly interested in the subject, sent in quick succession four children suffering from bronchopneumonia, whose ages ranged from 6 months to 6 years. All did well, the disease aborting in two of them within thirty-six hours; and as at this time better results were being seen in the treatment of pneumococcal arthritis by giving three daily injections, more frequent injections became the custom at the hospital, and in private, when treating acute pneumonia. Somewhat later we found that by doubling the strength of the solution even better results were obtained (Figs. 1, 2, 4).

In the meanwhile Dr. Pennington had had good results in the toxæmias of pregnancy, and began using the method in pneumonia.

Recently he treated a man aged 50, a very desperate case, where the pneumonia was accompanied by alcoholic delirium and high fever. Besides Dr. Pennington, Dr. Farr and Dr. Hanratty saw him soon after admission, and all of them thought he was too hopelessly moribund to respond to the treatment. Yet he lived, and went out for walking exercise in the garden three and a half weeks later. He received injections, on an average, every four hours from the time of admission, and his temperature fell from 103° to 101° in ten hours. He was much less delirious, with fitful consciousness, in thirty-six hours. Twenty-four hours later he was completely conscious, with an almost normal temperature, and he began to grumble about the small quantity of food he was being allowed (Fig. 3).

A severe case of septic pneumonia, confirmed by bacteriological examination, has lately been treated.

A youth, aged 17 years, was carefully attended to by two nurses and treated on the principles described below. He was steered through a dangerous illness without undue anxiety to those in attendance. Dr. Murray Cairns of Liverpool saw this youth in consultation, and agreed with the method we were using, saying he had seen a case of streptococcal invasion of the lungs do well with it. No complications occurred in this case, and the patient was out of bed at the end of the third week. Dr. W. H. Grace (honorary pathologist, Chester Royal Infirmary) reported: "This sputum contained many streptococcal chains in the direct films and the cultures gave abundant growths of a *Streptococcus longus*. I considered this a very severe streptococcal pneumonia." (See Fig. 5.)

## THE TECHNIQUE.

When this treatment is used for pneumonia aperients are avoided as far as possible for fear of driving intestinal toxins into the circulatory system. The bowels are gradually unloaded by the permanganate injections, or small doses of calomel are given when evacuation is not as complete as it should be. The solution used is made by adding two grains of pure potassium permanganate to one and a half pints of water, which should be comfortably hot; from three ounces to half a pint are used on each occasion,



according to the age of the patient. The fluid should be administered very slowly by means of a funnel and small tube, or by a Higginson's syringe, and the injections repeated from two and a half to four hours during the first

appetite quickly returns, and this has to be anticipated and met by a more substantial diet than is the usual custom.

Too few cases, as yet, have been treated to say anything definite as regards the value of administering thyroid

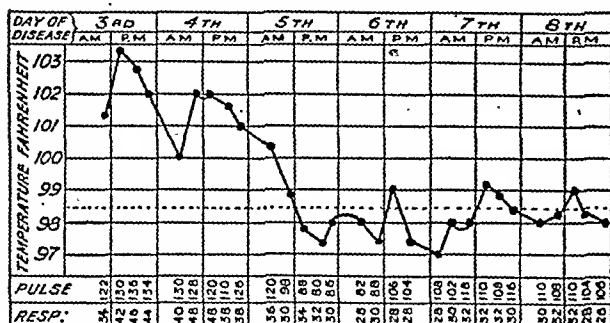


FIG. 1.—Dr. Kerr's case: Bronchopneumonia; child aged 6.

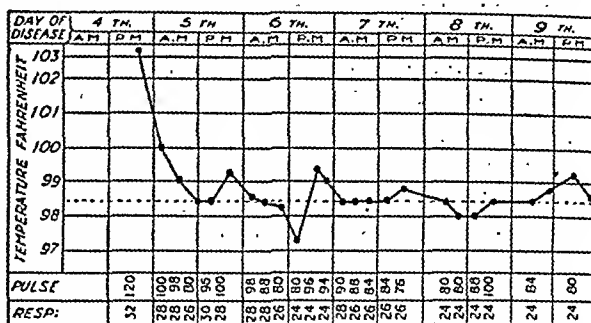


FIG. 2.—Dr. Farr's case: Bronchopneumonia; child aged 5.

twenty-four to thirty-six hours. The length of the interval between the injections depends upon what day of the disease the case comes under treatment, much in the same way as the dosage and frequency of the subcutaneous injections of serum are judged in the treatment of diphtheria. In ordinary cases, if the treatment is begun on the first or second day of the disease, intervals of three or four hours can be allowed; but when beginning on the fourth or fifth day, especially when the symptoms are severe, the intervals may be reduced to two and a half or even two hours. One must be guided also by the quantities the patient is able to retain on each occasion, shorter intervals being necessary when the fluid is quickly returned. Once the temperature reaches normal in adults and older children the injections are reduced to two a day for three days, and once a day for three more days, when they can be discontinued; or they can be replaced to the advantage of some by giving the combined thyroid and manganese cachets for a week or so. But in infants and younger children the injections should be continued twice daily for at least ten days after the temperature has reached normal, as there is a tendency to recurrence if they are given up too early.

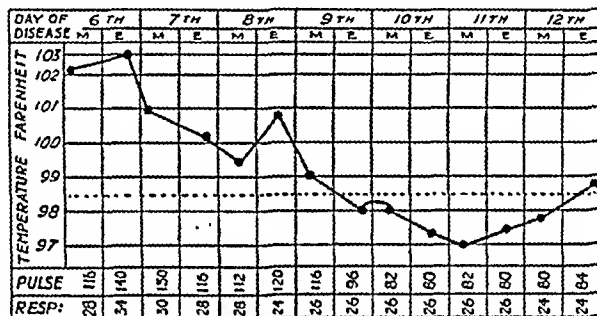


FIG. 3.—Dr. Pennington's case: Alcoholic pneumonia; male aged 50.

substance during the acute stage of the disease. Lately we have all come to look upon potassium permanganate as being specific in its effect, and most of us have not given thyroid even during convalescence. This is a matter for individual judgement and experience.

Those who, like myself, have seen the results of combining the two drugs in cachet form in treating toxic diseases will not hesitate to use it for a while during convalescence.

If it may be conceded that thyroid efficiency is reduced by the suffocating effects of all toxæmias, whether acute or chronic, then the body should derive benefit from thyroid feeding until the gland has regained its power.

#### EFFECTS OF THE TREATMENT.

The changes seen in the clinical picture when these permanganate injections are given are very rapid indeed. After the first or second injection the character of the cough alters from a harsh hawking bark to an easier and softer sound; the respirations become deeper and a little slower, with reduction of pleuritic pain in consequence. After the second or third injection the sticky expectoration becomes much looser and more easily raised. The grey or dusky type of cyanosis disappears in eighteen to thirty

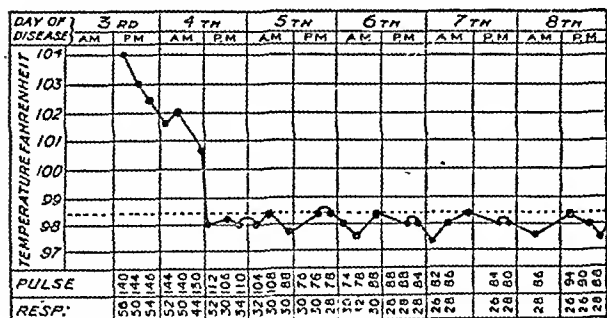


FIG. 4.—Dr. Hanratty's case: Bronchopneumonia; child aged 5.

A considerable quantity of mucus is seen in the stools, and the sooner it appears the more rapid is the improvement in the patient's condition. When ordinary uncomplicated pneumonia comes early under this treatment nothing more is ordered than a mild expectorant and poultices. Most cases have not needed hypnotics, but cardiac tonics and stimulants may be required, especially in septic cases. Owing to the rapid removal of toxæmia

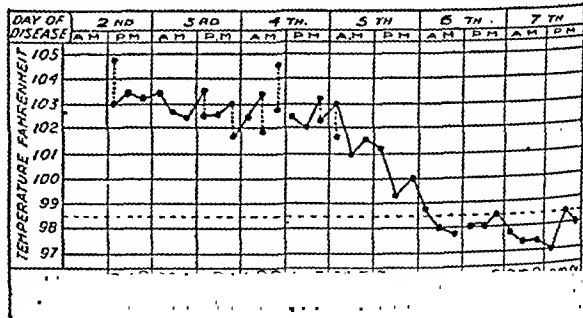


FIG. 5.—Septic pneumonia; youth aged 17.

hours, being often replaced by a rosy complexion in children, whilst in adults the pneumonia facies gives way to an expression of ease. Sleeplessness, if it has been a predominant symptom, ceases. After the very first injection a child with advanced bronchopneumonia will fall soundly asleep, and can be kept sleeping by repeatedly giving small injections. Reduction of active and noisy delirium is noticed after a few injections; the patient

quieters and is more readily controlled after three or four doses have been well retained. But the most dramatic change of all is the sudden ceasing of the coloured sputum. It is not uncommon to see a bright red sputum in the morning and to find white frothy expectoration in the evening of the same day.

Sometimes there is a little free haemorrhage for an hour or so just before this change takes place, and as this may alarm parents or attendants they should be warned that it may occur. An hour or two later the sputum may be milky white. The pulse and respirations settle down according to the course of the temperature, which itself may rise a degree or so before the crisis or lysis sets in. Indications point to mixed infections being rather less responsive, though a sufficient number of bacteriological examinations have not been made to settle the point. Crisis is not infrequent, but descent is by lysis in most cases, taking on an average from two to three and a half days from the commencement of treatment.

A few practical points must be mentioned in connexion with this treatment, whether it is being used for pneumonia or other toxic complaints, which if not carefully attended to may tend against success. In the first place, it is always advisable that the medical attendant be present when the first injection is given, for many mistakes may be made and valuable time lost; besides which it is reassuring to the patient to know that the treatment is being conducted properly. Nurses have been found giving vaginal injections when rectal ones have been ordered; some are too hasty or clumsy in using the syringe, or funnel and tube, and may irritate the patient; whilst others are to be found who frankly express an opinion that they have "no faith in the blue injections," and the fluid is thrown away accordingly. A temperature chart will sometimes clearly disclose mismanagement of this kind, and suspicions raised thereby have been followed by confessions.

A word must be said also as to the awkward situations which naturally occur when a child, who was looking deadly ill with bronchopneumonia three or four days before, is seen half-sitting up reading a book or playing with his toys as unconcerned as though he had just recovered from an ordinary cold; and when this is accompanied with a ravenous appetite doubting parents may think the diagnosis has been at fault. In some cases it may be better to have confirmation at the outset, in the interests of the child, for, as has been said already, too early cessation of treatment may allow of recurrence. It is disconcerting, too, to find an adult in his fourth or fifth day of the disease, and whose temperature was  $103.3^{\circ}$  a few hours previously, now with a falling temperature, calmly smiling, and wiping a little blood from his lips, hardly more inconvenienced than if he had been just relieved of a painful tooth under a local anaesthetic. But this tame and unexciting ending is not what the public imagines the crisis of pneumonia to be, and the diagnosis may again be called in question. So what are we to say? Difficult, no doubt; but cannot we reply with a little more faith than of yore, "Perhaps this mangauese has raised the patient's power of resistance to pneumonia"? Nor need it prevent our hoping that some day we shall be able to state this as a proven fact.

As the introductory paper referred to above begins by stating that the idea of this treatment originated in the study of Colonel R. McCarrison's works, so this contribution may end by saying that the quelling of the dangers and horrors of pneumonia, with the reduction in its death rate that will follow, has come in the first place from his brilliant book *Studies in Deficiency Diseases*.

#### Reports from Dr. GRACE and Dr. PIRRIE.

This man, aged 71, was admitted to the Royal Infirmary, Chester, in a semi-conscious condition on the sixth day of the disease. He was a case one would have expected to lapse into coma. But on receiving two injections of the standard solution of potassium permanganate his temperature dropped by crisis to normal, and he regained consciousness. He died two days later from heart failure, with myocardial degeneration.

W. H. GRACE, M.R.C.P.

This lady, aged 60, was a semi-invalid, and had been suffering from pyelitis and cystitis for some time, which flared up during her attack of pneumonia. Rectal injections of potassium permanganate

were given every four hours in her case, beginning on the third day of the disease; twenty-four hours later the temperature came down by a quick lysis from  $103^{\circ}$  to subnormal, taking three days to do so. Concurrently her pulse improved, and the respiration rate never exceeded 26; it was usually 22 to 24. She died seven days later from exhaustion caused by the pyelitis and cystitis. I have never seen a true pneumonia with such a remarkable absence of distress and toxæmia.

I. M. PIRRIE, M.C., M.D.

## MASTOIDITIS AND ITS COMPLICATIONS.

BY

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This paper is a review of over 800 cases of mastoiditis operated on in the Leeds General Infirmary during the past six and a half years. In almost every case the operation was performed for an urgent condition, such as acute mastoiditis, obvious cholesteatoma causing symptoms, or recurrent polypi with pain. On account of the difficulties of hospital accommodation, the simple mastoid operation for the cure of persistent otorrhoea of short standing or the radical operation for chronic otorrhoea has been rarely performed. In all but a few of the fatal cases a report of the necropsy has been available.

For purposes of discussion the cases have been classified as follows:

1. *Complicated Cases:* Mastoiditis with, in addition, brain abscess, sinus thrombosis, or meningitis.
2. *Uncomplicated Cases:*
  - (a) The simple acute or chronic case which runs a straightforward course.
  - (b) Cases with extradural abscess and no further lesion.
  - (c) Cases of tuberculous mastoiditis.

### COMPLICATED CASES.

For practical purposes it can be said that one out of every four chronic, and one out of every nine acute, cases presents one of the above-mentioned complications for treatment. There is little difference in the mortality rate, that in the acute being slightly greater than in the chronic.

TABLE I.—Incidence of Complications in Mastoiditis.

	Cases.	Percentage of Complicated Cases.	Percentage of Total Cases.
Temporo-sphenoidal abscess ...	46	31.0	5.6
Cerebellar abscess ...	27	18.4	3.3
Meningitis, serous and purulent ...	21	14.3	2.5
Lateral sinus thrombosis ...	41	27.8	5.0
C. ... ..	3	8.5	1.7
P. ... ..	2		
Total ... ..	147	100.0	18.1

Table I illustrates the relative frequency of each complication to mastoiditis as a whole. Fuller details of each complication are given later.

1. *The Meningeal Syndrome.*—Before considering the individual complications it is necessary to comment upon a common manifestation suggestive of infective meningitis, which is nevertheless not necessarily present. Head retraction, vomiting, high temperature with semi-coma and irritability, frequently mask the complicating lesions. Meningeal irritation is undoubtedly present, but whether the condition known as meningitis in the post-mortem room causes it is doubtful. After exploration, even where the cerebro-spinal fluid is milky, some of these cases will recover. Others will be found to have a brain abscess or sinus thrombosis, of which the symptoms were not apparent,

and the prognosis with suitable treatment of these lesions is favourable in a fair proportion of cases. In all such cases the risk of immediate and thorough exploration must be undertaken. In eleven of our cases operations were not undertaken on account of severe meningeal symptoms. Six of these cases were found to have brain abscesses. Purulent meningitis is a rare complication of otitis and mastoiditis in the absence of another lesion.

**2. Brain Exploration.**—In many cases, in the presence of meningeal symptoms and where brain abscess is suspected, one is strongly tempted to explore the brain, but refrains, because of the possible effects of trauma or of sepsis following such a procedure. In such cases, an exploratory brain puncture may be the only chance of proving the presence of brain abscess, and it has been found that this operation can be undertaken with only slight risk.

Twenty-seven cases, all presenting meningeal symptoms or symptoms suggesting abscess, were explored with a negative result. Of these, 3 were found *post mortem* to have purulent meningitis; 12 an abscess, with or without other complications; and 3 had lateral sinus thrombosis. Eight recovered, these being probably cases of serous meningitis presenting the masking syndrome. In one the complication present was doubtful. No *post-mortem* examination was allowed. Of the eight cases which recovered, not one showed any effects attributable to brain exploration.

#### BRAIN ABSCESS.

A statistical record of the cases of brain abscess is given in Table II.

TABLE II.—Brain Abscesses.

		Total Cases.	Incidence in Mastoiditis.	Diagnosed.	Suspected.	Not Diagnosed.	Not Opened (Died).	Opened (Died).	Total Deaths.	Death Rate.	Opened (Lived).	Sinus Thrombosis Superadded.	Incidence of S.T. as a Complication.	Acute Mastoiditis.	Chronic.	No Operation.
Temporo-sphenoidal Cerebellar ...	46	5.6	32	7	7	14	15	29	63.0	17	7	15.2	6	37	3	
	27	3.3	8	9	10	19	5	24	88.0	3	9	33.3	6	18	3	
Total ...	73	9.0	40	16	17	33	20	53	72.6	20	16	22.0	12	55	6	

Temporo-sphenoidal abscess occurs in about 6 per cent. of all cases of mastoiditis. In this series it has been six times more frequent in the chronic than in the acute cases. Cerebellar abscess, on the other hand, is about half as frequent as temporo-sphenoidal abscess, and occurs three times more frequently in chronic disease than in the acute variety.

#### Diagnosis.

The signs and symptoms in any given case vary enormously, and it is impossible to divide the course of the disease into stages, as has been frequently attempted. Intracranial abscess defies rule-of-thumb methods of diagnosis, and exploration is frequently justified by the presence of one sign or symptom alone. A few notes on the reliability of certain features of the symptomatology are, however, worthy of consideration.

General muscular wasting is a more prominent sign in cerebellar than in temporo-sphenoidal abscess. Cerebral hebetudo and irritability are by no means common, but in some cases slow cerebration does occur. The majority of patients are quite rational, complaining only of weakness and loss of physical and mental energy. The semi-comatose condition occurring in the late stages is most frequently seen in association with meningeal signs. Headache of distracting severity is the commonest symptom. It is not necessarily localized, but is often frontal and bilateral. An extradural abscess or sinus thrombosis will cause headache of equal severity, but persistence of this symptom after treatment of such a lesion would justify an exploratory brain puncture. Vomiting is inconstant, is not often effortless, and sometimes occurs after meals, simulating a food vomit. The temperature chart is a most

unreliable guide. A subnormal temperature is rare, and even in the absence of other complications the majority of these cases have a normal temperature or an abnormal one of remittent, intermittent, or continuous type up to 103° F. Much more useful is the disproportion in the pulse temperature ratio, the pulse being frequently ten beats or more subnormal, taking a normal rise in pulse rate of ten beats for every degree rise of temperature as a standard. Optic neuritis is rare, though more frequent in cerebellar than in temporo-sphenoidal abscess.

**Temporo-sphenoidal Abscess.**—The diagnosis of this condition presents less difficulty than that of cerebellar abscess. In only seven out of forty-six cases was the condition definitely undiagnosed, although the signs referable to the nervous system are more indefinite than in cases of cerebellar abscess, and we explain the apparent discrepancy on the ground of the more frequent occurrence of meningeal and sinus thrombosis symptoms in the latter, which symptoms mask the less manifest brain condition. The presence of aphasia of the type in which there is inability to name objects or sounds, for which loss the patient compensates by description, is of great use in diagnosis of left-sided lesions. A fixed, dilated pupil on the side of the lesion is occasionally present early enough to be of assistance in diagnosis. Contralateral hemiparesis is rare, and interfered with the motor tracts is not often seen.

**Cerebellar Abscess.**—Examination of the nervous system is of more value than in temporo-sphenoidal abscess. Optic neuritis is more likely to be present. Ophthalmoplegias have not been noted, except the phenomenon of skew deviation, which has only been found in association with semi-coma. Nystagmus is infrequent, but always to the side of the lesion. There is usually atonia with ataxia, and loss of the deep reflexes can be demonstrated. The past-pointing test and the sign known as dysidiadokokinesia have been useful. Marked deafness, which is sometimes found, is an important sign, indicating involvement of the opposite auditory tracts by pressure.

#### Treatment.

The mastoid operation is first performed, either simple or radical according to the indications present. The dura mater is then exposed in either the posterior or middle fossa. In doubtful cases the direction of spread of the bone disease is helpful as an indication which fossa to expose and explore. Frequently a localized pachymeningitis externa or fistula will indicate the spot for exploration. A large-bored Gauvain's needle or a thin-bladed scalpel can be used. In those cases where pus is not immediately evacuated the brain can be explored in several directions to a depth of one and a half inches, and some reliance may be placed on an odour clinging to the exploring instrument after withdrawal, if pus has not been immediately evacuated. Whether puncture is performed in front of or behind the lateral sinus in cerebellar abscesses depends upon the position of the sinus, but for drainage the posterior route is the more satisfactory. If successful the opening in the dura mater is enlarged to admit a rubber drainage tube one-third of an inch in external diameter with a moderate bore, with the end turned back like a flange to make it self-retaining, as advised by Dundas-Grant. Cerebellar abscess is difficult to drain, as the tube becomes blocked with diffident brain matter and there is a liability to kinking of the rubber tube. A medium sized Parker's tracheotomy tube is appropriate by reason of its curve and length, and can be held in position by means of tapes. The posterior wound is closed as far as possible, or lightly packed with gauze. On account of the small opening in the dura mater and bone obtained by this method of access no trouble has been experienced in the way of hernia cerebri.

Speed in operating and a short period of anaesthesia are without doubt essential, but some care must be taken over the ear plastic in the radical cases to give good and easy access to the mastoid cavity for after-treatment. The subsequent dressing of the case when the patient is semi-conscious and refractory is by no means simple, and stricture of the canal must be especially avoided. The drainage

tubo has been removed at varying periods after operation from forty-eight hours, and there is still some doubt as to the best time for removal, but until discharge has ceased it should not be removed, and it is better to wait until it is extruded. In one case the tubo remained for six weeks without untoward result.

### Prognosis.

The prognosis of brain abscess is very serious. In our cases the mortality rate for temporo-sphenoidal abscess is 63 per cent., compared with 80 per cent. in the series which was described by Hunter Tod. This figure renders an opinion as to the ultimate result impossible in any individual case, and the chance of recovery seems to be almost as good in the cases with meningeal symptoms as in those without.

In cerebellar abscesses the prognosis is even worse, and in our cases the mortality rate was 88 per cent. Hunter Tod gives a death rate of 90 per cent. This high death rate is explained by: (1) The difficulties of diagnosis (a) on account of the frequent concomitant symptoms of basal meningitis, masking those of the brain lesion, and (b) the frequent occurrence of sinus thrombosis as an added complication. (2) The difficulties in treatment. The cerebellar lesion is more difficult of access and drainage than the temporo-sphenoidal. Of thirty-one cases of temporo-sphenoidal abscess where the abscess was opened and drained, seventeen recovered (55 per cent.). Of eight cases where cerebellar abscesses were opened and drained only three recovered (37.5 per cent.). It is possible that in the future more frequent brain exploration in the doubtful cases will increase the chances of recovery.

### After-Results.

Attempts to follow up cases of the hospital class are notoriously unsatisfactory. Headache and a mental instability, well described as childishness, persist for some time, but no gross sequelae have been encountered. One case died subsequently of malignant endocarditis.

### Incidence of Sinus Thrombosis in Brain Abscess.

In our series of cases sinus thrombosis was a concomitant complication in 33 per cent. of the cerebellar abscesses and 15 per cent. of the temporo-sphenoidal. This increased frequency in cerebellar abscesses is explained by the fact that the lateral sinus is a very frequent source of cerebellar infection. This point is of great practical interest in the consideration of the brain lesion, where the symptoms of sinus thrombosis may mask those of the brain abscess, or their urgency result in an insufficient examination of available signs before, during, or after operation. Recovery took place in two of these double lesions. This association may also be expressed by stating that in fifty-seven cases of sinus thrombosis brain abscess occurred sixteen times (30 per cent.). Combined cerebral and cerebellar abscesses have not occurred. Three cases of occipital abscess have been discovered at necropsy.

### LATERAL SINUS THROMBOSIS.

The incidence of lateral sinus thrombosis, excluding cases with brain abscess, is shown in Table III.

TABLE III.—Lateral Sinus Thrombosis.

Excluding cases with brain abscess, 41 cases. Incidence in mastoiditis 4.9 per cent. Mortality 75 per cent. No cases with ligature of internal jugular vein without exploration of sinus.

	Total Cases.	Acute.	Chronic.	Recovery.		Death.	
				Ac.	Chr.	Ac.	Chr.
A. Sinus not explored; vein not tied—that is, doubt in ante-mortem diagnosis; S.T. on necropsy	15	11	4	—	—	11	4
B. Sinus explored and vein not tied	15	4	11	1	5	3	6
C. Sinus explored and vein tied ...	11	1	10	—	4	1	6
Total ... ..	41	15	25	1	9	15	16

Lateral sinus thrombosis alone occurs in about 5 per cent. of all cases of mastoiditis, and is more common in the course of chronic than acute disease, although in this relation the difference in incidence is not so marked as in the case of brain abscess. The mortality is 75 per cent.

**Acute Mastoiditis.**—This complication was found in sixteen acute cases, only one of which recovered. The reason for this is found by reference to Table III. In section A are the cases where the sinus was not explored, and the jugular vein not tied. The majority of this class are acute cases. Scrutiny of the records shows us that the majority of these patients were children, and in most the course of the disease was atypical. In such cases the simple mastoid operation was performed for acute mastoiditis, after which the temperature continued to be intermittent and the child to be slightly indisposed. No rigors occurred. In many a perisinus abscess was exposed, but the condition of the sinus at operation was not considered to justify exploration. This exploration was postponed on a "wait-and-see" policy until the onset of bronchopneumonic signs or metastasis proved the true state of affairs, after which treatment was of no avail.

**Chronic Mastoiditis.**—The cases where treatment was directed to the sinus thrombosis are enumerated in Table III, and the results are more satisfactory. These are largely chronic cases. Generally speaking, in the acute case the onus to reduce the mortality rests with the surgeon, in the chronic with the physician. As far as can be judged, in the chronic case the high mortality does not depend so much upon the type of infection or the mode of treatment adopted as upon the delay before these cases come for treatment. In most, a history can be obtained of recent severe prostrating illness; there is not the story of vague indisposition which often precedes the more definite symptoms of intracranial abscess. Most of this series had a history of pyrexia over a long period; many had repeated rigors. It is lamentable that these cases were not sent for treatment, say, after the first rigor, when evacuation of a perisinus abscess would possibly have preceded an uneventful recovery, as has occurred in many cases classed initially as uncomplicated.

### Treatment.

As indicated above, exploration of the sinus must not be postponed long in those acute cases with intermittent temperature, even though the condition of the sinus, if this was exposed at a previous operation, did not seem to indicate it. Thrombosis can be present in a pulsating sinus which has a normal tunica adventitia. Exploration by incision is the only satisfactory method.

The bulk of the enormous literature on sinus thrombosis concerns ligature of the jugular vein and the indications for it. Recently Laurens has condemned the procedure as unnecessary, and there are grounds for this statement. Inspection of Table IV shows that there is not much difference in the mortality rate between the series in which it was tied and that in which it was not. In our opinion the indications for ligature are few, but can be well defined, and there is no question as to the usefulness of the procedure in cases where these indications are present. The vein should be tied:

- (1) When on exploration of the sinus the clot cannot be entirely removed from the lower end.
- (2) If, after complete emptying of the sinus on exploration, a rigor occurs, or an intermittent temperature persists for more than forty-eight hours.

Ligature or any operative intervention after the onset of the pulmonary signs of pyaemia entails a high operative risk. Two out of three deaths under anaesthesia in this series were such cases.

### MENINGITIS.

Purulent meningitis, uncomplicated, is the most uncommon complication, and occurred in only fifteen cases—an incidence of 1.75 per cent. "Serous" meningitis was found in six other cases, which were operated upon with good

results. The term "serous" has been used with hesitancy. All these cases had typical meningeal signs and symptoms, and on lumbar puncture a milky fluid was obtained under pressure, which in one case gave organisms on culture. These cases progressed favourably after evacuation of the extradural abscess present. Throughout this paper the aim has been to emphasize a disregard for meningeal symptoms. Whilst accepting the clinical entity *meningitis* as a terminal stage in extradural abscess, intercranial abscess, and lateral sinus thrombosis, we wish to point out that purulent meningitis alone is a very rare condition in the post-mortem room. Abscesses before rupture can give a clinical picture of meningitis, including a milky cerebro-spinal fluid, and the serous effusion following the irritation of an extradural abscess is accompanied by a similar symptomatology. Comparable conditions can be found in the peritoneal cavity serous effusion with local abscess and a tendency to limitation of extension in the early stages of disease. Nowadays no case of peritonitis is abandoned; similarly the condition which is known clinically as meningitis is an indication for immediate intervention.

#### *Septicæmia and Pyæmia without Sinus Thrombosis.*

These cases described by some authors have been extremely rare in our series. In two cases of septicæmia following operation the subsequent autopsy was negative. In two other cases thrombosis of the jugular bulb was present without changes in the sigmoid sinus, and in one of these cases exploration of the sinus was negative, bleeding being obtained from the lower end. Pyæmia was present in both cases.

Seven cases in the complicated series were probably cases of sinus thrombosis cured by Nature after removal of the focus of bone infection by operation. Each recovered and the sinus was not explored, so that only the clinical course justified a diagnosis of probable sinus thrombosis on account of similarity to those cases of sinus thrombosis which were treated as described elsewhere. Two developed empyemata, one a pulmonary infarction and serous effusion, two had multiple pyæmic abscesses, and two had repeated rigors with a positive blood culture. The lesson learnt has been the necessity for a close watch on the pulmonary condition in cases of sinus thrombosis with pyæmia. Empyemata have been discovered for the first time in the post-mortem room, and the influence which they must have had in bringing about a fatal result can only be conjectured.

#### UNCOMPLICATED CASES.

The mortality rate in the uncomplicated cases is 2.25 per cent. Nine out of a total of fifteen deaths were cases of tuberculous mastoiditis. Excluding these the mortality becomes 0.9 per cent., which is a figure representing the operative risk. One nephritic case died of pulmonary oedema, two rachitic children of acidosis, and one patient of bronchopneumonia. Autopsies were not available in the other two cases. A review of the cases as a whole presents no feature of interest. Under this section two other aspects of the subject are included:

1. *The Prognosis as to Hearing after the Radical Mastoid Operation.*—It has been noticed that the power of hearing is better in those cases with a slight discharge following the radical mastoid operation than in those cases where the cavity is absolutely dry and epithelialized. To obtain a perfect epithelial covering in the cavity it is necessary to curette the inner wall and to cause the formation of a barrier or stricture by scar tissue at the auditory end of the Eustachian tube—with adverse effects on the auditory structures on the inner wall of the middle ear. Most patients with chronic otitis of a severity to warrant the radical operation would be content to sacrifice any usefulness of the ear for hearing for cessation of the discharge. In cases, however, where the function is of importance, the better hearing power of a moist cavity must be borne in mind. These remarks hardly apply to the emergency operation, where the total eradication of disease is indicated.

2. *Streptococcus mucosus Infections.*—A peculiar type of otitic infection was described by Viennese authorities in which the *Streptococcus* or *Pneumococcus mucosus* was found. Several of these cases have occurred, more frequently during the spring epidemic of otitis media. A history of earache is obtained, with or without slight discharge and consequent relief of pain. At a period varying from ten days to six weeks after the onset the patient complains of severe pain behind the ear. On examination a normal or scarred tympanic membrane is seen, with signs of acute mastoiditis, which are frequently atypical. A swelling far back over the position of the mastoid foramen indicates the probability of perisinus suppuration in many cases. Operation reveals extensive bone necrosis and sometimes caries, whilst the bone fragments are soaked in thin pus with a highly characteristic odour. Complications are common. The organism is usually to be obtained in pure culture on account of the absence of a contamination from the auditory canal. Special examination must be made, as it is likely to be mistaken for a common form of streptococcus. It is a member of the group which links together the streptococci and pneumococci, possesses a capsule, is bile-soluble, but occurs in chains. Several varieties have already been classified.

Table IV shows a mortality rate of 14.1 per cent. among all cases of mastoiditis requiring operation, due largely to the high incidence of complications and to the high death rate of such cases.

TABLE IV.—*Death Rate and Gross Complication Incidence in Mastoiditis.*

Disease.	Uncomplicated.		Complicated.		Total Cases.	Total Deaths.		Percentage Complicated to Total Cases.
	Cases.	Deaths.	Cases.	Deaths.		No.	%.	
Acute. Simple mastoid	400	No. 5 %	49	No. 35 %	451	No. 41 %	9.1	10.9
Hearth's operation	2	402						
Chronic. Radical operation	262	10 3.8	37 98	65 66.3	360	75 20.8		27.2
No operation ...			11					
Total ...	664	15 2.25	147 101 69.0		811	116 14.1		18.1

#### CONCLUSION.

In this paper an attempt has been made to draw conclusions from a series of records frequently far from complete. Every attempt has been made to avoid reference to authorities and to personal views, recording only the lessons and results afforded by the available material. We feel that the subject-matter will be of use to others, because of the better results obtained in the treatment of cases not included here—treatment based on conclusions arrived at whilst this summary has been in progress. Emphasis is to be laid on the following points:

1. The importance of regarding meningeal symptoms as an indication for operative intervention rather than a contraindication.
2. The necessity for brain exploration in doubtful cases.
3. Examination for multiple complications in any complicated case.
4. Early sinus exploration in cases of acute mastoiditis where, especially in children, thrombosis tends to be a "quiet" lesion.
5. The need for education to an appreciation of the danger signal in chronic suppurative otitis media equal to that obtaining at the present time in intra-abdominal disease.

We wish to thank Mr. E. W. Bain for his permission to include case reports and results in the statistics, the staff of the pathological department for their help in autopsies and the like, and the past resident staff of the Leeds General Infirmary, without whose notes this paper would have been impossible.



## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### EPIDEMIC ENCEPHALITIS WITH SEVERE INVOLVEMENT OF THE SPINAL CORD.

The following case, which appears to be one of epidemic encephalitis in which the spinal cord was seriously affected, is of sufficient rarity to be worth recording.

A married woman, aged 31, was admitted into Addenbrooke's Hospital on November 26th, 1923, for loss of sensation and paralysis of the trunk and lower limbs.

**History of Illness.**—The patient was confined on November 9th, 1923, and the child was born without medical assistance. Four days later her bladder became distended, and it had since required daily catheterization. On November 16th she noticed "pins and needles" sensations in her toes; these sensations seemed to pass upwards as far as the level of the breasts, and were followed during the next few days by loss of all sensation from the shoulders downwards. At the same time she also had shooting pains at the back of the neck, across the shoulders, and down the upper limbs. During the following days she began to lose power of movement, first in the toes, then in the whole of the lower limbs, and for the last three days she has been unable to move the latter. Two weeks before admission she began to see double, and this has continued intermittently. For about a week she has been very drowsy, being unable to keep awake even when friends came to see her.

**Previous History.**—The family and previous history were of no special importance; she had had four children. Her health had generally been good except for "bilious attacks" and constipation, but six weeks previously she had had an attack of jaundice.

**Condition on Admission.**—She was an intelligent woman, with good complexion and nutrition. Her pupils were normal in size and movement, and ptosis and strabismus were absent. Movements of the eyes from side to side caused pain and slight nystagmus; occasionally diplopia was present. Her hearing was good. The muscles of the face, jaw, and tongue were normal. She complained of pain and stinging at the back of the neck and down both upper limbs; sensation over these areas was otherwise normal. There was a slight loss of power in both forearms, as shown by a weakened grip; the reflexes were increased, but there was no obvious wasting. From about the level of the third rib downwards, over both trunk and lower limbs, there was complete loss of sensation to touch, pain, and changes of temperature. Joint and muscle sense and vibration sense were all absent. There was a small ulcer over the hepatic region from the burn of a hot bottle, and a blister on the big toe from sitting too near the fire, neither being felt at the time; there was a bed sore over the sacrum. The epigastric and abdominal reflexes were absent. The lower limbs were completely paralysed; the knee-jerks and ankle-jerks were absent and the plantar reflexes were extensor. The abdomen was distended and the bowels constipated. The bladder was distended and void of sensation; the urine was acid, specific gravity 1020, and it contained a little albumin and pus. The movements of the chest were diminished, but the heart and lungs were normal. The temperature was 102.8°, pulse 124, respirations 28.

#### Course of the Illness.

On November 28th the patient was very drowsy and fell asleep while being washed. The left knee-jerk was just perceptible. On November 30th lumbar puncture was performed and cerebrospinal fluid removed under increased pressure; it was very faintly opalescent; leucocytes 150 per c.mm., lymphocytes 90 per cent., polymorphs 10 per cent. On culture it was sterile (Dr. W. H. Whittle). Wassermann reaction negative.

On December 1st both knee-jerks very slightly present. Tapping the calf muscles caused extensor response at the ankle-joint. Temperature normal. Two days later she complained of "jumps" in the lower limbs. Right knee-jerk only present; plantar reflexes absent; diplopia less. Could use hands better and feed herself.

By December 12th the temperature, which had fallen since her admission, began to rise again, and was then 103°; this was due to a *B. coli* infection of the urinary tract. For the next two months the patient had a high temperature and was extremely ill, and for several months afterwards she had periodical attacks of pyrexia, with sweating, vomiting, and increased pyuria.

On December 17th she had cramps and pins and needles sensation in the lower limbs; phlebitis of left thigh. On December 28th she was very drowsy in the daytime. Plantar reflexes extensor. The bed sore over the sacrum had become very large.

On January 14th, 1924, sensation was present as low as the tenth dorsal spine. On February 1st the lower limbs were wasted; knee-jerks absent; plantar reflexes extensor. On February 25th the movements of the lower limbs were improving; cramps were occasionally present.

On March 24th the left lower limb was sensitive to touch. Two days later she passed urine normally, the ulcer was healed, and the bowels acted normally. There was occasional incontinence of urine. Abdominal reflexes absent; knee-jerks present, ankle-jerks present; plantar reflexes extensor. She could move both lower limbs. Sensation to touch was present all over the trunk and limbs.

By October 3rd the knee-jerks had increased; plantar reflexes extensor; there was no ankle clonus. On December 15th she could raise both lower limbs off the bed and bend the knees. By January 16th, 1925, she could stand if steadied, and could distin-

guish hot and cold, sharpness and bluntness, over the lower limbs. On February 10th she could walk, if supported in maintaining her balance. Two months later she walked better, but balance remained poor; she had control over bowel and bladder.

Recently the patient wrote to say that she was still slowly improving. She could walk a little with a stick and work about the house, but still had some stiffness and cramps in the legs.

My thanks are due to Professor A. J. Hall, who kindly saw the patient and suggested publication, and to Ward Sister Jones, to whose unwearied attention the patient largely owes her recovery.

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Cambridge.

#### MANGANESE IN FURUNCULOSIS.

The dramatic results often obtained by the use of intramuscular injections of colloidal manganese in furunculosis are well enough known, but far less frequently is this preparation given by the mouth. Among children, particularly infants, it is obviously desirable to use the oral method if equally effective. A particular case recently under my care exhibits, I think, a rapid and successful result.

A female child developed, at the age of about 12 months, several boils in the region of the buttocks, with no evident focus of infection. Originally breast-fed, weaning on sound lines had been successful; no alimentary disturbance had occurred, nor was there any reason to suspect any degree of constipation. The teeth were somewhat late in development, but there was no evidence then, or later, of rickets or other disease. The urine was normal and contained no sugar. Various modifications of diet, bearing in mind especially the question of an underlying disorder of carbohydrate metabolism, were of no avail; local applications were equally ineffective, and for a period of six months crops of boils increased both in numbers and in severity on the buttocks and lumbar region, causing much pain, fretfulness, and irritability.

At the age of 18 months, at a time when several boils, one particularly large, were developing, treatment by colloidal manganese was tried, beginning with a dose of 4 minims three times daily in water after food. Within three days the development of these boils was evidently arrested, with hastened absorption of earlier ones. After three days, the dose was increased to 5 minims thrice a day for a similar period; at the end of that time the boils had entirely disappeared, and much of the long-standing induration, the result of repeated crops of boils, had also disappeared. The dose was increased to 6 minims thrice a day for three days, and then to 7 minims for a further three days. At the end of this period—that is, after twelve days' treatment—the area appeared completely normal with the exception of a few bluish patches, the result of some twenty or more old-standing and long-persisting boils. The manganese was then stopped, colloidal ferromalt being given in half-drachm doses twice daily after food; this also was well tolerated by the child.

Throughout the treatment no digestive disturbance arose. The general condition improved steadily and fretfulness and irritability ceased. It would seem, therefore, that in the oral administration of this preparation we have a valuable means with which to combat cases such as this, in which no error of diet or of general hygiene seems to have been responsible.

MAURICE L. YOUNG, M.A., M.B., M.R.C.S.  
St. Albans.

#### QUININE POISONING.

A MARRIED woman, aged 28, thinking she was pregnant, procured 60 grains of quinine sulphate in powder from a chemist, dissolved it in hot whisky and water, and swallowed the whole at 10 p.m. She was alone in the house, and at 11 p.m. her neighbours were awakened by her shouting.

For an hour afterwards she was delirious, and had to be held down in her bed. When I saw her, at 1.30 a.m. next day, she was unconscious and in a state of extreme collapse, so much so that I thought death was imminent. However, an enema of hot coffee, a hypodermic of strychnine and digitaline, and hot bottles rapidly produced improvement. At 2.30 she was conscious, but quite deaf; she complained of intense headache, and said she could see nothing. Subsequently she vomited copiously, and afterwards improved steadily.

Thirty-six hours after taking the drug she was walking about, doing her work, and apparently quite well.

The drug appeared to act as a depressant to the respiratory and cardiac systems. I am in doubt as to the amount which may be taken with impunity, but the rapid elimination of the drug is well illustrated by this case.

Stony Stratford. H. GOUGH, M.B.

POISONING BY TOBACCO APPLIED TO  
THE SKIN.

THE cases of tobacco poisoning recently recorded in the JOURNAL remind me of a reference to the condition which is of some historical interest.

Fovillo (*Influence des Vêtements sur nos Organes*, Paris, 1834) describes the French military headgear of his time as specially tight, heavy, and unventilated. He adds that soldiers were accustomed to carry their tobacco inside their caps, and that symptoms of narcotism often resulted. One can understand that a mass of presumably strong tobacco, confined between an unventilated shako and a moist, overheated scalp, would have much the same effect as the fescani in the axilla described by Dr. Deacon (July 10th, p. 61).

JOHN RITCHIE,  
M.O.H. Dumfriesshire.

## Reports of Societies.

## CONCEALED ACCIDENTAL HAEMORRHAGE.

At a meeting of the Edinburgh Obstetrical Society held on June 9th, with the President, Dr. R. W. JOHNSTONE, in the chair, papers were read by Dr. J. HEWITT and Dr. SAMUEL J. CAMERON (Glasgow) on concealed accidental haemorrhage; Dr. Hewitt described the condition of the uterine wall in these cases and Dr. Cameron discussed the rational treatment, based on Dr. Hewitt's findings.

Dr. HEWITT said that the question of the clinical condition of the uterine wall could best be approached by a brief consideration of the common explanation of the retention of blood within the uterus. He agreed with Gordon Ley that such suggested causes as the non-dilatation of the cervix, adhesion of the membranes around the os, pressure on the lower uterine segment by the presenting part, or rupture of the haemorrhage into the amniotic sac, were inadequate and erroneous. In addition to the objections raised by Ley, Dr. Hewitt quoted Barnes with reference to the supposed adhesion of the membranes, and added the personal observation that in many cases the blood clot was entirely retroplacental. Even when bleeding extended beyond the placental margin, the blood often travelled upwards towards the fundus, and thus never even reached the lower segment. In view of the inadequacy of these theories it was not surprising that the view arose that the blood was retained, because the uterus was unable to expel it, the uterine muscle being described as "inert," "atonic," or "paralytic." Dr. Hewitt's view was that the uterus was temporarily unable to undergo rhythmic contractions, because it was already in a state of sustained and painful tetanic contractions. The basis for this belief emerged from consideration of the question why the foetal parts could not be palpated in cases of concealed accidental haemorrhage. That rigidity of the parietes was not responsible was shown by the fact that palpation still yielded negative results when the patient was deeply anaesthetized, and even after the abdomen had been opened in the course of a Caesarean section on these cases. Intervention of placenta and blood clot occurred in some cases, but in others where palpation had been negative the placenta would often be found on the posterior wall during manual exploration of the uterus in the course of Caesarean section or at a necropsy. He drew attention to the hard, tender, well defined uterus as being incompatible with the description "atonic," and added that in concealed haemorrhage the membranes were tense—a circumstance which could not occur in an inert organ. He referred to the view of FitzGibbon that the apparent increase in size of the uterus resulted from forward projection of the organ, due to its tonic state, but he admitted that in most cases the amount of intrauterine haemorrhage also contributed to the increased size. Sir James Mackenzie's dictum, that a hollow muscular organ might be distended indefinitely without producing pain until a contraction was started, was quoted in support of the speaker's view that the uterus was in a state of tonic contraction.

Dr. CAMERON said it was most important to realize that in concealed accidental haemorrhage the patient's life was endangered more by shock than by haemorrhage. The amount of blood lost in a fatal case was often much less than that lost by patients with placenta praevia who survived. In respect to the relative importance of shock and haemorrhage there was a close similarity between concealed accidental haemorrhage and acute inversion of the uterus. If bleeding was considered to be the more important factor, Caesarean section should be performed on every occasion, but with this Dr. Cameron did not agree: perhaps the most generally practised method of treatment consisted in packing the vagina. It was claimed that an efficient vaginal plug arrested the flow of blood through the uterine arteries, but he did not believe that it was possible by any method short of actual ligature or clamp to arrest or perceptibly diminish the flow of blood through these vessels. Moreover, a liberal blood supply still reached the uterus by the ovarian arteries, which during pregnancy were not much smaller than the uterine, and which, with the latter, formed an unobstructed "utero-ovarian loop" on the margins of the uterus, between the aorta above and the internal iliac artery below. Dr. Cameron demonstrated this point by an x-ray photograph of an injected specimen. In treating cases of concealed accidental haemorrhage the patient should be guarded from shock by administering large and repeated doses of morphine during the acute stage. When this stage had passed, but not before, labour pains were stimulated by pituitary extract. If the patient did not improve after morphine had been given he performed Caesarean section, because in his experience one of two events had occurred—a recurrence of bleeding, or rupture of the uterus. So far he had never been compelled to remove the uterus on account of atony. He did not perform vaginal Caesarean section because: (1) the shock was not less than that associated with abdominal Caesarean section; (2) it was impossible to inspect the uterus for rupture; (3) haemorrhage was less easily controlled; and (4) towards the end of pregnancy extraction of the child might prove difficult.

## Reviews.

## A FRENCH TREATISE ON INSULIN.

IN his volume, *L'Insuline*,<sup>1</sup> Dr. ÉMILE AUBERTIN of Bordeaux presents to French readers a comprehensive survey of insulin in all its bearings. He has not only collected information from a vast number of published sources, but he has been able to add to this the results of his own and Professor MAURIAC's experimental researches and clinical experience. Thus his book ranks as a monograph of first importance in the literature of insulin. The medical profession in France seems to have been handicapped at the outset by the high cost of insulin, the production of which in that country is a State monopoly. For reasons which Dr. Aubertin's book discloses there is no widespread acquaintance in France with the use of insulin in the treatment of diabetes. His work should prove of the greatest value in instructing the medical profession in the administration of insulin, and possibly in creating a public demand in France that the supply of insulin shall be made cheaper and more generally available there.

The book is divided into three sections. The first section deals with the history of the discovery of insulin, its preparation and physico-chemical properties. In the second section the various effects of the administration of insulin are admirably described. This section includes an account of much original work carried out by the author. His observations on the utilization of blood sugar by the tissues are of great interest. He states, for instance, that the sugar diminishes during the passage of blood through the organs of a diabetic just as in those of a normal subject, and that insulin injection does not increase the sugar loss in the diabetic. Yet he admits, of course, that the utilization of the sugar which the blood loses is profoundly influenced in some way as yet unexplained by

<sup>1</sup> *L'Insuline*. Par Dr. Émile Aubertin. Préface du Professeur agrégé P. Mauriac. Paris: Gaston Doin et Cie. 1926. (Roy. 8vo, pp. 400; 23 figures, 45 fr. net.)

insulin administered to the diabetic. He attaches great importance to albuminoids in the production of ketosis and regards them as being more dangerous than fats in this respect.

The third section is devoted to a consideration of the therapeutic use of insulin. Dr. Aubertin, in agreement with his colleagues Mauriac and Picchand, has formed the opinion, from their own experience, that the best plan to follow is to adopt a "standard diet" upon which to place the diabetic without preliminary starvation. This diet has a caloric value of 2,800, and contains 240 grams of fat, 80 grams of carbohydrate, and 80 grams of protein. By way of example, charts are given showing patients whose weights were 65, 71, 58, and 54 kilograms respectively at the beginning of treatment. This "standard diet" of 2,800 calories is considerably higher than the 1,679 calorie diet suggested by Woodyatt, which has proved satisfactory in the opinion of so many observers. It will also be seen that the fat-glucose ratio is slightly above Woodyatt's. On the whole, in spite of minor variations, Aubertin adopts the Toronto plan of adequate diet with adequate insulin, and has little to say in favour of preliminary or occasional starvation.

The book is deserving of high praise for the immense amount of literature that has been consulted and condensed into a thoroughly useful summary, while the author and his colleagues have added by their own work fresh and useful facts that materially advance our knowledge of diabetes and its treatment with insulin.

It is a pity that in correcting the proofs so many proper names should have been allowed to remain misspelt.

### HEREDITY.

PROFESSOR ARTHUR THOMSON'S book on *Heredity* has now reached a fifth edition,\* and is too well known to need any detailed description. Briefly it may be said to give the reader the facts—microscopical, statistical, and experimental—on which our knowledge of heredity rests; it also discusses, in a temperate and fair-minded spirit, the numerous debatable questions inherent in the subject. The tendency to draw far-reaching conclusions in a subject of great importance and naturally engrossing is strong in some natures, and to such the author administers the sobering reflection that it is too soon to settle down to fixed conclusions on more than a few points. The present edition has been revised throughout, and some of the more recent investigations have been incorporated, such as those of Cuénot on Mendelian phenomena in mice, of Haecker on sex differentiation, of Kammerer on the inheritance of acquired characters, and Cunningham's theory of the influence of specific hormones in heredity. An attempt has been made to keep practical problems in view, but owing to the imperfect state of our knowledge it has not been found advisable to risk many concrete suggestions.

The problem of the transmission of acquired characters does not seem to be definitely settled; the practical man, whether physician or breeder, is still in many cases a firm believer in their transmissibility, and one of the keenest physicians has said that a few months in practice was enough to dispel all doubt as to the inheritance of such characters. Professor Thomson, after a thorough overhauling of the evidence for and against, comes to the conclusion that there is little warrant for being other than extremely sceptical about the inheritance of these characters.

With regard to the possibility of the transmission of innate characters and predispositions there is no doubt; as Professor Thomson puts it, it is idle to deny that some children are "born bad" or "born good," and he quotes the dictum of Heine that "a man should be very careful in the selection of his parents." But there is no reason to believe that these inherited predispositions necessarily persist, the probability being that the subtle process of germinal selection is sometimes able to eradicate a morbid tendency. The liability to "rust" in wheat plants is suggestive in this connexion. Crosses between plants that are immune

and others that are susceptible yield hybrids that are all susceptible; but if the hybrids be inbred, the progeny are partly susceptible and partly immune, and the latter breed true—that is to say, the morbid predisposition has been eradicated from them. It is better, however, not to trust entirely to nature in this matter, and the following rules are put forward by the author as deserving of adoption: That the best general constitutions should be mated; that a markedly good constitution should not be paired with a markedly bad one; and that a person exhibiting a bias towards a specific disease should not marry another with the same bias. These rules seem so self-evident that they may almost be regarded as platitudes; they are ignored in innumerable cases, however.

There is less indifference as regards the effects of consanguinity; these are generally understood, but they have latterly been defined with somewhat greater precision. A similar hereditary taint in the lineage of mated cousins is extremely likely to lead to unhealthy offspring, even if the cousins are somatically healthy; and if somatically healthy cousins have what is called a simplex dose of the taint the probability is that one-quarter of the children will be unhealthy. On the other hand, there is no reason why two healthy cousins with a good family history on both sides should not marry. Careful mating, however, can do more than obviate the recrudescence of disease. Karl Pearson's observations lead him to believe that exceptional families can by careful mating obtain an exceptional stock in a few generations; on the other hand, the degenerate inhabitants of the slums of our big cities can as readily produce a degenerate stock, which no change of environment will elevate and nothing but an admixture with better blood will improve.

With regard to the desirability of eugenic measures carried beyond the rules above mentioned, the important fact should be kept in view that our ignorance is, as Professor Thomson states, immense. Some of the recommendations which have been made are merely grotesque, and it is clear that the solution of the difficult problems involved needs to be in the hands of level-headed men, to the exclusion of enthusiasts and hysterics.

### THE SANOCRYSIN TREATMENT OF TUBERCULOSIS.

In a volume written in French† Dr. C. H. WÜRTZEN recounts his clinical experiences of sanocrysin in the treatment of pulmonary tuberculosis. He covers much the same ground as his predecessors, spending time on the reactions and the complications that follow excessive dosage. The volume contains two chapters—on variations in antibody response and on morbid anatomy—written by Dr. Hansen and Dr. Fogh respectively. Then follows the history of each patient and a review of the results obtained. Dr. Würtzen divides his cases into three groups. Group I comprises 16 patients that were treated mostly in 1924 and have been followed up after discharge; half of these were mild, half were serious cases; after leaving the sanatorium 7 continued to improve and 9 became worse; one of the latter died of bronchopneumonia. Group II comprises 39 patients treated by 1-gram doses of sanocrysin; the immediate results were as follows: 17, of which 14 were serious cases, died; of the 22 remaining patients 10 showed improvement as judged by clinical and roentgenological examination, 8 showed clinical but not roentgenological improvement, and 4 were frankly worse. Group III comprises 61 patients treated by 0.5-gram doses; of these 8 died, 25 improved clinically and roentgenologically, 24 clinically but not roentgenologically, 2 were unchanged, and 2 were worse. All of the patients except 8 belonged to the Turban 2 or 3 category; of the 8 in Turban 1 only 2 improved both clinically and roentgenologically.

These figures seem to us to be meaningless. That sanocrysin is a dangerous drug there is no question; the fact that 7 out of the 17 deaths in Group II are attributed to the result of treatment suffices to prove this, without

\* *Heredity*. By J. Arthur Thomson, M.A., LL.D. Fifth edition, thoroughly revised. London: J. Murray. 1926. (Demy 8vo; pp. xiv + 542; 47 figures. 21s. net.)

† *Recherches sur les Effets de la Sanocrysin*. Par Dr. C. H. Würtzen. Copenhagen: Levin and Munksgaard. 1926. (Sup. roy. 8vo, pp. 223; 125 figures.)

mentioning the albuminuria, the dyspepsia, the stomatitis, the anaemia, the haemorrhages, skin rashes, glycosuria, and other complications observed in different patients from time to time. But whether it is of any value it is quite impossible to say—the cases are too few. One of the disadvantages of the clinician is that he sees his patients too closely. He finds it difficult to get away from them and view them with a true sense of relativity; so that when he has recounted the recovery of a few dozen patients he proceeds straightway to draw entirely unfounded conclusions: He is so imbued with the old adage about treating the patient and not the disease that he forgets that it is sometimes far more important to treat the disease rather than the patient. An experimental scientist wishing to ascertain, let us say, the toxicity of a certain preparation, chooses fifty or a hundred animals of the same weight and age, brought up under the same conditions, fed and housed alike, and looked after with the utmost regularity; the dose administered to each is standardized precisely, and a post-mortem examination is conducted on each animal that dies. With these precautions he obtains the percentage mortality due to a certain dose. On repeating his experiment he may obtain a figure differing by 20 or 30 per cent. or even more from his first titration; and not till he has worked out his standard deviation and obtained the degree of variation that is likely to be observed in similar batches injected with the same dose does he feel justified in judging of the toxicity of his preparation. The clinician manifestly cannot do this. His patients are of different ages, are brought up under different conditions, have received varying doses of bacilli at varying times, show lesions differing enormously, not only in their extent, but in their nature, and are dissimilar in a number of other respects. These are treated with varying doses of a drug; some appear to react favourably, others unfavourably. From a consideration of a comparatively few such cases he hopes to obtain a definite answer to his question. The problem he sets out to solve is scarcely clearer than when he started; at the best he is justified in forming no more than the most tentative opinion. It seems to us that the labour expended by clinicians at present is on this account largely wasted. If sanocrysin was capable of affording a rapid and complete cure of all tuberculous patients it might be possible to ascertain this from the treatment of two or three hundred cases; but when, as is abundantly shown, this is not so, the present method of investigation fails. To ascertain the value of the drug it is necessary to treat several hundreds or thousands of patients in the same way, to follow them up for two years at least, and to compare them with similar patients who have received sanatorium treatment alone.

*The Treatment of Tuberculosis with Sanocrysin and Serum*,<sup>4</sup> by Dr. KNUD SECHER, follows much the same lines as Dr. Würtzen's book. Both physicians are working at Copenhagen, and both disagree on a number of important points, such as the value of serum treatment, the dose of sanocrysin to be administered, and the type of patient to whom it should be given. Dr. Secher's figures are frankly worthless; he has selected the ones that he wishes to publish and has omitted a large number of others.

In our opinion neither of these books should have been written. No doubt the desire to publish one's work is strong, but in each case a brief paper in one of the recognized journals would have been sufficient. As it is, the reader is confronted with two volumes of considerable size, from which it is difficult to pick out the essential facts. The tables in Dr. Würtzen's book are too complicated, and, moreover, do not always agree with the text. Dr. Secher's work, which is bravely written in English, is marred by the use of such words as intoxication, bacilli-free, tumorous, and a number of malapropisms and ambiguities of style which render it difficult to read. We trust that in future the devotees of sanocrysin will hesitate before rushing into print in an endeavour to prove what by their present methods is unprovable.

<sup>4</sup> *Treatment of Tuberculosis with Sanocrysin and Serum* (Moellgaard). By Knud Secher, M.D. Copenhagen: Levin and Munksgaard; London: W. Heinemann (Medical Books) Ltd. 1925. (Sup. roy. 8vo. pp. 256; 65 figures. 21s. net.)

## RADIOGRAMS OF THE VISCERA.

*A Descriptive Atlas of Visceral Radiograms*,<sup>5</sup> edited by A. P. BERTWISTLE and E. W. H. SHENTON, adds one more volume to what may be termed the "picture books" on radiology which have been so fashionable in recent years. In a short introduction the chief points of the various organs and regions of the body dealt with are indicated from the x-ray point of view. Following this are over three hundred well produced, and in the main typical, radiograms, which portray very well different x-ray facts to be elicited by the examination of the alimentary, the urinary, the respiratory, the nervous, and the vascular systems. Others deal with the teeth, with foreign bodies, the thyroid gland, the nose, and the female generative organs. Accompanying each illustration is a short explanatory note; in many a short clinical history of the case is provided, and in some cases also the operative findings.

A large number of experienced radiologists have supplied the bulk of the pictorial material. Prominent amongst these are Dr. Rowden, jun., and Dr. Jordan, whilst Professor Sicard, Dr. Spriggs, Mr. Morriston Davies, Professor Wilkie, Professor Fullerton, Mr. Kidd, Sir William Milligan, and others have contributed both radiograms and notes on cases. In addition to abnormal conditions the authors have incorporated a number of pictures of the normal; the latter, in a book written, as this is, more for the general practitioner than the specialist in radiography, add considerably to the book's value. We note also that, although a considerable number of highly interesting rare conditions are shown, the bulk of the illustrations depict the commoner pathological conditions met with in making x-ray examinations. The illustrations are, almost without exception, very good and well chosen, the explanatory notes concise and to the point. The paper is excellent. Throughout there is evidence of the care and forethought of the authors.

Where all is so good it is somewhat invincible to pick out for especial praise any one portion, but we consider that the chapters on the respiratory, the nervous, and the urinary systems are the best, and in the latter the illustrations of various kidney conditions, stones and otherwise, by Dr. Rowden, jun., are of great merit. It is one of those books the pages of which it is a pleasure to turn over, and the amount of useful information it contains is very large. To the general practitioner its value will be great, and the specialist in radiology will also find in it much useful information. Not the least interesting point is the price; it is extraordinary in these times that so well and perfectly illustrated a book can be put on the market for the moderate sum of one guinea.

## MODERN METHODS OF FEEDING IN INFANCY AND CHILDHOOD.

THE short book by Drs. DONALD PATERSON and J. F. SMITH entitled *Modern Methods of Feeding in Infancy and Childhood*<sup>6</sup> appears as one of the Modern Medical Monograph series edited by Professor Maclean. It will certainly prove to be a popular book for students because it is concise and dogmatic and expresses opinions in an easily rememberable fashion. The three main subjects dealt with are normal breast-feeding, artificial feeding, and minor digestive ailments of children. The text is accompanied by twelve tables, in some of which there seems to be a good deal of unnecessary repetition. There is not much that is new in the book, as its title might suggest, and certainly nothing revolutionary. Compared with books written on the same subject a generation ago, this short book would differ not so much in its information as in its brevity and emphatic style.

<sup>5</sup> *A Descriptive Atlas of Visceral Radiograms*. By A. P. Bertwistle, M.B., Ch.B., F.R.C.S. Ed., and E. W. H. Shenton, M.R.C.S., L.R.C.P. London: H. Kimpton. 1925. (Cr. 4to, pp. xx + 250; 350 figures. 21s. net.)

<sup>6</sup> *Modern Methods of Feeding in Infancy and Childhood*. By Donald Paterson, D.A., M.B. Edin., M.R.C.P. Lond., and J. Forrest Smith, M.R.C.P. Lond. Modern Medical Monographs. London: Constable and Co., Ltd. 1925. (Demy 8vo, pp. ix + 105. 7s. 6d. net.)

## DISEASES OF NOSE, EAR, AND THROAT.

The second volume of the monumental system of otorhino-laryngology, edited by DENKER and KAHLER,<sup>7</sup> forms Part II of the section on diseases of the nose and throat. We published a review of the first volume last October, and it is announced that this section will be comprised in the first five volumes.

Continuing the work on this scale, the general pathology, symptomatology, and treatment of these regions are reviewed in detail, and the reader who desires information on essentials and the selection of the best methods will feel that he is sacrificed to a desire to omit nothing. Thence there is a sudden jump to a description of tracheotomy by Dr. Harmer of Vienna. It seems strange, though perhaps illuminating, that a subject of such vital importance should be illustrated merely by a few blocks depicting tracheotomy tubes, among which Durham's is not seen, whilst a little later in the book a chapter devoted to congenital deformities of the nose is profusely interspersed with an array of frightful monsters, possibly of intense academic interest. This leads on to the subject of hare-lip and cleft palate, and its inclusion in such a work is significant. It is to be noted that Laugenbeck's operation for the latter is figured and described, though the operations of Lane and of Brophy are mentioned. It is not easy to understand the plan on which the work has been compiled, for although congenital deformities and tumours of the larynx, trachea, and bronchi follow, there is another sudden change after this to a section on the surgery of the nasal septum, written by the late Professor Passow. This chapter is particularly thorough, and contains an interesting photograph showing the relative position of the surgeon and the patient during an intranasal operation; the surgeon sits on a stool which forms a bridge over the body of the semi-recumbent patient. Dr. Lautenschläger, who contributes a long article on atrophic rhinitis, appears to hold that the outlook is bad and that the reason cases are only seen in early life is that the patients succumb to tuberculosis, pneumonia, and chronic bronchitis, unless they are cured by operation, which he considers the only efficient remedy; he gives no evidence for this gloomy opinion. On the other hand, he believes that the disease sometimes disappears spontaneously in older patients; this certainly does occur, but he is very vague regarding the ultimate fate of these patients. The surgical treatment is described at great length; this indicates a lack of perspective in discussing a disease which readily responds to simple local applications of glycerin containing glucose or honey, a method which is not even mentioned in the ten pages devoted to treatment. The remainder of the volume is almost entirely devoted to the consideration of the inflammatory diseases of the accessory sinuses. The subject is for the most part dealt with on conventional lines, but the chapter on the intracranial complications by Professor Burger of Amsterdam merits attention, as it is clearly the result of much patient research and contains a store of information which can be found nowhere else.

The sixth volume forms Part I of the section on diseases of the ear. Two more volumes will complete this section; the whole system is to consist of ten volumes. This part is arranged systematically, and in this respect is superior to those on the nose and throat; it begins with an account of the evolution and comparative anatomy of the ear. Professor Alexander describes variations and anthropology, and the very complete account of the anatomy of the ear is by the veteran Professor Otto Körner of Rostock. The histological study of the ear, including microscopical technique, and the nervous connexions, conclude the anatomical portion. The next portion is devoted to physiology, and after that come general pathology and therapeutics. General pathology (including injuries) is very full, whilst the article on bacteriology is relatively short but comprehensive. The section on the examination of the ear, by Professor Brühl,

is excellent. It is followed by a description of a method of taking photographs of the tympanic membrane; the results do not appear to be brilliant. The important subject of testing the vestibular apparatus is discussed by Professor Rutin. Towards the end there is an account of lumbar puncture, including the pathological changes which occur in the cerebro-spinal fluid in association with diseases of the ear; it is very thorough and systematic, and is beautifully illustrated. The numerous pictures all through maintain the high standard of the previous volumes; as already noted, this volume compares favourably in the arrangement of the subjects, and the same may be said of the literary material itself. It contains, however, 1,274 pages, and is therefore even more unwieldy as a handbook.

## NOTES ON BOOKS

Dr. FIELDING H. GARRISON has a scholarly style, and rarely has he written more charmingly than in *The Principles of Anatomic Illustration before Vesalius: an Inquiry into the Rationale of Artistic Anatomy*,<sup>8</sup> with the object of supporting the late Dr. Robert Fletcher's view that the real content of artistic anatomy is not descriptive anatomy but ethnic morphology, physiology, and pathology. The principles of pre-Vesalian illustrations of anatomy were, in the first place, slavish obedience to tradition, and therefore faulty rudimentary delineation in manuscript hand drawings and printed diagrams till the time of Leonardo da Vinci; and secondly, admirable first-hand observation of the external configuration of the body, which was more physiological and pathological than descriptive. Conditions such as achondroplasia and endocrine obesity were well portrayed in innumerable Egyptian, Maltese, Pompeian, and Peruvian figures centuries before they received a name. Cubist art is described in perhaps a rather complimentary manner as an attempt to hark back to the childhood of the race and to visualize the feeling of prehistoric and primitive man about the body. The first artist to take to the scientific study of anatomy appears to have been Donatello (1386-1466), but Leonardo da Vinci really founded artistic and physiological anatomy, and possibly his drawings may have suggested to Vesalius the illustrations in his *Fabrica*.

A series of lectures on cardiac diagnosis given to a post-graduate class at Bad Nauheim last year have been printed in a volume.<sup>9</sup> To it Dr. Diethlen contributes an account of the method of estimating the size of the heart by means of x rays. A large amount of work has been done on this subject, but unfortunately it is somewhat contradictory, and the physiological limits of variation in heart size are not yet ascertained with certainty. German and Austrian workers are fairly unanimous in describing a work hypertrophy of the heart, which is seen most clearly in those habituated to long-distance athletic events. Many English and American workers are, however, doubtful of the existence of such a hypertrophy. Dr. Diethlen presents the German view, which appears to be supported by strong evidence based on measurements of the heart shadows of thousands of athletes and non-athletes. He discusses the range of this normal work hypertrophy of the heart, and also gives figures for the normal relation of body weight and heart shadow. Dr. Nickau describes the methods of capillary microscopy, and gives a summary of some of the recent investigations in this field of research, which has attracted so much attention recently. Other writers describe methods for the photographic registration of the venous pulse, the significance of the electro-cardiographic records, and the significance of the shape of the heart shadow in cardiac disease. The articles as a whole give a concise account of some interesting new methods in cardiac diagnosis. Unfortunately in some cases the limits of normal variation do not appear to be clearly defined, and until these are known fairly accurately it is difficult to use any measurement for the diagnosis of disease.

*A Handbook to the Drink Problem*,<sup>10</sup> by WILL REASON, deals comprehensively with the various questions and conflicting statements in a complex controversy. A considerable amount of information is gathered together in the form of questions and answers. A bibliography is provided for further study, and a short index enables reference to be made quickly to the different subjects treated. Lord Aston contributes a characteristic preface.

<sup>7</sup> *Handbuch der Hals-Nasen-Ohren-Heilkunde*. Herausgegeben von A. Denker und O. Kähler. Zweiter Band: Die Krankheiten der Luftwege und der Mundhöhle. Sechster Band: Die Krankheiten der Gehörorgane. Erster Teil. Berlin: Julius Springer, München: J. P. Bergmann, 1926. (Sup. roy. 8vo. Bd. II: pp. xiv + 1068; 334 figures; paper cover, R.M.84.00; bound, R.M.89.40. Bd. VI: pp. xv + 1274; 456 figures; paper cover, R.M.96.)

<sup>8</sup> *The Principles of Anatomic Illustration before Vesalius: an Inquiry into the Rationale of Artistic Anatomy*. By Fielding H. Garrison, A.B., M.D. New York: Paul B. Hoeber, Inc. (12mo cloth, pp. 55; 26 full-page illustrations, 2.50 dollars.)

<sup>9</sup> *Moderne Methoden der Kreislaufdiagnostik*. Ärztlicher Fortbildungskurs in Bad Nauheim Pfingsten 1925. Leipzig: G. Thieme, 1925. (Roy. 8vo, pp. 79; 31 figures, R.M.3.)

<sup>10</sup> *A Handbook to the Drink Problem*. By Will Reason, M.A.; With a Preface by the Viscount Aston. London: Student Christian Movement, 1926. (Cr. 8vo, pp. 110. 1s. 6d. net.)

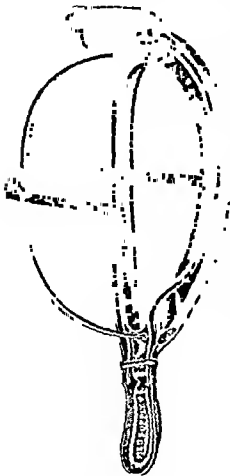


## PREPARATIONS AND APPLIANCES.

*Modified Schimmelbusch Anaesthetic Mask.*

Mr. R. J. HILLIER, anaesthetist to the Jessop Hospital for Women, Sheffield, has designed a modified form of Schimmelbusch's mask to obviate difficulties which arise from the hinged fixing frame of the original pattern becoming too loose to hold the gauze or else allowing insufficient space to clip the necessary number of layers of gauze. To obviate these troubles Mr. Hillier has made the fixing frame a detachable wire oval ending in two spikes. These spikes perforate the gauze, and are then passed under a metal bridge on the body of the face-piece. The other end of the wire oval is fixed to the body of the mask by a spiral spring ring. In this way the gauze is firmly fixed in the mask and cannot be detached from its proper position. Moreover, even the largest mask is made of such a size that it will take any ordinary width of gauze without the possibility of any part of the mask being insufficiently covered. The mechanism for holding the gauze is very simple, and there is nothing that should go wrong in use. The mask seems to be simple, cleanly, and effective. It is made by the Medical

Supply Association, 12, Holly Street, Sheffield.

*Nova et Vetera.*

## THE HUNTER-BAILLIE COLLECTION.

BY

VICTOR G. PLARR, M.A.,

LIBRARIAN OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AMONG the treasures of the Library of the Royal College of Surgeons of England not the least is the collection of autographs and other documents presented to the institution by the descendants of Matthew Baillie. The collection is in two parts, the first, comprising five volumes, having been presented during the nineteenth century by the late Mr. William Hunter Baillie. With this historic collection, largely incorporated in Lockhart's *Life of Sir Walter Scott*, Douglas's *Familiar Letters of the same*, and Aitken's *Life and Works of Dr. John Arbuthnot*, as well as in several articles in the literary periodicals,\* I am not now concerned. It is the second collection of Hunter-Baillie Papers that claims our attention. This also consists of five volumes, and is of a more personal Hunterian character than its famous predecessors, wherein Pope, Swift, Arbuthnot, Smollett, and Scott occupy much space. The new collection has been beautifully arranged by the donor, Miss Hunter Baillie, the last representative—in some sort at least—of John and William Hunter.

Volume I, which is locked in token of the value of its contents, contains Royal letters and the manuscript poems of Mrs. Anne Hunter, wife of John Hunter.

The so-called Royal letters are, with two exceptions, written by Princess Mary, Duchess of Edinburgh and Gloucester, fourth daughter of King George III. They number some twenty-eight and are addressed to "My dear Baillie" (Dr. Matthew Baillie) and signed simply "Your friend Mary." In every instance they refer to the last illness of Princess Amelia, youngest child of George III, who died of erysipelas in 1810, having been more or less of an invalid since the year 1798. Princess Mary was devoted to her delicate young sister and nursed her to the end. Though often hard to decipher and erratically spelt, the letters are so many careful bulletins of the sufferer's daily progress from July, 1810, to her death at Augusta Lodge, Windsor, on November 2nd of the same year. On July 27th Princess Mary writes: "She adheres strictly [*sic*] to your prescription"; but in August she was already very ill. When dying Princess Amelia presented to the King a

ring, which she had caused to be made. It contained a lock of her hair under crystal, and as she pressed it on his finger she said simply, "Remember me." The aged George III, half blind at the time and enjoying only rare intervals of sanity, was plunged into such poignant grief that he passed into the last sad condition of madness.

Another Royal letter in this collection is in the handwriting of the unhappy Queen Caroline, then Princess of Wales, and refers to her own health and that of the Duchess of Brunswick. "The greatest difficulty . . . consists in persuading the Duchess to listen to an able Esculapian," she writes in her clear Italian script to Matthew Baillie.

An account of the tragic *accouchement* of Princess Charlotte, dated November, 1817, accompanies these letters. It is unsigned, but appears to be by Matthew Baillie himself.

The poems of Anne Hunter, *née* Home (1742-1821), who married John Hunter in July, 1771, are interesting as containing the original manuscript of her song "My Mother bids me bind my hair," which was set to music by her friend, the famous composer Franz Josef Haydn. It enjoyed a vast vogue early in the nineteenth century, as appears from Mrs. Susan Sibbald's *Memoirs*. Here also is the original libretto of Haydn's oratorio *The Creation*, in which Anne Hunter displays all her talent for neat and rather trite versification in the late eighteenth century manner. "Of his oratorios," says Sir William Hadow, "the *Creation* alone survives," and his fame rests on his quartets and symphonies. The famous composer set many other pieces of Anne Hunter's to music, but the manuscripts do not indicate this. One may suppose that John Hunter bore with the poetic tendencies of his amiable wife, and that he thus "acquired merit," as did Mr. Salteena in the *Young Visitors* by his marriage. That Anne abundantly appreciated John Hunter is proved by her epitaph upon him in Westminster Abbey, which is here in manuscript. It is, indeed, a noble tribute to a hero of science.

The four other volumes of Hunter-Baillie Papers now under consideration contain an *embarras de richesses*. Here is the original of John Hunter's letter addressed to his brother-in-law, James Baillie, on his being given the degree of Doctor of Divinity and the post of Professor of Divinity in the University of Glasgow. It has been printed by the late Mr. Stephen Paget in his *John Hunter* (Masters of Medicine Series), and bears witness with unaccustomed grace to the great surgeon's domestic felicity four years after marriage. The date is November 20th, 1775. The letter congratulates the divine on his preferment.

"Altho you modestly say it was upon your family's account that you recd. it, yet it is what you should not have refused upon your own. There is hardly any character so low, or so high, but what will receive dignity from Title."

Of his family he says:

"I can only yet say, that I am happy in a wife; but my children are too young to form any judgement of. They consist of a stout red-headed boy call'd Jock [Captain John Banks Hunter, died at Toulouse in 1838], three years and some months old; and a weakly girl call'd Mary-Ann, near two [died in 1776]. We lost a fine boy call'd Jimmy who would have been now about twelve months and Anny is near her time of a fourth [Agnes Margaretta, afterwards Lady Campbell]."

The allusion to the boy's hair is interesting. Hunter's own hair, as appears from the careful miniatures in the superillustrated volumes of *Foot's Life of John Hunter* at present in the Wellcome Historical Medical Museum, was a ruddy auburn, and in the collection now being reviewed Miss Hunter Baillie has preserved in envelopes locks of the fine red gold hair of his infant sister and brother, Elizabeth and Andrew, who died respectively in 1711 and 1714. The baby boy's hair is of unfading brilliancy and beauty and compares singularly with the now fading hue of John Hunter's locks in Reynolds's portrait. One wonders what the little Hunters died of in two successive generations, and in an age of high infant mortality.

"I am not anxious about my children," the letter continues, "but in their doing well in this world, I would rather make them feel one moral virtue" (there is a touch of Rousseau here) "than read Libraries of all the dead and living languages. You

\* See *Edinburgh Review*, October, 1912, and January, 1913: articles by Victor G. Plarr on Walter Scott's unpublished letters to Joanna Baillie.

know I am no *Scholar*, therefore do not feel the beauty of language when I do not see the use of it."

He speaks of his work:

"As to my studies, I am following my business as a student, pursuing my comparative anatomy; . . . and it appears to be Anna's enjoyment in seeing me pleasing myself. While all these concurring circumstances go on, I must continue to be one of the happiest of men living."

In connexion with the foregoing self-revelation should be read Joanna Baillie's manuscript notes on the Hunter family, and especially the account of John Hunter's early boyhood, dictated to her by his mother. In this is told the full story of how he mauled a masked "devil," who was one of the Long Calderwood labourers. Of these good people we catch a glimpse in an old letter in Miss Hunter Baillie's private collection of family documents, where a most typical Lowland peasant woman and her *obiter dicta* are described by Joanna Baillie. This old canny peasant must have known the boy John quite well, but is silent on the point. Joanna Baillie, the accomplished dramatist and poet, wrote delightful letters to Sir Walter Scott, which are apparently lost, and to members of her family, of which a number remain. A volume in the collection under discussion contains business letters as to the sale of her books and some unpublished pieces. But the vogue of this woman writer, whom Scott likened to Shakespeare, has too unaccountably passed away.

Among the documents of historic interest here collected mention should be made of the Petition to Parliament, of date 1736, for the purchase of the Hunterian Collection, which is now in the Museum of the Royal College of Surgeons, and the Declaration of Trust relating to the same in 1813. The signatories of both these parchments are Matthew Baillie and Sir Everard Home. Here also is the proposed original Charter of the Medico-Chirurgical Society and the diplomas, burgher tickets conferring freedom of cities, and so forth, of William Hunter. His diploma of membership of the Corporation of Surgeons is dated August 6th, 1747, Cheselden being among the signatories. Documents and letters relating to the purchase of the Hunterian Museum by the University of Glasgow are also numerous. The date of these is 1783, the year of William Hunter's death.

William Hunter, accomplished and a man of the world, was an industrious correspondent. Many of the letters to him are of historic interest, but are mostly contained in the first part of the Hunter-Baillie Collection. In this new collection we find the following:

"Le lundi, 9 fevrier. [1782]

"C'est avec une veritable satisfaction, Monsieur, que j'ai l'honneur de vous adresser la lettre de M. Amclot qui vous apprendra votre election à une des huit places d'associés étrangers de l'academie des sciences. Cette compagnie desirait depuis long tems de reparer par le choix d'un grand anatomiste les pertes successives de Morgagni et de Haller, et il y a long tems que les vœux étaient pour vous. Vous voyez, Monsieur, que la guerre qui divisa nos nations n'a nous a peine empêché de rendre justice à vos grands talens. Tous ceux qui come vous concourent aux progrès des sciences et au soulagement de l'humanité ne peuvent être jamais que nos amis. Daignez agréer mes félicitations sur l'honneur que j'ai de vous avoir pour confrere, et les assurances de mon respect, et de mon attachement.

LE MAR. DE CONDORCET,  
Sec. perp. de l'academie des sciences.

"A Monsieur Hunter."

The famous Condorcet, *encyclopédiste*, friend of Voltaire, and one of the leading wits of the most brilliant society in Europe, is thus seen to have been an adumbrator of the *Entente Cordiale*. At the time he wrote France and England were still technically at war, for the Peace of Versailles was not signed till September, 1783. William Hunter, he implies, is to be the successor of Morgagni and Haller, but Chopart, in another letter, speaks of him as succeeding Linnaeus, who, however, had died in 1778. Louis XVI actually appointed him to succeed Tronchin. William Hunter died the month after receiving this European honour, and Condorcet was a victim of that French Revolution which he had so laboured to promote.

These last facts lend a certain pathos to Condorcet's cordial letter, written in minute and almost indecipherable script and spelt in the quaint careless manner of his century.

## ST. BARTHOLOMEW'S HOSPITAL WAR MEMORIAL.

THE memorial erected in honour of the 113 students of St. Bartholomew's Hospital who fell in the great war was unveiled on the afternoon of July 8th by H.R.H. the Prince of Wales, President of the hospital. For the purpose of the memorial the archway under the Great Hall, which gives access to the Square from King Henry VIII Gateway and Smithfield, has been reconstructed and beautified. The four panels in this archway and the domed roof, hitherto faced with dingy plaster, have been stripped and recovered with Portland stone, and on the panels have been carved the names of those who fell. Above each of the four panels is part of an inscription. The two panels on one side of the archway bear the words:

THESE GAVE THEIR LIVES FOR KING AND COUNTRY

Those on the other side:

COUNTING NOT THE COST IN DEFENCE OF RIGHT.

The work has been carried out with simple grace from the design of Mr. Edmund Mathews, and forms a most dignified and fitting memorial on a site familiar to every St. Bartholomew's man. Those whose names appear on it served in the Navy, the Army, and the Air Force, the majority as medical officers, some as combatants, and one of them—John Leslie Green, Captain R.A.M.C.T.F., killed in action, July, 1916—won the Victoria Cross. It was appropriate, therefore, that last week's ceremony should be attended by Surgeon Vice-Admiral Sir Joseph Chambers, Medical Director-General of the Royal Navy; Air Vice-Marshal David Munro, Director of Medical Services, R.A.F.; and Major-General Sir Matthew Fell, the newly appointed Director-General Army Medical Service. The Lord Mayor with the Lady Mayoress and the Sheriffs of the City of London were also present, showing the bond which unites the City with the only general hospital within its boundaries.

His Royal Highness was received by Lord Stanmore, treasurer of the hospital, and Sir William Lawrence, Bt., and the other almoners. A guard of honour was furnished by the Honourable Artillery Company. After inspecting these, and a group of ex-service men drawn from the hospital porters, the Prince proceeded to the Square, where the relations and friends of the fallen, the staff, and subscribers to the Memorial Fund, were grouped under a large canopy. Behind them, under the plane trees around the fountain, were a large number of students, nurses, and patients.

A short service, beginning with "O God, our help in ages past," was conducted by the Rev. Dr. A. C. E. Jarvis, C.M.G., M.C., Chaplain-General to the Forces. The lesson, from Wisdom iii, 1 to 10, was read by the Rev. J. L. Douglas, Hospitaller and Vicar of St. Bartholomew's the Less. Sir Anthony Bowlby, Bt., chairman of the War Memorial Committee, and consulting surgeon to the hospital, presented the Prince with a volume, bound in morocco, containing the names and records of the 113 students commemorated, and asked His Royal Highness to unveil the memorial. The Prince stepped forward and drew apart the veil of Union Jacks over the entrance to the archway, saying: "To the glory of God and in honoured memory of the students of St. Bartholomew's Hospital who gave their lives in the great war, I unveil this memorial." A dedication prayer was recited by the Chaplain-General, buglers of the Grenadier Guards sounded the "Last Post" and "Réveille," and the National Anthem was sung. At the foot of each stone panel had been placed a wreath of laurels—one given by the governors, another by the students, another by the council and staff of the Medical College, and the fourth by the League of St. Bartholomew's Nurses.

After the ceremony the Prince made a tour of the Square and spoke to some of the patients who had been brought out in their beds, and on leaving was warmly cheered by the students, nurses, and patients.

## ROYAL SANITARY INSTITUTE JUBILEE CONGRESS.

THE Royal Sanitary Institute Jubilee Congress, the earlier proceedings of which were reported in our last issue (p. 71), continued its work until July 9th, by which time some seventy papers had been read in the various sections and conferences. The addresses of the chairmen of the sections were in some cases very stimulating deliverances, notably that of Sir GEORGE NEWMAN in the Sanitary Science Section, which might be described as an epitome of his previous writing on preventive medicine, and that of Lord EUSTACE PERCY in the School Hygiene Section. Sir GEORGE BUCHANAN addressed the representatives of port sanitary authorities on the international arrangements affecting port sanitary work. The Section of Hygiene in Industry met at the Guildhall, under the presidency of Sir CHARLES WAKEFIELD, who afterwards entertained the members to lunch, when both he and the principal guest, Mr. J. R. CLYNES, M.P., spoke of welfare work in factories and deplored the retardation of progress owing to industrial conflict. Sir Charles Wakefield renewed a previous plea of his for a five years' truce in industry.

*Food and Industrial Hygiene.*

Among other events of Wednesday morning was a session of the Section of Hygiene and Food, at which Professor H. R. KENWOOD spoke on the trade pasteurization of milk—a measure, he said, which served the mutual interests of the trade and the public. With regard to the objection that pasteurization led to a loss of vitamins, he said that only the antiscorbutic vitamin, of which milk was a poor source, could be affected by low temperature pasteurization. All infants, even when fed on raw milk, should be given a little antiscorbutic, such as orange juice.

The Section of Hygiene and Industry was addressed by Mr. J. R. CLYNES, M.P., who spoke on industrial welfare, and by Professor EDGAR COLLIS, who discussed the future of the factory medical service. Professor Collis said that of the two proposals contained in the Factories Bill, 1924—one, to substitute for the office of certifying surgeon the post of "appointed doctor," which meant a practitioner selected by the factory and duly appointed for the examination of young persons previous to employment, and the other, the transfer to the local authority of the duty of arranging for such medical examination—he hoped only the first would become law, since it called upon industry to perform certain health duties, but left industry, under inspection, master in its own house.

*The Health of the Working Girl.*

The Section of Personal and Domestic Hygiene was presided over by Miss ELLEN WILKINSON, M.P., and the principal discussion—on the health of the working girl of from 14 to 16—was opened by Dr. CHRISTINE MURRELL. Dr. Murrell said that in dealing with girls of this age it was important to remember that they were subjected to a double strain in that they had to submit to the conditions required in the labour market while still passing through one of the most vital periods of life. She instanced certain disabilities to which they were liable, such as errors of spinal growth and anaemia, and pleaded for welfare work, the provision of healthy exercises, and a sympathetic understanding of their emotional state. In the discussion which followed, Sir THOMAS LEGER, senior medical inspector of factories, made the remark that in his view there had been a great improvement both in the health and looks of the working girl during the last twenty years. From 30 to 38 per cent. of working girls suffered from anaemia twenty years ago; to-day he would put the figure at 5 per cent. In visiting factories he noted the looks of the workers, and found that three-fourths of them could be described as good-looking—their features might not be classical, but they were pleasing—and very few were ugly. The discussion widened into the question of the employment of women after marriage, and Dr. LETITIA FARRFIELD, who replied in Dr. Murrell's absence, said that of the women who continued at work after marriage all but a negligible proportion did so from economic necessity, and not from personal preference.

Given proper economic conditions, the question of married women's employment, like other questions, would settle itself.

*Unification of Health Administration.*

Dr. G. F. BUCHAN presided over the Conference of Medical Officers of Health, when the subject of health administration in relation to Poor Law reform and national health insurance was discussed. Dr. Buchan considered that the provisional proposals for Poor Law reform prepared in the Ministry of Health, while not unworkable, did not carry things very much further towards the complete unification of health services. He believed that no solution of the problem of local health administration would be satisfactory which was not based on the principle that in each area there should be one local health authority, and one only, and that each such authority should be directly under the control of the Ministry of Health without the intervention of a third party.

Dr. EUSTACE HILL said that if the views put forward by the Ministry of Health with regard to the transfer to county councils of the sanitary services for rural and small urban districts came to pass he hoped that the county councils would have power to combine sanitary areas in order to get a sufficient unity of population, and that the districts so combined whole-time medical officers of health would be appointed, with control of the whole of the communal health services, including some special services at present undertaken by the county councils themselves.

Dr. H. B. BRACKENBURY made a contribution to the discussion, which was in substance a recapitulation of the arguments put forward in the memorandum on this subject published as an appendix to the Report of Council of the British Medical Association.<sup>1</sup> He contended that there should be a local unification of health administration, not a mere co-ordination of the administrative work of various local public health authorities. The local machinery of administration should involve the establishment by each local authority of a statutory health committee, somewhat on the lines of the present education committees, and every such committee should contain, as a minority, representatives of the medical profession of the area and of other bodies experienced in public health work. In each local area also there should be a representative local medical committee to advise on medical matters. All the services which could properly be regarded as health services should be brought within the purview of one authority in each area. It was particularly undesirable that a county council should be placed in a supervisory or controlling position with regard to large boroughs or urban districts within its area in respect of health matters.

Mr. H. L. EASON (Guy's Hospital) claimed that the general hospital in any scheme should not be regarded as a hospital of second instance—an institution of somewhat a patient could go only on the recommendation of free elso. He urged two reasons for the continuance of access of the patient to the general hospital—that it was essential that medical students should see all types of disease, trivial as well as serious, and that a voluntary hospital, to fulfil its function as a charity, must provide for the poor person what the rich could afford to pay for—namely, an independent second opinion. Dr. A. E. CORE said that all Poor Law district medical officers and public vaccinators would welcome the increasing co-operation to which the proposed new administration would lead; in the past they had felt themselves cut off from everyone else. Dr. JAMES FENYON (M.O.H. Kensington) dealt with the London problem, and outlined a more even distribution of functions in metropolitan public health administration whereby the London County Council would delegate more of its health functions to borough councils and would remain itself in a supervisory capacity as a kind of provincial board of health for London.

*Jubilee Dinner of the Institute.*

The jubilee dinner of the Institute took place at the Hotel Cecil on July 8th, when, in the absence of the Minister of Health, who was detained by his duties at the House

Commons, the Duke of Northumberland presided over a very large and distinguished company, which included the Marquess and Marchioness of Aberdeen, Sir John Gilmour (Secretary for Scotland), and Mrs. Neville Hamberlain. The oratorical feast was on the old-fashioned lines, with eight toasts and eighteen speeches. Dr. Charles Carter proposed "The Health of the Navy, Army, and Air Force," and spoke of the way in which the sanitary aspect had been carried by these services throughout the world. The toast was acknowledged by Surgeon Commander J. L. PISTON and Colonel H. P. W. BARROW.

The Health of Parliament" was proposed by Sir Joseph Cook; and in response Viscount BURNHAM (little knowing that at that very moment an unruly demonstration was taking place in the House of Lords over the Mines Bill) referred to the Upper Chamber as unapproached among legislative assemblies for dignity and courtesy; the nearest thing to it, he said, was the International Labour Conference at Geneva, over which he had lately been presiding. Dr. F. E. FREMANTLE, M.P., responded for the House of Commons, and said that diverse as were the views and interests of constituents they showed remarkable unanimity when it came to any matter of health. Sir JOHN GILMOUR congratulated the Institute on its jubilee, and Professor BOSTOCK HILL, in responding, paid a tribute to the loyal services, extending over forty years, of its secretary, Mr. White Wallis. The members of the City of London, of the delegates from overseas, and of the Chairman were also toasted.

## MEDICAL INSURANCE AGENCY.

THE annual meeting of the Committee of Management of the Medical Insurance Agency was held at the House of the British Medical Association, Tavistock Square, on Friday, July 9th, when Sir Humphry Rolleston, Bart., was in the chair, and the following members were present:

Dr. Weaver Adams, Sir Robert Bolam, Dr. Alfred Cox, Lieutenant R. H. Elliot, Dr. R. A. Gibbons, Mr. N. Bishop Harman, Dr. R. Langdon-Down, Dr. J. A. Macdonald, Sir Squire Sprigge, Mr. W. E. Warne, and Sir Dawson Williams.

### EPSOM COLLEGE.

It was reported that in response to an invitation to nominate a representative for election to the council of Epsom College Dr. R. A. Gibbons had been appointed. It was also reported that the boys whose candidature for election as foundation scholars had been supported by the British Medical Association were all elected. A discussion ensued as to the by-laws of Epsom College limiting the number of votes of any subscriber or donor, and it was decided that the whole question of the future relations of the Medical Insurance Agency with Epsom College should be considered at the next meeting of the Committee.

### CHAIRMAN'S REPORT.

The Chairman, after mentioning that the offices of the Agency had been transferred to the new British Medical Association House in Tavistock Square, continued as follows:

"The development of the Medical Insurance Agency has been rapid, if not spectacular, and although it is reflected in the fact that in the past five years the premium income has been doubled, yet it is not only by figures that the growth and influence of the Agency can be measured. One of the best indications of the influence of the Agency is its success in obtaining prompt settlement of claims made on behalf of members. There are occasions, few and far between, when the weight of the Agency cannot in fairness be used, but in the overwhelming majority of cases it is sufficient for the Agency to state that it is satisfied as to the propriety of a claim in order that a completely satisfactory settlement may be effected.

The Medical Insurance Agency set itself a record by introducing over £100,000 of new life assurance business a year, and for five years lived up to that record, but the following table shows how the record was smashed in 1925.

Life and endowment policies were issued through the M.I.A. as follows:

Between 1907 and 1920 to the extent of ...	£416,684
During 1921 to the extent of ...	£105,500
" 1922 " " " ...	£113,468
" 1923 " " " ...	£101,037
" 1924 " " " ...	£113,351
" 1925 " " " ...	£160,935

—the total since the inception of the Agency exceeding £1,011,000 (one million and eleven thousand pounds).

It must be realized that the income of the Agency from this source will not necessarily be proportionately greater each year, as a much higher rate of commission is earned on new proposals than on renewals, although the office work involved in looking after a life policy, once it has been granted, is, of course, as great in the second and subsequent years as in the first. More and more energy is needed to maintain the rate of progress as the total of the sums assured mounts higher and higher.

A greater number of motor car insurance proposals were received in 1925 than ever before, and there is an increase in the premium income from this source. Despite this, the commission earned shows a decrease. The explanation is that the doctors' special policy introduced through the M.I.A. and underwritten at Lloyd's is being taken up in increasing numbers. The insured pays a lower premium and the commission is calculated at a lower rate on this reduced premium. The Agency loses, but the insured gains.

Although there is a fall in revenue under the heading "Employers' Liability," there is a corresponding increase under the heading "Comprehensive Household Policies," under which domestic servants are also included in the policy.

Efforts have been made to direct the attention of members of the profession to the advantage of sickness and accident policies. It is hoped that this class of protection will become more popular with the profession.

### EXPENDITURE.

It is gratifying to note that the rebates to doctors insuring through the Medical Insurance Agency stand practically at last year's figure, despite the great saving in motor car premiums which has been effected. Had the premiums not been reduced the rebates would have been considerably larger. In this connexion it is interesting to note that the rebates to medical men since the formation of the Agency exceed £22,300, the figures for the last few years being:

1919 ...	£960	1923 ...	£2,069
1920 ...	£1,453	1925 ...	£2,791
1921 ...	£1,697	1924 ...	£2,811
1922 ...	£2,064		

Grants to medical charities were made during the year 1925 to the extent of two thousand guineas, making a total since 1910 of £14,395 5s., divided as follows:

	£	s.	d.
Royal Medical Benevolent Fund...	4,119	10	0
Royal Medical Benevolent Fund Guild ...	4,148	5	0
Epsom College ...	3,318	0	0
M.I.A. Educational Grants Fund (Girls)...	937	10	0
Sundry charities...	1,872	0	0

Since rebates exceeding £22,300 have been returned to members of the profession and charitable contributions totalling £14,395 have been made, it may safely be contended that the Medical Insurance Agency is fulfilling successfully two of the functions for which it was formed.

But it is in the unseen, unmeasured work of advice and assistance in the choice of the best policies to meet individual needs, in drawing attention to the absolute necessity to medical men of insurance policies, and in the fair and generous settlement of claims, that the greatest work of the Agency may be considered to be done.

The accounts for the year 1925 have been duly audited by Messrs. Price, Waterhouse and Co., of Frederick's Place, Old Jewry, E.C., whose certificate is annexed to the balance sheet.

The report was approved and the proceedings terminated.

# British Medical Journal.

SATURDAY, JULY 17TH, 1926.

## HORSLEY MEMORIAL LECTURE.

SIR VICTOR HORSLEY'S premature death in the service of his country in 1916 removed a pioneer in the science of neurology and in the surgical treatment of nervous diseases. His work will long keep his memory green in the history of the department of medicine which he did so much to advance, and his followers have paid their tribute to his leadership by establishing a memorial lectureship. The first triennial Horsley Memorial Lecture was given on October 25th, 1923, by Professor Sir E. Sharpey-Schafer, on the relations of surgery and physiology, in which he spoke of surgery as based on physiology. The Edinburgh professor had been a colleague of Horsley at University College, and this year the second lecture was given on July 9th by Mr. Wilfred Trotter, senior surgeon to University College Hospital, who was very closely associated with Horsley in his surgical work, and now supplements Sir E. Sharpey-Schafer's contribution by showing that surgery may advance physiology, just as Sir Arbuthnot Garrod, in the Harveian Oration of 1924, set out "The debt of science to medicine." This year's Horsley Memorial Lecture was of the high standard entirely worthy of the occasion, as may be judged by those who will read its full text published in the opening pages of this issue.

In his account of the insulation of the nervous system Mr. Trotter provides his readers—and everyone who did not form part of his audience at the British Medical Association House should take advantage of this further opportunity—with much that is new and stimulating as the products of an original mind. Utilizing his observations as a surgical neurologist on injuries of the nervous system, he throws fresh light on some dark and disputed regions of physiology. From consideration of amputation neuromas and of breaches made in the spinal and cranial dura mater, which allow contact between the nervous and the other tissues of the body, he shows that these are followed by an energetic local reaction resulting in the formation of a highly specialized material and not of a mere scar; in the case of a divided nerve the irritant is the naked axis cylinder, and for the changes in the dura mater the cerebro-spinal fluid is responsible. The insulation of the peripheral nerves is not by the medullary sheath but by the neurilemma which surrounds the sensory axis cylinders everywhere, except at the periphery of the nerves concerned with the perception of pain. This exception has an interesting bearing on the physiology of pain, for the correlation between the anatomical arborescences of pain nerves and the character of painful sensation points to a primitive and crude anatomical and physiological stage. Further, it is shown to be probable that the modifications in all forms of sensation, so as to resemble pain, which characterize regeneration of a cut nerve are a regression of function to the level of perception of pain, and that this regression depends on the non-insulated condition of the nerve fibrils during the process of regeneration. Mr. Trotter makes the attractive suggestion that the cause of von Recklinghausen's multiple neurofibromatosis is absence of neurilemma, so that the non-insulated nerve fibrils irritate the somatic tissues and cause fibrosis, much as

a foreign body or a micro-organism of highly attenuated virulence might.

The central nervous system is insulated as a whole mechanically by the meninges and chemically by the cerebro-spinal fluid, and Mr. Trotter persuasively argues that the function of the cerebro-spinal fluid, which is picturesquely described as "Nature's nearest approach in the animal body to a spring of pure water," is to remove the products of cerebral metabolism and dilute them to a degree rendering it safe for them to pass into the general circulation. The influence of the insulating boundary between the central nervous system and the other tissues of the body is illustrated by the behaviour of intracranial tumours; the neural tumour glioma never invades the meninges or the skull, whereas the dural endotheliomas commonly attack the cranial bones but never the brain.

## THE STANDARDIZATION OF INSULIN.

THE establishment of some accurate standard of potency is the first obvious necessity whenever a new remedy of unknown chemical composition is introduced into medicine. A second and almost equally difficult problem is to secure the general acceptance of a single standard. Standardization is a relatively simple problem when chemical methods are adequate, but biological methods of standardization cannot be avoided in the case of substances of unknown chemical composition, and, indeed, are often needed even when the chemical composition is known. Unfortunately, there is no such thing as a standard animal; hence all methods of biological standardization are difficult, and accuracy can be obtained only when tests are performed on a large number of animals. Moreover, even minor variations in methods usually suffice to render the results worthless for comparative purposes; the most rigid exactitude in all details of technique is required to obtain satisfactory results.

No method of biological standardization at present devised, can be regarded as completely satisfactory, and in the past the tendency has been for each country to set up its own method of standardization, a procedure which results in confusion which is always unfortunate and often actively dangerous. This danger was threatened in the case of insulin, but fortunately the problem has been tackled by the Health Organization of the League of Nations, and it has succeeded in devising an international standard, which it may be expected will meet with universal acceptance. This work was commenced at an international conference on the standardization of drugs held at Edinburgh in 1923, and was continued at a second conference at Geneva in 1925; the conclusions have now been published in a pamphlet.<sup>1</sup>

The first conference agreed that the unit for general acceptance should be similar to that laid down by the Insulin Committee of the University of Toronto. This unit is based on the measurement of the amount of insulin needed to produce a certain degree of hypoglycaemia in rabbits. The conference, however, had to make arrangements suitable for countries all over the world, and recognized that there was little likelihood that a unit so defined would afford the requisite degree of uniformity when applied in different institutions in different countries. For example, the individual variation in the response of rabbits in a single institution is always one of the most serious sources of error, and this error might be greatly increased.

<sup>1</sup> The Standardization of Insulin. Pp. 72. Health Organization of the League of Nations.



by differences in diet, climatic conditions, etc. The committee decided, therefore, to obtain a large quantity of insulin of uniform strength, to determine its strength as accurately as possible in Toronto units, and then to redefine the unit in terms of a weight of the standard preparation. The work involved in carrying out this scheme is summarized in the pamphlet under review.

The British National Institute of the Medical Research Council obtained half a million units of insulin from five different sources in four different countries. This was purified by Dr. Dudley, and was reduced to a dry powder. This powder was assayed in five laboratories in England and America, and the results only varied between 8.4 and 8.8 units per milligram. This accuracy in the results was as satisfactory as it was remarkable. The details in the report show, however, how extensive is the scale of experiment necessary in order to obtain such results. Dr. Clowes of the American Lilly Research Laboratories mentions that from 1,000 to 1,500 rabbits are there used for the assay of a single batch of insulin. The University of Toronto used fewer rabbits, but a preliminary trial on 52 rabbits gave a value of 6.5 units per milligram, while repetition of the test on 200 rabbits gave a value of 8.5.

At the second international congress in Geneva in 1925 it was agreed that the international unit for insulin should be 0.125 mg. of the dry standard preparation, prepared and kept by the Medical Research Council, and that small amounts of this standard preparation should be distributed to all countries desirous of carrying out tests for the standardization of insulin. The conference recommended that in future this should be the only insulin unit used, so that the danger of confusion between the so-called physiological and clinical units may be eliminated. The new unit will be almost identical with the Toronto clinical unit, which has been in use in England for the last two or three years. This unit is about one-third of the original rabbit unit.

The main results of this work of the Health Organization of the League of Nations are twofold. In the first place, a reliable and constant standard has been set up, and in the second place the standard will be accepted generally, so that it will be possible to compare therapeutic results obtained in different countries.

The whole success of insulin therapy really depends upon an accurate method of standardization, and the work under review is a striking example of the way in which an important and difficult scientific problem can be solved by international co-operation.

### KALA-AZAR AND THE SANDFLY.

THE first report of the Kala-azar Commission of India, dealing with the work of the period 1924-25, was published in Calcutta last February as No. 4 of the Indian Medical Research Memoirs,<sup>1</sup> but reached us only in June. The Commission is in reality a twofold one, in that to the Government Kala-azar Commission is affiliated the Kala-azar Ancillary Inquiry, working at the Calcutta School of Tropical Medicine.

The primary aim of the Commission was to elucidate, if possible, the long-debated question of the mode of transmission of the disease. Kala-azar is exceedingly prevalent in Assam, and the headquarters

of the Commission were therefore fixed at the King Edward Memorial Pasteur Institute, Shillong, with a field laboratory at Golaghat. This report reveals the vast amount of work that has been done. Lieut.-Colonel Christophers has written an introductory chapter outlining succinctly the general trend of the numerous papers which follow.

The report proper consists of five parts, to each of which several papers are contributed. The first deals with the morphology, life-history, and bionomics of the Leishmania parasite as revealed in culture. Consideration of numerous questions into which we have not space to enter here seemed to point inevitably to some blood-sucking insect as the intermediate host and vector. Fleas, bed-bugs, reduviid bugs, lice, mosquitos, sandflies, and, of arthropods other than insects, the ticks, have all been from time to time, but mainly on hypothetical grounds, suggested as vectors. Mechanical transmission by non-blood-sucking flies had also to be taken into account. In addition, possible helminthic vectors were carefully considered, and some were tested experimentally. The difficulties were the greater owing to the fact that many of them may harbour herpetomonad forms of flagellates having nothing to do with kala-azar. One example, merely by way of illustration, may be given of the amount of work involved. The previous investigations of Mackie in 1914-15, and of Cornwall in the following year, had tended to reduce greatly the value of the arguments incriminating the bed-bug. Experiments were carried out over a period of fifteen months with twenty-five monkeys (*Macacus rhesus*), and on the death of any animal its organs were thoroughly examined, not only microscopically but culturally, but with uniformly negative results, thus giving a definite quietus to the long-held and plausible theory of the bug as the vector.

The second part of the report details experiments carried out with some other possible vectors. The question of direct contaminative infection, again, could not be thrust aside without adequate testing, nor that of faecal transmission, provided that the parasite could infect by ingestion. Experiments directed to this end were not altogether decisive, though they seemed to suggest that such a mode of infection may be possible. The discovery was next made, by the Ancillary Inquiry, that the parasite readily underwent development in the sandfly, and the Assam Commission, employing *Phlebotomus argentipes*, soon confirmed this. The third part of the report, consisting of eight communications, details the numerous transmission experiments carried out with this insect. The conclusions drawn and stated at the termination of these papers are made with great caution and good judgement. The main difficulty was, not to obtain development in the gut of the sandfly, but the fact that the insect always dies by the fifth day after feeding, unless, as in some instances, it could be kept alive for eight days by preventing fertilization. If death occurs naturally after so short an interval the efficiency of the sandfly as a transmitter is not likely to be great, unless there is a second, more favourable, host to carry on the work. On the other hand, it is also improbable that the parasite should develop as far as it does if this insect is not a true intermediate host. All that can be said at present is that the phlebotomus is very probably the transmitting agent, but the final crucial test of experimental transmission by this insect is still to be successfully performed.

The fourth part consists of four contributions on the *Phlebotomus argentipes*, its morphology, life-history,

<sup>1</sup> Memoir No. 4, Indian Medical Research Memoirs: Supplementary Series to the Indian Journal of Medical Research. Reports of the Kala-azar Commission, India, Report No. 1 (1924-25). Calcutta: Thacker, Spink and Co.; London: W. Thacker and Co. February, 1926. (Cr. 4to, pp. 283; illustrated. 11s. 6d.)

and bionomics, while the fifth and last gives an account of certain epidemiological researches, such as the incidence of kala-azar in various districts, a sand-fly survey of Madras Town, and a most able and informative paper, with carefully considered and cautiously expressed conclusions on the transmission of kala-azar in India from the consideration of the epidemiological aspect, by Dr. L. E. Napier. Among these conclusions it is stated that "every single epidemiological observation appears to be in keeping with the theory that this insect [*Phlebotomus argentipes*] is the transmitter of the causative organism of kala-azar."

This is the stage arrived at in this first report. It needs only the successful transmission of the disease experimentally to place at the summit the coping-stone of the edifice.

### THE INCIDENCE OF CANCER.

REPORTS on the death rate of cancer accumulate, and the stories they tell are fairly concordant. The Department of Health has issued a careful study by Dr. M. J. Holmes<sup>1</sup> of the statistics of the Commonwealth of Australia, and the Metropolitan Life Insurance Company of New York has published a complete analysis of the experience of its Industrial Department<sup>2</sup> from 1911 to 1922. From the technical point of view the American report is the more satisfactory. Tests of the significance of the results from the statistical point of view (perhaps rather too lenient tests) are applied, and the question of age incidence is dealt with more adequately than in the Australian report, which relies too much upon the method of proportional mortality. These, however, are small points, and both studies are useful contributions to knowledge. In a general way the results of the analyses are similar. Thus, according to the American experience, there was no significant increase of cancer mortality (all forms) among white women at any age below 65—in fact, a significant decrease between 35 and 55. At ages over 65 there was a significant increase of 5.2 per 100,000 living in the age group 65-74, and of 14.8 in the age group over 75. The Australian report, although providing the necessary material, does not tabulate the annual rates of mortality in fine age groups. Taking decennial age groups, however, we find that the rate of mortality did not sensibly change between 1908 and 1923 in any age group between 40 and 70, but increased decidedly both in the group 70-79 and in that of 80 and over. In the former the increase was from 607 per 100,000 in 1908 to 854 in 1923, in the latter from 834 to 966. This concentration of increase upon the older age groups seems to be a world-wide phenomenon. The experiences further agree in showing (at certain ages) an increase of cancer of the female breast, and no increase of the rate of mortality from cancer of the female genital organs. Similar results have been found in this country. Both in America and Australia mortality from cancer of the digestive tract is increasing. The American authors remark that 60 per cent. of the mortality from this group of cancers resulted from growths in the small intestine, or in some part of the large intestine other than the rectum or anus. About 31 per cent. of the deaths were due to rectal and anal growths, while 6.5 per cent. were due to cancers in mesentery or peritoneum. Dr. Holmes noted that mortality from cancer of the digestive tract was the outstanding factor in connexion with the increase of cancer mortality in recent years. Having regard to the interest taken in

statistical studies of cancer, it is a pity there is no uniformity of the methods of presentation. Thus it is troublesome—indeed, without special calculation, impossible—to compare directly the results in these two reports. The best way to standardize statistics of cancer is a matter worthy of the consideration of the Health Committee of the League of Nations.

### THE RECENT EPIDEMIC OF SMALL-POX IN FRANCE.

AN epidemic of small-pox of rather severe type, but limited in extent, occurred in France during last autumn and winter. It appears to have begun in the Midi in October of last year, amongst Spanish rag-and-bone men in Toulouse. It spread to l'Hérault and other regions in the south, and ultimately appeared in Paris, being present there from December, 1925, to April of this year. The outbreak did not resemble the comparatively innocuous form commonly termed *alastrim*; in Toulouse the mortality was 25 per cent., in l'Hérault about 33 per cent., and in Paris (where, however, there were only 24 cases) it was 20 per cent. Dr. M. L. Camus, in a paper communicated to the Académie de Médecine of Paris on June 22nd, after pointing out that very few people are immunized for the whole of their life by a single vaccination, said that he was inclined to recommend revaccination every three years. He attributed the long duration of the outbreak in the Midi as compared with Paris to the difference in the energy with which the disease was combated in the two places. To stay an epidemic three measures must at once be rigorously applied: the isolation of those attacked, the disinfection of contaminated places and things, the vaccination without exception of everyone who has come into contact with the patient, and of everyone in offices, manufacturing, or schools to which the patient has had access. In France very little difficulty was experienced in getting people to be revaccinated. Posters were put up, especially at railway stations, calling attention to the danger, and large numbers flocked to the institutions for vaccination. As Dr. Camus expresses it, fear is the beginning of wisdom. Apparently strangers from Tunisia and Algiers are very apt to introduce the disease into France; and Dr. Camus urges that they should be revaccinated before being allowed to leave their own country. Dr. Arnold Netter, at the same session of the Académie, described the epidemics in Switzerland, England, and the United States, which, though very much milder, had, he said, been decidedly more extensive and of longer duration than in France. The evidence from Switzerland is interesting because it shows that the incidence of the disease was much less in the French-speaking than in the German-speaking cantons. In the former vaccination is still obligatory, in the latter it is not. According to Dr. Netter, of the 2,483 small-pox cases in England in 1923, 83.5 per cent. had never been vaccinated, and only 4 per cent. showed recent revaccination. Dr. Netter discusses certain ill effects of vaccination, and declares that violent reaction is not attributable to impurity of the lymph, but to its great activity. With the very active lymph now in use it is considered advisable to diminish the number, extent, and depth of the insertions, although the duration of immunization will not be so long. The eleven cases of tetanus following vaccination in America were due, Dr. Netter pointed out, to the use of protectors analogous to "corn plasters" or "hunion pads."

### PROTECTION OF INFANTS FROM TUBERCULOSIS.

A REPORT by Dr. Paul Labesse on the protection of children in the first year of life from infection by tuberculosis presents an account of what is being done in various European countries as observed in the course of a tour of inspection organized by the League of Nations. Infection in infancy is described in the report as the crux

<sup>1</sup> *Cancer Mortality in Australia: A Statistical Study.* By M. J. Holmes, M.S.O., M.B., D.F.H. (Commonwealth of Australia, Department of Public Health, Service Publication No. 30, Melbourne, 1925.)

<sup>2</sup> *Cancer Mortality among Insured Wage Earners and their Families: The Experience of the Metropolitan Life Insurance Company, Industrial Department, 1911 to 1922.* New York, 1925.

of the whole tuberculosis problem, and the difficulty is only to be met by removing nursing infants from the proximity of infected persons, and especially from the care of tuberculous mothers. In Austria, where good work is being done in hospitals and dispensaries, von Pirquet's reaction is extensively utilized both by its author and by others. Infants exposed to risk which cannot be safeguarded in their own homes are placed with healthy families by private organizations; there are no public services under this head, and no legal sanctions for them. Czecho-Slovakia combats tuberculosis, including the tuberculosis of children, but without special reference to infants. In Hungary an official campaign is carried on, but the protection of infants has little part in it. The infant clinic at Budapest, however, is highly efficient, and suitable cases are sent to a lakeside sanatorium. France is the scene of much activity. Nurslings are withdrawn from infective surroundings. A special feature is ante-natal prophylaxis; if an expectant mother is discovered to be suffering from tuberculosis she is warned that her child must be removed from her care at birth. There is good co-ordination between infant centres, hospitals, dispensaries, and other charitable foundations. The work in general is under voluntary agencies, and is only subsidized from public funds through indirect channels. In Belgium the co-operation between infant welfare and tuberculosis control is weak. There is open-air treatment for the tuberculous at Knokke and elsewhere, but young infants are excluded. Holland takes an interest in the welfare of infants and in tuberculosis prevention, but there is little to report in the way of results, especially under school age. In Switzerland the idea of infant protection from tuberculosis has, it is said, taken a firm hold. The crèches at Neuchâtel accept the charge of infants from tuberculous families. The Lausanne dispensaries give special attention to infants exposed to risk, and tuberculous meningitis has become rare in the district. The countries reported on thus fall into three main classes. In the first class are Austria, France, Switzerland, and probably Hungary, where there is much local enterprise by medical charities and other private agencies, but without official recognition or without the effective form of recognition which is expressed by grants-in-aid. In the second class are Czecho-Slovakia, Belgium, and Holland, where nothing definite appears to be done for the infant exposed to tuberculosis. In the third class, by itself, is England, where the nursing at risk, though not specially marked for attention, is nevertheless protected, since it shares in the general well-being. Having regard to the situation as summarized above, the report expresses regret that the policy of protecting infants from tuberculosis by removing them from infected persons does not in general receive that position of honour which it is held to deserve. Its effective application, it is claimed, would strike at the root of tuberculosis. It would reduce infantile mortality by 30 per cent., being the proportion of tuberculosis deaths to total deaths in the first year of life. This proportion of 30 per cent. of tuberculosis deaths, which is quoted in the report from an American source, is unduly high if judged by British standards. It is open to doubt whether the reduction in the number of tuberculosis deaths under one year likely to ensue on the adoption of an intensive removal policy, even assuming the complete success of that policy in securing the object aimed at, would approach the figure suggested. The claims of the report, therefore, under this head appear to be overstated. Some of the tuberculosis developing in the early years of life succeeding the first must, and much of it may, be due to infection in infancy by either the human or the bovine type of the tubercle bacillus. The tuberculous mother, probably phthisical, would, as such, almost invariably harbour and disseminate the human type of bacillus, so that the removal of her infant from

her care would certainly protect it to that extent from infection by the human type. But other forms of tuberculosis contracted in the first year, of which takes mesenterica and glandular tuberculosis in early childhood may be cited as examples, are frequently of the bovine type, and the young infant, by being removed from its mother, would not necessarily be protected from them. Wherever bovine infection is prevalent the child would be subject to that infection in its new home as in the old, excepting in so far as its new environment might be more hygienic and its milk selected or pasteurized. It is asking too much of a method which is mainly directed against the human type of bacillus that it should also repress the bovine strain, which infects through a different channel. It is not intended by these remarks to depreciate the policy of infant protection by the methods now under notice. At Lausanne it is claimed to be justified by its results. At least it has been attended by a remarkable decline in the incidence of tuberculous meningitis, usually a human type of infection. As an item in a well organized tuberculosis scheme it has an obvious value. But however actively carried on it is, in the presence of bovine infection, only a partial defence. It cannot supersede other well known methods. The removal of an infant from its tuberculous mother will have served little purpose if the child is immediately afterwards infected by milk from a tuberculous cow. The English plan, to which the report refers, of making provision for infant protection from tuberculosis as a part of a general movement, shows practical sense and is apparently not ineffective. Balance as well as co-ordination must be observed in working out these measures. The protection of infants from tuberculosis by withdrawing them from contact with infected persons, and especially from the care of infected mothers, must surely be looked upon as a link in the chain, and not the chain itself.

#### TUBERCULIN TREATMENT OF TUBERCULOSIS.

OUR attention has been called to an error in an answer we gave on July 3rd (BRITISH MEDICAL JOURNAL, p. 47) to "Tuberculosis Officer," who asked if any investigation had been made by the officers of the Ministry of Health into the treatment adopted by Dr. Camac Wilkinson at his tuberculin dispensaries; and if so, what was the verdict as to the efficacy of the treatment. We stated that an inquiry was made in 1923, at the request of the Ministry of Health, by the Medical Research Council; but that "the report of the visitors was not, so far as we are aware, published, and was described as confidential." It appears that there were several errors in our answer. The inquiry took place as the result of a letter to the Right Hon. Christopher Addison, then Minister of Health, from the Tuberculin Dispensary League. The Medical Research Council asked Drs. G. T. Western, L. S. T. Burrell, and A. S. MacNalty to conduct the investigation. They reported early in 1921, and for a time the report was regarded as confidential. But owing to the publication of Dr. Camac Wilkinson's pamphlet, *The Tuberculin Dispensary for the Poor*, in the summer of 1923, the Medical Research Council consented to the publication of the report, which appeared in the issue of the *Lancet* for November 3rd, 1923 (p. 984). The conclusions reached by the committee were: That the evidence submitted by the Tuberculin Dispensary League was not as full and satisfactory as was desirable; that the method immunized patients to large doses of tuberculin, but that there was no evidence that it immunized them to tuberculosis; that the most favourable results related to Stago I (Turban-Gerhardt) cases, but that it could not be assumed that these patients were treated solely by tuberculin; that the mature age of many of the survivors was indicative of a chronic type of pulmonary tuberculosis, and that equal longevity could be

seen in cases untreated by tuberculin; that occasionally individual patients derived distinct benefit from tuberculin treatment, but that there was always the risk that large doses of tuberculin might light up latent foci of the disease. For these reasons the investigators were of opinion that the method of tuberculin administration advocated by the Tuberculin Dispensary League had no claims over other methods of treating tuberculosis which would justify its general adoption.

#### THE REBUILDING OF "BART'S" IN THE EIGHTEENTH CENTURY.

SIR D'ARCY POWER has contributed to *St. Bartholomew's Hospital Reports* a paper, "The rebuilding of the hospital in the eighteenth century," from which it appears that even the two large volumes of Sir Norman Moore's history do not tell the whole story. In 1723 a general court decided on rebuilding some part of the house, and appointed a committee, among whose members were Drs. Mead and Freind and the architects Nicholas Hawksmoor and James Gibbs, with instructions to prepare a plan. Both these architects have left their marks on the church buildings of London. Both of them were steeped in the Wren traditions, and especially Hawksmoor, who was the scholar and domestic clerk of Sir Christopher. The two took a large part in designing and building the fifty new London churches at the close of Queen Anne's reign, but Gibbs's greatest claim on the interest of the medical profession, especially of its London consultants, rests on his building of St. Peter's, Vere Street, a church which has a peculiar connexion with the medical quarter and in which the funeral services of many of the great ones of medicine and surgery have been held. These two artists freely gave their services to St. Bartholomew's, and Gibbs in particular gave his designs and supervision to the work of rebuilding. Neither of them could produce anything to rival Wren's best work, such as the steeple of St. Mary-le-Bow, and in the heyday of the Gothic revival their work was despised as dull and heavy; but in these days, when even the baroque style has its enthusiastic admirers, we are once more allowed to find beauty in the work of the followers of Wren. But a more interesting person than either of the architects was soon added to the court in the person of Ralph Allen of Bath, the Squire Allworthy of *Tom Jones* and the host and benefactor of Fielding and of Pope and of many others. The former has immortalized his friend in "that exquisite picture of human manners," and the latter, in his *Satires of Horace*, wrote:

"Let Humble Allen, with an awkward shame  
Do good by stealth and blush to find it fame."

Allen, after making a princely income by reforming the postal services, became still wealthier as the proprietor of quarries near Bath. In the *Dictionary of National Biography* it is stated that "he eased the exterior of St. Bartholomew's Hospital in London with stone at his own expense." Sir D'Arcy Power shows that this statement is inaccurate. Allen was an open-handed philanthropist, but he was enabled to become so by his keen business instincts and methods. He frankly told the authorities of St. Bartholomew's that his offer to supply the stone at a low price was inspired by a desire to get his stone known and to form a market for it in London. As things turned out he must have lost a great deal of money by his contract. The stone was conveyed from the quarry to barges on the river Avon, and then by water to Bristol, where it was put on shipboard for the sea voyage to London. All went well with the building of the first and second piles of the new structure, but soon after the third was begun the war of the Austrian succession broke out, and the risks to shipping were very grave. Even when Allen bought a quarter of

a ship the press-gang and the temptations of service in privateers made it difficult to man her, and enemy action rendered the voyage dangerous. Finally, the ship was cast away, to Allen's loss. These and other causes delayed the work, so that the rebuilding was not finished till 1752, when the inscription over the inner gateway of the hospital was set up, but a later addition to this inscription stated that it was finished in the year 1770. Last year the members of the British Medical Association who attended the Annual Meeting at Bath had opportunities of seeing some of the results of Allen's philanthropy in the building of the Royal Mineral Water Hospital, as well as the magnificent home which he built for himself at Prior Park. Another great man and governor was William Hogarth, who was born in Bartholomew Close, and whose paintings on the walls of the great staircase are familiar to all visitors to the hospital. He grasped at the opportunity of showing his powers in the great style of history painting, and, as he said, "with a smile at my own temerity, commenced history painter," with "two Scripture stories, the 'Pool of Bethesda' and the 'Good Samaritan,' with figures seven feet high." But the public knew better than he did in what style of painting he most excelled, and, as he said, he "returned to the pursuit of my former dealings with the public at large." We are glad to note that this paper is only an instalment, and we look forward to the continuation which Sir D'Arcy Power promises to us.

#### MINER'S NYSTAGMUS.

THE committee appointed in 1920 by the Medical Research Council to investigate the causation and means of prevention of miner's nystagmus announced in the following year its unanimous conclusion that the essential factor in its production was deficient illumination. This was ascribed to the low lighting power of safety-lamps, their distance from the objects looked at by the miner, and the absorption of light by the dark surface of coal. The committee recommended by way of prevention that the standard of illumination of objects, in all places where work was done, should be made equal to that of open-light pits, either by increasing the power of safety-lamps or by the introduction of portable electric lights. The personnel of the committee commanded respect: their investigations covered an extensive field, and the conclusions reached were broadly supported by the data they brought forward. It appeared to many that the etiology of miner's nystagmus had found at least a provisional explanation, and that time should be given for the proposed remedial measures to be put to the full test of experience. It is therefore noteworthy that an ophthalmologist of the standing of Dr. Freeland Fergus of Glasgow, who is familiar with miner's nystagmus as a referee, should have stated recently<sup>1</sup> that the nystagmus committee, in his view, went on wrong lines, and that the remedy suggested has only made matters worse and put owners to great and needless expense. The change from the safety-lamp to electric light, he says, has in certain pits increased the number of cases of nystagmus: he even quotes one pit by name where the nystagmus rate rose when the safety-lamp was given up, and fell again on its reintroduction. He contends that miner's nystagmus is chiefly a disease of the nervous system. Though its cause, so far, is undiscovered, he does not regard it in any sense as within the province of the ophthalmologist; he hands on the problem to pathologists, neurologists, and medical officers of health for exploration in their several departments. In laying stress on the nervous factor Dr. Fergus does not seem to be really at variance with the reports of the nystagmus committee. It described the eye movements as but one among the manifestations which go to make up the symptom-complex; neurasthenia, or neurosis;

<sup>1</sup> *Glasgow Medical Journal*, March, 1926.

with sleeplessness, anxiety and mental depression, were, the committee said, present in the later stages. The committee cited as modern views of the disease that it may be either an oculomotor fatigue or a general neurosis with local oculomotor involvement, clearly contemplating that in certain cases at least it may be chiefly a disease of the nervous system. With regard to the utility of brighter illumination for the prevention of nystagmus the divergence between Dr. Fergus and the committee is complete. If it has been made manifest by the trials made—assuming that these have been sufficient in number, extent, and duration to warrant a definite conclusion—that lighting is no remedy, it follows that the industry should not be asked to bear further charges for lighting reconstruction. If lighting is no remedy it follows also that deficient illumination cannot be the essential factor in the causation of miner's nystagmus, and the whole question remitted to the nystagmus committee is reopened from the beginning. The facts as to the results of the lighting improvements will doubtless be made known when available. Meanwhile Dr. Fergus himself has been pursuing inquiries, and has obtained statistics which he hopes to publish before long. Their appearance will be awaited with interest.

#### A LABORATORY FOR THE STUDY OF MENTAL ABNORMALITY.

SOME years ago Dr. Arthur MacDonald drafted a bill "to establish a laboratory for the study of the abnormal classes," which has been endorsed by many leading medical, legal, and religious organizations in the United States, and also by the International Congress of Criminal Anthropology of Europe. This bill was twice reported upon favourably by the Judiciary Committees of both Houses of Congress, but failed of passage through delay. Dr. MacDonald ceased to press the bill in Congress, but owing to the increase of these evils, which it is the purpose of the bill to prevent or lessen, he considers it high time that a rigid scientific study of the individuals producing these evils should be instituted by the Government. He points out that the cost of these antisocial personalities to the United States is more than one billion dollars a year, including all patho-social activities outside of institutions, not to mention the still greater moral damage involved. The proposition is to spend \$110,000 per annum to combat this enormous annual drain upon the American people by the latest methods known to science. The main purpose of this bill is to provide for the study of the causes of crime, insanity, pauperism, alcoholism, defectiveness, degeneracy, and other forms of abnormality, with a view to lessening or preventing them; but in addition to this general scope of the bill there are some other direct ends which it is expected to accomplish. Such ends are to discover whether or not there are any physical and mental characteristics that distinguish abnormal from other children, with a view to protecting children in advance; to undertake the exhaustive study of single typical criminals in order to determine how men come to go wrong, and to what extent their surroundings influence them as compared with their inward natures; to summarize and combine results already gathered by State and Federal institutions, encouraging uniformity of method in collecting data useful generally to all States; and to lessen the enormous expense to the community of the abnormal and delinquent classes by a study of the evils which lead to such expenditure. Dr. MacDonald is of the opinion that the acquisition of proper and full statistics would in itself justify the bill which he proposes. A similar suggestion was made by Professor Kraepelin, who maintained that psychiatric investigation on a large scale is necessary to determine whether the general tendency of civilized communities is towards decadence on the one hand, or progressive development of

productive and resistive power on the other. We need what he describes as a "mass psychiatry," having at its disposal statistics in their widest scope, to provide the foundations for a science of mental health—a preventive psychological medicine for combating all those mischiefs which we group under the head of mental degeneracy. We shall watch with interest further developments in connexion with this bill, which appears to have the support of those best qualified to estimate its social significance. It would certainly seem that a laboratory such as the author describes would be of considerable service to the community.

#### THE ROSS INSTITUTE AND HOSPITAL FOR TROPICAL DISEASES.

IN anticipation of the opening by the Prince of Wales on July 15th of the Ross Institute and Hospital for Tropical Diseases at Putney Heath, Sir Charles McLeod, chairman of the council of the institute, Sir Ronald Ross, director-in-chief, and the members of the staff gave a reception last week to a number of journalists, to whom they explained its methods and purposes. Since the appeal for a Ross clinic was made, above the signatures of many eminent persons, in 1923, a good many disappointments have been experienced in the endeavour to acquire a suitable building. If the public dislike the proximity of an ordinary hospital, the idea of a hospital for tropical diseases appears to evoke still greater objection. Eventually, however, the freehold was secured of a modern mansion known as Bath House, standing in its own grounds of two and a half acres, on the border of the famous heath where nowadays the highwaymen and gibbets are scarcely a memory. A good deal of structural alteration within and without has been necessary, but the result is a beautiful as well as a convenient building, and not often do the windows of laboratories look out upon such refreshing views. The purpose of the institute, as explained by Sir Charles McLeod, is primarily intensive research work on the prevention and treatment of tropical diseases, but it is also to serve as a hospital (in a small way, at all events at first) for sufferers from such diseases, and as a propagandist centre for stimulating and assisting control work in malaria and other diseases of tropical countries. It is hoped that the institute will take its place in that little group of institutes in various parts of the world which in their name commemorate a distinguished pioneer, such as the Pasteur Institute in France, the Gorgas Institute at Panama, and the Kitasato Institute in Japan. Sir Ronald Ross told the assembled journalists that although, by the wish of the council, the institute bears his name, its inception was not due to any idea of his own. In 1917 Dr. Aldo Castellani, who is now director of tropical medicine and dermatology at the institute, came to him with a proposal to raise a public subscription to found a Ross clinic with laboratories. The preoccupation of the war prevented the idea from being carried further at that time, but later on Dr. Castellani renewed his suggestion, and with Sir William Simpson, now the institute's director of tropical hygiene, worked out a plan. In response to a public appeal many contributions were received, especially from companies interested in tea and rubber plantations in the East, and also from Governments and municipalities of British possessions, and from Indian princes and others. It was proposed, among other subjects, to carry out researches on cancer and small-pox. The object of the institute is to assist generally in the control, prevention, and cure of the diseases, especially malaria, which lay waste the tropics, and it is hoped to raise an endowment fund of a quarter of a million. The visitors were then taken over the laboratories of Sir Ronald Ross and his two colleagues, Sir William Simpson and Dr. Castellani, and were also shown the library of tropical diseases which is in course of formation, and the nucleus of



a museum, which includes the microscope used by Sir Ronald Ross when, in 1897, he discovered the transmission of malaria through the anophles mosquito to human beings. The method of breeding mosquitos for experimental purposes at the institute was also demonstrated. The attached hospital consists of twelve beds, two of them already occupied. It was stated that medical men home from the tropics have already taken advantage of the facilities offered in the laboratories, and have done research work on their own account at the institute. It is intended that reprints of papers relating to work in which the institute has had a share shall be circulated free to doctors abroad whose names are sent forward by subscribers and others, but the point is made that this is not to be a teaching centre, and that its purpose is to supplement, not to compete with, the existing schools of tropical medicine.

#### THE PUBLIC HEALTH ADMINISTRATION OF JUGO-SLAVIA.

DR. ALFRED GREENWOOD, county medical officer of Kent, was nominated nearly a year ago by the Ministry of Health as one of two representatives from England to visit Jugo-Slavia and study its public health on behalf of the League of Nations. He has now issued to his county council a report on what he saw there, and for readers here it will serve the same purpose as the memorandums for various other countries, including Germany, Austria, Hungary, and Czecho-Slovakia, already issued direct by the Health Section of the League's Secretariat. That regarding the Kingdom of the Serbs, Croats, and Slovenes was noticed briefly in our issue of October 24th, 1925 (p. 760), but Dr. Greenwood's report on the same area hardly overlaps it, and is worthy of separate attention. Instead of dealing in sequence with the many subjects now embraced in the wide sphere of public health, Dr. Greenwood has in very interesting fashion adopted the style of a narrative of his perambulations of the country, telling brightly and briefly what he saw of health organization, institutions, and activities wherever he went in his travels, which extended over a period of six weeks. French was the medium of communication between the different nationalities represented on the tour. The costs were borne by the Rockefeller Foundation. Jugo-Slavia includes what was formerly Serbia as its largest component part. After explaining the international exchanges in public health of which the expedition to Jugo-Slavia formed a part, Dr. Greenwood gives a short but clear and interesting history of the peoples covered by the geographical expression Jugo-Slavia, the "land of the South Slavs," descended from tribes settled in the North-Western Balkans after the fall of the Roman Empire, who were for long divided by physical barriers and by forms of religion. The present kingdom has an area of 96,000 square miles and a population of over twelve millions. Serbia lost a million men in the war, and had only 1,600 doctors at the end of it. Now there are 3,000 doctors, or 1 per 4,000 of population, so that there is still ample room for increase of medical personnel. Following such preliminary information Dr. Greenwood proceeds to tell the story of his tour, which he divides into three parts. In the course of it he gives a brief account of all the health institutions and activities of the country. In that account we do not propose to follow him, but may note that it embraces the passing of a National Health Insurance Act in 1922, under which dependants as well as workpeople are included. The report naturally contains many criticisms, but Dr. Greenwood rightly claims that these are constructive, not destructive, and he holds up to admiration "the excellent public health work which has been carried out in Jugo-Slavia in such a short time."

#### ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

THE eighty-fifth annual meeting of the Royal Medico-Psychological Association was held in London, at the British Medical Association House, from July 13th to 16th. The association during the year has had to mourn the death of its president, Sir Frederick Mott, and an eloquent tribute to him was paid by the acting president, Dr. M. J. NOZAN, who described Mott as one of the vital forces of the association. Dr. J. R. Lord, C.B.E., was elected president for 1926-27. Dr. C. Winckler of Utrecht and Dr. Adolf Meyer of Baltimore were elected honorary members, and Dr. Edwin Goodall of Cardiff was nominated Maudsley lecturer for next year.

##### *Clinical Study of Mental Disorders.*

Dr. J. R. Lord's presidential address, on the clinical study of mental disorders, was really a volume, running to seventy-eight octavo pages, and will be published in full in the *Journal of Mental Science*. He began by dealing with the purposes of the association, and urged the re-establishment of a research committee whose functions would include the definition of psychological and psychiatric terms, and the collection, registration, and classification of clinical data. A sounder knowledge of the psychic processes underlying the disordered mind called not only for research work, but for properly organized and routine team work in the investigation and treatment of individual cases. Individual treatment alone, however much concentrated, would never cure mental disorders. Team work meant a concentration on the individual case by several doctors, one of whom should be foremost and responsible. He then reviewed the special departments of knowledge which psychiatry needed for its clinical purposes, the first of these being psychology. Here he considered that the psycho-analytical conceptions of Freud and his school, and their modification by Adler and others, had been a distinct gain to psychiatry, especially in the sphere of psycho-pathology, giving it a new vigour and quickening the interest of the profession and of the community generally in psychological matters.

The President next considered the more important of the psychological approaches to the problems which concern clinical psychiatry, showing that they were all of service in one relation or another, after which he went on to speak of the physiological and biochemical approaches in the same way. In the province of pathology and psycho-pathology two principal schools had grown up—namely, the physiogenic and the psychogenic. The wards and laboratories of the mental clinics and hospitals afforded one ground at any rate for a closer approximation of the work of both. The progress of clinical psychiatry had been held up by dissociating the mind from the body, or the nervous system from the body, and by neglecting sociological considerations. The aim of such team work as he advocated was to supply the psychiatrist responsible for the diagnosis and treatment of a case with a complete clinical picture, taking advantage of every avenue of approach, physiological and psychological alike. Clinical psychiatry, he said, could not take up an *ex parte* attitude in respect of the factors operating in the case of mental disorder, and must, as far as possible, dissociate itself from leaning towards any one viewpoint, or one of the main objects of team work would be defeated. Clinical psychiatry had for too long suffered from such one-sided investigations, culminating in the accumulation of much unbalanced knowledge about mental disorders and diseases.

Dr. Lord then passed on to examine team work in its more practical aspects, and said that to establish or further develop team work in public mental hospitals would mean, in the first place, a reorganization of the work of the medical staff, and, in the second, an addition to it of specialists and experts in various other branches of medicine, and, where necessary, those of some special branches of clinical psychology. As little as possible of the time of the skilled psychiatrist should be spent on the chronic insane. Much more of the supervision and general care of this class of patient should be entrusted to nurses and skilled lay help. The house staff of a mental hospital should consist of psychiatric specialists and of

visiting or resident physicians. The ideal would be to utilize to the utmost the existing staff of medical officers and link them up with such specialists as the circumstances of each hospital required. At the head would be the clinical director, and each of the other medical officers should be required to make as might be necessary one or more branches of medicine besides clinical psychiatry a special study. The work should be done, so far as these special branches were concerned, under the direction of the appropriate visiting specialist, subject, of course, to the clinical director. Each hospital would settle for itself the number and character of its specialists and consultants, the most essential being a dentist, an ear, nose, and throat specialist, a neurologist, and a gynaecologist. The effort of the team should be first to concentrate on the ascertainment of the morbid physical processes at work and their alleviation, the psychic examination in the meantime being purely objective. In the final passages of his address he spoke of the reconstruction of psychiatry as a medical science, and pointed out what wealth of psychiatric material there was in general medicine. One field, the last to be cultivated, but perhaps the richest in potentialities, was the field of general practice.

#### *The Madness of Ajax Clinically Considered.*

Dr. G. A. AUDEN read a paper on the madness of Ajax as conceived by Sophocles. He said that the description of rapidly varying emotional states, with a maniacal outburst followed by depression culminating in suicide, furnished a clinical picture which must have been the result of experience. He compared it with the description of confusional insanity in a modern textbook. For accuracy in clinical detail Dr. Auden considered the Greek tragedian superior to Shakespeare, and claimed him as the first of the long line of physician-poets, extending down to our own day, as exemplified in the present laurate.

Dr. T. B. HENSLOR thought that the case of Ajax in a modern court of law would come under the M'Naghten rules, though whether the legal mind would properly assess it was doubtful. Sophocles was always interesting for his intimate knowledge of clinical psychology. Professor G. M. ROBERTSON said that the description of the symptoms of confusional insanity was about as perfect as it could be. If any student gave such a description as that given by Sophocles he would get full marks.

### BRITISH EMPIRE CANCER CAMPAIGN.

THE Duke of York presided at the third annual general meeting of the British Empire Cancer Campaign held in the House of Lords on July 12th, and drew attention to the activities of the various counties in establishing their own research centres or setting up county committees to aid the central fund. Sir John Ferguson announced that the midsummer ball organized by Lady Cavo had yielded £1,600. To the annual report, edited by Mr. J. P. Lockhart-Mummery as in the previous year, Lord Cave, chairman of the Grand Council of the Campaign, contributed an introduction, in which he referred to the great impetus that has been given to cancer research, the harmonious co-operation which has been established between cancer research committees and individual workers, and to the publication of a journal of abstracts and reviews, for the initial expenses of which the Campaign has allocated funds. Grants for the year ending May 31st, 1926, were made to the Birmingham University Cancer Research Centre, £4,047; the Cancer Hospital, £2,500; Coombe Lying-in Hospital, Dublin, £200; the London Association of the Medical Women's Federation, £600; Middlesex Hospital, £3,000; St. Bartholomew's Hospital, £1,695; St. Mark's Hospital, £500; Westminster Hospital, £500. Grants had also been made to ten research workers, and £600 had been expended in connexion with visits to American and Continental cancer research laboratories; the total amount distributed was £16,757; the body of the report is taken up with statements from these institutions and individuals. The Cancer Research Department of the Middlesex Hospital has continued the investigations carried on last year, particular efforts being made to determine the way in which

the malignant cell differs from a normal cell. Experimental work has also been performed in connexion with tar cancer and the Rous sarcoma; in the latter case the work undertaken has been on the lines suggested by the researches of Dr. Gyo and Mr. Barnard. The effects of x rays on metabolism have been further investigated, and researches continued into the Abderhalden reaction. Radiological studies included the general reactions of tissues to radium and x rays, and the biological and chemical effects of visible and ultra-violet radiations. At the Cancer Hospital Research Institute various experiments with coal and acetylene tars have been made, and the work on the carcinogenic properties of mineral oils concluded. At St. Bartholomew's Hospital the effect of radiation on mitosis in the tumour cells is being investigated in the hope that some indication may be afforded thereby of the proper intervals which should be allowed in the split dose methods. At St. Mark's Hospital investigations are proceeding in connexion with the relation between simple and malignant tumours of the bowel; a survey is being made of the value of laboratory tests on the faeces in the diagnosis of cancer of the bowel, and investigations are being continued into the effect of large doses of colloidal copper and lead on malignant tumours. Under the auspices of the Campaign the old suggestion that "cancer houses" play an important part in the production of cancer is being studied. Professor R. T. Leiper now reports definitely that there is no evidence that the *Gongylonema* worm is associated with gastric carcinoma in man, nor that rats in old "cancer houses" harbour this worm and convey it to man. We referred on June 12th last (p. 1002) to this investigation of Professor Leiper, which has destroyed one of the few apparently solid pillars supporting the "cancer house" hypothesis.

### BEIT MEMORIAL FELLOWSHIPS.

THE annual report for the year ended June 30th, 1926, has been presented to the Beit Memorial Trustees by the honorary secretary, Sir James K. Fowler, M.D. It records that during the period under review research work has been carried on by two senior fellows, two fourth-year fellows, and twenty-two junior fellows. Dr. T. R. Elliott, F.R.S. (assistant honorary secretary), has now completed a record of the after-histories of all the Beit fellows appointed since 1910, and the details will appear in the next issue of the book of regulations.

#### *Election to Fellowships.*

The trustees have elected Ernest Basil Verney to a senior fellowship (value £600 per annum), and William Kershaw Slater, Harold John Channon, and John Maurice Hardman Campbell to fourth-year fellowships of the value of £400 per annum.

The following have been elected to junior fellowships, each of the value of £350 per annum.

RICHARD JAMES LYTHERG, M.A., B.Ch.Cantab., Sharpey Scholar, University College, London, who will investigate the electrical reactions of the optic and auditory nerves to sensory stimuli of varying wave-length, intensity, and quality.

FRANK MACFARLANE BURNET, M.D.Melb., temporary assistant, National Collection of Type Cultures, Lister Institute, who will undertake a study of bacteriophage in relation to the treatment of enteric bacillary infections.

JOHN GLOVER HUGO FREW, M.Sc.Birm., working at the Research Hospital, Cambridge, who will investigate the physiology of the blow-fly, particularly during metamorphosis.

MAURICE WALTER GOLDBLATT, M.D., B.Sc.Belfast, now working in the Dunn Laboratory, St. Thomas's Hospital, who will continue his investigation of (1) the relationship between ketosis and alkalosis; (2) the fate of the two terminal carbon atoms in the fatty acid chain during the hypothetical  $\beta$ -oxidation process; (3) the role of insulin in fat metabolism.

JAMES TUTIN IRVING, B.A.Cantab., Junior Demonstrator in the Sir William Dunn Institute of Biochemistry, Cambridge, who proposes to investigate in the Biochemical Department, Oxford, certain aspects of the metabolism of carbohydrates and allied compounds in the animal body.

JOHN GOWER STEPHENS, M.B., B.Sc.Sydney, now working in the Physiological Laboratory, Cambridge, who will continue his investigations of the functions of the spleen by the method of "window" observation.

BARRET WOOLF, B.A.Cantab., now working in the Sir William Dunn Institute of Biochemistry at Cambridge, who will undertake a comparison of some chemical reactions induced by resting bacteria with those induced by animal tissues.

## Scotland.

### NATIONAL HEALTH INSURANCE IN SCOTLAND.

At the annual meeting of the Scottish Conference of Friendly and Approved Societies held in Edinburgh on June 26th, Sir James Leishman of the Scottish Board of Health stated that the second valuation of the Scottish societies showed a gross surplus of over £4,000,000. There would, he said, probably be at least £2,500,000 available for distribution, which was two and a half times the amount available after the last valuation in 1918. He said that the year 1925 had been a fair year from the point of view of the health of the workers in Scotland, especially considering the long-continued depression in trade, the loss of contributions, and other adverse facts. He pointed out that representations had been received from societies regarding the present great number of claims, especially in certain areas. In connexion with some societies, the claims had increased recently by 50 to 100 per cent. above the claims usual at this time of year. He did not wish to go into the merits or demerits of industrial disputes, but he thought there was an intimate connexion with the general strike and the mining stoppage. Some societies said they were fairly sure that there was a large number of doubtful claims lodged for sickness and disablement benefit. The commission was sending out a circular to all medical practitioners calling attention to this alleged state of affairs and to the fact that the only good claim for sickness or disablement benefit was the claim of the person being unable to work. The great majority of societies probably looked with considerable confidence on the certificate of a medical practitioner as to a man's fitness for work, and he hoped that this would not be destroyed. Turning to the Royal Commission's report, Sir James Leishman said the chief recommendation was for an extended and fuller medical system. This should include all the specialist advice and treatment and all the institutional treatment necessary. The report by the committee on the hospital services of Scotland had shown a great deficiency in the accommodation and equipment of the voluntary hospitals. It was a serious matter that in the six large hospitals of the Scottish cities there had been no fewer than 5,864 people on the waiting list. He hoped that provision for the suffering would be practically the first charge on the generosity of all who could help. With regard to the distribution of the £2,500,000 it must be remembered that when spread over 1,700,000 people it came to only about 1½d. a week. He hoped that people would not get the idea that there was money to be given away to the first person who put out a big hand to get it.

### ST. ANDREWS ALUMNUS ASSOCIATION.

At a meeting of the General Council of the University of St. Andrews on June 26th Principal Irvine submitted the report of a committee appointed to consider the proposed establishment of an alumnus association in connexion with the university. It was decided to send a circular to all former students of the university inviting them to become members of the association, and to invite St. Andrews University associations throughout the country to become affiliated to the central association at St. Andrews.

### CHAIR OF NATURAL HISTORY AT DUNDEE.

At a meeting of the University Court of the University of St. Andrews on June 25th the vacant chair of natural history in University College, Dundee, was filled by the appointment of Mr. Alexander David Peacock, M.Sc.Dundee, F.R.S.Ed., senior lecturer in zoology at Armstrong College, Newcastle-on-Tyne. Professor Peacock has done a large amount of research connected especially with entomology, and was previously entomologist in the Government Agricultural Department of Southern Nigeria. During military service from 1914 to 1919 he was engaged particularly in entomological research and instruction connected with the medical and sanitary services under the War Office.

### STANDARD OF INCAPACITY FOR WORK IN SCOTLAND.

The Scottish Board of Health has issued a circular to all insurance practitioners in Scotland relating to the certification of incapacity for work. The circular states that the Board had recently had occasion to consider the position arising from a sudden and very substantial increase in the certification of claims for sickness and disablement benefit, mainly in the industrial areas. So far as the Board had been able to discover, the apparent access of sickness indicated by the increased issue of certificates of incapacity for work was not attributable to any epidemic or outbreak of exceptional sickness. It appeared from the re-examination of a large number of cases by the district medical officers that the seeming increase was due to a less stringent view being taken by practitioners of the conditions for which sickness and disablement benefit was given, and the Board would impress upon insurance practitioners the fact that the statutory condition for payment of sickness or disablement benefit under the National Health Insurance Act is that the insured person shall be incapable of work through some specific disease or bodily or mental disablement. The Scottish Miners' Federation Approved Society has also issued a circular on the subject to their district agencies in which the situation is characterized as "an utter collapse from the normal standard of certification." It is also stated that the society's experience in 1926 corresponds to that in the industrial dispute in 1921.

### PURE MILK IN EDINBURGH.

A lecture on "A pure milk supply" was delivered by Dr. W. Robertson, medical officer of health for Edinburgh, in the Synod Hall, Edinburgh, on July 2nd. Preventive medicine would, he said, receive a strong impetus when milk free from disease-producing micro-organisms was generally available. Milk containing germs of tuberculosis was a menace to the very young and a risky food for the delicate. In course of time, he believed that those who had been strenuously advocating the production of tubercle-free milk would reap the reward of their efforts by witnessing the decline in the incidence of tuberculosis, more especially of bones, glands, and serous membranes. Powers now existed to deal with the diseased cow and were being employed by the Veterinary Department. By slow degrees the demand for tubercle-free milk in Edinburgh had increased until now several hundreds of gallons were sold daily. This meant that persons in the dairy trade were fast realizing the importance of a great problem, and it also proved that many consumers would pay an enhanced price for a reliable food. Those who had spent time and large sums of money in collecting tubercle-free herds must earn the gratitude of a public health authority. No longer did they stress such matters as ornamental byres, with tiled interiors and elaborate fittings; but, rather, importance was attached to clean cows, clean hands, and cleanly methods, with daily exercise for the animals. In another direction Edinburgh had led the way, and this was in the production of pasteurized milk, of which thousands of gallons were now being sold every week. Dr. Robertson believed that in the course of a year or so the dairies in the city would be selling little else than tubercle-free milk from tested cows, or milk that had been treated by pasteurization. During the past forty years there had been nine serious epidemics of scarlet fever in the city caused by infected milk, which had cost the city enormous sums of money. What was now required was a far more universal use of milk by young and old people. It was a valuable food and relatively cheaper than many other articles of diet.

### CENTRAL MIDWIVES BOARD FOR SCOTLAND.

At a meeting of the Central Midwives Board for Scotland for the hearing of penal cases, Dr. James Haig Ferguson in the chair, it was reported that a certified midwife had been found guilty of procuring abortion and sentenced to penal servitude, and it was resolved that the secretary be directed to remove her name from the roll of midwives and to cancel her certificate, and in addition thereto, in terms of Section 8 of the Midwives (Scotland) Act, 1915, to prohibit

her from attending women in childbirth in any other capacity. Another certified midwife appeared in answer to charges of being guilty of negligence, breaches of the rules, and failure to notify to the local authority contact with a person suffering from puerperal fever, thereby endangering the lives of her other patients. Miss Jane C. Barker, assistant inspector of midwives, Glasgow, appeared in support of the charges. The Board found the charges to be proved, and resolved that, in view of the technical character of the offence, the midwife be severely censured and admonished to adhere strictly to the rules of the Board in future, and further, that a report be obtained from the local supervising authority on the conduct of her practice during the next three months. At the ordinary meeting of the Board held later, Sir Archibald Buchan-Hepburn, Bt., presented the report of the Finance Committee, which, on his motion, was approved.

## Ireland.

### COUNTY WEXFORD MEDICAL PRACTITIONERS.

At a meeting of the medical practitioners of County Wexford, at Enniscorthy, a report of the joint meeting of the medical practitioners of the counties of Wicklow and Wexford, which was held at Woodenbridge Hotel, Vale of Avoca, on June 17th, 1925, was read by the honorary secretary, and it was decided to stand by the resolution, as to the refusal to fill up the new Registration Quarterly Return Form, adopted at that meeting, and previously passed by the Irish Medical Committee on April 6th, 1925. A letter was read from Dr. Hennessy, Irish Medical Secretary, in which he gave an account of the proceedings in connexion with the meetings of the Committee of Inquiry into National Health Insurance and the Medical Services, of which Dr. R. J. Rowlette is a member, and of the Poor Law Commission, of which he (Dr. Hennessy) is a member. Dr. Hennessy also drew attention to the position of the funds out of which the remuneration for medical certification was paid, and urged that the County Wexford medical practitioners should take steps to organize to protect their interests in respect of medical certification, among other matters. The question of the organization of the profession in the Saorstát was considered, and the following resolution, proposed by Dr. Bowen, and seconded by Dr. Lawlor, was passed:

That in view of the many pressing and important questions that are likely to face the medical profession in Saorstát Éireann in the near future, we consider that the enrolment of all its members in one large association would add enormously to its strength and prestige, and we request the Irish Medical Committee to take such steps as it may deem necessary and expedient to have a scheme formulated which would amalgamate existing associations, rope in those who do not belong to any association, and give renewed life to medical politics in Ireland.

A communication was received from the County Wexford branch of the Irish Local Government Officials Union inquiring if it would be possible to effect an amalgamation between it and the Medical Association; after discussion, it was decided that it was not advisable to have a union of the two bodies on account of the varied interests involved; but in view of the possibility of the County Board of Health taking action towards the reduction of salaries it was agreed to ask the local branch of the Union to consult with the doctors in joint meeting.

## England and Wales.

### THE MILK SUPPLY.

THE Milk and Dairies Order, 1926, was issued by the Ministry of Health on July 12th. It revokes the Dairies, Cowsheds, and Milkshops Orders of 1885, 1886, and 1899, so far as they relate to England and Wales, and all Regulations made thereunder by local authorities. The main provisions of those Orders and Regulations are re-

placed by provisions similar in general purpose, but modified in accordance with the development of modern hygienic knowledge so as to lay greater stress on cleanliness in all operations connected with the production and handling of milk (including the care of the cow) than upon the structure of buildings. The most important of the new provisions are those relating to the health and inspection of cattle, and to the handling, conveyance, and distribution of milk. The Ministry has also issued Public Health (Imported Milk) Regulations, 1926. These require the registration by port and riparian sanitary authorities of persons receiving imported milk, and give power to the registering authorities, similar to that conferred by Section 2 of the Milk and Dairies (Amendment) Act, 1922, in regard to retailers, to refuse registration or to remove a person from the register if the requirements of the Regulations in regard to the condition of the milk are not complied with. These requirements—namely, freedom from tubercle bacilli and a limitation of the bacterial content—are, as the Minister is advised, such as can suitably be applied to milk which has been submitted to a pasteurizing or other heating process which is a commercial necessity for imported milk. The Milk and Dairies Order, 1926, will come into operation on October 1st next, and the Public Health (Imported Milk) Regulations, 1926, on January 1st, 1927.

### PRESENTATIONS TO DORSET DOCTORS.

On June 24th Dr. F. Rodier Heath of Weymouth and Dr. P. W. MacDonald of Radipole were each presented with a silver salver at a dinner held at the Town Hall, Dorchester, in connexion with the West Dorset Division of the British Medical Association and the Dorset Local Medical and Panel Committee. The chair was taken by Dr. E. Kaye Le Fleming of Wimborne, and Dr. G. C. Anderson, Deputy Medical Secretary, British Medical Association, represented the headquarters of the Association: Dr. MacDonald, who had been medical superintendent of the Dorset County Asylum, was in the past president of the Dorset and West Hants Branch of the British Medical Association and chairman of the West Dorset Division. Dr. O. Rees, chairman of the West Dorset Division, in proposing his health, referred to the active part Dr. MacDonald had taken in the difficult time at the commencement of the Insurance Act. As justice of the peace he had also served the county, and since his retirement he had devoted his energies to medico-political work. Dr. Le Fleming described the valuable service of Dr. Rodier Heath as secretary of the Panel Committee from 1918 to 1925; he had been particularly prominent in the task of overcoming difficulties between medical practitioners and the State authorities. The toast of "The British Medical Association" was proposed by Dr. T. MacCarthy, who gave several instances of the way in which the Association supported the interests of doctors which did not conflict with the larger interests of the general public. Dr. Anderson, in replying, referred to the Royal Commission into the national insurance system, and said he believed that the Association had persuaded the Ministry of Health to revert to the old transfer of practice system, with a month instead of a fortnight. He described also the recent scientific activities which had been fostered by the Association. The dinner was arranged by Dr. J. A. Pridham of Broadwey, who was highly complimented on its success.

### FURTHER MEMORIAL TO THE LATE DR. MARY STURGE.

Two wards in the Taylor Memorial Home of Rest in Birmingham have been set aside to the memory of Dr. Mary Sturge, who died on March 14th, 1925. These wards will be reserved for poor gentlewomen suffering from incurable malignant disease and unable to afford nursing home fees. It will be remembered that during her active life Dr. Sturge initiated the scheme for the erection of a nurses' home in this institution, which was opened on April 1st, 1925, and the Medical Women's Federation decided last year also to raise a fund to endow a bed in her name. A sum of £210 was collected by the Federa-

tion and presented, on July 2nd, at the annual meeting of the Taylor Memorial Home, by Miss Frances Ivens, president of the National Federation of Medical Women, and Dr. Lena Walker, president of the Birmingham and Midland Medical Women's Association. The annual report of the home showed that, during 1925, thirty-seven patients had been admitted, and twenty-three deaths had occurred in it. An anonymous donor had presented £1,000 for the endowment of a bed, and the Birmingham Hospital Saturday Fund Committee had given £100. The home has been placed on the list of institutions which share in the distribution of the Hospital Sunday Fund.

#### STRETFORD HOSPITAL.

A hospital for maternity cases was opened on July 10th at Stretford, near Manchester. Dr. T. Wheeler Hart, county director of the East Lancashire branch of the Red Cross Society, who presided over the ceremony, said that this, the first hospital to be erected in Stretford, was so particularly well equipped as to rival any of the kind in the country. Its building had been rendered possible through the generosity of Sir Thomas Robinson, M.P., who had advanced £2,000 free of interest, and by the East Lancashire Red Cross Society, which had provided another loan of £1,000. It was recognized that the ideal hospital provided accommodation for both men and women suffering from any illness, but such a complete scheme was not yet possible in Stretford. The trustees felt that the first consideration was the provision of accommodation for maternity cases, and they hoped to obtain later on an annexe for men. Sir Thomas Robinson explained that if an adequate response to the appeal was made by the inhabitants of Stretford the trustees would be able to proceed with the second section of the work. The annual upkeep of the hospital at present would require an income of £1,000 a year.

#### THE WARNEFORD HOSPITAL, OXFORD.

In commemoration of the centenary of the Warneford Mental Hospital, on Headington Hill, Oxford, the medical superintendent, Dr. Alexander W. Neill, has compiled a brief history of the institution. It appears that in 1813 the governors of the Radcliffe Infirmary, urged thereto by Dr. Cooke, president of Corpus, decided to establish an asylum for the reception and relief of insane patients. Weekly payments, according to their means, were to be made for the patients, who, preferably, should not be those who had received parish relief. Prolonged negotiations with the Oxfordshire magistrates prevented effect being given to these decisions until 1826, by which time £20,000 had been raised, and an asylum for thirty patients was erected on ten acres of land purchased at Headington. It was opened on July 10th, 1826, and was known as "The Oxford Lunatic Asylum." It supplied the needs of persons for whom the law provided no gratuitous assistance, but who had insufficient means for obtaining help. In 1828 the name of the institution was changed to "The Radcliffe Asylum," in recognition of the large contributions received from the Radcliffe trustees. Later on the Rev. Dr. S. W. Warneford, rector of Bourton-on-the-Hill, began to bestow gifts on the asylum, and in forty-two years his donations exceeded £70,000. In 1843 Dr. Warneford's gifts to and interest in the asylum had already become so great that as a permanent memorial the governors changed the name to "The Warneford Asylum." In 1849 Dr. Warneford obtained the grant of a Royal Charter. His friend the Rev. Vaughan Thomas helped in developing the charitable side of the institution, by means of which "a few poor curables of the county" could be admitted and maintained either gratuitously or at reduced prices. The hospital has been gradually developed and additional land has been purchased until the Warneford Asylum now accommodates 130 patients on an estate of 120 acres. The centenary was celebrated last Saturday by a garden party, which was attended by the president of the hospital (Lord Saye and Sele), the Mayor of Oxford, and many residents there, and many members of the University and of the medical profession.

## Correspondence.

### THE PROPHYLACTIC VALUE OF SCARLET FEVER ANTITOXIN.

SIR,—In a letter appearing on page 1011 of the *JOURNAL* of June 12th Dr. J. H. Garrett takes exception to the deductions in a paper with the above title which was contributed by two of my medical officers and myself to your issue of May 22nd.

In this paper an endeavour was made to give some indication to practitioners "in charge of children's institutions" as to the degree and duration of protection afforded to susceptible children by the use of prophylactic doses of scarlet fever antitoxin. The basis upon which susceptibility was assessed was a skin test dose of Dick toxin. There is abundant evidence to show that the Dick test is a reliable index of susceptibility or otherwise to the toxin produced by the *Streptococcus scarlatinae*.

The degree of infectivity of scarlet fever was not discussed in the paper. It is well known that scarlet fever is a disease of relatively low infectivity amongst the general population. It is also well known that patients suffering from diphtheria are peculiarly prone to contract scarlet fever, and vice versa. One reason for this is that children who are susceptible to diphtheria are commonly also susceptible to scarlet fever. The Dick-positive and Schick-positive curves in the earlier age groups of which such ward populations are chiefly composed run parallel.

During the last six years in one of the hospitals under my charge many hundreds of cases of scarlet fever have been nursed with safety in the same ward with other infective and non-infective diseases under the conditions of "bed isolation." Spread has only occurred on two occasions, both as the result of proved contravention of rules. But a diphtheria ward nursed on ordinary lines is a different matter.

In my opinion the production of passive immunity amongst non-immunes, even although this immunity is of limited duration, is a great advance on the old method of dealing with ward populations exposed to scarlet fever. This old method was practically based on the trust that the disease might not "extend to any considerable number of contacts or otherwise . . . show urgent need for control by an extraordinary method." Why take any risks with a ward population of susceptible children when a method exists by which these risks may be eliminated for an appreciable period?

Our paper dealt with institutional conditions. In the *JOURNAL* of January 30th appeared an apposite contribution from Dr. David Kirkhope bearing the same title as our paper. He, using a scarlet fever antitoxin prepared at the Lister Institute, inoculated 140 contacts (with 41 scarlatinal patients), and in addition 131 children "derived from school classes where scarlet fever cases were recurring with unhappy frequency. . . . From the time of the inoculations no further cases occurred in the school *for a fortnight and all the inoculated escaped infection.*" (*Italics mine.*) Dr. Kirkhope employed an earlier serum than either of those used by us. He found that the minimum protective dose of this serum was 5 c.cm., and that such a dose, he believed, protected for fourteen days. Dr. Kirkhope's estimates were based on the actual contraction of scarlet fever—after the lapse of the period of immunity—by contacts and exposed children (without reference to the Dick test). Some months, therefore, before our paper appeared he had arrived by a different route at substantially the same conclusion as ourselves.

But, after all, the production of temporary passive immunity, whether applied to the general population or to special populations under institutional conditions, although a great advance upon the "expectant" method, can only be regarded as an exceptional means of protection under certain conditions. The ideal is, of course, the production of lasting active immunity.

The production of active immunity against diphtheria is now a well established process, and through its agency diphtheria has, for example, been eliminated as a cause of



sickness amongst the nursing and domestic staffs of the Birmingham City Hospitals.

Active immunity against scarlet fever by means of multiple skin test doses of Dick toxin is also being produced by us, but sufficient time has not yet elapsed to speak with confidence as to its duration.—I am, etc.,

E. H. R. HARRIES,  
Medical Superintendent, Birmingham City  
Hospitals.

July 7th.

#### OBSTETRICS IN GENERAL PRACTICE.

SIR,—The distinguished author of *Operative Midwifery* deserves more consideration than would seem his due from the tone of some of his critics. While not agreeing with him in his suggestion that all serious midwifery work should be in the hands of specialists and removed from those of men in general practice, one sees that it is a reasonable proposition. It should be met, not with rudeness, but with that calm nonchalance with which, for instance, the sister proposition would be met by men of his position: the suggestion, namely, that as midwifery is essentially a woman's question, and as plenty of skilled women specialists would be available, the practice of midwifery should be carried on exclusively by women and that male teachers should be superseded. That in itself is also a reasonable proposition, and it would be pleasant to watch the calmness with which it would be received by the present teachers of obstetrics.

My own quarrel with Dr. Munro Kerr would be from another point of view. His title is alluring, and on reading his paper up to a certain point one's hopes were raised that here at last we were to have some light on the real point which, to my mind, is now at issue—the actual state of the woman herself, the changes brought about in pregnancy. Surely the day is come when we can no longer look on the pregnant as just an ordinary healthy woman who is going to have a baby. The biochemists and the workers on endocrine activity have altered that. She is fundamentally changed, and for the worse so far as her defences against disease in general and sepsis in particular are concerned. Such is the proper objective of Preventive Medicine as applied to Obstetrics, and Dr. Munro Kerr has advanced only a little way along the path towards it.

Another point I should wish to make. Everyone will agree that an obstetric operation should be dealt with as a major surgical operation. But, if so, it comes under the ordinary rules of surgery. Now one of the principal axioms in surgery is that, having made up your mind that operation is indicated, operate at once. My old chief Joseph Bell used always to say, "Get the patient off the table and into bed as quickly as possible," and the obstetrician should bear this in mind. If you work under strict antiseptic precautions your patient runs far more risk from delay and consequent exhaustion than from sepsis.

With regard to Dr. Munro Kerr's not original but interesting suggestion that another battalion should be added to the already bloated armaments of officialdom, may I suggest that the opinion of the "balancing elector," the poor woman herself, might be considered? She has her own doctor, who has brought all her children and perhaps herself into the world. Is it to be supposed for a moment that she would embrace with joy the idea of exchanging him for someone sent down from the nearest city by the medical officer of health? I should like to hear some of them on the point.—I am, etc.,

Cupar, Fife, June 30th.

C. E. DOUGLAS.

#### THE ROYAL MEDICAL BENEVOLENT FUND.

SIR,—I regret that absence on holiday has prevented an earlier reply to Sir Charters Symonds's letter (June 12th, p. 997). I am in complete accord with him as to the undesirability of provoking controversy on this matter; but I marvel that it has not occurred to him that the publication of such a letter, with its many debatable points, is the surest method of bringing about that which he desires to avoid.

My speech to which he takes exception was delivered nearly a year ago in an endeavour to persuade the Repre-

sentative Body to set up a separate British Medical Association Medical Benevolent Fund, which should have as its object the making of adequate provision for those of our profession and their dependants who had fallen on evil times—a task which the Royal Medical Benevolent Fund in its own annual report admitted it had failed, so far, to accomplish. The Representative Body in its wisdom decided against my policy, and instead set up a British Medical Association Charities Trust Fund Committee, whose duty it is to stimulate the profession to subscribe (through this committee) to existing medical benevolent funds, of which the Royal Medical Benevolent Fund is one of the most important.

As a loyal member of the British Medical Association I accepted that decision, and as a member of that Charities Trust Fund Committee and its first chairman I have used my best endeavours to carry out the wish of the Representative Body.

It is obvious, therefore, that to criticize (or even justify previous criticisms of) a fund for which it is the duty of my committee to appeal would create an impossible position which I could not attempt to justify.

I prefer, therefore, to bear any misconstruction which may be put upon my omission to reply in detail to Sir Charters Symonds's various points, rather than do anything to damp enthusiasm for an object in which I am very keenly interested.

I appeal earnestly to the profession to allow no word which I uttered in the totally different circumstances of July, 1925, to hinder them from most generously supporting the British Medical Association Charities Trust Fund, in order that our less fortunate brethren may be relieved from the distress and penury in which so many of them are at the present time involved.—I am, etc.,

JOHN F. WALKER,  
Southend-on-Sea, July 7th. Chairman, Charities Trust Committee.

#### FUNCTIONAL ALBUMINURIA IN ATHLETES.

SIR,—The following case should be of some interest to those of us who remember how much concern any form of albuminuria produced forty years ago. It was, as I then wrote, "the most marked case of functional albuminuria I have met with, one in whose urine I have often seen as much as one-half of the column in the test tube to consist of solid albumin. This is a case of a young gentleman, now aged 23, whom I have had under observation for six years, and who, though the albuminuria is as marked as ever, has fairly good health which has not deteriorated during that time." He had been a patient of the late Professor Sir Thomas Grainger Stewart of Edinburgh, who had kept him on a purely milk diet for thirteen months without in the least influencing the albuminuria.

The quotation is from a contribution made to the *Lancet* (December 10th, 1887). Its title was "Albuminuria in the apparently healthy." In it I reported the results of the examination of the urine of 461 persons. Of these, 369 were boys; of them 20.8 per cent. were albuminurics. By a series of tests I proved that the albuminuria was caused by rising from the reclining to the standing posture. I therefore called the condition "postural albuminuria." Sixty-four of the boys played wind instruments; of them 59.4 per cent. were albuminurics. This did not appear to controvert, but rather helped to substantiate, the theory then advanced that the temporary albuminuria was produced by a temporary paresis of the renal vessels.

The immediate point of interest is this: I hear occasionally from the "young gentleman" above mentioned. He is now 62 years of age and in good health. The albuminuria ceased entirely only a few years ago. Is this because the walls of the renal vessels had in the meantime changed their character?—I am, etc.,

ALEX. W. STIRLING, M.D.Ed.;  
D.P.H.Eng., F.A.C.S.

Atlanta, Ga., May 19th.

SIR,—I am encouraged to contribute some recent observations in relation to two athletic feats which for severity could hardly be surpassed.

In a successful attempt upon the world's record, G. C. walked a few yards short of 8½ miles in the hour. Urine

passed half an hour after the completion of the exercise showed a faint cloud of albumin, subsequently estimated at 0.1 per cent. (Aufrecht), very numerous oxalate crystals, hyaline and granular casts, but no blood. The urine passed six hours later exhibited a faint trace of albumin, very few granular casts, oxalate crystals, and no blood. That passed twelve hours later was free from albumin; oxalate crystals were still present.

The severity of the effort may to some extent be measured by the observation that G. C.—naturally in the best training—lost  $4\frac{1}{2}$  lb. during its performance. His temperature per rectum ten minutes after he had finished was 105.6° F. The shade temperature at the time was high (76°), but the air was dry and a light breeze encouraged free perspiration. The runner, a man of 42, an experienced athlete, who accompanied him throughout, lost 1 lb. in weight. No trace of albumin could be identified in any urine he subsequently passed.

It is worth noting that G. C., who is over 51 years of age, has a resting cardiac rate of only 41, and a maximum systolic blood pressure of 125 mm.

Mr. D. G. L., an Olympic champion, aged 23 $\frac{1}{2}$ , in the course of the greatest effort of his distinguished career ran half a mile inside world's record time. The urine he passed four hours afterward—the first available—contained an almost imperceptible trace of albumin. This albumin "was precipitated in the cold by the addition of dilute acetic acid and had the characters of the orthostatic albumin of adolescent urines." Microscopy of the centrifugized deposit contained oxalate crystals, but no casts or blood.

It is at least an interesting coincidence that oxalate crystals were present in all the specimens examined. In the case of Mr. L. no opportunity was afforded for further investigation; in G. C.'s case oxalates were found twenty-two hours after the exercise. No dietetic peculiarities could be correlated with their occurrence, but if, as is sometimes urged, oxaluria is dependent upon some nervous association, there was certainly abundant provocation in both instances.

I acknowledge most gratefully my indebtedness to Mr. Herbert Perkins, pathologist to the Hampstead General and Children's Hospitals, for the interest he took in the proceedings, and the time and trouble he generously devoted to the investigation.—I am, etc.,

London, W.1, July 10th.

ADOLPHE ABRAHAMS.

#### "ATOPHAN DERIVATIVES IN RHEUMATISM."

SIR,—Dr. Langdon Brown and Dr. Geoffrey Evans have issued a timely warning about the use of atophan and its derivatives. I can illustrate their letters by the following case.

An elderly lady went to Germany for treatment for rheumatism. While there she was given five intravenous injections of 5 c.cm. of Messrs. Schering's atophanyl, only one or two days being allowed between the injections. On her return she produced a box containing five ampoules of atophanyl, which she had been directed to ask me to administer. Being somewhat fearful of intravenous medication, and also seeing that her anatomy was not kindly disposed towards that line of drug administration, I proceeded cautiously. I gave doses of 2 c.cm., then 3, 4, and 4.5 c.cm.—four injections at intervals of about four days. After the last one she complained of indigestion, and within another five days jaundice set in. This is now a month ago, and it is only during the last few days that we can say she is really beginning to improve. Dr. Canti and Dr. Archer kindly investigated the blood and the evacuations for me, and they reported that "the jaundice is of the so-called haemolytic type." The colour in this case interested me, as it was more of a deep chrome yellow than the usual greenish yellow of catarrhal jaundice; also the pulse remained about 68 to 80, and did not drop down into the 40's and 50's, as is so often the case in the latter disease.

I understand that these incidents occur after atophan taken by the mouth, as well as—as in my case—after atophanyl given intravenously. One must suppose that there is some factor at work in the patients who get jaundice that is not present in those who escape it; I cannot offer any suggestion on this matter. I am assured by

the professor who ordered these injections that jaundice after their administration is unknown in Germany. Nevertheless it is wise that a word of warning should be given regarding the use of these drugs, and doubtless we shall hear some more facts hereafter concerning them.—I am, etc.,

Hampstead, July 10th.

LEWIS G. GLOVER.

SIR,—I was rather surprised to read Dr. Langdon Brown's letter in your issue of July 3rd, recording two fatal cases following the use of atoquinol.

I have records of thirty-three cases in which I have prescribed atoquinol, both by mouth and as an ointment, without a single sign of toxicity. One case of very severe rheumatoid arthritis persisted with the treatment, taking four tablets daily with night and morning inunction for six and a half months without any satisfactory result, though the pains were undoubtedly relieved, but also without any toxicity.

I have always insisted on the simultaneous taking of sodium bicarbonate 5 grains for every tablet of atoquinol, and on a minimum of two quarts of fluid daily.—I am, etc.,

London, W.1, July 9th.

L. C. DUNDAS IRVINE.

#### RECOVERY AFTER MASSAGE OF THE HEART.

SIR,—It is of the utmost importance in every case of recovery of the heart's action, that the means adopted should be most accurately recorded: this must be my excuse for troubling you again on this subject.

Mr. Spackman's case (BRITISH MEDICAL JOURNAL, July 3rd, 1926) is very interesting as indicating adrenaline as the efficient cause. But hearts have a way of stopping and restarting *sua sponte*, as it seems; we are all familiar in the physiological laboratory with Luciani's phases. Therefore we want to know exactly, not only the dose of the remedy, but that it reaches its destination—namely, the cavity of the right heart. Mr. Spackman injected 10 minims of the 1 per 1,000 of adrenaline into "the apex of the heart through the fourth space." This is not precise enough; it should be, according to Dr. Bodon, the "fourth left interspace, at the upper rim of the fifth rib close to the sternal border"; the needle should be 8 cm. in length (just over 3 inches), and it should be carried from front to back with a slight inward direction—that is, towards the mid-line. Should any other site be elected for special reasons, it and any other modification of procedure should be precisely reported. In children and adults of small build, the whole length of the needle would not be required to reach the heart's cavity.—I am, etc.,

London, W.1, July 9th.

HARRINGTON SAINSBURY.

#### OPHTHALMIC EXAMINATION IN INFANCY.

SIR,—There is one cause of error of refraction that is at once remediable, if I am right in suspecting foetal damage from the exposure of infants to sky glare in the dorsal position in the open perambulator. Damage to the macula in this way is conceivable in view of the frequency of eclipse blindness, and might well account for some problematic cases of poor visual acuity in normal eyes; indeed, in abnormal eyes also, since such errors as astigmatism, myopia, presbyopia, etc., could be brought about secondarily thereto. It is a well known fact that interference with the macula by corneal opacities within the first seven months gives rise to nystagmus.—I am, etc.,

London, W.1, July 12th.

HORATIO MATTHEWS, M.D.

#### RADIOGRAPHY OF MAXILLARY ANTRUM.

SIR,—Dr. McKelvie in his article on the radiography of the maxillary antrum (July 10th, p. 58) recommends the use of lipiodol as an opaque medium to demonstrate the filling defect in an antrum in which either malignant disease or polypi are present.

I have on many occasions used the same method, employing bismuth in paraffin with a small amount of iodiform; this gives a good shadow and is very much cheaper than lipiodol; moreover, it is necessary to plug the nose, for the bismuth-paraffin solution remains in the antrum for a sufficient time in all cases to allow a ski-





*Lecturers.*

The following were elected to give lectures during the ensuing year:

*Hunterian Professors.*—Sir Arthur Keith: Six lectures on recent researches carried out in the Museum. Vincent Zachary Cope: One lecture on shock and collapse in acute abdominal disease. James Ernest Helmo Roberts: One lecture on the diagnosis and treatment of intrathoracic tumours. Ernest Marshall Cowell, D.S.O.: One lecture on recent advances in the surgery of hernia. Arthur Hughes Southam: One lecture on the pathology and treatment of the retained testes in childhood. Bernard Warren Williams: One lecture on the importance of toxæmia due to anaerobic organisms in intestinal obstruction and peritonitis. John Howell Evans: One lecture on testicular tumours of congenital origin.

*Arris and Gale Lecturers.*—Ralph St. Leger Broekman: One lecture on the cause of toxæmia and death in acute obstruction. Hildred Carlill: One lecture on the simulation of surgical affections by hysteria. Alfred Piney: One lecture on hyperplasia and neoplasia in lymphatic tissue.

*Erasmus Wilson Lectureship.*—Clement Edward Shattock: Six demonstrations on pathology.

*Arnott Demonstratorship.*—Sir Arthur Keith: Six demonstrations on the contents of the Museum.

*Lister Medal.*

At a meeting of the Lister Medal Committee on June 3rd last the Lister medal for distinguished contributions to surgical science, with the honorarium of £500, was awarded to Professor A. F. von Eiselsberg of Vienna. In compliance with the conditions of the trust, Professor von Eiselsberg will give an address at the Royal College of Surgeons at some date in 1927 convenient to the President and Council.

*The Museum.*

It was decided that the Museum be closed during August as well as during September, and for such part of July as may be found necessary in order to facilitate repairs and redecoration.

Diplomas were granted jointly with the Royal College of Physicians to 6 candidates in psychological medicine and to 11 candidates in laryngology and otology. Licences in dental surgery were granted to 68 candidates.

*Primary Fellowship Examination.*

A report from the Board of Examiners in Anatomy for the Fellowship was read, stating that at the examination concluded on June 17th, 129 candidates were examined, of whom the following 42 were approved and 87 rejected:

F. G. All  
Blakel  
R. A.  
H. N.  
S. I.  
R. J.  
H. R.  
J. H.  
Walker, H. S. Waters, N. L. White, P. Wiles, Beatrice M. Willmott, Margaret D. Wright, S. Zuckerman.

**Medical Notes in Parliament.**

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons this week debated Estimates for the Ministry of Health, Ministry of Transport, and the Post Office, discussed a motion relating to the business interests of Ministers, and further considered the Finance Bill on Report. The discussion on the Ministry of Health Vote was marked by a general concentration on health subjects, such as has previously been lacking in discussions about this department. The report of the Select Committee on Nursing Homes was due for publication during the week, but had not been issued at the time we went to press.

**The Ministry of Health Vote.**

In the House of Commons, on July 13th, the vote for the salaries of the Ministry of Health was discussed.

Mr. Neville Chamberlain (Minister of Health) said that cancer was increasing at an alarming rate. Last year, in this country, 1,336 deaths from cancer occurred per million, which was equivalent to the death of 50,000 persons. It had been estimated that out of every seven persons in this country who reached the age of 30 one would die of cancer. It was important that the public should be educated so that the disease could be treated in its early stages. The significance of the discovery of Dr. Gyo and Mr. Barnard was that cancer was due to a virus which entered the body from outside, but which did not produce cancer until and unless it was associated in the body with some other factor, the nature of which had not yet been clearly ascertained.

The right hon. gentleman proceeded to direct the attention of local authorities to the experiment which was being carried out at Papworth by Dr. Varrier-Jones in regard to the treatment of tuberculosis. There was here an opportunity for a big progressive local authority to start a settlement of its own on Papworth lines.

Small-pox was rapidly increasing in this country. The number of cases were as follows: In 1922, 973; 1923, 2,500; 1924, 3,800; 1925, 5,300; and in the first six months of this year, 5,500 cases.

This increase must be regarded without a great deal of anxiety. It was true that the disease was occurring in a very mild form, but in the past this mild form had coexisted with a deadly form. If this were to reappear, those who fulminated against vaccination would rush to the vaccination officer. Vaccination against small-pox was regarded with prejudice by a large number of people; the vaccination laws were framed a good many years ago, and knowledge had increased and widened since then. At present there were seventy different diseases for which vaccination was practised to secure immunity. Small-pox was the only instance in regard to which compulsion was applied. It might be that the very fact that this particular disease was picked out and separated from the others for this exceptional legislative treatment had served to inflame the fanatical feelings against it, which had led to so large a proportion of our population going without vaccination. At any rate, he had recently set up a committee, under the chairmanship of Sir Humphry Rolleston, to investigate the whole subject, and he was content for the present to await the report and any recommendations which it might make on the subject.

A good deal of alarm had been created by the very distressing after-effects of lethargic encephalitis. It was unfortunate that as matters stood at present there was considerable difficulty in providing proper treatment. The legal definition of mental deficiency would not cover such cases; certification for lunacy was inappropriate. That was engaging his very serious attention, and it might be that he would have proposals to make to Parliament before very long to meet it. It was reassuring to know that the disease appeared to be on the wane. The number of cases, which had been 5,039 in 1924, came down to 2,635 in 1925. It was justifiable to draw the conclusion that this complaint, which appeared so suddenly and developed so rapidly, had reached its maximum and was now passing away, and that soon it would become, not a matter which could be neglected indeed, but one which would no longer give serious concern and anxiety.

Sir M. Macnaghten referred to a letter from the Ministry of Health to the Edmonton District Council, which, he said, placed an absolute prohibition on a doctor in a maternity centre giving advice or information to a woman on the subject of birth control. The letter stated that while a doctor could not give the advice himself, he might refer the woman for advice to a private practitioner or to a hospital. In default of compliance with the instruction, the grant would be withdrawn. Obviously, he said, maternity centres ought not to be converted into birth control clinics, but all that was asked was that in the case of a poor woman a doctor should be in a position to give this advice and information.

Dr. Fremantle said that statements had been published with regard to the starvation of the children of the miners, but he had seen no evidence in support of those assertions. On the other hand, evidence from medical clinics and welfare centres went to show that the health of the children was better now than before the strike. Dealing with the question of deaths in childbirth, Dr. Fremantle said that the report on public health for 1924 contained very serious figures, showing how unprogressive had been the treatment of that question. Although there had been a considerable reduction in maternal mortality, it had not been in proportion to the reduction in infantile mortality. There had, indeed, been an actual increase in the mortality of mothers in childbirth. There was great room for an increase in the number of beds in maternity homes, especially in view of the lack of proper accommodation in working-class homes. Maternity homes should be regarded, not as permanent institutions, but as makeshifts, until proper accommodation for maternity cases was provided in all homes. Another question of great importance was the supply of clean milk. Again, there was no provision for the supervision of health in coal mines. They heard of certain diseases among the men which were exceedingly troublesome. The Ministry of Health ought to take up the attitude, more and more, of being responsible for the health of the people in every department, and of knowing what health conditions were all over the country.

Dr. Vernon Davies said that it was true that for the last fifty years there had been a very happy and steady decrease in tuberculosis, except in the war years 1913 to 1918, when for temporary reasons there was an increase. But, despite that decrease, consumption still took a terrible toll of the younger people. He proceeded to review the machinery which existed at the Ministry of Health for dealing with the disease, and paid a tribute to the work of the panel doctor, who was the first link in the system of treatment. The Ministry had added to the panel doctor tuberculosis officers, who were expert in the diagnosis and treatment of consumption. To get the full benefit of sanatorium treatment the cases must be taken early. The great want was for village settlements, and the Minister of Health ought to give a lead in this matter. The Ministry should divide cases of tuberculosis into two groups—those that could be cured and those which were too far advanced. Sanatoriums should be kept absolutely for the curable cases, and the unfortunate people who could not be cured should be removed from their homes to the Poor Law hospitals. His visit to M. Spahlinger had convinced him that he had made out a prima-facie case for his treatment. M. Spahlinger was a wonderfully clever scientist and was working on strictly scientific lines, without the slightest desire for money. But a difficulty was found in tying him down to any definite legal agreement. Now he had no money at all, having spent £20,000 in his experiments for the good of humanity, and he was living from hand to mouth by taking odd patients who gave a subscription or donation to his institution. The one essential thing for M. Spahlinger was to be able to produce his serum and enlarge his laboratory and stock. He (Dr. Davies) appealed to the Minister of Health to vote a certain sum, say £50,000 or £100,000, to M. Spahlinger for the purposes of his research work.



Dr. Watts said that only a small proportion of infants were vaccinated. This was due more to the carelessness of parents than to conscientious objection to vaccination. Yet there were very few prosecutions for breaches of the law. The increase in the number of cases of small-pox was due to this laxity, and it also explained the action taken by foreign countries, such as the United States, in seeing that British sailors were vaccinated before they were allowed to land. He advocated the cure of tuberculosis by the use of M. Spahlinger's serum, and urged the need of greater co-ordination between the different departments of the Ministry.

Dr. Haden Guest said that while the Spahlinger treatment might have a certain value, M. Spahlinger would not enter into any undertaking with anybody at any time. He thought it was an occasion for private rather than public enterprise. He hoped that something might be done in that way. He thought the real way of dealing with tuberculosis was by preventive rather than curative methods. If such an improvement could be made in the standard of life, that every day everybody had an adequate amount of food and did not do an excessive amount of work, the consumption statistics would fade almost out of existence. Experiments which had been undertaken in providing workshops for men who had been discharged from sanatoriums where they could learn to take up life again under normal conditions were on the right lines and would be of great assistance to such men to get back to ordinary life.

Dr. Shiels associated himself with other speakers in his appreciation of the results of the Spahlinger treatment, but there were considerable difficulties to be faced. The Minister should keep his mind open in regard to the possibility of acquiring this treatment for those who suffered from tuberculosis. He was glad that the Ministry would encourage local authorities to show initiative in the establishment of village settlements. There had been some misunderstanding of the position of the Ministry in regard to treatment by sunlight and artificial sunlight because many local authorities had the impression that the setting up of installations for this treatment was not encouraged. The milk supply was consumed for this treatment and was far behind that of the United States. The Ministry should continue its efforts to try to eliminate no means what it should be and was far behind that of the United States. The Ministry should continue its efforts to try to eliminate no means what it should be and was far behind that of the United States.

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#### University of London Bill.

The University of London Bill was considered in committee in the House of Lords on July 9th. On Clause 7 (providing for the incorporation of colleges and schools) the Earl Beauchamp moved a proviso that no statute made under the bill should affect any institution existing on January 1st, 1925, except with the consent of the governing body. The Earl of Balfour (Lord President of the Council), who is in charge of the bill, said that he did not

think the theological colleges which now existed were threatened. The University did not concern itself with questions of theological controversy, and there was no danger that the traditions so long maintained would suffer any change by the legislation proposed. Viscount Haldane said that the work of the Commissioners would be paralysed by the proposed amendment, and it was withdrawn. On the Report stage, which was taken on July 13th, the day as to the appointment of commissioners was, at the instance of the Government, amended, to provide that an order appointing a person to fill a vacancy among the commissioners should be laid before Parliament.

#### Bonesetting.

Mr. Clarry presided, on July 13th, over a meeting of members of Parliament at the House of Commons, called to hear an address on bonesetting by Mr. A. E. Kennard. Mr. Kennard said that a schoolboy of 11 he was accustomed to treat the injuries of his schoolfellows, and when apprenticed as a boilermaker those of his fellow workers. The manager of the shipyard at Newport where he worked had built him a proper surgery where he treated many ailments and injuries, but the General Medical Council intervened and forced the firm to shut down the surgery. He continued to practise at home, but had charged nothing till increasing practice forced him to give up his work as a boilermaker. He freely acknowledged Sir Herbert Barker as his master. Mr. Kennard claimed that in his own field his successes had been only second to Sir Herbert Barker's. He had treated thousands of cases, most resulting in complete cure and the rest in alleviation. In all industrial areas there were bonesetters, some competent, some otherwise, and he shuddered to think of the mistakes of some of these men ran. But more damage had been done by noxious patent medicines than by all the mistakes of bonesetters. Qualified medical men made mistakes. Referring to the members of Parliament some time ago, Mr. Kennard said he himself was competent to diagnose many cases. Certain other cases he had been made by Lord Dawson to a meeting of members of Parliament to diagnose many cases. The competent surgeon had a skill in his hands and wrists which fully sent to a medical specialist for diagnosis. The competent manipulative surgeon had a skill in his hands and wrists which could only be compared to that of a pianist, and had to be kept up by constant practice. The bonesetter encroached on only a small part of the doctor's sphere, but in that was more skilled than any doctor or surgeon who had not special training. He alluded to the case of Dr. Axham, and said it had not increased public goodwill towards the General Medical Council. Mr. Kennard said he maintained free clinics in many parts of the country, but was not allowed the services of an anaesthetist, thus limiting the work of the clinics and inflicting needless suffering on the poor. He thought that doctors possessing innate skill should take courses of study under bonesetters, and that, as Lord Dawson had advocated, there should be a test of efficiency for bonesetters. He yielded to no man in his admiration of the medical profession, all he asked was that in his special work he should not be treated as one beyond the pale, but should be allowed the help of anaesthetists and doctors. With or without that help he would continue his clinics, but the Government should see that his work was not impeded.

Mr. Clarry asked if there was any organization representing bonesetters. How could the Government interfere to force doctor to assist?

Mr. Kennard said there was an organization of ten or fifteen bonesetters in the North of England, but he did not belong to it. He presumed that the Government had the power to insist on his receiving the aid which was necessary. Sir Leonard Brasseley asked what Mr. Kennard thought should be the necessary qualification of a bonesetter. Mr. Kennard said a bonesetter should be able to treat any joint which was suffering from disease other than tuberculosis or any other disease which made the joint dangerous to handle. A committee of doctors should judge whether a claimant to bonesetting skill was in fact expert in manipulating joints.

Sir Leonard Brasseley asked whether the candidate should show knowledge of anatomy and physiology. Mr. Kennard agreed, and said such a test would reduce the "qualified bonesetters" in England to ten.

Another member asked whether, in view of the present bias of the medical profession, Mr. Kennard thought that professional would make such a test.

Mr. Kennard said unfortunately an examination by medical men would make such a test. He hoped that the Government would break down the difficulties and that the time or women would come when bonesetting would only be in the hands of qualified medical men and surgeons.

Mr. Hardie asked if Mr. Kennard thought it possible to get a board of doctors or surgeons with sufficient skill to adjudicate the skill of a bonesetter. Mr. Kennard said he saw that difficulty. Mr. Basil Peto thought the medical profession of to-day too prejudiced to examine the competence of bonesetters. They should issue their own diplomas.

The General Medical Council.—Mr. Erskine, on July 8th, asked Major Hennessy, as representative of the Lord President of the Council, what was the object in appointing a lay member of the General Medical Council. Major Hennessy said it would be contrary to practice to disclose the grounds on which the Privy Council advised the King to make the appointment. Mr. Erskine was doubtless acquainted with the public discussion on the constitution of the General Medical Council. Sir N. Grafton Doyle asked whether the appointment of a lay member signified any

range in the policy which the General Medical Council had adopted towards Dr. Axham. Major Honnessy asked for notice of that question. Mr. Erskine asked if Dr. Collis, a registered medical practitioner, was now acting in the same capacity as Dr. Axham had acted in times gone by to Sir Herbert Barker. The Speaker asked to see the question in writing, as it appeared to involve an individual. Mr. Macquisten asked if the purpose of appointing a lay member to the General Medical Council was to abate the autocracy of the medical profession and to dilute its fanatical trade unionism. The Speaker suggested that Mr. Macquisten should abate some of the adjectives in his supplementary questions.

**Recognition of Manipulative Practitioners.**—Mr. Chamberlain, being asked on July 9th whether he would consider the institution of an inquiry into manipulative surgery with a view to the recognition and registration of manipulative practitioners, said he would not. He had nothing to add to the statement he made in the debate on February 9th, which arose on a motion by Mr. Graham Little. The question had then been fully discussed.

**General Disease in the Royal Air Force.**—In an answer to Mr. Vernon Davies, on July 7th, Sir Samuel Hoare said the incidence of primary syphilis and gonorrhoea in the Royal Air Force at home and abroad during the last three years for which figures are available was (per 1,000 sick daily)—Syphilis: 1922, .36; 1923, .040; 1924, .031. Gonorrhoea: 1922, 2.29; 1923, 2.17; 1924, 2.0. There was no reliable information as to the proportion of cases in which preventive measures were used.

**M.O.H. and D.P.H.**—In a reply to Mr. R. Young, Mr. Chamberlain said he had informed the council of Golborne, Lancs., that the candidate selected by it as medical officer of health did not possess the requisite qualifications he was not at present prepared to give a sanction which would enable the council to obtain repayment from the county fund of one-half of the salary of the officer.

**Research Institutions in the Dominions, Colonies, and certain Foreign Countries.**—On July 12th Mr. Ormsby-Gore told Mr. J. Williams that arrangements had been made by the Department of Scientific and Industrial Research for communicating regularly published and other information as to the work done under its auspices to Dominion Government research organizations and to the principal unofficial research centres. Similar communications were sent to the Governments of India and the colonies. In return, valuable information was received by the department from the overseas parts of the Empire. Mr. Williams asked whether there was any interchange of opinion with the Dutch and French colonies. Mr. Ormsby-Gore replied that there was no direct interchange, but practically all Colonial Office research officers got reports from places like Guiana and Java, and the work of the French in this matter was followed in the appropriate institutions of research in this country. Dr. Haden Guest asked if the research institutions of the British Empire were in touch with the international research institute in Italy. Mr. Ormsby-Gore: Yes. Dr. Haden Guest asked if it would be possible to have a Government publication, setting out the present conditions of all these different research institutions. Mr. Ormsby-Gore replied that he had gone into the matter recently. There was a suggestion that, by co-operation with the Imperial Institute, more regular publication might be obtained of the names of research officers in different parts of the Empire and the main subject with which they were dealing. That was not yet decided.

**Illness in Officers' Training Corps.**—On July 12th Sir L. Worthington-Evans (Minister of War) told Mr. Rennie Smith that there were no records in the possession of the War Office from which he could give an analysis of the infectious illness of 3,660 members of the junior division of the Officers' Training Corps who were for this reason prevented from attending camp in 1925. It would be erroneous to assume that the 3,660 members in question were ill. The great majority were "contacts" who were not allowed to attend camp owing to the risk of spreading infection.

**Control of Nursing Association Homes.**—On July 12th Mr. Penny asked the Minister of Health whether, in view of the inability of nursing association committees to deal with the technical side of their activities, he would introduce legislation enforcing the composition of an advisory committee of local medical men in all cases in addition to the regulations for inspection now in force. Sir K. Wood replied: It is clearly desirable that a nursing association which undertakes the management of an institution such as a maternity home should have the benefit of medical advice, but the Minister doubted whether it would be expedient to attempt to enforce, by legislation, such a condition as was suggested. Mr. Penny asked whether any alternative way of doing this would be considered. As these institutions were to a very large extent local institutions would it not be better if local medical men inspected them periodically? Sir K. Wood replied that the Minister of Health had already made various suggestions with regard to this particular case, with a view to improvement, and if Mr. Penny had any suggestion to make he would consider it.

**Regulations for Bakhouses.**—The Home Secretary told Colonel Day, on July 8th, that proposals requiring the adoption at bakhouses of certain special precautionary measures against dermatitis had been communicated to associations representing employers and employed, and the views of these associations had been considered. He had decided to proceed at once with the issue of an Order

for the baking industry under Section 7 of the Police, Factories, etc. (Miscellaneous Provisions), Act, 1916. Any objections lodged would have to be considered before the Order could be finally made.

#### Notes in Brief.

On July 12th the Bethlehem Hospital Bill was read the third time in the House of Commons.

On July 8th Mr. Churchill said no final decision had been reached about the provision by the Treasury of accommodation for the headquarters of London University.

On July 13th the Reading University Bill was read the third time in the House of Commons.

## Obituary.

### SIR JOHN SHERBURN, M.B., C.M.,

Consulting Surgeon, Hull Royal Infirmary.

We regret to record the death of Sir John Sherburn, on July 7th, at the age of 75, after a long period of ill-health. He received his medical education at Edinburgh, where he graduated M.B., C.M. in 1875; two years later he obtained the diploma M.R.C.S.Eng. He was closely associated with the Hull Royal Infirmary, where he had held the posts of house-surgeon; pathologist, and honorary consulting surgeon. He was also connected with the founding of the Hull Victoria Hospital for Sick Children, to which he was honorary consulting surgeon.

In addition to his extensive medical practice in Hull, Sir John Sherburn was a partner in the shipping firm of Bailey and Leatham; and took a prominent part in the public life of the city; he was elected sheriff in November, 1886; in the following year he became mayor, and held the office for two years in succession. In 1889 he was appointed justice of the peace for Hull, and later for the East Riding of Yorkshire. For twenty-three years he was connected with the East Riding Artillery Volunteers, and after his retirement he retained his rank of lieutenant-colonel. On three occasions he was a candidate for Parliament in the Liberal Unionist interest, but was defeated. He was created a knight in 1902. He leaves a widow, two sons, and three daughters.

### NEIL MACLAY, M.B., C.M.,

Surgeon, Throat, Nose, and Ear Hospital, Newcastle.

DR. NEIL MACLAY of Newcastle-on-Tyne died with tragic suddenness on June 26th, at the age of 53, while on holiday at Bamburgh. A student at Glasgow University, he graduated M.B., C.M. in 1895. After gaining experience in several assistantships in various places he commenced general practice at Wallsend-on-Tyne in 1899. While carrying on an extensive practice he found time to interest himself in diseases of the nose and throat, and became honorary surgeon to the Throat, Nose and Ear Hospital, Newcastle-on-Tyne. In 1911 he determined to devote all his time to that special branch of work, and for that purpose removed to Newcastle-on-Tyne. At the time of his death he was senior surgeon to the Throat, Nose and Ear Hospital and aural surgeon to the Infectious Diseases Hospital, while carrying on a very busy practice. A Fellow of the Royal Society of Medicine, and a member of the Scottish Otological and Laryngological Society, he was a frequent and enthusiastic attendant at meetings in London and Scotland. Indeed, on the day he died he had intended travelling to Edinburgh for a meeting of the latter society. At the time of his death he was president of the Newcastle-on-Tyne and Northern Counties Medical Society, of which he had previously been secretary. He was vice-president of the Section of Laryngology, Otology, and Rhinology at the Annual Meeting of the Association at Bath. Apart from his duties as surgeon to the Throat, Nose and Ear Hospital he found time to interest himself largely in its administration and particularly in its recent extension. During the war he was very actively engaged in the formation of the Tyneside Scottish battalions, and acted as medical officer for a considerable time.

He contributed numerous articles to the *Journal of Laryngology* on diseases of the sinuses and related subjects.

A man of stolid and dogged perseverance, whether in his practice or recreation; he manifested also great personal sympathy with those whom he attended professionally. His work was always quietly performed, and he seldom came into public prominence. During the later years of the war he was laid aside for many months with illness, borne with fortitude and patience; this occurred at a critical time in his career as a specialist. He has died in the heyday of active and prosperous practice at an early age. To say that he will be missed is merely banal; the profession is the poorer for the loss of such a man. For those who were privileged to know him intimately there is a gap which cannot be filled, the loss of a friend of ripe experience and knowledge of the world who was always ready to help and advise. He leaves a widow and one son, who is studying medicine. G. H.

Lieut.-Colonel WILLIAM HORSON CADGE, I.M.S. (ret.), died at Lowestoft on July 9th, where he had lived since the end of the great war. He was the second son of Mr. Christopher Goulder Cadge, and was born at Loddon on August 11th, 1853. His uncle was the celebrated surgeon William Cadge of Norwich, and in many ways the nephew resembled his distinguished relative, particularly in his very high sense of duty, his unassuming personality, and his generous nature. He was educated at Norwich Grammar School, under Dr. Jessup, and spent a year at the Norfolk and Norwich Hospital before going up to St. George's Hospital. He obtained the diplomas of L.R.O.P. and M.R.C.S. in 1875, and entered the I.M.S. Though posted to the Civil Branch, he volunteered for the Afghan war in 1879, and received the Afghan medals. At Quetta he distinguished himself by the efficient evacuation of the wounded, and as a result was ordered to join Lord Roberts's forces at Kabul, but was not able to get beyond Jumrood Fort in the Khyber Pass, where he found scope for his energy in attending to the large number of sick men of a victorious army, victims of dysentery, rheumatism, and fever. He himself went down with rheumatic fever and was invalided home. He returned to India to take charge of the Lucknow Jail, and when operating on a case of stone poisoned his hand, and was after a very serious illness again invalided home. He returned to take charge of Agra Jail, and then became civil surgeon successively at Fategarh, Aligarh, Fyzabad, Bareilly, and Nainital. During this period he showed great skill as an operating surgeon, particularly in cataract, lithotomy, and lithotomy. During the great famine he enhanced his reputation, and was on the staff of the Lieutenant Governor, from whom he received a personal letter of thanks. Retiring from the I.M.S. on account of failing health he lived for a time at Lowestoft, where his uncle had also retired. But idleness was irksome, and he obtained the post of medical officer to the Mutford and Louthland Board of Guardians, where he earned the reputation of an efficient and painstaking officer. During the great war, in spite of his age, he insisted on service, and was appointed to the Ranelagh Hospital at Ipswich, which he largely equipped out of his own means, provided extra nourishment and stimulants for the men, and refused any remuneration for his services. He worked incessantly without regard for his health from 1915 to 1918 at this post, and finally retired with the thanks of his commanding officer, receiving the decoration of O.B.E. for his services. In spite of his failing health Colonel Cadge took a great interest in local affairs; he served on the board of the Lowestoft Hospital, which was the richer for his generosity. He was a keen sportsman, and up to last year a good shot. He was endeared to a large circle of friends by his courteous and lovable nature, his loyalty to his friends, his great kindness and humility, which, perhaps, was a barrier to the high place he could have obtained if he had ever desired fame and high position. His generosity was great, and few knew the extent of his benefactions, both to institutions and individuals. He married in 1882 Miss Flora Summers, whom he leaves to mourn his loss. Our sympathy and condolences are with the widow and relatives.

We regret to record the death of Dr. W. F. R. CASTLE, on July 1st, at the age of 34. His school was Wellington, where he was distinguished as an athlete. Thence he went up to Trinity College, Cambridge, and in 1913 entered the London Hospital. At the outbreak of war he became a surgeon probationer in the navy, and in 1916 obtained the diploma L.M.S.S.A. Lond.; he was then promoted surgeon, and served in the North Sea and the Baltic, winning the Distinguished Service Cross in connexion with the Archangel expedition. In 1920 he graduated M.B., B.Ch. Cantab., proceeding M.D. in 1923, and in the following year obtained the M.R.C.P. Lond. After holding the posts of house-surgeon, house-physician, senior casualty officer, and anaesthetist at the London Hospital, and clinical assistant to the St. John's Hospital for Diseases of the Skin, he was appointed physician in charge of the skin departments of the Queen's Hospital for Children, the West End Hospital for Nervous Diseases, and the Kensington, Fulham, and Chelsea General Hospital. He contributed numerous articles on dermatological subjects to medical periodicals, including one on fur dermatitis to the BRITISH MEDICAL JOURNAL in 1924. His outstanding clinical skill, together with his kind, cheery nature, won for him great popularity, and his untimely death has brought grief to his many friends.

## Medical News.

THE Rogers prize, of the value of 150 guineas, for the best essay on the subject of "The treatment of the sick poor and the preservation of the health of the poor" has been awarded by the trustees (Sir John Ross Bradford, President of the Royal College of Physicians, and Dr. T. Vincent Dickinson, Master of the Society of Apothecaries) to Mr. Hugh J. McCarrick, M.S., M.B., F.R.C.S. Numerous essays, many of them of considerable merit, were received from different parts of the country and from as far afield as India and South Africa.

THE annual meeting of the Poor Law Medical Officers' Association will be held on Thursday, July 22nd, at 5.15 p.m., in the guardians' board room, Shakespeare Street, Nottingham. The chair will be taken by the president, Sir Arthur Nowsholme, K.C.B., M.D., F.R.C.P.; after the formal business Dr. A. L. Baly, superintendent of the Lambeth Hospital, will read a paper on the Poor Law hospital, its past, present and future. All Poor Law medical officers are cordially invited to be present.

THE Italian Government cinema film on malaria was exhibited on July 12th, by the Baron Bernardo Quarantini di San Severino, at the Royal Army Medical College, Millbank. Dr. Andrew Balfour, Director of the London School of Hygiene and Tropical Medicine, introducing the lecturer referred to the value of the Baron's work during the war and subsequently in establishing and strengthening the friendly relations between Italy and Great Britain. The film dealt comprehensively with the whole field of malaria prophylaxis and treatment in the past and present. Diagrammatic illustrations of the processes of the infection of the mosquito and the life-history of the malarial parasite were associated with detailed descriptions of the preparation of quinine and its distribution throughout Italy, and the different processes of drainage and destruction of the mosquito larva. The lecturer explained the extensive nature of the antimalarial legislation in Italy, and gave illustrations of the value of the work that is being done. Malaria, he said, is gradually disappearing from the world and will soon become an almost unknown disease wherever this systematic treatment is adopted. The lecture had been originally intended for students of the London School of Hygiene and Tropical Medicine, but it was felt that the importance of the subject and the particular interest of the film called for its exhibition to a larger audience, and Sir Holburt Waring, in moving a vote of thanks to the lecturer, emphasized this point.

DR. H. HAROLD SCOTT, F.R.C.P. Lond., D.T.M. and H. Camb. F.R.S. Ed., has been appointed lecturer on tropical diseases at the Westminster Hospital Medical School. Dr. Scott, who formerly held the appointment of Government bacteriologist, Jamaica, and was afterwards Government bacteriologist and pathologist, Hong-Kong, is now Senior Research Fellow and comparative pathology at the London School of Hygiene and Tropical Medicine and pathologist to the Zoological Society of London.

THE Medical Women's Federation has arranged to hold a garden party during the Annual Meeting of the British Medical Association in Nottingham next week. It will be held, through the kindness of Miss Jessop, in the grounds of The Hermitage, on Thursday, July 22nd, from 3.30 to 6 p.m.

THE proposed post-graduate medical hostel at the Imperial Hotel in Russell Square, London, W.C., to which we referred on July 10th (p. 82), will be opened on Monday, July 26th, when an address on the objects of the hostel will be given by Sir D'Arcy Power at 9.15 p.m., under the chairmanship of Dr. Alfred Cox. Prior to the address there will be a general meeting at 7 and dinner at 8, for which the charge is 5s. Medical practitioners and their friends, including ladies, are cordially invited. Further information may be obtained from Mr. A. P. Bertwistle, F.R.C.S., 4, Spital Square, Bishopsgate, E.1. An announcement of the objects of the hostel appears in our advertisement columns this week.

THE Fellowship of Medicine and Post-Graduate Medical Association announces that on July 19th, at 3 p.m., Mr. Letchworth will give a special demonstration in clinical ophthalmology at the Royal Eye Hospital; this demonstration is open to all members of the medical profession without fee. On the same date there begins an intensive course in medicine, surgery, and the specialties at the Prince of Wales's General Hospital, Tottenham, with daily sessions for a fortnight from 10.30 a.m. to 5.30 p.m. The West End Hospital for Nervous Diseases will hold a course of lectures and clinical demonstrations on the diagnosis and treatment of common diseases of the nervous system from July 19th until August 12th at 5 p.m. daily. All-day courses will be given at the Queen Mary's Hospital for the East End, Stratford, from August 23rd to September 4th, and at the Queen's Hospital for Children, Hackney Road, from August 18th to 28th, the former being an intensive course in medical surgery and the specialties, and the latter in diseases of children. Practical courses in anaesthetics are arranged at any time to suit post-graduates and usually last about three weeks. Weekly practical courses in obstetrics and child welfare are arranged at the City of London Maternity Hospital; personal application must be made at the Fellowship offices. Copies of all syllabuses and of the general course programme may be had on application to the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

ON the occasion of his leaving Ballyjamesduff, co. Cavan, to practise at Now Dunston, Northampton, Dr. M. J. McQuaid was presented by his friends and patients with an address, a wallet containing Treasury notes, and a silver tea set.

THE extension of the Dental School at Guy's Hospital, opened on July 8th by the Right Hon. F. D. Acland, chairman of the Dental Board, adds to the number of dental chairs and the number of students that can be accommodated. One room is set apart specially for children, another is a denture room reserved exclusively for fitting dentures and appliances, a third is a demonstration room with the latest devices (including movable tiers on which students can stand); another is a clinical room in which special cases are seen by the surgeon on duty. A very large conservation room has been installed, together with a new prosthetic laboratory in which dentures and appliances are constructed, and a large preparatory laboratory, accommodating fifty students, for teaching the more mechanical side of dentistry. Altogether between 300 and 400 students can now be accommodated. At the ceremony Mr. Acland was invited to open the extension by the senior dental surgeon, Mr. Montagu F. Hopson, who was the first student at Guy's Dental School when it opened its doors in 1889. Mr. Hopson mentioned that in the first year of the school's history the attendances of patients numbered about 4,000, in 1925 they numbered 88,000. During those thirty-six years more than 2,000 students have been enrolled. Mr. Acland, addressing the company in the physiological theatre before proceeding to unlock the doors of the new building, said that the Dental Board had been able to provide £5,000 towards the £23,000 which represented the cost of the extension with its equipment and fittings. The allocation was from funds the Board received from the dental profession as registration fees; but he wished to remind those present, and especially the students, that a very large proportion of those funds had been provided by men who had never enjoyed the advantage of training in such a place as Guy's Dental School. After the dean of the school, Professor T. B. Johnston, had proposed a vote of thanks to Mr. Acland an adjournment was made to the new building.

THE British Consul-General at Marseilles informs us that the Marseilles British Merchant Seamen's Hospital is now complete and ready to receive patients. It has been renamed Queen Alexandra Memorial Hospital (Marseilles). The building fund is nearly exhausted and, though there is no debt, it is not proposed to open the hospital until a satisfactory balance has been accumulated to meet the initial running

expenses; the committee is appealing, therefore, for a sum of £5,000. The hospital contains sixty beds which will provide accommodation for merchant seamen and also for travellers from the Far East and elsewhere. The Duke and Duchess of York have consented to be patrons of the hospital. Subscriptions should be sent to the honorary treasurer, the Chairman of Barclay's Bank, 54, Lombard Street, E.C.3.

THE Cambridge University Press has recently undertaken to publish *The British Journal of Experimental Biology*. It is the official medium of publication of the Society for Experimental Biology, but its contributors are not limited to members of this society nor to the universities of Great Britain. The editor is Mr. James Gray, of King's College, Cambridge, with the assistance of Dr. Crew, of Edinburgh, and of eight other biologists representative of the different subjects concerned.

THE Ministry of Health has issued a revised list of treatment centres and clinics for venereal diseases in England, Wales, Scotland, and Northern Ireland.

DR. WU LIEN TEH (G. L. Tuck), Director and Chief Medical Officer of the Manchurian Plague Prevention Service and Physician Extraordinary to the President of China, has received from the Imperial University of Tokyo, Japan, the highest medical degree of *higaku-hakushi*, his thesis being "A treatise on pneumonic plague." Dr. Wu already possesses the degrees of M.D. Cantab., LL.D. Hong-Kong, Litt.D. Peking, Sc.D. Shanghai, and C.P.H. Johns Hopkins. The League of Nations is about to publish a book by him on pneumonic plague.

THE cinematograph industry has collected nearly two hundred films on various subjects to present to the leper hospital of Palo Seco, near Balboa, in the Panama zone.

WE are informed by Dr. Barcroft Anderson that Dr. Carl Spengler is now able to produce in the rabbit a rapidly growing cancer tumour in such site on its surface as he may select, using a pure culture obtained from man or the organism he believes to be the cancer micro-organism, and from this cancer again to isolate the micro-organism. The cancer tumour in the selected site is determined by the injection of a drop of turpentine.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the **BRITISH MEDICAL JOURNAL** alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should sign them with their names, not

Authors desiring REPRINTS of their articles published in the **BRITISH MEDICAL JOURNAL** must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the **JOURNAL**, should be addressed to the Financial Secretary and Business Manager.

THE TELEPHONE NUMBERS of the British Medical Association and the **BRITISH MEDICAL JOURNAL** are **MUSEUM 9361, 9362, 9363, and 9364** (internal exchange, four lines).

THE TELEGRAPHIC ADDRESSES are:

EDITOR of the **BRITISH MEDICAL JOURNAL**, *Aitiology Westcent, London.*

FINANCIAL SECRETARY and BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediscern Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Mediculus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

## QUERIES AND ANSWERS.

### THE BLUE BAG.

"K." as a . . . . . widespread belief in the "blue" . . . . . of bees and wasps. Is it really

As its efficacy is unquestioned in most domestic circles, there must be some grounds for the belief. That being admitted, the cause of its virtue becomes at once a suitable subject of inquiry and a consideration of its possible modes of action is not out of place. Washing blue consists of the colouring matter known as ultramarine. It is a double silicate of aluminium and sodium containing sulphur, and may be made by fusing together



kaolin, sodium carbonate, and sulphur. The sulphur in the compound is in a form kindred to that of the sulphur in liver of sulphur, the sulphurated potash of the *British Pharmacopoeia*. The other components of washing blue have alkaline properties, but are otherwise physiologically inert. As the pain from the sting of a bee or wasp is believed to be due chiefly to the acid injected, it must be concluded that the sulphur contributes nothing to the relief from smarting. There exists no analogy from which to infer that such a compound of sulphur could mitigate pain. It is said that ammonia allays the pain of a sting even more quickly than the blue bag. It might be assumed then that the relief produced by the blue bag is due to the alkalinity of its contents, but the acceptance of this view is checked by the objection that if such were the case washing soda would be better than blue; and, if better, would be generally used in preference, as it is at hand in every kitchen. There is a further difficulty that if the blue bag was good a simple innocuous washing blue made into a paste ought to be better. Again, if that were the case there is little doubt that the paste would have superseded the bag. It is thus necessary to look to the fabric of the bag for an explanation. The idea that the bag may be important is not to be summarily dismissed. After the blue bag has been in use for some time the fibres of its fabric become covered with particles of the less soluble alkalies which adhere by an adsorptive property. The film of silicate on the fibres, although but slightly soluble, contains alkali capable of effectively neutralizing acid. Moreover, the fibres are not softened by this alkali as they would be by a solution of soda; they retain a degree of stiffness and are capable of penetrating the puncture of the sting when the blue bag is dabbed on. With a flannel blue bag this quality is more pronounced than with one of cotton fabric. This reasoning seems also to furnish a valid explanation why the blue bag is better than a cloth moistened with solution of soda, for the fibres of such a cloth would not penetrate the puncture. If washing soda is less effective as a simple application than ammonia, this may be because the acid injected by the sting, being of appreciable concentration, at once produces a microscopic bubble of carbon dioxide on contact with the solution of soda. Such a bubble lodged in the aperture of the puncture would stop the entry of the soda.

It has been stated, we seem to remember, that the irritant fluid injected by a bee sting differs from that of a wasp sting, the one being alkaline in reaction and the other acid; but we are not aware that this has been confirmed, and a well informed correspondent insists that both are acid. It seems to be a matter of general observation that the same remedies are equally effective or ineffective in both.

## LETTERS, NOTES, ETC.

### SOUTHWELL MINSTER.

MR. RUSSELL COOMBE (Exeter) writes: It is to be hoped that no member of the British Medical Association who has not already visited Southwell will fail to take advantage of the opportunity which the Nottingham Annual Meeting offers. The nave of Southwell Minster (now cathedral) provides a magnificent example of a Norman nave. One of the original Norman aisle windows remains on the north side and illustrates one of the great disadvantages of the Norman churches—the smallness of the windows and consequent darkness of the buildings. The clerestory windows at Southwell again show the same point. The western door is a fine specimen of a Norman door, but the chief feature of the Norman work at Southwell is the porch on the north side of the nave, which is only doubtfully equalled (certainly not surpassed) elsewhere in England. But the crowning glory of Southwell is the decorated chapter house. Were there nothing else of interest in the cathedral, this alone more than repays even a long journey to see it. Of it Street, the architect of the Law Courts, says: "What either Cologne, Ratisbon, or Weissenau in Germany; Amiens Cathedral or the Sainte Chapelle in France; the Scaligere in Verona is to Italy, are the choir of Westminster and the Chapter House at Southwell to England." Another authority says: "It is impossible to conceive anything more beautiful. It is the most perfect work of the most perfect style of Gothic architecture."

### EX-RESIDENTS, NORFOLK AND NORWICH HOSPITAL.

THE honorary staff of the Norfolk and Norwich Hospital has issued a circular letter to ex-resident medical officers inviting them to contribute to a fund to furnish rooms for Miss Bindley, known to them all as "Maria," who is retiring from the position of officers' maid-servant after completing over fifty-one years' service. The board of management has granted her a pension. Contributions for the furniture not exceeding 1 guinea may be sent to Mr. Frank Inch, house governor and secretary, Norfolk and Norwich Hospital, Norwich. As there is difficulty in tracing the addresses of all residents it is hoped that those who may not have received the circular letter will act upon this intimation.

### Puerperal Sepsis.

Dr. W. B. HUNTER (Londonderry) has written to express the view that it would be well that practitioners should examine themselves before parturition as to the state of the kidneys. He asks how it is that puerperal sepsis is so rare now as it was, say, forty or fifty years ago, when nothing was known of sterilization of hands, or clothes, or instruments by the practitioner. "Before examining a case," he says, "we sometimes

did not even wash our hands, and used any grease or ointment we could come across for anointing the examining finger; when using the forceps any grease was used for smearing the blades, which had for a moment been dipped in some warm water. There was no flushing out of the vagina or washing the external parts with any antiseptic lotion. Antiseptics then were only of use in general surgery, but not thought of in puerperal cases. Yet in puerperal cases of sepsis was very common. These conditions in medical attendance obtained now amongst the majority of women in childbirth. I have no doubt they would die in great numbers of sepsis. The women of the days I speak of were able to obtain and use good wholesome and nourishing, though simple and plain, food, and thereby on white in addition. Consequently they fall easy victims to the attacking toxins. They fall to produce Nature's great life agent and protector in sufficient quantity; the streptococci the well nourished and the woman lives. These remarks apply to both exogenous and endogenous pathogenic germs, the latter always being present."

### SMALL BOYS AND WESTMINSTER BRIDGE.

"PRO RE NATA" writes: I was interested to see an account in the public press of a small boy who put his head through one of the trefoil openings in the side of Westminster Bridge and could not get it back again. In 1900, whilst passing over the same bridge, I saw a boy in exactly the same predicament. He was surrounded by a big crowd and two policemen were busy smearing his head with soft soap in an endeavour to get him out. I offered my services and was told by one of the policemen to mind my own business and "get away out of it." This I did, leaving one or two matters to attend to in the Strand, and on my return two hours later was surprised to see the poor little fellow in exactly the same position but very much the worse for it. I accordingly went to one of the policemen and told him that, as they had been unsuccessful and signs of considerable exhaustion, I might now be permitted to make an attempt to extricate him. At the time they were using a filio in an endeavour to enlarge the opening. "All right," said the constable; "if you think you can do better than we can, have a go." Speaking obsequially, the boy had obviously inserted his head in a position of extreme flexion and, after getting it through the opening, had extended it. This could be seen plainly on looking over the side of the bridge, and it was, in fact, the only position in which he could maintain himself fairly comfortably. It was the problem of the after-coming head. I accordingly flexed his head strongly upon his chest. To get his chin well down to his chest I had to push him a little further through the hole, as his tendency was to pull back and so keep up extension. It took just over half a minute to extract him, amid loud cheers from the crowd. It is a fairly certain thing that if a head can be made to go through one of the openings it can be made to retrace the path by which it entered, and it seems a pity that the bridge should have been damaged to the extent of using a hacksaw, especially as doctors are reported to have been on the spot to assist the police force and the fire brigade.

### PRONUNCIATION OF MEDICAL TERMS.

MR. ALEX. E. ROCHE, M.Ch., F.R.C.S. (London, W.) writes: The derivation of scientific terms is always of interest, but has little effect on the pronunciation sanctioned by usage. According to their transcription from *phthisis*, *diphtheria*, *raportis*, and *raportis*, the first *i* in phthisis should be pronounced as shortly as the second; the *e* in diphtheria short (as in "error"); the *o* in parotid and carotid long (as in "dotted"). As we flagrantly neglect etymology in the pronunciation of these and hundreds of other words, why worry about "angina"?

### ALCOHOL MOTOR FUELS.

AT the congress of chemists arranged by the Society of Chemical Industry to take place in London next week (July 19th to 23rd) some interesting records will be given of the use of alcohol as a motor fuel. It appears that the Queensland Government, the Distillers' Company, and others are producing alcohol from molasses and starch-bearing crops in Queensland. The German Government has also put on the market a fuel consisting chiefly of alcohol. The tests that have been made with the fuel show that many millions a year would be saved by its use if engines were altered to work on 65 to 1 compression.

### METHOD OF TREATING ASTHMA BY RADIATION.

WE are asked by Dr. S. Gilbert Scott to correct an error in his preliminary note on this subject published in the *JOURNAL* of June 5th. Under the heading of "Technique" (p. 940, col. 1) "25 mm." should read "25 cm."

### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 49, 52, 53, 56, and 57 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 54 and 55.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 44.



# British Medical Association.

## NINETY-FOURTH ANNUAL MEETING, NOTTINGHAM, 1926.

### President's Address

ON

### THE MEDICAL PRACTITIONER AND THE PUBLIC.

BY

ROBERT GEORGE HOGARTH, C.B.E., F.R.C.S.,

SENIOR SURGEON, GENERAL HOSPITAL, NOTTINGHAM.

My first duty to-night is strictly personal. It is to express my heartfelt appreciation of the great honour conferred upon me. To be President of the British Medical Association is—I hope I speak without bias—to be the President of the finest professional association in the world. I can truthfully add that no one in the fast lengthening line of my predecessors in office has entered upon the duties of the Presidency with a greater realization of his own inadequacy to fulfil them as they might be fulfilled, or with a more earnest desire to bring to such fulfilment the very utmost of which he is capable.

#### THE NOTTINGHAM MEETING OF 1892.

May I next remind you of the Association's last visit to Nottingham in 1892—more than thirty years ago? That was before I came to Nottingham, and I certainly had no visions or premonitions that the next time the Association met here I should occupy this exalted position. What made that Nottingham meeting memorable was that then, for the first time, the Association, by its vote, admitted women to its full membership. I will not rake over the cold ashes of that dead controversy except to say that no one, so far as I know, regrets that decision to-day, or if he regrets it, deems it expedient to say so, or wishes that it had been further postponed. The wonder now is rather that the prejudice—for time has proved that it was only a prejudice—lasted so long.

There is now no degree or diploma, no office, no honour, no post in the medical profession (at any rate on the civil side) which is not open equally to women as to men, and I shall be well satisfied if, in the years to come, the present Nottingham meeting of the Association has as good cause to be remembered with honour and with gratitude, either for some signal reform or some wise and judicious decision, as was the earlier meeting in 1892.

#### Nottingham and its Surroundings.

The abundant literature about Nottingham which all of you have doubtless received makes it quite unnecessary for me to sing the praise of a city which has a glorious past, both in fact and legend, a prosperous present, and a future bright with hope. You will be able to judge for yourselves whether report speaks in terms too flattering or in terms not flattering enough of Nottingham's varied charms. All I wish to say is that the local members of the Association are immensely proud of the visit of their colleagues from all parts of the Empire, and are deeply grateful to the civic authorities, and indeed to all who have collaborated so generously in the preparatory work necessary to make the visit a success.

We who practise our profession in this ancient yet modern city by the Trent invariably find all classes of the population singularly responsive to the many and recurrent humanitarian claims of her medical institutions. You will see the evidence of that in many a fine building, and in none displayed more nobly than in the magnificent Home to Nurses, which is built almost on the very spot where

Charles I raised his standard at the opening of the Civil War. The city which chose that home for a war memorial will be proud to show her famed hospitality to those who practise medicine.

#### THE MARCH OF MEDICAL SCIENCE.

The decrease in the general rate of mortality is one of the most striking proofs of the rapid forward march of medical science. It has fallen by nearly one-half in fifty years. Had the birth rate been maintained the Malthusian doctrine would have enjoyed a new lease of life, and we should now be talking in awed tones of the "hungry generations" treading us down. But it has fallen by even a larger proportion in the same period, and the net total figures of the population only continue to show an increase because of the longer life.

It is a great triumph that a large percentage of humanity can now so far outrange the Psalmist's three score years and ten, and, instead of the added years entailing heaviness and sorrow, can still enjoy the pleasures of a discreetly ordered table and the beneficent exercise of the veteran's game at golf. By taking thought and following advice we can lengthen out the measure of our days and look forward with some confidence to a green old age. This prolongation of life—active life of course I mean, though the pace may slacken—is, I say, a great achievement in itself, especially if we agree with Scipio's reason for regretting that so few attained old age—namely, that if more attained it life would be lived in better and in wiser fashion.

Yet is there not a real danger of attaching too much importance to the triumphant statistics of mortality without due consideration of their actual content? Mere prolongation of life is of little good in itself, either to the individual or to the nation, unless there is a real capacity to enjoy it. All medical men meet with cases where the efforts made to prolong the life of a patient who is far past effective help hardly seem a kindness to the sufferer and often bring those about him to the breaking-point. Far more desirable than to make a bravo show in the statistical tables and increase the number of nonagenarians and centenarians is to raise the general standard of health among all ages of the community.

#### The Practitioner's Duty to the State.

Let us look at this question from the point of view of the State, since our duty to the State, according to some people, seems to be reckoned higher than our duty to ourselves. During the war public opinion was shocked to discover that the C3 category was so large in comparison, not with the A1, but with the B's and even with the C's. But it did not surprise the doctors, who knew the long catalogue of disabling ailments which afflict the general mass of the people.

The first sets of figures published by those who medically examined the school children in the elementary schools had already given clear warning. If such distressing percentages prevailed among the children between the ages of 5 and 15, what was to be expected when they grew to manhood? Moreover, a swollen C3 category of men

between 18 and 45 necessarily means a still larger percentage of the same category between 45 and 65, after which year, presumably, very few of these damaged people contrive to earn a livelihood. What is true of the men applies no less to the women, and so we have throughout the country an enormous mass of bruised and damaged humanity which never enjoys robust health, which is continually ailing, which provides a multitude of victims for every epidemic, and which, regarded from the purely economic standpoint, never approaches full industrial efficiency, because it is never fit and alert.

I would not paint the picture in too sombre colours. Most of the world's work is routine work, which can be got through more or less satisfactorily at ordinary times, whether, for the purpose of the military category, a man is classed C3 or B2. Nevertheless, the C3 man will be oftener on the sick list; he will make more mistakes; he will produce less; he will lose his job sooner; and at any moment of emergency he will be less trustworthy and reliable. His physical deficiencies will increase with the passing years; he will be less able to protect himself and his family; he is more likely to seek support or stimulant from alcohol and then begin to suffer from its cumulative effect. Would it not therefore be better for the State if we took pride, not in rewriting the tables of mortality, but in raising the C3 people to a higher category—not in view of distant military contingencies, but for the immediate purpose of rendering them more efficient citizens, more valuable producers of wealth, parents of a healthier stock, and themselves more contented with their lot?

If we regard the great stagnant pools of ill health and the infinite variety of debilitating ailments, deep-seated and chronic, we are driven to the conclusion that physical inefficiency is at once the most permanent and fruitful cause of individual unhappiness and social discontent. Walt Whitman's lines are worth recalling in this connexion:

"I think I could turn and live with animals,  
They are so placid and self-contained;  
I stand and look at them, long and long;  
They do not sweat and whine about their condition,  
They do not lie awake in the dark and cry for their sins,  
Not one is dissatisfied, not one is demented with the mania  
of owning,  
Not one is respectable or unhappy over the whole earth."

Humans are like animals at least in this, that if they are to be happy and contented they must either keep fit or be kept fit; and the honour of being considered the greatest benefactor to mankind belongs not, as is so often said, to him who can make two blades of grass grow where only one grew before, but to him who can add most to the science of health and raise the standard of fitness throughout the whole community. Surely that would be of more instant value to the State than the preservation of infant life in the first year of existence and the indefinite prolongation of what used to be called the allotted span. If there be any who dislike such a comparison of human values, they may be reassured by the reflection that whatever measures are taken to raise the general standard of life can hardly fail to benefit the infant in the cradle and the aged patient in the Poor Law infirmary.

#### *The State and the Nation's Health.*

If these considerations have weight, it must be one of the paramount duties of the State to concern itself more and more intimately with the health of the nation. It can do that by its solicitude for those who are sick, and by taking whatever measures are possible to keep them from becoming sick. Its action, in a word, must be both curative and preventive. While the science of medicine was mainly empirical and the causes of disease were either unknown or wrongly attributed, preventive measures by the State were little thought of. To-day a long series of Public Health Acts and the still recent creation of a Ministry of Health attest the full recognition and acceptance by the State of this essential administrative function. The right of the State and of the public authority to invade this particular domain is no longer challenged. It is seen to be for the common good that the sanitary and the factory inspector are armed with the sanction of the public authority; and as the ameliorative possibilities,

latent in preventive measures, are better understood, there will be a growing impatience with the obstacles placed in the way of their effective exercise by selfish or interested parties.

The establishment of the Ministry of Health bore witness, not to the sudden discovery of a new truth, but to the proved results of much admirable work which had been done in the previous half-century and to the need of its more resolute prosecution. We are now accustomed to the blessings of a pure water supply and efficient systems of drainage and sewerage; we have grown intolerant of the most offensive features of a slum; we have a clearly defined standard of, say, the minimum hygienic requirements of a new house. Throughout the wide field of industrial hygiene we know what conditions are desirable and what are dangerous to health. Our knowledge is fairly complete; the practical difficulties are connected with administration—how to deal with the borderline cases, and how to make the best use of the money at disposal, for improvements are always costly and public expenditure can only be met either out of rates or out of taxes.

Public opinion has to be educated continuously all the time. As a rule it proves amenable to tactful handling. For example, the compulsory notification of diseases is now extended far beyond its original scope to as many as twenty-two notifiable diseases, and will probably be extended much further within the near future. The agitation when the National Health Insurance Act was being passed is now remembered with a smile for the broken vows that were registered never to lick Mr. Lloyd George's new-fangled stamps. But even the greatest changes are very soon accepted as if they had always been, provided that on the whole the new institution functions well and promotes, in spite of whatever defects, the general well-being.

#### *Preventive Legislation.*

The scope of preventive legislation is almost limitless, and we are likely to see the State interfering—or shall I say intervening?—more and more in the interests of public health. For example, all the Licensing Acts of the last half-century are based in the last instance on the argument that stricter regulation is necessary for the general public health and safety, and it is obvious that that particular field of controversial legislation is by no means exhausted.

Moreover, the State is beginning to assert its regulative powers in departments of social and even of family life from which hitherto it has held aloof, and its justification will always be that the interests of public health override the personal interest of the individual, who, as a member of the community, does not and cannot act to himself alone. We may expect sharp controversy, for example, if and when the State concerns itself directly with eugenics, and asserts its solicitude for a generation not yet born, not by the provision of cradles and nurseries, but even by the very determination of parentage itself. This might have seemed fantastic a few years ago. But now that the idol of State socialism has been set up for our worship we may be sure that sooner or later the theorists will attempt to invest the Ministry of Health with increasingly autocratic powers, and will seek to transform the whole medical service of this country into a State service, with State hospitals, State examinations for degrees, and the State payment of doctors. This would be a perfectly logical development in a socialist State, nor can it be pretended that such a system could not be worked. But whether it would be as efficient as our present system, whether it would be as acceptable to the general body of the people, and whether the vastly increased cost would be repaid by equivalent advancement of medical knowledge or improvement in the public health, there is room for the very gravest doubts.

#### *Doctor and Patient.*

The patient's right to choose his medical adviser—which right is indispensable to the creation of a perfect relationship between them—has contributed largely to the smooth working of the National Health Insurance Act. There are roughly thirteen million insured persons and rather more

than thirteen thousand medical practitioners on the panels. These are not, as some ill informed critics of the service would seem to assume, a separate and inferior class of medical men. They are in every sense of the word general practitioners, and the service they give is a general practitioner's service.

To each patient on his list the insurance practitioner accepts the relationship of a family doctor, just as he would do if he were called in by a private patient. He gives to each the skill and the attention within his power, and he gives them, as a rule, cheerfully and willingly, as he has contracted to do. One sometimes hears general complaints of too rapid and casual a diagnosis; but when the waiting room is full the same complaints are not wholly unheard even in the most august thoroughfares of the London specialists. The true test of value of the service given is to be found in the fact that in 1924 only 404 complaints were received by Insurance Committees and investigated by their expert subcommittees, and in only four cases did the more serious charges result in the removal of the practitioners' names from the Medical List.

Is it likely that a better service would be provided if each insurance practitioner were selected for inclusion in the list by some official of the Ministry of Health, and if he were required to give an even more detailed and minute account of his practice and submit still more voluminous reports? The panel would still be composed of exactly the same people, and even if the allotted quota of patients were reduced, is it at all certain that the individual patient would receive a greater share of the doctor's attention?

We know what happens in all State services. The red-tape machine would soon be started; more and more reports would be called for; the doctor might see fewer patients, but the volume of his activities would be in no wise lessened; and the cost of the service to the taxpayer would be enormously increased. You will not make the panel doctor a better doctor by making him more of a civil servant and less of a doctor; nor will you make the thirteen million patients more contented with their treatment.

The reform that is most required in connexion with the insurance service is one which shall link up the insurance practitioner with the consultant physician and the consultant surgeon, and give the insured patient the benefit of the profession's specialized as well as of its general knowledge.

#### THE VOLUNTARY HOSPITALS.

Nowhere is the principle of voluntarism so well worth maintaining as in connexion with the hospitals; nowhere has it been so triumphantly maintained. It is sometimes suggested that the chief virtue of voluntary agencies is to do the rough pioneer work in difficult and intractable places, to create a favourable public opinion, and then, in due process of time, to hand over control to some department of State which will carry on the work upon an altogether larger scale. Indeed, I have seen it stated that voluntarists ought to be proud to merge their small individualities into the larger being of a public department and to lose themselves like rivers in the sea. But the enthusiastic friends of the voluntary hospitals are human beings, not mere charitable machines which function altruistically because their well disciplined hearts happen to be set that way. They are proud of their work. They love it. They see results which encourage and inspire them. They do not want to sink themselves, but to express themselves. The gratitude of those who are healed is sweet in their ears. Voluntarism is the very life and soul of the whole hospital movement.

It is not suggested that the hospitals would wither if the voluntary principle were abandoned. They would still multiply and prosper. Their orderly routine might well show an even more brilliant and imposing efficiency. But the rules and regulations would lengthen. The spirit of the institution would suffer change and lose something—I fear much—of its geniality and kindness. Why is it that such a difference exists to-day between the voluntary hospital and the Poor Law infirmary, which is often better constructed and much better equipped? If you ask a patient to which he would rather be sent, why does he always say the hospital? To some extent the old hard,

unforgettable associations and traditions of the Poor Law still chill the heart. But that is not the whole truth. There is something inherent in officialdom which freezes the genial current of the soul, and thaw it as you will by the application of whatever new principles of kindness and mercy it can never be thawed right out.

#### Hospitals and the State.

Other countries have their State hospital services. Some of you may remember that certain British delegates who visited the show hospital of the Medical State Service of Soviet Russia were enormously impressed by the fresh-water tank in which they saw the live fish which were to serve for the patients' dinners. I wondered when I read the passage how many fish they counted, whether so much as the heads and tails reached the patients in the wards, and whether even this agreeable luxury was much compensation for the complete inadequacy of that particular State medical service to cope with a hundredth part of 1 per cent. of the disease and suffering in Russia.

Let us stand by the principle of voluntarism in the hospitals at whatever cost of energy and patience required for their adequate provision and efficient maintenance. I need not remind this audience that it will take a vast and sustained effort to provide the 10,000 additional beds which the Voluntary Hospitals Commission has declared to be necessary. For that effort the friends of the hospitals will soon have to brace themselves. There is to be no financial assistance from the State. The Minister of Health last February very reluctantly came to the conclusion that no subvention was possible, at any rate at the moment, and so the hope that the Government might repeat its unconditional grant of half a million to the hospitals after the war, in recognition of their invaluable war work and of the utter impossibility during the war period of keeping abreast of their requirements, has been cast to the ground.

Unless this second grant had been as unconditional as the first, I do not know that I am altogether sorry at the Government's decision. If the Ministry had begun to impose conditions of control, it might well have marked the beginning of the end of the voluntary system. I contend that the work done by the hospitals is of such inestimable value, and the confidence placed in them by the public is so well justified, that the State, if it makes any subvention at all, should do so without restrictions, knowing that the money will be judiciously expended. The hospitals should beware of even the mildest beginnings of State control and the relentless, however friendly, grip of any State department.

However, as there is to be no grant these particular anxieties do not arise, and the supporters of the hospitals must shoulder their burden. So large a sum as four or five millions for new capital expenditure will take a very considerable time to raise; for, over and above all this, the maintenance cost has to be found for each new bed provided, and this means an additional recurrent annual cost of £148 per bed. Many of us were disappointed that once again the Chancellor of the Exchequer in the last Budget failed to exempt bequests to hospitals from liability to legacy duty. That is claimed as an act rather of justice than of grace. The toll taken by the State is an interception of charity which is repugnant to good feeling and a sense of fair play to the suffering.

The hospitals, of course, in their turn, owe to their generous supporters the duty of sound economic management, which in turn depends primarily upon the choice of governors. Those which show the best financial balance sheets usually have upon their board of management some outstanding figure of marked ability who has made the local hospital his hobby, his interest, his care, and his pride. However that may be, there must be the undoubted assurance of economic and prudent management if the full support of the public is to be continued. It may well be that a closer co-operation between hospitals—large and small, general and special—is possible and desirable, and that considerable economies might be effected without infringing the real autonomy of each institution, which is so properly and jealously guarded. Charitable effort in this country has always been specially subject to the besetting sin of overlapping and wasteful management; voluntarists

must be ready to face a searching criticism of their accounts by business men whom, if they are wise, they will invite and welcome to their councils.

#### *Changing Type of Hospital Patient.*

Again, we must not shut our eyes to the rapidly changing character of the personnel of hospital patients. The hospital is no longer the lazar-house of the destitute, the place to which homeless and plague-stricken outcasts crawled to die, or into which they were herded if they seemed too noisome and dangerous to be tolerated at large. Such it was in mediaeval times; then came the period, which lasted more or less down to our own day, when the hospital was still exclusively used by such as were too poor to pay for the ministrations of a doctor. Some people still hold that this should be the fundamental function of any hospital which is supported by public subscriptions, and I agree that this primary purpose for which hospitals exist—namely, that of taking in and caring for the indigent poor—must in no way be shelved or neglected.

But we have advanced far beyond that simple conception in these days, and we shall advance much further still, if only because the hospitals, from being mere infirmaries, have become the centres of the best medical and surgical skill in the areas they serve. The best nursing, the latest scientific apparatus, all are concentrated there for the service of the poor, and while the rich and the well-to-do can look after themselves, there remain large intermediary classes of the population who are cut off from the best skill because, on the one hand, they cannot afford the fees, and, on the other, they are not of the class for which the hospitals were intended. If that were pressed it would indeed be intolerable, especially in view of the increasing expensiveness of any serious operation or illness, the cost of nursing homes, and the palpable unfairness of leaving out in the cold the great body of the middle classes, whose financial betterment has by no means kept pace with that of the superior artisan class, and who have been in the past, according to their means, good and loyal friends of the hospitals.

#### *Wards for Paying Patients.*

It is certain, therefore, in my opinion, that we shall see a steady extension of the principle of the paying ward, and even of the paying hospital, for the use of the patient who pays in accordance with his means. In many hospitals to-day all but the very poorest patients are expected to contribute to the cost of their healing, and there is little need to lament the disappearance of the old principle that the hospitals were absolutely free—a principle which, in fact, was often grossly abused.

The interests of the middle classes deserve attention no less than those of any other class. May we not, therefore, look forward to a time when every general hospital will be well equipped with paying wards, or will have a paying hospital in association with it, served by the same staff and the same nurses? A middle-class patient who is a suitable hospital case could be seen by the almoner of the hospital, and, after stating his income and position, terms could be arranged according to means. Naturally that will open up the question of fees for the surgeon or the physician, and some obvious and possibly difficult adjustments would have to be made; but no vital principle that I can see would be endangered by the payment of these special fees, or even by the hospital itself making a substantial profit on such cases which would help towards the maintenance of more beds in the non-paying wards. Such changes are likely to be gradual; we can carefully note what effect, if any, they have upon the flow of subscriptions. Personally, I do not think that the charitable donor is likely to object to a middle-class paying patient receiving a share of the fruits of his bounty. He had a much more valid grievance against those who abused the freedom of the hospital and never contributed a penny to its funds.

The medical profession is generous in accommodating its fees according to the patient's income. But every medical man knows cases where the serious illness of the breadwinner or the wife or child has exhausted the savings of a middle-class home or crippled it with a load of debt. The middle-class patient, moreover, is the principal sufferer from the high fees of the nursing home, another institution

which has a necessary place in our existing system for dealing with the cure of disease, but which is by no means immune from well justified criticism. Is it, indeed, too much to say that the extreme expensiveness of nursing homes—I speak, of course, in purely general terms—is contributing as much as anything else to the extension of the system of paying wards in hospitals and the call for its rapid development?

#### *Working-Class Contributions to Hospitals.*

There is also another important development in process with regard to the hospitals. More and more in the large cities and industrial areas the hospitals are coming to rely upon the subscriptions of the working classes, contributed through a general Hospital Sunday collection or through a direct trade union levy. In this district, for example, the Hospital Saturday Committee are very good friends of the hospitals, contributing willingly, cheerfully, and without condition or stipulation as to the hospital service for their members they will receive in return. This trust is not misplaced. They lose nothing by not dealing in terms of contract and demanding the strict recognition of a right.

Many county hospitals are stimulating interest in their work by forming a collecting committee in every village and persuading the cottagers to subscribe to its funds, almost in the same way that they subscribe to a sick or benefit club. This will necessarily lead to a great extension of the hospitals, for those who pay will expect to receive hospital treatment as a right in case of serious illness. When the small contributor begins to talk about "our hospital," the vitalizing spirit of voluntarism is at work. Open the door to State direction and control and the cold east wind of officialism will contrive an entrance too.

#### *THE GENERAL MEDICAL COUNCIL.*

Another aspect of the relationship of the medical profession to the public has been much discussed of late in connexion with certain punitive action taken by the General Medical Council. This discussion has removed many misconceptions as to the specific purposes for which the Council was created by the Legislature—not, as was too often supposed, to serve as the executive of a powerful professional organization protecting the interests of its members, but as a body entrusted with powers, clearly defined first by Parliament and later by the judges, for the protection of the public against the incompetence and the imposture of unqualified medical practitioners. Practically the only criticism directed against the Council arises from the fidelity with which, in these days of growing laxity, it has maintained its jealous regard for the purity of its register of membership. There are really two main questions in which the lay public is interested. The first is: Is it or is it not to the public advantage that the General Medical Council should set its face like flint against professional self-advertisement? The second is: Is it or is it not to the public advantage that the Council should show a less uncompromising attitude towards the unqualified practitioner and a greater leniency towards those who transgress its stringent rule against covering?

The rule against professional self-advertisement is unquestionably in the public interest. The publicity agents of the commercial world may sound their slogan as they will about "Truth in advertising." But, as Dr. Johnson once shrewdly observed, the secret of advertising is "large promise"; and large, limitless, boundless promise is wholly out of place in the practice of the medical art. Inseparable from quackery, it is the sign manual of the unqualified nostrum-monger. In my view, this most salutary rule against professional self-advertisement needs to be observed more than ever now that the old reticences are being broken down in so many directions, and in view of the growing disposition to discuss all medical subjects freely in the public press.

Whether we like it or not, that school of thought is prevailing which holds that the open forum is the best of all popular educators, that ignorance is the greatest of all dangers, and that publicity alone can create the new public opinion out of which it is hoped there may issue a higher moral sense and a stronger self-control. The

public press will devote more and more space to the manifold problems of public health, and it is obviously desirable that what is written should be written with authority. No anonymous article on a technical or professional subject carries the weight of the signed contribution, and if doctors write for the lay press, as they will be urged to do with an ever-increasing insistence, the opportunities of professional self-advertisement will greatly multiply.

Nevertheless, it is to the common interest of the profession and of the public that these temptations—not, indeed, to inform the public of what is for its good, but to inform it in such a way as to advertise and glorify the writer and conduce to his personal gain—shall be resisted, and that the Medical Council shall still continue to exercise its powerful restraints. In other countries a different practice may be followed, but till it is shown that their method is more conducive than ours, either to the dignity and character of the profession or to the protection of the public from the charlatan and the quack, these restraints should not be weakened. Many borderline cases are bound to occur as they do at present, but I assume that the Council will continue to act with that judicial discretion which has on several occasions received the acknowledgement of the highest legal authorities.

#### Unqualified Practitioners.

As for the unqualified practitioner, I say without hesitation that the Medical Council cannot and must not recognize him, and therefore cannot and must not abate its strong reprobation of covering. To do so would be to stultify itself and the *Register*, which is its special creation and instrument. It cannot, to borrow an expression from another profession, recognize any orders but its own. I do not mean that it should seek to induce the State, as is done in some countries, to make unqualified practice illegal. Even if that were desirable, the public would not permit it. Public opinion, if I may say so, has a sporting fancy for the outsider, and outsiders, even the rankest, do sometimes win. But, though rare and exceptional cases may arise, the Council cannot extend either the bow of friendship or the nod of recognition to any unqualified practitioner without placing itself in a false position. If an unqualified practitioner really discovers a new cure or treatment for one of the ills of humanity, his consulting room will not long remain empty of patients. If his method is genuine it will endure, and, soon or late, it will win general recognition. But no one can reasonably expect admission to the *Medical Register*—or to any appendix thereto—by any except the approved channel.

Admission is not a question of initiation and secret rite; it is a plain question whether the entrant has gone through certain courses of medical training and passed the presented examinations. How can either be abandoned with safety to the public interest? The unqualified practitioner may or may not have sufficient general medical knowledge to enable him to make a diagnosis. A few may have gone through some sort of a medical course; the majority have not. It takes the ordinary medical man five years or more to complete his course; the unqualified man often does not give as many months. He professes to be a specialist without even elementary grounding in the essential rudiments of medical knowledge. I say nothing against the science of osteopathy or these uses of the manipulative treatment. I only say that those who practise these arts should have the medical knowledge without which they may do their patients infinite harm.

The champions of the unqualified practitioner fall into two main classes. One consists of those good people, invincibly credulous and optimistic by nature, who chatter about cures and treatment as others chatter about politics, and on whose ears well-syllabled words like "osteopathy" and "manipulation" fall with a sweetly modulated cadence of solace and hope. The other class consists of the ingenious rebels against all authority but their own, the sophists of the day, who deride professional etiquette and grimace at professional tradition. Perhaps here and there certain solemn composites do linger even yet in our profession, and an occasional grin at these may do no harm; but the health of the public is no grinning matter. The

plain truth remains that behind the rare—the very rare—unqualified practitioners of whose success so much is made, but whose failures pass unrecorded, there are scores of other practitioners of technique ancient and modern, Chaldean and transatlantic, who are eager to take advantage of any momentary opening of the door, which it is the declared policy of the General Medical Council to keep tightly shut.

A selfish, obscurantist policy would be totally contrary to the free spirit of inquiry which animates the medical science of to-day. But this is neither selfish nor obscurantist. Whatever in any modern technique is tested and proved good is sure of eventual adoption, and not even the gates of the General Medical Council will prevail against it. But the tests and the proofs must be such as are recognized by that universal medical science which talks a common language throughout the world and which alone can severely judge.

The public mind was perhaps never more impatient of authority than it is to-day. Unable to distinguish with certainty where the trained expert alone has any claim to be heard, multitudes of people are still prepared to accept offhand the morning and the evening stunt of their favourite newspapers, which are then forgotten as soon as read. So many romantic impossibilities of yesterday have become the casual scientific commonplaces of to-day that the very word "miracle" itself has shrunk back to its original connotation, and even the wisest have still no effective retort to Hamlet's gibe as to the inadequacy of their philosophy to embrace the content of heaven and earth. Nevertheless, Authority remains unshaken on her intellectual throne, though the gusts of change may a little disorder her raiment, and Authority herself acquires a ripper wisdom and a larger experience with the passage of the years.

The medical profession is a living profession. It is for ever breaking new ground, mapping and charting as it goes, and the necessary correction of a too hasty observation or faulty induction, as well as the need to include new knowledge, requires us from time to time to revise our atlases. And though we may be fairly confident that the older continents are now accurately charted, there is always the need to be prepared for the crash of old-established notions and for restless movements of insurgence along boundaries which once appeared to have been fixed for all time.

It is a sobering reflection that, but for the violent wrench out of its true direction which medical science suffered two thousand years ago, some of our most recent discoveries might well have been among the oldest blessings to suffering humanity. With the abandonment of the one true scientific method of patient observation and careful induction there was also unhappily discarded that sagest of all the medical maxims of ancient Hellas, that the physician is the servant of Nature.

The human race has suffered sorely because medical art and science took so tragically wrong a turning, after making so brilliant a start. Probably the perversity of the patient was largely responsible. Popular demand has always been insistent for the bottle of medicine and the charm. Science, under the lead of Aristotle, had sought to exorcise the potion-monger and the thaumaturgist, but back they came with a rush, and when the ancient scientist candidly admitted that he was uncertain as to the nature or the cure of the complaint the patient soon betook himself to one who promised a safe, quick, and pleasant cure.

The great truth that the supernatural and the scientific do not run well in double harness needs, I believe, a resonant restatement to-day. The profession is often blamed for its instinctive repugnance to the introduction of the supernatural into the art of healing. This is attributed to that professional jealousy which is supposed to seize every doctor when an unregistered hand assumes the gold-headed cane which is the symbol of his craft. I do not know that there is more professional jealousy among doctors than there is among lawyers; I doubt if there is as much as among plumbers and bricklayers.

No professional body loves an outsider who usurps its own particular functions, and long experience has shown



that the unqualified practitioner of medicine is in double measure an unqualified danger to the public. And yet how elients troop to his door or rain in upon him a shower of post-office orders if he is a shrewd exploiter at once of the foibles and the earnest longings of mankind. So it has ever been; so it will ever be. As the cynic long ago said: "If the public want to be deceived, let them." But the obvious fact is that the public want not to be deceived but to be cured, and that is why, if an authorized prescription in our cryptic Latin fails to bring relief, they will cheerfully take a free medical tip in plain English from their Sunday paper's answers to correspondents, or accept as gospel the large promise of displayed advertisement; or if they are of a more serious and contemplative type, they will haunt the temples of those who say that they possess the secret of permanent good health.

#### *The Religious Healer.*

With respect to the religious and quasi-religious healer, the medical profession is in a difficult position. It is precluded by the memory of its own empirical past from adorning its robes with the fragile fringes of infallibility. Dedicated to Science and conscious of boundless horizons still beyond its ken, whatever face the profession may present to the outer world, it must display in the intimate presence of Truth the modesty of the neophyte. Nor can it refuse to acknowledge the sincerity of other searers after truth travelling upon roads other than that on which its own feet are set. Nevertheless, the profession owes to itself and to the public the duty of speaking out.

There is no difficulty, of course, in dealing with the vulgar quack who sells a bottled panacea to the joint benefit of himself and the Inland Revenue, and who leaves the deluded purchaser, if he be lucky, much the same as he was before. But obvious difficulty arises when a new theory and practice of the art of healing is proclaimed and health is taught in terms of religion, and religion in terms of health. In that company the medical scientist has no place. His facts are not theirs. Their terminology is not his. There is no meeting ground in common. He knows what he understands by science; he does not know what they mean. Even if he were willing to join the new cult, its complete refusal to recognize the need of a medical art, such as that which he practises, must effectually keep the door of communication closed. Science has long since framed her own laws of method and proof which are recognized throughout the world, and the medical profession can have no commerce with any newly organized cult which denies the very bases on which these laws are founded.

But this is not to say that no friendly co-operation is possible between doctors and those who are earnestly studying the healing power of the mind. Let there be no contention about names; when we speak of mind or soul, let us freely admit that we cannot take a specimen of either on a slide and put it under a microscope. That there is a certain healing power, a *vis medicatrix*, in religion as in nature, few careful observers would, I think, deny. Between religion and nature, between mind and body, there exists not an opposition but a relation. Every medical man of experience must have known cases in which his own scientific skill has seemed to be helped, sometimes most strangely and wonderfully, by some serenity of mind in the patient, some quiet confidence in the ultimate issue, some realization of sure dependence upon a higher power, some tranquillizing influence of the soul upon the physical stress and tumult of the senses—beneficent, soothing, healing activities in which he and his art have had little or no share.

These facts are not reducible to formulae. Science cannot explain them as she can explain the operation of an anodyne stealing along the passage ways of sense. We do not, indeed, know very much about that mysterious parallel road, which always lies in deep shadow, where the mind or the soul, reacting to a spirit which seems to come from without, influences profoundly in its turn the body which the doctor is trying to heal. There is no place in respect of this region for dogmatic utterance; but there is always room for patient and reverent inquiry. The

whole of our profession will await with impartial mind the result of the labours of the joint committee which was appointed some months ago to investigate the phenomena of what is generally called spiritual healing.

Meanwhile, I say with confidence that any systematized creed which professes to dispense with the art of medicine and surgery is false to the Divine. But if any possess the precious gift of ministering to the mind diseased or of imparting to those who walk in the shadow of the valley the courage to move serenely among the phantoms and terrors which haunt that road, let us be sure that so divine a gift can only emanate from a divine source, and let us welcome the help of any unseen wings that stir the air with healing.

In such moments the old tradition is confirmed that the doctor stands in a different relation to his fellow from most other professional men. I do not claim that the doctor consciously lives, like the priest, what is called a dedicated life—though I have known men to whom that noble phrase might well be applied—but there is a special nexus between doctor and patient which is independent of, as it is unrepulsed by, the fee which passes between them. The public expect much of the doctor and take much for granted. I like that old story of the woman of Selkirk who, observing her doctor ride by, said to the neighbour with whom she was gossiping, "Aye, there goes the doctor—honest man! He's brought all my ten bairns into the world and never got a rap for one of them."

The national health insurance scheme has at any rate checked the more unconscionable draughts which once used to be made upon the deep well of medical disinterestedness, but the profession still gives much for which it receives no direct return but gratitude, and sometimes even that is left unspoken. That, however, is the penalty of altruism and an established reputation for kindness of heart, and that is partly why the doctor holds his place in the public esteem, despite the satirists, the playwrights, and the novelists who still delight to poke their fun—at the whole not unfriendly—at his etiquette, his bedside manner, his scraps of weird Latinity, and the artifice with which the wild surmise of an impossible diagnosis may still be masked under the grave, slow smile of apparently assumed certainty.

#### *THE REAL DOCTOR.*

But if we want the portrait of the real doctor we go, not to books, but to life. We expect him, not in vain, to combine with knowledge the understanding that springs from intuition till it is most richly reinforced by experience, to bear a tranquillizing influence, and to radiate confidence and hope. We expect him to exemplify, like the surgeon of whom Henley wrote:

"Faultless patience and unyielding will,  
Beautiful gentleness and splendid skill,"

earing always for life as a thing most precious, quick—and now happily well able—to spare the sufferer one unnecessary pang, the restorer of health, a strong sure help in the more supreme moments:

"In many a house of care, when pain has forced a footing there,  
And there's a Darkness on the stair will not be turned away."

Such is the doctor, the family doctor, who is more to the public at large than the most learned and the most wise who dwell in those two long, unlovely, parallel streets of London, where the waters of healing are laid on at the main. He is still the same, even though he is called upon in these days to enter the service—the preventive service—of the Ministry of Health, disarming disease before it strikes, saving the firstborn, not by a smear of blood on the lintel, but by a dash of disinfectant in the drain, and sometimes purchasing the immunity of millions as cheaply as the restoration of a few convalescents to health. The doctor's professional qualifications may change as medical science advances; the qualifications he needs to win him the confidence of his fellows are unchangeable as human nature itself. That confidence it is the policy of this great Association and the desire of every one of its members always to deserve and for ever to retain.

## The Maudsley Lecture

ON

## PREVENTION OF INSANITY.\*

BY

PROFESSOR GEORGE M. ROBERTSON,  
IDENT OF THE ROYAL COLLEGE OF PHYSICIANS, EDINBURGH.

## (ABSTRACT.)

PROFESSOR ROBERTSON divided his subject into two parts: the influences which go to the causation of insanity; and, observations on the theories and methods of prevention, particularly of general paralysis of the insane. Statistics he used were taken from the twenty-first report of the Commission in Lunacy of the State of New York for the year 1908-09.

## Conditions and Influences Affecting the Occurrence of Insanity.

From these statistics it appeared that insanity under the age of 15 was quite negligible and if included in statistics of insanity had a most disturbing effect, as this part of life comprised nearly a third of the population. A high birth rate and a low infantile mortality would increase the population at this period, and the effect of a proportionate increase would be to reduce the apparent incidence of insanity in the total population, without any diminution of insanity. A fair number of admissions occurred between 15 and 19, and a larger number between 20 and 24. The amount continued very high up to 40 years of age, after which it fell, so that it appeared that the years of life were the most liable to insanity, and increasing years a mental breakdown became every more remote. But these statistics did not represent the incidence of the liability to insanity—that is to say, the frequency with which insanity occurred in proportion to the number living. The large number of admissions between 20 and 40 was mainly due to the large number of persons living in early life, and the smaller number of admissions at 75 resulted from the small number in old age. Statistics of incidence showed that they tended to develop between 15 and 19, but became more pronounced between 20 and 24. This was followed by a steady rise year after year till the age of 45 was reached. There was then a short period of decline, which there was an extremely rapid rise in old age. There was a general tendency for insanity to become more frequent as one grew older. To emphasize the difference between the number of admissions at the various ages and the rate of incidence of insanity at these ages Professor Robertson brought the two charts together for the purpose of comparison.

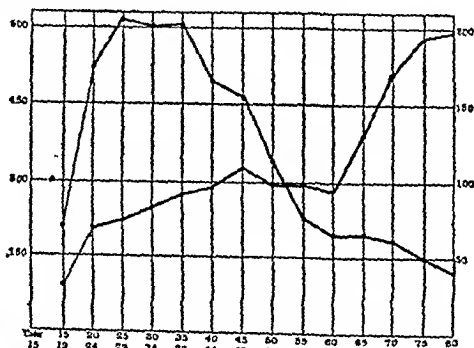


FIG. 1.—Graph of total number of first admissions (5,222) compared to rate of incidence of insanity per 100,000 of the population at sequential age periods (ratio 3 to 1).

## Incidence of Insanity among Males and Females.

As regards sex, insanity occurred among males at a proportionately higher rate than among females. This unexpected result was mainly due to the greater number of admissions from general paralysis and alcoholic insanity.

Livered before the Royal Medico-Psychological Association on 15th.

Among the married the incidence of insanity was decidedly low. It was slightly higher among women under 35 than among men, and this was no doubt connected with the risks of child-bearing. The loss of a husband or a wife increased in a marked manner the incidence of insanity. Up to the age of 55 the prevalence of insanity among widows and widowers was almost double that among married men and women. The symptoms of insanity in these people were to a large extent a wrong method of adjustment to difficulties in life, and the increased amount of insanity among widows and widowers was both a sociological and a biological phenomenon. Between the ages of 25 and 55 the prevalence of insanity among single men and women was nearly three times as great as among a similar number of married men and women of the same age. The causes of this high prevalence among the single were involved; but the average health of the single was probably lower than that of the married, for ill health might be itself a reason for remaining single. Professor Robertson concluded, from the low incidence of insanity among the married, that the condition of marriage and of family life, in spite of its greater responsibilities, perhaps on account of them, was the most favourable mode of existence for men and women. Young men between 25 and 35 years of age continuing bachelors died on the average four years sooner than married men, and ran three times the risk of becoming insane.

## The Three Critical Periods of Life.

Coming to the three critical periods of life, all connected in some measure with the function of sex, Professor Robertson remarked that during pubescence and adolescence the balance of the internal secretions of the body was disturbed by the intrusion of the internal secretion from the sexual glands. For all practical purposes insanity occurred for the first time at this period of life. Leaving on one side the effect of heredity, there was in insanity almost always a physical cause, but usually combined with mental causes. The physical cause in adolescent insanity was the physiological disturbance produced by the internal secretions. The mental cause was the change in the social status of the young adult or adolescent. He had to adjust himself to the problems of life, and of these the most disturbing during these early years were those connected with sex.

The next critical period was the climacteric, occurring between 45 and 50. This was the age when the powers first began to fail; an age when to keep abreast of younger competitors increased effort was needed. When the climacteric had been surmounted, the incidence of insanity for a period fell steadily. This period, accompanied by a damping down of the fires of emotion, was one of the most valuable. The mind had become stabilized. Wisdom had increased with experience of life. Men of this age guided the destinies of mankind. The third crisis, said Professor Robertson, was known as the grand climacteric, when the period of senescence began. After the age of 64 the rate of incidence of insanity mounted year by year with extreme rapidity, and was proportionately almost double that of the period of adolescence. Above 75 it was almost treble. The incidence was more marked even than was recognized, since many senile persons were cared for at home and were never registered as insane. The crisis of the grand climacteric supported the regulation of the Civil Service that 64 was the age for retirement.

## Hereditary, Acquired, and Senile Insanity.

Professor Robertson then divided insanity into three distinctive types—the hereditary, the acquired, and the decadent, associated with three age periods—early adult life, middle age, and senescence, although not limited to them.

He said that the number of admissions of dementia praecox was large, that it was malignant in character, that only 15 per cent. of those afflicted with it recovered, so that the majority of the patients became permanent residents and filled mental hospitals. This gave the impression that the early period of life was the most liable to insanity, whereas adolescence was actually the least dangerous period of life for insanity in general. If, however, we refer to the hereditary insanities alone, and

especially if we restrict our attention to the most malignant type of insanity, dementia praecox, then adolescence is undoubtedly a dangerous period of life. As the individual grew older the danger of a breakdown from dementia praecox grew less. Between 40 and 45 it was exactly half of what it was between 20 and 25.

Manic-depressive insanity, the other important form of hereditary insanity, was not so prevalent in early adult life as dementia praecox, but its hereditary character was displayed by its tendency to recur. It was the benign type of hereditary insanity, and the vast majority of patients suffering from it, who were in good bodily health, made excellent recoveries. Manic-depressive insanity, being a disorder of the emotions, was more frequent among females than among males. The disease in males might be wrongly diagnosed as alcoholic insanity because the patients had taken to drink. In the elated phase of the disorder the patient drank because of his high spirits, and in the depressive phase in order to drown his sorrow.

The two most important forms of insanity in middle life were alcoholic insanity and general paralysis of the insane, and both occurred more frequently in men than in women. Both of them were acquired forms of insanity, and therefore preventable. The diagnosis of alcoholic insanity was uncertain, and depended largely on the personal equation of the observer. The part played by heredity created uncertainty in every case. To suffer from alcoholic insanity one must first be alcoholizable by hereditary predisposition. Alcohol, according to Féré, was the "touchstone of mental equilibrium," and to be able to resist the toxic effects of alcohol betokened a well controlled mind and a sound brain. Mercier had pointed out that there were always two factors in the production of insanity—an internal and an external. The internal factor represented the hereditary tendency; the external, some exciting cause in the environment. These factors were always inversely proportional. If the internal factor or hereditary tendency to insanity was strong, then the external or alcoholic factor was weak; but if the hereditary predisposition to insanity was slight, then the exciting cause must be strong. The graph of alcoholic insanity in

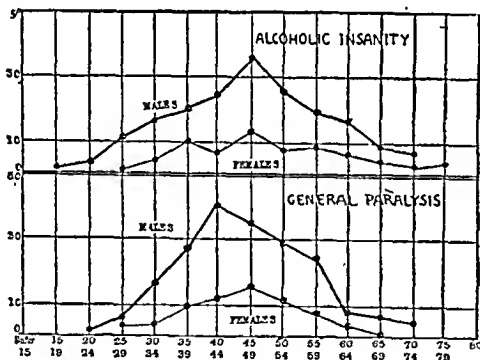


FIG. 2.—Alcoholic insanity and general paralysis. Male and female admissions separately per 100,000 of the population.

males was as perfect as the outline of Fujiyama. The sharp apex of the cone seemed to indicate that there was in the male a climacteric which corresponded to the female menopause.

The incidence of general paralysis of the insane in both sexes resembled that of alcoholic insanity. It reached its period of maximum incidence five years earlier than was the case with alcoholic insanity. Its onset was probably determined by the date of infection by syphilis. We are now in possession of two promising forms of treatment—namely, benign tertian malaria and tryparsamide. In early cases after malarial treatment about a third of the patients were able to return to work, and another third were distinctly improved. Apparent recoveries had also been effected by tryparsamide alone, which was by far the most potent arsenical preparation for the treatment of this disease.

The mental decay of old age would come, said Professor Robertson, to every human being if he lived long enough;

but no physiological process showed more extreme variations than the time of onset of senectitude. Senile insanity was closely related to the waning of the bodily functions and to those diseases to which the aged are liable. Dr. John Carswell had made some interesting observations on the relation between the death rate and the occurrence of insanity. He selected ten wards in the city of Glasgow with a combined population of nearly 400,000, and divided them into two practically equal groups, the one with a death rate below, and the other with a death rate above, that of the whole city, called for convenience the healthy and the unhealthy groups. He also subdivided each group into two sections, the one consisting of persons between 15 and 44, and the other of those above 45 years of age—in other words, a younger and an older section. Dealing first with the younger sections, and making use of first attacks only, Dr. Carswell found that in three years there were 165 cases of insanity in the healthy group and 186 in the unhealthy group. This difference was slight, so he concluded that health of body was probably not the main factor in the production of insanity in the early period of life; 67 per cent. of the cases were due to constitutional or hereditary influences. Dealing next with the older sections he found in the unhealthy group 149 cases of insanity, as compared with only 91 in the healthy group—an increase of 61 per cent. He therefore concluded that ill health of body was an important factor in the production of insanity, being less in a district in which comfort was enjoyed and the death rate was low. Improved social conditions did not apparently lead to any marked diminution in the amount of insanity during early adult life, as the forms of insanity were then mainly hereditary. They apparently reduced the amount of senile insanity.

The preventive aspect of his survey, said Professor Robertson, fell naturally into a consideration of the measures to be taken to deal with the three types of insanity—the hereditary, the acquired, and the senile.

#### *Prevention of the Hereditary Insanities: Eugenics.*

It was sometimes alleged, on the original authority of Morel, that when insanity made its appearance in a stock it arose at an earlier age and in a more severe form in every subsequent generation, so that in the third or fourth generation it was represented by imbecility and idiocy, and the stock came to an end. This progressive degeneration was described by Sir Thomas Clouston as Nature's method of killing off a bad stock. There were errors as well as false suggestions in these statements. When insanity first made its appearance in a stock there was no necessity for it to continue, far less to arise in an earlier and more severe form in each successive generation. If bad stock married into bad, the offspring was naturally less fit than either parent, and if this policy were continued for two or three generations the family ultimately came to an end. But, just as insanity might appear in a family previously sound, owing to unfortunate mating, so it might also disappear, when it had once occurred, owing to propitious unions. Maudsley wrote: "The two principal modes by which an insane strain in a family is worked out of it are, first, propitious unions in marriage, with sound stocks, whereby it is attenuated, neutralized, perhaps ultimately extinguished; and, secondly, propitious dispositions of the circumstances of life." Of these methods he remarked that without doubt the first was most effective. In a process allied to progressive degeneration to which Sir Frederick Mott had given the name "antodating or anticipation," an hereditary form of insanity, usually dementia praecox, appeared in offspring at an earlier age than an attack of insanity in the parent. These precocious attacks of malignant insanity Professor Robertson believed to be the result of unpropitious unions. They indicated that the hereditary tendency in the offspring was greater than it was in either parent. It was clearly a social duty on the part of those inheriting a neuropathic strain to avoid marriage into stocks with a similar weakness, if offspring were expected. In the case of those with obvious mental defect or subject to a severe psychosis, marriage should not be contemplated. Belief in the evil effects of the marriage of cousins had sunk deep into the

popular mind, but in itself consanguinity did no harm, provided the stock was good. As for the question of sterilization, Professor Robertson was not convinced by the theoretical arguments in its favour. He believed the bulk of the medical profession regarded the proposal as such an outrage on their traditional ideals of duty towards their patients that its adoption was impracticable in this country. He could not imagine a board of physicians calmly sentencing a victim to this cold-blooded and superfluous insult. Enthusiasm had overstepped the bounds of reason when a writer declared that "if sterilization should be permanently prohibited, it will be impossible to prevent a slow but steady deterioration of all such civilized races as are so strongly endowed with human sentiments as to prevent infanticide from becoming a permissible practice."

In support of his views on this subject and to show how little the extent of mental disease was appreciated, Professor Robertson quoted an inquiry by Sir Thomas Clouston, who found that in three generations in 41 of 83 families with which he was acquainted in a country parish in Scotland one or other of four diseases had occurred—namely, mental disease, congenital imbecility, idiocy, or epilepsy. Sir Thomas Clouston had no doubt that if his information had been quite perfect, a few more families would have been found to have produced those diseases. The lesson of this study in heredity showed how much room there was for the practice of mental hygiene, of moral control, of abstinence from deteriorating agents, of cultivating good health, and of arranging marriages on right principles, to counteract, and in time perhaps to eradicate, those morbid nervous and mental tendencies.

#### *Mental Hygiene of Childhood and Adolescence.*

To eradicate "morbid nervous and mental tendencies," Professor Robertson continued, is the avowed aim of eugenics, and stripped of exereescences eugenics might one day help to lay the foundations of a healthier and a more efficient race. That goal achieved, it must still be remembered that the task of producing healthy-minded men and women does not end. Every human being is a living and developing organism, bound by his nature to react to the influences of his environment, especially so if they were brought to bear on him during the most plastic phase of life. Even the defective child showed the influence of discerning management and an environment adapted to its responsive capacity, a consideration which went far to justify the large expenditure of public funds in the provision of special institutions and schools for this class. But the advantages so laboriously acquired were squandered by making indifferent provision for lifelong care, and the rectification of this failure was one of the necessities of our time. There was also need for the earliest possible recognition of mental defect, and for a closer study of the ante-natal as distinguished from the hereditary conditions of defect.

In Professor Robertson's opinion the mind of man was not born—it was made. At the outset all those forces which left their imprint on the child were combined in the personality of the mother, and practical hygienic measures must be concentrated on her rather than on the child. The subsequent development of the child involved the transition from the state of dependence to comparative freedom. The social instincts had to be developed through contact with the other members of the family, and later with the community at large. Home influences had subsequently to be tempered by the discipline of school life. Through such experiences the primitive, self-seeking tendencies were subordinated to the higher self, and their latent energy set free for the achievement of social ends. The danger inherent in this long travail was lest in the end the primary instinctive tendencies should triumph over the educative influences. Out of the failure to master the temptations was born the type of temperament in which the seeds of dementia praecox and other forms of mental disorder found a congenial soil. Without doubt, the mental hygiene of childhood and of adolescence played a most important part in the prevention of insanity.

Professor Robertson applied the term "prophylaxis" to particular steps taken with the immediate object of pro-

tecting the mind when threatened by danger. It was essential, for example, to those with a known hereditary predisposition who had already suffered from an attack, and especially to those in whom the attack had been of a recurrent type, such as manic-depressive insanity. When such a case occurred it should be borne in mind that the other members of the family inherited a similar predisposition. The warning indications were, first, loss of sleep. Extreme or prolonged insomnia was a danger, and precautions should be taken. Secondly, there was prolonged anxiety that could not be dislodged. Another danger signal was mental and physical exhaustion. A change of character, not amounting to actual insanity, was another important sign, particularly in those who were subject to manic-depressive insanity. Sometimes the patient was morbidly elated, at others he was morbidly depressed. These changes of mood could be controlled only to a limited extent, but much could be done to prevent their exaggeration into something definitely morbid.

#### *Early Treatment.*

It was believed by many that some of the cases receiving treatment for the prevention of insanity would not develop insanity were they to receive none. Such authorities believed that these cases of the psycho-neuroses, which others regarded as exhibiting the early stage of insanity, suffered really from a definite type of mental disorder of a different kind. It was even alleged by them that the presence of a psycho-neurosis was a protection against insanity. Professor Robertson was inclined to agree that once a psycho-neurosis had assumed a definite form, although it varied from time to time in its severity and in the details of its symptomatology, it did not tend to alter its character, or to assume that of insanity, any more than one definite form of fully developed insanity tended to alter into another. To this extent the treatment of the psycho-neuroses was not the early treatment of insanity, nor could such treatment claim to prevent insanity from developing where that danger did not exist. To this extent also the existence of a definite type of psycho-neurosis, except in rare instances, might be said to protect the individual from the occurrence of actual insanity. But at an early stage it was impossible to foretell whether transient, vague, and disorderly mental phenomena would develop into a typical psycho-neurosis or into a definite form of insanity. There were two stages—an initial stage when anything was possible, and a later stage when the type was fixed.

#### *Prevention of the Acquired Insanities.*

In the middle period of life the benefits of prevention were more noticeable because they were more immediate. Insanity at this period was largely acquired, and could often be prevented. Myxoedematous insanity, for example, had diminished almost to the vanishing point since the discovery of its cause was made. Just as heredity was a factor to be reckoned with to a greater or less extent in every case of insanity, so we were beginning to recognize that disturbance of the internal secretions played a more or less important part in all forms of mental disorder. Any future great therapeutic discovery in the domain of mental disease would probably be found in a knowledge and control of the internal secretions.

Professor Robertson then said that as regards the prevention or abolition of alcoholic insanity there is a very simple way of effecting this, provided it is voluntary. But even if alcohol were prohibited, not in the legal but in the real sense, the total number of cases of insanity would not be diminished by the full number of cases diagnosed as alcoholic insanity. Many of these, owing to inherent instability, would break down from other causes in the absence of alcohol. On the other hand, alcohol is a contributing factor but not the principal cause of insanity in many other cases, and in these abstinence might be the means of averting insanity altogether. Alcoholic insanity is diminishing, though not so rapidly as most people desire. The habit of drinking is on the decline, and it is no small boon that drunkenness is on the decrease and in some places has entirely disappeared.

The other important form of acquired insanity is general paralysis. An astounding fall in the number of deaths was

recorded in 1919, and this has continued, and is of supreme interest from the point of view of prevention. From 1907 to 1918 inclusive the number of male deaths was steady, and for eight years the biennial numbers did not vary more than 10. In 1919-20 there was a sudden drop of 26 per cent. The following appears to be the probable explanation of this sudden fall in the number of deaths. General paralysis may appear within three years after syphilis has been contracted, but it is not till seven years have elapsed that it occurs with any frequency. Of those attacked more than a half die within two years after the first appearance of the symptoms, which are usually present for a year before the patient is admitted to a mental hospital. If, therefore, persons develop general paralysis seven years after infection, and if a half die within two years, we require to go back nine years to find an explanation for any variation in the death rate. In other words, to explain a sudden fall in the number of deaths in 1919 we require to investigate conditions in 1910. If this be done an explanation is found in the employment during that year of salvarsan and the cure by its use of those males who contracted syphilis. As the fall in the number of deaths in 1919-20 is 26 per cent., it is certain that many who had contracted syphilis previous to 1910 and 1911 also took advantage of the discovery of the new remedy.

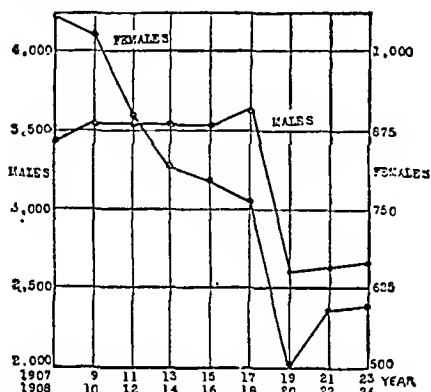


FIG. 3.—Numbers of deaths from general paralysis in England and Wales in biennial periods from 1907 to 1924, males and females separately. Graph of females four times enlarged as compared with graph of males.

The above chart has been designed from the number given to illustrate the deaths in biennial periods, and as the proportion of deaths of males to females, is about 4 to 1 the graph for females has been enlarged four times to make its variations comparable. The graph for females is remarkable. There is a steady fall from 1907 to 1918, which amounted in that year to 28 per cent. Great as this reduction is, it cannot be attributed to the treatment women received, as comparatively little was done for them till venereal clinics were established in 1920. The explanation of this fall is believed to be as follows: Syphilis is infectious, and in dealing with infectious diseases the treatment of the individual case is of less importance than the prevention of the spread of infection. During the first decade of the century treatment by mercurial inunction was employed, and this form of treatment was a long one. The opportunity was taken of instructing male patients regarding the nature of the disease they were suffering from and of appealing to them to avoid infecting others. Many men, it would seem, acted on this advice, but the result was strangely one-sided. In other infectious diseases, when precautions against infection are taken, benefit is received by all alike. Syphilis, however, is peculiar, as it spreads from one sex to the other, and if one sex only adopts measures to avoid spreading infection the whole benefit of these precautions is received by persons of the opposite sex alone. It is thus that we account for the continuous fall of female deaths from general paralysis from 1907 to 1918, while the deaths of males remained stationary, or even tended to rise. There was a further fall of 33 per cent. in the

number of female deaths from general paralysis in 1919-20, as compared with the two previous years. This corresponds exactly with the fall in the deaths of males in time and proportion, but it was not directly due to treatment by salvarsan as was the case with males. It may, however, be traced to the employment of a rapid method of curing syphilis, with the result that the infectious stage of the disease in males was cut short by salvarsan, and fewer women became infected.

These observations teach us two lessons. The first, the success of modern scientific methods in preventing the most terrible malady to which man is subject. The money spent on clinics for the treatment of venereal diseases will in a few years be amply repaid. The other lesson is the effect of educational propaganda and publicity. I attribute the whole fall in the number of deaths from general paralysis among females up to the year 1919 to the instruction given to infected males. I believe also that those who have mainly benefited by the knowledge thus imparted have been the innocent wives of the less educated classes. Among these classes the proportion of women to men suffering from general paralysis is about 1 to every 4, but it may be as high as 1 to every 3. Among patients of the richer and better educated classes the proportion is very different: at Craig House there has been only one lady admitted suffering from general paralysis during the last twenty-four years, as compared with 73 men.

### Prevention of Senile Insanity.

As to measures for the prevention of insanity during senility, Professor Robertson continued, we are guided by the knowledge that the later in life insanity begins the less important is the factor of hereditary predisposition in its causation; and that, in all forms of insanity occurring during senility, the influence of the body, if not paramount, predominates. For the prevention of insanity during senility we must begin to interest ourselves in bodily hygiene at a much earlier period. The diseases of old age are usually insidious in origin and gradual in development, and their seeds have been sown in middle life or even earlier. Syphilis and chronic alcoholism, for example, may not lead to any form of insanity in the early or middle periods of life, but owing to a progressive degeneration of the blood vessels of the brain and to a general lowering of the vitality, they may induce premature and marked senility and be the essential agents in the causation of insanity late in life. Prevention is then too late. Without doubt preparation for a healthy old age by careful living during the middle period of life is the best insurance against senile insanity. The measures employed to prolong life by increasing the number of the aged in proportion to the rest of the population, increase the total amount of insanity, for senility is the insanity-producing period of life. If this be associated with later marriage, a falling birth rate, and emigration of the young and fit, so that there is a proportionate diminution of the non-insanity-producing period of life, then in spite of all the efforts of mental and physical hygiene—indeed, partly on account of these efforts—the amount of insanity in proportion to the total population must show a marked increase. These statistical fallacies have to be eliminated before the relative amount of insanity from year to year, or in different areas, can be compared with accuracy. The alarmist, naturally, does not trouble to do this.

### Is Insanity on the Increase?

Professor Robertson then turned to the question Is insanity on the increase? After pointing out that nations seem to pass through periodic phases in which fears arise that among them the occurrence of insanity is on the increase, he said that so far as can be judged the outlook in this country at the present time is distinctly favourable. In Scotland the total number of insane persons has fallen from 390 per 100,000 in the first quinquennium of the last fifteen years to 369 in the last; and the number of insane persons registered annually for the first time has fallen from 2,828 in the first quinquennium to 2,731 in the last, although the population has increased in number.



## Conclusion.

In conclusion, said Professor Robertson, it must be apparent to everyone that the problem of preventing mental disorder is not a simple one. The analogous problem is that of the prevention of tuberculosis, with which it has so many points in common, and from the campaign for its prevention much can be learned. The possible causes of mental derangement are legion, and the possible combination of these, in individual cases, beyond counting. It is clear that when sickness of mind threatens or occurs, mental health cannot be regained by any royal road. The claims of the individual sufferer are in the first place paramount and must be studied. Every case of threatened breakdown presents a unique problem. It may have features in common with others; it certainly will present features peculiar to itself. Intensive study, therefore, of individual cases, so as to disclose these causative factors, is the primary duty of the psychiatrist. If that duty be not discharged, treatment will be confined to a few rule-of-thumb precepts, and its results will be disappointing. Secondly, what can be done in a more general way is well illustrated in the case of general paralysis. By disseminating, as widely as possible, information as to its mode of attack and the methods of prevention, a real contribution has been made to the mental hygiene of the community. Encouraged by that success, let us see to it that our knowledge of the origin and development of other disabling conditions is effectively applied wherever it is needed. In the opening up of these preventive channels a great responsibility rests on practising psychiatrists. It is futile to lament that those of unstable equilibrium turn elsewhere for help—to the quack, to the charlatan, to the barren ritual of the latest cult. The blame for this state of affairs must be shared by the psychiatrist. Far too long has he sulked in his cave; now he must come out into the market-place and offer his wares to all who need them. He must not confine his interests to his duties in the mental hospital. He must co-operate with the general practitioner and get into touch with the outer world through the agency of out-patient clinics. An expert body of psychiatrists, trained in every device of medicine and psychology, and diligently applying themselves to the clamant needs of their generation, might avert much needless suffering on the part of those in mental difficulties or about to be overwhelmed. Let none be daunted by the magnitude of the enterprise that is envisaged, but rather find in it an incentive to continued and combined effort, and the hope of a greater reward.

## DARK-GROUND ILLUMINATION OF TISSUE CELLS CULTIVATED "IN VITRO."

BY

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THE cultivation of animal tissues *in vitro* is now a recognized method of research. When a fragment of tissue is cultivated upon a cover-slip in suitable medium a zone of cells grows out around the edge of the fragment. Many of these cells become adherent to the surface of the cover-slip and wander over it by amoeboid movement, pushing their way along the plane between the glass and plasma jelly. Such cells are very suitable for microscopical observation, and studies of the cells carried out under direct illumination have already been reported.<sup>1</sup> The thin film of growing cells is peculiarly suitable for observation by dark-ground illumination, and by this method beautiful and instructive pictures of the living vegetative cells can be obtained. The technique for this examination requires considerable experience and care, but presents no great difficulty to workers familiar with critical microscopic technique.

<sup>1</sup> A demonstration given to the Section of Pathology and Bacteriology of the Annual Meeting at Nottingham on Friday, July 23rd, 1925.

The following description of the apparatus and methods used for the examination and study of tissue cells by dark-ground illumination may be useful to workers not familiar with this method of microscopic examination.

The cultures must be put up on thin glass slides not more than 0.6 mm. in thickness, and the thickness of the whole preparation must not exceed 0.9 mm.

The tissue may be cultivated in plasma or in plasma and embryo extract on a cover-slip sealed over a hollow-ground slide, and just before examination the cover-slip can be removed and transferred to a thin glass slide on which a drop of Tyrode or other suitable saline solution has been placed; the cover-slip is then sealed down with paraffin wax to prevent evaporation.

A better method, however, is to cultivate the tissues directly on the thin glass slide. By this means it is possible to use cultures growing in fluid as well as semi-solid media. Care must be taken not to press upon the cover-slip while handling the cultures as pressure may damage the growing cells. Too violent excursions of the oil-immersion objective will also cause damage.

The microscope we have used is a Zeiss microphotographic stand with mechanical stage and sliding objective carriers. Before any attempt is made to use the dark-ground condenser the objectives must be carefully centred. A triple nosepiece is to be avoided, as the three portions are seldom in exact optical centre and cannot be adjusted. The sliding carriers, on the other hand, are readily adjusted, and with a little experience give no more trouble than a triple nosepiece. Each objective must be centred and kept on its own carrier.

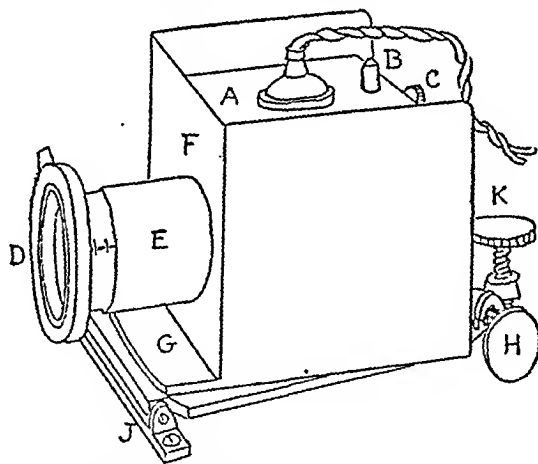


FIG. 1.—Diagrammatic drawing of lantern. A, Metal shield bent at right angles holding a pointillite lamp; the whole slides on B, a steel rod to which it is fixed with a thumbscrew C. This arrangement allows the lamp to be moved as required for centring with the lens D. The lens carrier slides in a sleeve, E, fixed to the front of the body of the box F. The top and back of the box are open and the bottom is made of a cast brass plate, G, to which is fixed the steel rod which carries the lamp-holder. This plate is pivoted at its centre and rides on a similar cast brass plate, movement laterally being obtained by the thumbscrew H. The lower plate is in turn pivoted at its forward end to a bar, J, fixed to the table, so that the whole lantern can be tilted up or down by the thumbscrew K.

The following instructions for centring the objective may be useful to those not accustomed to critical work.

1. Swing out the lower substage diaphragm, and the Abbé condenser, leaving the upper substage diaphragm in position; close this as far as possible.
2. Place the 2/3 inch objective with its sliding carrier in position and, using diffuse light, focus on to the aperture of the diaphragm.
3. Centre the 2/3 inch objective to the aperture of the diaphragm, using the key.
4. Replace the Abbé condenser, and place a centring slide on the microscope stage.
5. Focus on to the cross-line of the centring slide with the 2/3 inch objective and place the cross-line exactly in the centre of the field.
6. Remove the 2/3 inch objective and replace by the 1/8 inch, and later by the 1/12 inch, each on its own carrier. Using the key, centre these lenses to the cross-line.

All the lenses are now centred to the aperture of the upper substage diaphragm and hence to each other.

The source of light used for illuminating the object is a pointolite of 100-c.p. This is fixed in a special lantern constructed of metal plate, made by Maffin. In the front is a Zeiss aplanatic condensing lens (Model 1c.) with iris diaphragm. The lamp is capable of being centred to this lens, and the whole lantern with the lamp can be tilted either vertically or horizontally as one unit. Fig. 1 will make the construction of this lantern clear.

The examination of the cultures is made in an incubator regulated by a Hearson thermostat and containing the microscope (Fig. 2).

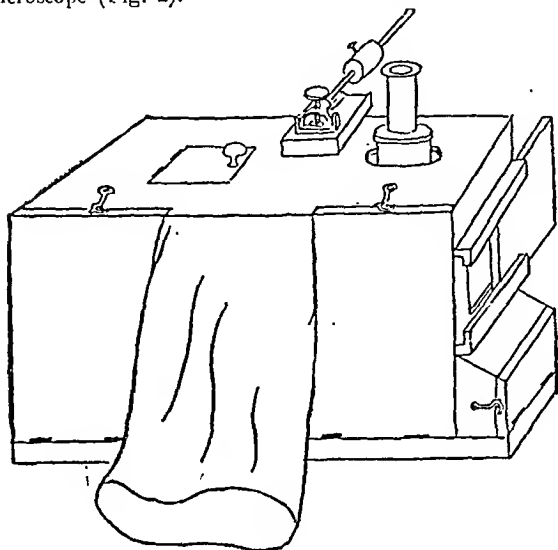


FIG. 2.—Incubator arranged for use.

The incubator consists essentially of a wooden box 20 inches long by 9 inches wide by 12 inches high.

The microscope is placed inside close to the right-hand end in order that a camera lucida attachment with drawing-board may be employed. The tube of the microscope projects through a hole 2 inches in diameter in the top of the box. This hole has its centre  $3\frac{1}{4}$  inches from the front and 3 inches from the right-hand side. To the left of this opening a square is cut out of the top of the box and fitted with a sheet of glass through which a view may be obtained of the interior. This square is fitted with a hinged wooden door. In the front of the box opposite the mirror of the microscope is a window, fitted with glass, through which the light is admitted to the microscope from the lantern.

The back of the box is divided vertically into three equal portions, the left and right being closed with a door, hinged at the bottom, giving access to the heating elements and the microscope respectively. The middle partition is open, and is fitted with a velvet sleeve through which the microscope is manipulated.

The heating elements consist of two 16-c.p. carbon filament lamps run from the mains, one of which is kept permanently alight and the other is connected in series with a Hearson's capsule thermostat regulated at  $38^{\circ}\text{C}$ . The connexions required are shown in Fig. 3.

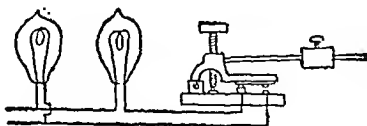


FIG. 3.—Heating elements showing connexions.

The capsule is protected from the direct radiation of the lamps by means of a small cardboard tray suspended beneath it.

The mirror in the model of the microscope employed is ordinarily attached to the substage condenser, so that it moves with it. When a focused source of light is used this form of apparatus is inadmissible, and the mirror is

therefore removed from the microscope and attached to the floor of the box on a sliding base. The microscope is placed so that it stands vertically over the mirror, and is kept in position by a horseshoe-shaped plate of lead 1 inch thick, cast so that it fits the base of the microscope stand (Fig. 4).

This arrangement keeps the microscope rigidly in position during the various manipulations required, and at the same time allows the whole instrument to be moved at will and its position adjusted as required.

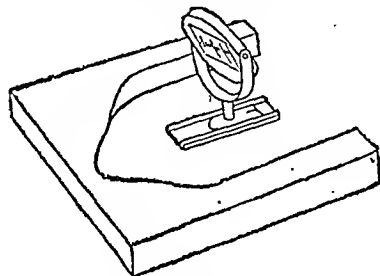


FIG. 4.—Mirror and lead plate to fit base of microscope stand.

The dark-ground condenser is made by Swift with numerical aperture 0.95. The objectives used are  $1/8$  inch oil immersion by Swift with numerical aperture 0.95, and a  $1/12$  inch objective by Zeiss suitably stopped. The selection of the objectives is of considerable importance. Most of the stops supplied to bring down numerical aperture of the ordinary  $1/12$  inch do not fit closely to the back of the lens, and thus perfect definition cannot be obtained. The authors advise an objective of the correct numerical aperture. The usual eyepieces are used, and also an X1 Telangie by Swift.

The apparatus is assembled as follows. The pointolite lamp is first adjusted in the lantern so that the centre of the lens is in alignment with the point of light of the lamp. To ensure this the light is focused through the lens on to a strip of white paper about 4 feet away, and the bright image of the glowing tungsten ball of the lamp is thus readily obtained. The lamp is now moved vertically and horizontally as required until the image of the tungsten ball is clearly seen surrounded on all sides by an equal halo of coloured light. It will be found that as the lamp is moved the halo moves to one or the other side of the circle of light, and a truly centred beam is only obtained when the coloured halo is seen encircling the light evenly. The lamp is now fixed in front of the microscope incubator and focused on the mirror at such a distance that the size of the tungsten ball on the mirror is not larger than 10 mm. in diameter. This is ensured by pasting upon the concave surface of the mirror a piece of paper with a scale marked upon it as shown in Fig. 1. The mirror is now turned round so that the plain surface receives the light. The microscope, with all the lenses removed, is now adjusted so that the light passes directly upwards through the draw-tube. This is a detail of great importance and requires practice. The iris diaphragm of the substage is placed in position. The beam of light is now thrown upon the ceiling through the draw-tube, and by alternately opening and closing the iris diaphragm of the substage and that in front of the condensing lens of the lantern it is possible to judge if the beam of light from the lantern is passing centrally through the draw-tube; the two circles of light, which may be caused to increase or decrease in size by opening one or other of the iris diaphragms, must coincide exactly and the circle of illumination must show relatively sharp edges, blurring on one side or the other indicating that the beam of light is not central. When the light has once been centred, the lantern, the microscope, and the mirror must on no account be moved again or shaken. If accidental movement occurs during subsequent manipulations the whole process of centring must be repeated. A piece of white paper is not inserted on the top of the substage about  $3/4$  inch below the opening in the microscope stage. The light is carefully focused on this sheet of paper by moving the condensing lens on the lantern in or out, care being taken

that the lantern is not moved while adjusting the lens. The image of the tungsten ball on the paper should not exceed 10 mm. in diameter. The paper is now removed and the iris diaphragm of the substage swung out and the dark-ground condenser gently placed into position on the substage. Great care must be taken not to touch the mirror or to move the microscope while this manipulation is being carried out. The condenser is then racked up to the level of the stage. The 2/3 inch objective, which has already been centred, is put in position and a No. 1 eye-piece inserted, into the draw-tube. The surface of the condenser is brought into focus and the rings engraved on the surface are carefully centred by means of the centring screws of the carrier of the condenser. The apparatus is now ready for use.

To examine the cultures, switch on the heating bulbs of the microscope incubator and allow the temperature to become steady at 38° C., if this has not already been done. Open fully the iris diaphragm of the lantern and note again that the dark-ground condenser is centred correctly. Rack down the condenser about 1/4 inch. Take the culture to be examined and on the under side of the glass slide place a large drop of cedarwood oil. Place the slide in position on the stage of the microscope and rack up the condenser until the oil on the slide touches the top of the condenser. Air bubbles must be avoided. Focus the central fragment of tissue in the culture and clamp slide to the stage. Rack up the condenser; a dark circle gradually appears in the centre of the field, which becomes smaller as the tungsten ball is raised, and suddenly a very bright image of the condenser should be exactly in the fragment. This bright image of light is seen truly centred through the fragment. When the 2/3 inch objective is removed carefully and replaced either with the 1/8 inch or the 1/12 inch oil immersion as required. The iris diaphragm of the lantern is closed to an opening of about 1/8 inch in diameter and the oiled objective brought down and focused on the central fragment. The condenser is now racked slowly up, and if the centring is true a small area of light will be seen in the centre of the field. If the centring is not quite true this area of light will appear to one side of the field, and a slight adjustment of the objective with the key of the carrier is permissible in order to bring it to the true centre. If, however, the area of light is quite outside the field then the apparatus must be again set from the beginning. The worker is warned that it requires considerable practice to obtain this true centring, but unless the necessary skill is acquired good results cannot be expected. When the light is correctly centred the culture is moved by the mechanical stage so that cells at the edge of the central fragment which are in single layer are brought into the field. To obtain good definition the objective and condenser are carefully focused and the light of the lantern is adjusted by the iris diaphragm of the lens. A mercury green line filter placed in front of the lantern renders the light approximately monochromatic and increases the sharpness of the image; in addition, light of this colour is useful in preventing eye-strain.

It should be noted here that the dark-ground method of illumination shows up one thing only, and that is the interface between two surfaces of different refractive index. When each of the substances on either side of the interface is clear then the interface is shown as a white line with lackness on either side of it. If, however, one of these substances should contain, for example, particles of a different refractive index, then this substance will appear bright light will show up as a cloud the presence of particles which, owing to their fineness, a less bright light would leave as a complete blackness.

Cultures of tissue cells of about eighteen to twenty-four hours' incubation which are growing well should be selected for examination. In such cultures the outlines, internal structures, and complex internal movements of the vegetative cells are clearly shown. The vegetative cells when growing upon the cover-slip usually have a feather-like outline. The cytoplasm is clear and in it the various cell structures are seen embedded; the nucleus appears as a clear or rounded body with a sharp outline and contains

one or two distinct, slightly opaque bodies—the nucleoli. In the cytoplasm the most prominent objects are small globules of fat which are present in varying numbers in practically all cells cultivated *in vitro*. These fat globules are seen as very bright refractile spheres. The fat globules vary much in size and become larger and more numerous as the culture grows older. A varying number of fine somewhat refractile granules are also seen; these are quite small and not so bright as the small fat globules. The mitochondria are clearly seen in the cytoplasm as fine threads which vary greatly in length. The centrosphere shows as an obscure area on one side of the nucleus. The cell undergoing mitosis is not well shown by dark-ground illumination, as such cells become spherical in shape and thus are not so suitable for critical study as the flattened vegetative cell. The fat globules, however, and some of the small granules and some of the mitochondria can usually be made out lying round the clear spindle-shaped area of protoplasm, in which can be seen indications of the chromosomes, especially when the cell is at metaphase.

The structures described above can be well seen in cultures examined under dark-ground illumination at room temperature without the use of a microscope incubator, but the fascinating movements of the cell and its structures do not take place under these conditions.

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## Memoranda: MEDICAL, SURGICAL, OBSTETRICAL.

### A METHOD OF REDUCING CERTAIN DISLOCATIONS OF THE SHOULDER.

I was recently called to a colliery ambulance room to see an old man—an underground haulier. He was sitting on a bench with the right arm hanging down by his side, and he was apparently in great pain.

Half an hour before the patient had been pushed by his horse and had fallen against the side, receiving a sharp blow on the upper and back part of the right shoulder-joint. He had "felt his arm go out" and had "felt sick." He had a very obvious subcoracoid dislocation of his right shoulder-joint. He had never before had a dislocation.

Stripping him of his shirt, I tried Miller's method of reduction with countertraction by means of a towel round the chest for some time, but without success. I then carried out Kocher's manoeuvres, but these also failed to effect reduction. I resorted, in turn, to hyperabduction with traction, to leverage with the patient's arm round my waist, and to the heel in axilla method. These were all unavailing. I was about to administer an anaesthetic when it occurred to me to try a simple manipulation of the head of the humerus, which I could feel medial to the biceps and coraco-brachialis muscles. This was immediately successful—despite the fact that the patient was not faint, nor were the muscles relaxed. Further, the successful method caused the patient no pain at all. The plan was as follows (for right shoulder):

1. With the patient recumbent, the right arm is grasped at the elbow and lifted forward and upward until the patient's arm is almost extended above his head. This places the arm in position for movement 2, and relaxes the biceps, coraco-brachialis, and deltoid muscles.
2. With the patient's arm still raised, pressure is applied to the elbow as if trying to make the head of the humerus touch the table. The line of force is thus vertical, from the elbow through the shaft and head of the humerus. At the same time the operator's left fingers are spread out on the back of the patient's right shoulder, while the thumb in front presses the head of the humerus downwards and so helps it to travel back under the muscles whence it came. By this manoeuvre the head of the bone passes back round the neck of the scapula to a position below the glenoid cavity. The dislocation is thus converted into a subglenoid one.
3. The patient's arm is now brought down parallel with the trunk.
4. Finally, with the operator's clenched left fist in the axilla to act as a fulcrum, the patient's elbow is now approximated to the side—when the head of the bone will re-enter the capsule and will be felt—and heard—to slip over the labrum glenoidale into position.

*After-Treatment.*—In this it is important that the elbow on the injured side be well supported, thus preventing the head of the humerus from pressing on the damaged lower part of the capsule.

Pontycymmer, Glam.

YELNOR NEWTON, M.R.C.S.Eng.

## THE GOLD TREATMENT OF TUBERCULOSIS.

## SECOND REPORT BY THE MEDICAL RESEARCH COUNCIL.\*

THIS second report deals almost entirely with clinical experience. It does not attempt a review of the laboratory evidence on what is at the root of the whole inquiry—namely, the action of sanocrysin in arresting the spread of tuberculosis implanted experimentally into animals.

## CLINICAL OBSERVATIONS.

The results are given briefly for each separate clinical centre at which the observations were made. For convenience of reference the after-history of individual patients who were given by serial numbers in the first report<sup>1</sup> is here described under the same serial numbers. No new reference numbers are given for fresh cases described in the present report.

## ST. BARTHOLOMEW'S HOSPITAL (PROFESSOR F. R. FRASER AND DR. C. F. HARRIS).

Eleven cases of pulmonary tuberculosis have been treated or are undergoing the treatment. Two cases of abdominal tuberculosis were treated and one case of lymphatic leukaemia was studied as a control. The cases of pulmonary tuberculosis were all of a more chronic type than those in which the best results are reported from Denmark. One death occurred after a few doses of sanocrysin, which were given only because a fatal issue seemed inevitable. Severe reactions were experienced with large doses, but later it was found that with smaller initial doses at longer intervals the treatment was well tolerated. No striking results have been obtained, but the unexpected improvement in certain cases suggests that sanocrysin may be of service in the early cases of pulmonary tuberculosis or in the fresh spread in more chronic cases. The general impression has been formed that the method of treatment deserves further investigation.

## LONDON HOSPITAL (PROFESSOR ARTHUR ELLIS).

Since the publication of the last report only one new case of pulmonary tuberculosis has been treated. This patient, whose condition was desperate at the time treatment was commenced, improved to a very remarkable extent. The patient had been under observation in hospital for nearly a year and was going very rapidly downhill with hectic temperature, repeated haemoptysis, and severe pleural pain. At his own insistence a course of sanocrysin injections was given. No severe reactions occurred and improvement was rapid and continuous. He became afebrile, pain, cough, and haemoptysis disappeared, his sputum diminished from four ounces daily to slight morning sputum only. He was discharged to a sanatorium and when last heard from some weeks ago was doing well.

The after-histories of the cases detailed in the first report have been as follows:

*Case 1.*—Has been in a sanatorium and is now back at home. His general condition is much the same as on discharge, but the breath is now definitely fetid and the moist sounds at the right base are much more numerous. The cough and sputum have both increased. There are no tubercle bacilli in the sputum.

*Case 2.*—Gradually failed, and died in his home in January, 1926. No post-mortem examination was obtained.

*Case 3.*—Downward progress continued. He died early in June, 1925, five months after the last injection of sanocrysin. Specimens of various viscera were obtained post mortem and sent to an analytical chemist for analysis for gold. The kidney, liver, and colon contained no trace, but in a portion of the lower lobe of the left lung a definite trace of gold was detected, estimated roughly at 3 mg. per 100 grams of lung tissue. The total gold salt used in this case was only 1.5 grams.

*Case 4.*—Recovery from the exfoliative dermatitis eventually occurred. Coincident with this, the exacerbation of the tuberculous process gradually subsided and the patient again became afebrile. She is now able to be up and about, but the physical signs are more extensive and her general condition worse than before treatment was given. It is some three months since she was last seen.

*Case 7 (Control).*—This patient was a case of Hodgkin's disease treated with sanocrysin as a control. The patient died in January, 1926. No post-mortem examination was obtained.

Professor Ellis considers that the value of the serum is doubtful. He suggests that his bad results may have been due in part to serum. All the cases that did badly had very severe serum sickness. It was in the period of resulting prostration that exacerbation of the tuberculous process was particularly manifest.

## ST. MARY'S HOSPITAL (PROFESSOR F. LANGMEAD).

No new cases are reported. With regard to the original cases: *Case 9.*—Convalescence was satisfactory. The patient went to Ventnor for six months, where tubercle bacilli were present in the

sputum at first. Her health is now fairly good. The sputum has been free from tubercle bacilli for some time, and radiograms show that there has been no spread of disease.

*Case 10.*—Satisfactory convalescence. At work as a cannado since August, 1925, and no tubercle bacilli in sputum. A similar recovery had occurred previously, and before sanocrysin treatment, when the patient had been rested in a sanatorium.

## ST. THOMAS'S HOSPITAL (PROFESSOR H. MACLEAN AND DR. G. T. HERBERT).

Ten new cases have been treated with considerable, though it may prove to be only temporary, improvement.

Out of the five original cases which were chosen as being of a mild type, two have relapsed decisively. The after-history of all the original cases is as follows:

*Case 11.*—Ins kept well: no evidence of active tuberculosis, but is under treatment for pityriasis rosea.

*Case 12.*—Went to a sanatorium for three months, until June, 1925; tubercle bacilli in sputum at that time. He was in good health three months later but not at work; then married and moved out of London, leaving no address.

*Case 13.*—Went to a sanatorium for three months, until July 8th, 1925; apyrexial, but tubercle bacilli in sputum at that time. He worked in the country as a grocer's assistant till December, 1925, when symptoms of active disease reappeared. In January, 1926, there was infiltration of both lungs, and in March, 1926, he was admitted to the Lambeth Hospital.

*Case 14.*—Went to a sanatorium for three months, until July, 1925. No further definite symptoms of tuberculosis. The patient is now at work.

*Case 15.*—Lived in the country during the summer of 1925. In September, 1925, was not looking well, but no tubercle bacilli were present in the sputum. Patient had pleurisy of the left side in December, 1925, followed by symptoms of active pulmonary tuberculosis. Admitted to a sanatorium in February, 1926.

## UNIVERSITY COLLEGE HOSPITAL (PROFESSOR T. R. ELLIOTT).

Twelve cases of tuberculosis have been treated, including the four described in the first report. Three were of glandular or osseous infection, and gave no special information. There were seven patients with pulmonary tuberculosis.

*Case 16.*—In the first report it was concluded that the girl had been made worse by the treatment. After discharge from hospital she remained at home in a poor environment. But she is now well and back at work. There are no tubercle bacilli in the sputum, and the disease appears to be completely arrested; an unexpectedly good recovery in view of her originally poor physique.

*Case 18.*—The patient returned to work soon after discharge from hospital and remains well.

*Case 19.*—The boy went to work with very long hours in a factory last autumn. His health broke down and he was readmitted to hospital. There appeared to be more extensive fibrosis in the lungs, but there were no tubercle bacilli in the sputum. He recovered quickly and was then sent to the country.

One new case of pulmonary tuberculosis developed very seriously, with clay-coloured stools, after two doses of 0.5 and 1 gram respectively. Recovery from the hepatitis was slow and treatment was therefore discontinued. Such toxic jaundice appears to be rare in Danish experience. A similar but fatal case was described (Case 8 from St. Mary's Hospital) in the first report.

Another patient with extensive caseous lesions in the left lung and only two months' history improved with great rapidity under treatment. The fever ceased after two severe rash reactions, and ultimately the tubercle bacilli disappeared from the sputum. Three months later a relapse occurred at a sanatorium during December. The patient was readmitted to hospital, with further spread in the lungs and tuberculous laryngitis. A second course of sanocrysin failed to evoke a rash or high pyrexia. The patient is still under treatment and appears to be improving only slightly.

One control case was tried, a woman aged 25, with prolonged fever ranging daily from 99° to 101°, and high eosinophilia—60 per cent., of unknown cause. Three injections of 0.5 gram each were given; no rash resulted nor any obvious temperature change.

The best results in tuberculous infections seem to have been obtained when the patient reacted strongly with fever and a rash. Professor Elliott concludes that the treatment is definitely beneficial in early cases without extensive fibrosis, though it is rarely capable of effecting a rapid and complete arrest of tuberculous disease.

## GUY'S HOSPITAL (DR. G. MARSHALL).

Sanocrysin had not been used at this centre at the time of the first report. During the last year eight cases of pulmonary tuberculosis have received treatment. All these cases had extensive pulmonary disease and were of some length of duration. Three cases showed apparent arrest, two cases improved, while the remaining three cases were unimproved. In no instance was disease extended by the treatment. The improvement resulted after other modes of treatment, such as rest and sanatorium, were tried and failed. Severe reactions with exanthem and albuminuria have been observed, although small doses were employed. One case of infective endocarditis, in which the spleen diminished in size and became impalpable, ceased treatment after eleven doses.

\* The first report was published in the BRITISH MEDICAL JOURNAL on April 18th, 1925 (p. 735).

effects might be termed "gold" effects and "tuberculous" effects respectively. The evidence suggests that the focal reactions, the increase of sputum, the papulo-cythematosus skin eruptions, the pyrexia, and the gastric symptoms, especially vomiting, which the authors noted accompanied the earlier doses of sanocrysin in a course, may be regarded as "tuberculous" effects. On the other hand, the albuminuria which occurs late in the course and in association with de-quarantine skin lesions and many of the alimentary symptoms (stomatitis and diarrhoea), appears to be a "gold" effect due to irritation accompanying the accumulation of the metal in the renal cells. The gold salt, therefore, appears to produce two types of effect in the body: the "specific" action on tuberculous areas which is immediate, and the cumulative poisoning seen in the excretory organs. The authors add that two questions still remain unsolved—namely, the cause of the early decline of the "tuberculin" reactions, and



the reason for the failure of later doses of sanocrysin to evoke albuminuria.

(2) The immediate effects on the health of the patients have varied greatly. The majority have experienced more or less discomfort and some have suffered severely. The gastric symptoms and tendency to severe dermatitis, combined with the almost universal and often considerable loss of weight, make the treatment a matter not lightly to be undertaken in its present form. To avoid the risk of producing severe reactions it would appear desirable to aim at a smaller concentration of sanocrysin in the system, either by reducing the size of the dose, or by lengthening the interval between the doses, or by combining these suggestions. In several cases a striking reduction has occurred in the number of tubercle bacilli in the sputum. Negative films became more frequent in some patients, but in no instance did the bacilli permanently disappear from the sputum, and, as yet, no patient can be said to have had his disease arrested. Apart from the loss of weight produced no patient has been harmed by the course of treatment. The one death that occurred is not ascribed to the treatment, as it took place after the full course had been completed with apparent benefit at first resulting. Some degree of clinical improvement has been observed in the greater proportion of patients who underwent the full course. No dramatic change has occurred, but there has been in several instances a steady advance at a greater rate than might otherwise have been expected. This improvement has not in all cases been maintained; some of those who did best during the course have since retrogressed, while others who did not seem immediately benefited have since greatly improved.

(3) The authors conclude their report by some observations on the intramuscular administration of sanocrysin. They formed the impression that this method presented some advantages—for example, less albuminuria and less rapid loss of weight—and that further experience was likely to reveal ways of still further excluding the discomfort of the procedure.

#### PUBLIC HEALTH DEPARTMENT, EDINBURGH (DR. J. GUY).

Dr. Guy has treated 10 cases of pulmonary tuberculosis with sanocrysin. The first 6 were given small and gradually increasing doses; and the last 4 received large doses but not the full doses recommended by Professor Moellgaard. In the first 6 of the series sanocrysin did not appear to have any appreciable effect for good or ill. In the last 4 there appeared to be some slight improvement and lessening of the sputum. This, however, is a regular feature of sanatorium régime. Dr. Guy considers that so far there does not appear to be any marked curative effect from sanocrysin. He infers that the drug has some specific effect on the tuberculous lesion, as in the last 4 cases treated signs of increased moisture were commonly noted after the injection. He regards sanocrysin as worthy of further trial.

#### NORTHERN IRELAND (DR. A. TRIMBLE AND OTHERS).

A committee was constituted last year to supervise the trial in the Belfast area of sanocrysin as a method of treatment of tuberculosis. The reports from the three institutions selected for the test are thus summarized:

**Belfast Municipal Sanatorium (DR. PERCY WALKER).**—Six male patients treated. Each patient received seven injections, totalling 6.5 grams each. All these patients were suffering from pulmonary tuberculosis (Turban-Gerhardt: third stage). Result: 1 case appears to be arrested, 2 are definitely greatly improved, the sputum being now negative as regards tubercle bacilli, 2 are improved clinically but the sputum is still positive. One case shows no change. A second group of 3 patients is still undergoing treatment.

**Forster Green Hospital (DR. B. R. CLARKE).**—Twelve cases of pulmonary tuberculosis treated, 11 with tubercle bacilli in the sputum. Results: The sputum of 4 patients became negative; 4 patients had a diminished number of tubercle bacilli, and in 2 patients there was an actual increase of tubercle bacilli after treatment. Clinically 8 of the 12 patients showed improvement, the condition of 2 was unchanged, and 2 appeared to be worse as a result of the treatment. Five further cases are undergoing treatment.

**Royal Victoria Hospital (DR. S. I. TUBBINGTON).**—Four cases of pulmonary tuberculosis treated. Three cases were definitely improved; in 2 of these cases tubercle bacilli disappeared from the sputum after treatment. The fourth patient had a profound reaction after the third dose of sanocrysin and died from toxæmia. Serum was used in this case, but it had no beneficial effect.

The conclusions of the Belfast Committee are as follows:

1. Sanocrysin is a distinct therapeutic advance in the treatment of tuberculosis in definitely selected classes of cases.
2. The undoubtedly good results that have been obtained must, however, be observed for a further term—say, at least one year—to see whether the results are permanent, or whether further courses are advisable.
3. Sanocrysin as a method of treatment is not suitable for general use, and with our present limited knowledge it should only be used in institutions equipped with the necessary apparatus, and under the direct control of sufficiently experienced physicians, with expert knowledge in the treatment of tuberculosis.
4. Further research is necessary in order to determine: (a) the class of case most likely to benefit by this form of treatment; (b) the correct size of dose for individual patients; (c) the intervals between the doses; (d) the length of the whole course of treatment; and (e) the significance of the clinical phenomena which would seem to indicate the discontinuance of the treatment.

#### GENERAL SUMMARY.

Experience in the selection and treatment of cases has greatly lessened the dangers attending the use of sanocrysin. The first collective report by the Medical Research Council described 2 deaths directly caused by sanocrysin out of a total of about 30 cases treated. This second report records only one similar fatality (Royal Victoria Hospital, Belfast) in a much larger number of cases treated—about 140. But the risk remains. There may be sudden or progressive exaggeration of the more serious symptoms of the tuberculous infection, or there may be a poisoning of the kidney, of the liver, and even of the skin with a drug dermatitis which is quite distinct from the relatively transient rash. All these dangerous features are far more liable to arise in the sanocrysin treatment of tuberculous patients than in the use of salvarsan for syphilitic or other infections. All patients under treatment must, therefore, be in bed and under close medical control.

In the last twelve months it has become the custom to give smaller doses of sanocrysin and at longer intervals than those used with the cases described in the first report. The patient is thereby spared from dangerous reactions and even from any great discomfort. It is, however, debatable whether this attenuation of the treatment for the sake of the patient's immediate welfare may not have the disadvantage of lessening the final benefit. The arguments on either side are given in two recent books by Secher<sup>1</sup> and Würtzen<sup>2</sup> respectively, when describing clinical results obtained in Copenhagen.

The special serum has rarely been used, and there is no fresh experience to record about it. Nor is there much more evidence upon the question whether a well marked reaction to sanocrysin can be accepted as a diagnostic test for tuberculous infection. It would, indeed, appear from the reactions seen by Fournier and Mollaret<sup>3</sup> in the treatment of human syphilis with a similar gold salt that such reactions are not specific for tuberculosis. As in the first report, it was again evident that there may be an advantage in collecting evidence from different clinical observers as to the possible benefit of sanocrysin treatment. Some thought that nothing more was seen than might have been expected as the result of prolonged rest under hospital or sanatorium control. But others were very emphatically of the opinion that sanocrysin did cause unusually quick amelioration of all the features of a tuberculous infection, especially in the lessening of sputum and disappearance of tubercle bacilli. The question of secondary infections of the lung tissue by other organisms has not been dealt with. The results described are considered only in their broad aspect of clinical recovery or deterioration, for there are no laboratory tests yet available for analysis of any possible changes in a patient's powers of resistance to tuberculous infection.

The Medical Research Council received, by the generous courtesy of Professor Moellgaard, a free supply of sanocrysin and serum for trial in Great Britain over a period of twelve months. The trial has shown how dangers may be averted, and, in the opinion of some workers, it has given indication that along the line of some such substance as sanocrysin there is definite hope of a drug treatment that will check the progress of a tuberculous infection and allow the patient's natural powers of resistance better play in finally arresting the disease. These various clinical reports, for which the Council is greatly indebted to the observers, will suffice to indicate to the medical profession the general need for extreme care in the use of sanocrysin, and also the particular types of infection in which it may be expected to cause some improvement.

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- <sup>5</sup> C. H. Würtzen: Recherches sur les effets de la Sanocrysin. Copenhagen, 1926 (Levin and Munksgaard).
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## British Medical Journal.

SATURDAY, JULY 24TH, 1926.

### THE PRESIDENTIAL ADDRESS.

THE address of the President of the British Medical Association, delivered this week at the Annual Meeting at Nottingham, deals with many thought-compelling problems of medical work. Mr. Hogarth addresses himself primarily to medical practitioners. His aim is to discuss certain problems with his colleagues. But since these problems concern the public weal the address may be read with profit by a wider circle than the medical profession, as we have no doubt it will.

The part of the address that will make the largest appeal to the student of the times is the exposure of two apparently opposing tendencies to be found in current expressions of opinion outside medical circles. On the one hand there is a cry for greater freedom of medical practice. The public, it is said, is weary of medical etiquette and of the shackles of order and precedent. Some, who have the ear of the public in literary and dramatic affairs, deride the *Medical Register* and all it stands for, and protest against its continued limitation to those who, as diligent students, have sought to make themselves familiar with the human body, its form and functions; and with disease, its manifestations and mastery; and as they deride the hard-trodden road of achievement, so they exalt the unknown and mysterious, the eloquent and blatant. Some of these, in the words of the President, are "good people, invincibly credulous and optimistic by nature, who chatter about cures and treatment as others chatter about politics, and on whose ears well syllabled words like 'osteopathy' and 'manipulation' fall with a sweetly modulated cadence of solace and hope. The other class consists of the ingenious rebels against all authority but their own, the sophists of the day." There is in the cry of these persons something of the blood-stirring appeal of the revolutionary which often strikes a spark in even the sanest minds. On the other hand, there is the direct reverse of this attitude to be found among a large section of the community. This is not a revolt, it is a reaction, a tendency to revert to a mediaeval attitude of mind which yearns after the super-authority or something whose efficacy is supernatural. It seeks to harness some ineffable influence to the chariot of progress, which seems to them to drag heavily and advance too slowly.

Both the revolutionary and the reactionary seek short cuts to ends which are equally the aim of scientific medicine. But the methods of attainment differ as the poles. Medicine aims at attainment by continuous experimentation and verification; it would make sure of the stability of each step of advance. Whereas the revolutionary and reactionary would take haphazard leaps into the unknown, with results the experience of generations has shown likely to be disastrous to those who are ministered to if not to the ministers of these cults. The President wisely shows that, steadfast as modern scientific medicine is in its adhesion to the road of experiment, observation, and verification, this steadfastness does not exclude, but most emphatically includes, a constant vigilance and preparedness "for the crash of old-established notions and for restless movements of insurgence along boundaries which once appeared to have been fixed

for all time." And, also, the ever-present recognition that "there is a certain healing power, a true *vis medicatrix*, in religion as in nature, . . . some serenity of mind in the patient, . . . some tranquillizing influence of the soul upon the physical stress and tumult of the senses—beneficent, soothing, healing activities in which [the doctor] and his art have had little or no share."

On more general questions the President's strictures on unbalanced rejoicings at improvements in bills of mortality are most pertinent. "What good is there," he asks, in the mere prolongation of life either to the individual or the nation "unless there is a real capacity to enjoy it"? Our aim must be to raise the general standard of health among all ages of the community. But we still have among us "an enormous mass of bruised and damaged humanity which never enjoys robust health, which is continually ailing, . . . and never approaches full industrial efficiency." He observes that it has been the gradual recognition of these facts that has brought about a community medicine—an effort on the part of the State to concern itself more and more with the health of the nation. The establishment of the Ministry of Health bore witness, not to the sudden discovery of a new truth, but to the proved results of much admirable work which had been done in the previous half-century and to the need of its more resolute prosecution. Pure water, good drainage, better housing, industrial hygiene, compulsory notification of disease, licensing laws, all proved their effectiveness.

The scope of preventive legislation is almost limitless, and Mr. Hogarth sees the possibility of the State intervening more and more in the interests of public health. But with advantages he sees possible risks. A logical development in a socialist State might make all medicine directly subservient to the State. He concedes that such a system of State medicine might be worked, but adds: "Whether it would be as efficient as our present system, whether it would be as acceptable to the general body of the people, and whether the vastly increased cost would be repaid by equivalent advancement of medical knowledge or improvement in the public health, there is room for the very gravest doubts." Nowhere, he believes, is such a conclusion more likely to be realized than in the hospitals. He does not suggest that the hospitals would wither if the voluntary principle were abandoned. They would still multiply and prosper. Their orderly routine might possibly show an even more brilliant and imposing efficiency. But "there is something inherent in officialdom which freezes the genial current of the soul, and thaw it as you will by the application of whatever new principles of kindness and mercy it can never be thawed right out." That there must be changes in our hospital system he clearly recognizes. There must be close co-operation between hospitals; the elimination of that besetting sin of charitable effort, overlapping and wasteful management; and searching criticism of accounts by business men. Again, he points out that the modern voluntary hospital is no longer "the lazar-house of the destitute, the place to which homeless and plague-stricken outcasts crawled to die, or into which they were herded if they seemed too noisome and dangerous to be tolerated at large." The idea of the modern voluntary hospital is far larger and finer. The primary aim of care for the poor is in no way shelved or neglected. But the hospitals, from being mere infirmaries, have become the centres of the best medical and surgical skill in the areas they serve. So it is certain that we shall see the hospital idea still further expanded in the near

future, through a steady extension of the principle of the paying ward, and even of the paying hospital, for the use of the patient who pays according to his means. The interests of the middle-classes deserve attention no less than those of any other class, and he does not think that the charitable donor is likely to object to middle-class patients receiving a share of the fruits of his charity. "He had a much more valid grievance against those who abused the freedom of the hospital and never contributed a penny to its funds." In his view of hospital development the President, we think, gives correct expression to the growing volume of opinion among all classes of the community, a fact that is illustrated by the recent paper by Mr. Sanctuary, the administrator of the Radcliffe Infirmary at Oxford, read before the Oxford Division of the British Medical Association, and reported elsewhere in this issue (p. 170). Mr. Sanctuary took an even bolder line: he urged that the voluntary hospitals should be available for all—the poor, the middle classes, and the rich alike, each paying according to their several abilities, and the doctor receiving the remuneration due for his services.

There is much matter for thought in this Presidential Address. It is eloquent because it is thought-compelling, and we believe also because it is of the quality of fruitful thought in that it stirs to action.

## ANNUAL MEETING NOTES.

### THE ANNUAL REPRESENTATIVE MEETING.

*Friday, July 16th.*

FULL reports of the first two days' proceedings of the Representative Body will be found in this week's SUPPLEMENT. The short notes that follow are meant to serve merely as an informal guide to some of the discussions and decisions.

The Representative Body met on Friday, July 16th, with what promised to be a "record" attendance, and with an agenda which, on the face of it, was probably the least controversial presented to the series of meetings held since the war. Accordingly, the debates throughout the day were somewhat discursive, and less progress than might have been hoped for was made by the evening. This is not to say that the matters discussed lacked interest, but merely that they provoked little controversy. The outstanding feature of the day was, of course, the report by the Chairman of the Organization Committee on the organization of the profession in South Africa, and the adoption by acclamation of the resolutions which set the final seal of approval on the settlement negotiated by Dr. Cox during his South African tour. Throughout Dr. Morton Mackenzie's analysis of the position as it had developed last year and his summing up of the steps by which obstacles once apparently insuperable have been surmounted, and throughout the speeches of the South African representatives and Dr. Cox's reply to the warm congratulations addressed to him, there was manifest a strong sense of the reality of the difficulties to be met, the danger of failure, and the solidity of the success achieved. But there was also a full appreciation of the fact that it was the spirit of true statesmanship displayed by the South African leaders that has rendered possible professional unity in South Africa under the auspices of the newly formed body to be known as "The Medical Association of South Africa (British Medical Association)." In the cause of that unity, and in the public interest, they, in the words of Dr. Morton Mackenzie, have given freely and as freely recognized the concessions made by the Association at home. It was a happy augury for the future that the report was made under the flag presented by the Wit-

watersrand Branch for display in the Great Hall of the House of the Association. Apart from the presentation of the South African report the session was hardly eventful. The amendments to standing orders governing procedure at the present meeting were adopted as a matter of course, and it may be hoped that some way of regulating the reservation of seats in a manner which will appeal to the collective sense of the representatives will be found by the Agenda Committee before next year. On the Chairman of Council's presentation of the several reports and memorandums before the meeting, the main items of interest emerging were the list of gifts presented to the Association during the past year, and the honorary membership conferred by the meeting on Dr. Hall-Edwards. Under the heading of finance there was enough discussion to indicate a healthy interest in the subject, but no substantial criticism was advanced. The discussion did, however, serve to clear the minds of representatives as to the extent of the Association's financial contributions towards the advancement of science, and the means by which it seeks to serve this end. The chief interest centred in the cordial expression of appreciation of the outstanding services rendered by the Building Subcommittee, both in regard to the Association's new headquarters and the disposal of its former house. It was only with a portion of the Science Committee's report that a point of sharp difference of opinion, or perhaps rather of sentiment, was reached. Here there was real danger that the efficacy of the scale for non-professional teachers and laboratory and research workers might be destroyed by motions designed to meet the hard cases of struggling institutions. The afternoon session opened with a sharp skirmish between those who, in the words of a critic, were either not trying to be heard or not trying to hear. As the outcome of a debate on the constitution of the standing Charities Committee the principle of territorial representation received general approval. A suggestion from Dr. Fothergill that in order to save time he should deal with two motions from Brighton together was very well received—possibly as a hint for others to follow. The discussion of those motions showed how often it may happen that the same idea arises both centrally and locally, and illustrated once again the activity of Brighton in exploring new fields of utility for the Association—in the one case co-operation with other professional societies in this country, in the other with foreign medical societies. The session closed with an unexpected outburst of feeling elicited by the old question of the length of time for which a member may retain books borrowed from the library. The solution accepted on the suggestion of the Chairman of Council appeared to the meeting generally to be both reasonable and practicable.

*Saturday, July 17th.*

The Representative Body met on Saturday with the prospect of a short session, though the agenda included at least three matters in which lay as well as professional opinion had been considerably exercised of recent years—namely, hospital policy, psycho-analysis, and the constitution and functions of the General Medical Council. Under all three heads definition of the points at issue and elucidation of the facts of the case, as opposed to surmises regarding the position, formed probably the most important work accomplished. The resolution on the treatment of accidents in hospitals was accepted as an uncontroversial application of the existing policy of the Association; but that relating to hospital case sheets, involving on the one hand ethical considerations, and on the other the danger of impairing practical efficiency by the rigidity of definition, was more debatable. Here the recommendation of Council was accepted as a necessary safeguard of a position open to attack, and as the nearest approximation to maintaining the relationship of doctor and patient as it exists

in private practice. The question of payment of the visiting consultant staffs of Poor Law hospitals raised the old issue between the dangers and the advantages of laying down any definite standard of remuneration. The acceptance of definite minima for services rendered on an attendance basis, and the remission to the Council of the question of rates for annual contracts, was probably the utmost advance that could be made in the circumstances. The discussion of psycho-analysis showed a marked division of opinion, not so much on a matter of principle as of practical politics. All were probably in sympathy with Dr. Woodroffe's statement about the difficulties of the general practitioner in this connexion, and with the desire to narrow as soon and as effectively as possible the existing field for misunderstanding. But those who followed Dr. Langdon-Down and Dr. Hawthorne in their opposition to the motion felt, as Dr. Buist briefly suggested, that a scientific association should work scientifically; knowledge was wanted before opinion, and the requisite knowledge on this subject did not exist. This was the assumption underlying Dr. R. G. Gordon's clear and informative speech. There seemed to be some division of opinion also as to the scope of the functions of the British Medical Association in connexion with inquiries of this nature, and as to the procedure proper to them. While the opponents of the Sussex motion argued effectively, Dr. Parry was successful in his determination not to be tied down to the original proposition brought forward at Bath, which the Sussex representatives had explicitly abandoned in favour of the present proposal. The discussion on the General Medical Council served two good ends. It allowed expression to a considerable and well founded feeling of dissatisfaction with the attitude taken up by certain sections of the public and the press, and permitted a vindication of the manner in which that Council had faced the resulting position by reference to the facts. It was an interesting commentary upon the theory of public transaction of business, as opposed to secret deliberation, that whereas the members of the lay press were very naturally requested to withdraw in order to ensure freedom of statement on the part of the members of the General Medical Council who explained its methods and machinery, when these statements had been made it was found that their publication would be definitely in the public interest. The ending of the debate by Dr. Dain's motion to proceed to the next business was an excellent example of the statesmanlike use of that method of procedure as opposed to its more frequent abuse in other assemblies. The installation of a microphone and "loud speakers" during the luncheon interval was the outcome of a protest from the back of the hall to the effect that a motion, thrice read to the meeting, had nevertheless not been heard by many members when the vote was taken. The immediate result was to allow the main body of representatives to hear those addressing them, but the speakers became forthwith wholly inaudible to the press and the platform and the front rows of the audience. When this had been adjusted Dr. Buist stood up to raise a diverting point of order—namely, to inform the Chairman that every "aside" upon the platform had become clearly audible at the back of the hall! Apart from such minor embarrassments, it appeared that the introduction of this device enabled the Representative Body to follow with closer attention the conduct of its business.

#### LUNCHEON TO OVERSEA REPRESENTATIVES.

On the first day of the Annual Representative Meeting the officers of the Association and the Chairmen of the Organization and Dominions Committees gave a luncheon party at the Victoria Hotel to welcome the representatives of oversea Branches and Divisions who are taking part in

the proceedings at Nottingham. Dr. H. B. Brackenbury, Chairman of the Representative Body, who presided, said how glad he and his colleagues were to have this opportunity of making the personal acquaintance of oversea members. Their affairs were constantly before the Association at home, and formed a most interesting part of its work. The presence of representatives from distant lands helped towards that consolidation of the profession in every part of the Empire which the Association had at heart. Dr. K. B. Alexander (South Africa), in a few words of acknowledgement, spoke of the great value of personal meetings and discussions, and quoted the success of Dr. Cox's visit to South Africa as a case in point. Lieut.-Colonel F. F. Elwes (South India and Madras) said attendance at the Annual Meeting brought home to these from abroad the fact that they belonged to one body which was looking after its members' interests everywhere. Dr. R. J. Bull (Victoria) brought a message of loyalty and goodwill from Australia, and added that his own reception at headquarters and in Nottingham made him feel among friends. The brief and informal proceedings—an agreeable interlude between two busy sessions—ended with the toast of "Our Hosts," proposed by Dr. P. J. Chissell (Ceylon). The joint hosts, with Dr. Brackenbury, were Sir Robert Bolam (Chairman of Council), Mr. Bishop Harman (Treasurer), Dr. Morton Mackenzie (Chairman of the Organization Committee), and Sir Jenner Verrall (Chairman of the Dominions Committee). The other oversea guests present were Dr. H. W. Dyke (Orange Free State), Dr. G. S. Woodman (Mesopotamia), Professor J. W. C. Gunn and Dr. E. A. Seale (Cape of Good Hope), Dr. G. B. McEntehinson (Malaya), Dr. E. F. Hatton (Grenada), and Dr. Gregory Sprott (Tasmania). The company also included the President-Elect, Mr. R. G. Hogarth, and the Honorary Local General Secretary, Mr. A. M. Webber; Dr. J. A. Macdonald, Dr. J. Barcroft Anderson, and Dr. F. J. Gomez; together with the senior officials of the Association, and the Solicitor, Mr. Hempson.

#### THE CHURCH SERVICE.

A special service for the British Medical Association was held at St. Mary's Parish Church, Nottingham, on Tuesday afternoon, when the President, the Chairmen of Council and of Representative Meetings, the Treasurer, and other officers and a very large body of members attended, wearing their academic gowns. There was also a civic procession, headed by the Mayor and the Sheriff of Nottingham. The service was conducted by the Rev. Thomas Field, D.D., vicar of Nottingham, and the sermon was preached by the Bishop of Manchester (the Right Rev. W. Temple, D.D.). The sermon was on the theme that the lower forms of existence had their meaning just in the degree in which they became vehicles for the higher forms. The preacher said that the Divine method of creation had always been, in his conception, to introduce the higher in order to develop to its full capacities the lower, and to reveal within it new elements. The trend of modern knowledge, in his view, made easier and not more difficult the intellectual acceptance of the essence of the old traditions. It was supremely difficult, he said, for anyone of his own generation (the bishop is still in his forties) to understand what all the trouble over evolution in the last century had been about, or was about now. No doubt that was partly because he was brought up in a home where the new thoughts were already familiar, and so his own early training was adapted to them; but he had great difficulty in thinking himself into the position of those to whom such ideas as evolution came as a shock. None the less, it did seem quite plain to him that the essential features of Christian doctrine fitted in with the newer scheme of thought far more coherently than they did with

the more static view which was prevalent in the days of our grandfathers. Speaking of the origin of evil, the bishop said that this question, however curious, was singularly unimportant. It had very little practical bearing on the really important question—not how evil came, but why it was here and what we were going to do now it was here. It was clear that in the Christian view, and, he thought, in what might be broadly termed the historico-scientific view, the struggle with evil was the main element in the significance of life and of reality; and that again was at the heart of Christian conviction. In the closing passages of his sermon the preacher spoke of the very close and intimate relation between those who were primarily concerned with healing evil in its bodily form, which was called disease, and evil in its spiritual form, which was called sin. Both Churchmen and medical men were engaged in the same task and struggle. The closer they could work together the better it would be. The stronger the spiritual life among those concerned with physical healing, the better would it be alike for themselves and for those who profited from their ministrations. He had been specially asked to call attention to the Guild of St. Luke, which existed to band together the members of the medical profession according to the rites of the Church of England. "But whether by that means or other means, just as we need your support on the Church's side if we are not to fail miserably in all that we set our hands to do, so you need, not only for the health of your individual souls, but for the full efficacy of your professional work, the heightening of your own spiritual powers to the utmost by the opening of your hearts to receive the love of God, and by the making of your spirits the vehicle of His Holy Spirit." The offertory was on behalf of British Medical Association charities.

#### "THE BOOK OF NOTTINGHAM."

A beautiful volume, *The Book of Nottingham*, resembling in size and style that issued by Bath last year, has been produced by the Printing and Publishing Committee at Nottingham, and a copy has been given to every member attending the present Annual Meeting. This volume, like its predecessors, is not intended to serve as a guide-book. Its purpose is to make the reader acquainted with the history and natural features of Nottingham and Nottinghamshire from the earliest times to the present day, and to tell him something of the staple industries of the town. A large part of the text is from the pen of Mr. E. L. Guilford, M.A., to whom our readers are indebted for most of the descriptive and historical notes on Nottingham and its neighbourhood which have appeared in recent months in the *BRITISH MEDICAL JOURNAL*. Mr. Guilford's intimate knowledge of local history and his literary skill have been placed freely at the disposal of the committee. His articles are supplemented by a synopsis of the varied scenery and geology of the country around Nottingham, by Dr. W. Alfred Richardson, lecturer in petrology, and Mr. Sydney G. Clift, lecturer in geology, at University College, Nottingham. The book opens with an outline of the history of the town, and in a series of notes on modern Nottingham particular attention is paid to the hospitals and to University College. It is a pity, as the preface remarks, that its growth from a small agricultural community of the Middle Ages to a large commercial and industrial centre has only been accomplished by the covering up of ancient landmarks and ruthless sacrifice of the picturesque for the utilitarian. "Gone are the narrow streets with overhanging gabled houses, and the old gates that marked the confines of this ancient city." Nevertheless, the busy Nottingham of to-day has a good deal to attract the antiquary: and the surrounding country abounds with famous houses, monastic remains, and interesting towns and villages, many of which are here

described and illustrated. In a chapter headed "Famous Men of Nottinghamshire," the exploits of Robin Hood and of the Fools of Gotham are treated in a spirit of becoming levity, and a sketch is given of John of Arderne, the father of English surgery, who practised at Newark from 1349 to 1370, and whose career has been made familiar through the writings of Sir D'Arcy Power. Another medical name honoured in the neighbourhood is that of the physiologist, Marshall Hall, M.D., F.R.S., who was born at Basford in 1790, and practised as a physician in Nottingham from 1817 to 1826. The volume is excellently printed in clear large type on good paper, and the many illustrations, reproduced from drawings, photographs, plans, and old prints, add greatly to its interest and value. The frontispiece is from a portrait of the President, Mr. R. G. Hogarth, and there is a beautiful reproduction in colours of the characteristic landscape by Arnesby Brown, R.A., "May Morning, Nottingham," exhibited four years ago at the Royal Academy: the original, in the possession of the corporation, hangs in the Nottingham Museum and Art Gallery. The chapter describing the leading trades and industries of Nottingham includes, of course, sections on hosiery and lace making, and on the manufactories of the firms of Boots and Player; there is also a note, particularly interesting to us, on the development of modern methods of printing. Everyone knows that the town is famous for its lace, its tobacco, and its chemicals, but in recent times it has become an important centre also of the printing trade, and this volume is a good example of what can be done by a Nottingham firm of printers. Indeed, the chairman and the secretary of the Printing and Publishing Committee—Dr. Eric Snell and Dr. N. P. R. Galloway—write altogether too modestly in their preface about the results of their labours. *The Book of Nottingham* will be valued as a delightful souvenir by everyone who has taken part in the ninety-fourth Annual Meeting of the British Medical Association.

#### THE STUDY OF CANCER.

THE Departmental Committee of the Ministry of Health appointed in 1923 to consider available information with regard to the causation, prevalence, and treatment of cancer has issued two more reports.<sup>1</sup> No. 33 is by Dr. Major Greenwood, and deals with the natural duration of cancer. The data analysed, with all Dr. Major Greenwood's customary care and insight, were obtained from several hospitals, and included 4,238 cases relating to seven primary sites; they are utilized in various ways, but principally to ascertain the natural duration, in order to be able to measure the effects of treatment. Any numerical measure of cure must, Dr. Greenwood points out, take account of three quantities: (1) the average duration of life of a person, of the same age as the patient, but not known to be suffering from the disease; (2) the average duration of life of a person suffering from the disease and left untreated; (3) the average duration of life of a person suffering from the disease and treated in the manner the value of which it is desired to test. The case of cancer of the breast is taken as an example, and the assumptions which must be made are set out. It is shown that the normal expectation of life of a woman aged 55 is 18.87 years. The expectation of life of a woman with untreated cancer of the breast is 3.25 years; that of a woman operated upon under "average" conditions is 5.74 years, and of a woman operated on under the best conditions 12.93 years. By "average" conditions are to be understood conditions

<sup>1</sup> Ministry of Health. Reports on Public Health and Medical Subjects. No. 33: *The Natural Duration of Cancer*, by Dr. Major Greenwood; price 9d. No. 34: *The Late Results of Operation for Cancer of the Breast (Leads)*; price 6d. H.M. Stationery Office, London, Manchester, Cardiff, and Edinburgh.



in which women usually present themselves for treatment—that is to say, in conditions not too far advanced to render operation with a view to eradication hopeless. By “best” conditions is to be understood those of a patient whose cancer is strictly localized, does not involve the skin, and has not affected either axillary or supraclavicular glands. No. 34 is a report on the late results of operation for cancer of the breast, and shows the after-histories of women operated upon for primary cancer of the breast in Leeds General Infirmary and the Hospital for Women and Children during the years 1910-13 and 1919-21. One of the general conclusions is that if the complete operation is undertaken while the growth is still confined to the breast it is rare for the patient to die of the disease within ten years. If the growth has ceased to be local it is rare for a patient to be alive ten years after operation. While the growth was still local 90.1 patients were alive ten years after operation. When the axillary glands were involved 91.3 were dead within ten years of operation, and of more advanced cases 94.4 were dead within ten years of operation. This is well summarized in the epigrammatic statement that the “survival rate is inverted as soon as the cancer has passed beyond the breast.”

#### FORECASTING EPIDEMIC SMALL-POX.

THE Medical Research Council has just issued<sup>1</sup> an interesting study of Indian medical statistics by Sir Leonard Rogers. In a preliminary investigation he had ascertained that in the North-Western area major epidemics of small-pox followed failure of the south-west monsoon rains; but when the whole peninsula was considered it appeared that the actual amount of rain was not the determining factor. Thus, while in the seven provinces which receive their main supply of rain during the south-west monsoon from June to October there is, during this period, a great fall in the incidence of small-pox, yet the north-east monsoon—which is the chief source of supply in the south-eastern parts of Madras—is not associated with a decline of mortality from small-pox in that area. Detailed investigations make it probable that a more reliable indication of coming epidemics is given by the absolute humidity of the atmosphere. With this clue the explanation of the anomaly in Madras is reached. There “the north-east monsoon rains of October to December are seen to occur at a time of falling monthly mean temperature; they are consequently accompanied by a falling absolute humidity, especially during the rains of November and December, which we have seen are followed by a rapid rise in the incidence of the disease.” This thesis is supported by an examination of all the available data, illustrated by numerous charts and tables. Cases naturally occur when the correspondence is not good, but these may be explained. For instance, in the Central Provinces there was an exceptional prevalence of small-pox in 1895, although the rains were good and the humidity high. But this followed a period of five years in which the small-pox rate was low and vaccination neglected, so that an accumulation of susceptible persons might be the explanation. The method of correlation shows in each case a negative correlation between the absolute humidity of one year and the small-pox rate of the following year. In only two of the provinces, however, are the values, taken alone, significant from the statistical point of view; but, as Sir Leonard Rogers notes, the epidemic often begins in the year before that containing its maximum, so that the data are not very suitable for summary presentation by means of single constants. The question is raised whether this means of forecasting could be used outside of India, and it is sug-

gested that in other countries with definite rainy seasons and high temperatures the criterion might be useful. He indicates, among other districts, Eastern Queensland, Central and much of South America, and the Southern United States as suitable for study. For the reasons given this method is not, perhaps, likely to be of much service to epidemiologists in this small island, but its value in many continental areas may be great. If there was a reasonably trustworthy means of prediction a good deal might be done—for instance, by an intensive vaccination campaign—to reduce the mortality of the epidemic. Hence Sir Leonard Rogers has performed a valuable service in bringing this method to the notice of epidemiologists, and the value of his report is enhanced by the publication of the actual data. Most readers will no doubt be content to read the text and examine the diagrams, but the few who may wish to try refinements or modifications of the author's process will have the means of doing so.

#### IMPERIAL CO-ORDINATION OF MEDICAL RESEARCH.

AMONG the addresses to the Congress of the Universities of the Empire held at Cambridge last week, that by the director of the London School of Hygiene and Tropical Medicine had a special appeal to the medical profession at home and abroad. Dr. Balfour said that at present much time was wasted, energy dissipated, and money thrown away owing to the fact that in the great and important domain of tropical medicine men were to a large extent working in watertight compartments. While it was true that such publications as the *Tropical Diseases Bulletin* served to keep workers conversant with the researches carried out by others, this only partially met the difficulties. Some organization was required to lay down lines of research work (which need not appear to be immediately profitable), follow up what had been done, and decide not only what results were worth recording, but how best they could be recorded. At the moment India alone had done anything in this direction. There a Scientific Advisory Board met several times each year to consider the medical and sanitary research work which was being done and to discuss future lines of progress. The Indian Research Fund, which controlled the monetary resources, did not allot funds without obtaining the opinion of the board. There was no link, however, between the board and any institution in this country, and the want was badly felt. Dr. Balfour suggested that the Indian board should be in touch with some body such as the Medical Research Council. That Council, which had accomplished so much in this country, had not yet, to any great degree, extended its activities to questions of tropical import—from its constitution it was not at present in a position to deal with them unless they were common to both tropical and temperate climes. It was curious that while the Indian board worked in co-operation with the League of Nations it was not officially in touch with the scientific activities in the mother country. Dr. Balfour thought it essential that there should be in London some central organization which would consider and put forward suggestions for exploration, which would keep in touch with and encourage the workers themselves, which would collate and disseminate information, and which would arrange for the selection and training of personnel. He saw no insurmountable difficulties in such a scheme, especially if the Medical Research Council became the nucleus. A comparatively small expansion of its staff and resources would enable it to serve as such a nucleus and to keep in close touch with the Colonial and India Offices and with the Foreign Office (under whose control the Anglo-Egyptian Sudan came). The recent appointment of Dr. A. T. Stanton as chief medical adviser to the Secretary of State for the Colonies was a first step in the right direction, and if there were

<sup>1</sup> *Small-pox and Climate in India: Forecasting of Epidemics.* By Sir Leonard Rogers, C.I.E., M.D., F.R.C.P., F.R.S. (Medical Research Council, Special Report Series No. 105; pp. 22 + tables and diagrams.) 1926. H.M. Stationery Office. Price 2s. net.

attached to him a number of liaison officers it would become possible to look forward to a group of medical officers at the Colonial Office which, in close touch with the Imperial Research Council (or whatever it might be called), would be of the greatest value in supplying expert and up-to-date information. Another hopeful development, Dr. Balfour said, was the recent establishment of the Committee of Civil Research—a committee which might be, at least in part, incorporated with the council which he suggested. In each of the African colonies there should be a department of research, just as there was a department of public works, which would be concerned with all the branches of science—medical, veterinary, agriculture, forestry, botanical, geological, and so forth. The necessary funds might be obtained by grouping several colonies together—a scheme specially feasible in West Africa, the two Rhodesias, and the Sudan and Uganda. The Department of Research, in order to steer free of departmental jealousies, might well be placed under such a neutral department as that of education, if it were quite impossible for it to stand on its own legs. This plan had already been attempted with complete success by Sir James Currie in the Sudan. Education itself would benefit immensely by being linked up with all the research activities of those lands where it was endeavouring to make the native a wiser, better, and healthier citizen. The new London School of Hygiene and Tropical Medicine could, Dr. Balfour concluded, play an important part in co-ordinating and assisting medical and hygienic research throughout the empire, and might be one of the weapons by which the Central Research Council in London would wage an empire-wide war on ignorance and disease.

#### CHINESE HOSPITAL, SHANGHAI.

THE Chinese Hospital, Shantung Road, Shanghai, was founded eighty years ago by Dr. William Lockhart. It is staffed by members of the London Missionary Society, and controlled by British trustees. Recently the hospital has received, under the will of the late Mr. Henry Lester, an old resident in Shanghai, the magnificent gift of £350,000 in money and land. With these funds it is proposed to reconstruct the hospital on modern lines, to establish outside the city of Shanghai a home for convalescing and other patients, and to form an endowment fund for the institution. The report of the hospital for the year 1925, by Dr. Cecil J. Davenport and some of his subordinates, gives an interesting account of the work of the institution during the difficult period of the strike. In consequence of the boycott patients left the wards and attendances in the out-patient clinics fell off markedly. At times the whole Chinese staff threatened to resign, but better counsels in most cases prevailed. One resident Chinese doctor departed, leaving a picture of skulls and daggers on his bedroom wall; and four senior assistants and nurses left to join in the fray. The rest of the staff remained faithful to their posts. They were kept busy attending to persons who were wounded in the riots. In the report by Dr. Agnes Towers on the women's hospital a big drop in the in-patient admissions for 1925 is attributed partly to what must seem a curious cause to readers in this country. The "women opium suicides" were sent to a different part of the hospital. It is satisfactory to learn, however, that the suicide wave seems on the wane, fewer cases of suicide from swallowing match-heads having been seen than in former years. This form of suicide, says Dr. Towers, is very fatal, as the patients do not reach the hospital until the poison has had time to get thoroughly absorbed. In the men's wards nursing is done by young male nurses, assisted by coolies for sweeping and cleaning. The male nurse is apparently not easy to discipline, but on the whole is fairly satisfactory considering that he is a

man. The funds of the hospital show a slight balance on the right side, and with the generous gift of Mr. Lester its futuro should be assured.

#### A GREAT SURGEON'S COUNTRY SIDE.

IN addition to being a scientific surgeon in the first flight Sir Rickman Godlee was a many-sided man, though from innate modesty and reserve many of his accomplishments were hidden from all but his close friends. He was a linguist, a biographer, an artist, a poet, a botanist, an ornithologist, and more; as Sir George Newman points out in a sympathetic memorial sketch, all too short, which is attached to *A Village on the Thames: Whitechurch, Yesterday and To-day*,<sup>1</sup> a collection of charming essays written, without any thought of further publication, for the parish magazine, and now given to a wider audience by Lady Godlee, who supplies their history in a pleasing foreword. These fifty-two articles, the last three of which were ready for the press at the time of his sudden death on April 20th, 1925, are redolent of the country and the peaceful waters of the Thames, and reflect the wide interests of the few years of retirement after a busy professional life. They show an ideal realization of that desire to retire which so many men have but so comparatively few achieve. The first eight tell the story of the surroundings of Whitechurch in accounts of "The ancient Thames," "Locks and weirs," and "Ancient earthworks," while among the others there are many of a wider scope of birds, beasts, and insects, place names and surnames, coaches and railways, the last bringing into prominence the seclusion of his home, where "we Whitechurch folk hear indeed an occasional whistle and the distant roar of the trains when the wind is south-west, but even from the top of the hill it is hard to catch a glimpse of them until they are out of sight!" Charming written and well illustrated, especially with a photogravure of this smiling high-minded man sitting with his dog on a wheelbarrow in his garden, these essays are just the companions to take on a holiday.

#### THE ROSS INSTITUTE AND HOSPITAL FOR TROPICAL DISEASES.

ON July 15th the Prince of Wales opened the Ross Institute and Hospital for Tropical Diseases at Putney Heath of the origin and nature of which we gave an account last week (p. 129). The Prince of Wales was received by the Duchess of Portland, president of the institute, and by Sir Charles McLeod, the chairman, who presented an address and the key of the building. The Prince of Wales in reply, said that malaria, which had been one of the most deadly and elusive of tropical diseases, was now certain to be defeated, thanks to the achievements of Sir Ronald Ross. In the Sir Alfred Jones Laboratory in Sierra Leone the Prince had seen, only a few months ago, the remarkable progress which had been made in the campaign. No single discovery in recent times had earned the gratitude of so many human beings as the discovery made in India in 1897 by Sir Ronald Ross, who, as had been well said "made one-third of the world inhabitable." With the sincere hope that further public support for endowment would be forthcoming, the Prince of Wales declared the institute and hospital open. After a dedicatory prayer by the Bishop of Southwark, a vote of thanks to the Prince was proposed by the Duchess of Portland and seconded by Sir Ronald Ross. The guests attending the ceremony were permitted subsequently to view the grounds of the hospital.

<sup>1</sup> *A Village on the Thames: Whitechurch, Yesterday and To-day*. By Sir Rickman J. Godlee, Bt., K.C.V.O., M.S., F.R.C.S. London: George Allen and Unwin, Ltd. 1926. (Extra post 8vo, pp. 283; photogravure frontispiece, 19 other illustrations, and 2 maps. 7s. 6d. net.)

## THE CONGRESS OF CHEMISTS IN LONDON.

THE annual meeting of the Society of Chemical Industry in London this week was enlarged into a congress of chemists. On Monday, July 19th, at a meeting of the Institution of Chemical Engineers, the EARL OF BALFOUR was presented with the Messel medal, and delivered the Messel memorial lecture, and an exhibition of British chemical plant at the Central Hall, Westminster, was opened by Sir Max Muspratt, president of the Federation of British Industries. On Tuesday morning, July 20th, the annual meeting of the Society of Chemical Industry was held, and the retiring president, Mr. W. J. U. Woolcock, delivered an address on the present position of the society. He pointed out that through co-operation it had become possible, for the first time in the society's history, to make the annual meeting a nucleus of a congress of chemists, representative of sixteen scientific and technical associations. He hoped also that in time the electrical engineers would be associated with their society. Co-operation had led to the formation of a bureau of British chemical abstracts, and by this means duplication in publication was avoided. The Chemical Society published abstracts in pure chemistry, and the Society of Chemical Industry those in applied chemistry. He called attention also to the formation of a fuel section of the society, for matters relating to fuel research and practice.

*Scientific and Industrial Problems of Hormones.*

On the same day the London section of the Society of Chemical Industry held a joint meeting with the Biochemical Society. The chair was taken by the Rt. Hon. Sir ALFRED MOND, and the subject for discussion was the scientific and industrial problems presented by the hormones—the natural drugs of the body. The first paper was read by Dr. H. H. DALE, F.R.S., on the experimental study and the use of hormones. Dr. Dale described the history of adrenaline from the time of Dr. George Oliver's experiments, and its isolation by Professor Abel in America, to the researches into its structure by Dr. Fawcett. The Cambridge school of physiologists found that adrenaline might be said to produce all the vascular and visceral reactions which accompanied, and, according to one school of psychology, provided the basis for, the emotions of anger, excitement, and fright. There was evidence that the suprarenal glands supplemented the normal sympathetic control of the viscera when the organism prepared for combat or flight; while traces of this hormone in the blood probably helped to maintain a healthy tone and readiness of reaction in the small peripheral blood vessels. Apart from asthma, however, the chief condition for which adrenaline was used was the local production of bloodless mucous membranes for surgical purposes. From the chemical and manufacturing point of view, said Dr. Dale, adrenaline already furnished a complete story, if not a closed chapter. For the biochemist the fascinating problem of its origin in the body still remained. But of the active principles of the cortex of the suprarenal gland nothing was known; it still presented a problem to biochemical research, and ultimately to biochemical manufacture.

From the thyroid gland Kendall, in America, about ten years ago, isolated the active iodine-containing hormone thyroxine, which could now be prepared in practicable quantities, so that there was no doubt that sooner or later it would be produced by artificial synthesis. The active principles of the posterior lobe of the pituitary body, of insulin from the pancreas, and of secretin from the intestinal mucous membrane, were protein derivatives, or closely associated with such derivatives, and could not be separated from them without losing their specific activities. Consequently the manufacturer had to obtain his raw material from the abattoir in a state of absolute freshness. But the stability of the principles, once obtained, was considerable, if their reaction was weakly acid. Pituitary extract was invaluable in obstetrics. If the manufacturer obtained absolutely fresh material, simple extraction by boiling acidulated water gave an extract of high potency, and, at acid reaction, of great stability. But the gland

was extraordinarily sensitive to antilytic change or bacterial action, so that the variations in activity of samples of the extract had been something of a scandal to scientific manufacture, and a danger to life. If ever the principles were to be isolated for examination, it could only be by the close co-operation between industry and biochemical skill. The right method of extraction for insulin took many years to discover, but Professor Abel claimed that he had now isolated insulin as a pure crystalline substance. Evidence was now accumulating that the maintenance of a steady percentage of free glucose in the blood was due to a delicate balance between the action of insulin and the antagonistic effects of adrenaline, thyroxine, and pituitrin. Insulin was an example of what could be effected by co-operation between the scientifically organized factory and the academic laboratory; and the scientific industry of this country had reason to be proud of the fact that, within eighteen months from its introduction, production had increased so greatly that a balance was available for export, and the original price was reduced to less than one-eleventh of that originally required. The great need, however, was biological standardization. Even with adrenaline and thyroxine it was doubtful whether adequate chemical criteria of purity were yet available. It was possible even for the conscientious manufacturer to make, by apparently identical methods, preparations with a wide variety of activities, in the absence of physiological control. But the term "biological standardization" had too often been used, to its inevitable discredit, merely to represent the effort of a manufacturer to ensure that different issues of his own product had a rough uniformity of action. The activity of these potent preparations must be defined in, possibly empirical, but internationally valid units.

Dr. H. W. DUDLEY dealt with the difficulties of isolating in a pure condition the principles of pituitary gland and of insulin. The posterior lobe of the pituitary gland in oxen was so small that to yield a kilogram of the dried material 10,000 oxen were required, and probably less than 0.1 per cent. of the dried tissue represented active principles. With insulin also probably the major portion of the preparations was inert material. The chemical investigation of these hormones encountered difficulties equally formidable on account of their complexity and instability. No chemical tests for their presence being known, they must, after each attempted step in their purification, be recovered in a form suitable for a quantitative physiological test, while their stability was such that none but the mildest chemical manipulations caused their destruction. In the case of the pituitary hormones the preparation of crystalline salts had been reported, but in no instance had the observations been confirmed. It was now possible to concentrate the entire insulin activity of the pancreas into a very small bulk, which was the insulin of modern chemical technology; but whether the crystalline substance isolated by Professor Abel—and which he stated had a physiological activity slightly greater than that of the best commercial preparations—was the hormone in chemically pure form could not be determined until further evidence was provided.

Mr. FRANCIS H. CARR said that, with the help of the physiologist, the technical difficulties of manufacturing hormones, though somewhat exceptional, might be compared to those encountered in other departments of fine chemical manufacture. Beginning in the slaughterhouse, the raw material (the glands) was laid out in thin layers in cold, dried air, and was quickly frozen. But, even when frozen, adverse changes were not entirely inhibited, so that the frozen glands must be worked up as promptly as possible. Crude extracts containing insulin were stabilized at normal temperatures by bringing the solution to a pronounced acid condition, and removing enzymes by filtration. Continuous treatment of small amounts was better than treating larger quantities in intermittent batches. Grinding of glands should be carried out in two stages, between which acid and alcohol should be incorporated to make the mixture stable. In the stage of concentration low temperature was again of importance, the destruction of insulin being a function of the factor temperature multiplied by time. The ultimate purification of high-

grado insulin depended upon careful steering through a maze of operations, success in the final stage being largely due to Dr. Dudley's method of precipitating the insulin with picric acid, and subsequently regenerating it as hydrochloride. The preparation of thyroxine, originally discovered by Kendall, had recently been greatly improved by the introduction of Harington's method, whereby twenty-five times as much thyroxine was produced. The advantage of thyroxine was that, being a crystalline chemical substance, its purity could be determined by chemical means. Mr. Carr said that the manufacture of hormones which he had described had been achieved by the alliance of manufacturers with State laboratories and universities; and in both cases substantial reduction in cost had been achieved, bringing the prices well within the reach of the poor.

Dr. H. A. D. JOWETT sketched the history of adrenaline down to the present day, when the isolation and identification of the hormone had been completed and the synthetic process had been worked out on the commercial scale, so that a synthetic adrenaline—identical in all respects with the natural product—was available and was sold under the name of "suprarenin synthetic."

Dr. G. BARGER, F.R.S. (Edinburgh), described recent progress in the chemistry of thyroxine, referring in particular to the work of Kendall and Harington, of which an account in some detail was given in our issue of June, 26th (p. 1092).

The difficulties attending the biological assay of hormones were discussed by Dr. J. W. TREVAN. They depended, he said, almost entirely on the variability of the animal or organ used as the indicator of potency. Not only did different individuals of the same species give different responses to the same drug, but the responses varied from day to day in the same animal. A biological assay must, therefore, always take the form of a direct comparison with a standard preparation. The specification and preparation of international standards for insulin and pituitrin by the Health Committee of the League of Nations would render the provision of preparations of constant activity much easier, and it was to be hoped that tests for the other hormones would be devised of sufficient accuracy.

## ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

THE annual meeting of the Royal Medico-Psychological Association in London, the earlier proceedings of which were reported in our last issue, was continued from July 14th to 16th, under the presidency of Dr. J. R. LOND.

### *Encephalitis Lethargica.*

Some observations on encephalitis lethargica were contributed by Dr. MACKENZIE WALLIS, and in another paper Dr. C. FARRAN-RIDGE described some symptoms referable to the basal ganglia occurring in dementia praecox and epidemic encephalitis. Dr. Wallis said that the chief feature of encephalitis in laboratory animals appeared to be the profound effect on the kidneys, liver, and spleen; there was an almost complete absence of nervous symptoms. Evidence was shown of hepatic insufficiency and also of hyperglycaemia and glycosuria, but these changes did not appear to be confined to encephalitis; they occurred in other filter-passing diseases—vaccinia, for example. The experimental investigations furnished an approach to the clinical problem of encephalitis lethargica in man. Dr. Wallis described the tests which he had employed—namely, the laevulose tolerance test, the lipase content of the serum, and the cholesterol content of the blood—and said that forty cases of undoubted encephalitis lethargica had been investigated by means of the tests for hepatic insufficiency, and twenty-five of them showed evidence of hepatic derangement. Many of these cases came to the *post-mortem* room, where the tests were confirmed by histological examination. The acute cases had shown a raised lipase content and also a raised cholesterol content of the blood, and a positive indirect van den Bergh test. The most striking results occurred in cases of mid-brain tumours. The relation of the mid-brain to the carbohydrate metabolism and to the hepatic function had received further confirmation from these results.

### *Educational Provision in London for Subnormal Children.*

The members of the association paid a visit to the London County Hall, where they were received by the chairman and vice-chairman of the Mental Hospitals Committee (Mrs. Dunn Gardner and Mr. A. C. Morcing) and the chief officer of the mental hospitals department (Mr. H. F. Keene).

Dr. F. C. SHRUBSALL read a paper bearing the title "Educational adaptation of the individual child," which was in reality a statement of the educational provision in London, especially for subnormal children. He said that the number of schools for the blind and deaf was 48, for the physically defective 37, for the mentally defective 78, and for tuberculous or pre-tuberculous children (open-air schools) 12. The number of school doctors was 89, of whom 25 were on whole-time engagements, and the children examined in 1925 numbered 316,722, or about half the total number of pupils in the elementary schools. Children were examined four times in their school career—first on entrance, then during the years in which they attained the age of 8 and of 12, and finally a few months before leaving school in their 15th year. The improvement of the physique of the children, Dr. Shruballs claimed, had been very marked, and there was evidence that the 8-year-old boy averaged half an inch taller, with a similar gain in weight, as compared with the boy of corresponding age twenty years ago. He gave some interesting particulars of the psychological investigations pursued. About one child in ten showed superior abilities, and the attempt was made to select such children by examination at 11 and transfer them from the elementary to the secondary schools. Altogether the child was now considered as an individual, and attempts were made to modify the educational machinery to suit the child rather than to follow the former procrustean method whereby the child was made to fit the machinery.

Afterwards the members were shown over the County Hall, visiting the magnificent council chamber, also the medical examination rooms and laboratories, and then they inspected the automatic telephone system, and the lighting, ventilating, and heating arrangements. Practically all the rooms have indirect lighting by means of bowl fittings. In the sub-basement the visitors saw the six boilers which supply hot water through thirty miles of pipes to more than two thousand radiators.

### *Psycho-Analysis and its Development.*

On Thursday morning (July 15th) a discussion on psycho-analysis and its development was opened by Dr. W. A. POTTS, who said that in the mind there was a mass of past experiences which could not be readily remembered, and some of a person's mental processes eluded his observation. The modern psychologist said that the forgotten memories and the hidden mental processes were in the unconscious or the subconscious mind, which was below the threshold of personal consciousness. Freud's method of exploring the unconscious mind was termed psycho-analysis, and was founded on the idea that dreams were neither accidental nor meaningless, but constituted the royal road to the unconscious mind. Freud found in this unconscious mind the real motives of unusual conduct; he held that the unconscious consisted largely of unfortunate experiences in early life, many of them of a sexual nature, and that the abnormal conduct was due to a conflict between the conscious and the unconscious minds, owing to primitive desires being stifled. In Freud's view, sex included such fine instincts as the love of the mother for her child. One of the chief objects of psycho-analysis was to discover repressions. It had been unjustly urged against psycho-analysts that to regard desires as natural meant that they should have indiscriminate gratification; nothing should be encouraged which would be against either the community or the individual. Jung did not agree with the emphasis which Freud placed on sex, and contended that present ideas often had more power than had past experiences. Dr. Potts avowed himself an adherent to Jung's school. The object of the analyser was to draw the patient to a conception of the manner of man he was, and that his troubles were really part of general human

experience. Dr. Potts insisted that it was desirable that those who practised psycho-analysis should themselves have been subjected to the process by another. If those who had not entered fully into it worked on this method it was liable to bring discredit on it. It was not a form of treatment for acute mental disease; both psycho-analysis and psychological analysis were special kinds of education, which prevented the recurrence or development of mental disorder which otherwise seemed inevitable. This process by no means disregarded physical ailments in mental disease.

Dr. WILLIAM BROWN (Oxford) agreed with Dr. Potts in a general way, but insisted that, whether the method of Freud or that of Jung were followed, it was the same in quality. He believed that Jung's insistence on the influence of present factors would not be denied by Freud. He gave a sketch of Freud's most recent work, on the general libido theory, which was an attempt to explain difficulties of evolution in the moral life in terms of libido distribution. In psycho-analysis dissociations of one kind and another were overcome, while the unsatisfactory nature of his philosophy was revealed to the patient, thus helping him to find another philosophy of life. He agreed that all who intended to specialize in this branch should themselves have been analysed.

Dr. A. WOHLGEMUTH approached the matter from that of pure science, having no regard to the therapeutic value of the method or otherwise. He objected to the term "the unconscious mind," as it was no more than a process. It was not correct to credit Freud with the discovery of the unconscious mind. He contended that much of the result claimed by psycho-analysis was due to adroit suggestion on the part of the analyst.

Dr. M. HAMMILL SMITH pleaded for an unprejudiced examination of the claims of psycho-analysis. Psychology was the science which taught man about himself, but it dealt shrewd blows at his self-esteem. Freud's hypothesis went far beyond the limits of any system of therapeutics; it dealt with the normal as well as the pathological. He knew people who had been freed, by psycho-analysis, of phobias and of obsessive practices.

Dr. E. MAROTHEK said the great question was whether results were obtained by psycho-analysis which were not procurable by other means of treatment. After twenty years of experience and watching he remained in doubt on the point. At the present time he believed that truly free association was hardly ever obtainable; patients' associations were largely directed by what was obviously expected of them. What was most needed was an unprejudiced record of changes in patients seen before and after the process by people who were not professed and practising psycho-analysts.

Dr. CRITCHON MILLER also examined the subject in some detail, and declared his belief that the method was coming into use more and more.

Professor G. M. ROBERTSON said he regarded Freud as one of the greatest psychologists and one of the greatest discoverers the world had produced; no man could strike out an entirely new line without making mistakes. He spoke, not as an expert psycho-analyst, but as one who tried to take a detached view.

Dr. M. A. ARCHDALE said he preferred intentionally suggestive treatment. He asked whether, when the psycho-analyst obtained a cure, it was always because he had discovered the patient's disturbing complexes.

Dr. T. A. ROSS took the same view on the subject as Professor Robertson. He objected to the dictum that only those should carry out psycho-analysis who had themselves been subjected to it.

Dr. Potts, in a brief reply, dealt with the points raised.

#### THE ANNUAL DINNER.

The annual dinner took place at the Victoria Hotel, Northumberland Avenue, when a large number of distinguished people were present to support the President.

The toast of His Majesty the King having been loyally pledged, Dr. J. G. SOUTAR proposed "The London County Council," coupling with it the name of Sir George Hume, J.P., M.P., the chairman of the L.C.C. He said the functions and activities of that body were so numerous and varied that they made appeal to every special interest.

He pictured how the subject might be dealt with by a speaker from a number of special points of view—that of the historian, the sanitary engineer, the educationist, the architect. However viewed, those activities could be interpreted as a desire to give effect to the teachings of medical science. He referred in feeling terms to the loss of the association and the profession had sustained by the death of Sir Frederick Mott, and to the great work he did in the special sphere covered by that body. He believed the beneficial results brought about by the Maudsley Hospital, in the founding of which Sir Frederick took an active part, would result in legislation being brought forward. He hoped the L.C.C. would continue to be fellow labourers with the profession for the still further improvement of the people.

Sir GEORGE HUME, in the course of his reply, said he had found, in his present position, that it was safer to listen than to speak, though he was glad to report that since the Council had entered into the occupation of its new home the relations of its members to one another had been much more harmonious than in former times. He was proud that the L.C.C. had on its staff men whose achievements made them known over the whole world. He concluded by congratulating the association on having been granted a Royal Charter.

Dr. R. PERCY SMITH submitted the toast of "The Universities and Royal Colleges," and, after speaking of the various ancient and modern universities, referred to the granting by several of them of the diploma in psychological medicine.

Professor G. M. ROBERTSON, P.R.C.P.Ed., in responding, gave an historical survey of the university teaching of psychiatry from 1923 onwards, and mentioned incidentally the establishment by William Tuke of The Retreat at York in March, 1792, six days after a requisition had been lodged by Admiral Duncan for a mental hospital at Morningside, Edinburgh.

Dr. WILLIAM BROWN, Wilde reader in psychology, Oxford, also replied. He referred to a certain university where it was not regarded as good form to be seen working, hence it was usual for men to read hard in the long vacation—that was why it was made so long. But the matter was quite different when one came to London University, where one needed an iron nerve to get through the examinations. He pointed out the great service to a man of having a system of philosophy to guide him, and discouraged the idea that any line of research and endeavour could be entirely "academic."

Dr. BEDFORD PIERCE proposed "The Royal Society of Medicine and the British Medical Association" in terms of appreciation of the work those bodies were doing for the benefit of the profession. He blended this sentiment with that of sympathy for those responsible for carrying on that work, as they must have great difficulty sometimes in satisfying everybody. He counselled every doctor to read carefully the *Handbook for Recently Qualified Medical Practitioners*. He had a special word of praise for the editors of the medical journals and the way in which they carried out their duties, though he thought there were few articles published in them which would not be the better for being cut down to half, or less, of their length.

Sir STCLAIR THOMSON, for the Royal Society of Medicine, kept the company in continual merriment by his narratives and topical sallies.

Sir DAWSON WILLIAMS, replying for the British Medical Association and its JOURNAL, made special reference to the recent death of Sir Frederick Mott, an old friend of his own, whom he regarded as a man possessed of quite exceptional qualities, who applied to this most difficult realm of medicine a scientific precision and thoroughness which was quite out of the ordinary, and was a very sincere believer in the possibilities of improving the human race.

Sir FREDERICK WILLIS (of the Board of Control) proposed the toast of "The 'Nests,'" coupled with the names of the Right Hon. Hugh Macmillan, K.C. (Chairman of the Royal Commission on Lunacy and Mental Disorder), and the Bishop of Southwark.

Sir HUGH MACMILLAN replied in an eloquent speech. Referring to the imminent appearance of the report of



the Lunacy Commission, he declared, amid laughter, that he was shortly starting on a voyage to Canada to escape the criticism with which it might be met. He paid a warm tribute to the medical profession for the great assistance which every member of it who was asked gave to the Commission during its sittings, and said that the report represented a sincere effort to assist the profession, and this special department in particular, in its noble task.

The BISHOP OF SOUTHWARK also replied.

Sir ARTHUR ROBINSON, K.C.B., proposed "The Royal Medico-Psychological Association," which, he said, was approaching its centenary, full of influence, power, and wisdom; he conveyed the good wishes of the Minister of Health to the association and the profession for success in its great task. With regard to the coming report of the Lunacy Commission, he had never seen, in all his experience, a commission so ably presided over as was this, and he had nothing but praise for the way Sir Hugh Macmillan did his work.

The PRESIDENT (Colonel Lord) replied, making mention of hospital clinics for early mental disorder, and the high aim of the mental hospitals of the country.

## AMERICAN HOSPITAL FINANCE AND ADMINISTRATION.

### LESSONS FOR BRITISH VOLUNTARY HOSPITALS.

As already mentioned (April 24th, p. 740), Mr. A. G. E. SANCTUARY, M.A., administrator of the Radcliffe Infirmary, Oxford, recently read a paper to the Oxford Division of the British Medical Association, describing certain aspects of the administrative policy and financial methods of American general hospitals which he thought should be imitated by British voluntary hospitals for the benefit of the public, the improvement of the service they afford, and the relief of their financial embarrassments.

America, Mr. Sanctuary said, possessed a complete and comprehensive system of hospital service which dealt with every section of the community at a cost varied to suit the pocket of each member of it. The accommodation and equipment were, he thought, on the average better than ours, and afforded the accommodation the public demanded. This was because the hospitals were not continually struggling to avoid bankruptcy.

One reason, but not the only reason, was the amazing prosperity of the nation, but there was, he thought, quite enough spare money in England to pay for a complete and comprehensive hospital system. He urged the managers of our voluntary hospitals, with the support of the medical profession, to undertake the in-patient treatment of every section of the community, and thus enlist the sympathy and financial support of every class, instead of confining their attention to the one class which cannot pay for itself.

It was well known, he said, that plans were in existence for the replacement of the voluntary system by some form of State-controlled hospitals; the case for this change relied mainly upon the fact that the present system failed to produce enough beds. It must be admitted that owing to lack of funds the needs of the community in the way of institutional treatment were at present inadequately met. First, there were not enough beds in the voluntary hospitals to take in the greatly increased number of patients who had a moral claim to treatment in free or partially free wards and could only afford to pay a fraction of the actual cost of their treatment, and by common consent could not pay an adequate fee to the physician or surgeon who attended them. Secondly, there was a very large class for whom no suitable provision was made and who consequently drifted into hospital wards and added to the congestion there. This class would be able to pay an adequate fee for board, lodging, and nursing, and for the use of the hospital's special equipment as they required it, and also a modified fee to the doctor, especially if they did so by an insurance scheme. Thirdly, there were the well-to-do classes, who had been content hitherto to pay large and often exorbitant fees for accommodation in nursing homes which did not contain a quarter of the equipment considered necessary for the treatment of the poor in the

voluntary hospitals. They were even content in emergencies to undergo operations in their own homes under conditions which would not be tolerated in a hospital, because no nursing home accommodation was available or because the charges were so high. It was certainly very greatly to the credit of this class that they should so long have continued to find large sums of money for the establishment and equipment of hospitals from which they were themselves debarred, in spite of the fact that they could get nothing so good outside. The problem of providing all three classes with adequate institutional accommodation in times of serious illness at a cost which collectively they could afford to meet could, he believed, only be solved if treated as a whole, as had been done in America. He continued as follows:

The quickest and most economical way of providing large-scale, perfectly equipped hospital centres for the treatment of every class is by extending the existing voluntary hospitals where a large part of the necessary equipment and staff already exists and among whose committees and medical, nursing, and lay staffs most of the hospital experience and tradition of the country are to be found.

The maintenance of such hospitals would not, I am inclined to think, present nearly such great difficulties as are faced under our present system. It has been proved that by organized weekly contributions of various kinds the poorest section of the community can pay from one-half to two-thirds of the actual cost of their treatment, the remainder being made up by charitable donations. The next class of patient, with incomes varying, say, from £300 to £750, could by means of insurance easily cover the cost of their treatment and doctors' fees, and leave a balance of profit to the institutions treating them, whereas at present they are driven into beds which are meant for the use of a poorer class, and pay less than they can afford. A smaller percentage of this class would require institutional treatment, because their home conditions are more suitable for treatment of certain illnesses than are those of the poorest class. Insurance schemes are already in existence which cover their policy-holders against the cost of specialists' fees and of nursing homes up to a certain maximum—a very much higher maximum than they are in a position to pay without the help of such schemes. These schemes would, I think, be readily joined if only the right sort of accommodation were provided, and it can only be provided at reasonable cost by the existing voluntary hospitals. The results of this extension of the present voluntary system would be:

(1) A large and deserving section of the population would be relieved of great anxiety and in some cases of severe economic distress, as they would be able to avail themselves freely of proper hospital equipment when they needed it without either crippling themselves financially or taking advantage of the voluntary hospitals and their honorary medical staffs.

(2) Their private doctors would be relieved of anxiety on their behalf and would not be placed in the invidious position of having to advise them to make use of accommodation and voluntary services, which they greatly dislike using and which is already insufficient for its proper purpose. They would also, under such a scheme, I hope, be able to continue to attend their patients in hospital to the same extent as they now do in nursing homes.

(3) The specialists would receive adequate payment for the work they do instead of doing it for nothing.

(4) The hospitals would receive a regular income, a part of which would be available for the upkeep of their special departments and overhead charges. Their ordinary ward beds would be relieved of pressure. They would, moreover, have enlisted the direct sympathy and help of a very large class, who at present are very little interested in hospital matters. The medical profession has already accepted the principle of dealing with this class in hospital by making use of wards in cottage hospitals for their private patients.

I think both hospital managers and doctors are generally agreed that an extension of our voluntary hospitals is desirable, but I do not think that this extension goes far enough. The people who have hitherto subscribed most of the money for the building and equipment of the hospitals are not satisfied on the whole with what they are getting in the way of institutional treatment. If the voluntary hospitals were prepared to offer them what they want in the way of first-class nursing-home accommodation, and to put at their service the whole of the equipment of their special departments, operating theatres, resident and nursing staffs, and so on, I feel sure that their generosity would be greatly stimulated, particularly in the case of the large and influential class of professional and retired men who just manage to pay their way in times of serious illness, but who have nothing left over for the support of charitable institutions. One has heard such people say over and over again that they wished they could go to a hospital when they are really ill, and that their servants' families get a better chance in emergencies than they do. It is obvious that the delay and discomfort involved in getting hold of the

nurses, the specialists, the x-ray photographs, or whatever may be needed in a particular case, would be obviated if their private doctors could send them to a large medical centre where all the specialists and all the necessary equipment were concentrated.

Rich Americans have been quick to recognize this, and have found the necessary money to build wonderfully equipped hospitals containing large blocks in which there are rooms varying in luxuriousness to suit the individual, and of course the price varies. They pay the hospital fees for the use of operating theatres, special departments, and special nurses if they want them, and they pay their doctors privately with the exception of the resident medical staff.

This arrangement seems to me excellent from the point of view of everyone concerned. From the well-to-do patients' point of view because they can obtain every luxury and comfort to be found in an expensive nursing home, combined with the use of equipment and organization which can only be found in a large general hospital, and with the services of a resident medical staff. From the poor patients' point of view because there will be less difficulty in finding the necessary funds for keeping the hospitals up to date and for perfecting the service and equipment; they will have better hospitals and more beds, because there will be more money to provide them.

With great diffidence I suggest that from the general practitioner's point of view it is excellent, because by sending his emergency cases to a fully staffed and equipped hospital he will be relieved of a thousand anxieties. Instead of having several really severe cases on his hands at long distances apart from one another and from his own home, he will have them concentrated in one place surrounded by every appliance and instrument that can be needed, and with a qualified medical man on the spot to carry out his instructions. He will no longer have to find nurses for his patients at all hours of the day and night, and be called out to visit them perhaps unnecessarily. He will only be called upon to give instructions as to treatment to a properly trained staff, and they will see that his instructions are carried out intelligently. I cannot help feeling that when every class has acquired the habit of going to a hospital when very ill the life of a doctor will become far more enjoyable, with reasonable hours of leisure and nights of comfortable sleep such as are enjoyed by other members of the community.

The same arguments apply to the specialists. They will spend far less time in motoring from place to place to carry out their work under exhausting and unfavourable conditions. Most of their work, with the exception of consultations, will be carried out in the hospital rooms and theatres and departments with ample equipment and a staff which understands their methods. They will in some cases be freed from the trouble and expense of providing apparatus in their own homes and of maintaining it there, and will have the satisfaction of employing for the benefit of their private patients the very expensive apparatus and buildings which they themselves have advised their committees to provide for the benefit of their poor patients.

From the hospitals' point of view the arrangement would mean freedom from financial worry, and the ability to produce a service which will not be cramped, either as regards its quality or its extent, by a lack of funds. The hospitals will be serving the whole community, and collectively the community will in return provide ample funds.

A further great advantage from everybody's point of view would be that the whole of the medical profession in a district would be brought into close contact with the hospital, which would consequently become a sort of continuous graduate school and a centre for the exchange of medical knowledge and experience.

I was staying last summer with an American physician on Long Island, where the population is increasing very fast. A hospital of about eighty beds was wanted in a small town there, and when I arrived they had just issued an appeal to build it. In a few weeks they had raised £300,000. So far as I could make out everyone subscribed as a matter of course in a businesslike sort of way, because everyone, rich and poor alike, realized that the time might come when they themselves would need hospital treatment, and therefore it was a question of common sense to provide the best hospital possible. Maintenance in America seems to be still easier. The expenses of the patients who cannot afford the whole of their cost is met by the profit made by treating the rich. A man who can afford it may have a beautiful tiled bathroom, and even a sitting room for his relatives next door to his own; these cost practically nothing to maintain, but the rich man may like to have them when he is ill, and certainly will not mind paying a few guineas a week extra for them. This is clear profit to the institution, which consequently prospers and improves in many ways. It makes it possible to improve the diet of the poor patients, to increase the salaries of the nursing staff, and so to attract more and better brains to the profession, and so on.

In fact, there is no end to the improvements that could be made if the committees had enough money, and I believe the money would be forthcoming if doctors and hospital managers combined to give the public what they want on the lines I have suggested. One often hears English business methods criticized on the ground that many firms are content to go on turning out certain articles, which they have produced for generations, without paying enough attention to changes in fashions and customs, with the result that by slow degrees their prosperity becomes less and less. I suggest with the greatest respect that this criticism might fairly be levelled against hospital managers and their staffs, and against the whole medical profession who have grown up under the voluntary hospital system. The economic conditions of the country have changed very greatly, but the voluntary hospitals are still clinging to their old traditions and are trying to limit the scope of their work within traditional boundaries. The public are trying their best to fit themselves in with the old system because they respect it and have a very real affection for it, but during the past two or three years friendly criticisms of the system and demands for its extension have been greatly on the increase.

I sincerely hope that the medical profession will combine with the hospital managers to expand and remodel the existing system of institutional treatment to suit the changing needs of the public, before the whole matter is taken out of their hands by purely commercial bodies, who will be prepared to undertake the paying side of the work as a profit-making concern, leaving the remainder for the voluntary hospitals to deal with under conditions which must become increasingly difficult as the various forms of treatment become more elaborate and expensive.

If the hospitals, starting as they do with fine equipment and buildings, and possessing great experience, will respond to what I think are the wishes of the public, they will put themselves in a strong position financially, and by a wise use of their money will become such an efficient as well as indispensable feature of the nation's life that their continued existence will be assured.

## England and Wales.

### VITAL STATISTICS.

THE Registrar-General's *Statistical Review* of England and Wales for 1924 has been issued. The number of deaths (473,235) is the smallest registered since 1857, when the population was only 56 per cent. of that estimated for 1924. They correspond to a rate of 12.2 per 1,000 of the estimated population, but when standardized this rate is reduced to 10.7. The standardization was effected by comparison with 1901 when the population included relatively few infants and old people; it formed, therefore, a standard exceptionally favourable to low mortality and accordingly yielded comparatively low standard rates all round. To correct any wrong impression thus produced and to provide standard rates comparable with those of other countries the standards recommended by the International Statistical Institute were used, when the rate was increased from 10.7 to 12.0 per 1,000. The standard rate of 10.7 was less than any returned prior to 1823, when the low record of 10.3 was reached. The increase of mortality, which applied equally to each sex, occurred entirely in the first quarter of the year, when the death rate rose from 13.2 per 1,000 in the previous year to 16.6. The rate for the second quarter was lower than for any of the previous nine years, except 1921, and those of the third and fourth quarters were the lowest yet recorded. The excess in the first quarter occurred chiefly in March and was largely due to influenza, but the rate was high for a number of other diseases also, and it would appear that the conditions during March were such as to hasten the advent of death when impending from many causes not otherwise affected by season. The rate of infant mortality was 75 per 1,000 births, and was the lowest recorded, except in 1923, when it fell to 69. In a section on the distribution of infant mortality it is shown that the rates for the county boroughs and for the North of England are, as usual, in considerable excess, the highest rate being 99 for the northern county boroughs, and the lowest, 51, in the rural districts of the south. Taking the country

<sup>1</sup> New Annual Series, No. 4 Text, H.M. Stationery Office, London, Manchester, Cardiff, and Edinburgh, or through any bookseller. Price 5s. net.

as a whole, the fall of 6 per cent. as compared with the preceding quinquennium was accounted for by a decline in the number of deaths attributed to diarrhoea, congenital debility, and convulsions. There was an increase from bronchitis and pneumonia. The reduction of mortality at ages 1 to 5 has been greater than in that of infants. As was pointed out in the report for last year, this is the period of life at which susceptibility of mortality to environment is greatest, so it is probable that improvement in the conditions under which the children were living has been the main factor in bringing about this remarkable change. For this improvement the fall in the birth rate may be largely responsible, but if so it "cannot be expected to continue for long at the recent rate, for the birth rate, though it may continue to fall, cannot long do so at the present rate consistently with national survival." These seem to be the chief broad conclusions the Registrar-General draws from the statistics at his disposal. We hope to recur to the report later on.

#### THE CARE OF CRIPPLES IN HERTFORDSHIRE.

The annual meeting of the Hertfordshire branch of the British Red Cross Society was held, through the kindness of the Hon. A. Holland Hibbert, in the beautiful grounds of "Munden," near Watford, on July 16th. Hertfordshire bore its part worthily in Red Cross service during the war and did not allow its organization to fall into decay after the stoppage of actual warfare. In 1919 the energies of its Voluntary Aid Detachments were diverted largely to the service of a number of massage clinics which were established for the benefit of ex-service men, and their scope was afterwards widened to include the treatment of civilians of all ages.

Advantage was taken of this organization when the care of cripples came to be considered, and the six orthopaedic centres which now exist in the county work side by side with the massage clinics, of which there are now nine, and with the after-care centres at Hertford and Hoddesdon. The members of the Voluntary Aid Detachments staffing these centres are now so efficient that the latter are equivalent to out-patient departments, where all sorts of plaster work are carried out, and almost the whole treatment, except that requiring cutting operations, for which patients are admitted to the Royal National Orthopaedic Hospital under the honorary visiting surgeon, Mr. S. L. Higgs. Hertfordshire is exceptionally well supplied with railway communications from south to north, but very badly off for transit from east to west. In consequence it is found that London, where the Hertfordshire County Council meets, is the most convenient centre for the whole county, and the Royal National Orthopaedic Hospital, with its country branch of 118 beds at Brookley Hill, is more conveniently situated than would be any possible hospital placed near the geographical centre of the county. The present arrangement has the advantage of securing that the patients are in the care of the same orthopaedic surgeon from first to last. During the year ending March 31st, 1926, there were over 21,000 attendances at the massage clinics; a number of these patients were no doubt orthopaedic cases, and there were 1,458 attendances at the orthopaedic centres; of these, 335 were new cases, and on them 338 reports were made to the medical practitioners in whose care the patients had been. This system leads to improved co-operation as well as efficiency, and obviates possible causes of friction. The annual report, while it shows good progress in the efficiency of the Hertfordshire branch, demonstrates the need of more financial support. Watford, in particular, which is the most populous of all the centres, is not self-supporting, but draws upon the county funds. The Hon. A. Holland Hibbert, in a humorous and effective speech at the meeting, appealed forcibly to Watford to remove this stain from its reputation.

After the business of the annual meeting Mr. Muirhead Little, F.R.C.S., addressed the members on the care and care of cripples generally, and on the work of the Central Committee. He pointed out that, although crippling as the result of tuberculosis and rickets might be expected to decrease perhaps rapidly, it was far otherwise as regards infantile paralysis. For aught that was

known, this country might suffer from an epidemic comparable to those that had occurred in Sweden, Germany, New England, and, above all, in New York. In the case of such a misfortune, the county clinic organization would be invaluable, for it was susceptible of rapid expansion with a minimum of friction. The main points to be attended to in any district scheme were: (1) that every case of incipient crippling, whatever its cause, should be detected and at once treated at a clinic; (2) that there should be no delay in gaining admission to hospital of cases that required hospital treatment; (3) that after treatment in hospital or clinic was complete every case should be kept cured by the necessary care at a clinic; (4) that during hospital treatment education should be carried on; and (5) that industrial training should be available for all cripples over school age. The Central Committee for the Care of Cripples had obtained for a scheme of this kind the provisional approval of the Ministry of Health. It suggested a special committee in each orthopaedic area containing representatives from the hospitals and clinics, who would know the capacity and limitations of the cripples from the surgical point of view, together with representatives from the Juvenile Employment Exchange, employers, and trade unions, who would know local trade conditions and appointments. Hertfordshire was far advanced along the right line, but for a certain number of cases whose home surroundings were not good a convalescent institution was needed. It should be an open-air home, of simple and therefore cheap design and construction, as might be studied in the Cripples' Hospital at Coombe Park, near Bath; to begin with it need have not more than twenty beds. The address of the Central Committee is 117, Piccadilly, W.1.

## Scotland.

CHAIR OF OBSTETRICS AND GYNAECOLOGY IN EDINBURGH. DR. ROBERT WILLIAM JOHNSTONE, C.B.E., M.A., M.D., F.R.C.S., has been appointed professor of midwifery and diseases of women in the University of Edinburgh, in succession to Professor B. P. Watson, who was recently appointed to the corresponding chair in Columbia University, New York. The new professor is a son of the late Rev. Professor Robert Johnstone, D.D., of the United Free Church College, Edinburgh. He received his early education at George Watson's College, Edinburgh, and graduated with honours in medicine at Edinburgh University in 1903, subsequently pursuing post-graduate studies in Vienna and Prague. From 1906 to 1919 he was assistant to the professor of midwifery in the university. During the war he was successively surgeon to the Royal Victoria Red Cross Hospital, a surgical specialist in France, and later held a post in the Ministry of National Service in London. Returning to Edinburgh in 1919, he became Dean of the School of Medicine of the Royal Colleges, and up to the time of his present appointment was physician at the Royal Maternity Hospital and assistant gynaecologist in the Royal Infirmary, Edinburgh. He has also conducted a successful class as lecturer on midwifery and gynaecology in the School of Medicine of the Royal Colleges at Edinburgh. Professor Johnstone has made numerous contributions to the current literature of his subject, upon such aspects as "The pathology of pelvic infection," "Scopolamine and morphine in labour," "Unsolved physiological problems in gynaecology and obstetrics," and "Results of operative treatment of intrinsic dysmenorrhoea." The work by which he is best known is his valuable and highly successful *Textbook of Midwifery*, published in the Edinburgh Medical Series, which has now reached its fifth edition. Great satisfaction is expressed in Edinburgh that the curators of the chair have selected for the post an Edinburgh man, who may be trusted not only to be familiar with, but to enhance the traditions of, the chair previously occupied by Hamilton, Simpson, and Croom.

#### HOMES FOR DISABLED EX-SERVICE MEN.

The Liberton Settlement for Disabled Sailors and Soldiers at Kaimes Crossroads, near Edinburgh, established by the Scottish Veterans' Garden City Association, was

formally opened on July 3rd by Lord Provost Sir William L. Sleigh. The first block of the settlement consists of a substantial building containing five houses, each house including a living room and small kitchen downstairs, with two bedrooms and other accommodation upstairs; a generous amount of garden space is allowed to each tenant. Lord Salvesen, chairman of the association, who presided at the opening ceremony, said that in the eleven years since the association had commenced to ask for subscriptions nearly 200 houses for disabled men and their families had been provided. These houses were at present inhabited by something like 1,000 people, so that the association had done something towards both solving the housing problem and repaying their debt of gratitude to the men who had suffered most in the war. The Lord Provost, in declaring the settlement open, said that the work of the association had extended all over Scotland, and the present was the eighteenth settlement where disabled men could live in comfort and bring up their families amidst healthy and pleasant surroundings. Although no actual rent was charged for the houses the occupant was called upon to pay the rates and taxes and other oncosts. He believed that no other country was in possession of a scheme such as this. It was mentioned that the cost of each house was now about £600.

## Correspondence.

### CARCINOMA OF THE PROLAPSED CERVIX.

SIR,—The *JOURNAL* of July 3rd (p. 12) contains an interesting Memorandum on carcinoma of the prolapsed cervix by Mr. N. A. Macleod, in which he remarks that prolapse and cancer of the cervix, though individually common in the same class of cases, very rarely coexist. He also suggests that cancer is less liable to develop in the prolapsed cervix than in the non-prolapsed.

I have been wondering whether the conjunction of the two conditions is really rare. When cancer is found, co-existent prolapse is often ignored and the case is classified and recorded as one of cancer. Again, cancer of the cervix of the common columnar-celled type soon extends into the parametria and fixes the uterus. The majority of cases are only seen after this has occurred, when pre-existent prolapse has already been more or less cured by fixation, so to speak, and is no longer obvious. In cases of the stratified squamous type, like Mr. Macleod's Case 7, fixation of the uterus occurs much later than in the common type.

There are other conditions which are seldom seen together with prolapse, a notable example being complete rupture of the perineum. Pelvic cellulitis is another good example. It fixes the uterus by inflammatory infiltrate in the parametria and thus it prevents prolapse in some cases and cures it in others.

The first case of cancer of the vagina I ever saw was in a puerperia under the late Dr. Lloyd Roberts. It is figured in my handbook of *Diseases of Women*. I have always taught that one should operate for prolapse by the vaginal route, and should try to exclude cancer by exploring with a curette both the cervical canal and the uterine cavity. During this routine preliminary examination I have three times found early unsuspected cancer of the body of the uterus, and more frequently cancer of the cervix. On each occasion a radical operation has, of course, been done instead of the plastic operation.

High amputation of the cervix is an essential part of my own operation for uterine prolapse, which thus has the advantage that in addition to curing the prolapse it frees the patient from the risk of the subsequent development of cancer in the cervix. This risk remains after operations like ventral fixation.

Early cancer originating within the cervical canal may escape detection by the curette. Only last week the senior resident at St. Mary's Hospitals, Manchester, sent to the laboratory a cervix he had removed for prolapse, and received a report that on section it showed distinct evidence of carcinomatous change. Thus it is desirable that every suspected cervix removed for prolapse should be submitted to microscopic examination. If early cancer is

found the surgeon will decide between radical operation and the use of radium according to the circumstances of the case.—I am, etc.,

Manchester, July 15th.

W. E. FOTHERGILL.

### RHEUMATIC HEART DISEASE IN CHILDREN.

SIR,—I would like to congratulate the Science Committee, and through it the Association in general, on the excellent report on rheumatism and heart disease in children. It is very typical of the English character to depreciate our own efforts and land those of our neighbours, and whilst one recognizes perfectly and congratulates very heartily the Americans on their progress in supervision of children suffering with cardiac lesions, self-depreciation can be carried a little too far, and I am quite sure that the report gives a needlessly pessimistic view of the stage to which treatment of this condition has arrived in England. Whilst this may be good propaganda, it may still be bad policy.

The investigations with regard to treatment seem to have been made through the school medical officers, whose interest in the subject may be gauged by the percentage of replies. Possibly this line of investigation was adopted advisedly, but it seems strange that the authorities actually treating—as distinct from tabulating—the largest number of sick children should have been so carefully ignored. Of course, at present it is highly improper to suggest that boards of guardians ever did anything right, more particularly as regards their work for the sick; but possibly reference to the work of the Manchester Board of Guardians with regard to its attitude towards its sick children may be illustrative of what is taking place more or less throughout the country, though it be not widely advertised.

The essentials of treatment as laid down in the memorandum are: (1) provision for prolonged treatment, including rest in bed for an indefinite period, with mental stimulus and suitably graded finger work; (2) adequate attention to septic conditions, particularly of the mouth and tonsils; and these conditions are entirely met by the scheme at present worked by the Manchester guardians. Five years ago the dentist visiting Booth Hall Infirmary for Children began to examine the mouths of children suffering particularly from carditis and tuberculosis of any type. He renders these as free from sepsis as he can at the earliest possible moment after their admission. Three years ago the aurist began to pay similar attention to the throats and noses of these children, and enucleation of tonsils is carried out by him when considered needful. Provision is made at the above-named hospital for treatment as prolonged as may be necessary, and when cases become ambulatory they are, on the recommendation of the visiting physician, Dr. Hugh T. Ashby, recommended for transfer to one of two convalescent homes. In one the children are up practically all day, and go to the school provided in the home until such time as Dr. Ashby considers they may be transferred home. In the other, dealing with more serious cases, rest and exercise are carefully regulated. Between these three institutions there is complete co-ordination. Children are transferred from the convalescent homes to the hospital, or vice versa, when occasion requires, by means of motor ambulances. On a child being discharged home the Invalid Children's Association is notified of the fact, and the chain of supervision becomes as complete as can be arranged.

The guardians are of opinion that they have provided as complete and efficient a scheme as need be desired, but they certainly do not imagine that they are the only authority endeavouring to meet the very serious needs of this difficult type of case.—I am, etc.,

J. D'EWART,  
Medical Superintendent, Booth Hall  
Infirmary.

Manchester, July 12th.

### THE PROPHYLACTIC VALUE OF SCARLET FEVER ANTITOXIN.

SIR,—Dr. E. H. R. Harries, in his interesting communication to the *BRITISH MEDICAL JOURNAL* of July 17th (p. 134), refers in his concluding paragraph to the pro-

duction of active immunity to scarlet fever in the staff of the Birmingham City Hospitals. The following figures, having reference to this subject, are of interest as indicating the apparent result of active immunization at the Fazakerley Hospital.

Year.	No. of new proba- tioners entered.	No. who contracted scarlet fever.
1921	39	4
1922	26	2
1923	47	2
1924	66	10
		(1 fatally)
January 1st to June 30th, 1925	20	1
July, 1925, to July, 1926...	54	0

Active immunization was begun in July, 1925.—I am, etc.,  
C. RUNDLE,

Medical Superintendent, Fazakerley  
Hospital, Liverpool.

July 17th.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

### Registration of Nursing Homes.

THE report of the Select Committee of the House of Commons on the Registration of Nursing Homes was published on July 19th.

#### RECOMMENDATIONS.

Its recommendations are thus summarized :

- (i) That inspection scheme of registration and introduced at an early date.
- (ii) That and county should be county councils
- (iii) That ay well be empowered to upon which both doctors and nurses shall have some representation.
- (iv) That the duties of inspection shall be carried out by medical officers of health with the assistance of other technical officers.
- (v) That inspection shall be limited to the general suitability and organization of the home, and shall not embrace any inquiry into the medical records or private affairs of the patients.
- (vi) That the definition of the term "nursing home" shall be made wide enough to include all types of nursing homes, including maternity homes.
- (vii) That certain publicly controlled institutions shall be expressly excluded from the scheme.
- (viii) That authorities may exempt certain charitable periods of time.
- (ix) That shall not be exempt on the sole ground, of a medical practitioner resident in or in actual control of a home.
- (x) That appeals against the refusal or cancellation of registration may be made to a referee appointed by the Minister of Health.
- (xi) That, in spite of existing legislation in regard to maternity homes, all nursing homes, including maternity homes, shall be brought under one comprehensive scheme.

The Committee recommend that, subject to the provisional exemption by the supervising authority of existing homes at present controlled and staffed by unqualified persons, and to possible exemptions in special circumstances, it should normally be a condition precedent to registration that the matron or other person in charge of the nursing in any registered nursing home be a fully qualified nurse; and that, if and when nursing becomes a more popular and better paid profession, the extension of this condition to a certain proportion of the staff employed in the home will also become desirable.

#### COMMENTS ON EVIDENCE.

##### Nursing Homes Maintained by Doctors.

With regard to the claim advanced by the British Medical Association for exemption of doctors who receive patients for treatment into their private homes, the Committee say :

Many doctors take in single patients for treatment in their private houses; frequently such cases require no actual nursing but merely normal home life and the sympathetic companionship of intelligent persons. It is submitted by certain witnesses that the term "nursing home" cannot properly be applied to cases of this type and that registration is not required, would do no good, and would be strongly resented by the medical profession. There are a number of nursing homes and private hospitals directly controlled by medical men, and often having a medical officer resident therein. Strong representations have been made by the medical profession that, although there would be no objection to simple registration, such homes, particularly those with a resident medical officer, should be entirely exempt from inspection. If registration is considered necessary, it is suggested that the registration authority should place on the register any home controlled by a qualified medical practitioner who can submit to them certificates from two recognized medical men that he is a fit and proper person for the conduct of such an establishment. This system, it is pointed out, is already in operation in certain areas which have obtained powers for the registration and inspection of maternity homes. The Committee feel that there is much to be said for this point of view, but,

on the other hand, they have had evidence put before them which indicates quite clearly that in certain cases there is very decided room for improvement in nursing homes under the direct control of a doctor. They feel that if an individual doctor decides, for purposes of gain, habitually to take in patients, whether into his private house or into a nursing home, he does so with the full knowledge that he is taking up a definite trade and entering into competition with other persons who have to comply with such regulations as may be enforced. Some medical witnesses have objected to the public display of the rules and regulations drawn up by the supervising authority, and to the exhibition of brass plates outside registered nursing homes. The Committee are opposed to any form of compulsion in this matter.

#### Inspection.

Discussing the evidence tendered to them the Committee say :

It has been strongly urged that inspections should be carried out by a qualified medical man, or woman, preferably by the medical officer of health or some similar officer on his staff and deputed by him. It has been pointed out that in many cases it would not be necessary to appoint special officers for the conduct of this work; in short, that it could be taken by medical officers of health in their stride. On the other hand, objections have been raised by a number of witnesses as to the ability of a medical man to inspect the efficiency of the nursing services and as to his capacity for criticizing the domestic arrangements of a home. It is suggested that a medical man is not trained in the art of nursing, and that he would be slow to criticize or interfere with such matters; further, that he would not be likely to detect with the same ease, if at all, minor irregularities in the domestic arrangements, which, although in themselves small, have a considerable cumulative effect upon the health and happiness of patients and nurses. A trained nurse, it is suggested, is the only person competent to inspect and criticize these details. (As stated in the summary, the Committee recommend that inspection should be by medical officers of health.)

#### Structural Deficiencies.

On the evidence presented the Committee are convinced that the dwelling house converted into a nursing home with its many structural deficiencies which cannot be overcome is, at any rate in acute surgical cases, a very poor and expensive substitute for the specially built, adequately equipped and staffed, hospital. It is, of course, true that at the present time there is a considerable demand for nursing home accommodation, and that in fulfilling this demand nursing homes serve a useful purpose, but development in the provision of accommodation for the paying patient should run more along the lines of the provision of specially built and equipped private hospitals and homes, and of the extension of the paying ward system in the existing big hospitals. The Committee note that the complaints from doctors who gave evidence were mainly directed to structural and sanitary defects in the buildings used as nursing homes, and to the lack of proper provision and equipment in regard to surgical cases.

#### Chronic Senile Cases.

With regard to chronic senile cases the Committee report as follows :

The Committee have been impressed with the urgent need for registration and supervision in that class of nursing home which caters for the poor senile chronic. It has been stated in evidence that it is impossible adequately to nurse and accommodate, in a private room, a patient under £5 a week. Unfortunately there exists a large class of elderly persons who although they are capable of making some payment are quite unable to find a weekly sum of this order. The Committee consider that the general application of registration and inspection will do much to alleviate the bad conditions and suffering undergone to-day by patients of this class, but they strongly emphasize their opinion that this change cannot be regarded as a cure for these evils, but merely as a palliative. They feel that the problem can only be properly solved by the reorganization of the Poor Law system, and by the provision of proper paying accommodation by local authorities to meet needs. It has been made abundantly clear to the Committee that the provision of accommodation for the nursing staff in nursing homes of all grades leaves very much to be desired.

#### Bills.

On the motion of Dr. Fremantle, on July 14th, the amendments made in the Midwives and Maternity Homes Bill in the House of Lords were considered in the House of Commons. The amendment providing that the embargo against unqualified persons acting as midwives should not apply to the education of medical students or midwives was agreed to. Another amendment provided that a supervising authority might grant an exemption to a hospital, or other premises for which a duly qualified medical practitioner there resident was responsible, or any hospital or institution not carried on for profit and not used mainly as a maternity home. It was under consideration when the debate was adjourned.

The House of Commons read the Land Drainage Bill a third time on July 14th. It had already passed the House of Lords, where Lord Bledisloe, for the Ministry of Agriculture, had pointed out that inadequate land drainage adversely affected public health and also produced diseases in animals.

The British Medical Association's Report on Rheumatic Heart Disease in Children.—Mr. Chamberlain stated, on July 15th, that the recommendations in the British Medical Association's report on rheumatic heart disease in children were substantially in accord with the suggestions in the chief medical officer's preface to the



Ministry of Health report on rheumatic diseases, published in 1924. Continuous attention was paid to them in deciding the administrative policy of the Ministry, which used all the pressure and influence it could bring to bear to secure the improvement of housing conditions which might cause rheumatic diseases in children.

**Motor Drivers.**—During the discussion on the estimate for the Ministry of Transport, on July 14th, Mr. Bromley asked whether, in view of the proposed introduction of coloured light signals for regulating road traffic, the Minister had made any provision to test motor drivers for colour-blindness; and Mr. Palin urged that driving licences should be granted only to applicants possessing satisfactory physical qualifications. Eighteen was young enough for the driver of a light motor vehicle, and 21 for a heavy lorry. He suggested also that the time for which a driver should be allowed to work ought to be limited, as was the case with railways and tramways. A fatigued driver was a danger to the public, and there ought to be prescribed periods of rest. In the course of his reply Colonel Moore-Brabazon (Secretary to the Ministry) said that the danger of dazzling headlights was becoming less every day. A vehicles bill about to be introduced would lay down standards for the weight of various types of vehicles. In reply to a question the Home Secretary said that during the first six months of this year the metropolitan police had taken out 3,000 summonses against motorists for excessive noise. The noise was due probably to inefficient silencers, particularly in the case of motor cycles. The question was being discussed between the Ministry of Transport and the Motor Cycle Manufacturers' Union. In answer to another question, the Minister of Transport said that complaints had been received with regard to the pollution of the atmosphere by steam-driven vehicles. The matter could be dealt with under the existing law, the enforcement of which was for the police.

**Indian Opium.**—The Home Secretary informed Mr. Ponsonby that 116,000 lb. of raw opium were imported into this country from India in 1925; 16,000 lb. were exported during the same year. The Indian opium retained in this country was used for the manufacture of morphine and other drugs and medicinal preparations. In five years 730 lb. of refined and 6,050 lb. of crude morphine hydrochlorate had been manufactured in India.

#### Notes in Brief.

Deaths from cholera registered during 1924 in Indian cities were: Calcutta, 1,250; Rangoon, 132; Madras, 96; Karachi, nil; Bombay City, 34.

Mr. Chamberlain told Mr. Kennedy, on July 15th, that he could not yet say which of the recommendations of the Royal Commission on National Health Insurance would be adopted by the Government nor when it would be possible to introduce the necessary legislation to give effect to them.

(To be continued.)

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

The following candidates have satisfied the examiners in both parts of the examination:

**DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.**—H. M. Ayres, J. L. Dunlop, Banai Elhiraajin, N. E. Goldsworthy, Riad Abdel Noor Henein, Farid Hilmy, Wasfi Omar, Trilok Chand Paul, F. C. Tibbs, Abdul Wahid el Wakil.

\* Distinguished in the examination for Part II.

The following candidates have been approved at the examinations indicated:

**DIPLOMA IN MEDICAL RADIOLOGY AND**  
Frances Deoley, H. Franklin.

J.  
M.  
J.

... ..

## Medical News.

A DINNER arranged by the London Association of the Medical Women's Federation was held at the Welbeck Palace Hotel, on July 15th, in honour of Dame Mary Scharlieb. The President, Dr. Christine Marrell, presided, and the health of the principal guest was proposed by her old friend and fellow student, Dr. Jane Walker, who spoke warmly of her personal qualities and professional standing. Dame Mary Scharlieb was over 40 years of age before she ever had a scalpel in her hand, and now, at 81, she was still operating with unimpaired judgement and skill. Dr. Walter Carr paid tribute, not only to the outstanding surgical ability of Dame Mary Scharlieb, but to her high character. All her friends would rejoice at the national recognition of her services, which were the more valuable because the love of her fellow creatures had prompted them. Lord Liddell pointed out that the British virtues of courage, pertinacity, and ability were here combined with charm of manner and an unusual and enduring vitality. Sir Alan Anderson praised the pioneer spirit that was an inspiration to all younger women,

and Lady Barrett, as dean of the London (Royal Free Hospital) School of Medicine for Women, spoke of the pride of all members of the school in the honour that had been conferred on Dame Mary Scharlieb. In reply, Dame Mary Scharlieb said that if life were a quest for happiness she had discovered how to achieve it in the love of God and of her friends. Among the guests present were Sir John Rose Bradford and Sir James Berry.

THE KING has been graciously pleased to confer the Territorial Decoration upon Lieut.-Colonel J. W. Craven, M.C., and Major Charles Douglas, both of the Royal Army Medical Corps.

A SCHEME for a general contributory system of pensions, supported by King Edward's Hospital Fund for London, has now been accepted by sixty-nine of the hospitals in London. It will include nurses in all branches of the profession, as well as those in hospital service.

THE Committee upon the Physiology of Vision, appointed by the Medical Research Council at the instance of the British Medical Association, has issued a report (H.M. Stationery Office, 2s. 6d. net) by Mr. R. J. Lythgoe, M.A., B.Ch., founded upon recent literature on the relation of illumination to visual capacities.

As announced last week, the post-graduate medical hostel at the Imperial Hotel, Russell Square, London, W.C., will be opened on Monday next, July 26th. There will be a dinner (5s.) at 8 p.m., and at 9 a meeting over which Dr. Alfred Cox will preside, when Sir D'Arcy Power will give an address on the hostel and its objects; ladies will be welcomed. On Friday, July 30th, at 9 p.m., a discussion on the difference between inflammation and hyperplasia will be opened by Sir G. Lenthal Cheatle. All medical practitioners are invited to attend.

THE Fellowship of Medicine announces that the last of the demonstrations arranged for this session will be given by Mr. Dorrell at the Royal Eye Hospital, Southwark, on July 30th, at 3 p.m.; it will be open to members of the medical profession, without fee. In connexion with its intensive courses in medicine, surgery, and the specialties attention is directed to the formal lectures throughout the week at the Prince of Wales's General Hospital, Tottenham, at 4.30 p.m., which are open to members of the Fellowship. The West End Hospital for Nervous Diseases is providing weekly courses of lecture demonstrations until August 12th. Owing to unforeseen circumstances the intensive course at the Brompton Hospital for Chest Diseases has been cancelled. The entire clinical work of the hospital will be available, however, daily throughout the month to graduates on payment of the fee of 1 guinea. From August 18th to 28th the Queen's Hospital for Children will hold an all-day course, and the Queen Mary's Hospital has arranged an intensive revision course from August 23rd to September 4th. Practical courses in anaesthetics and courses in obstetrics and child welfare at the City of London Maternity Hospital can be arranged by the Fellowship. For full particulars as to details of these various courses inquiries should be made to the Secretary of the Fellowship, 1, Wimpole Street, W.1.

THE campaign for cancer research instituted by the University of Sydney was, according to an Exchange dispatch, formally launched at a meeting presided over by the Governor of New South Wales on July 14th. It is hoped to obtain £100,000; towards this amount £25,000 has already been subscribed.

THE house of the Royal Society of Medicine will be closed during August, but the library will be open on week-days from 11 a.m. to 6 p.m., except on Saturdays, when it will close at 1 p.m.

DR. ARTHUR CUSHNY, professor of materia medica and pharmacology in the University of Edinburgh, left estate of the value of £22,140, with net personality of £21,984.

THE Secretary of the Department of Scientific and Industrial Research announces that a licence has been issued by the Board of Trade to the British Food Manufacturers' Research Association, which has been approved by the Department as complying with the conditions laid down in the Government Scheme for the encouragement of industrial research.

THE seventh Congress of Italian Industrial Medicine will be held at Genoa from October 12th to 15th under the presidency of Professor G. B. Ramoino. Among the subjects to be discussed are individual conditions and organic changes in persons affected by electric currents, and workmen's dwellings. Further information can be obtained from the general secretary, Dr. Agostino Crosso, Via Frugoni 19, Genoa.

A POST-GRADUATE course in tuberculosis will be held at the Strasbourg Faculty of Medicine under the direction of Professors Canuzy and Vaucher, from October 10th to 25th. The fee is 200 francs. Further information can be obtained from Professor Vaucher, Rue de l'Université 22, Strasbourg.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the **BRITISH MEDICAL JOURNAL** alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the **BRITISH MEDICAL JOURNAL** must communicate with the Financial Secretary and Business Manager, **British Medical Association House, Tavistock Square, W.C.1.**, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the **JOURNAL**, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the **BRITISH MEDICAL JOURNAL** are **MUSEUM 0361, 0362, 0363, and 0364** (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

**EDITOR** of the **BRITISH MEDICAL JOURNAL**, *Aitology Westcent, London.*

**FINANCIAL SECRETARY AND BUSINESS MANAGER** (Advertisements, etc.), *Articulate Westcent, London.*

**MEDICAL SECRETARY**, *Medisecra Westcent, London.*

The address of the Irish Office of the **British Medical Association** is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumslough Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

### QUERIES AND ANSWERS.

#### INCOME TAX.

##### *Production of Accounts.*

"A. P. L." was last year called upon to produce accounts in support of his income tax return. He employed an accountant, with the result that his return was found to be somewhat excessive, but his gain in tax was less than the accountant's fees. He has now been asked to produce an account for the year 1925, but wishes to avoid further expense.

\* \* \* We advise "A. P. L." to send in a statement, prepared and certified by himself on the same lines as the accountant's statements, with a covering note pointing out that, as the sufficiency of his previous returns was corroborated by the independent accounts last year, he is not prepared to incur the further expense of employing an accountant again.

##### *Cash Basis.*

"O. R." has been informed by his local inspector of taxes that in future the district commissioners of taxes "are not prepared to accept from professional men accounts which are on a cash basis only."

\* \* \* This question crops up from time to time, and the attitude of the authorities has generally been that they are prepared to accept cash accounts in normal cases, reserving their claim to press for an adjustment for the value of outstanding book debts when they are increasing in a marked degree. It is undeniable that in theory accounts should include such adjustments, but it is only in the case of rapidly growing practices or where a practice changes hands that they affect materially the income tax result, and undoubtedly an accurate adjustment (involving as it does the probable value of each outstanding debt) is almost impossible to calculate. "O. R." has the choice of three courses: (1) to lodge a formal request that his assessment shall be made by the Commissioners for Special Purposes instead of by the district commissioners, seeing that the latter seem to have prejudged the issue in his case; (2) to maintain his refusal and appeal personally to either of the two bodies of commissioners if his accounts are not accepted; and (3) to send in the figures for each of the three years forming the average, quoting (a) the nominal amount of outstanding debts at the beginning and end of the year, and (b) the figures at which, after a careful examination, he estimates their actual value.

### LETTERS, NOTES, ETC.

#### SPIROCHAETOSIS ICTEROHÆMORRHAGICA.

DR. ANDREW BALFOUR (Director, London School of Hygiene and Tropical Medicine, W.C.1) writes: I read with interest the paper on "Spirochaetosis icterohæmorrhagica in Norfolk" by Dr. Burton-Fanning and Dr. Cleveland, which appeared in the **BRITISH MEDICAL JOURNAL** (July 17th, p. 103). The symptoms of the cases they record certainly simulate those of the condition formerly known as Weil's disease, even though the account of

the spirochaetal findings in the urine of Case IV does not appear to me to be quite convincing. My object, however, in writing is to draw the attention of the authors to a paper which they have apparently missed—namely, that by Hindle and Brown in the *Lancet* for August 22nd, 1925 (p. 372). This paper, entitled "Spirochaetosis jaundice in Great Britain," gives an account of two cases of the disease occurring in England which were undoubtedly associated with a small outbreak at a school in the Midlands. Hindle and Brown point out that there is some evidence that a mild form of the disease is widespread in this country. I note that the cases recorded by Drs. Burton-Fanning and Cleveland were all severe and that three of them ended fatally.

#### UNRECOGNIZED SMALL-POX IN POOR LAW INSTITUTIONS.

THE Minister of Health has issued a circular letter to guardians stating that his attention has been drawn to recent instances in which unrecognized cases of small-pox have been admitted to Poor Law institutions and have been the means of spreading the infection before their true nature was discovered. The Minister points out that the regulations in force require every person on admission to be examined by the medical officer, and he requests that the attention of the medical officer should be drawn to any skin eruption observed on admission or afterwards noticed by the nurses or attendants. He asks further that at the larger Poor Law infirmaries the attention of the junior medical staff should be directed to the importance of immediate consultation with the medical superintendent if a patient should exhibit symptoms which might be due to small-pox. He adds that in all cases of doubt concerning the diagnosis the medical officer should at once inform the medical officer of health and request him to see the patient.

#### A FINE RIFLE SHOT.

EVERYONE will have noticed the fine performance of Dr. F. H. Kelly in tying for the King's Prize this year at Bisley. Dr. A. M. LUMPHY sends us the following list of prizes Dr. Kelly has won at Bisley in recent years:

Grand aggregate 1914, 1922, and 1923. All comers' aggregate 1922 and 1923. Service rifle championship 1914. Elkington aggregate 1923 and 1925. In the King's Prize Dr. Kelly reached the final stage in 1910, 1921, 1922, 1923, and 1925. He won the Bronze Medal in the first stage in 1922, and in 1924 was again in a leading position in the aggregates, but was unable to remain at Bisley for the later part of the meeting. He was third in the King's Prize last year, and this year won the Silver Medal in a tie shoot of three. In the final stage this year he was one of four who tied with 286; in shooting off he was beaten by 1 point by the winner, Mr. Arthur Filton.

#### THE AUTOMOBILE ASSOCIATION.

AT the twenty-first annual meeting of the Automobile Association held at the Savoy Hotel on July 14th, Lord Donoughmore, one of the vice-presidents, was able to announce that the number of members of the Association now exceeded 300,000. The meeting was also memorable because, probably for the first time of record, four members arrived with a "grouse." Apparently these gentlemen were sympathizers with the general strike, and were annoyed that some minute portion of their subscription had been used to help in defeating it. Two of them spoke at great length and were admirable exponents of the art of drawing red herrings across the trail. They contended that the action of the committee in offering the assistance of the machinery of the association to the Government was *ultra vires*; but their resentment was not sufficient to permit them to accept a return of their subscriptions. It is curious to note that one of the speakers, Mr. W. J. Brown, is described as the secretary of the civil service clerks' trade union. The protesting resolution was rejected by an enormous majority. The Automobile Association is to be congratulated on its successful work for motorists during the last twenty-one years, and probably Mr. Brown will avail himself of its good offices if ever he gets into a motoring difficulty.

#### CORRECTIONS.

IN Dr. Horatio Matthews's letter on ophthalmic examination in infancy (July 17th, p. 136) for "presbyopia" read "hypermetropia."

MR. A. P. BERTWISTLE desires to call attention to two "inaccuracies" in the review of *A Descriptive Atlas of Visceral Radiograms* published in the **JOURNAL** of July 17th (p. 118). "Firstly," he says, "Dr. Rowden, senior, has been mistaken for junior; the former supplied about 120 [?] radiograms against the latter's eight." The second "inaccuracy" seems to be that sufficient prominence was not given to the name of Dr. Spriggs, who supplied ninety excellent abdominal radiograms. Mr. Bertwistle says that "Dr. Rowden, senior, and Dr. Spriggs provided the backbone of the book."

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 37, 40, and 41 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 33 and 39. A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 72.

## A SEARCH FOR AN IDEAL ANTIGEN FOR THERAPEUTIC IMMUNIZATION.

BY

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AND

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It is now more than twenty years since Wright introduced the principle of therapeutic immunization against various microbial infections by the injection of bacterial vaccines. Wright's discovery gave an enormous impetus to the study of active immunity in microbial diseases. Although at first the range of therapeutic trial of the method of specific inoculation was of necessity much wider than it is to-day, experience has demonstrated that the principle has a much greater value in some infections than in others, and in certain types of disease than in others. It is probable that we do not even yet know the limits of the method, though it is already certain that it has limits, and these of a very definite kind. Especially is its value limited when infections are generalized and when the tissue resistance of the patient is at a low level. In the treatment of such a grave and common disease as acute streptococcal septicaemia, for example, the failure of vaccine therapy is notorious, while in chronic streptococcal endocarditis response to therapeutic inoculation does not occur.

It cannot be said that in specific antiserums, at least in the case of the streptococcus again, the practitioner has a remedy which is much more potent than it was twenty years ago. There are those who consider that Bosredka made an appreciable advance when he introduced the use of "sensitized vaccines," and certainly this mixed type of bacterial antigen, in combination with specific antibody, appears to be of definite value in the treatment of septicaemic processes when the infection is one for which a homologous antiserum is available.

In spite of the last-mentioned contribution to the subject, however, it cannot be said that the treatment of bacterial infections of the "pyogenic" class has advanced materially during the past decade, and this is true whether we consider the matter from the aspect of bacteriotherapy or of chemotherapy. Sometimes hope swings over to the side of chemical agents, at other times it turns to "specific" measures. Occasionally, since these things have a vogue at present, the physician wonders if physical processes may not possibly hold some more potent means available for the septicaemic patient. In the search for remedies the donor of blood has not been omitted, and various forms of "immuno-transfusion" have been exploited, though so far to very little purpose.

### NON-SPECIFIC INOCULATION.

Of late years a great deal of non-specific treatment of infective processes has been carried out by methods which are generically termed "protein shock." The undoubted benefits which have occasionally followed these efforts, though not infrequent improvement following directly upon the use of a bacterial vaccine which later experience of the case proves not to be specifically related to the infection, together with some other pieces of evidence, have led some observers to consider if most of the good results following the employment of bacterial vaccines may not be of the nature of protein shock. This doubt may, however, be read to be as much a measure of disappointment at the meagre results of vaccine therapy as a convincing conception of the mode of its action. For it may well be the fact that it is not so much that bacterial vaccines are not specific as that they are not specific enough. It can scarcely be doubted, in view of all the known facts of natural and of acquired immunity, that in the stimulation of the patient to produce specific antibody there lies, dormant but available, a much larger field of response than has hitherto been entered by the use of any antigen yet placed in the practitioner's hands.

It seems clear that a new method is essential in order to advance from the present position where the treatment of pyogenic infections has paused for so long. Wright's introduction of vaccine therapy gave a great fillip, not only to the treatment of infective processes by specific inoculation, but to the study of antigen therapy in general. It is important to cast about for new remedies of the antigen class, to devise new experiments with this object in view, and especially to maintain an open mind as to possibilities which may have become hidden, as possibilities oftentimes are hidden, by assumptions which have gone before and which, through the course of years, are mistaken for facts.

In this paper it is proposed to give a survey of the various forms of antigen that have been used for the purpose of therapeutic immunization and to describe a new one, with the steps which led up to its discovery and the uses to which it may, in our judgement, be put.

### SURVEY OF METHODS OF PREPARING ANTIGENS.

The methods of preparing bacterial antigens for immunizing purposes, proposed from time to time, have been many and diverse. Following the original discovery that suspensions of dead bacteria in a neutral medium, sterilized either by heat or by chemical action, were capable of protecting against bacterial infection, bacterial "vaccines" (Wright) have been used for this purpose almost to the exclusion of other forms of antigen; moreover, these bacterial vaccines have been considered to be a standard by which the immunizing values of other antigens could be measured.

Since the time when vaccines were placed upon a practical basis, however, a good many other antigens have been proposed, and have been actually prepared for purposes of laboratory research. A few of these have also been made available for therapeutic use. None so far has approached very nearly to the ideal antigen, perhaps little closer than did the original bacterial suspensions. The ideal antigen for therapeutic purposes should exist in aqueous solution; it should be protein-free; it should be non-toxic; it should be rich in immunizing properties.

The various methods adopted to prepare antigens for immunizing purposes may be reduced to four, according as the product of the method is (1) a bacterial suspension of a culture grown upon solid media, (2) the whole broth culture of a micro-organism, (3) the filtrate of a broth culture, or (4) an extract of the bacterial cells obtained in various ways. In all of these resultant products the antigen exists in a crude state, adulterated more or less with substances which are not only of no value in the process of immunization, but are not seldom extremely injurious to the patient, as well as to the antigen itself.

Although the exact nature of the antigenic substance is not known, since it has never been obtained in a pure state, it is undoubtedly specific in any particular antigen. In other words, each micro-organism has its homologous antigenic or stimulating substance, and the production of immunity depends upon some sort of favourable interaction between this substance and the cells and tissue fluids of the body. A weak antigen tends to excite the formation of a weak antibody, while a strong antigen stimulates an antibody response more or less proportionate.

In preparing antigens, therefore, whether for experimental or for therapeutic purposes, including the production of antisera, it has been the ultimate aim of all investigators to obtain these substances in a form which might stimulate the highest degree of specific antibody response with the least noticeable reaction on the part of the host. It has long been recognized clinically that severe general reactions, and to a less extent also severe local reactions, tend, in greater or less degree, to lower the resistance, or to diminish the defensive power of the body. This results from the failure of the tissues to respond to their fullest capacity to the stimulation of the antigenic substance, part of their energies being spent in combating substances not in the least concerned with the production of immunity, but harmful to the whole economy. Such relative failure is well illustrated in the attempt to produce immunity to diphtheria by the use of the broth filtrate of a culture of the diphtheria bacillus. This filtrate, which is in effect a solution of the diphtheria toxin, contains

both a poisonous portion, which is non-antigenic (non-immunizing), and an immunizing portion, which is non-toxic. In order to utilize the latter portion of the diphtheria toxin to its fullest extent in practice, the toxic portion is neutralized by the addition of diphtheria antitoxin, giving us the product known as the toxin-antitoxin mixture of Von Behring<sup>1</sup>; or it is rendered harmless by exposure to heat or to certain chemicals, leaving the toxoid or immunizing portion available as an antigen, the diphtheria toxoid of Glenny and Hopkins,<sup>2</sup> or the anatoxin of Ramon.<sup>3</sup> With the same object in view Larson,<sup>4</sup> by the use of soap, also produced a detoxicated diphtheria toxin.

Substances, such as various proteins, innocuous in themselves but prone to be poisonous when injected or absorbed parenterally, are invariably found in association with the antigenic substance in all antigens at present available. Such proteins—originating either from the bacterial bodies or from the media in which the bacteria have been cultivated—always excepting those which are intimately connected with the antigenic substance itself—are considered non-essential to the antigen and more or less harmful. To isolate the antigen proper from these proteins in a pure state has been a problem beset with many difficulties, since all known procedures for ridding the antigen of them have been undertaken only at the expense of weakening the value of the antigenic substance itself.

Seeing that the antigenic substance has been considered to be itself protein in nature, or to be closely associated with the proteins of the bacterial cell, it has been the practice of some workers to prepare extracts of the bacterial elements which should contain as much of the bacterial protein as possible, rather than to utilize the whole bacterial body as a form of antigen. In many instances, and where a special purpose was in mind, this procedure has proved fairly satisfactory.

One of the first and most widely used methods of extraction on these lines was that of Besrodka,<sup>5</sup> who triturated in a mortar a mixture of salt and bacteria dried *in vacuo*. The extraction was carried out by the gradual addition, during trituration, of distilled water until the final content of salt in the solution approached 0.85 per cent. Macfadyen<sup>7</sup> and others have obtained important results by triturating frozen bacteria by special machinery and extracting with water or with salt solution. Another method turns upon allowing the bacteria to remain in their nutrient fluid media for prolonged periods. This method has disadvantages, in that it not only results in extraction of the proteins from the bacterial cells, but it permits of the retention, in the final product, of the autolysates and poisonous metabolic substances contributed to the media. This method, which was originally employed by Kraus<sup>6</sup> in the production of his antigen for the precipitin test, is used also in the preparation of some of the tuberculins. Prolonged incubation of a suspension, in normal saline, of live or of dead bacteria, will also produce an extract containing antigenic properties, but the antigenic value of a solution obtained in this manner is weak, and therefore it is of little value. It has been customary for many years to dissolve the bacterial cells in alkaline fluids, such as N/10 sodium hydrate, and from this solution to precipitate the protein. One of the best alkaline solvents for all except acid-fast bacteria was found to be "antiformin." It has been shown by several investigators that by the tryptic digestion of bacteria, as originally suggested by Hirschfelder,<sup>8</sup> antigen more or less free from extraneous constituents may be obtained.

While these various methods of extracting the proteins or so-called endotoxins from bacterial cells have been successfully applied when the antigen was merely required for certain serological purposes, it was early discovered that antigen obtained in these ways did not fill the role required of it from the clinical standpoint as a substitute for the whole bacterial cells themselves, and therefore other means of attaining the desired end have been sought.

D. Thomson in 1919<sup>9</sup> described an extract of the gonococcus and other micro-organisms prepared by dissolving the elements in N/10 alkaline solution and precipitating in a weak acid solution. The precipitate, washed and redissolved, resulted in an extract said to be non-toxic in nature and of high antigenic value. Extracts prepared in

this manner have been called "detoxicated vaccines." In 1920 Douglas and Fleming,<sup>10</sup> with a view to rendering bacterial cells more soluble in the body fluids and thereby more readily absorbed for purposes of immunization, extracted the elements with acetone by means of a Soxhlet's apparatus. It was found that the resulting material, in the form of a sterile, dry, white powder, was very soluble in media containing tryptic and other proteolytic ferments. These authors concluded that this type of antigen appeared to possess immunizing properties fully as great as those of vaccines, and also that it formed a very suitable antigen for use in complement fixation tests. Jenkins,<sup>11</sup> in 1921, by modifying the preparation of "detoxicated vaccines" as described by Thomson, and incorporating a method of detoxication described by Dean,<sup>12</sup> produced what he termed "residual vaccines." Dean had previously used hydrogen peroxide as a detoxicating agent in the preparation of various vaccines, especially of dysentery bacillus vaccine, and claimed that they were rendered non-toxic thereby. In 1923 Dreyer<sup>13</sup> gave us "defatted vaccines," later called "diaplyto" vaccines and antigens, and claimed that it was possible to obtain better results with the use of antigens freed from surrounding fatty or lipoidal material than with those prepared in any other way. While this work of Dreyer, as also that of Douglas and Fleming before him, appeared to lead to conclusions diametrically opposed to those following the researches of others, especially of Warden,<sup>14</sup> who held that bacterial antigen is lipid in character, it is interesting in that it would, on the surface, seem to prove that the specific antigenic substance may be obtained from different parts of the bacterial cell and by different methods.

#### THE NATURE OF THE ANTIGENIC SUBSTANCE.

During the past two or three years several investigators, and especially Heidelberger,<sup>15</sup> Zinsser,<sup>16</sup> Perlzig,<sup>17</sup> and their associates, have been carrying out some extensive experiments in an attempt to throw more light on the character of the antigenic substance, and considerable progress has been made. Most of this work has been done with the pneumococcus, and certainly suggests that the possibilities of obtaining a protein-free antigen are by no means hopeless. In the course of these researches a soluble and highly specific substance was purified and concentrated from the three types of the pneumococcus by Dochez, Avery, Heidelberger, and others. This was obtained free from nitrogen, and appeared to be of a polysaccharid nature. This substance, however, is non-antigenic, while the protein substance is antigenic. Perlzig, Steffen, and others isolated an antigen from the three types of the pneumococcus by prolonged tryptic digestion and extraction of the digest with 70 to 90 per cent. alcohol. This antigen is insoluble both in absolute alcohol and in ether, and in all lipoidal solvents. It is not impaired by boiling for five minutes nor by heating at 56° C. for one hour. It would appear from these researches that bacterial antigenic substance is, in the case of the pneumococcus at any rate, of the nature of a lipid, and that it probably adheres to the protein fraction of the cell in loose union.

#### A NEW TYPE OF ANTIGEN.

The work now to be summarized was begun in 1921 by Ferry and was continued by Ferry and Fisher. Many details of these researches have been already published.<sup>18, 19</sup> The experiments had for their purpose the determination of the practical value, from an immunizing standpoint, of bacterial antigens prepared after various methods. They were originally undertaken as the direct result of suggestions made by Horder. In carrying out the work a large number of antigens prepared from several different micro-organisms were tested, in the hope that a substance would be found fulfilling more satisfactorily than any in present use the requirements of an ideal antigen.

The work was first undertaken with broth cultures of the typhoid bacillus, colon bacillus, pneumococcus, and other bacteria of the (so-called) endotoxin-producing class. It was found that the antigenic properties of the filtrate were higher than anticipated, having regard to previous conceptions of the antigenic properties of broth filtrates

generally in this class of bacteria. It was also found that these properties varied more or less inversely with the time of incubation of the cultures. In other words, the shorter the incubation time, within certain limits, the higher the antigenic titre of the filtrate, the optimum incubation time being from eighteen to twenty-four hours. Filtrates from cultures incubated for five and ten days were very low in antigenic power. This experiment was carried out several times with similar results, leading to certain deductions which were contrary to ideas previously held. Reasoning from past experience with diphtheria and tetanus toxins and with toxins of similar nature to these, it was concluded, in the first place, that the antigenic substance pertaining to the class of bacteria under observation is probably not of the extracellular type, because if it were it would probably have been stronger at the end of several days than at the end of eighteen or twenty-four hours. It was concluded, in the second place, that if the antigenic substance were of the endotoxic variety, strictly so called, it would again have been found stronger after several days' incubation than after the early stages, since more of the antigenic substance would have been dissolved out of the cells and have been evident in the filtrate. It would seem, therefore, that this stimulating substance which we term antigenic substance must be more or less loosely bound up with the bacterial cell and is to be found in the broth as a washing from the bacterial surface or ectoplasm rather than as an extract from the endoplasm of the cell.

As a result of these observations with broth filtrates it was argued that, if the antigenic substance could be so easily washed off the bacterial cells and was to be found in the broth as early as eighteen hours after planting, it ought to be obtained, and in a higher degree of purity, in the washings of bacteria grown on solid media. In order to prove this point some preliminary tests were carried out with the typhoid bacillus. This micro-organism was chosen because it grows very readily on ordinary media and because the antigenic properties of the particular strain of typhoid bacillus in use were more or less known to us. In carrying out these experiments twenty-four-hour agar growths were washed off with normal saline and the suspensions of bacilli were immediately agitated for a few minutes in a mechanical shaker more quickly to yield a homogeneous suspension and to facilitate the extraction of the antigenic substance. In order to clarify the suspension of bacilli with as little loss of antigenic properties as possible, it was passed through a Sharples centrifuge in place of a porcelain filter, for it had been found earlier in the work that if the washings were passed through porcelain filters they lost, probably by absorption, more or less of their antigenic power: for this reason clarification by means of the centrifuge was here adopted. These washings, when received from the centrifuge, proved, as anticipated, to be highly antigenic, even more highly than the broth filtrates, and in some instances more highly than the suspensions of bacilli from which the washings were obtained. The washed bacilli were, in every instance, very low in antigenic content, showing that the more washing had taken from them a large part of their immunizing power.

In carrying out the experiments with the broth cultures and the cultures grown on solid media all operations were done as quantitatively as possible. Twenty-four hour broth cultures or salt suspensions of the bacilli, grown for the same length of time on the solid media, were divided into three parts: one part or fraction to be tested as a whole; one part to be centrifuged for the preparation of the filtrate fraction, which we called the "centrifugate"; and one fraction to be centrifuged for the sediment. This last fraction was diluted to the original volume with normal salt solution. These fractions were sterilized by the addition of 0.3 per cent. cresol instead of heat, as experience had shown that heat is injurious to antigen, especially to the immunizing portion of it. The antigenic or immunizing properties of these fractions were determined by injecting them intravenously into rabbits of equal weight in the same number of doses, usually four, and testing their serums, according to various serological methods, for antibody content.

Washings from other bacteria also supposed to be of the endotoxic variety, such as the colon bacillus, pertussis bacillus, streptococcus, gonococcus, and especially the pneumococcus,<sup>20</sup> were prepared and tested as above, and antigens of extremely high value were obtained. These results corroborated the work on the typhoid bacillus, and confirmed the deduction that the antigens of this type of micro-organism are very loosely bound to the bacteria, and that it is not necessary to break up the bacterial cell in order to liberate the antigenic material.

The fact that the bacterial cells were intact and, so far as the eye could discern, were not broken up, was shown by means of staining and observing under the microscope, and also by plating, a comparison being made between the number of colonies obtained and the number of bacteria in the original suspension.

#### "ECTOANTIGEN."

A very important point was brought out at this time—to wit, the fact that washing the organisms in this way extracted the antigenic substance from the bacteria, while the toxic principles were left behind. Tests showed that the washings were non-toxic, while the washed bacterial cells were practically as toxic as before, as they produced reactions similar to the unwashed cells. The toxins or poisonous substances retained in the bacterial cells, therefore, are apparently endotoxic in nature, while the antigens are seemingly derived in great part from the ectoplasm. The antigens in question, therefore, are in all probability not identical with the endotoxins or endopoisins, as has been taught, but appear to be entirely different substances. As it would appear from these results, and others which Ferry and Fisher have reported, that the antigenic or immunizing portion of the bacterial cell is more ectoplasmic than endoplasmic in origin, it is proposed to call this type of antigen an "ectoantigen," and for products prepared in such a manner as to contain only this ectoantigen the designation "immunogens" is suggested, to distinguish them from other antigenic products already in use.

A further study of this type of antigen elicited several other facts of extreme interest. One of the first experiments in the attempt to produce an antigen of superior value was carried out by treating broth cultures with sodium hydroxide, as this chemical had been used for a number of years by many investigators for the disintegration of bacteria, in the belief that by destroying the bacteria the endotoxin or antigenic substance is set free. The results, however, were disappointing in that the antigenic properties were found to be more active in the original broth cultures and in the broth filtrates from the original culture than in the material remaining after the sodium hydroxide had been allowed to act. There was no doubt about the fact that the bacteria were broken up and the contents set free, but the liberation of the so-called endotoxin in no way increased the antigenic properties of the filtrates. On the other hand, something, probably the alkali, had a very injurious effect upon the antigen, since the broth culture and its filtrate stimulated rabbits to produce agglutinins of the titre of 1 in 16,000 and 1 in 10,000 respectively, while the fractions acted upon by the alkali only stimulated agglutinins of titres as low as 1 in 150 and 1 in 2,000. Somewhat similar experiments were next carried out, using antiformin instead of sodium hydroxide, and the results were practically the same. The immunizing value of the antigen was nearly destroyed during the process of extraction.

#### TITRES OF BACTERIAL WASHINGS.

Another experiment was undertaken to show the relative values of bacterial autolysates, artificial aggressins, and bacterial washings ("immunogens"), as it was felt by some that these three products must be closely related. The results, however, were very convincing of the fact that they were not at all alike. Serum resulting from the injection of the agar washings gave an agglutination titre of 1 in 12,000 and a complement fixation titre of 1 in 750, while the aggressins gave titres of 1 in 5,000 and 1 in 500 respectively. The autolysate from the residue of the agar washings gave titres of 1 in 3,000 and 1 in 100, while that



from the residue of the broth filtrate titred 1 in 5,000 and 1 in 500. An autolysate from an agar culture not previously manipulated in any way gave an agglutination titre of 1 in 7,000. We have concluded from these results that autolysates and aggressins are antigenic, not because of the lysis of the bacteria or of the extraction of the antigen by shaking and long standing, but because they contained some of the antigen which had been washed from the exterior of the bacterial cell and which had lost some of its antigenic properties as a result of the method of treatment. The more of the antigen that is previously washed off the cell, the lower will be the titre of the serum stimulated by the sediment left by lysis or the autolysate from the sediment, whether washed or unwashed.

Nitrogen determinations of these bacterial washings show that the total nitrogen in them is very much lower than in that of any other bacterial antigens at present in use, including such well known antigens as bacterial vaccines, glycerinated vaccines, detoxicated vaccines, and serobacterins. The fact that the washings were low in nitrogen content and high in antigenic properties led to experiments to determine, if possible, if washings rendered protein-free would show any immunizing properties. Three methods of precipitating the protein were followed, including the use of acetone, phospho-tungstic acid, and uranium acetate. In the first method the acetone was removed by evaporation under vacuum in order to use as little heat as possible, and in the third method the solution was freed from uranium by precipitation with sodium phosphate. Agar washings of *B. typhosus*, *B. coli*, pneumococcus, streptococcus, and gonococcus apparently protein-free were found to stimulate antibodies of appreciable value, as shown by agglutination and complement fixation tests.

As a final experimental procedure tests were carried out on animals in order to compare these washings with therapeutic antigens prepared after various other methods. The results in every instance were favourable to the washings. In carrying out these tests rabbits were given three intravenous injections each of the antigens, diluted to contain the same number of micro-organisms per cubic centimetre, or their equivalent in antigen, and bleedings were made seven days after the last injection. The serums from these rabbits were then tested for antibody content, according to several well known serological methods, and the results tabulated. As stated above, the antigenic properties of the washings per cubic centimetre, estimated on a quantitative basis, exceeded those of any of the other antigens tested.

It was concluded, therefore, as a result of these last tests and others previously carried out, that these washings more nearly approached the ideal antigen than any which had come under the observation of the writers. This last statement is based on the fact that these washings are in aqueous solution, are low in protein content, are high in antigenic properties, and are practically non-toxic.

#### CLINICAL RESULTS AND DOSAGE.

Following the experimental work on these "immunogens" steps were next taken to test them on a practical basis. They were sent to a considerable number of clinicians, choosing those who had suitable cases in their clinics, and who were known to be conversant with, and able to give time and attention to, systemic observations of their patients throughout the treatment. While the first trials were carried out more or less as a preliminary measure in order to determine the safety of the remedies, the results justified the procedure, and a more extensive trial was then attempted. The subcutaneous, intravenous, and intramuscular routes for injection of the antigen were compared. So also were various intervals of time in the course of different disease processes. Altogether these trials have been pursued over a period of two years. The intramuscular route appears to be the one of election, and daily injections appear to give the best results. These conclusions are, however, only tentative, since the experience of different observers varies, and the best mode and the interval of injection doubtless depend upon the type of the disease, whether acute or chronic, general or local.

It has been found by a series of trials that the most useful concentration of the antigen is one which allows of

an initial dose of 0.5 c.cm., with increments rising to 2 c.cm., and, on occasion, to 5 c.cm.

It is as yet too early to speak of the main results of the use of this antigen, still less of statistical results. To quote concrete cases, however successful they appear to have been, can avail little, although it is hoped to do this later when a larger number have been collected. Already, it may be said, however, this form of antigen has become the favourite one in the hands of a good many practitioners who have had experience of various types of these remedies. Promising reports are forthcoming in connexion with streptococcal, pneumococcal, and gonococcal infections especially. That reactions of an undesirable kind are absent after injection of this antigen is a fact recorded by almost all those who have used it, and this clinical observation confirms the results of its experimental use in the laboratory.

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## SYMPTOMS, PATHOGENY, DIAGNOSIS, AND TREATMENT OF ADDISONIAN ANAEMIA.\*

BY

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THIS disease is worthy of consideration on account of its frequency—I have been meeting with one case a month for the last two years—and because of the mistaken diagnoses which have been made: neurasthenia, neuritis, chronic rheumatism, pelvic pressure neuritis, food poisoning, colitis, and carcinoma of the liver have been some of the diagnoses in this series—tragic mistakes, for the disease appears to be amenable to treatment if only the diagnosis is made early.

#### SYMPTOMS.

Symptoms are often few and vague, and in a series the presenting symptom shows much variability; tiredness or weakness and the symptoms of anaemia are the most common. Dyspepsia is often met with, but pain is usually slight and vomiting rare. Diarrhoea alternating with periods of constipation is a symptom of importance, and is found in about 50 per cent.; it precedes the anaemia by years, and, as the patient has always had it, information about it is not volunteered. It is severe at times and diagnosed as colitis; in one case a severe attack following a meal of suspected fish led me to diagnose food poisoning for two weeks. Premature greyness occurs in a large number of the cases. Glossitis, another symptom which precedes the anaemia, is common; painful cracks and fissures occur for years, and each patch heals slowly, leaving behind it atrophied epithelium devoid of papillae. These atrophic patches spread gradually over a large part of the tongue, and produce the smooth glazed tongue of the declared condition. This glossitis appears to be the sequel of suppurative periodontitis, past or present, and it is found apart from the disease under discussion, though rarely to the same degree. In the less marked cases the glossitis may be unmasked by swabbing the tongue over with dilute acetic acid.

Nervous symptoms, usually those of subacute combined degeneration, are frequent in the later stages of the disease, but symptoms of this condition were the presenting complaints in a third of the series. Abnormal sensations, due to degeneration of the sensory tracts or nerves, are the first and are very misleading, for there is no loss except of deep sensation; the vibration sense, fortunately one of the easiest to test, is one of the first to disappear. As the sensory changes are modified qualitatively, rather than

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quantitatively, a diagnosis of neurasthenia is given. The motor tracts are affected later; the pyramidal tract is, as a rule, the first to suffer; the spastic paresis resulting augments the fatigue of the anaemia. A flaccid paresis usually follows, but Babinski's sign persists. Symptoms due to intoxication of the higher levels are not infrequent, but, apart from those due to the relative anoxaemia, they occur at a much later stage, and are of no value for diagnosis; acute confusion, depression, and Korsakow's psychosis are frequent. Nervous changes in the upper extremity are less prominent, but of the same kind as in the legs; they occur later. A rapid ascension of the nervous symptoms is occasionally seen; in Case W. it was interesting, although humiliating, to follow the extension to abdomen, thorax, and arms. Trophic changes are late, and, as a rule, terminal.

#### COURSE.

The disease is of long duration, and has been present for years before it is diagnosed. As will be shown later, it

may be termed a congenital disease in most cases. It consists of gradually lengthening waves of anaemia separated by gradually shortening remissions of relatively good health, apart from diarrhoea and glossitis. Hunter says it is the third wave which is diagnosed, but there are probably many ripples, and the waves are difficult to map out. These early waves readily respond to treatment, but recovery occurs without treatment, unless the resistance of the patient is so slight that the condition becomes aplastic at the outset. The later waves are progressively less amenable to treatment, and the aim of this paper is to encourage earlier recognition of the disease.

#### ETIOLOGY.

This is obscure still. A few cases follow intoxication with known substances—thorium, radium, and  $\alpha$  rays; some aniline and arsenical derivatives, and toxins of roundworms and tapeworms. These act by depressing the bone marrow, and cause an anaemia which is indistinguishable from the primary one.

Experimentally an anaemia very nearly related to Addison's type can be produced by injecting known haemolytic substances.<sup>1</sup> Seyderhelm<sup>2</sup> produced an anaemia of this type in dogs by making a stenosis of the ileum; he found that anaemia developed only when the gut above the stenosis became infected with faecal organisms. This experiment was planned to reproduce the condition found present in cases of Addison's anaemia; it has been known for some time, from operation and post-mortem experience, that there is a faecal condition of the contents of the small intestine in these cases, and an atrophic gastro-enteritis similar to the atrophic glossitis already noted.

This infection of the upper alimentary tract would appear to be due to the gastric achlorhydria found in all but a few cases of this disease—the Guy's Hospital school say that it is invariably present; I shall return to this point. The gastric hydrochloric acid is a strong antiseptic—an acidity of pH 4.0 will kill many strains of *B. coli* and streptococci; acidities much stronger than this are found in the normal stomach; I have found acidities of pH 1.0. Culture of normal gastric and upper small intestinal contents shows that most of the bacteria visible are dead, but from these viscera in Addison's anaemia rich cultures of streptococci and other organisms are obtained. It is thought that this failure of normal antiseptics and the absence of a related antiseptic power of the succus duodenalis<sup>3</sup> lead to a progressive infection of the alimentary tract with absorption of toxic substances which cause the

anaemia. The cases of anaemia of this type occurring after gastrectasis support this contention.

The cause of the achlorhydria is not yet determined; it is often ascribed to the purulent periodontitis present in practically every case, or previously existing. It is thought that the continuous swallowing of pus leads to gastritis and diminution of acid secretion, just as frequent ingestion of alcohol is known to do. The effect of pyorrhoea on the gastric secretion deserves more study; it is often stated that pyorrhoea leads to hyperacidity, or acid retention, but in several advanced cases I have found complete achlorhydria; this may, however, have been congenital. It has been found that 4 per cent. of normal persons have complete achlorhydria, but Addison's anaemia does not attain this frequency.

Many single organisms have been blamed for the disease: streptococci, spirochaetes, *B. coli*, monilia, and, of late, *B. welchii*. The occurrence of the last-named organism in excess is probably dependent upon the absence of anti-

sepsis. Most importance is attached to streptococci in England and to *B. coli* on the Continent. The toxins of both cause anaemia in animals, and *B. coli* is known to produce a neurotoxin which may well be the cause of the nervous changes so frequently present. Though the common strains of *B. coli* are not capable of producing haemolysins, they do produce haemolytic substances from certain amino-acids which may occur in the small intestine.<sup>4</sup> Moreover, truly haemolytic strains of *B. coli* would appear to be more frequently found in this disease than is at present generally believed; in five out of six cases

haemolytic strains were isolated at the first attempt; experiments with these organisms are proceeding, and one throws some light on the etiology.

Two rabbits were used and two others kept as controls. Both pairs were put on a vitamin-deficient diet with casein and as much alkali added as the animals would tolerate; this was done to diminish gastric acidity, to supply amino-acids, and to allow bacterial proliferation. The controls were not treated in any other way, but the experimental animals received living cultures of *B. coli* and streptococci isolated from cases of anaemia with nervous changes. Both groups showed anaemia, but the controls rather less. The corpuscles of the controls diminished in size, but the corpuscles of the experimental pair showed an increase (Chart 1). One of the experimental rabbits developed spastic paralysis of the hind legs and was killed; the spinal cord showed patchy degeneration of the white matter, a condition very similar to that found in Addison's anaemia in man. It may be that this change was due to the avitaminosis, but no similar change has been found in the controls, which had exactly the same diet. In addition, the liver of this rabbit showed a free iron reaction, and before death the urobilin in the urine was increased to one hundred times the normal.

The belief that the soil is of as great importance as the seed deserves some notice, especially as several very different seeds are known to be causal. If we replace this gardening simile by another, we have one which satisfies the known facts better: we should liken the patient to a loaded gun—several things may pull the trigger. Harst<sup>5</sup> has collected from the literature and his practice 49 cases of familial occurrence of this disease. In one of the early cases of my series there was a strong family history—the patient's mother and grandfather had died of the disease. Having diagnosed Addison's anaemia in this patient (W.) I advised that the relatives should be examined; I found that both her children were anaemic, and that one had complete achlorhydria, and also that one of the patient's sisters was in the early stages of the disease. Since then I have examined the relatives of every case possible, and show the results of eight families in Table I. In the family B.1 the father of the patient died of the disease, and both his children show complete achlorhydria. In case C.1 a brother is

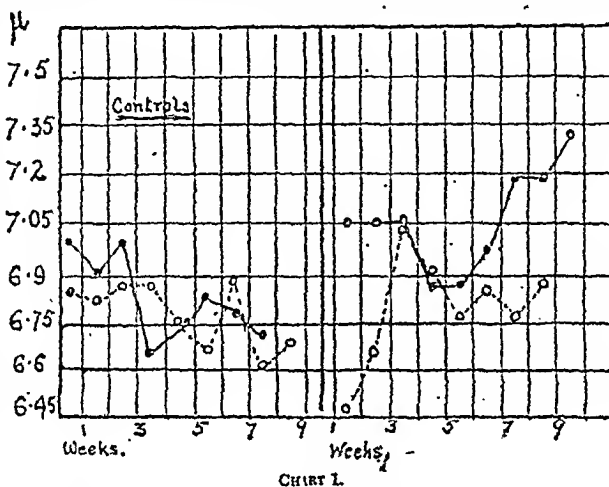


CHART 1.

TABLE I.—*Relatives of Cases of Addisonian Anaemia.*

Case.	Age.	Average Size ( $\mu$ ).	Variation.	Free HCl (N/10).	Red Blood Cells.	Haemoglobin.
Sister of W. ...	42	7.9*	4-10	C.cm. 0	5.0	Per cent. 85
Sister of W. ...	41	7.6	5-10	40	5.6	85
Son of W. ...	19	7.9*	4-10	0	4.6	85
Daughter of W. ...	21	7.8*	5-10	5	4.4	70
Son of Y. ...	30	7.5	5-10	55	4.8	82
Grandson of Y. ...	7	7.5	5-10	34	5.4	?
Daughter of F. ...	21	7.4	6-10	14	4.9	102
Son of F. ...	17	7.4	5-10	16	5.6	108
Son of F. ...	...	7.3	5-10	25	5.3	104
Son of E.1 ...	8	7.5	5-9	0	4.8	78
Daughter of H. ...	30	7.7	4-9	12	4.5	67
Daughter of B. ...	14	7.5	4-10	0	5.7	117
Daughter of B.1 ...	17	7.8*	5-10	0	6.0	112
Daughter of B.1 ...	12	7.5	5-10	0	5.0	120
Daughter of D. ...	25	7.3	5-11	0	4.8	80
Daughter of D. ...	26	7.4	5-10	16	5.7	120

\* Suspiciously high values.

suffering from anaemia of long duration, but I have not been able to obtain any further details. Other local familial occurrences are reported to me by Dr. Harvey and Dr. G. Hadfield. A glance at Table I shows that achlorhydria or hypochlorhydria is frequent, and that either anaemia or an excess of red blood corpuscles and haemoglobin is very common. This excess rather points to the presence of some toxic action on the bone marrow with excessive blood formation. Thus hypochlorhydria or achlorhydria and instability of blood formation are very frequent in predisposed subjects, and it is contended that similar conditions are probably present in all cases—that is, that the soil is of importance.

We must leave the etiology, concluding that the toxins or toxic decomposition products of organisms normally saprophytic produce depression of haematopoiesis in a predisposed individual. These toxic substances may act in several different ways: (1) Simple depression of the marrow with the production of badly formed red cells which are rapidly removed from the circulation by the reticulo-endothelial system. (2) The toxic substances stimulate the reticulo-endothelial system to excessive haemolysis, and the marrow is exhausted secondarily. (3) The toxic substances depress the inhibition of the adrenal gland on the reticulo-endothelial system.<sup>9 11</sup>

We must leave the question at this point, for the evidence does not warrant a definite answer.

#### CLINICAL SIGNS.

It is rather unfortunate that the disease is called an anaemia, for, apart from the waves of haemolysis, there is little if any anaemia. In the intervals the blood values are normal or above normal. Thus Case W. was investigated by many consultants and two senior pathologists, and was reported free from any sign of anaemia, yet she was very anaemic when I saw her first, and died within three months.

As is well known, during the anaemic periods there is a high colour index, polychromia, and the presence of nucleated red cells, megaloblasts especially being significant. The high colour index requires explanation; in the remissions it is about normal. It appears to be due to the fact, first stressed by Price-Jones,<sup>6 10</sup> that the average size of the red cells is increased in Addison's anaemia—it is a megalocytosis as well as a haemolytic anaemia. This does not mean merely that megalocytes are present, for they are

found in any anaemia; it is the average size, which is greater than normal.

Normally the red cells vary between 5 and 9  $\mu$ , the average being given as 7.5  $\mu$ . Price-Jones finds it to be 7.3  $\mu$ ; my own value and that of some others<sup>7</sup> is 7.4  $\mu$ . Normal values I find to range between 6.9 and 7.6  $\mu$ . Table II shows the averages in as wide a collection of blood diseases as I could find, and it will be seen that the values are all below 7.7  $\mu$ ; in Table III the values in Addison's anaemia are given, and the lowest is 7.7  $\mu$ . In no other disease have such high values been found with the exception of emphysema<sup>10</sup> and malaria, in a case of which I have found a value of 7.8  $\mu$ , probably due to the abundance of parasites present. This increase of size is the one constant symptom; it remains during remissions and allows a diagnosis to be made when there is no anaemia. Also, these large cells can contain more haemoglobin, for in the anaemic waves the marrow appears to be able to turn out haemoglobin more easily than corpuscles.

It is probable that this increased diameter of the red cells is not always present, although the exceptions must be very few; two cases of subacute combined degeneration have been described recently which had normal values<sup>1</sup>; in two of my cases the values, though above the normal, were low for Addison's anaemia, and one of these cases was exceptional in showing some gastric hydrochloric acid.

To support a diagnosis of Addison's anaemia we expect to find (1) anaemia, (2) leucopenia, (3) absence of wasting, (4) increase of the average size of red cells, (5) glossitis or its sequelae, (6) achlorhydria, and (7) evidence of excessive haemolysis—that is, excessive urobilinuria and increase of indirect bilirubin in the blood. To every one of these there are exceptions: (1) has already been noted; (2) waves of leucocytosis are not infrequent; (3) wasting is common in the later stages, and when not obvious is often masked by a slight anasarca; (4) exceptions have been noted already,

TABLE II.—*Diseases other than Addisonian Anaemia.*

Case.	Average Size ( $\mu$ ).	Variation.	Free HCl.
Haemorrhage ... ..	7.3	4.5-9	—
Ditto ... ..	7.2	3.7-9.5	—
Menopause ... ..	7.4	4.5-10	—
Ditto ... ..	7.4	5.2-9.6	0
Syphilis ... ..	7.3	4.5-9.6	—
Tubercle ... ..	7.5	5.2-10	—
Ditto ... ..	6.9	5.2-9	—
Plumbism ... ..	7.4	4.5-9	—
Xerostomia with glossitis ... ..	7.1	5.2-9	—
Chronic septic endocarditis ... ..	7.5	5.2-10	—
Ascariis ... ..	7.5	6.0-9	—
Gastric carcinoma ... ..	7.2	4.5-9	0
Sprue ... ..	7.6	5.2-9.6	—
Osteo-arthritis ... ..	7.6	5.2-9.6	—
Ditto ... ..	7.4	4.5-9.6	—
Polycythaemia ... ..	7.5	4.5-9.6	—
Ditto ... ..	7.5	4.5-9	—
Lymphatic leukaemia ... ..	7.5	4.5-11	—
Ditto ... ..	7.1	5.2-12	—
Ditto ... ..	7.5	5.2-11	—
Von Jaksch's anaemia ... ..	7.0	3.7-12	—
Purpura ... ..	7.2	5.2-9.6	—
Ditto ... ..	7.5	5.2-9.6	—
Acute rheumatism ... ..	7.3	4.2-9	0
Post partum ... ..	7.4	5.2-9	—
Spleno-medullary leukaemia ... ..	7.5	4.5-9	0
Lymphogranuloma ... ..	7.6	5.2-10	—
Secondary (?) ... ..	7.5	4.2-9.6	0

TABLE III.—Addisonian Anaemia.

Case.	Average Size ( $\mu$ ).	Variation.	Subacute Combined Degeneration.	Result.
X.	9.1-9.12	5.2-12	—	Alive.
F.	8.4	3.7-13	Present	?
X.	8.35	4.5-10.8	—	?
Y.1	7.95	4.5-11	Present	?
Z.	8.4	5.2-10.5	Present	?
As.H.3	7.9	4.5-10.5	—	?
N.	7.85	4.5-9.8	Present	Alive.
M.	7.8	5.2-9.6	Present	Alive.
W.1	7.7	4.5-10.5	Present	Alive.
W.	9.3-8.2-7.9	3.7-12	Present	Dead.
E.1	7.9	4.5-12	—	Alive.
W.2	7.8	3.7-10.6	—	Alive.
A.	8.0	?	—	Alive.
J.	8.7	4.8-12	Present	Alive.
C.	7.9-7.8	3.0-11	Present	Dead.
C.1	7.9-7.7	4.5-11.2	Present	Dead.
E.	8.4-7.5-3.4	3.7-12	—	Dead.
F.1	8.0	3.7-11.2	Present	Dead.
J.1	7.8	4.5-10.6	—	Alive.
S.	8.0	3.7-12	—	Alive.
B.	7.85	4.5-12	Present	Alive.
B.1	8.4	3.7-13	Present	Alive.
B.2	7.8	3.7-12.6	Present	Alive.
D.	8.2	4.5-13	Present	Alive.
D.2	7.82	4.5-9.6	Present	Alive.

if we are to conclude, in agreement with the Guy's Hospital school, that subacute combined degeneration occurring in anaemia is confined to the Addisonian type—a conclusion not generally accepted; (5) glossitis may be little marked; (6) in a series of 51 cases Faber and Gram<sup>6</sup> found 4 in which some free hydrochloric acid was present; my Case M. also shows free hydrochloric acid; these appear to be the only cases which have been fully examined; it has been objected that the cases of Faber and Gram were bothrioccephalus anaemia; this cause was not found, although these observers were alive to the possibility; in my case there is no evidence and little likelihood of worm infection; (7) evidence of excessive haemolysis is not found in the remissions and in the cases becoming aplastic (note Chart 2 of Case W.—the urobilin and bilirubin diminish to normal values in spite of increasing anaemia).

Measurement of the red cells may be made in several ways; the best, I think, is actual measurement with a carefully calibrated ocular micrometer. A green monochromatic screen is of help. Three to five hundred cells, taken as they come, are measured and an average made, or a curve, as recommended by Price-Jones,<sup>6</sup> is compared with the normal. Where there is considerable increase a glance is sufficient to give a diagnosis, but in the lower values fully 500 cells should be measured. Such a count takes me about ninety minutes. American observers find that 200 cells are sufficient, and that the count can be made in twenty minutes.<sup>7</sup> There are several ways other than this. A very pretty one, when the staining turns out well, is to make the suspect film on the top of a film from a diabetic patient with acidosis; the corpuscles of the latter take a basic dye, while the suspect's cells take an acid stain.<sup>13</sup> In the lower values this method is of no value.

The cause of this megalocytosis is not the achlorhydria, for a glance at Table II will show that in several cases with achlorhydria normal values are found; in bothrioccephalus anaemia, where there may be no achlorhydria, the values are above the normal.<sup>6</sup> The experiments of others<sup>1</sup> and my own show that this permanent increase is to be ascribed to the presence of toxic substances acting on the marrow; a temporary increase occurs in some forms of acidosis.<sup>12</sup>

## APLASTIC ANAEMIA.

This is most commonly regarded as a separate disease, although usually discussed with Addison's anaemia. The diagnosis is not made frequently, and is apt to be considered a guess. The features of this anaemia are said to be: severe anaemia; presence of a haemorrhagic tendency due to thrombopenia; absence of evidence of blood regeneration, marked leucopenia and scarcity of nucleated red cells; smallness in size of the red corpuscles; absence of marked or any excess of haemolysis; presence of a gelatinous marrow in the long bones; generally fatal issue, the few survivals probably being cases of purpura haemorrhagica, which simulates, and may even terminate in, aplastic anaemia.

Four cases in my series have acquired these features after showing all the signs of florid Addisonian anaemia. In Case W., shown in Chart 2, the red cells diminished in size and number and at the same time urobilin and bilirubin fell to normal values. The explanation is that the marrow is turning out so few corpuscles that there is not enough material for excessive haemolysis. In Case E. (see Table III) the low diameter coincided with a severe wave of anaemia; the following higher value accompanied a remission. In Cases C.1 and C.2 a diminishing value is seen; these cases could not be worked out so completely as Case W.

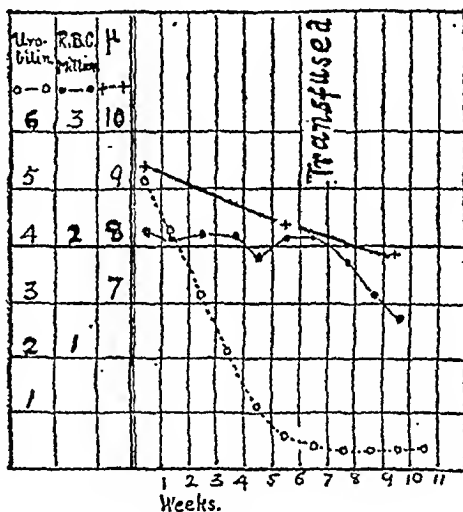


CHART 2.—Note that urobilin index is the product of percentage and amount in ounces.

From these observations, confirmed by *post-mortem* examination in Case C.2, it is inferred that aplastic anaemia is merely a terminal phase of Addison's type, and that this variety would be more frequent if the patients survived longer. It may, however, be the first manifestation of this or any other anaemia where there has been a heavy intoxication of the marrow or where the haematopoietic power is low at the outset. It is important to recognize the transition, for treatment is disappointing in this stage; blood transfusion leads to transient amelioration only; in two of the cases it gave me the impression that it accelerated death.

Before considering treatment the part played by the endocrine glands requires mention. Evidence of disease is often found *post mortem*, and this would be expected. Thyroid changes are common; Case Y. requires 3 to 5 grains, and Case D. has been receiving 15 grains of thyroid extract daily; the possible influence of the adrenal gland has been noted. It will be of interest if both the diseases named after Addison are found to be associated with lesions of the same gland. The condition of the pancreas is of greater practical importance, for evidence of defect in its external secretion is found with some frequency, and this would have been regarded as inevitable until recently; the external secretion of the pancreas was said to be stimulated by secretin produced by the inter-

action of hydrochloric acid and the duodenal mucosa. According to this theory the digestion of proteins was almost impossible in achlorhydria, for peptic and tryptic digestion could not occur. We now know that hydrochloric acid is not indispensable, but the atrophic condition of the duodenal mucosa raises the suspicion that it is deficient of pro-secretin. Examination of the stools shows that in many of these cases flesh is poorly, if at all, digested; yet, in view of the anaemia, the patients are urged to eat as much of it as possible; the result is putrefaction and the production of further toxins to depress the marrow.

#### TREATMENT.

There are many treatments, and the effect of any one is difficult to gauge when the nature of the disease is remembered; no matter what treatment is given, the marrow will respond as long as it can, and a remission will follow. At the present stage of our knowledge the indications are:

1. Stimulation of the blood-forming activity of the marrow.
2. Improvement of gastric and intestinal digestion.
3. Diminution of intestinal infection.

#### Stimulation of Haematopoiesis.

Septic foci around the teeth, accessory sinuses, or wherever found, should be removed. The removal of tissue causing haemolysis—that is, splenectomy—used to be practised with some frequency, and is still advised. It is not performed so frequently as it was, and should only be considered where there is splenomegaly. The series of Giffin and Szlapka<sup>14</sup> is regarded as the chief authority, and these authors base their conclusions on survival. A review of the operation in other places gives a high mortality, and shows that the remissions were not often of long duration; survival is very variable with any treatment; my Case Y. has survived eleven years, although for about eight of them he had no treatment. Another operative method in use at present is the removal of marrow from the long bones, with the hope that a new marrow will regenerate; it is usually preceded by blood transfusion, and remissions occur.

More direct methods are the exhibition of arsenic, which remains our sheet anchor; it may be given in any form, and the form does not appear to be very important. In certain schools in Germany it is given in enormous doses. If there is actively spreading nervous disease arsenic must be carefully watched, for it is a nerve poison. Iron does not appear to be of any value, but it is hoped that its use intravenously may cause a blockade of the reticulo-endothelial system and give the same result as splenectomy, without its danger; experiments on this line are being made. Cholesterolin, with the object of providing stroma for the red cells, has been recommended; I have not had any success with it.

Blood transfusion, an excellent stimulus for the bone marrow, is widely practised, and if the marrow is still capable of response it acts well. In the cases showing signs of aplasticity it does little, and may well be conceived to do harm; when the marrow is almost exhausted the provision of donor's blood may remove any stimulus to regenerate, and the struggle is given up. It has been noted that in two such cases transfusion gave the impression that death was hastened. When blood transfusion is given it is advised to group the donor and recipient and give blood of the same group; if the blood count of the patient is under one million grouping is difficult, and a Group IV donor should be chosen. The results of transfusion are well known, and many, some even permanent, remissions follow; it should be pointed out that at the menopause an anaemia occurs associated with some excess of haemolysis, and in about 50 per cent. with achlorhydria; these cases do well on iron and arsenic, but transfusion gives a permanent remission. With earlier recognition of Addison's anaemia transfusion will be seldom required.

#### Improvement of Digestion.

This is largely accomplished by the provision of the missing hydrochloric acid. This must be given in large

doses, commencing with 45 minims and increasing as rapidly as possible to at least 2 drachms. The dose must be modified to the diet; this latter dose after a meal like afternoon tea will give pain. The 2 drachms of acid are given in 7 to 10 ounces of water flavoured with sugar and lemon juice; this is sipped towards the end of, and shortly after, each meal. It must be taken for the rest of the patient's life. This amount of acid has been found to bring the acidity of the stomach to the normal, and should permit peptic digestion, and it is hoped that it will stimulate pancreatic secretion. Where there is active dyspepsia this should be preceded by a short course of bismuth and hydrocyanic acid until gastric irritability is less marked. If, as is common, pancreatic digestion is defective, flesh should be sparingly ordered at first; the diet should be mainly lacto-vegetarian. In several of these cases I have tried pancreatic extract, but have not found any certain benefit.

#### Intestinal Antisepsis.

In addition to the help afforded by the procedures noted in the section above there are some more direct methods. Koumiss, lactic cultures, or *B. acidophilus* cultures all have the same action and are interchangeable; they act, like the lacto-vegetarian diet, by increasing the acidity of the intestinal contents, and so reduce the growth of streptococci and *B. coli*. As a lacto-vegetarian diet is monotonous and sometimes repugnant, this method of giving cultures with an ordinary diet will afford a welcome interlude. Given with a mainly carbohydrate diet they are of more value still.

Kaolin, from its power of adsorbing toxic substances and precipitating micro-organisms, is indicated. It is given either dry or suspended in water the first thing in the morning; my patients readily increase to three heaped teaspoonfuls.

Colonic lavage through an artificial anus appears to be giving good results, and is a rational treatment where the urinary indican remains high in spite of the measures so far outlined.

Vaccine therapy (streptococci and *B. coli*) is still on trial; it is too early to be sure of its value.

Treatment of the nervous symptoms is the same as that of the anaemia. When the anaemia has disappeared the only treatment is re-education, but this gives very good, although slow, results.

#### CONCLUSIONS.

1. Addison's anaemia is a common disease, and through most of its course is not an anaemia.
2. Diagnosis is possible in the pre-anaemic stage.
3. In the early stages treatment is highly successful, but must be perpetual.
4. In the later stages exhaustion of the marrow, or aplasticity, supervenes, when treatment is without result.
5. Hereditary transmission of the anaemia, and of relative or complete achlorhydria, is so frequent that the relations of any case should be examined for these defects.

I am indebted to Dr. J. A. Nixon and Dr. G. Hadfield for a few of these cases. The expenses of this research have been met by a grant from the Colston Research Fund. I am indebted to Professor I. Walker Hall for advice and stimulation.

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## A NOTE ON THE CARDIAC SYMPTOMS OF PERNICIOUS ANAEMIA:

WITH PARTICULAR REFERENCE TO CARDIAC PAIN.\*

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THE following observations are based on notes of thirty-six consecutive sufferers from pernicious anaemia. In one of them, an elderly man, the picture was perhaps rather that of an aplastic anaemia; yet there was enough reason for looking on it as a haemolysis to which his bone marrow could not respond, to justify its inclusion in these notes. My present purpose is to call attention to two facts that have some clinical significance. The first of these, the simulation of cardiac disease by pernicious anaemia in its early stages, was forcibly impressed on my mind by an experience that I shall briefly relate.

About two years ago I was spending a week-end in the country; and, having need of a telephone, went in search of one at the village post office. It was a warm Sunday afternoon, and when I attacked the private house adjoining the post office, some time passed before my knocking brought out a stout, middle-aged woman, who was so scant of breath and so inclined to cyanosis that even on a June Sunday afternoon in Somersetshire I could not help speculating on the state of her myocardium. A few weeks later I was called to this same village by the doctor in whose practice it lay, to see a patient who proved—to my great interest—to be the lady of the post office. I was told that for some months she had been short of breath, and losing weight rather quickly; also that she had been troubled by polyuria. Her pallor was remarked on, but it made no great impression on me—partly, perhaps, because the room was darkened by a very heavy thunderstorm. Her pulse was 96 to the minute and regular; the blood pressure was 130 mm. Hg systolic and 70 diastolic; she seemed a trifle cyanosed. The heart was not obviously enlarged, and indeed the only local sign of disease was a loudish systolic murmur heard all over the front of the heart, but especially at the apex. Apart from a few rales at the bases nothing abnormal was found. She was in bed, and we decided to keep her there, with a provisional diagnosis of myocardial degeneration of senile type.

As the course of events proved, it was a severe anaemia that had depreciated the value of the cardiac muscle; and though its subsequent behaviour has not been exactly that of a pernicious anaemia the moral is the same: I ought to have examined the blood.

This is, however, not an isolated experience. In ten of my thirty-six cases the first diagnosis made was that of heart disease. Six of these patients were elderly, and their symptoms were of the kind that arise from the myocardial changes common at such ages: dyspnoea, oedema, and cardiac pain. In two, men of about 40, the rapid bounding pulse and basic murmurs had given rise to a suspicion of aortic valvular disease. In one other, to be alluded to later, there was in fact aortic disease as well as pernicious anaemia. Last of all, a woman of 40 was at first thought to be suffering from chronic ulcerative endocarditis, and indeed it may yet prove that she has this disease as well as the haemolytic anaemia that has been shown to exist.

My second point is this: that among the symptoms of myocardial disease sometimes exhibited by the patient with pernicious anaemia cardiac pain has a place; 8 of my 36 patients complained of it. In 2, attacks of substernal pain during exertion constituted the first evidence of ill health. In another patient, a woman of 56, two terribly severe attacks of precordial pain with collapse were observed during the last weeks of life, the second one being almost immediately fatal. There was no autopsy. A fourth complained of a heavy pain over the chest and shoulders, a fifth of a painful sense of constriction round the waist, and a sixth of a tearing, pressing pain in the centre of the chest and both arms; in all these it was brought on by exertion. Another, a woman of 63, had a brief attack of mid-sternal pain while we were examining her. It made her groan and lean forward with an anxious look. The case of the eighth patient, a man of 56, differed from the rest in that he had, from the first, quite definite physical signs of aortic disease in addition to the characteristic symptoms of pernicious anaemia. *Post mortem* this view of his case was confirmed; he had a diffuse atheroma of the aorta.

It is possible that all my other examples of cardiac pain in pernicious anaemia are also to be referred to a coincident cardio-sclerosis. All the patients were of an age to which such an explanation might be applied, yet none of them showed any signs of cardiac disease, apart from this one man; and Reid's<sup>1</sup> recent inquiry into the heart of pernicious anaemia discovered a noteworthy absence of cardio-sclerotic changes. Moreover, Dr. Todd has shown no some electro-cardiograms which suggest that there are certain changes in the curve which are peculiar to severe anaemia. Finally, the incidence of cardiac pain in cardio-sclerosis with pernicious anaemia is higher than in cardio-sclerosis alone.

At all events, let me be content to record the fact to which I have only once seen any allusion elsewhere, in a paper by Herrick and Nuzum<sup>2</sup> written in 1918—that patients with pernicious anaemia sometimes experience cardiac pain.

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## NINETY-FOURTH ANNUAL MEETING

OF THE

## British Medical Association.

Held at Nottingham, July, 1926.

### PROCEEDINGS OF SECTIONS.

## SECTION OF PUBLIC HEALTH.

PHILIP BOOBYER, M.D., M.S., President.

### DISCUSSION ON

## FOOD DEFICIENCY CONDITIONS IN RELATION TO PREVENTABLE ILLNESS.

### OPENING PAPERS.

I.—STUART J. COWELL, M.B., B.Chir. Cantab.,  
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### THE SCIENTIFIC POINT OF VIEW.

THE past few years have witnessed an enormously increased interest in dietetic problems. Stimulated by the researches of scientific workers during the early part of this century into the nature of the foodstuffs necessary to maintain animals in health, and the consequent discovery of vitamins, men and women all over the world have been tackling problems of health and disease in man in the light of this new knowledge. The public at large has to a certain extent become acquainted with the more dramatic results of our dietetic investigators, and there is a real danger of its being led astray by the half-truths that are being served out to it by the lay press and by commercial advertisers. In these circumstances it is our duty to ascertain as far as we can the real facts concerning food deficiency in so far as they affect our own people, so that whatever practical measures we advocate for dealing with the situation may have the greatest chance of success. It is quite likely that a great deal more preventable illness results from defective diets than we recognize at present. Animal experiments and clinical observation have, however, yielded positive evidence of the relationship between dietetic deficiencies and certain common diseases met with in this country. I propose in this opening paper to limit myself to the discussion of these common diseases and the methods that may be used for their prevention.

We are not, of course, concerned here with food deficiency in the sense of diminution in the total quantity or energy value of a diet, nor do we intend to discuss at length the effect of alterations in the relative amounts of protein, fat, and carbohydrate contained in any particular diet. We know that the proportions of these food constituents can be varied very considerably in an adult's diet without producing signs of ill health. Moreover, some of us are beginning to realize that even the delicate alimentary canal and tissues of the infant need not be regarded as hypersensitive to slight alterations in the composition of

\* Given before the Bath and Bristol Branch of the British Medical Association.

its food in respect of these three constituents, provided the diet is adequate in certain other qualitative respects, which we shall refer to later.

In general, the food deficiency conditions which we to-day recognize to be responsible for preventable illness are related to deficiencies of vitamins. Recent work has made it clear that the amounts of the vitamins necessary to maintain an animal in good health vary considerably in different circumstances. Mellanby<sup>1</sup> has taught us that many factors in a diet, and particularly the amount and quality of the cereals it contains, may determine the minimum amount of fat-soluble vitamin necessary to prevent or cure rickets. Similarly Plimmer<sup>2</sup> has described the variations in the amount of vitamin B necessary to maintain young birds in health, according as the amounts of protein, fat, and carbohydrate and the total energy value are varied in the diet. Therefore, the mere presence of the essential vitamins in any diet is not necessarily sufficient to ensure maintenance of health, but there must be a balancing of the quantity of vitamin with other factors. We may cite the following specific instances of this balancing mechanism. Mellanby<sup>1</sup> has shown that when oatmeal or the germ of cereals is given to puppies severe rickets will develop unless a very considerable amount of the calcifying vitamin is added to the diet. Again, butter contains a moderate amount of this vitamin, but rickets can be produced in dogs receiving quite large amounts of butter if the diet contains oatmeal; the addition of extra calcium to the diet containing oatmeal and butter will prevent the occurrence of rickets. Furthermore, it has been established that exposure of an animal or of its food to ultra-violet rays may compensate to a very considerable extent for the absence of the antirachitic vitamin D from a diet. The decision concerning the presence or absence of vitamin deficiency is, therefore, not always easy, and can only be arrived at by consideration of numerous factors connected with the individual's diet and environment. In these circumstances it is not strange that the various practical suggestions that may be offered by responsible advisers to alleviate food deficiency conditions may differ considerably and yet all rest on some sort of scientific basis. This may be illustrated by a review of our present ideas concerning the etiology and means of prevention of rickets.

Rickets is one of the common food deficiency diseases met with in this country. This statement will even to-day probably not pass unchallenged. On the one hand, there are still men holding responsible positions in the medical world who regard the application to clinical problems of our knowledge of vitamins obtained from animal experiments as a "stunt," and refuse now, as they always have refused, to accept any etiological connexion between rickets and specific food factors. On the other hand, the recent striking discovery of the effect of exposing the skin or the food of an animal to ultra-violet rays, as regards the promotion of bone calcification, has caused many medical men to regard rickets as a disease produced primarily by fog and smoky atmosphere. No one who has had the opportunity of observing closely the experimental and clinical work on which Mellanby's views concerning the etiology of rickets are based can fail to recognize that dietetic factors are of supreme importance in the control of this disease. On the basis of this work the following are some of the conditions which we might expect to lead to the occurrence of rickets in children: (1) the deficiency of the antirachitic vitamin in an otherwise well balanced diet—as, for example, in an infant being breast-fed by a mother whose stores of the vitamin are below normal; (2) the absence of a sufficient supply of calcium in a diet which contains only a small amount of antirachitic vitamin, as in a child who is receiving little or no milk; (3) the presence in a diet of excess of cereal, and especially oatmeal, without a corresponding increase in the antirachitic vitamin to balance it; (4) the absence of solar irradiation combined with a relative deficiency of vitamin D, as in children brought up on poor diets in smoky industrial areas, particularly in winter time. If these factors are the chief ones operative among our children in producing rickets, the prevention of the disease ought to be relatively simple: we should either take steps to ensure that the

child, from the moment of its birth, was supplied with a sufficiency of antirachitic vitamin, or we might see that the child was regularly exposed to natural or artificial sunlight.

Before proceeding to discuss the principles involved in providing an adequate supply of vitamin for the child, I propose to deal in a general way with the respective merits of ultra-violet irradiation and the supply of fat-soluble vitamin. This is a subject of practical interest at the present time. Large sums of public money are being asked for, and in some cases obtained, for the setting up of artificial sunlight clinics in our industrial cities for the purpose of preventing and treating rickets and malnutrition. Before public funds are applied on any large scale for this purpose we ought to be reasonably certain that the result will justify the expense. In the first place it must be recognized that irradiation, either of the skin or of the food, will compensate only for deficiency of the antirachitic vitamin in the diet. Normal growth and maintenance in health of a young animal deprived of vitamin A, the distribution of which is very similar to that of vitamin D, is impossible for any considerable length of time, whether the animal is irradiated or not. In illustration of this principle we may note the observations of Bloch,<sup>3</sup> who has reported cases of xerophthalmia in children due to deficiency of vitamin A, which have not responded to weeks of ultra-violet irradiation, but which have quickly cleared up under the influence of vitamin A supplied in the form of cod-liver oil. Therefore it would still be important to ensure an adequate supply of fat-soluble vitamin in a child's diet even if he were regularly receiving exposures to ultra-violet light. Next, what evidence have we as to the relative effectiveness of the two methods purely from the point of view of preventing or curing rickets? As far as experimental work on animals goes, it would appear that the giving of fat-soluble vitamin is more efficacious than the irradiation of either the skin or the food of an animal. Both methods may be successful when the diet is only moderately deficient, but when animals are given really bad diets including abundance of the rickets-producing cereals (oatmeal or germ), cod-liver oil is found to have a more potent antirachitic effect than irradiation. From the clinical point of view it must be allowed that the irradiation of children can in most cases cure active rickets. Precisely the same statement applies to the giving of cod-liver oil, although there are still members of the profession who do not believe that the oil has any specific action in this respect. Cod-liver oil has been prescribed to children for many generations past as a cure for all sorts of conditions, so that mothers are apt not to be impressed with it as a specific remedy. As the oil is frequently disliked by the children, unless prescribed in infinitesimal quantities mixed with malt, it frequently happens that the mothers do not trouble to give it regularly and in adequate quantities; consequently the doctor who has ordered it, or who is told that it has already been given, often gets the impression that it has no great antirachitic effect. Irradiation has therefore the advantage of being a spectacular proceeding which will appeal to the average mother more strongly than the homely remedy of cod-liver oil, and will be pursued with more or less enthusiasm.

Occasionally cases of rickets are met with which do not respond either to ultra-violet irradiation or to cod-liver oil. For instance, I have met with a case of renal rickets in which there was no increase in the calcification of the bones after two months of treatment by means of cod-liver oil, natural and artificial sunlight, and irradiated milk. Cases are also reported in which cod-liver oil given by the mouth has proved ineffective, but the desired result has been obtained by the subcutaneous injection of the oil or of a concentrated preparation of it. Such instances are, however, rare and do not affect our main conclusions.

We have seen that the giving of cod-liver oil has the advantage over irradiation of providing for an adequate supply of the growth-promoting vitamin A as well as the calcifying vitamin D. What evidence is there that irradiation has beneficial effects which cod-liver oil does not have? In this connexion I propose to turn for a moment from the subject of rickets to that of infantile malnutrition.

malnutrition, or marasmus, in infants is not generally recognized as a food deficiency condition, but very many of the cases could with some justification be included in this category on account of the remarkable way in which they respond to the addition to their diet of fat-soluble vitamin. In Sheffield, where I have had the opportunity of observing most of the marasmic infants admitted to the Royal Infirmary during the past three years, the vast majority of these babies quite rapidly improve in their general condition and put on weight when given the diets suggested by Mellanby,<sup>4</sup> the principle of which is the addition of adequate supplies of the vitamins to feeds of cow's milk, diluted if necessary. In some infant welfare centres, I believe, marasmic children are being treated with "artificial sunlight" and good results are apparently being obtained. Is there any evidence that the light produces effects in these cases which fat-soluble vitamin does not? On theoretical grounds we might expect that the light effect would be inferior to the vitamin one, as light can by itself induce merely temporary growth, apparently by mobilizing reserves of vitamin A stored in the young tissues. Be this as it may, cases of marasmus are occasionally met with which respond promptly to ultra-violet rays after the condition has been more or less stationary for many weeks in spite of an adequate supply of fat-soluble vitamin. In two or three cases I have seen wasted infants with this kind of history who have started to gain weight at once when their milk was exposed to ultra-violet rays before being given to them. The explanation of such results is not clear, and I do not propose to discuss it here. The point I wish to emphasize is that such cases are rare, and the vast majority of infants can be successfully reared even in our smoky cities without the aid of artificial sunlight, provided they are supplied with adequate quantities of fat-soluble vitamin; irradiation may prove of value in the rare cases of malnutrition that do not respond to dietetic treatment alone.

To revert now to the subject of rickets: we have seen that this disease may be regarded primarily as a food deficiency disease, and should therefore by definition be preventable by dietetic measures alone. We may now inquire what principles should guide us in dealing in a practical way with the problem of its prevention. First and foremost it is of the utmost importance that the child should be born with ample reserves of fat-soluble vitamin in his tissues, and therefore preventive measures should begin with the pregnant mother. The influence that the feeding of the pregnant mother may have on the health of her child is only now beginning to be appreciated from the standpoint of physiology. It is a subject of such great importance that it is worth while considering it in some detail. Animal experiments have demonstrated conclusively that relatively large amounts of both vitamin A and vitamin D can be stored up in the tissues of the young provided the mother obtains a liberal supply of them in her diet.

In most of the experimental work now carried out in connexion with the growth-promoting vitamin A, young rats are employed. Workers used frequently to be puzzled by anomalous results that appeared in different litters that were receiving experimental diets. The animals from one litter would continue to grow for long periods after they had been receiving diets deficient in vitamin A, while the growth of animals from another litter which were receiving exactly the same diet ceased rapidly. The explanation is now known to be that one mother had been getting in her diet but a moderate amount of the vitamin, while the other had been getting a liberal supply. The same principle applies in the case of the antirachitic vitamin D.

Mellanby<sup>5</sup> has demonstrated the effect of pre-natal feeding on the development of rickets in puppies. To give an example of these experiments, he kept two bitches who were pregnant by the same father, and fed one on a diet containing abundance of fat-soluble vitamin and the other on a diet that was deficient in this respect. After they were weaned the puppies from the two litters were reared in pairs, a puppy from the well fed mother receiving the same diet as a puppy from the badly fed mother. When this diet was moderately deficient in

respect of its fat-soluble vitamin content it was found that the puppy whose mother had been receiving the poor diet developed severe rickets, while the puppy whose mother had been well fed had almost normally calcified bones. Furthermore, it was demonstrated that the influence of the mother's diet lasted for a considerable period in the life of the young animal. One puppy from each mother in the above experiment was given an adequate supply of fat-soluble vitamin, and at the end of four and a half months they both had normally calcified bones. Their diet was now changed to one deficient in fat-soluble vitamin. Six months later the animals were almost fully grown, but the one whose mother had been badly fed had developed severe rickets, corresponding to late rickets met with in children, while the other, whose mother had been well fed, still had normally calcified bones.

Similar results have been reported by Grant and Goettsch,<sup>6</sup> working on the subject of rickets affecting rats. They found that the diet of the mother was a very important factor in increasing or diminishing the resistance of the young to rickets when there was a deficiency of antirachitic vitamin in their diets. In fact, they make the statement that among rats "under ordinary circumstances rickets does not develop in the young of well nourished mothers when a lack of the antirachitic vitamin is the only deficiency in their diet."

In the experiments just quoted the mothers usually received their experimental diets during both pregnancy and lactation. That the diet during each of these periods is of great importance for ensuring reserves of vitamin in the young is further indicated (a) by the fact that the fat-soluble vitamin content of eggs varies greatly with the fat-soluble content of the diet of the hen, and (b) by the fact that the fat-soluble vitamin content of milk has been shown, both in the case of cows and nursing women, to vary according to the fat-soluble vitamin content of their diet. Obviously, then, the feeding both of the pregnant and of the lactating mother is a most important determining factor in the development of rickets and malnutrition in her offspring, and if means were taken to ensure that during pregnancy and lactation all mothers received a well balanced diet containing ample supplies of fat-soluble vitamin it is probable that infantile rickets would become a rare disease and the incidence of malnutrition would be very materially lessened.

In the case of infants who for any reason cannot be fed on the breast, and in the case of all children during the first few years of life, the prevention of rickets can be practically ensured by giving them an adequate supply of cod-liver oil. Even infants during the first few weeks of life tolerate the oil in almost all cases. After they are weaned the children should receive a well balanced diet which should include milk, as this is the only considerable source of calcium in common foodstuffs, and foods which are comparatively rich in fat-soluble vitamin—butter or beef dripping (in preference to margarine or "bacon dip"), eggs, and cod-liver oil.

If these simple dietetic measures resulted in the virtual elimination of rickets and the diminution of the number of cases of malnutrition it would seem well worth while on these grounds alone to make strenuous efforts to put them into effect. But we have evidence that these same measures would result in further important beneficial effects. I do not wish to enter into any lengthy discussion of Mrs. Mellanby's work concerning the relationship between food deficiency and dental defects, but the subject is such an important one that it cannot be neglected. Mrs. Mellanby has demonstrated that fat-soluble vitamin exerts a profound influence on the structure of the teeth. The teeth of a young animal can be made to develop well or ill by varying the amount of antirachitic vitamin and other factors in the diet, precisely as can the bones of the animal. The feeding of the pregnant and lactating mother has been shown similarly to influence enormously the structure of the teeth of the young. Mrs. Mellanby has not confined her observations to experimental animals, and has studied the relationship between the structure of the teeth in children and the incidence of dental caries. She finds that, in general, badly formed teeth are far more liable to caries than well formed teeth, and has demon-

strated that the development of dental caries in children can be markedly influenced by dietetic means. We are justified in drawing the conclusion that if children were brought up under the dietetic conditions which are most likely to ensure the prevention of rickets, their teeth would be better formed and much less liable to decay.

Lastly, there is considerable evidence that deficiency of fat-soluble vitamin has a potent influence in predisposing animals, and especially young animals, to infections, particularly of the respiratory and alimentary tracts. Whether this influence is due to the lack of vitamin A or of vitamin D or of both has not been definitely settled. That vitamin D is concerned in raising the resistance of tissues to infection is suggested by the increased bactericidal power of the blood induced, as shown by Colebrook, Eidnow, and Hill,<sup>7</sup> by exposure of the skin to ultra-violet rays, the action of which in other directions is similar to that of vitamin D. Whatever the mechanism may be, there seems to be little doubt about the fact. For instance, infantile diarrhoea is less liable to occur when an adequate supply of fat-soluble vitamin is given. This has been frequently observed in the case of experimental animals, and that it is true in the case of children would appear highly probable from the pronounced effects on the incidence of this condition that have apparently resulted from the routine administration of cod-liver oil to babies in institutions such as homes for illegitimate children. The occurrence of respiratory diseases in children would seem similarly to be affected by the supply of fat-soluble vitamin. Mellanby<sup>5</sup> has pointed out that pneumonia is practically never found in puppies that have been brought up on good diets including cod-liver oil, whereas it is quite common in puppies receiving deficient diets. It is common knowledge that rickety children are peculiarly liable to catarrhs, bronchitis, and bronchopneumonia. It is therefore highly probable that if mothers received during pregnancy and lactation ample supplies of fat-soluble vitamin, their children would be to a very large extent protected from these disorders during the early months of their life.

To sum up: it would appear possible at the present moment practically to eliminate rickets, to improve enormously the condition of the teeth of our people, to lessen the infant mortality from malnutrition, diarrhoea, and respiratory infections, and in general to raise the standard of physique and health. The measures that are recommended to bring about this result are quite simple. Ensure an adequate supply of fat-soluble vitamin in the diet: begin with the pregnant and lactating mother and continue with the child from the earliest days of his independent existence. When the child is weaned, the less milk, eggs, and butter that can be included in his dietary, and the less opportunity he has for being exposed to natural ultra-violet rays, the more important is it that he should be given cod-liver oil or one of its reliable preparations, and that foodstuffs such as oatmeal, which have a rickets-producing effect, should be excluded from his diet.

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II.—HELEN M. M. MACKAY, M.D., M.R.C.P. LOND.,  
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## THE CLINICAL POINT OF VIEW.

The clinician is confronted with a totally different problem with regard to food deficiency diseases from that of the laboratory worker. The laboratory worker gives a diet deficient in certain respects and watches the results of the basic diet given alone or with certain additions. The clinician is confronted with the results, and must attempt to elucidate the tangled causes, whether dietetic, hygienic, or infective, and he is constantly faced with the fact that a given symptom may result from any one of a great variety of causes. However, it is obvious that in order to deal successfully with dietetic diseases he must know

what deficiencies are likely to arise. Since these vary greatly in different parts of the world, the following remarks must be taken to apply solely to conditions in this country.

In the hope of getting the views of others, I will put forward the statement that, excluding clinical rarities, specific food deficiencies definitely known to cause illness in this country are few in number—the chief being deficiencies of iron, organic antirachitic factor, antiscorbutic vitamin, and probably iodine in certain districts. Other deficiency diseases may be present among the population, but their presence is as yet unproven.

Examples of the latter are diseases due to insufficient vitamin B, a deficiency of which brings about, among other results, intestinal atony and consequent stasis; but I would suggest that there is as yet no sufficient reason for assuming that chronic constipation and digestive disturbances are frequently due to deficiency of this vitamin, or that an increased supply would cure these cases or materially lessen their incidence. Vitamin B has a wide distribution. It is found in meat, eggs, milk, potatoes, tubers, roots, green vegetables, peas, beans, nuts, and fruit, and is not easily destroyed either by keeping or by heat, so that the presumption—until disproved—would be that it is present in sufficient quantity in any mixed diet. Unlike some recent writers, I would expect that if there existed a slight but widespread deficiency of this vitamin occasional sporadic cases of beriberi would occur, but this disease is almost unknown in Great Britain. Similarly, keratomalacia, associated with deficiency of vitamin A, and pellagra, probably associated with a deficiency of certain amino-acids, with or without other dietetic defects, are extremely rare.

Far be it from me to say that, apart from clinical rarities, the only food deficiency diseases occurring in this country are those due to deficient iron, vitamin C, vitamin D, and iodine. It may be that there are many others, but if they commonly occur I, for one, do not find myself able to diagnose them when I meet them, and I believe most other clinicians are in the same position. If anyone will refute me, and contribute evidence of their occurrence and discuss their differential diagnosis, the information would be most valuable.

My own work is almost confined to children, and I will therefore, only attempt to consider some aspects of the preventable disease in children caused by deficiencies of iron, vitamin D, and vitamin C, to all of which children are more susceptible than adults. I hope some other speaker may deal with iodine deficiency.

Iron, with a protein and a pigment—namely, globin and haematin—is necessary for the formation of haemoglobin. Biochemists tell us that the proteins and pigments of the diet are probably adequate under any ordinary conditions to supply the globin and haematin of the body, but there is much evidence as regards young children that the necessary supply of iron is often lacking, and that the so-called alimentary anaemia of infants is due to a deficiency of iron in the diet, and not to any form of milk or fat toxæmia, as has been suggested. We know that the iron content of milk, both human and cow's milk, is low, and insufficient by itself to supply the needs of the growing infant, so that the child is largely dependent, until such time as it receives a mixed diet, upon the iron store present in the liver at birth. If this store is exhausted before the child gets food richer in iron than milk and cereal it must become anaemic. Most of this iron store is laid down in the later months of pregnancy, so that the premature infant, born with a small iron deposit, invariably becomes anaemic, often profoundly so, before 5 to 6 months of age if not supplied with additional iron. This condition can be cured by giving iron as a drug by the mouth. After an interval of two to four weeks, sometimes longer, during which the haemoglobin percentage remains stationary, there is usually a steady rise week by week up to 70 per cent. or higher. Among full-term infants minor grades of anaemia are also extremely common. For example, of a group of 40 fairly healthy infants, aged 3 to 18 months, examined this spring at a welfare centre, 25 cases (60 per cent.) had less than 70 per cent. haemoglobin in the blood as estimated by Haldane's method.

he normal is probably something over 70 per cent. haemoglobin at this age. Of these 25 cases, one had only 45 per cent. haemoglobin and four more between 50 and 60 per cent., so that we may safely assume that anaemia is very common in infants, though we cannot assume that the whole of it is due to iron deficiency. Its prevention is one of the problems badly requiring investigation. I have attempted to give an emulsion containing iron as a prophylactic, but without success, as it was unpalatable and I was unable to persuade the mothers to continue giving it with any regularity when they considered their infants healthy. Points on which we require further information are: how much of this anaemia in full-term infants is due to deficiency of iron, and what are the simplest and most efficient means of prophylaxis in such cases.

Deficiency of the antirachitic factor or vitamin D is, so far as definite evidence goes, one of the commonest food deficiencies among children in this country, but the presence of widespread ill health in the adult community due to this also has not been established.

I need not remind you that the antirachitic factor is formed in the skin, as well as in various foodstuffs, by the action of ultra-violet light, and that on this account the amount needed in the diet varies with the degree of exposure to light. During the summer it is uncommon in London to find a child showing evidence of inadequate antirachitic factor, or, in other words, suffering from active rickets, though of course cases do occur. The "fresh" cases of rickets develop for the most part between January and April—that is, after the darkest months of the year—and in spring it is still a very common disease in the East End of London. In a recent radiographic investigation of 167 unselected new out-patient cases aged 1 week to 2 years, carried out during April at the Queen's Hospital for Children, we found that 8 per cent. of cases had x-ray evidence of rickets, or, taking only cases aged 4 to 13 months, 15 per cent. of the series. Of course in northern manufacturing towns the incidence is much higher. It is, therefore, during the winter and early spring that special precautions should be taken to ensure adequate vitamin D in the diet, and undoubtedly cod-liver oil is the source of the vitamin on which we should chiefly depend. Infants getting 1 to 1½ pints of cow's milk—or, for that matter, of human milk—in the day have been found to develop rickets when leading an indoor life. Cream and butter, too, are found to have a variable, but low, antirachitic value when compared with cod-liver oil and other fish oils. In the spring of last year I found that a mixed diet containing meat and vegetables as well as milk had little or no curative effect on rachitic children living indoors, so that we may legitimately conclude that if a young child is kept indoors it will probably suffer from a deficiency of vitamin D unless special measures are taken to supply this vitamin. It seems a very great pity that when cod-liver oil is available enormous sums should be spent by the public under medical direction on widely advertised proprietary preparations which are relatively poor sources of this vitamin. A cod-liver oil emulsion, begun gradually and given three times a day in the bottle (say a total of 1 drachm of the oil in the day), is well tolerated by almost all infants.

As regards conditions of ill health, other than rickets, due in part to deficiency of this factor, I would mention tetany (the cause of convulsions in many infants between 6 and 24 months of age), and respiratory infections, which account for a great rise in the infantile mortality in the winter months. In our observations at the Vienna University Kinderklinik it was found that the amount of infection of the respiratory tracts (including spread to the middle ear with otorrhoea) was very much less in a group of infants having cod-liver oil than in a comparable group without.

I should like to repeat that if every artificially fed infant, and every breast-fed infant that was little out of doors, were given cod-liver oil throughout the winter, it seems probable that all but the slightest manifestations of rickets would be banished, and the incidence of colds, bronchitis, otorrhoea, and convulsions in infancy would be lessened, with a consequent lowering of the infantile mortality. Moreover, the amount of dental caries should also be

diminished, since deficient vitamin D is one among the many factors leading to decay of the teeth.

Turning next to the *antiscorbutic vitamin*. Infantile scurvy is not a common disease in London, and I do not think that so-called incipient scurvy occurs frequently either. It would be interesting to know the views of others in this connexion. There is no proprietary preparation, or rather two recommended to be used in sequence, which are probably responsible for more cases of scurvy than all other methods of feeding in this country put together. The second of these two is a dried milk with an addition of malted flour recommended by the makers for infants from 3 to 6 months of age. Possibly we may hear some views from the public health standpoint concerning how this danger can best be brought to the notice of mothers. So-called "sterilized milk," which is sold by dairies and is often two weeks old by the time it is consumed, and pasteurized milk also account for a certain number of cases of scurvy every year.

Orange juice is in very general use in London as a prophylactic, but when oranges are expensive tomato juice is an excellent substitute which needs popularizing among mothers instead of the less effective grape juice. The contrast between the incidence of infantile scurvy in London and in Vienna I found striking, and was probably due in part to the widespread use of orange juice in London.

Perhaps I might mention one other common deficiency—this time a drink deficiency. We must all have been struck on many occasions by the improvement seen in sick children as the result of giving liberal amounts of water—as much as they care to take—after a period of deficient intake. One sees this improvement most strikingly perhaps in two conditions, diarrhoea and high pyrexia, for instance, with pneumonia. Unfortunately many members of the public believe that water is harmful in such conditions, and so withhold it, to the distress and detriment of the child. The public also need instruction, I think, in the desirability of leaving water accessible to children at and between meals, so that they may take as much as they wish—there is no reason to suppose they will take too much.

To sum up. Of the three dietetic deficiencies in children which I have asked you to consider—those of vitamin D, vitamin C, and iron—the diseases associated with the first two are well recognized and we are already steadily diminishing their incidence; but the fall in their incidence, in my opinion, could be greatly accelerated by our consistently advocating the prophylactic use of cod-liver oil and of orange or tomato juice for all artificially fed infants and many breast-fed infants. These rich sources of vitamins D and C are within the reach of practically all sections of the community. The prophylaxis of alimentary anaemia is a much more difficult question. But iron deficiency is very widespread, at any rate during the first one to one and a half years of life, and the resultant ill health should be preventable. Much more information of a practical kind as to how this can best be achieved is urgently needed.

III.—**SIR PERCY W. BASSETT-SMITH, F.R.C.P.,**  
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#### THE TROPICAL MEDICINE POINT OF VIEW.

It is often stated that the endemic population of tropical climates under natural conditions is free from dietary diseases so common in those living in temperate climates. This is only partially true, for in certain parts the struggle for existence is very severe and the food supply is so short—as, for instance, North-West Australia—that intestinal diseases from the consumption of unsatisfactory forms of food are very common. The same results are, I believe, found in parts of Africa, Borneo, etc., due to mutilation of the teeth. It is, however, certain that to maintain good health it is necessary for all races to supply and take the right kinds of food, and that this shall not be deprived of important factors by the methods of cooking often employed. No doubt exercise and sanitation are very necessary, but it is the food absorbed that supplies the energy and strength required to carry out the duties of our early life.

Within recent years our knowledge of the important



subject of dietetics has increased and widened, and a very large number of experiments, both human and animal, have been carried out. Quantities of books and pamphlets have been written on the subject; still the public often do not see these, and they are slow at grasping the vast importance of a right dietary for their daily life and well-being. It is a sad fact that much of what is good food is very largely deprived of one of the most important attributes by the modern processes of preparation and preservation. The habitual rush of the present century life has brought into existence the want of a large supply of food, quickly produced and rapidly obtainable in the most handy form, and also the poor appetite of the over-worked man demands greater variety and more highly spiced kinds.

It has been frequently shown that the old belief that so many calories of a mixed diet containing protein, fats, carbohydrates of starch and sugar, with salts and water, was sufficient for life, is not the whole truth. To ensure life, growth, and the maintenance of health the various so-called vitamins or accessory food factors are necessary; without these food consumed is but inert or dead for vitalizing the tissues of the body. This essential fact must be grasped first when making out any scale of dietary.

The following table shows a dietary for ordinary work in the tropics as described by Ghosh. Here the total value is much less, about 2,500 calories, with a minimum of fats, high carbohydrates, and good protein value.

*Dietary for Ordinary Work in the Tropics (Ghosh).*

	Grams.	Proteins.	Carbo- hydrates.	Fats.
Bread ... ..	224	17.92	112.0	8.35
Meat ... ..	168	44.8	—	25.2
Cheese ... ..	28	8.68	—	7.84
Eggs ... ..	Two	2.8	—	6.44
Butter ... ..	84	0.84	—	75.6
Potatoes (or other vegetables) ...	224	12.32	78.4	10.08
Milk ... ..	224	8.96	10.76	7.84
Rice ... ..	112	11.2	92.4	0.896
Fish ... ..	84	55.12	—	2.52
Total as grams...	1,148	122.54	293.16	209.776
No. of calories ...		490.16	1,172.64	836.104

Total number of calories 2,498.904.

The following is a modern naval diet, which does not include that bought in the canteen with the extra fourpence a day.

*Present Naval Ration.*

	Proteins.	Carbohydrates.	Fat.
Grams ... ..	131.6	407.2	103.8
Calories ... ..	526.4	1,628.8	934.2

Total number of calories: 3,087.

Sugar is a most valuable article of diet in the tropics, especially for men doing hard labour. I have been much struck by the descriptions of the great value placed on, and craving for, sugar by those climbing the mountains of the Andes in Peru. It is not only a heat producer but also a saver of proteins.

Tropical heat has thus, undoubtedly, a great determining action upon many physiological processes; for instance, under its influence the respirations are reduced in number, less oxygen is inspired, less carbon dioxide and water are given off by the lungs, and there is, therefore, a tendency to the retention of carbonic acid and alveolar air in people while at rest, also to the production, particularly in the rich, of glycosuria and acidosis. The urine is reduced in quantity from an average of 15,000 c.cm. to 5,000 to 7,000 c.cm. per diem. There is a reduction of chlorides and nitrogen excreted. The blood, as has been indicated, shows an increase of sugar content, and the Arneith count-index is said to be pushed to the left.

The digestive powers are less vigorous than in cold

climates, and large quantities of food cannot be well borne in the tropics. The food given should be such as to produce the minimum of heat, but giving sufficient nourishment. Proteins, in themselves, stimulate metabolism and also produce heat, and naturally are physiologically less required; if, however, much physical labour is taken the requirements of a greater supply of protein are evident. Woodruff states that "all natives in the tropics are in condition of partial nitrogen starvation, and need more nitrogen than they can get." To say that in the tropics we should live like the natives is quite wrong, as examples of certain enthusiastic, but misguided, missionaries could be quoted. He also states that the destructive effects of the concentrated actinic tropical rays on protoplasm cause the necessity of more nitrogen than at home (which is a debatable question), and he thinks that it untrue that fat is not needed in the tropics. It is evident that in arranging a dietary the conditions of work and the varying states of life must be taken into consideration.

There is no need for me here to describe the various forms of vitamins and their character, as this has already been done by other speakers. I give here a short synopsis of the tropical diseases due to deficiency in dietary:

1. Oriental beri-beri and infantile beri-beri.
2. Occidental beri-beri.
3. Ship beri-beri.
4. Rancid scurvy.
5. True scurvy.
6. Epidemic dropsy.
7. Pellagra.
8. Rickets.

In tropical climates the deficiency diseases mostly centre around the inadequate supply of vitamin B, hence it is the study of this factor which is the most important. The antineuritic factor was first found in the rice polishings, and subsequently in varying amounts in many other substances, and all three vitamins are often found in the same substance—milk, eggs, green vegetables, tomatoes and yeast. The vitamin B has been obtained in a concentrated condition from rice polishings as "ticque-ticque" from yeast—"marmite," a palatable preparation of yeast and other extracts; and vitamin C by condensing orange juice in vacuo, but all attempts to obtain a pure crystalline substance have so far failed. As constituents of our diet a great deal of attention has naturally been paid to the stability under conditions of cooking and storage of food stuffs. Vitamin B is unchanged for a long time in dry storage and is fairly stable in ordinary cooking operation. It would appear that it is as essential to the normal life of a plant as to the animal which derives its whole supply from the vegetable world, directly or indirectly, for evidence of the synthesis of a vitamin in the animal world is known. Confirmation of this is found in the fact that yeast and moulds require provision of the water-soluble vitamin B to start their growth; a small amount only required and the plant will then continue to thrive by synthesizing its own supply.

According to Finlay, vitamin B is essential for the formation of nucleic acid in the body. For this reason muscular activity or any condition of growth, by rapidly using up vitamin B, shortens the incubative period of the subsequent polyneuritis. Drummond notices that a diet deficient in vitamin B produced sterility in male rats, which is in accordance with the views generally held of the relationship between vitamin B and nuclear metabolism.

The most important deficiency disease in the tropics is beri-beri, which is caused to a great extent by a lack of vitamin B in rice-eating natives, and has been traced by the careful and persistent investigations of Fraser, Stanton, and others in the Malay States, to the almost exclusive use of white polished rice as the staple article of diet—that is, rice which has been deprived of its outer layers and embryo in which the vitamin B is contained. By using coarse milled rice the disease could generally be prevented. It is not exactly known what it is that actually gives rise to the symptoms, but a large amount of clinical facts have been brought forward to substantiate the view of Fraser and Stanton. It is not only adults that suffer but there is an infantile form found in suckling infants of beri-beri mothers; this can be cured by giving extract

of rice polishings or by extracts of yeast. The same disease occurs in other countries where the staple diet is white bread or potato starch, and it was prevalent during the war among the troops in Mesopotamia, and in the Eastern series in the South of France. The diet that produces beri-beri in the few can hardly fail to have a deep-seated and bad physiological effect on the many; ordinary everyday evidence of this is seen in native settlements in the East. When we consider the extent to which the European in the tropics has often to exist on canned foods and milk, and a relative absence of fresh green vegetables, it seems not unlikely that some at least of the evils ascribed to the climate may be really due to the food.

With regard to beri-beri, which is usually classed as a true deficiency disease, it must be pointed out that the Japanese still hold the view that the polyneuritis of birds, due to the ingestion of polished rice in which the deficiency of vitamin B is the cause, is different from true beri-beri. This view is supported by Megaw, in a recent paper, who places epidemic dropsy as a form of beri-beri, similar to ship beri-beri. His view is that in the present state of our knowledge it is unsafe to assume that a deficiency of vitamin B is the cause of beri-beri, but that it is a disease due to some change, probably bacterial, in the rice, which occurs on faulty storage—a toxin being formed which may be the essential cause of some forms of beri-beri and possibly of the disease in general. There is another theory, held by Vedder, that polyneuritis and dry beri-beri are chiefly due to a deficiency of vitamin B in the diet, and wet beri-beri and epidemic dropsy, and perhaps ship beri-beri, to a distinct and as yet unknown factor.

From a naval point of view, the beneficent action of eating "scurvy grass" was recognized by Captain Cook, but it was due to Dr. Lind and Sir Gilbert Blane that the great preventives, lemon and lime juice, were supplied and regularly issued as an antiscorbutic ration for the ships' companies when at sea. From that time to this lime juice has been constantly used, but its efficacy has disappeared. The reason for this has been ably shown by Mrs. Alice Henderson Smith. As originally prepared, the lime juice was made from sweet limes, *Citrus medica*, and with lemons, imported chiefly from Spain. In 1793 was stopped these supplies, but in 1802 delivery was resumed, and scurvy, which had obtained a temporary hold, was again almost eliminated. About 1860, by the development of the cultivation of limes in the West Indies, a large quantity was made available, and the contract for the navy caused the sour lime, *Citrus medica*, var. *acida*, to supersede the sweet limes and lemons formerly in use, and for a time this new lime juice was believed to be better than the old. This has been proved not to be the case, both by results of Arctic expeditions under Sir George Nares and by much recent laboratory experiment work.

I find that in 1793 Dr. Johan Kramer of Nuremberg, in the *Medicina castrensis*, said that it was useless to attempt to cure scurvy by drugs or by rubbing in applications to the affected joints, but recourse should be made to the acid vegetables of the garden, or, if these could not be obtained, lemons. The juice from the vegetables should be added as a watery solution to milk, or lemonade be made. These will bring about a certain cure.

There is no time here to enter into a full description of modern work on the action and characters of these essential vitamins, except to point out that one of the most important practical factors is their keeping power. The antineuritic is fairly stable—very stable if we are to believe the work of Jansen, who found that paddy of over one hundred years old, kept in storehouses in the higher regions of Java, was still as rich, or almost as rich, in anti-beri-beri vitamin as fresh rice. The antiscorbutic factor is, on the other hand, very much less stable, being easily destroyed by cooking, oxygenation, and keeping, especially in the presence of alkalis.

Though the antiscorbutic vitamin is generally so quickly destroyed by heating, there is the important exception in the case of tinned tomatoes; these, as originally shown by Hess, are still powerfully antiscorbutic, and are useful both for prevention and cure.

We know now that symptoms due to lack of vitamins are very slowly evolved, causing indefinite signs of ill

health and malnutrition, though in the tropics there is generally no deficiency of either the antiscorbutic vitamin C or the antirachitic vitamin A, yet in temperate climates these early symptoms are frequent in young children and are often not recognized. It is therefore good practice to reinforce the ordinary foods so often deprived of these three important vitamins. The food given should produce the minimum of heat but give sufficient nourishment. Proteins are physiologically less required, and we should follow out the example of the people of the country, who take more vegetable foods. If Europeans will insist on living as in a cold climate they develop all sorts of intestinal troubles and quickly run down.

It may be generally accepted that we need food from animal sources for the growth and maintenance of our body tissues; we need carbohydrates and fats for our body heat and energy, with inorganic salts to build up our tissues and perform physical functions; and lastly, we need an adequate supply of all vitamins, those substances without which there can be no healthy condition of the cells. If the consumption of the protein is in excess of the physiological requirements there is a tendency to gout and intestinal disorders, with an increased amount of work for the kidneys in eliminating the nitrogenous waste. An excess of fat tends to retard digestion of other foods; an excess of starch and sugar causes fermentation, with headaches and some forms of intestinal auto-inoculations and even a form of diabetes. People may appear well for a long period on a diet deficient in vitamins, but they will inevitably develop some form of constitutional disease, slowly evolved.

There seems to be little doubt that the water-soluble B, the water-soluble C, and the fat-soluble A vitamins have a definite place in a chain of reactions, which, if wanting, terminate in producing conditions known as beri-beri, scurvy, and rickets. Pellagra is also probably due to a deficiency of some protein factors.

#### IV.—JAMES WHEATLEY, M.D., County Medical Officer of Health, Shropshire.

##### THE PUBLIC HEALTH POINT OF VIEW.

THE extraordinary advances made in recent years in the knowledge of food, and particularly of food deficiencies, has placed a very great responsibility on that branch of the medical profession responsible for the health of the public. The magnitude of the responsibility rises in direct proportion to the importance of the advances made. It is obvious that, for practical purposes, these advances will be useless unless they are brought to the notice of the people in such a manner as to produce a real knowledge and a desire for better things, and unless facilities are provided for putting this knowledge into practice. These are the problems before us, and I venture to say that they will, in their way, prove as difficult of solution as any that have confronted the investigators into these food deficiencies.

The first essential is a general recognition of the supreme importance of health and of the extraordinary damage to health that is at present taking place through food deficiencies. Unless the thinking and influential part of the nation can be thoroughly imbued with these facts we shall not get the motive force to remove the obstacles—political, financial, social, and trade—at present standing in the way of progress.

The preceding papers will, no doubt, have dealt fully with the proofs we have of the bad effects of deficient foods. These proofs are mainly based on experiments on animals, and consequently have to be scrutinized very carefully. They have, however, been made on a great variety of animals, extending from monkeys to birds, by a large number of skilled observers, and on the whole with remarkable agreement. Moreover, in certain very important directions, they have been confirmed by the occurrence, prevention, and treatment of disease in man. It seems to me that we are justified in basing our preventive measures on the well established findings.

It will be useful to state concisely the supposed effects upon health of food deficiencies that have so far been investigated.

*Deficiencies of fat-soluble vitamins A, D, and E (?)*—in mothers' food causing stillbirths and premature births, marasmus, and general feebleness of infants, resulting possibly in a considerable proportion of deaths during the first month of life; defective growth of infant and child; infections of lungs, intestines, and eyes; rickets, and defective structure of teeth predisposing to caries; possible predisposition to enlarged tonsils and adenoids; and the train of symptoms associated with the catarrhal child.

*Deficiency of vitamin B*—loss of appetite, subnormal temperature, lowered function of the gastro-intestinal mucous membranes, resulting in inflammatory changes, constipation, and intestinal infections directly or indirectly causing a very considerable proportion of the illness after middle life; colitis, appendicitis, and gastric ulcers; lowered bactericidal power of the blood, and consequent lessened resistance to accidental infection; interference with growth.

*Deficiency in vitamin C*—infantile scurvy, greater susceptibility to infection, possibly interference with growth.

*Deficiency in calcium*, in addition to being an important factor in the production of rickets and defective teeth, produces certain important blood changes.

*Deficiency in iron*—anaemia; evidence of anaemia due to food shortage is not very obvious, except in persons kept on milk diet for long periods.

*Deficiency in iodine* is probably the basal factor in the causation of endemic goitre, and a cause of lowered general metabolism.

*Deficiency in roughage* has been assumed to be the important factor in causing intestinal stasis and the infections that follow from it. These results are now attributed largely to the shortage of vitamin B. Roughage probably has a value apart from the vitamins it contains—certainly as a compeller of mastication and probably by fulfilling a mechanical and perhaps an absorbent function in the intestines.

There seems good reason to think that a considerable part at least of this formidable array of disease, deaths, lack of growth, and vitality, can be caused by "food deficiencies." Have we sufficient reason for assuming that there is a serious deficiency of these substances in the diet of the people? We know that white bread, sugar, and margarine, forming perhaps 90 per cent. of the food of the lower wage-earning classes of our towns, contain almost no vitamins. We also know that rickets, an extremely common disease, is caused by a shortage of fat-soluble vitamin D, and that where there is a shortage of this vitamin there will be a shortage of vitamin A also. We may therefore safely assume that there is a widespread shortage of vitamins in the diet of the poorer classes. The causes of the deficiencies are ignorance, poverty, and the refinement of food over which they have no control.

These factors come into play very unequally with regard to the various deficiencies. The deficiency in fat-soluble vitamins A and D is largely due to poverty, but to some extent to ignorance. There is probably little deficiency of these vitamins in the foods of the well-to-do—possibly an excess. The deficiency in vitamin B is mostly due to refinement of cereals, or, for practical purposes, refinement of flour. No other food can adequately make good this deficiency where bread is as much as 70 to 80 per cent. of the diet. There is not the same deficiency where potatoes take the place of bread, particularly if the peel is eaten.

Unless we are prepared to make the pulses form a considerable part of our diet, or to substitute potatoes for bread or rye for wheat—and these alternatives are quite impossible—the shortage of vitamin B in the diet of the lower wage-earning classes can only be met by the consumption of wholemeal bread instead of white bread. This vitamin is contained in the germ and outer coats, and in the yeast used in making the bread. Of all our foods, yeast and wheat-germ are supposed to be the substances richest in vitamin B, and to contain this vitamin in about equal amounts. The germ forms only about 1.5 to 2 per cent. of the whole grain, while in baking bread dried yeast is added to the flour in a proportion of only about 1 per cent. It has been estimated that if these substances

are the only source of vitamin B in a diet, they should form about 6 per cent. of the total food. It has also been estimated that under similar conditions wholemeal flour should form 75 per cent. of the diet.

The wheat germ is about five times as rich in vitamin B as the outer coating, but whereas the germ only forms at most 2 per cent. of the whole grain, the outer part removed in the manufacture of white flour is equal to at least 20 per cent. of the whole grain. About two parts of the vitamin B in wholemeal flour is therefore due to the coatings, and one part to the germ. The vitamin B in wholemeal bread is due to the yeast (1 part), the germ (nearly 2 parts), and the coatings (4 parts). In other words, wholemeal bread contains about seven times as much vitamin B as white bread, when both are made with yeast. Mellanby's finding that wheat-germ, in the large quantities that he gave in his experiments, is a considerable factor in the production of rickets, has of course no bearing upon this particular question, but it shows how dangerous it is to fractionate foods without scientific knowledge. If this simple fact had been understood in the past it would have saved us a great many very serious mistakes. Of the other cheap foods containing vitamin B, probably lentils in the form of soup is the best, and of the more expensive ones, eggs.

The deficiency in vitamin C is due to ignorance as to the value of fruit and the proper method of cooking vegetables, and also to poverty, for fruit and green vegetables are too expensive for daily consumption by the poorer classes unless they have productive gardens. Deficiency in calcium and in roughage is also due mostly to refinement, too much cooking, and rejection of all food difficult of mastication and digestion.

It may be accepted that there is a general shortage of calcium in our food, and that this shortage seriously affects a considerable proportion of our infants and young children. It is difficult to suggest how this shortage can be made good in a natural way. Milk and cheese are the foods richest in calcium, and when taken in any quantity there will be sufficient calcium in the diet. The consumption of milk per head in this country is, however, very small, and large numbers of poor children get practically none. The substitution of wholemeal bread for white bread would increase somewhat the amount of calcium in the food. Probably the amounts of calcium needed by the body at different ages and under different conditions of living have not been sufficiently worked out, but the needs of an adult have been estimated at from 9 to 16 grains. A growing child in the maximum bone-forming period would presumably require a considerably larger amount. The amount of calcium in 2½ lb. of bread, the quantity that will give sufficient calories for an adult, is only about 3½ to 4 grains if made of white flour, and about 5½ grains if made of wholemeal flour. So even if wholemeal bread is eaten, some food richer in calcium than bread should be eaten to make up the deficiency. A pint of cow's milk contains about 9½ grains of calcium, and would supply nearly the whole of the calcium required in a day's food. Half a pint of milk added to a diet deficient in calcium would probably, as a rule, make good the deficiency.

Experiments seem to show that inorganic salts of calcium can be utilized by the body. If this is so, the hardness of water is a matter intimately concerning public health. If 1½ pints of unboiled water of 20 degrees of temporary hardness were drunk daily, 1½ grains would be added to the daily intake of calcium. This would be only about 15 per cent. of the total daily requirement, but it would do something to make good the deficiency. There is, I believe, some difficulty in adding lime to soft water supplies. Perhaps, if necessary, this can be got over, but the question of deficiency of lime in our diet should certainly be considered when the adoption of any scheme of softening drinking water is contemplated. In these estimates the possible differences in absorption of lime in different states have been ignored.

Investigations show that the amount of iodine in the soil and in the plants and animals living on the soil diminishes generally with the remoteness from sea influences. There can be little doubt, too, that the lack of iodine is the basal factor in the production of endemic goitre, although this

conclusion does not exclude the possibility of many other influences in its production. It appears likely, too, that the lack of iodine in food is frequently responsible for lowered and disordered metabolism. On these assumptions it is clearly desirable that in some way the food supply of less favoured districts should be levelled up to that of the best. The addition of iodine in minute quantities to common salt appears to supply this deficiency in the most convenient way. When this question has been more definitely decided, Government action will undoubtedly be necessary to bring about the desired result in a reasonable time and in an effective manner.

It is obvious from this short statement that the removal of these deficiencies is going to be a very complicated task. It is quite clear, too, that our present food legislation, except that directed to the prevention of the use of preservatives, has no bearing on this question. The remedies are education and the provision of better facilities for getting suitable food.

The first step is education of the people so that they will have the requisite knowledge to get the best foods possible with the money available, and to prepare the food without damaging it. This should have a foremost place in health education and all our public health schemes, and schemes of propaganda should be utilized to the utmost.

Education of the elected bodies (Parliament and sanitary authorities) responsible for health is essential for rapid progress. The Ministry of Health might well give a lead to sanitary authorities by stating that it is most desirable that members of health committees should take every opportunity of making themselves acquainted with public health problems so as to be able to form a balanced judgement on, and appreciate the importance of, the matters brought before them by their professional advisers. They would then be able to put forward their recommendations with the requisite force and authority. Local authorities have great influence on Parliament, and are the training ground for members of Parliament, so that enlightenment of local authorities should react in time upon Parliament.

Education is the first and most important matter. It will not, however, get over the difficulty that the fat-soluble vitamins are contained almost entirely in the expensive foods—dairy produce, animal fats, eggs, and green vegetables; that vitamin B is refined out of the staple food before it reaches the public; that fruit is, generally speaking, too expensive for the town dweller; and that probably in every district there is a deficiency of calcium and in certain districts a deficiency of iodine in food.

It appears as if legislative action on entirely new lines will be necessary. Such action will only be possible if the proof of great damage to health by existing deficiencies is convincing. We are all greatly dissatisfied with the amount of disease and consequent suffering and inefficiency amongst us. The interference with the legitimate pleasures and enjoyment of life and the economic loss are appalling. If much of this is due to defects of food, and especially to "food deficiencies" in the special sense, the issue will be recognized as so important that legislation of a type hitherto unthought of would be demanded by the people. Such legislation might take the form of taxation of certain undesirable forms of food; or facilities for the greater production of others; or for the addition of substances to certain staple articles of universal consumption.

In order that the food supply should contain a sufficient quantity of vitamin B a tax might be put upon all flour containing less than a certain percentage of the whole grain. This would result in wholemeal bread being eaten by the large proportion of the population, whilst not prohibiting the manufacture of refined white bread for exceptional individuals who need special treatment. Or if the trade difficulties of storage are for the present almost insuperable perhaps these might be lessened by separating the germ, selling it separately, and making it compulsory for the bakers to mix a certain percentage of the germ with the flour. Or, as a very poor alternative for immediate action, it might be made illegal to sell wheat-germ for animal food. It would then be sold for human consumption, and could be retailed as biscuits, or in some other form, at a cheap rate.

Refined sugar is quite free from vitamins, and its excessive consumption, which there is much reason to think is injurious to health, might be lessened by a tax. The money saved on this food would then be spent on other more suitable foods, and the revenue raised might be used for cheapening other and better foods.

The problem of placing the lower wage-earning classes in a position to get a good supply of the fat-soluble vitamins is a very difficult one. The radical solution of increased earning power will, no doubt, come gradually along with increased production. In the meantime, what legislative or other measures are possible, apart from education, to enable poor persons to get a better supply of these vitamins?

Everything points to the fact that the principal damage is done during the first few years of life. A point that requires further elucidation is: Up to what age is a plentiful supply of fat-soluble vitamins essential? If we are correct in assuming that there is a marked shortage of these vitamins in the diet of young persons of the lower wage-earning class, particularly in the towns, due largely to economic reasons, and that in practice the deficiency can only be removed by an increased consumption of dairy products, principally milk, it follows, I think, that the only immediate remedy is a great extension of the scheme for supplying milk to expectant and nursing mothers and young children. In addition, the Government should give every encouragement possible to the increased production of milk and green vegetables and the cheapening of their distribution. It is upon a plentiful and cheap supply of these foodstuffs that the health of the nation largely depends, and consequently economic reasons should not entirely prevail. We know that the ordinary economic laws affecting the production of commodities are constantly interfered with, but never, or almost never, for the purpose of improving health. Why not?

The country population should be safeguarded by a simple enactment making it a statutory duty of dairy farmers to supply milk to the inhabitants of their district at a price between the wholesale price and the retail town price, and encouragement should be given to cottagers with proper facilities to keep goats. These measures would, to some extent, get over the extraordinary difficulty, probably an increasing one, of obtaining milk in many country districts. The facilities for allotments should be greatly increased, and sufficient garden should be provided to every new house for growing vegetables and fruit.

Further legislation is necessary to prohibit the treatment of milk in such a way as to cause any considerable diminution of the vitamin content, and every possible step should be taken to see that a milk is produced that will gain public confidence without increasing the price. Further legislation may prove to be necessary to prevent the destruction of vitamins in the canning and other methods of preservation of all classes of foods.

Not sufficient attention is paid to the quality of dairy products and the desirability of increasing grass feeding to the utmost. Imported butters from different parts of the world must vary enormously according to the season—whether the grass is growing well or the land is under snow. In particular, New Zealand butter must be vastly superior to Danish during the months of November, December, January, February, and March.

Whether, if all these measures fail to meet the situation, we shall have to fall back upon some artificial method of providing vitamins or other substances in a concentrated form and distributing them in common foodstuffs remains to be seen. It is to be hoped that no such measures will be necessary, but if they prove to be, then the compulsory addition of fat-soluble vitamins to margarine appears to be the most practicable application of this method.

If it is established that the lack of vitamins A and D in the food of the expectant and nursing mother and the infant is one of the causes of premature births, stillbirths, feebleness at birth, marasmus, deaths of infants during the first month, rickets, and bad development of jaws and teeth, it follows that ante-natal work is one of the most important and will be one of the most fruitful of our public health activities; also that the branch of this work concerned with the detection of abnormalities and the prevention of dangers from them, which has formed so

large a part of ante-natal work, although very important, sinks into insignificance compared with the careful supervision of the general health of the expectant mother. To be effective it must be accompanied by a liberally administered scheme for the supply of milk.

Although our knowledge of food deficiencies has made wonderful strides, there is much need for further research, and it is most encouraging to see that this, probably the most important work that has ever been done to improve the health of a people, is being undertaken with great vigour throughout the civilized world. We want more definite information and particularly of a quantitative nature. What is the optimum amount of the vitamins for different body weights, ages, and total food quantities? Can harm be done by excessive amounts of vitamins? Does the necessity for fat-soluble vitamins almost disappear with cessation of growth? What is the actual shortage of vitamins in the foods of different classes of the population—those in which money and knowledge are scarce and those in which there is no shortage of money for food and knowledge may be supposed to be more advanced? An inquiry of this kind was commenced under the auspices of the Society of Medical Officers of Health by Dr. Daley at Blackburn, but owing to industrial disturbances, which would have rendered the inquiry almost useless, it was abandoned and has not since been attempted. Inquiries of this description that have so far been made appear to me to be very inconclusive.

The Essex investigation, so far as it went, seemed to show that there was no marked food deficiency amongst the country children inquired into. These results cannot be applied generally without far more extensive and complete inquiry, but they do show the extraordinary public health importance of the cottage garden.

Such inquiries seem to me to be absolutely essential and urgently needed, if we are not simply to continue guessing at the amount of vitamin deficiency and the damage done.

Notwithstanding the necessity for further investigation, the proof that food deficiencies are causing an enormous amount of ill health, lack of growth, and premature death, is to my mind conclusive, and a study of the present position of the food supply of the people leads me to the inevitable conclusion that Government help in the way of special legislation and financial aid in certain directions is essential, unless we are prepared to wait for improvement until the people have been sufficiently educated and their earning power sufficiently increased. Has not the time arrived when the Government should take this matter up seriously with the object of encouraging the greater production of those essential foods which are at present too dear for the masses, and rendering available those natural foods which have been refined almost out of existence?

Can anyone doubt the economy of such expenditure?

#### GENERAL DISCUSSION.

Dr. GREENFIELD (Rushden) said he thought many observers had failed to notice the prevalence of rickets among the agricultural population. It had been stated that the grosser manifestations of food deficiency were found very rarely in the country, but it was only in recent years that the minor symptoms of thyroid deficiency had been recognized. Enlarged tonsils, adenoids, and pyorrhoæa were apparently more prevalent in this country than abroad, and he believed these conditions were all attributable to errors in diet. The prevention of pyorrhoæa and streptococcal invasions of the mouth would be one of the greatest advances which modern medicine could make.

Professor LEONARD HILL observed that cod-liver oil had been used for many years, and, having gained a great reputation in the treatment of tuberculosis, must have been effectively prescribed. It had not, however, acquired that reputation for preventing and curing rickets and tuberculosis which it would have gained in that period of years had it possessed the powers now claimed for it. Ultra-violet rays were required to balance the loss of sunlight in cities and to give that aid which had been found to be so valuable in country sanatoriums in the curative

treatment of tuberculosis and rickets. Light acted not only by the ultra-violet rays, which by activating cholesterol formed the antirachitic vitamins, but also by rays of longer wave-length, including visible rays. The energy of these rays was sufficient to penetrate the epidermis so that it could be converted by the blood and the living cells of the tissues. Open-air and light treatment must in all cases be combined with a diet rich in vitamins.

Dr. B. SPEARMAN (Zanzibar) said it had often been stated and published in the press that the primitive savage was the physical ideal to which they must look. After many years' intimate experience of primitive African tribes in Uganda and Zanzibar he was compelled to dissent from that view. The African native was on the whole a fine fellow physically, but his resistance to infections was low. He was prone to suffer from coughs and "colds," and more serious respiratory diseases, from ophthalmia, and from a peculiar form of chronic and indolent ulcer which was extremely difficult to cure, even when modern methods of treatment in hospital had replaced the universal native panacea—cow dung! His resistance to epidemic diseases such as small-pox and cerebro-spinal meningitis was extremely low, but rickets was unknown among these tribes, probably because of their liberal supply of sunlight. Rickets was occasionally seen in Zanzibar, but almost always among Indian females living under the purdah system, which involved deprivation of light and air. He was, however, satisfied that many of these people suffered from disorders due to food deficiency. Different tribes had different diets, consisting mainly of maize, millet, bananas, or sweet potatoes. In all cases these diets were traditional, unvaried, and monotonous, and he believed they could be shown to be seriously deficient in the accessory food factors.

Dr. B. DUNLOP (London) supported Dr. Greenfield's view that there was a considerable amount of rickets among the inhabitants of rural areas, and that it was due to diet deficiencies. Like urban populations, they lived too much on white bread and tinned foods, but he thought that people could be well fed without milk. He was glad that it had been pointed out that the natives of tropical climates also suffered from food deficiency conditions, but thought that any physical superiority they possessed was due to eugenic selection, which prevailed more among such people than it did at home. The discussion supported the idea that the nation should breed mainly from people who could afford to supply an ample diet and sufficient air and sunshine to their children.

Dr. H. SCURFIELD (Folkestone) thought that a large section of the population of our industrial towns were very short of the foods enumerated by Dr. Mackay as the chief sources of vitamin B. There was accordingly a real danger of lack of this vitamin in the national dietary, and he believed that much of the prevalent constipation, dental decay, and stunted growth was due to a deficiency of vitamins. The results reported from the artificial light treatment of tuberculosis were very conflicting. With regard to Dr. Wheatley's suggestions, he thought the first step should be to secure legislation which would enable the purchaser to know what he was getting when he bought bread or flour—that is, the proportion of bran, germ, and endosperm in the article purchased. He hoped the Medical Research Council would shortly investigate the vitamin content of jam and marmalade.

Professor F. E. WYNN (M.O.H. Sheffield) pointed out that Mellanby's researches were not confined to experiments on animals. They were tried out in the children's wards of the Sheffield Royal Infirmary and at the Child Welfare Centres. The administration of cod-liver oil cured rickets, in his experience, with the precision of a laboratory experiment. He did not at all underrate the value of sunshine and the other factors involved in the life of almost nudity lived by tuberculous children in their Sheffield hospitals, but their results from artificial ultra-violet light had not quite confirmed the enthusiastic reports received.



from other places, and to apply it to all children in a large industrial centre was, in existing circumstances, a financial impossibility. The difficulty in connexion with rickets was to get hold of the cases. He saw many cases in the slum districts, but mothers refused to admit that there was anything wrong with the children. He could not understand the attack that had been made on sugar as an article of diet, and believed that the child's craving for sugar represented a physiological need.

Dr. E. V. ASHCROFT (Manchester) said that twelve years' experience in Ancoats, which was largely a slum district, had convinced him that the incidence of rickets depended not so much on food deficiency or deprivation of light as on want of cleanliness. He described the treatment of rickets carried out at the Greengate Hospital, Salford, which consisted of cleansing the children and the administration of cod-liver oil. He attributed the excellent results obtained mainly to cleanliness.

Dr. STUART COWELL, in replying to the discussion, said that he and those associated with him fully appreciated the value of light in the prevention and treatment of rickets and other deficiency diseases, but he was satisfied that light could only operate satisfactorily when there was an adequate supply of vitamins in the diet.

Dr. WHEATLEY said he could not accept Dr. Wynne's suggestion as to instinct as a guide in these matters. Instinct might be a reliable guide under natural conditions, but was not to be trusted in artificial ones. Under natural conditions sugar was difficult to obtain, and the craving for it led to the consumption of fruit. To satisfy this craving by resort to artificially refined sugar was unnatural and dangerous.

## THE SECTIONS.

### BRIEF SUMMARY OF PROCEEDINGS.

ARRANGEMENTS have been made to publish, during the next few months, full reports of the discussions in the Sections of the Annual Meeting at Nottingham. Meanwhile, the notes printed below will enable members who were not present to gain a general view of the proceedings. Any errors to which attention may be drawn will be corrected in the full reports.

### SECTION OF MEDICINE.

Wednesday, July 21st.

#### THE BILIARY TRACT.

PROFESSOR EVARTS GRAHAM opened a discussion on "Some recent developments in our knowledge of the biliary tract." After a short statement on the functions of the gall bladder Professor Graham discussed the pathogenesis of cholecystitis, and, turning to diagnosis, said he would only deal with cholecystography. A proper conception of the interpretation of cholecystography must be based on an understanding of some of the theoretical points involved. The substance used must be excreted by the liver into the bile; it must pass with the bile into the gall bladder, and there it must be concentrated by the absorption of water in order to give the densest shadows. It was thus apparent that the densest shadows would be in normal subjects, whereas there would be no shadow at all, or only a faint one, if the liver was unable to secrete the substance, if the cystic duct was occluded, or if the gall bladder was unable to concentrate its contents owing to a diseased wall. The method provided a means of investigating the only two known functions of the gall bladder: its distensibility and contractility were shown by alterations in the size of the shadow, its power of concentration by the density of the shadow. The interpretation of results depended in part on the technique adopted, and Professor Graham discussed shortly the advantages of the intravenous and oral methods and of the various salts used. He himself preferred the intravenous route, and used either tetratridophenolphthalein or its isomer phenoltetratridophthalein; and he gave a

detailed account of his own technique. The chief points in making a diagnosis of cholecystic disease were: (1) Failure to obtain a shadow. (2) Filling defects; soft calculi were frequently seen as "negative" shadows, and many small stones often produced a characteristic mottled appearance. (3) Irregularities of contour denoting adhesions, diverticula, etc. (4) Variation from normal in the density of the shadow or in the time of its appearance or disappearance; these were the most difficult to interpret. He had had no alarming symptoms in the last 500 cases. He gave a tabulated list of the degree and number of reactions experienced with different drugs and methods of administration. Finally, he discussed the mechanism of emptying the gall bladder. Muscular contractions of the wall seemed to play only a very minor part, the chief factors being apparently the elastic recoil of a distensible viscus, the washing out of the organ by the ingress of fresh hepatic bile, and intra-abdominal pressure.

Dr. Hurst said that 10 per cent. of all dead bodies showed the presence of gall stones; these were all preceded by cholecystitis, but as cholecystitis was not necessarily followed by gall stones it must be even more common, and occurred probably in at least 20 per cent. of all persons. He urged the need for early recognition so as to prevent the formation of stones. Flatulent dyspepsia was frequently due to cholecystitis, and such cases should be examined by a diagnostic team, which should exist in all towns. The three most important diagnostic methods were: (1) Test meal; 50 per cent. of cases of cholecystitis showed achlorhydria or hypochlorhydria. (2) The duodenal tube; this might show evidence before the cholecystogram. (3) X rays and cholecystography, as in the case of appendicitis he found the presence or absence of tenderness over the visualized organ a most helpful point. Cholecystitis was an infective disease, and the main treatment was sterilization of the gall bladder by urotropine in large doses up to 100 grains three times daily if alkali was given with it in sufficiently large doses to keep the urine alkaline; in the case of the gall bladder the drug acted even in an alkaline fluid. Dr. F. A. Knott gave the result of his experience with the Einhorn tube; he emphasized the need for examining a series of upper alimentary specimens rather than the duodenal contents only. With regard to the power of urotropine in sterilizing the bile, he suggested that one factor might be the lowering of surface tension. Professor D. P. D. Wilkie testified to the extreme usefulness of cholecystography and the increased accuracy in diagnosis obtained by its use. He preferred the intravenous route, but the drug must be freshly prepared and scrupulous care in technique taken. Although they might have to modify their views of gall-bladder activity in the light of Kodama's work, he found it difficult to believe that the muscular wall and rich nerve supply had nothing to do with it. Mr. C. F. W. Illingworth described the technique adopted, and gave the results of his work in conjunction with Professor Wilkie, with illustrative slides. Dr. J. W. McNea discussed the changes in the biliary secretion passing along the bile passages. Cholesterol was, in his opinion, not formed in the wall of the gall bladder; it was derived from the food, absorbed as cholesterol esters and passed through the liver cells; there it was de-esterized, and entered the bile as pure cholesterol; passing into the intestine it was re-esterized and absorbed, so that it was conserved in the body with the same care that iron was.

Dr. T. Izod Bennett spoke of the clinical aspects of diseases of the biliary tract. In cholecystography he used the oral route of administration, which avoided any risk of venous thrombosis. His last fifty cases had been uniformly successful, and toxic symptoms had not been grave. Dr. J. H. Anderson gave the results of his series of cases of cholecystography, illustrated by slides. He used the oral route now in nearly all cases with quite satisfactory results; he also gave a barium meal so that the relative position of the gall bladder to the alimentary canal might be more easily determined. Sir Berkeley Moynihan paid tribute to Dr. Graham's pioneer work. He believed a high blood cholesterol figure to be of great importance. In early cases of cholecystitis there was a cholesterol flood with high cholesterol content in the blood, bile, and walls of the gall bladder. In chronic cases, on the other hand, the calcium

content was high. Sir Humphry Rolleston, after a tribute to Dr. Graham, doubted whether they would ever reach Dr. Hurst's ideal of being able to dispense with the surgeon in cases of cholecystitis. He agreed that there was little evidence of contractile power in a healthy gall bladder. Dr. Graham replied briefly.

#### SECTION OF SURGERY.

*Wednesday, July 21st.*

GREAT regret was felt that illness prevented Sir D'Arcy Power from presiding at this Section, and the hope was expressed that he would speedily regain his health. His place was taken by Sir James Berry.

#### CEREBRAL TUMOURS.

The discussion of cerebral tumours centred chiefly round general problems. There was general consent that cerebral surgery required very special training. Many speakers emphasized the frequency of tumours of the brain, and stressed the necessity for complete neurological investigation of every case where the symptoms suggested in the slightest degree the presence of such a condition. Mr. Percy Sargent, who opened the discussion, was able to show from his experience that the outlook for victims of this disease was not so gloomy as was generally depicted. Of 300 operations for glioma, for instance, 25 per cent. of the patients returned to work after the operation. In other brain tumours a similar degree of success was obtained also. Mr. A. P. Bertwistle (London) communicated a method for localizing more accurately the sulci from without the skull. Mr. G. Jefferson (Manchester) urged the need of more intensive study and specialization by surgeons in neurology, and claimed good results from operation. Mr. J. P. Ross (London) spoke of the danger from increased intracranial tension after operation and its relief. He referred also to the results of radiotherapy. Mr. H. S. Sontar (London) demonstrated an ingenious instrument for turning down rapidly an osteoplastic flap. The whole discussion gave a different complexion to the generally accepted view of the almost hopeless prognosis in brain tumour.

#### THE PLACE OF GASTRO-ENTEROSTOMY.

The discussion on the place of gastro-enterostomy in the treatment of simple ulcer appeared inconclusive. Mr. H. Paterson (London) was a strong upholder of the operation, while Professor H. Finsterer of Vienna was equally emphatic in denouncing it. There was no general agreement as to how the operation acted as a curative measure, nor how it should be performed. Mr. K. W. Monsarrat (Liverpool), Mr. C. Roberts (Manchester), Dr. H. Bruce (Toronto), in the main supported Mr. Paterson. Mr. E. Deanesly recommended Finney's operation as a substitute in duodenal ulcer. Professor D. P. D. Wilkie (Edinburgh) favoured local resection with gastro-jejunostomy for gastric ulcer, while Sir William Wheeler (Dublin) advised resection. He also declared that the sleeve operation was not so successful as he had once believed. Mr. A. B. Mitchell (Belfast) for gastric ulcer recommended gastro-jejunostomy with infolding; for a bleeding duodenal ulcer ligature of the pancreaticoduodenal artery was advised.

*Thursday, July 22nd.*

#### CARCINOMA OF THE TONGUE.

The treatment of carcinoma of the tongue was first discussed, and the result of the morning's debate was to show that finality had not been reached on this question. While Mr. D. C. L. Fitzwilliams, who opened the discussion, pleaded for the use of the knife whenever possible, other speakers, including Mr. Gordon-Taylor, recommended the diathermy canter. Other debatable questions were the dissection of one or two sides of the neck to remove the lymphatics and the order in which operations should occur. Mr. W. S. Dickie (Middlesbrough) described a useful method of extirpating growths at the base of the tongue, and exhibited two patients upon whom the operation had been performed. Sir William Milligan spoke of the results of diathermy and radiation therapy, and claimed that

51 patients out of 812 were cured. He included apparently all forms of cancer of the buccal cavity in these statistics. Mr. Gordon-Taylor admitted a very considerable mortality from operation, but gave a hopeful account of the subsequent course of events—namely, 50 per cent. of cures. Several speakers emphasized the danger of death from bronchopneumonia, which Mr. Stanford Cade said could be eliminated by employing local anaesthesia only.

Mr. H. W. Carson read an interesting short paper on the after-treatment of carcinoma of the breast, which provoked some discussion. Mr. A. B. Mitchell gave a lantern demonstration of methods of treating spiral fractures and dislocation at the acromio-clavicular joint.

#### SECTION OF OBSTETRICS AND GYNAECOLOGY.

*Wednesday, July 21st.*

#### TERMINATION OF PREGNANCY BEFORE VIABILITY OF THE CHILD.

Dr. T. W. Eden, opening the discussion on the indications and methods for termination of pregnancy before the viability of the child, thought that from time to time they should consider what conditions could be agreed upon as indications for the induction of abortion. Each case deserved sympathetic consideration on its merits. Dr. Eden thought that it was an ethical question of great interest to what extent they, as doctors, had the right to insist that a woman should pass through an ordeal which she was unwilling to face, even if they did not think that she would sustain any permanent injury from so doing. At times it might be right to terminate pregnancy even if the mother were not suffering from any condition which might strictly speaking be called disease, but only after the most careful consideration. Dr. Eden then gave the chief medical indications for the induction of abortion. In regard to phthisis there was much difference of opinion. Generally speaking there was not much risk to the mother in healed or arrested cases if her physique were good; but in active disease pregnancy usually hastened the tuberculous process. He advocated a close association between the obstetrician and the physician before determining whether induction should be performed or not. As regards the chances of life of children born to a phthisical mother, Dr. Eden said that in France it had been estimated that 38 per cent. of such infants did not survive the first month. Dr. Ward, the tuberculosis officer for South Devon, had estimated that the children of a tuberculous mother were seven times more likely to become themselves tuberculous than the children of healthy mothers. Of tuberculous women who became pregnant, Dr. Ward estimated that 50 per cent. were definitely worse, while 19 per cent. were improved. Dr. Eden considered these to be powerful arguments for the termination of pregnancy in women who were the subjects of active tuberculosis. In chronic nephritis the risks of pregnancy were considerable, both to mother and to child. The speaker suggested that a woman with chronic interstitial nephritis (azotaemic type) should be allowed to continue with her first pregnancy under supervision, but in subsequent pregnancies abortion should be induced early if serious renal breakdown occurred in the first pregnancy. The early occurrence in pregnancy of albuminuria with oedema justified (if it did not urgently demand) the induction of abortion. Induction might become necessary in some cases of *B. coli* infection of the urinary tract. With the introduction of insulin the risks of pregnancy in diabetes mellitus had been very greatly reduced, though not entirely eliminated. In valvular disease of the heart induction of abortion was right when there was failure of compensation in the early months and in cases where serious breakdown had occurred in a previous pregnancy. Pregnancy in an insane patient might have to be terminated, but only after consultation with a psychiatrist. Induction was hardly ever necessary in chorea, but now and then an exceptional case of psychopathic disturbance might render induction advisable. Dr. Eden then dealt with the obstetric indications. Toxaemic vomiting sometimes proved incurable by medical means and pregnancy had to be terminated. These cases were relatively of very rare occurrence. Induction should not be contemplated in the non-toxaemic forms of hyper-

emesis. Cases of vesicular molo and missed abortion should be treated by evacuation of the uterus as soon as the diagnosis was made. Free bleeding in the early months did not in all cases result in abortion. Persistent bleeding was of far more serious import to the life of the ovum than an initial smart haemorrhage.

Mr. J. D. Barris described the different methods whereby pregnancy could be terminated. The method selected should cause the least amount of strain or risk of injury. The factors to be considered were the urgency of the need for termination and the date of the pregnancy. As a rule the need for rapid evacuation was more insistent before the third month, therefore a rapid method was the one called for and was the one most likely to give a good result. After the third month the risk of delay was not of such import as a rule, and the difficulties attending upon a rapid evacuation of the uterus were such as to render a slower method far more preferable, even though such methods were not always immediately reliable and might have to be repeated. If the need for a rapid evacuation after the third month was urgent Mr. Barris advocated a vaginal hysterotomy. He had found Caesarean section very satisfactory in cases of vesicular molo. He reviewed briefly the different methods which could be employed according to the circumstances of individual cases. Professor Louisa Mellroy thought that induction should only be performed in the direst necessity; with increasing knowledge there would be a reduction in its employment. Referring to the ethical aspects of the question, she was opposed to the induction of abortion unless the continuance of pregnancy was going to subject the patient to a very grave risk. She favoured sterilization by x rays in tuberculosis. In some heart cases pregnancy was beneficial, since it compelled the patient to take much needed rest. She preferred slow induction whatever the date of gestation was. Vaginal hysterotomy or Caesarean section she was entirely opposed to when a living child was not the object sought after. Dr. F. W. Price dealt with the subject from the point of view of the cardiologist, and urged that pregnancy should not be terminated until a reasonable period of rest and appropriate treatment had been tried. Dr. R. H. Cole mentioned the various types of mental aberration which might be complicated by pregnancy, and on the whole thought that induction should only very exceptionally be undertaken in this type of case. Dr. R. A. Young thought that in tuberculosis the induction of abortion might be as harmful to the patient as a natural labour. The circumstances of every case ought to be very carefully considered by the family doctor, the obstetrician, and the physician in consultation. He would consider the advisability of abortion in the presence of very active disease, but not in cases of the quiescent or arrested type. Pregnancy should not be allowed to interfere with treatment. A useful aphorism was that prevention was better than abortion. Dr. R. C. Buist pleaded that general practitioners should not send their cases to the specialist with a final opinion already expressed. Dr. Henry Evers insisted that induction should never be performed for purely speculative reasons. Dr. Binnie Dunlop held strongly that in the public interest the profession should be free to terminate pregnancy on economic or eugenic grounds as well as for purely medical reasons. Dr. English explained the method of inducing abortion by passing a stomach tube into the uterus. Mr. L. C. Rivett had found in a rather limited experience of tuberculosis that the puerperium was the time of danger whether full term had been reached or not. He commented on the serious effects of extreme heart failure in pregnant women even after delivery, and spoke favourably of Caesarean section with ligaturing of the tubes in selected cases of heart disease. Mr. Norman Lock thought that Caesarean section was a less severe ordeal than natural labour. The President (Mr. Comyns Berkeley) emphatically protested against a patient being told that she should never again have another pregnancy. He supported the view that rapid methods should be employed in the earlier months and slow methods in the later months, owing to the difficulty and danger of the rapid methods. The discussion had brought out the great value of team work. The discussion was brought to a close

by Professor Mellroy, Mr. Barris, and Dr. Eden, who urged the profession to take a broad view of its responsibilities in the matter of inducing abortion.

#### SECTION OF NEUROLOGY AND PSYCHOLOGY.

Wednesday, July 21st.

On the first day a joint meeting was held with the Section of Ophthalmology, Dr. Farquhar Buzzard in the chair. Professor Edwin Bramwell (Edinburgh), for the Section of Neurology, opening a discussion on migraine, described the various symptoms associated with an attack and the manner in which they might vary in different cases. He also referred to the close analogy between many of the symptoms of epilepsy and those of migraine; in his experience, however, the resemblance was superficial and the two conditions seldom met with in combination. He considered that the most reasonable explanation of the headache was spasm of the meningeal vessels, giving rise to the prodromal symptoms, followed by dilatation, which produced the headache, so frequently described as throbbing in character. Professor Bramwell then reviewed the different theories regarding the etiology of migraine, and also referred briefly to treatment. Mr. H. McMullen (London) opened for the Section of Ophthalmology. From his standpoint the visual symptoms were the most interesting, and they were also the commonest subjective phenomena associated with migraine. They consisted of spectra, whirling spheres, zigzags, scotomata, and more rarely visual hallucinations. Loss of vision in the upper or lower half of the visual field might also occur, and total loss of vision had been recorded. He described the rarer form of migraine, in which ocular palsy occurs (migraine ophthalmoplégique), stating that in many cases an organic lesion of the affected oculomotor nerve had subsequently been found. As regards eye-strain as an etiological factor, the matter was still uncertain, and diametrically opposed views had been expressed by different writers. In his experience the refractive error was usually slight, and many cases derived undoubted benefit from its correction. Dr. Walter Timme (New York) dealt mainly with the role of the pituitary gland in the causation of migraine. In his opinion migraine was merely a symptom of an underlying condition, and not a disease *per se*. Migraine might be the result of eye-strain or other forms of irritation. He particularly wished to emphasize that one type was due to compensatory enlargement of the pituitary gland. If the sella turcica were small, such enlargement would produce headache, and might eventually lead to an erosion of the bone demonstrable upon x-ray examination.

Dr. Gordon Holmes (London) regarded migraine as a definite clinical entity although it was frequently confused with conditions which merely resembled it. In his opinion the evidence of physiology which demonstrated the absence of vasomotor fibres in the cerebral vessels was against the hypothesis of a vasomotor disturbance being responsible for the symptoms. Also, the onset of attack was too rapid to be accounted for by pituitary enlargement.

Dr. R. G. Gordon (Bath) dealt with the mental state in sufferers from migraine and the analogies to that met with in epilepsy. Psychological investigation often revealed compensations for a feeling of inferiority. He also referred to the rare occurrence of automatism following migraine. Dr. E. I. Spriggs (Ruthin) had found that cases which appeared to be examples of true migraine were often associated with a definite physical disorder such as gall stones or constipation. Relief of such disorder had been followed by disappearance of the migraine. Dr. W. A. Potts (Birmingham) referred to the association of hyperglycaemia and migraine. In such cases barley-sugar had given relief. Dr. G. E. Nesbitt (Dublin) dealt with his personal experiences of migraine. It was difficult to assign a cause for the vaso-dilatation and equally difficult to explain why, if the pituitary gland enlarged, other endocrine organs did not similarly enlarge. Mr. E. W. Brewerton (London) knew of a case relieved during the attack by the application of heat to the occipital region during the actual attack. Dr. C. Worster-Drought (London) dealt with his experiences in

treating migraine; he had found that luminal (grain 1/2) given twice or three times daily over a long period was probably the best remedy for averting attacks. He also referred to the occurrence of unilateral dilatation of the pupil during the paroxysm.

## SECTION OF LARYNGOLOGY AND OTOTOLOGY.

Wednesday, July 21st.

### TREATMENT OF MALIGNANT DISEASE OF THE UPPER AIR AND FOOD PASSAGES.

THE discussion at the first session, with Dr. Brown Kelly (Glasgow), President of the Section, in the chair, was on the treatment of malignant disease of the upper air and food passages, and was opened by Mr. F. J. Steward (London) from the point of view of the surgeon. He said that in the selection of patients for operation, they fell into the three groups of favourable, doubtful, and hopeless cases. The first was a small group, including 10 per cent. of the total, or less; doubtful cases made up about 50 per cent. of the total. About 4 in every 10 cases which he saw were obviously hopeless, either on account of the extent of the primary growth, or of the glandular involvement, or both; but a purely palliative operation might be indicated. The principal dangers and complications of these operations were the result of infection of the operation wound or of the lungs; these complications were more frequent and serious when the teeth were septic. The anaesthetic which he had used for many years in all major operations on the nose, mouth, and throat was ether administered by intratracheal insufflation. It was usually convenient to remove first the lymphatic glands and vessels. The growth might be dealt with by excision or diathermy; the principal advantage of the latter was that the peripheral coagulation sealed off the surrounding tissues. The result of the whole operation depended largely upon the successful closure of the opening into the pharynx.

Dr. Robert Knox (London) discussed the subject from the point of view of x-ray treatment. Recent improvement in technique had brought the possibility of administering a satisfactory dose of x rays in these cases perceptibly nearer; higher voltages enabled the radiologist to apply a greater intensity at the depth, while working at a greater tube distance, with filters on the skin of 2 to 10 cm. of wax, aided in the giving of a strong dose in the depth with no risk of skin damage. Accurate diagnosis was essential; it was often the secondarily affected glands which first called attention to the disease, and it had to be settled whether the glands were primarily or secondarily affected, thus necessitating a careful search for a primary lesion. In doubtful cases, when a primary lesion could not be found, a few x-ray treatments might indicate the nature of the disease. He commended the conservative use of x rays in combination with surgical measures as early as possible; in cases where surgical removal was possible, but there was widespread glandular involvement, pre-operative treatment was to be advocated. In inoperable cases x rays might be extensively employed to alleviate symptoms.

Sir William Milligan (Manchester) took up the subject from the point of view of treatment with radium, and said that he was compelled to confine his remarks almost exclusively to the treatment of surgically inoperable growths, since few surgeons had the courage to employ radium where the growth appeared to be removable by ordinary surgical procedures. In the treatment of inoperable carcinomata some believed in large doses and short exposures, while others advised small doses and long exposures. In the majority of cases the speaker favoured treatment by small doses and long exposures up to ten, fourteen, or even twenty-one days. Radium was useful for its devascularizing effects before surgical intervention, while the uncertainty of effecting complete removal by surgical measures, combined with the risk of serious haemorrhage and the possible occurrence of severe septic otitis media, rendered its employment practically free from risk, apart from occasional perforation of the palate or necrosis of the bony walls of the posterior choana. The

more fibrous the growth the larger was the dose and time required. It was a moot point whether glands should be removed before the operation upon the primary growth. In malignant growths of the larynx, extrinsic growths might be successfully approached *per vias naturales* with the aid of Haslinger's directoscope; but in cases where the growth had extended laterally it might be advisable to expose the wall of the deep laryngo-pharynx from the outside. Malignant disease of the oesophagus was one of the saddest and most difficult surgical problems, largely because the cases were seen too late. The fetish of "nervous symptoms" and the vogue of the bougie—a dangerous and inconclusive instrument—still dominated too many practitioners. Treatment of this condition was enormously helped by the performance of a gastrotomy, which gave physiological rest to the affected part.

Dr. W. S. Syme (Glasgow), dealing with treatment by diathermy, said that for more than seven years he had made use of diathermy in the treatment of malignant disease of the mouth and throat—at first timidly and only as a palliative measure in inoperable cases, but later operable cases in all stages had been dealt with. Sometimes a preliminary tracheotomy was performed. Ordinary principles such as removing diseased teeth should not be neglected because diathermy was being employed. Chloroform was necessarily the anaesthetic employed, ether being obviously contraindicated. The extent and the position of the disease had to be considered in deciding to employ diathermy. Broadly speaking, the method decreased in suitability as the site of the disease descended from the alveolus to the oesophagus. Even in advanced and inoperable cases this method of treatment could give some measure of relief to nearly all patients.

## SECTION OF ANAESTHETICS.

Wednesday, July 21st.

### THE FUTURE OF ANAESTHESIA.

ON Wednesday, July 21st, the first discussion in the Anaesthetics Section, under the presidency of Dr. Samuel Johnston (Toronto), was opened by the President with an address on the future of anaesthesia. Dr. Wesley Bourne (Montreal) followed with a paper on the effect of some impurities in ether on respiration. Dr. H. M. Cohen, in a short address, described the value of journals, current literature, and year-book to the science and art of anaesthesia, while Mr. C. W. Moots (Toledo) was emphatic on the necessity of co-operation with the surgeons. Dr. A. L. Flemming (Bristol) continued the interest by contributing a paper on preventing needless deaths. An interesting discussion followed, in which many overseas visitors took part, as well as a member from Ireland and the President-Elect for the following year, who, although a physician, claimed that he was of the fraternity, since anaesthetists were primarily physicians and only secondarily the allies of the surgeons.

In the afternoon a discussion on the newer gas anaesthetics was opened by Dr. F. H. McMechan (Avon Lake, Ohio), in which he was followed by Dr. E. I. McKesson (Toledo), who discussed guiding signs and dangers. Many speakers took part in the discussion, both from home and overseas, and it was late before the President declared the meeting closed.

Thursday, July 22nd.

### ANAESTHESIA IN CARDIO-VASCULAR AFFECTIONS.

THE third session, in the morning of Thursday, July 22nd, was opened by a cardiologist (Dr. F. W. Price), in a paper on cardio-vascular affections. He endeavoured to convert all anaesthetists into competent cardiologists by summarizing the chief points in cardiology which were of interest to the practising anaesthetist. Dr. J. Blomfield followed with a paper on anaesthesia in relation to cardio-vascular affections, which summarized the problem from the point of view of the anaesthetist. Dr. Ernst von der Porten followed, and an animated discussion ensued, in which numerous speakers took part. The general trend of thought was that while valvular conditions could for the most part be disregarded if compensation was good, cardio-

vascular lesions were of great importance in the choice and in the desirability or otherwise of giving an anaesthetic, and that each case had to be determined as regards its anaesthetic risk on its own merits.

In the afternoon Dr. E. I. McKesson exhibited his new apparatus for the induction and maintenance of nitrous oxide and oxygen gas anaesthesia. Dr. S. R. Wilson followed with a paper in lighter vein on the evolution of anaesthesia, in which he humorously recounted the progress of anaesthesia from Helen of Troy—whom he claimed as the first anaesthetist on record—to the present day, as exemplified in the wonderful apparatus which had just been exhibited. Lantern slides, in which pictures of Helen of Troy and of the succeeding generations of anaesthetists figured, added much to the interest of a lecture delivered in Dr. Wilson's best and most humorous vein.

Before the meeting was dissolved Dr. Rawlings gave a demonstration of some new apparatus he had devised for the safe administration of chloroform as an adjuvant to anaesthesia with ether, as he considered ether undesirable in cases of long duration when used by itself. The meeting then dissolved after a hard day's work which had proved interesting and profitable.

## SECTIONS OF ANAESTHETICS AND SURGERY.

Friday, July 23rd.

### ANAESTHESIA IN ABDOMINAL SURGERY.

At the joint meeting of the Section of Anaesthetics and the Section of Surgery Dr. Samuel Johnston, President of the Anaesthetics Section, was in the chair, and a discussion on anaesthesia in abdominal surgery was opened by Professor Finsterer (Vienna) with a paper on splanchnic anaesthesia for gastric surgery. Mr. C. W. Moots (Toledo) followed with a paper entitled "The evaluation of the risk, blood pressure protection, and nitrous oxide anaesthesia as vital factors in gastric surgery." Dr. C. Langton Hewer (London) dealt with endotracheal administration of nitrous oxide-oxygen-ether in gastric surgery; and, in the absence of Dr. Ian MacDonald (Spain), his paper on intravenous somnifene anaesthesia was read by a deputy. An interesting discussion followed in which both surgeons and anaesthetists participated. The meeting seemed to be divided into two main camps. In one group were those who deemed it fit that there should be co-operation and consultation between the anaesthetist and the surgeon before operation, to determine the operative risk and the choice of anaesthetic. The other group included one speaker who thought that the anaesthetist should do as he was told by the surgeon: since the case was the surgeon's he had the right to dictate the choice of anaesthetic as well as the appropriate preparation of the patient. The "team work" fetish was being worshipped excessively and a check on this extravagance should be imposed. The majority of the surgeons were, however, in favour of close co-operation between surgeon and anaesthetist, and the anaesthetists were overwhelmingly in favour of this course. Individual surgeons and anaesthetists preferred to use the routine methods to which they were accustomed in ordinary cases, though in special cases they were quite willing to make trial of the less familiar methods. The fact emerged that there was no perfect anaesthetic yet in use, each and every one having disadvantages to counterbalance such advantages as it possessed. Ether, like chloroform in former times, was passing through a period of unpopularity with the risk of being ousted from its place as the chief stand-by of the anaesthetist. It was concluded that it would be long, however, before either ether or chloroform would cease to be used by the occasional anaesthetist, who could not afford the expense of a motor lorry and a gang of porters to provide transport between the scattered homes and houses in which he worked for the weighty apparatus necessitated by modern gaseous methods for the administration of anaesthetic vapours. For those professional anaesthetists who worked in well equipped institutions the matter was different, since the problem of transport did not arise with such urgency as in the case of the occasional anaesthetist.

## SECTION OF PATHOLOGY AND BACTERIOLOGY.

Thursday, July 22nd.

PROFESSOR J. SHOLTO DOUGLAS paid a warm tribute to Sir William Leishman, who should have been with them that day. Sir William's memory would be cherished by pathologists through the ages, both for his kindly personality and for the great work he had done for pathology, and, through pathology, for his country.

### RELATION OF STREPTOCOCCI TO SCARLET FEVER AND ITS COMPLICATIONS.

Dr. R. A. O'Brien summarized the characters of the *Streptococcus scarlatinae*, and the reason for believing that it was the cause of scarlet fever. Three important questions remained for discussion. Could it be decided quickly and certainly whether a given haemolytic streptococcus of unknown origin was *S. scarlatinae* or not? Were there different types of scarlet fever caused by different strains of streptococcus? Did *S. scarlatinae* attack only as a toxic organism, or also by the septic or pyogenic method? In answer to the first question the speaker said that *S. scarlatinae* could not be quickly and certainly identified because, although the group was fairly well defined serologically, occasional strains failed to agglutinate with the specific scarlet fever serum, while some haemolytic streptococci from other diseases did so. With regard to the second question, subgroups existed, but their biological significance could not at present be determined. Evidence based on the Schultz-Charlton test seemed to show that all strains were toxigenically identical. The relation of puerperal and surgical to ordinary scarlet fever was not clear. As for the third question, the toxigenic factor appeared to be the most important clinically, since the beneficent action of antitoxin, when given early in the disease, approached that of the specific antitoxin used in the treatment of diphtheria. In experimental animals, however, septicæmia was an important factor.

Dr. C. C. Okell gave an account of some of the difficulties met with in titrating scarlet fever toxin and antitoxin. The difficulties of finding the neutralizing power of an antitoxin in terms of a known toxin were even greater. At present no close quantitative comparisons of serums were possible, although the therapeutic effect might be gauged to some extent by toxin neutralization tests, blanching tests, or the passive immunity method. He then discussed the toxic and the pyogenic role of the streptococcus in scarlet fever and the therapeutic results of the antitoxin.

Dr. K. E. Birkhaug gave the results of very extensive researches into the bacteriology of the mouth and ears in cases of scarlet fever, and spoke of his experiences of the carrier problem. His study of the mechanism involved in the production of the scarlatinal rash and its neutralization by means of antitoxin had produced some interesting results. He used Krogh's method of direct examination of skin capillaries in this work with signal success. His experience with specific therapy confirmed that of other workers. Dr. Birkhaug also read a paper on the etiology of erysipelas and its specific therapy. After giving an account of his studies of the *Streptococcus erysipellatis*, he showed the results of treatment with specific serum in a most interesting series of cases.

## SECTION OF DISEASES OF CHILDREN.

Wednesday, July 21st.

### ACUTE NEPHRITIS IN CHILDHOOD.

At the beginning of the meeting the President, Dr. Thursfield, alluded to the great loss sustained in the field of medicine associated with diseases of children by the death of Dr. John Thomson. Dr. Leonard G. Parsons, opening the discussion on acute nephritis in childhood, said that although the problems of nephritis in the child were relatively simpler than in the adult, "simple" was the last word that could be applied to them, as many seemed at the moment to be insoluble. He divided cases into the haemorrhagic and the hydræmic groups. The haemorrhagic group was the larger; it often occurred after



tonsillitis, there was little oedema, albuminuria was less than in the other group, oliguria was frequently absent, and most of the patients tended to recover. In the hydraemic group there was often no previous disease, oedema was marked, there was more albuminuria, less urine, many casts and pus cells, and the patients showed more tendency to become chronic cases. To these groups might be added a febrile group connected with acute infections—diphtheria, scarlet fever, pneumonia, or rheumatism. Dr. Parsons then discussed the various theories of the respective parts taken by the glomeruli and the tubules in nephritis, and thought it justifiable to assume that the defect in oedematous cases was in the tubules; while in haemorrhagic cases the blood originated from the glomeruli. On the other hand, this view had recently been criticized by Mayr. From the pathological point of view haemorrhagic cases could be divided into focal and diffuse glomerulitis, and exudative or tubular cases into mild and severe which often passed on into a subacute form—nephrosis. A third group of mixed, diffuse glomerulo-tubular nephritis often went on to chronic parenchymatous nephritis, and in later life to secondary contracted kidney. Nitrogen retention, raised blood pressure, and uraemia might be seen in either of the main groups of cases, and were dependent upon the severity of the attack. A "critical diuresis," coming on a few days after an early oliguria, was of great prognostic importance. When it occurred after a short oliguria the patients very commonly recovered. If the tubular cells were only damaged and not necrosed, it would appear that they remained active enough to resist the absorption of urea, although possibly unable to resist absorption of threshold bodies. As regards etiology, Dr. Parsons said that the exudative type of nephritis often arose without any obvious cause, while the haemorrhagic type was often associated with acute infections, especially streptococcal. Some had thought that the exudative type was due to nasal sinusitis. Prognosis in the disease was complicated by the difficulty in deciding whether a patient had recovered or not. Mild cases in both groups recovered, but exudative cases tended to become chronic. At the same time functional recovery appeared to occur in some subacute or chronic cases, after all hope of a favourable termination had been abandoned. In treatment the important matters were rest, a suitable diet, and the removal of any focus of septic infection. The patient should remain in bed at least three months, and the food should be at first milk, with sugar, barley-sugar, and fruit juice. As soon as possible attention should be paid to the tonsils, teeth, and skin infections. Diuretics, even if not harmful, were useless.

In the discussion which followed Dr. Parsons's paper, Dr. J. M. Smellie referred to the divergence of opinion in classification and prognosis. He described some investigations he had made, based on a division into early, intermediate, and late prognosis. He thought that if the original acute disease received efficient treatment, complete recovery would occur in many cases. Inadequate treatment of the initial acute infection was largely the cause of subacute or chronic nephritis in early adult life. Drs. Spence, Barber, Tuke Ashby, Wilkie Scott, and others took part in the discussion.

Dr. E. H. M. Milligan then read a paper on goitre in childhood, based on the investigation by the Ministry of Health, and appealed for the assistance of general practitioners in investigations of this kind. He produced figures showing the remarkable variation in the incidence of the disease among children in various parts of the country. He mentioned the association with goitre of such conditions as nose and throat trouble, rheumatism, and mental deficiency, and described the types and causes of the disease. He stated that at Glossop a scheme of treatment had been undertaken by the public health authority, by the administration of iodine, often in chocolates, to school children suffering from enlargement of the thyroid. The surprising differences in incidence described by Dr. Milligan were criticized by several of those present; and the use of iodized salt was suggested as the simplest, cheapest, and most effective method of treatment.

In the afternoon a visit was paid to the Children's

Hospital, now being enlarged through the munificence of Mr. J. D. Player. An extremely interesting series of cases was shown by Dr. Wilkie Scott.

## SECTION OF ORTHOPAEDICS.

Friday, July 23rd.

### NON-TUBERCULOUS COXITIS IN THE YOUNG.

Mr. H. A. T. FAIRBANK, opening a discussion on non-tuberculous coxitis in the young, said that coxitis arose from either trauma or infection. Recovery followed traumatic synovitis in the absence of immobilization. Epiphyseal strain was the first stage of adolescent coxa vara. Some such cases with muscle spasm might be taken for tubercle. All types of infective arthritis might be caused by the same organism of varying virulence. In a subacute type the pneumococcus might be suspected. Acute osteomyelitis with secondary arthritis presented difficulties of diagnosis, and pseudo-coxalgia might be simulated by tubercle. In dislocation of the hip traumatic arthritis might follow reduction. Osteo-arthritis occurred chiefly in subluxated hips. Arthritis deformans juvenilis was very rare as a primary affection; it was preceded by anatomical abnormality. Mr. S. W. Daw said that there were a number of anomalous cases which would not yet fit into any classification. He referred to the difficulties of diagnosis in the early stages of rheumatoid arthritis (Still's disease), and added that the distinction between pseudo-coxalgia and tubercle was sometimes difficult. Many patients with unreduced congenital dislocations of the hip reached middle life without suffering pain or great disability. Dr. S. T. Irwin drew attention to the importance of the bar of cartilage which existed up to the age of about 11 between the capitulum cartilago and the neck of the femur. This he believed prevented slipping of the epiphysis, which was rare before that age. He exhibited some very beautiful preparations of infantile femurs illustrating this point, and also a number of lantern slides illustrating displacement of the femoral epiphysis. Mr. T. P. McMurray pleaded for simplification of classification into tuberculous and non-tuberculous, dividing the latter into traumatic and infective. This would include all except pseudo-coxalgia, which much resembled Köhler's disease of the tarsal scaphoid. Both might be congenital. Mr. Harry Platt emphasized the importance of the age of the patient in the formation of a differential diagnosis. He mentioned the importance of recognizing the presence of extra-articular tubercle of the neck of the femur and treating it early. A valuable symptom of acetabular disease, much relied on in France, was enlargement of the iliac glands on the affected side. Mr. Alan Todd advocated elaborate clinical classification as a means of increasing our knowledge of the real varieties. Juxta-epiphyseal strain was, he was sure, a real stage of coxa vara. Gonorrhoea was a cause of arthritis in young children who suffered from vulvo-vaginitis. Histological examination of the blood might be a means of diagnosis between tuberculous and non-tuberculous arthritis. Early diagnosis and treatment of congenital dislocation of the hip was important, for while a few unreduced cases might do well, many did not. Mr. F. C. Pybus said that there was extensive vascularization of the epiphyseal cartilages before ossification, and that thus primary vascular infection of the hip might occur. He thought that in chronic tuberculous joints some movement might be allowed cautiously as was done by Rollier. X-ray evidence of pseudo-coxalgia might appear before or after the detection of clinical evidence. This disease might be associated with coxa plana. When tubercle of the neck of the femur was detected early operation was demanded before the joint became involved. The classification should be as simple as possible. Mr. W. A. Cochran thought that the angle of the plane of the epiphyseal line between the head and neck of the femur more or less predisposed to slipping of the head as it was more or less vertical. Acute infection of the joint needed opening and free drainage.

On the afternoon of Thursday, July 22nd, Mr. S. Alan S. Malkin and Mr. Frederick Crooks showed a number of

interesting cases to the members of the Section at the clinic of the Nottingham District Cripples' Guild. The results obtained in the completed cases were excellent, and some of the patients awaiting treatment presented interesting problems of diagnosis and treatment.

### SECTION OF MEDICAL SOCIOLOGY.

*Friday, July 23rd.*

#### THE PHYSICAL AND MENTAL EFFECTS OF FATIGUE AND MONOTONY IN MODERN INDUSTRIAL WORK.

*Morning Session: The Monotony Factor.*

In opening the morning session of the Section of Medical Sociology the President, Mr. C. J. Bond, drew attention to two principles to be remembered in laying a solid biological foundation for a system of industrial psychology and physiology: first, that every human being strives to obtain a sense of satisfaction from work done; secondly, that the industrial problem is an evolutionary one of adaptation to the industrial environment. Two things, therefore, were needed: to make industrial toil more satisfying to the mind, and to fit the work to the worker and the worker to his work. Mr. A. Hudson Davis of the National Institute of Industrial Psychology opened the morning discussion on the monotony factor. He found difficulty in separating monotony from fatigue; the former was really a special phase of the latter. Monotony was not an objective characteristic of work. In one sense there was no such thing as a monotonous job. Monotony was the reaction of certain human beings to certain jobs under certain conditions; and the job need not necessarily be repetitive. The mental results of monotony might be inertia and lack of interest, and discontent leading, through atmosphere of disaffection and unrest in the workshop. Physical results were not direct and obvious, though symptoms sometimes occurred of functional defence reactions, such as miner's nystagmus. The physical results were chiefly visible in fall of output, a drop below maximum efficiency, variability in the rate of working, and unorganized protective rests from exertion. In removing monotony a balance must be kept between too much change, which had an irritating effect, and too little change with its danger of monotony. Interest in the work must be increased, together with *esprit de corps*; and shop organization should be good. The value of rest pauses was marked; but some change of work, if possible, was even more desirable than rest. Any source of irritation in environment should be removed. Mr. Hudson Davis concluded with some remarks on vocational selection and tests. He was of opinion that those who suffered from monotony were mainly the badly adapted and the intelligent, though intelligence often worked towards the overcoming of monotony. Miss May Smith of the Industrial Fatigue Research Board had found that the highly educated more commonly complained of monotony, but that repetitive movements were not necessarily monotonous. The investigator too often put himself in the place of the worker, and judged the work on what he thought would be the result if he himself were doing it. Miss Smith dissented at some length the relief to monotony afforded by day-dreams. Major T. Knowles, supervisor of Messrs. Boots' Welfare Centre, criticized the use of such expressions as "monotony" and "self-development." He showed that repetitive work was not necessarily monotonous; that repetitive work was essential to production; that many mental stimuli lessened the monotony of repetitive work; and he regarded leisure as the time for self-development. In one of the office departments he had found that the incidence of sickness among girls employed in ordinary office work was twice that of girls employed in repetitive work. Major Knowles hinted that constant suggestion that repetitive work was injurious might arouse artificial discontent. At the same time every effort must be made by employers to secure the welfare of their workers. Miss Slocock, superintending inspector of factories, emphasized the necessity of getting at the worker's view. Character and temperament played so large a part that what appeared monotonous to one person would not be so in the least to another. She thought that

the absence of a creative aspect in work caused the sensation of monotony. Miss K. Dowding of the Chiswick Polish Company urged the careful selection and placing of workers. One discontented worker would make a job unpleasant for a whole body of workers; suggestion was contagious. Sir Thomas Legge desired to see comity between employers and employed, such as existed in the days of mediaeval guilds. He thought that competition was leading to monotony; but he had not noticed much complaint of monotony from the workers themselves. He looked to co-operation between employers, trade unions, and welfare workers to bring back some portion of interest in work. Drs. Stewart Mackintosh, Robb, Lockhart, Christine Murrell, C. Forbes, Brackenbury, and Beadles took part in the discussion; and Professor Winifred Cullis submitted a paper which she was unable to be present to read.

*Afternoon Session: The Physical Fatigue Factor.*

Mr. W. L. Hichens, chairman of Cammell, Laird and Co., read a paper on industrial physical fatigue. He thought that the introduction of the word "fatigue" into the name of the Industrial Fatigue Research Board was unfortunate. It suggested too much and too little. It suggested that fatigue prejudicial to the health of workers existed; whereas at present there was no such condition in any industry in this country. It did not suggest that some industries involved much more fatigue than others, and that in these the point at which fatigue began should be postponed. Research work should be directed to the elimination of all unnecessary physical labour by means of machinery. Time-motion study should be carried out, as well as researches into the design of machinery. In these studies Mr. Hichens thought that they had done at least as much on the theoretical side as had been done in America; but it was of prime importance to enlist the interest of the workers in improvements. Local fatigue was the most important and insidious form of fatigue. The effect of temperature should be studied, output being less in hot weather than in cool. Mr. Hichens regretted that hours of labour were a subject of political controversy rather than scientific study. Further subjects for research were the incidence of sickness, the lighting of factories, baths, liability of accidents, and vocational selection and guidance. Dr. H. M. Vernon read a paper on the effects of temperature and ventilation in lessening fatigue in various occupations, and illustrated his remarks with lantern slides. He stated that the effects of fatigue on health were more difficult to estimate than the effects on efficiency. There was an increase of accidents with increase of hours; but accidents also increased with rise of temperature. Dr. Stewart Mackintosh and Mr. C. J. Bond took part in the discussion. Professor Leonard Hill and Mr. F. Varley, M.P., were unfortunately prevented from being present to read their papers.

### SECTION OF DERMATOLOGY.

*Friday, July 23rd.*

*ECZEMA.*

Dr. ARTHUR WHITFIELD said that eczema was the most important thing in the whole of dermatology on anatomical and physiological grounds. The essential feature of it was a special or general irritability of the skin—a susceptibility of the patient—which enabled exposure to various external agencies to call forth the eruption, when a normal individual would be unaffected. The constitutional factor was of great importance, and could be best explained by postulating the existence of a type of toxin which acted on the epidermo-papillary system so that the slightest possible trauma excited an eczematous reaction. He explained those cases in which mental anxiety or shock seemed to cause an attack by supposing that digestive disturbance resulted in an erroneous chemical cleavage of the food with the production of an alimentary poison. He preferred not to use the term "seborrhoeic eczema," but to employ the term "pityriasis capitis" for the dry scurfy head, its simplest form, and to agree with Sabouraud that it was due to infection with the *bottle bacillus*. Superimposed on this infection there might

also be infection with the non-liquefying staphylococcus, which on the body gave rise to reddish rings, which the speaker considered as only a low-graduated bacterial infection. On the other hand, he did desire to recognize as a form of eczema an eruption of V-shaped distribution over the shoulders and upper back where the lesion was a discrete spongy papule, microscopically indistinguishable from the lesion of simple eczema, except that the lesion was localized rather specially at the mouth of the sweat gland; he believed this form to be a true eczema of chemical origin caused by bacterial decomposition of the sweat.

Dr. Dyson suggested that the epithelium of the skin was a secretory organ and that some day it would be found to act as a ductless gland. Dr. Barber classified different types of eczema from their clinical appearances. Eczematous lesions might occur in seborrhoeic patients, and focal sepsis was important in many cases. One patient had been cured by evacuation of pus from the antrum, another after removal of intestinal indican by the Plombières treatment, and another after the extraction of a septic tooth. Dr. Hallam doubted whether external irritation was absolutely necessary for the production of eczema. He thought that sometimes the external irritant might be replaced by an internal irritant distributed by the blood stream. Dr. Haldin-Davis said that in many cases there was either hyperglycaemia or sugar intolerance. He thought that the symmetrical distribution of the lesions was determined by spread through the nervous system. Dr. H. C. G. Semon said that there must be some "tissue idiosyncrasy" of the skin, and that eczema never occurred on a naevus, possibly because the skin over such an area was always devoid of vaso-constrictor nerves. Sir Norman Walker recalled that he had been present at the British Medical Association meeting at Nottingham in 1892, when the Dermatological Section had not been started. In those days the fashionable cause of eczema was gout; nothing was ever heard of it now as a cause of eczema. He was convinced of the importance of focal sepsis and of treating scurf of the scalp. The President said that there must be an oedematous base to the eczematous vesicle. He distinguished between traumatic dermatitis and eczema; the former was much more superficial than, although it might ultimately develop into, eczema.

#### TREATMENT OF PSORIASIS.

Dr. R. W. MacKenna, in opening the discussion on psoriasis, deprecated the use of strong applications in acute attacks, in which he found antimonial wine very useful, with, locally, an oily calamine lotion. He discussed the employment of emetine, arsenic, salvarsan, auto-haemotherapy, and vaccines of various kinds: four out of sixteen cases improved on a course of vaccines made by the Danysz method. Better results had been obtained by producing "fixation abscesses" with the aid of terpinin injected in doses of 1 c.cm. weekly into the gluteal region. Seven out of fourteen patients showed distinct improvement after the first injection, and it was certainly helpful to any local treatment also employed. He had treated fifteen cases with intramine, and had found it distinctly beneficial in all except one. He was most favourably impressed with x rays and ultra-violet light: x rays for the removal of lesions from special areas such as the face, neck, and hands; ultra-violet light for general irradiation. He found it useful in all stages of the disease, and had had some excellent results from it. He advised strict moderation both in food and in tobacco and the interdiction of alcohol. He thought that the return of the eruption was delayed longer after tar than after chrysarobin treatment. Salicin was of undoubted value internally in some cases; sulphur, salicylic acid, mercury, and pyrogallol acid all had their sphere of utility.

Dr. Dyson emphasized the importance of rest; he had found salicin and arsenic the most useful drugs. Tar had a drawback in that it caused troublesome furunculosis, and x rays he had discontinued altogether. He had found vaccines useful as an intermediate treatment for the prevention of attacks. Dr. Barber said that ultra-violet light did more harm than good; at times it caused generalized spread of the disease. He advocated conservative action by British dermatologists to ascertain the cause of

psoriasis. He and Dr. Embleton had isolated an organism which, when made into a vaccine, had always made the patient worse; he thought this was suggestive. Dr. Skinner described a series of cases which demonstrated the superiority of chrysarobin over x rays as a method of treatment. He also showed some sections illustrating the pathology of the disease. Sir Norman Walker had found arsenic occasionally very useful in acute cases. He said he was less pessimistic than others about the chance of recurrence of the eruption, and that he had had several cases which had remained free for many years. Dr. Whitfield advocated the use of creosote internally in psoriasis, and Dr. MacKenna replied.

#### SECTION OF OPHTHALMOLOGY.

Thursday, July 22nd.

##### RETINAL HAEMORRHAGE.

At the first morning session the chair was taken by Mr. Elmore Brewerton (Vice-President of the Section). The proceedings opened with a demonstration of operations for glaucoma simplex by Dr. George Young (Colchester). He made two small trephine holes on the scleral side of the limbus at the lower part of the cornea, then removed the fibres of the ciliary muscle to reach the uvea. The discussion for the day, on the significance of retinal haemorrhages, was opened by a paper by Mr. R. Foster Moore, which in his absence was read by Dr. A. Christie Reid. He commented upon the importance of the experimental work done by Ricker and Regendanz on the conjunctiva of rabbits, in one of which the conjunctiva was severely irritated by finely powdered pumice-stone, which was then washed out. There was immediate strong hyperaemia, and in a few minutes complete stasis. In the second experiment a solution of abrine was dropped into the conjunctival sac. There was no immediate effect, but eight hours later there was pronounced hyperaemia, and next day the vessels were much dilated. There was marked capillary stasis and capillary haemorrhages, which increased for several days. The haemorrhages seemed to be due to poisoning of the endothelial cells by the abrine; and in poisoned states of the blood, such as diabetes and renal disease, retinal haemorrhages were of frequent occurrence. Thus it seemed evident that certain poisons especially affected capillary walls, so that they no longer maintained an inviolate barrier against the passage of cells from within their lumen. It seemed that the picture presented was that of an endothelial cell or cells whose health was impaired by the action of a toxin, to the extent that the endothelial tube was no longer inviolate, but that a defect in it developed sufficiently gross to allow of the escape of the cellular elements of the blood into the tissues, through a stoma from the opening up of the line of junction of separate cells or from a breakdown in the cell itself. The toxins of certain organisms appeared specially; to lead to haemorrhages. He did not believe that retinal haemorrhages of arterio-sclerosis were caused by an increase of pressure in the arteries or capillaries; they occurred only in somewhat advanced cases, and suggested that the haemorrhage was an expression of the defective circulation through the vessels, so that the nutrition of their endothelium was impaired and consequently a leakage of blood occurred. Haemorrhages, no matter how profuse or large, produced no permanent change in the retina unless the external limiting membrane was lacerated. Dr. C. O. Hawthorne agreed that damage to tissues preceded retinal haemorrhages, and not mere changes in blood pressure. He would say that the cause was undue fragility of the vessels. Retinal haemorrhages might appear as the first and only sign of severe constitutional disease, so that no safe diagnosis could be made without ophthalmoscopic examination, and that not once but several times. The paper was discussed also by Mr. G. H. Pooley (Sheffield), Mr. M. L. Hine, Mr. T. Harrison Butler (Birmingham), Mr. Bishop Harman, and Dr. Peter Macdonald (York).

Mr. Bishop Harman (London) read a paper on the Chorley Wood College for the higher education of girls with little or no sight. He pointed out that in 1917 the Interdepartmental Committee on the Welfare of the Blind reported that there was urgent need for a college for blind

girls. In 1921 this need had been met by the establishment of a splendid college for girls at Chorley Wood, Herts. He gave an account of the work of the college, and showed that at a visitation by medical and educational experts from the Board of Education in 1925 the whole work of the college had received the highest praise. It was now the duty, he considered, of all ophthalmic surgeons who had blind girl patients of their own class to secure that the knowledge of this college should be brought to the parents of such children; no better thing could be done for them than the introduction to a public school education.

At the afternoon session Mr. Basil Graves (Liverpool) performed the operation devised by Dr. Wheeler of New York for capsulotomy. A fine knife was entered through the cornea from above with its edge directed downwards, the point was made to reach the capsule below the iris border at its lower segment, then with a quick backward and upward movement the knife was withdrawn, severing the capsule from below upwards and without loss of aqueous. Mr. G. H. Pooley (Sheffield) demonstrated his operation for chronic dacryocystitis. A small skin incision gave access to the sac, which was severed from below the tenon oculi down to the site of the lacrimal duct. Then the bone at the mouth of the ducts was cut away with a sharp gonge and mallet, the fragments were removed with a scoop, and finally the passage packed with a faggot-like bundle of catgut, and the skin opening closed. Dr. George Young (Colchester) read a paper on the cause of stammy cornea in glaucoma, which he suggested might be due to an optical effect produced by the slipping of the corneal layers under tension. Dr. Arnold Verrey (Lausanne) read a paper on Nagel's anomaloscope for defects of colour vision. In a suitable instrument, like a telescope, there was placed in one half of the field a yellow filter screen, the other half was fitted with a red and green filter, which could be mixed at will by suitable gearing until a yellow colour matching the yellow screen was obtained. The accuracy of the match was a test for colour vision, the defects could be measured accurately by the position of the gearing. Mr. Harrison Butler read a paper on slit-lamp results by simplified methods. By the use of the half-watt electric lamp a linear illumination of the front of the eye could be made without elaborate projectors, and the tissues in this linear illumination could be magnified by a powerful corneal loupe, so that many of the finest effects of slit-lamp methods could be obtained with comparative ease.

## SECTION OF PUBLIC HEALTH.

Wednesday, July 21st.

### POOR LAW REFORM AND PUBLIC HEALTH.

Dr. P. BOBBYER, who presided, opened with a short comparison of the present health conditions of Nottingham with those in 1882, when the Association last met there. The general death rate, which was then 18 per 1,000, had fallen to 12, and the infantile death rate had been reduced from 200 to 85. Enteric fever then, and for five years afterwards, used to average over 400 cases annually, and in one year there were 617 cases with 114 deaths. Deaths from infantile diarrhoea averaged 335 per annum. Both these diseases had now been practically eliminated with the disappearance of 40,000 pail closets. Dr. J. Middleton Martin, opening the discussion on reform of the Poor Law, mentioned that whereas in 1851 5.3 per cent. of the population were paupers, there were in 1921 only 1.75 per cent. The subsequent increase was due to industrial conditions and might be regarded as temporary. Various modern public health services had taken over some of the functions of the Poor Law. Disease was being increasingly recognized as a cause of pauperism, and illness was preventable by improvement of social conditions. The speaker thought that the duties of district Poor Law medical officers should be shared among all medical men practising in the district on lines similar to those of the National Insurance Act. Dr. R. P. Garrow said that Poor Law reform had been made an excuse for placing non-county boroughs and urban districts under the control of the counties, and that the proposals in the Memorandum of the Ministry of Health were viewed with consternation by the

members and officials of such authorities. Dr. A. L. Baly thought that the Poor Law was often blamed for the faults of its administrators; it was not generally realized how much could be effected under the Poor Law when it was well administered. The acceptance of any public service which was not paid for in full should involve the local disfranchisement of the recipient. Dr. E. Hill held that the Memorandum of the British Medical Association ignored the necessity for the unification of medical services which was the essence of the proposals of the Minister of Health. Dr. D. C. Kirkhope was of opinion that health administration should follow the line of concentration on the individual; this could only be done by the medical officer of a smaller area with his more intimate knowledge of its population. Dr. Stella Churchill said that existing methods in London caused a great deal of overlapping. She could not agree with the suggestion of disfranchisement, since many municipal services, such as hospital provision for infectious cases and child welfare centres, were accepted without payment. Dr. G. H. Pearce gave several instances of the difficulties that would arise in boroughs and urban districts placed under the control of the county council. Dr. H. Scurfield said that any satisfactory scheme for the unification of services must include the formation of areas large enough to employ whole-time medical officers. Dr. B. Hill approved the retention by combined districts of all the public health duties at present allotted to them, in order to preserve the individual touch in public health work. Professor F. E. Wynno thought the differences of opinion were more apparent than real. Nobody wanted to rob a large and highly equipped borough of its health functions, but there were rural districts in which neither the county nor the local authority exercised any real control over sanitation. Dr. H. B. Braekenburg further explained the Memorandum of the Association, which, he said, contained only the considered policy of the Association as adopted from time to time by the Representative Meeting and the Council. Dr. Middleton Martin, in his reply, said he had never suggested any want of competence in Poor Law authorities. Nor did he state that the counties must necessarily be the sanitary authorities in future. Some form of unification was necessary, and in many cases, he thought, the county would prove to be the best administrative unit.

The second day's discussion, on food deficiency, is reported in full at page 185.

## Reviews.

### OPERATIONS ON THE SYMPATHETIC NERVES.

UNDER the title of *Chirurgie du Tonus Musculaire*,<sup>1</sup> Dr. P. WERTHEIMER of Lyon and Dr. A. BONNIOT of Greuoblo have published their observations on the results of surgical division of the grey rami communicantes in the cervical, thoracic, and lumbar regions. The whole subject is reviewed critically from the anatomical, physiological, and surgical standpoints, and finally the results of eighty-nine operations on the sympathetic which they have themselves performed are analysed.

After a careful description of the anatomy of the sympathetic ganglia and nerves, based chiefly on the researches of Professors Leriche and Hovelacque, the authors proceed to a review of the relation of the sympathetic system to muscular tone. They trace the development of the researches of Broudegeest, de Boer, Boeke, Sherrington, Langelaan, and others on the apparently dual nature of muscular tone, plastic and contractile, and the histological evidence produced by Perroncito of two kinds of nerve fibres, myelinated and non-myelinated, distributed to striped muscles. Finally they discuss the work of Hunter and Royle, which forms the basis of the indications for surgical treatment: interwoven with this is the histological work of Kulchitsky, to which, however, they do not specifically refer. After a passing reference to the operation of posterior root section as performed by Foerster for the relief of spastic conditions, and the opera-

<sup>1</sup> *Chirurgie du Tonus Musculaire*. Par P. Wertheimer et A. Bonniot. Paris: Masson et Cie. 1925. (Roy, 8vo, pp. 136; 21 figures 22 fr.)

tion of Lericho of periarterial sympathectomy in certain vascular lesions, they describe in detail the technique of section of the sympathetic rami in the different regions with the object of reducing excessive "plastic tone." Cervical ramisection is performed under local anaesthesia, lumbar ramisection with root anaesthesia. In their eighty-nine operations there was no death, and they lay stress on the absence of any serious complications and the general safety of the operations. Their results are on the whole much more encouraging than those which have been obtained by surgeons in this country, judging by the opinions expressed at a recent discussion of this subject by the Section of Neurology of the Royal Society of Medicine.

Their best results followed in cases of infantile cerebral palsies and in cases of spastic contracture following cortical disease or injury; in vascular lesions of the pyramidal tracts and in sclerotic lesions of the cord the effects were less encouraging. They also obtained striking results in some cases of the "reflex contractures" of Babinski following peripheral injuries, the "reflex" nature of which has been contested by Hurst and others. They have not made any observations on the effect of the operations on cases of the Parkinson syndrome. In general the effects produced were increased freedom of movement in the operated limb or limbs, diminution of the hyperactivity of the tendon reflexes, and increased passive movement, with consequent improvement in voluntary control.

The authors are careful to make no excessive claims for this new branch of surgery, but their book, which is well illustrated and has an introductory chapter from the pen of Professor Leriche, is of much value as a clear presentation of the present position.

#### THE NOSE AND ACCESSORY SINUSES.

THE fifth edition of the book on the pathology and treatment of inflammatory affections of the accessory sinuses of the nose,<sup>2</sup> by Professor HAJEK of Vienna, is welcome, if only because twelve years have elapsed since the last edition was published; the first dates back to 1898. The author therefore has not only introduced later researches on pathological anatomy, but from his own large experience has been able to lay down with more precision the indications for conservative methods of treatment in some circumstances, and to say why it is that only radical procedures can succeed in others. For those who intend to undertake operations on the accessory sinuses and hope to do so not only with safety to the patient but also with success, an intensive study of the anatomy of the nose is essential. In this Professor Hajek is a safe guide, and in so far as it can be learnt from books the numerous anatomical illustrations are in themselves an education; in addition a number of finely executed representations of the microscopic structure of diseased tissues have been introduced into this edition. Operative treatment of all kinds is fully described, and an account is given of Krönlein's operation, which may be employed in some retrobulbar inflammatory conditions, though usually reserved for the exposure of new growths.

It is, however, to the study of pathological anatomy that Professor Hajek particularly devotes himself, a study which he rightly considers provides the safest path to the solution of the innumerable problems which arise. The description of mucoceles from this point of view is particularly enlightening, and it is interesting to note that mucocele of the sphenoidal sinus is described, for its existence has sometimes been questioned, no doubt on account of its rarity. Professor Hajek himself points out that the study of the inflammatory disorders of the accessory sinuses in connexion with rhinology dates back for at least twenty-five years, so that it was not to be expected that anything very new or startling should be found in this edition; but it is gratifying that in spite of the unfavourable times this volume, so full of mature wisdom and so admirably produced, has issued from the Vienna school.

<sup>2</sup> *Pathologie und Therapie der entzündlichen Erkrankungen der Nebenhöhlen der Nase.* Von Prof. Dr. M. Hajek. Fünfte, gänzlich umgearbeitete und vermehrte Auflage. Leipzig und Wien: Franz Deuticke. 1926. (Sup. roy. 8vo, pp. xxiv + 600; 186 figures, 7 plates. G.M. 26.)

#### PERITONEAL ADHESIONS.

THE etiology and significance of peritoneal adhesions have received a good deal of study on the part of surgeons and pathologists in recent years, and at all times their importance has been recognized in connexion with diseases of certain organs, such as the stomach and appendix. But for the most part the peritoneal lesion has been regarded as an accompaniment or sequela of some definite visceral disease, constituting merely a stago in the latter and not an independent pathological entity. It is now known, however, that apart from visceral disease peritoneal adhesions and thickenings may be produced under the influence of purely mechanical or developmental conditions, and, moreover, even when resulting from visceral disease, may persist after the disease of the organ has healed and assume the characters of an independent affection. It would seem, therefore, that the time has arrived when these peritoneal conditions may be profitably considered independently and as a whole, with their diverse clinical manifestations dependent on the modifications in form and function which they produce in related organs. This task has been undertaken in a series of lectures forming part of a course of gastro-enterology given under the direction of Professor CARNOT at the Beaujon Hospital, and published under the title of *Les Périviscérites Digestives*.<sup>3</sup>

The classification adopted is based on the organs affected by the peritoneal lesion. In connexion with the stomach descriptions are given successively of adhesions to the anterior abdominal wall and liver, to the hinder wall of the small omental sac affecting the pancreas or the solar plexus, and of adhesions involving the greater and lesser curvatures; and finally those affecting the pyloric and cardiac orifices. A second chapter treats of the various deformations of the duodenum which result from inflammations of the adjacent peritoneum; in the first place, those involving that part of the bowel which is situated above the attachment of the mesocolon are considered, and then those involving its lower segment. Of the former, separate consideration is given to the first part of the duodenum, to the curvature, and to the upper part of the descending portion. Of the latter, distinction is made between the lower half of the descending portion (related to infections of the ascending colon and appendix), the third part, and the duodeno-jejunal flexure. A third chapter deals with pericholecystitis in relation to its effects on the stomach, duodenum, transverse colon, and appendix; and a fourth with perityphlitis, periappendicitis, and pericolicitis of the ascending colon, including epiploitis, Jackson's membrane, Lano's mesenteric band, Reid's genito-mesenteric fold, and the parieto-colic fold of Jommesco. In a final chapter are considered the peritoneal inflammations affecting the descending colon and rectum—pericolicitis of the transverse and descending colon, the splenic flexure, perisigmoiditis, and perirectitis.

It will be seen from what has been said that the subject is treated in great detail, and it may be added that the clinical pictures of the various conditions described are excellent. Numerous reproductions are given of radiograms illustrating the deformities produced in the organs, and these are in most cases accompanied with explanatory diagrams, which are of great assistance, and indeed essential, to the uninitiated in radiography.

#### MEDICINE FOR THE MILLION.

IT is generally supposed that the lay public is thirsting for greater knowledge of health than heretofore, and that in the process it is prepared to learn more about disease and its treatment than has been vouchsafed to it by a jealous medical profession. For such inquirers Dr. G. T. WRENCH's book on *Domestic Medicine and Surgery*<sup>4</sup> will be of use. Dr. Wrench has adopted a different plan from that used in the ordinary dictionary of domestic medicine.

<sup>3</sup> *Les Périviscérites Digestives.* Par Paul Carnot, Blamoutier, Libert, R. Friedel. Paris: J. B. Baillière et Fils. 1926. (Extra post 8vo, pp. 173; 67 figures. 1s. 8d.)  
<sup>4</sup> *A Textbook of Domestic Medicine and Surgery.* By G. T. Wrench, M.D., B.S. London: J. and A. Churchill. 1926. (Cr. 8vo, pp. vi + 339. 6s. net.)



to has grouped diseases, not alphabetically, but according to the symptoms as they appear to the patient and his friends. Thus we have, in the first place, the group of febrile diseases, subdivided into sudden acute fevers, fevers of gradual onset without characteristic signs, and fevers of gradual onset with characteristic signs. The second group is distinguished by dominant symptoms, such as pallor or paralysis, either without fever or with fever of only minor importance. The third group contains diseases of special locality, such as the eye, ear, nose, or skin. Dr. Wrench's last group is accidents.

When a person is taken ill his friends, it seems to be suggested, should at once take his temperature. If this has been raised by sudden onset the friends should sit down and read Chapter II. They will find a choice of about a couple of dozen diseases, from pneumonia to sandfly fever, from sunstroke to acute osteomyelitis. Each disease is briefly and clearly described in language as non-technical as Dr. Wrench could make it; for he has tried to avoid the obscurantism in which he thinks all professions delight. With each disease there is a statement of the treatment usually adopted. It is anticipated that from a perusal of the book the patient's friends will avoid the twofold reproach of sending for the doctor unnecessarily or the more serious error of sending too late. Where, as in towns and in most parts of this country, a medical practitioner is not far off, most people will prefer sending for him in illness to the labour of symptom-hunting in a handbook. But we readily agree with Dr. Wrench that in remote corners of the widely scattered empire the knowledge he imparts will often be found useful. His little book is quite readable, even if not entirely free from technicalities. It is very complete, and the recommendations as to treatment are reasonable and within the understanding and capacity of the ordinary layman.

#### NOTES ON BOOKS.

DR. JEHANGIR J. CURSETJI points out, in his *Pocket Guide Book to Medical Life Assurance*—by which he means medical examination for life assurance—that the examining physician should bear in mind the varying condition and vitality of different races in India due to climate, habits, and modes of life. He must have felt the difficulty himself, since he acknowledges that his book is mainly a condensation from various authors, probably European or American, and at the same time he sets forth the many differences in mortality returns of the various races living in India, which his various authors can hardly have had in mind. The book is a useful summary of the methods which should be adopted by medical examiners, and also indicates the conditions under which rejection of the proposer should be advised. Though the author thinks that the trend of opinion is in favour of the view that syphilis can be completely cured by early, careful, and prolonged treatment, he wisely does not recommend the acceptance even of a cured patient without loading.

*The Doctor's Books*,<sup>4</sup> by Mr. A. P. BERTWISTLE, is a short description of a system of book-keeping designed to meet the needs of medical practitioners and dentists and to avoid the employment of special books or cards. The case-book, on the loose-leaf system, enables a systematic record of early symptoms to be made and the past history and the previous treatment of the patient to be quickly ascertained, while the cash book combines the merits of completeness and absence of complication.

*The Pharmacopoeia of University College Hospital* has been revised, and the new edition<sup>5</sup> contains eighteen new formulae. As in former editions, both metric equivalents and the imperial weights and measures are supplied. A table of food values has been added, and the section of pathological data has been revised and condensed. Prescriptions for children are listed separately. The volume is interleaved, and is of convenient size for the pocket.

<sup>4</sup> *A Pocket Guide Book to Medical Life Assurance*. Compiled by Jehangir J. Cursetji, M.D., L.R.C.P., L.R.C.S., L.M., and S., F.R.S.M. London: Bombay: The Times Press. (4½ x 7½, pp. 125 + xvii; 1 plate.)

<sup>5</sup> *The Doctor's Books*. By A. P. Bertwistle, M.B., Ch.B., F.R.C.S.E.D. London: J. Bale, Sons, and Danielsson, Ltd. 1926. (6 x 4½, pp. 25; illustrated. 1s. 6d. net.)

<sup>6</sup> *Pharmacopoeia of the University College Hospital*, 1926. Published by authority of the Medical Committee. Edited by Charles H. Hampshire, B.Sc. (Lond.), F.I.C. London: J. Bale, Sons, and Danielsson, Ltd. 1926. (3½ x 6½, pp. 99. 4s. net.)

Dr. W. B. BLANTON has written *A Manual of Normal Physical Signs*<sup>6</sup> in order to assist students who have a difficulty in obtaining normal standards of comparison of the physical signs in health and disease. The information is set out in notebook form, which renders it more useful for reference than for continuous reading. The subject-matter is classified so that the various forms of examination and the methods of investigating special organs and systems can be seen in detail at a glance.

A series of lectures under the auspices of the People's League of Health has been published under the title of *The Importance of Diet in Relation to Health*.<sup>7</sup> Dr. Leonard Hill deals with the general subject of diet, Sir D'Arcy Power considers food from the historical and geographical standpoints, and Professor Halliburton writes on vitamins and diseases caused by badly chosen diet. The principles of infant feeding are set out by Dr. H. Scurfield, Dr. M. J. Rowlands treats of the subjects of the feeding and breeding of cattle in relation to the public health, and Professor W. E. Dixon contributes an article on food preservation and adulteration.

<sup>6</sup> *A Manual of Normal Physical Signs*. By Wyndham B. Blanton, B.A., M.A., M.D. London: H. Kimpton, 1926. (Post 8vo, pp. 215. 12s. net.)

<sup>7</sup> *The Importance of Diet in Relation to Health*. The People's League of Health Lectures. London: G. Routledge and Sons, Ltd. 1926. (Cr. 8vo, pp. xii + 133. 3s. 6d. net.)

#### THE HEALTH OF THE SEAMAN.

##### INTERNATIONAL RED CROSS CONFERENCE IN NORWAY.

IN 1924, at the third meeting of the general council of the League of Red Cross Societies in Paris, the Norwegian Red Cross Society put forward an international scheme for the promotion of the health and welfare of the sailor. The principle underlying this scheme was unanimously accepted by the other national Red Cross societies in the league, and the Norwegian Red Cross Society was given a mandate to work it out. The Norwegian Red Cross has elaborated it, and it was with a view to studying it in detail that the Norwegian Red Cross and the League of Red Cross Societies invited representatives of the national Red Cross societies of all maritime countries and certain other bodies, such as the International Labour Office, to meet in Norway in a conference which should assemble at Oslo on June 28th, and pay visits to Bergen and Trondhjem. The subjects set down for discussion were: (a) Educational propaganda on board ship by posters, pamphlets, and in other ways; (b) the improvement of existing manuals on hygiene for seamen or the publication of new ones; (c) the establishment of Red Cross medical stations for seamen; and (d) the plans for a standard up-to-date medicine chest.

The delegates from Great Britain were: Mr. L. Bowden, representing the British Social Hygiene Council; Colonel L. W. Harrison, representing the Ministry of Health; Dr. F. N. Kay Menzies, representing the London County Council, the British Red Cross Society, and the Order of the Hospital of St. John of Jerusalem; Mrs. Neville Rolfe, representing the British Social Hygiene Council; and Mr. Murray-Williams, representing the British Red Cross Society. The League of Red Cross Societies was represented by Dr. F. Humbert and Dr. C. Lillingston; the League of Nations by Professor T. Madsen and Dr. Norman White; the International Labour Office by Dr. Butler and Mr. Sture Thorsson; and the International Red Cross Committee by Surgeon Commander L. F. Cope, R.N. The countries represented, in addition to Great Britain, were: China, Costa Rica, Denmark, Finland, France, Germany, Holland, Italy, Japan, Spain, Sweden, and the United States of America.

The conference was formally opened by the King of Norway, in the presence of a large and representative gathering, in the hall of the university in Oslo. Dr. Engelsen of the Norwegian Red Cross presented to King Haakon the first copy of the medical manual prepared by an editorial board of medical men under the auspices of the Norwegian Red Cross, and a paper was read on certain hygiene problems in the merchant service by Dr. Ustvedt, chief medical officer of the Ullevaal Hospital. The following days were devoted to discussions, and it was soon found that the problem of establishing medical stations under the Red Cross for seamen throughout the world engrossed the attention of the delegates almost to

the exclusion of the other subjects on the agenda. Though appreciation was expressed for the work of the Norwegian Red Cross in preparing a medical manual and medicine chest, both of which might become the basis of an international standard, it was realized that they would have to be more carefully studied than the time at the disposal of the conference would allow, and they were referred to a standing committee for further study.

The problem of medical stations was thrashed out very thoroughly. The original plan of Dr. Engelsen of the Norwegian Red Cross was for one doctor in each seaport town to put his surgery at the service of the Red Cross, charging his usual fees when he treated a sailor himself, and acting merely as a clearing station for those he sent on to specialists or hospitals. He had made arrangements with twenty-one doctors in twenty-one Norwegian ports to put the Red Cross sign outside their surgeries. His hope was that similar stations would be organized throughout the world, and that the captain of every merchant vessel should be provided with the addresses of every Red Cross doctor on his route, so that he would have no difficulty in knowing where to send a sick sailor when his ship reached port. In this connexion it may be well to quote some passages from a paper read at the conference by Dr. Jørgen Berner, Secretary-General of the Norwegian Medical Association. It should be noted that the medical officer of health of most Norwegian ports is also a general practitioner. Dr. Berner said:

"Only by establishing permanent medical stations whose locality is known beforehand to the seaman is it possible to give him effective aid. The medical officer of health of the port is already responsible for the supervision of the hygiene of the ships in port and for all measures concerning infectious and epidemic diseases. When the medical officer of health cannot, or will not, undertake this work, another doctor may be appointed after consultation with the Norwegian Medical Association, the rate of remuneration being that of the association in this locality for the time being. It is inevitable that the solution of the various social medical problems and the safeguarding of the economic interests of the medical profession must sometimes, to a certain extent, clash. This may happen especially in an arrangement limiting to a certain extent the free choice of a doctor. In this connexion the establishment of permanent medical stations for seamen may be criticized. The principle of free choice of doctor—that is, that every patient shall be free to choose the doctor he wants and in whom he has confidence—has successfully been maintained by the Norwegian Medical Association during the past twenty-five years in its negotiations with insurance societies and others. Both doctors and patients consider this arrangement to be ideal. We have found it necessary to abandon this principle in the matter we are now dealing with, because the Norwegian Medical Association has been unable to indicate any other solution for this problem, which is of so great importance that the claims of the individual must give place to the good of all. I am pleased to say that the executive's attitude in this matter has not been criticized by any of the members of the association. On behalf of the Norwegian Medical Association I beg to wish the Red Cross every success in its task, and to express the hope that it will soon see its plan realized throughout the world."

So much for the attitude of the Norwegian Medical Association, which has been described as "the most powerful trade union in Norway." After Dr. Berner's paper, small and large groups of delegates attempted during the rest of the conference to thrash out the difficult problems arising. It was maintained by more than one delegate that Dr. Engelsen's plan entailed a monopoly, and that the Red Cross Society which appointed one doctor in a port to act as its special medical officer would arouse the ill will of his colleagues. An alternative scheme suggested was that the Red Cross should establish an information bureau in each port where information would be given as to where appropriate medical advice and treatment could be secured, where letters could be received, and information obtained as to local recreational and social facilities, and where sleeping accommodation could be procured. It was the general opinion of the conference that the Norwegian Red Cross had focused attention on a state of affairs which might otherwise have continued to be neglected indefinitely. It had demonstrated the existence of a big gap in the welfare work for seamen, and had traced the broad lines to be followed to fill it. It was also the opinion of most of the delegates that each maritime country would have to work out its own scheme for Red Cross medical stations for seamen, but that individual national differences would not prevent the system becoming

unified throughout the world under the Red Cross. A suggestion which received much support was that each delegate, on returning to his own country, should communicate with the national medical association thereof with a view to its putting the health and welfare of the seamen on the programme of its annual meeting in the summer of 1927. In the case of Great Britain Dr. Lillingston undertook to approach the British Medical Association. If this plan can be carried out in its entirety, the chief medical associations of the world should be able to provide in 1927 a vast amount of information which should be of great value to the League of Red Cross Societies, the International Labour Office, and other bodies, in co-ordinating an international movement for the health and general welfare of the sailor. The following preamble, resolutions, and appendix were unanimously adopted by the conference.

The conference desires to place on record its great appreciation of the initiative taken by the Norwegian Red Cross in the organization of the conference, and of the work done by that society in establishing medical stations in Norwegian ports, and preparing a medicine chest and manual, and also its great appreciation of the general progress which has taken place in recent years in the provision made for the health and welfare of merchant seamen in certain ports.

From evidence placed before the conference it appears that there is in nearly all countries a need for further development in activity on behalf of the general health and welfare of seamen. During the discussions emphasis has been laid on the special dangers caused by tuberculosis, venereal diseases, and tropical diseases.

Even in those ports in which medical provision for seamen is adequate it often happens that foreign seamen find it difficult to ascertain where treatment and advice can best be obtained. A central bureau, or bureaus, under a local seamen's welfare committee, at which seamen of all nationalities could obtain information regarding such matters, as well as information regarding social and recreational facilities available, would be of the greatest benefit. Such bureaus could further be of great use as addresses to which letters from home for the seamen might be sent. In certain circumstances—for example, in the smaller ports—medical stations and clinics for seamen might with advantage be attached to such bureaus.

#### Resolutions.

In view of the above considerations the conference recommends:

- (1) That bureaus for furthering the health and general welfare of seamen be established in seaports throughout the world in close liaison with, and as a further development of, such national and international action in this field as has already been taken.
- (2) That each bureau be placed in a prominent position at the waterside. The chief function of these bureaus would be to furnish (a) treatment or information as to where appropriate medical advice and treatment can be secured, (b) postal facilities as outlined above, and (c) information as to the local recreational and social facilities and sleeping accommodation.
- (3) That such seamen's bureaus should be distinguished by a common badge of world-wide application.
- (4) That the League of Red Cross Societies should invite the national Red Cross societies of maritime countries in the first instance to take the initiative in the establishment of these bureaus in consultation with shipping and other organizations interested.
- (5) That the shipping interests and the seamen's organizations in each country should be invited to promote or to assist in promoting recreational facilities and welfare work among seamen. The provision of recreation and social amenities is recognized as of equal importance in maintaining the health of seamen as efficient medical treatment.
- (6) That the League of Red Cross Societies should invite the International Labour Office, the Health Organization of the League of Nations, and other international organizations concerned, to co-operate in appointing a standing committee on the welfare of seamen, this committee to arrange for expert investigation of: (a) Facilities for the medical treatment of seamen—for example, standardization of ships' medicine chests; medical manuals; a wireless code for medical consultations at sea; education of ships' officers in first aid and in the use of medicine chests; health propaganda among seamen, etc. (b) Welfare conditions on board and in port; the provision of recreational facilities for seamen of all nationalities; social conditions in the ports; ships' libraries, films, etc.
- (7) That the League of Red Cross Societies publish the transactions of the conference.

The conference expresses: (a) Its high admiration for the enterprise of the Norwegian Red Cross Society in publishing a medical manual for the use of officers of the Norwegian merchant service, and particularly for the skill which Dr. Engelsen and his collaborators have displayed in its preparation. This manual, a copy of which has been presented to each delegate, should be studied in each country represented; it will be of great assistance to those responsible for the preparation of similar works in other languages. (b) Its gratitude to the League of Red Cross Societies and its secretariat for their assistance, mentioning especially its director-general, Sir Claude Hill.

## British Medical Journal.

SATURDAY, JULY 31st, 1926.

### THE NOTTINGHAM MEETING.

ANOTHER Annual Meeting of the British Medical Association has come and gone, but the crowded events of the Nottingham week remain with us as a pleasant memory. When our last issue went to press the meeting was still in progress, and we were only able to give a full account of some of the earlier proceedings. This week we publish further reports and descriptive notes. The written word is too often inadequate, but it may refresh the memory of those who took part and convey some idea of the meeting to others less fortunate; it is a means also of expressing gratitude to our hosts for all they did to bring about success. What, then, are the outstanding impressions that remain? One is, we think, a sense of the smooth working of well laid plans, matured and carried out by a band of brothers; the other is appreciation of the kindness and courtesy of all classes, for the inhabitants were at one with the local profession in demonstrating to the British Medical Association that Nottingham, both city and county, is another word for hospitality.

The personality of the President is always a considerable factor in the success of an Annual Meeting. Last year at Bath this could be felt plainly enough, even though Dr. F. G. Thomson himself was on a bed of sickness and had to address his guests through the mouths of friends; his presence in good health at Nottingham last week was very welcome to all the members. More fortunate than his predecessor, Mr. R. G. Hogarth was able to take an active part in his own meeting, and it is not too much to say that from first to last his individuality spread its warmth over the whole proceedings. Mr. Hogarth's spirit never seemed to flag, and throughout an arduous week he managed to say the right word, in public as in private, with an air of charming informality that endeared him to all. Of the many loyal helpers whose invaluable work the President acknowledged at the Annual Dinner, and whose names are mentioned elsewhere, we can single out only one for praise in this place. For months—and indeed, it is said, for years—Mr. A. M. Webber had planned and worked behind the scenes; during the meeting he was here, there, and everywhere, giving himself without stint to all comers; and now it is triumphantly over we hope he is satisfied with the result of his unselfish labours.

We have indicated that the Nottingham meeting of 1926 was a success, and have tried to show why. This is not the time to attempt any comprehensive review of a large and many-sided meeting, for the event is too near; but in a brief backward glance a few leading features may be remarked. First we note that 1,086 members registered. This figure takes no account of the great number of wives and daughters whom Nottingham lavishly entertained by day and by night, nor of those members who rushed into University College to hear a paper discussed and

left Nottingham without recording their names. Those who took part in the scientific work included an unusually large number of distinguished colleagues from Canada, the United States, and the Continent; the Anaesthetics Section in particular, under the presidency of Dr. Samuel Johnston of Toronto, was attended by many visitors from America, and had the character of an international conference. As might be expected in so large a gathering, the attendance in the less specialized sections was very good, and a number of profitable discussions on topics of wide interest were followed by audiences drawn from all branches of practice. In order that others may gain an early idea of the course of the scientific and clinical proceedings, both general and special, we print this week the first instalment of a series of notes on the daily work of the Sections. The debate on food deficiency conditions in the Section of Public Health is reported in full at page 185. This and the brief summaries will be followed in due course by full reports of all the sessions. The morning papers and discussions were rounded off again this year by a number of afternoon demonstrations, and of these also we hope to provide some account. Most of the demonstrations were given in the annual Pathological Museum which had been organized mainly for this purpose. The specimens, photographs, and slides on view there attracted many visitors, who found the exhibits, illustrating recent advances in methods of diagnosis and treatment, highly instructive.

By the time the scientific Sections began their work the Annual Representative Meeting of the Association had run its usual four days' course under the able chairmanship of Dr. Brackenbury. Though the agenda paper was neither long nor contentious, as judged by recent years, a considerable volume of medico-political and administrative business had to be got through. The subjects under review arose directly, for the most part, out of the quiet and efficient work done in committees and subcommittees, and in the several departments at headquarters, during the past twelve months. The outcome of all these varied activities had already been set down in the Annual and Supplementary Reports of Council, which formed the groundwork of the representatives' deliberations. Reports on many uncontroversial matters came up for approval and were approved; but now and again the placid waters were ruffled, and the anglers from the newspaper press seem to have landed a few fish of moderate size. A full report of the proceedings of the first two days appeared in last week's SUPPLEMENT, and the conclusion of the Representative Meeting is recorded this week. These detailed reports, together with the informal commentaries printed in the JOURNAL under the heading of "Annual Meeting Notes," will, it is hoped, suffice to keep members in general acquainted with the business transacted this year by those who represent them in what is often styled the parliament of the medical profession.

As for the social side of the ninety-fourth Annual Meeting, a great deal might be written without exhausting the topic. We shall, however, try to give some slight notion of its varied character in the SUPPLEMENT. It is almost enough to say here that the functions of every kind were, by general consent, admirable. The entertainment by Buxton of the representatives and their womenfolk, during the week-end between business sessions, was a thing quite out of the ordinary. Many other pleasant trips to interesting places—ranging from cathedrals to coal-

mines—were provided during the week. The receptions by the President and by the Mayor at Nottingham Castle were as brilliant as that overworked adjective can be made to convey, and the speeches at the Annual Dinner were better and shorter than usual. A first-class concert was provided by the generous firm of Boots, and a succession of evening affairs, each with dancing into the small hours, ended with the ball given by the Nottingham Division. On the following day the members and their families scattered in all directions, some to distant parts of the empire, all taking with them the happiest recollections of the profession and the public of Nottingham.

### THE ROYAL COMMISSION ON LUNACY.

THE report of the Royal Commission on Lunacy and Mental Disorders issued on Wednesday last is an important document, with which we cannot pretend to deal critically to-day. It is important chiefly perhaps because it may confidently be expected to quicken the shifting of opinion from the fatalistic legal view to the rational and scientific. It was an obsession of the late Lord Halsbury that thousands of sane people were confined under certificates. He used the great influence his position gave him to imbue lunacy law with this idea, but it was an *a priori* view for which he had no adequate body of facts that would stand examination. The Royal Commission heard a good deal of evidence in support of this view, but did not accept it. While refraining from pronouncing judgement on individual cases the Commissioners say that in none of those brought before them "were they left in any doubt as to the propriety of the certification," and their conclusion is "that the evidence does not support the suggestion that the present safeguards against wrongful certification, if properly observed, are inadequate." The Commission is satisfied that at the present time instances of sane persons being wrongfully certified or improperly detained must be of the rarest occurrence. Attention is very properly drawn to another aspect of the matter, which is, that the public are entitled to be safeguarded against the presence in their midst of persons of unbalanced mind and dangerous tendencies. "Any properly conceived lunacy code," it is said, "must have regard to the rights of the public, who are entitled to its protection against risks attendant on failure to detain those who ought to be detained." Incidentally the Commissioners, after hearing evidence submitted to them and after visits to numerous institutions, express their definite opinion that, on the whole, patients are well cared for, and that there is no ground for the allegation that ill-usage is deliberately or systematically practised in mental institutions; where such incidents happen they are isolated occurrences.

It will be remembered that when the Royal Commission was set up in July, 1924, the British Medical Association appointed a Special Committee to consider possible modifications of the lunacy laws, to prepare evidence for submission on behalf of the Association to the Royal Commission, and to appoint witnesses to give evidence. The Committee prepared a memorandum, which was submitted to the Royal Commission at the beginning of 1925,<sup>1</sup> and evidence was given on behalf of the Association by a number of witnesses. This evidence, together with that given by other witnesses, was duly reported in our columns

from time to time. It is clear that the Royal Commission has given careful attention to the views expressed on behalf of the Association; it has in its recommendations made proposals for giving effect to the majority of them. This is only a general impression on a first perusal, and there are many matters of detail which must be carefully studied.

The Commissioners recommend that the lunacy code should be recast, so that the treatment of mental disorder should approximate as nearly to the treatment of physical ailments as is consistent with the special safeguards indispensable when the liberty of the subject is infringed. They have come to the conclusion that facilities for the treatment of voluntary boarders should be increased, particularly by their admission to public mental hospitals, and that early treatment should be encouraged by the provision of clinics. Certification, it is said, should be the last resort, and not necessarily preliminary to treatment; the procedure for certification should, therefore, be simplified, made uniform for private and rate-aided cases alike, and dissociated from the Poor Law. The report lays emphasis upon the need for extending facilities for the treatment of incipient insanity without certification. In the case of an involuntary patient it is advised that if there is a prognosis of early recovery facilities should be provided for treatment without certification for a period of one to six months under a provisional treatment order. When voluntary patients require full certification a reception order should be made on two medical certificates by a judicial authority consisting of specially selected justices, who should exercise their discretion under conditions to be prescribed by statute.

The report of the Commission contains a special section on research work and recommends that at the present stage each large mental institution should have a laboratory adequately equipped for routine examinations, and that higher research work should be conducted in a limited number of central laboratories serving a county area or group of counties. Such laboratories, it is thought, might be provided either by local authorities or voluntary agencies, or by the co-operation of both, and should be associated whenever possible with a university. In this connexion we may note the recommendation that while the medical officer in charge of the mental institution should be the ultimate authority on all matters medical and administrative, he should be relieved of administrative details to a greater extent than is at present the case. He should retain a decisive voice in all matters affecting the care and treatment of patients, but should be able to devote the greater part of his time to the medical questions, which are more immediately his concern. It is advised also that the present medical staffs of some institutions ought to be increased, and in all instances be large enough to make it possible to allow facilities for assistant medical officers to be given study leave. It is said that in order to attract and retain in the service suitable assistant medical officers the financial prospects ought to be improved.

The report of the Commission makes reference to the reluctance of medical practitioners to be involved in the certification of the insane, owing to the liability to actions at law. The Commission recommends "that for the more effective protection of medical men and others in the bona fide discharge of their duties under the Act, Section 330 should be so amended as to provide that any such person shall not be liable to civil or criminal proceedings unless he has acted

<sup>1</sup> SUPPLEMENT, January 17th, 1925, p. 29.

with bad faith or without reasonable care," and that subject to this qualification "any proceedings taken against such person shall be stayed upon a summary application to the High Court, or a judge in chambers." The Association in its memorandum claimed for medical practitioners who sign medical certificates under the Lunacy Act the immunities granted to witnesses in courts of law; it insisted that the medical certificate should be given very definitely the status of evidence, and that therefore the protection witnesses in courts of law are entitled to receive should be extended to the practitioner who signs a certificate under the lunacy laws. We do not see that the Commission has made any definite reference to the point thus made by the Association, but possibly the words above quoted may be considered partly to satisfy the point.

One of the sections of the British Medical Association's memorandum dealt with the value of variety in the type of institution for the reception of mental cases. There exists, it was said, a desire in the community that it should be possible to treat suitable patients otherwise than in public institutions, and that if the existing veto on the setting up of more licensed houses or the extension of those now existing were to result in the diminution or inadequacy of this provision, it might be necessary to repeal the veto or to provide extended facilities for the treatment of patients in small numbers in private hands under proper safeguards. Upon this point the Royal Commission is divided; some of its members considered that licensed houses should be abolished as soon as alternative accommodation can be provided either at registered hospitals or by local authorities; others were of opinion that licensed houses should be continued, but on a new footing, under conditions including stricter administrative and financial supervision, and with power to the Board of Control to issue new licences.

With regard to general administration it is advised that the county councils or county borough councils should be made responsible for providing accommodation and maintaining therein persons who, through mental disability, must be detained under care at the public expense. The cost of maintenance, it is advised, should be transferred from the poor rate to the county or borough rate, and it is considered that in providing a lunacy service on the lines envisaged in the report it is essential that local authorities should be assisted by an Exchequer grant, subject to the provision that all institutions should be supervised by the Board of Control. The work done by that Board is highly praised, but it is recognized that it is handicapped by certain factors beyond its control. One is that in order to effect economies the number of its members has been so much reduced that it is not in a position to discharge the duties imposed upon it by statute. To meet this difficulty it is recommended that the Board should consist of four or five commissioners only, and that most of the visitation should be done by a body of fifteen assistant commissioners attached to headquarters.

Taking a broad but necessarily somewhat hasty view of the report, it seems that it is a step forward, that the Royal Commissioners have approached the difficult subject with which they had to deal in an admirable temper and have made many suggestions which, if carried into effect, would advance the study of psychiatry, tend to the prevention of confirmed mental disorder, and contribute to the welfare both of patients and of the public.

## ANTIGENS FOR THERAPEUTIC IMMUNIZATION.

THE paper by Sir Thomas Horder and Dr. Ferry published this week (p. 177) describes a novel method of preparing vaccines for which promising results are claimed. Those whose business it is to manufacture vaccines belong usually to one of two schools: either they believe in the dead but otherwise unaltered bacterium, or else they believe in predigesting it or robbing it of its sting. The latter group of experimentalists has been responsible for "defatted," "detoxicated," "trypsinized," and many other modified vaccines which have enjoyed a degree of popularity almost exactly commensurate with the time and energy spent on their advertisement. When one considers what other elements in the microbe are worthy of a trial from the hands of the immunologist there does not seem much left, for it is no exaggeration to say that laboratory workers are to be found in almost every university town of this country and the Continent who look back on ten or twenty years spent in the attempt to isolate and identify antigen and antibody. Do the experiments recorded by Horder and Ferry suggest that the ideal antigen for which these patient research workers have been seeking has been allowed to run to waste down the laboratory drain?

The investigations now summarized have been in progress since 1921; their purpose was to determine the practical immunizing value of bacterial antigens prepared after various methods, in the hope that a substance would be found more nearly fulfilling the requirements of an ideal antigen than any at present in use. Broth cultures of the typhoid bacillus, the colon bacillus, the pneumococcus, and other bacteria of the (so-called) endotoxin-producing class were first used, and the early results showed that the antigen properties of the filtrate were higher than anticipated. The inference was drawn that the antigenic substances must be more or less loosely bound up with the bacterial cell and reside in the bacterial surface or ectoplasm rather than in the endoplasm. In the next stage a centrifuge instead of porcelain filters was used to wash the bacteria and the fluid yielded was found to be highly antigenic, while the washed bacilli were very low in antigenic content. This method of washing extracted the antigenic substance from the bacteria, while the toxic principles were left behind. The name "ectoantigen" is suggested for such products, and for products prepared in such a manner as to contain only this ectoantigen the term "immunogens" is proposed. Animal experiments were in all cases favourable to the theory. The conclusion then was that these washings more nearly approach the ideal antigen than any others which had been examined. They are in aqueous solution, low in protein content, high in antigenic properties, and practically non-toxic. During the last two years the immunogens have been tested clinically by a considerable number of observers, and promising reports have been received in connexion especially with streptococcal, pneumococcal, and gonococcal infections; in the experience of most of those who had tried them, these products have not caused reactions of an undesirable kind.

There are only two satisfactory methods of investigating the value to practical human medicine of any method of preparing vaccines. One is the virulence test on animals, and the other is clinical observation on human patients. The report by Horder



and Ferry does not make it quite clear by what standards they judged antigenic capacity. It is well known that the production of agglutinin, complement fixing antibodies, precipitins, and suchlike does not run parallel with the capacity to resist infection, and it would be interesting to know whether animals which had received injections of the bacterial washings were capable of withstanding a larger lethal dose of the microbe than those animals which had not received such injections or than those which had received one or more of the orthodox vaccines. Another question which arises is how these bacterial washings can be standardized. Accurate dosage is known to be of great importance in all vaccine therapy, and laborious methods are necessary to determine the correct strength of any vaccine. Are the bacterial washings to be standardized by the amount of water used in the process or by the time taken by the operation? But these are technicalities on which no doubt the authors will give more precise information on a later occasion. In the meantime the final and most important question of all—namely, whether these vaccines are of value in the treatment of disease—must be left undecided. The early results are encouraging, but, as the authors say, it is too soon to speak of the main results of the use of antigen.

### ANNUAL MEETING NOTES.

#### THE REPRESENTATIVE MEETING.

In the SUPPLEMENT this week we conclude publication of the full report of the Annual Representative Meeting at Nottingham. The short notes printed below are intended to give, in very general terms, an outline of the course of the discussions during the later part of the meeting.

#### Monday, July 19th.

Monday's session, which opened with the introduction of Sir Robert Philip, President-Elect for 1927-28, saw the completion of an important part of the business of the Representative Body. There was relatively little opposition to the Council's proposals about the utilization of municipal maternity hospitals and the fees payable to general practitioners and consultants attending patients in such institutions. This had already been brought forward at Bath, and now became the policy of the Association; but a useful distinction was drawn between fees for occasional attendance and attendance on a salaried basis, and the latter question was referred to the Council for consideration. Later in the session much satisfaction was evident in the reception of Dr. Lyndon's clear statement as to the increased cover afforded by the two English medical defence societies in connexion with the acts of assistants and locumtenents. Of this satisfaction the withdrawal of the motion by the North of England Branch was in itself good proof. The Edinburgh motion arising out of the Harnett case was, however, accepted as a request to the Council, and showed that some uneasiness continues about the position of doctors under the existing lunacy laws. A formula setting out the relation between the Association and the factory medical service raised some difficulties. When these had been overcome the meeting settled down to its most important business for the day—namely, discussion of the Memorandum of Evidence submitted to the Royal Commission on Local Government. During the protracted consideration of this subject the Deputy Chairman, Dr. Hawthorne, took the chair, in order that Dr. Brackenbury, who drew up the Memorandum, might participate with more freedom in a discussion which brought to light a considerable difference of opinion within the ranks of the public health service as

to the effect of the Minister of Health's proposals and of those in the Association's Memorandum. The debate as a whole proved how hard it often is to draw up a policy that allows for future development, and to present it subsequently for ratification at a time when its practical implications are beginning to be grasped. Moreover, issues of the first importance tended to be obscured at times by discussion of the procedure by which the position indicated in the Memorandum had been reached and of the part played by individuals in its development. The report on bills of medico-political interest now before Parliament served to elicit useful statements on the relations between the British Medical Association, the Medical Committee of the House of Commons, and the individual medical members of Parliament, and to define the attitude of the Association towards bills not originated by itself though generally in accordance with its policy. The only point seriously disputed was the recent modification of the Dangerous Drugs Regulations; here the question appeared to be the probable effect of the wording of the Regulations, a matter on which criticism should perhaps await the event. The South Shields motion on notification under the Workmen's Compensation Act dealt with a matter of public importance, and its reference to Council by the Representative Body merely endorsed the action already begun by the Council at the instigation of members in the North of England. On Dr. Morton Mackenzie's motion relating to motor licences an old grievance was discussed, without, however, any practicable solution being found. The Hastings suggestion for a scheme of insurance for members was the occasion of a good description of the scheme established by the dental profession, but secured no support. Medico-political business was brought to an end by a discussion on the use of pituitrin by midwives—a regular feature of the Representative Meeting for some years—and by a reference to the Council of the whole question of schemes for crippled children. The Report of the Insurance Acts Committee provided no controversial matter and was approved without dissent; but the motion on additional benefits put forward by Marylebone led to an interesting discussion, whilst that by Birmingham Central on disciplinary procedure under the Insurance Acts revealed an increasingly strong objection to administrative interference with the practice of medicine. The resolution as passed should strengthen the hands of the Council in a matter which is causing insurance practitioners no small anxiety.

#### Tuesday, July 20th.

Tuesday's session opened with a well deserved tribute to the work of the central office staff in the production of the minutes day by day during the meeting—a heavy task undertaken for the first time this year. On the public health report a useful indication of opinion as to the proper basis of remuneration for medical superintendents was given on the Harrogate motion; the number of assistants (the basis originally put forward in 1924) had by general consent many disadvantages. A question of first-class importance which came under review was that of the application of the public health salaries scale in Scotland. The result was acceptance of the report, with a full realization on the one hand of the peculiar difficulties of Scotland in this respect, and on the other of the danger of any local modification of the scale; the ground was then cleared for final decision by the Council. In accepting the Brighton motion on public education in health the Representative Body acknowledged the responsibilities of the Association towards this matter, locally as well as centrally. The discussion on Dr. Langdon-Down's motion to exclude advertisements of appointments which are conditional on membership of a professional organization was

interesting, and revealed a sharp division of opinion. The motion was a logical outcome of that liberal attitude which deprecates any interference with individual freedom in such matters; it was rejected apparently on grounds of expediency rather than of principle, because, as suggested by the Chairman of Council, it would entail the rejection of what was, in effect, a condition advantageous to the individual concerned and to the employing authority. For the rest, the concluding session was spent in the reception of reports rather than in discussion, the chief item of interest being the announcement by Sir Richard Luce of the long-deferred reforms in conditions of medical service in the R.A.M.C., the R.N.M.S., and the R.A.F.M.S. The amount of work contributed by Sir Richard Luce personally in the course of the protracted negotiations on this subject was cordially and gratefully recognized by the Representative Body. No fewer than six reports, including that of the Naval and Military Committee, were dealt with between lunch and the termination of the proceedings, the speed with which business was dispatched during this period being in strong contrast to the general course of events during the first days of meeting. This has happened in some previous years, and, human nature being what it is, will probably happen again. Before proceeding to the usual complimentary resolutions two exceptional matters were dealt with: the sudden illness of Dr. Cowell, to whom an expression of sympathy was conveyed, and the election of Dr. T. W. H. Garstang as a Vice-President of the Association. Dr. Garstang's election was carried with the enthusiasm inspired, not merely by his remarkable record of devotion to the work of the Association, but by the more personal ties he has established with so many of those who have entered on the same service, whether as Representatives or as members of Council, during his twenty-two years as a member of the Representative Body and his three years as its chairman.

#### THE POPULAR LECTURE.

The "popular lecture" was a truly popular feature of the Annual Meeting, for it attracted to the Mechanics' Hall on the Wednesday evening of the Nottingham week an audience which filled it to overflowing. The lecturer was Dr. Leonard Hill, F.R.S., whose subject was ultra-violet radiations. Specimens of lamps used in ultra-violet treatment were placed on the platform and their working demonstrated. The chair was taken by Dr. F. G. Thomson, late President, who took advantage of that meeting of Nottingham citizens to thank them for the welcome they had given to the Association. Dr. Hill began by describing the effect of ultra-violet radiations on monkeys at the Zoological Gardens in London, where the monkey house had been fitted with a series of incandescent quartz lamps in order to let through the radiations during the winter months when sunlight was lacking; in this way the marmoset monkeys had been kept with complete success through what had previously been for these creatures an unfortunate season. In the same way the runs on some poultry farms had been fitted with incandescent lamps to warm the chicks with radiant light, and to give them also a certain proportion of ultra-violet rays, and so diminish mortality. The lecturer then went on to the application to the human subject, and described the work of Rollier at Leysin, of the Royal Orthopaedic Hospital at Stanmore, and, still nearer home, of the "sun-clinic" at Nottingham, where mercury vapour lamps were used for treating the city cripples. He instanced the method used by Dr. Eidinow and himself at the New End Hospital for irradiating the whole body of a child in four sections, followed by a fortnight's rest. The effect of "artificial sunlight" in the treatment of lupus and other conditions

was also illustrated. The amount of ultra-violet radiation in a natural form varied greatly in different parts of the country; for example, Kingsway, in London, received only one-third of the ultra-violet radiation in sun and sky shine which was received at Corton, near Lowestoft. Even under the best conditions, the enormous mass of ultra-violet radiation proceeding from the sun was filtered out very largely, so far as the shorter rays were concerned, by the ozone fifty miles up in the atmosphere. But the city dweller, owing to smoke and to sedentary conditions of life, was deprived in very large measure of this stimulating agent, though certainly it was possible even to produce sunburn through window-glass. The lecturer mentioned the curious experiments whereby a man or an animal might be sensitized to visible rays by the injection of a trace of a fluorescent dye like eosin or haematoporphyrin; also that there were rare cases in which haematoporphyrin, or something like it, existing naturally in the body, caused a similar sensitivity so that the individual dare not venture out into full sunlight for fear of a violent skin reaction. In conclusion, he made a reference to clothing, pointing out that even the thinnest of tropical clothing absorbed the ultra-violet rays. One interesting garment, consisting of a double layer of window-curtain material with a very open mesh—really two garments separated from one another by silken cords, and provided with an opaque cloth for certain parts of the body—had been evolved for country children by a medical colleague of his, though so far he had not ventured to introduce it into the towns. That artificial light baths might be efficacious in dispelling political anxieties was suggested by the public announcement by one of Mr. Ramsay MacDonald's colleagues that the ex-Prime Minister was taking a course of them. Dr. Thomson proposed, and Dr. Braekenburg seconded, a vote of thanks to Dr. Leonard Hill, the former remarking that the investigations into the uses of light were bound to have the most far-reaching results in public health during the next few years, though he trusted that in carrying out the principles Dr. Hill had enunciated both the profession and the public would temper enthusiasm with discretion.

#### THE ADJUSTMENT OF THE CIRCULATION TO THE NEEDS OF THE TISSUES.

THE study of histamine is of particular importance since it has been recognized that the body has the property of forming histamine-like substances under certain conditions. Among such conditions are gross injury to tissues and bacterial infections. It was in relation to at least some types of the bodily state known as "shock" that histamine aroused a widespread interest during the war. More recently it has been shown that histamine-like bodies are perhaps associated with everyday physiological functions such as vaso-dilatation. It was to settle certain anomalous results of the action of histamine in different animals that an investigation reported in a recent issue of the *Journal of Physiology* (vol. lxi, p. 185) was begun at the National Institute for Medical Research, Hampstead, by Dr. J. H. Burn and Dr. H. H. Dale, F.R.S. It was easy to demonstrate the dilator effect of histamine in the perfused limb of most animals except the cat. In this animal the initial vaso-dilator effect was not apparent, but by very careful technique and the use of apparatus that brought conditions in the limb to resemble as nearly as possible those in the intact animal it was shown that the initial dilator effect occurred also in the cat. It became apparent that the excised limb recovered a vascular tonus after a certain definite time, and that if the perfusion of the histamine was begun at the right moment the tonus was inhibited and dilatation was induced in the limb. The

further study of these phenomena has shown that the vascular system reacts differently in its different parts to the same drug. In the dog, for instance, histamine dilates capillaries and the smaller arteries, but contracts the larger arteries. In the cat it dilates the capillaries but contracts the smaller and the larger arteries. In other animals, such as some rodents, the constrictor effect is pushed still further towards the periphery of the vascular system. These observations establish a principle of great importance in clinical medicine as well as in physiology—namely, that the vascular system may react to an effective substance or stimulus, not as a unit, but as a system whose response varies in its different parts. Going still further, an attempt was made to explain the fact that histamine, when injected into the circulation, causes at first a fall of blood pressure which is succeeded by a secondary rise. Adrenaline, when injected into the circulation in small doses, may cause at first a trivial rise of blood pressure, but this is succeeded by a fall of blood pressure. By a series of ingenious experiments evidence was obtained that these reversal effects were due to the liberation in the tissues of a reversing principle. Previous work had given grounds for believing that histamine brought about the liberation of adrenaline. The new observations provide evidence that constrictor substances lead to the production of histamine-like substances in the tissues. This antagonism between constrictor and dilator substances would lead to the establishment of a perfect adjustment of the circulation to the needs of the tissues. An important function of adrenaline is to neutralize the dilator substances produced in the tissues, and so maintain or restore a normal capillary tone. Histamine has proved to be no mere pharmacological curiosity, but of great physiological importance, contributing to the balanced control of the capillary tone like the natural secretion of adrenaline.

#### STANDARDIZATION OF ORGANIC SUBSTANCES USED AS DRUGS.

THE need for the establishment of official methods of standardization of drugs which cannot be controlled by ordinary chemical methods is now engaging attention in many countries, and an approach to international action was made at the conference called in 1925 by the Health Committee of the League of Nations, to study the possibility of biological standardization. The movement has now extended to France, where the Minister of Labour, Health, Poor Law Relief, and Insurance recently asked the Academy of Medicine in Paris to undertake the task of creating a laboratory for the control of the anti-syphilitic remedies used in public dispensaries and by medical practitioners. On May 11th the Academy appointed a committee of eleven members to work out the details of the organization of the laboratory, and several additional members were subsequently appointed, among them being Dr. Paul Cazeneuve, who read to the Academy a paper on the physiological control of therapeutic agents, and its official organization. He observed that while inorganic drugs could be controlled by physico-chemical means it was very different with organic compounds and complicated organo-metallic substances. For these physiological control was necessary. Thus it had been shown that samples of organic arsenic derivatives often contained toxic impurities which were difficult to control chemically; for this purpose investigations in a physiological laboratory, by experiments on frogs and guinea-pigs, were necessary, and several drug factories in France, England, and America already made such experiments with a certain number of their products; moreover, the pharmacopoeia of the United States had made the method official in America; and the Pharmaceutical Society of Great Britain

had just established pharmacological laboratories for the control of certain drugs and galenic preparations the value of which could only be determined by biological methods. Such laboratories were necessary in the interests both of the sick and of the pharmaceutical industry. Dr. Cazeneuve suggested that the French laboratory should be established within the faculty of pharmacy in Paris; but though the Academy agreed to the general proposition the objection was made that neither physiology nor medicine was represented in the faculty.

#### MEDICAL MISSIONARY WORK IN AFRICA.

AN International Conference on the Christian Mission in Africa is to be held at Lo Zoute, in Belgium, next September (14th to 21st), and in preparation for it: special double number of the *International Review of Missions*<sup>1</sup> has been published. To it Mr. J. H. Oldham one of the two general editors, contributes a statistical article on population and health in different parts of Africa. In many places the population is sparse and appears to be declining in consequence of disease, limitations imposed by the method of life of the natives, and the disturbance resulting from European occupation. Attempts are being made to cope with these depressing circumstances. In Uganda the infant mortality during the first year of life, which was as high as 55 per cent., has now been very materially reduced, as has also the death rate due to sleeping sickness. The native fertility has been seriously affected by helminthic disease, the incidence of which in some districts is very high. Bad sanitary conditions in native villages, the insufficiency of food, and the unsuitability of native diets are other factors in depopulation, while the introduction of Western industrial conditions has also had a tendency to disintegrate native society. An article on health and welfare work, contributed by the Rev. P. H. J. Lerrigo, M.D., gives a detailed description of what is being done by missionary societies to cope with these difficulties. In twenty-seven different geographical areas seventy missionary societies are actively operating; twenty-four of these are British. The medical missionary staff includes 157 medical practitioners, of whom 15 are women, and there are 282 nurses at work. Associated with them are several hundred native assistants, who have received varying degrees of medical training. Most of the medical practitioners are associated with more or less adequate hospitals, of which 136 exist. While some hospitals are relatively large and well equipped, others are of the most elementary type, but still serve to provide more careful medical treatment than is possible in out-patient dispensaries. Over 60,000 in-patients were treated in all the mission hospitals listed in Africa during the last year for which statistics are available. Dispensaries are maintained at 387 places, and are visited at regular intervals by medical practitioners; during 1924 nearly two million attendances were registered. The inadequacy of trained professional help results in a considerable amount of medical work being thrown upon non-medical missionaries, and attempts are being made to train medical assistants, nurses, and health visitors for maternity and child welfare. Although medical education for the African has been almost non-existent, so far as missions are concerned, yet attempts are now being made in various places to provide training, particularly in nursing, midwifery, and elementary medical subjects, in order to supplement the activities of registered medical practitioners. Some special short courses for non-medical missionaries are provided,

<sup>1</sup> *The International Review of Missions*. July, 1926. London: Edinburgh House, Eaton Gate, S.W.1, and H. Milford, Oxford University Press. Prepaid annual subscription 10s. 6d., post free to any part of the world; single copies, 3s. net; special double Africa number, 5s. net.

particularly by the Belgian Government and at Livingstone College in London. It is suggested that a special medical treatise for the use of non-medical missionaries should be prepared by a committee of medical practitioners with a knowledge of the special requirements of the entire African field. It is thought that the awakening of interest in Africa in education at the present time affords a good opportunity for emphasizing the importance of dealing with health problems, and that native teachers might be trained so as to give instruction in personal hygiene and to deal with the problems of African village sanitation. Dr. Lerrigo concludes with an appeal for a definite campaign to control or eradicate such diseases as trypanosomiasis. While the missions are not in a position to make themselves responsible for such a difficult task, their active co-operation in it would furnish a large number of social workers, fully cognizant of the local conditions and able to take a leading part in systematic work. The inauguration of such a scheme would necessarily depend on one or more of the great philanthropic foundations which have been formed in recent years, or involve Government action, since large funds would be needed.

#### ANNUAL REPORT OF THE ROCKEFELLER FOUNDATION FOR 1924.

THE Annual Report of the Rockefeller Foundation<sup>1</sup> for 1923 was noticed in our columns on November 8th, 1924 (p. 869), and the report for the following year is much on the same lines. It opens with a comprehensive review of the world-wide activities of the Foundation by the President (G. E. Vincent), and contains the detailed reports of the Treasurer and the Secretary, of the General Director of the International Health Board (Dr. F. F. Russell), already noted (1926, vol. i, p. 840), of the General Director of the China Medical Board (Dr. Roger S. Greene), of the Director of the Division of Medical Education (Dr. R. M. Pearce), and of the Director of the Division of Medical Studies (Dr. E. E. Embree). The fields of activity of the Foundation compel admiration, for among the nineteen items tabulated by the President are: an allotment of 350,000 dollars towards an international abstract journal of the biological sciences; grants to hasten developments in the medical schools of the Universities of Oxford, Cambridge, Edinburgh, Wales, Montreal, Sao Paulo, Hong-Kong, Siam, and the American University of Beirut; campaigns against yellow fever in South America; malarial control in thirteen States of the Union, and in Haiti, Porto Rico, Nicaragua, Brazil, Italy, Palestine, Queensland, and the Philippines; anti-hookworm work; and directly or indirectly the provision of fellowships for 864 individuals of thirty-three different countries. The guiding principle of the Foundation is concentration for considerable periods upon activities in certain directions, and at present effort is concentrated on public health and medical education. These two fields, however, are very extensive and the ground has been intensively cultivated; as prevention is better than cure, the wise generosity of the Foundation in creating or expanding special graduate schools and institutes of hygiene is obviously a far-seeing policy. Three-fourths of the profession are general practitioners, and some have thought that they may be gradually squeezed out between the specialist and consultant on the one hand and the activities of preventive and social medicine on the other hand. This would be a grave loss; to survive and carry out their most valuable services general practitioners will have to meet the new conditions and become practitioners of preventive medicine or "counsellors of health"; to train such men the curriculum must be

permeated with the preventive idea. Recognizing how indispensable the trained nurse is in public health and medical education, nursing schools at Yale, Rio de Janeiro, Cracow, and Zagreb in Jugo-Slavia have been assisted. The report of the China Medical Board shows that gratifying progress was made in 1924. The Division of Medical Education has not only visited numerous countries to make surveys, but has invited visitors from this country, Hong-Kong, Straits Settlements, and elsewhere to visit America to study the methods of medical education.

#### THE FOUNDLING HOSPITAL SITE.

THE building, value of the site now occupied by Covent Garden and its distance from the principal railway stations have led to a suggestion for its removal, and the site of the Foundling Hospital, rendered vacant by the recent removal of that great institution to the country, has been suggested as suitable. It has an area, excluding Brunswick and Mecklenburgh Squares, of about 7½ acres. It is within the southern boundary of St. Pancras, where it adjoins Holborn, and the Holborn Borough Council, a local contemporary states, is opposed to the creation of a large vegetable and fruit market immediately adjoining its area; it fears a congestion of the streets by market carts; and maintains that the noise of the night traffic will interfere with the sleep of the many students lodging in Bloomsbury. It need cause only slight concern to the British Medical Association, for the Foundling site lies at a considerable distance to the south-east of its new House; it is, perhaps, of more consequence to the Royal Free Hospital and the School of Medicine for Women. It is to be hoped that whatever may be the fate of the Foundling Hospital site a certain part of the extensive grounds will be retained as an open space, if not as a recreation ground, for the children of the adjoining areas at present have to go very considerable distances to find green or even asphalt-covered spaces on which to play. Another site for Covent Garden market not far removed from the Foundling Hospital has been suggested. The St. Pancras Borough Council, well supported by local opinion, has taken steps to have the Ossulston Street area condemned; this locality, inhabited largely by coal porters employed in the vicinity, has even in these times of housing shortage been deemed to have reached the last stages of its utility. To some the neighbourhood of St. Pancras Station has been considered an adequate reason for the utilization of the site (about 8 acres, occupied by some 2,700 persons) for a new Covent Garden. Probably most of the population would have to migrate to the newer suburbs coming into being to the north and north-west of London, from which they would have to reach their work by rail; the original proposal was to rehouse them on the site in blocks of nine stories with quickly moving lifts and other amenities. It is, however, doubtful whether the problems of Covent Garden have yet been sufficiently analysed by the appropriate persons. No doubt the trade has outgrown the present market, but the places from which the produce sold there come have not been considered adequately in relation to the best possible site. It is probably true that most of it is brought from the counties west of London, but this should be definitely ascertained, and in fixing the new site consideration should be given to the demand for the lessening of the congestion of traffic generally in London.

THE QUEEN has graciously consented to become patroness of the College of Nursing, Henrietta Street, Cavendish Square.

<sup>1</sup> Rockefeller Foundation: Annual Report, 1924. The Rockefeller Foundation, 61, Broadway, New York. (Fcap. 4to, pp. xi + 447; 63 figures.)

## POVERTY, NUTRITION, AND GROWTH.

## CHILD LIFE IN SCOTLAND.

THE Medical Research Council has issued a report<sup>1</sup> by Professors Noël Paton and Leonard Findlay of Glasgow, with the co-operation of several workers, on poverty, nutrition, and growth, founded on studies of child life both in the cities and in the rural districts of Scotland. The investigation on which the report is founded was a part of the scheme for the study of the problems of child life undertaken by the Medical Research Council in 1919.

Already several reports bearing upon the ante-natal factors, as manifested in the child at birth, have been published. This report is the first study of the influence of ante- and post-natal factors on the child during infancy (the first year of life), when ante-natal influences may still be operative, and during pre-school years, when home environment may be supposed to be dominant. During the school age, from 5 to 16 years, external conditions are superimposed upon the home conditions, and the child, being in the hands of the educational authorities, has already been fairly extensively studied, and is here only cursorily dealt with.

The investigation was started in 1919; the field work was continued till 1923; and the statistical analyses have occupied two years.

In the introduction to the report it is pointed out that the character of the adult population of any country, its health, vigour, and working capacity, are determined by the development and growth of the children, and that this in turn may be influenced by environment after birth, and also by factors operating while the child is yet unborn, but that many of the factors making for the normal growth and nutrition of the child are still little known. The various hypotheses which have been advanced to explain the small size of the slum child are indicated, and the importance of a more adequate knowledge to guide the operation of child welfare schemes is emphasized.

The children of the slum population of the three great industrial towns of Scotland—Glasgow, Edinburgh, and Dundee—afforded the material upon which the work was done. As a contrast, the condition of the children of agricultural labourers and of rural coal-miners—populations of about the same social class—was also investigated. The extension of the work to these communities was made possible by a substantial grant from the Carnegie United Kingdom Trust.

In Part I a detailed account is given of the slums of the three cities, and this is supplemented in a later part of the report by detailed description of some of the families used for dietary studies (p. 155 et seq., and Appendixes III and IV). Of the town families studied 93 per cent. lived in one- or two-roomed houses, while in Glasgow no less than 43.7 per cent. inhabited one-roomed houses. The social conditions of the rural families studied are described. The contrast between the conditions of these country families and of the slum dwellers is most striking, and is briefly indicated in the conclusions to the reports upon the rural communities.

Since the economic position of the country underwent marked changes during the course of the investigation, between 1919 and 1923, consideration is given to the way in which this affected the circumstances of these families, and a chart shows how closely wages have varied with the cost of living in the class studied.

As regards the racial characters of the population of Scotland, rural and urban, the general conclusion drawn from the results of Tocher's survey is that there are quite definite racial differences, and that the urban populations tend to differ from the rural. In considering the data collected in the present investigation it is therefore necessary to keep in view the possibility that variations in size

which seem to be associated with different environments may be related to racial differences in the populations studied. The measure of growth adopted is height for age, and for nutrition weight for age.

## COMPARISON OF URBAN AND RURAL CHILDREN.

In Part II a comparison of the children of the slums and of rural labourers and miners is made in a series of tables and charts. These show a close correspondence in the growth and nutrition of the children in the three towns. They further show that these slum children are, on an average, lighter and less tall at every age than the children of rural miners and agricultural labourers, the last class being largest at each age. Except for a possible delay below 18 months, the rate of increase, however, is the same in town and in country children. Since no delay in the rate of growth of the slum child is manifest, the conclusion is drawn that the diet must be sufficient at least to supply the material and energy required for normal growth.

The explanation of the differences in the height and weight of the children in town and country is considered and a large amount of evidence adduced, chiefly from previous work, but also from investigations in Dundee described in the report: (1) that this is to some extent due to heredity; (2) that, dealing with large averages, the smaller town dweller begets smaller children than the larger country dweller; and (3) that this difference between town and country is probably being accentuated by the decrease in the emigration from country to town which has recently been pointed out by Brownlee. A typical slum population thus seems to be evolving, and the question is put, May it be that the smaller town race is really an adaptation to environment? Is it not possible that the small machine-tending male, the small, not too prolific female, requiring little food and little exercise, are better suited to urban surroundings than the big brawny man and the large prolific woman whose energies are more appropriately employed in rural surroundings?

The conclusion of this part of the report is:

"Whether environmental conditions are or are not responsible for the lag in growth below 18 months in the slum child, it seems manifest that after that age the inherited growth impulse is sufficiently potent to carry it completely on to the average size of its parents, that the influence of environment is not indicated on the curves of growth of the average of the whole number of children, and that the average diet of the population must be at least sufficient to supply the material and energy required for growth."

## FACTORS INFLUENCING NUTRITION AND GROWTH.

The rest of the report is a study of some of the factors generally supposed to influence the nutrition and growth of children.

After a preliminary consideration of the nature and significance of the evidence presented, the possible relationship of income and the condition of the home with the nutrition and growth of the child is dealt with—in the slum child, in the children of rural miners, and in those of agricultural labourers.

## Income.

Tables are given of the correlation between income and height and weight of the child at different ages, which seem to warrant the conclusion that within the range of income dealt with the variations of height and weight in children under 5 years of age do not appear to be related to the economic condition of the family. Although there is thus an absence of a correlation between income and growth and nutrition, the possible relationship of income to the food value of the typical or average diets of the slum population is considered, and after a statistical analysis of the data available, the following conclusions are reached: (1) that there is a small correlation between the total income and the calories of the diet, but this is due to the fact that in the slum families so high a proportion of the income is spent on food; (2) that between income spent on food and calories purchased there is the expected close correlation; (3) that the energy value of the diet is dependent upon the money spent on food and the energy purchased per penny—that is, upon the marketing, rather than upon the total income.

<sup>1</sup> Medical Research Council Special Report Series No. 101: *Poverty, Nutrition, and Growth. Studies of Child Life in Cities and Rural Districts of Scotland* (assisted by the Carnegie United Kingdom Trust). By D. Noël Paton, M.D., F.R.S., Professor of Physiology, University of Glasgow, and Leonard Findlay, M.D., D.Sc., Professor of Paediatrics, University of Glasgow; with the co-operation of Jean Agnew, Catherine A. S. Blair, M. L. Clark, P. L. MacIntyre, Olive Somerville, and A. M. T. Tully. H.M. Stationery Office, London, Manchester, Cardiff, and Edinburgh, or through any bookseller. Price 10s.



*Condition of the Home.*

The condition of the home, as indicated by the air space per person and the size of the family—both measures of overcrowding—fails to show definite correlations with the weight and height of the children, and does not justify the suggestion that in these homes overcrowding is a dominant factor in influencing the nutrition and growth of the child.

*Diets.*

Part V deals with the determination of the adequacy or inadequacy of the diet of the different groups, urban and rural, to maintain the growth and nutrition of the children. After a preliminary consideration of the relationship of diet and nutrition, it is indicated that the problem to be solved is: how far growth and nutrition are determined by the diet on the one hand, and how far the amount of food consumed is determined by the nutritional requirements of the child on the other hand. A copious diet may help to build up a large child, but the size and activity of the child and its exposure to cold may, in their turn, determine the amount of food consumed. The fact is emphasized that the country child, age for age, is some 11 per cent. heavier than the slum child, and that it leads a more active outdoor life and is exposed to all weathers. It therefore requires a much more liberal diet, and hence, if a difference of even 12 per cent. were discovered between the diets of the two types of family, it would be difficult to decide whether the differences in the weights of the children were the result or the cause of the different consumption of food.

The necessity for accuracy in dietary studies and the enormous labour involved in securing this rendered it impossible to carry out such studies upon all the families investigated. Hence it was essential that those selected should be representative of the whole population under observation. That the families studied actually were so was ensured by the experience of the workers who undertook this part of the investigation, and is indicated by the correspondence of the growth of the children of the selected families with that of the children of the whole group. Each dietary study extended over a week, and the validity of conclusions from studies of this duration is examined and substantiated.

*Energy Value of Diets of Urban Families.*

No	Year.	No. of Labouring Class Families.	Calories, Man Equivalent (Lusk's Standard).
1	1920	13*	2,732†
2	1912	40	2,720 (over 5s: 2,850; under 5s. 2,430). Five families restudied.
3	1915-16	40	2,900 2,697
4	Feb., 1917	10	2,650 2,661
5	Nov., 1917	5	2,608 2,603
6	Dec., 1918	5	2,670 2,670
7	April 1921	Unemployed and Short Time. 11	2,500 (over 8s. 2,470; under 8s. 2,505).
8	June, 1922	12	2,390 (over 8s. 2,607; under 8s. 2,160).
9	May, 1923	Artisan Class. 17	3,070

\* This study was made in Edinburgh, the rest in Glasgow; two families series of 15. Efficient of man value was opted. It has been found wife and three children under the Atwater standard. and, for comparison, this reduction has been made. † Five shillings per man per week—that is, total income divided by man value of family.

Details of dietary studies in Glasgow and Dundee and in eighteen families of agricultural labourers are given, while the dietary studies upon seventeen families of miners in Stirlingshire, previously investigated in 1923, are utilized. The average energy intake of these diets may be given as follows:

Families of city slums (1917-24)	...	2,564 calories.
Families of coal-miners (1923)	...	2,917
Families of agricultural labourers (1924)	...	3,220 "

An attempt was made by statistical methods to find whether there is a correlation between the calorie value of the diet and the weights of the children. With the slum and agricultural labourers' families taken together and with the slum families taken separately there is a small positive and apparently significant correlation between the weight of children and the calorie value of the diet; no such relationship is manifest in the case of the Derbyshire miners' families.

No statistical method can answer the question whether the weight of the child depends upon the diet or the diet upon the size and habits of the child. But that diet is not the main factor in determining the smaller size of the slum child is shown by its unimpaired rate of growth.

It was suggested that the amount of fresh milk consumed might be a factor in determining the differences in weight; but this seems to be negated by the fact that in the miners' families even less milk was used than in the slum families. The conclusions of this section are as follows:

"1. The evidence seems to show that even upon the low intake of something less than 2,600 calories and a supply of only about 0.4 pint of milk per man per day, the city slum child, at least after 18 months of age, grows at the same rate as the country child with its 3,220 calories per man per day. Age for age the country child from 1 to 5 years is some 10 to 11 per cent. heavier than the slum child. It leads a more active life and is more exposed to wind and weather. How far the difference in weight is the result and how far the cause of the more liberal diet is not revealed.

"2. It would seem that the usually accepted 3,000 calories by Lusk's standard as the minimum requirement per man per day for the family diets of our population, more than 80 per cent. of whom are town dwellers, is excessive, and that from 2,500 to 2,700 calories is nearer the correct figure—that is, that the standard might be reduced by 10, or possibly 20, per cent.

"3. The comparatively high correlation of calories in the diet and income (p. 140) and the absence of any correlation between the weights of the children and income (p. 129) seem to indicate that the diet is not the all-important factor in determining growth which it is often supposed to be. On the other hand, some evidence is afforded that below a certain energy intake there is a small correlation between the size of the child and the calorie value of the diet. This may be an example of the law that the effects of changes in any factor may be manifest over a comparatively small range." (P. 115.)

The possible relationship of breast and artificial feeding with growth is next considered, and, as a result of a statistical analysis of the material derived from the child welfare centres in Glasgow, Edinburgh, and Dundee, the conclusion is reached that "in our sample a child who has not been breast-fed at all is, after the usual period of weaning, as good a child as that which has been breast-fed during the whole time."

These environmental factors having been dealt with, the possible influence of parental factors, excluding the influence of heredity, are next taken up.

*PARENTAL FACTORS.*

The intimate relationship of the child to the mother before and after birth is emphasized, and the possible influence of the health of the mother—of either her general health or her health during pregnancy—is considered.

As regards the influence on the child of her health during pregnancy, the conclusion is arrived at that the correlations of both weight and height with maternal health during pregnancy are practically all insignificant, and reveal no distinct relationship between the height and weight of the infant and the health of the mother before its birth, thus confirming Pearson's findings; nor was any relationship between the general health of the mother and the height and weight of the child revealed.

For the study of any influence which the industrial occupation of the mother during pregnancy might have, the Dundee results afforded material, since in that city many of the women are engaged in the jute industry. A statistical analysis of the results led to the conclusion that the correlations of height and weight of the child to the industrial occupation of the mother throughout the series are quite insignificant, and give no evidence that the industrial occupation of the mother is detrimental to the growth and nutrition of the child.

*The Efficiency of the Mother.*

The last maternal characteristic studied was "efficiency." The mothers were classed into those of good and those of

bad or indifferent efficiency, estimated by the cleanliness of the children and the house. Precautions were taken to secure uniform assessment of this quality, and the tables and charts giving the correlations between the height and weight of the child and the efficiency of the mother are held to warrant the conclusion that this is the factor so far investigated most definitely related to the growth and nutrition of the child.

So important did this conclusion appear to be that an attempt was made to determine upon what "efficiency" depends. Are there differences in the innate character of motherliness in woman, as there undoubtedly are in other species of animals, or is "efficiency" related to environmental conditions? If evidence of the latter can be found the possibility of improvement of the condition of the child may be indicated. Is the efficiency of the mother modified by her health? Is it related to the income or to overcrowding? When these correlations are worked out they reveal:

"(1) That there is some slight association of maternal efficiency and income, but evidently within the class studied income is not a dominant factor affecting the efficiency of the mother. (2) That a fairly high relationship exists between maternal efficiency and maternal health. (3) That maternal efficiency seems to be associated to a slightly greater degree with overcrowding, as determined by the air space per person, and with the size of the family than with poverty as determined by income per person. A mother with a large family thus finds it more difficult to care for her home and children than a mother with a smaller family."

The direct correlation of the height and weight of the child had already been shown to be more closely associated with maternal efficiency than with maternal health, income, or overcrowding. But in order further to evaluate the relative importance of these various factors, partial correlations upon the Dundee figures were worked out, with the following results:

"1. Maternal efficiency still shows significant association with weight up to the end of the second year, wholly apart from differences in air space or income.

"2. Air space is of little importance with regard to its influence on nutrition when income per person and maternal efficiency are kept constant.

"3. The correlations of weight and size of family with efficiency of the mother constant are quite insignificant.

"With efficiency of the mother constant, her health seems to have no significant relationship to the weight of the child."

Of the factors studied maternal efficiency is thus the only one which is manifestly correlated with the nutrition in the child, and this seems to hold good, in Dundee at least, till the end of the second year of life. Overcrowding, whether as measured by the size of the family or air space per person, or poverty, as indicated by income per person, does not seem to be a factor related in any significant degree to the nutrition of children. Some evidence is added to show that the nationality of the mother—Irish or Scottish—is not a factor of significance in her efficiency.

An investigation of the mental capacity of efficient and inefficient mothers begun by Dr. Watt was interrupted by his death.

#### Age of Mother.

A short statistical study on the relationship of the age of the mother and the position of the child in the family to the height and weight of the child leads to the conclusion that neither of these factors has any great influence on the nutrition of the child, but that, on the average, the order of birth has more close association with weight and height of the child than has the age of the mother.

#### Habits of Parents.

One of the factors which it was found impossible to study statistically was the influence of the habits of the parents as regards alcoholism. In Dundee a limited number of reliable observations were secured, and the correlations at least suggest the probability that the children of intemperate parents are, during the first four years of life, somewhat lighter than those of temperate parents.

#### COUNTRY DISTRICTS.

The two succeeding parts of the report (Parts VII and VIII) deal with the families of agricultural labourers and rural coal-miners. Each begins with a description of the populations studied and of their surroundings, and these are compared with the conditions in the city slums.

#### Comparison of Conditions in Families Studied.

	Income per Person per Week.	Air Space per Person.	Average No. of Persons Living in Home.	Maternal Care Good.	Maternal Health Good.
	Shillings.	Cub. ft.		Per cent.	Per cent.
City slums—					
Glasgow ...	9.32	404.5	5.3	68.3	75.4
Edinburgh ...	8.21	401.4	5.8	87.5	85.7
Dundee... ..	7.58	400.8	5.5	66.8	61.3
Rural miners ...	9.95	531.85	6.2	92.8	91.0
Agricultural labourers	8.9	750.0	5.5	90.6	95.5

A striking difference was the high percentage of efficient and of healthy mothers in rural districts and the lesser overcrowding, as indicated by the greater air space per person. In fact, so small was the proportion of "not healthy" and of "not efficient" mothers that ordinary correlation methods could not be applied. As in the urban studies, the factor most closely correlated with the height and weight of the child was maternal efficiency.

The conclusions as regards the rural coal-miners' community are:

"The results of the study of the relationship of these various environmental and parental factors in the miners' families correspond closely with those obtained in the slum families of the cities. Poverty and overcrowding do not reveal the expected association with the growth and nutrition of the child, while the health of the mother, unless in so far as it modifies her efficiency, is not obviously related. The efficiency of the mother shows the same correlation with growth and nutrition of the child as was found in the slum families.

This investigation seems to indicate that in Scotland the families of the rural coal-miners are reared under environmental conditions altogether superior to those under which the slum child of our great cities grows up. They spend more time in the open air, they are better fed, and, in the vast majority of cases, have the advantage of good maternal care."

As regards the families of agricultural labourers, the conclusions are:

"The general result of the study of the families of agricultural labourers is to confirm the evidence obtained from the investigation of slum families and to indicate that the factor most directly correlated with the growth and nutrition of the child is maternal care—the efficiency of the mother. The study further reveals a pleasing picture of family life, contrasting with the squalor of life in the slums of the great cities. It presents a condition of comfort, good health, vigour, and efficiency."

#### OXFORD OPHTHALMOLOGICAL CONGRESS.

UNDER the mastership of Mr. Philip H. Adams, recently elected in succession to the late Sir Anderson Critchett, Bt., the Oxford Ophthalmological Congress held its sixteenth annual meeting at Oxford on July 14th, 15th, 16th, and 17th. No meeting was held last year owing to the Convention of English-speaking Ophthalmological Societies, but with this exception the Congress has met annually since its inception in 1910. The membership, which in that year was 181, has steadily increased to 380 at the present time. As in past years, the Congress met in the Department of Human Anatomy, through the kindness of Professor Arthur Thomson, and members were again indebted to Keble College for hospitality. The proceedings commenced on July 15th with a short address of welcome by the Master.

#### Discussion of Sympathetic Ophthalmia.

A discussion on the history of the treatment of the condition during the past fifty years. With the dread of sympathetic ophthalmia occurring, even many years after the injury, many eyes had probably been excised which might have proved useful. The general trend of opinion now, however, was against the likelihood of sympathetic trouble appearing after a lapse of years,

and it was to those cases of cyclitis developing within a few months after the exciting cause that he directed attention. Such cases were not all of the nature of sympathetic ophthalmia, and Mr. Hepburn thought that some scientific method should be devised whereby a cyclitis of sympathetic origin could be distinguished from one due to other causes. He suggested that it was not necessary to excise all eyes which manifested keratitis punctata, even though of sympathetic origin, and that many eyes showing that condition after injury or operation should be operated on for the relief of such symptoms. In quoting cases in support of this statement, he emphasized the value of the differential blood count. The finding of a considerable increase in the percentage of the large mononuclear cells with a decrease in the polymorphonuclears was a valuable guide in deciding the line of treatment to be taken.

Mr. S. H. Browning presented the bacteriological side of the subject, dealing chiefly with the question of the differential blood count. Cases were quoted in which a change in the blood count had preceded any other signs of sympathetic ophthalmia, and so determined the line of treatment to be followed. Treatment by arsenical preparations of the "606" type was dealt with and mention made of the anaphylactic theory of the disease.

Dr. G. E. de Schweinitz (Philadelphia), who followed, made special reference to the recent work of Verhoeff, which was presented at the last meeting of the American Ophthalmological Society. Seven cases of sympathetic uveitis were treated by him by frequent subcutaneous or intramuscular injections of diphtheria antitoxin in large doses. In four out of the seven a remarkable improvement in vision was obtained, but the effectiveness of the treatment was most striking in causing a rapid subsidence of the inflammatory condition. Dr. de Schweinitz expressed himself in agreement with Mr. Browning's views.

Dr. Harrison Butler pointed out the value of the slit-lamp in detecting the earliest signs of the disease, and mentioned illustrative cases. Mr. Russ Wood described two cases in which the reaction to tuberculin tests was positive in each. Professor Emile de Grósz of Budapest stated that in the past fifty years 150 cases of sympathetic ophthalmia had been treated at the No. 1 Eye Hospital at Budapest, making 0.28 per cent. of the total patients seen; 10 per cent. of these had followed operations, most of which had been performed elsewhere. In his view repeated operations on injured eyes increased the risk of sympathetic trouble. He was convinced that the inflammation was metastatic in nature.

Lieut.-Colonel H. Herbert referred to the iris-inclusion operation for glaucoma and the supposed risk of sympathetic ophthalmia. Mr. J. Gray Clegg spoke on the occurrence of the trouble after evisceration. Lieut.-Colonel A. E. J. Lister commented on the rarity of the disease in hot climates. Mr. A. F. MacCallan, Mr. A. Greene, Dr. Arnold Verrey, Mr. T. C. Summers, Mr. R. J. Coulter, Mr. N. C. Ridley, Mr. A. Zorab, and the Master also took part in the debate, and Mr. Hepburn and Mr. Browning replied.

#### Demonstrations.

The afternoon was given up to demonstrations in the Scientific Museum. Lieut.-Colonel H. Herbert demonstrated an iris-inclusion operation for glaucoma. Dr. G. Young showed statistics relating to ophthalmometry. Lieut.-Colonel A. E. J. Lister presented tables showing the weights of 180 cataractous lenses, with clinical details of the patients' weights, ages, and blood pressures. Dr. Thomson Henderson showed microscopical specimens of the ciliary region in mammalia, and exhibited his apparatus to illustrate the mechanism of accommodation. Mr. Tomlinson demonstrated his light-sense test for the light-adapted eye. Lieut.-Colonel W. V. Coppinger showed (a) a prosthesis of crude Indian manufacture which had cut through the lid of the wearer, and (b) prints of the plans of the new Calcutta Eye Hospital. Dr. Burdon-Cooper demonstrated Purkinje's phenomenon, and brought forward evidence that the explanation was connected with accommodation rather than with dark-adaptation.

In an adjoining room the most recent advances in ophthalmic apparatus and instruments were exhibited by a number of manufacturing firms.

#### Reports of Cases.

During the morning of July 16th papers were read by Dr. G. Young on the recovery of good vision by an amblyopic eye, and on the cause of the invisibility of the retinal vessels, with an explanation of Purkinje's phenomenon. The former included an account of a man, aged 60, with an amblyopic eye associated with internal strabismus, who had lost the vision of the good eye from embolism; the vision of the amblyopic eye improved in a year from less than 6/60 to 6/6. Dr. Marion Gilchrist presented some interesting medico-legal cases which would have given rise to much discussion had time permitted.

#### Dojne Memorial Lecture.

The Dojne Memorial Lecture was delivered by Dr. Thomson Henderson of Nottingham, who had chosen as his subject "The anatomy and physiology of accommodation in mammalia." Admirably presented in every way, the lecture was followed with the greatest interest. Some original and interesting theories on the physiology of accommodation were put forward, while the anatomy of the ciliary region was shown in a valuable series of slides and drawings from various mammalia, including man. Dr. Henderson was warmly congratulated, and received at the conclusion of his lecture the Dojne Memorial Medal for the year.

#### Intracapsular Extraction of Cataract.

In the afternoon Lieut.-Colonel H. Smith, C.I.E., presented a review of the various methods of performing intracapsular extraction of cataract, and described in detail his own latest method of expression, the outcome of his work during the past winter in India. The paper was discussed by Lieut.-Colonels Lister and Coppinger, Messrs. Zorab, Harrison Butler, Walker, Coulter, and Jaques.

#### Psychology and the Eye.

On the morning of July 17th Dr. T. S. Good, O.B.E., medical superintendent of the Oxford City and County Mental Hospital, read a paper entitled "Psychology and the eye," in which he gave details of cases where the relief of trouble caused by refraction error had had a marked effect in clearing up mental disturbances, and of other cases in which no result was obtained, although eye symptoms were prominent in these, but without abnormality in the eyes themselves. Many interesting points with regard to mental disturbance and sight were raised.

#### Papers.

Dr. Harrison Butler followed with an instructive paper on the signs of inflammation in the eye when examined by the slit-lamp. The proceedings concluded with a paper by Dr. Margaret Dobson on the macular region as seen by red-free light. Some very interesting drawings of the appearance presented by the macula in both normal and diseased conditions were shown, and revealed changes which could not be easily detected by other means.

#### Business Meeting and Dinner.

The annual general meeting was held after the morning session on July 15th, when the council reported that twenty-seven new members had been elected in the past two years, making a total membership of 380; that the attendance at the 1924 meeting was 101; that members and associate members of the Convention of English-speaking Societies last year had been entertained at Oxford by the Congress; and that the financial position was satisfactory. The council regretted to report the loss through death of the following: Sir Anderson Critchett, Bt., K.C.V.O. (Master, 1924-25), Edmund Landolt (Paris), Henri Coppez (Brussels), S. Lewis Ziegler (Philadelphia), member of council from 1911, J. B. Story (Dublin), S. Johnson Taylor (Norwich), member of council 1917-23, Percy Bardsley (Salisbury), C. F. Harford (London), and J. L. Meynell (Manchester).

The annual dinner was held on the evening of July 15th in Keble College; among the guests were Professor Sir Archibald Garrod, K.C.M.G., and Professor J. A. Gunn. The congress was well attended, overseas members being represented by Dr. G. E. de Schweinitz, Professor Emile de Grósz (Budapest), and Dr. Arnold Verrey (Lausanne), among others.

## POST-GRADUATE HOSTEL, LONDON.

The Post-Graduate Hostel at the Imperial Hotel, Russell Square, London, was formally opened on Monday, July 26th.

Among those present were Dr. Andrew Balfour, Lady Barrett, Mr. A. P. Bertwistle, Dr. H. B. Braekenbury, the Rev. S. D. Bhabha, M.D., Dr. P. J. Chissell (Ceylon), Dr. D. C. Cooper (Adelaide), Dr. Alfred Cox, Dr. G. G. Crowley (Melbourne), Mr. W. McAdam Eccles, Professor Finslerer (Vienna), Dr. Herbert French, Dr. W. Griffith, Dr. G. William Hill, Professor Louiso McIlroy, Dr. A. D. Macpherson, Dr. P. Manson-Bahr, Dr. A. A. Martin, Dr. Christine Murrell, Dr. Gilbert E. Orme, Mr. Herbert Paterson, Dr. Porter (U.S.A.), Sir James Purves-Stewart, Dame Mary Scharlieb, Dr. C. F. T. Scott, Dr. W. A. Shea, Dr. Russell Steele, Dr. G. Clark Trotter, Dr. L. R. Ycalland, Dr. Zeitlin.

A general meeting was held at 7 p.m., and Mr. W. McADAM ECCLES was voted to the chair. The following, who also form the executive, were appointed as officers:

*President:* Sir D'Arcy Power, K.B.E.

*Honorary Treasurer:* Sir Thomas Horder, Bt.

*Vice-Presidents:* Dr. Alfred Cox, representing the British Medical Association; Sir James Berry, representing the Royal Society of Medicine; Dr. Andrew Balfour; Lady Barrett; and one to be nominated by the Fellowship of Medicine.

*Director:* Mr. A. P. Bertwistle, F.R.C.S.E.

A long list was read of well known men and women attached to the universities and great hospitals of the country who had agreed to become vice-presidents, and it was announced that a large number of letters of approval were continuing to be received from all parts of the country.

It was resolved that the hostel should be open to all fully qualified medical practitioners—that is to say, qualified to practise in the countries to which they belong.

The question of the participation of women in the hostel was discussed, and it was decided that, in addition to the residential facilities, women practitioners should have access to the reading and writing room and to the regular discussions in the smoking room, as well as to all general functions.

After the business meeting some twenty-five dined together under the chairmanship of Mr. McADAM ECCLES, and Mr. A. P. BERTWISTLE proposed the toast of "The Hostel" in an optimistic speech, which was very well received.

At 9.15 p.m. the meeting was resumed, Dr. ALFRED COX being in the chair, and Mr. McADAM ECCLES read a paper on the hostel and its objects prepared by Sir D'Arcy Power, who, owing to illness, was unable to be present. A discussion on the objects of the hostel followed, and many useful suggestions and criticisms were made. Great emphasis was laid upon two points—namely, that the hostel was not intended to compete with any other post-graduate institutions in London, but to be complementary to them; and secondly, that it would stand or fall by its success in bringing the members together socially, and particularly in enabling them to make the acquaintance of eminent physicians and surgeons in London and the provinces, whom at present it was only possible for most post-graduate visitors to know by repute and sometimes by sight. This second object it is proposed to carry out by social meetings, including ladies' nights, and by informal discussions, which will be held at 9 o'clock on one or two nights a week.

It was announced that discussions had been arranged as follows:

*Tuesday, July 27th.*—Operations on the stomach, to be opened by Professor Finslerer of Vienna.

*Friday, July 30th.*—The difference between hyperplasia and inflammation, to be opened by Sir George Lenthal Cheate.

*Thursday, August 5th.*—Tropical diseases in London, to be opened by Dr. P. Manson-Bahr.

Visitors, both home and overseas, are invited to attend these discussions.

Further information as regards the aims of the hostel may be obtained from Mr. A. P. Bertwistle, F.R.C.S.Ed., 4, Spital Square, Bishopsgate, London, E.

## England and Wales.

## EPSOM COLLEGE.

VISCOUNT GREY OF FALLODON attended the Founder's Day celebrations at Epsom College on July 24th and opened the new chemical block, which has been erected at a cost of £10,000. The building is of brick with stone facings, and will harmonize well with the remainder of the school buildings. The ground floor includes a large lecture theatre, two large classrooms fitted with demonstration desks, a masters' room, preparation room, dark-room, and store. On the first floor there is a main laboratory, which will accommodate thirty boys, a main balance room, an advanced laboratory for sixteen boys, a special balance room, and a combustion room. The front window of the main laboratory is 40 ft. wide, and each room has at least two means of entrance and exit. The building is well ventilated and heated, and when fully equipped will be one of the finest school laboratories in existence. Owing to the present coal shortage the final stages of its construction have been unexpectedly prolonged, but it is already evident that the College, as a medical school, is entering into possession of unsurpassed facilities for the teaching of chemistry. The cost of erection was met principally out of bequests and donations during the last few years, and its provision is part of an extensive scheme to improve the general efficiency of the College. The lower school is at present being enlarged at a cost of over £3,000 to take an additional twenty boarders. Three new classrooms are being constructed, and it is hoped that the work will be completed by the beginning of September.

The headmaster, Mr. A. C. Powell, at the prize distribution in the afternoon, referred to these alterations in the lower school, and explained that the present preparatory school in it was now to be superseded, the minimum age of all new entrants, except foundation scholars, being raised from 8 to 12. Thus, within four years the occupants will become members of the College itself instead of belonging to an almost separate preparatory school. When the proposal to build a new sanatorium and to convert the existing one into a school house has materialized the College will become a public school of 400 boys instead of being, as at present, a school of 260 with a preparatory school of 80 small boys attached to it. The consequent advance in educational efficiency will be associated with administrative and economic gains. The headmaster mentioned also the reorganization of the heating, hot-water, laundry, and steam-cooking systems of the College which is to be effected at a cost of £3,000 during the summer holidays. The east end of the chapel has been panelled in oak; an anonymous donation had been received to redecorate the assembly hall and to provide oak panelling round its walls; and the recent launching of an appeal for money to build a new cricket pavilion had already elicited a most gratifying response. Included in the list of distinctions won by Epsom boys during the year was an open history scholarship at Clare College, Cambridge, an open classical scholarship at Pembroke College, Oxford, and an open Empire scholarship at the Loughborough Engineering College. Mr. Powell concluded with the statement that the popularity of the College might be estimated from the fact that for every boy accepted for entrance next term seven other boys had to be refused or their entry delayed for want of accommodation.

Lord Grey, after distributing the prizes, congratulated the College on its high position in the educational world, and emphasized the physical, moral, and mental value of a public school education. The benefit gained from an interest in outdoor sports persisted through life, and Lord Grey referred particularly to walking and cycling, suggesting that for week-end recreation professional men should adopt personal standards and endeavour to maintain a figure of twenty miles' walking or fifty miles' cycling up to the age of 50 at least. With such physical exercise should be associated some form of mental recreation, the wide scope of natural history rendering it very suitable in this connexion. Such a hobby would confer the greater happiness

which came from activity rather than from the more passive pastimes, and would afford a welcome relief from the daily round of duties.

Dr. Raymond Crawford, who moved a vote of thanks to Lord Groy, spoke of the latter's early days at school and of his courage and high sense of honour in the difficult days preceding the outbreak of the war. During the day a service was held in the chapel, and a cricket match was played between the College and an Old Epsomian team; a choral performance of *Merric England* was given in the evening by the College musical society.

#### UNIVERSITY OF WALES.

##### *Obstetric Research Scholarship founded by Sir Ewen Maclean.*

At a meeting of the Court of Governors of the University of Wales at Swansea, on July 20th, the Pro-Chancellor, Lord Kenyon, said that he had received from Sir Ewen Maclean an offer of £3,000 to endow a post-graduate scholarship in the Welsh National School of Medicine. The offer was made in connexion with the first distribution of the John Maclean medal and prize, which are intended to encourage diligence and proficiency in the undergraduate study of obstetrics and gynaecology. The post-graduate scholarship would be, to quote the words used by Sir Ewen Maclean in his letter making the offer, "for research into the factors which constitute and conditions which vary resistance to disease, especially as regards midwifery. Thanks to the cordial co-operation of Sir William Diamond and the board of management of the Cardiff Royal Infirmary, who supply the premises and bear a considerable proportion of administrative costs of the research laboratory in the maternity department, the scholarship holder would be well furnished with the necessary equipment and ample clinical material." Lord Kenyon expressed the thanks of the Governors and of the University for this splendid gift. Research and post-graduate scholarships were, he said, among the developments most desired by the University. Sir Harry Reichel, Principal of the University College of North Wales, said that the University of Wales was greatly in need of such endowments as this. The absence of post-graduate and research scholarships was detrimental, and tended to cause the ablest students to go to other universities. Sir Ewen Maclean, it will be remembered, is chairman of the British Medical Association's committee on puerperal morbidity, which at the end of last year made an interim report published in the SUPPLEMENT of January 9th, 1926. By his gift to the University of Wales he has shown his interest in the subject in a very practical manner.

#### BRISTOL ROYAL INFIRMARY.

A new pathological laboratory has been installed at the Bristol Royal Infirmary as a gift from the firm and employees of Messrs. Christopher Thomas Bros., Ltd. During the war this firm and its staff inaugurated a fund to give assistance where it might be required, and at the conclusion of peace a balance of about £450 remained. With this money and some additional assistance the new laboratory has been equipped, and was formally opened on July 12th, when a tablet was unveiled, bearing the inscription: "This laboratory stands as a memorial to those employees of Christopher Thomas Bros., Ltd., who made the supreme sacrifice in the Great War, 1914-1918." Colonel P. G. Robinson, president of the Royal Infirmary, gave an account of the extension during the last few years of several other departments, and added that the urgent need for the enlargement of the pathological laboratory could not have been met without the assistance of the firm. Professor Walker Hall, honorary pathologist to the infirmary, described the evolution of the laboratory since 1901, when a small room was opened by Sir Frederick Treves. The outbreak of war had held up a scheme of improvement which was then on the point of being put into operation, and it was a matter of particular interest that the balance of a war fund had now completed a work which had been stopped by the war. The new laboratory is situated in the old building, the necessary space having been obtained by building over part of the existing museum. It includes

an examination room, a bacteriological laboratory with a small private laboratory, and a biochemical laboratory, together with the usual accommodation for media making, histological work, and sterilization. An electrical incubator, a lamp for dark-ground illumination, and a spectroscope are also being provided.

#### CENTRAL MIDWIVES BOARD.

The Central Midwives Board for England and Wales held a penal session on July 15th, which was followed by an ordinary meeting. A resolution received from the Midwives Institute to the effect, "That pupil midwives should not be obliged to take their first five cases in hospital, but that the time should be left to the discretion of the teacher," was considered. It was agreed that the rule should stand, but that the Board should consider on its merits each case brought to its notice. The Board replied to a letter from the Lambeth guardians, by stating that it did not question the efficiency of the lecturers at the Lambeth Hospital, but that the policy of the Board was towards amalgamation of lecture classes wherever possible. Inasmuch, however, as the conditions at St. Giles's Hospital, Camberwell, have recently changed and that many more pupils are now being trained there than when the question originally arose, the Board is willing for a separate class of lectures to be held at St. Giles's Hospital. The Board, however, expressed the desire that lectures, both at St. Giles's Hospital and Lambeth Hospital, should be open to any outside pupils who wished to attend. The Board acceded to the request of the M.O.H. for Rochdale that in the special circumstances, and without prejudice to the principle laid down by it, it is willing to suspend the operation of its decision as to amalgamation of lectures at Rochdale until March 31st, 1928. In reply to a letter from the Kingston Nursing Association the Board wrote that the suggestion of the association was contrary to the principles of the Board that, in matters of septic infection, time, as such, was of no importance; that mere extension of time was no obstacle to infection; and that, if disinfection was efficient, time was no additional safeguard. The Board was therefore unable to fall in with the suggestion that there should be an extension of time of quarantine in the case of midwives who have been in contact with cases of puerperal septicæmia. Drs. Morris Myer Datnow and Sidney Blashill Herd were approved as lecturers. The secretary submitted a statement of the observations made on the resolutions passed at the recent conference between members of the Board and representatives of local supervising authorities; the observations (as amended) were approved and ordered to be conveyed to the local supervising authorities in a letter approved by the chairman. It was agreed to approve, and submit to the Minister of Health for approval, the alterations in the rules which would become necessary as the result of the passing into law of the Midwives and Maternity Homes Bill, 1925, and for other reasons. The next meeting will be held on October 7th.

#### A VISIT TO HARROW SCHOOL.

The Medical Officers of Schools' Association recently paid a visit to Harrow School. During the afternoon the visitors were shown the carpentry and engineering workshops (appropriately fitted with a first-aid cabinet), and an old schoolroom which, although spacious and equipped with excellent chairs and separate desk-tables, the top of which could be made to slope, could with advantage have been better lighted; "4 o'clock Bill" is called outside in winter, wet or fine. A visit was paid to a boarding-house, a large pleasant old-fashioned house where fifty-two boys were boarded and lodged. Some of the boys had single rooms, others slept two or three in a room; in none of the school houses are there dormitories. To this there is a disposition to attribute the rarity of infection, but probably another factor contributes largely—the watchful eyes of the house matrons. In the rooms are the famous Harrow wood-and-canvas beds with their ropes instead of springs and their extra footpiece, all capable of being pushed up into a box cupboard. Before early morning



"prep.," which starts at 7.30 and lasts half an hour, the boys have cocoa and biscuits. The boys have all their meals in their own houses. The sanitary arrangements are beyond reproach. The boys have half-holidays on Tuesdays, Wednesdays, and Saturdays. Soon they will have Sunday school, an arrangement beneficial for any public boarding-school. Attendance at camp and athletics is compulsory. Very little on medical grounds can be said in favour of the large Harrow football, which gets far too heavy, especially in wet weather and is apt to strain the ligaments of the knee; however, boys may run instead of playing football. The cricket and football fields are models, and the open spaces thus provided are incidentally a benefit to the townspeople. The arrangements at "ducker" (the swimming pool) are well supervised; very wisely no boy is allowed to overfatigue himself by bathing more than once a day. The small boys are not overdone by too much keenness in teaching life-saving. While running a mile as fast as possible is too much for boys about the age of 14 or even older, very little fault can be found with running "go-as-you-please." The tuckshop conducted by the school authorities presents certain problems in hygiene—not only that of the maximum quantity to be supplied to each boy, but also of the quality. Obviously, the food should be free from chemical and bacteriological contamination; the chemical preservatives shortly to be legally prohibited should be absent; the effect of these preservatives permitted in limited amounts (notably sulphur dioxide and sulphites) and possibly of certain colouring matters can be more or less easily watched on so closely supervised a population.

#### KIDDERMINSTER HOSPITAL EXTENSION.

The extension of the Kidderminster and District General Hospital to increase the accommodation for children and out-patients has been completed at a total cost of £25,000, and was opened by the Duke of York on July 21st. We have referred previously on several occasions to the efforts of Dr. J. L. Stretton, president of the institution, to raise the necessary money, and on August 22nd, 1925 (p. 359), we gave a short account of the new building. It may be mentioned here that the out-patient department on the ground floor contains a dispensary, dental, ophthalmic, and national health departments, consulting rooms, and a large waiting hall. Each of the two children's wards on the first floor contains forty beds, and the total hospital accommodation is now over 100 beds. Dr. Stretton, welcoming the Duke of York, announced that one of the children's wards had been named the "Princess Elizabeth Ward," and the other the "Stanley Baldwin Ward," in appreciation of the fact that the Prime Minister had started the extension fund with a donation of £5,000 to provide a new children's ward. The total amount of money required had been obtained, and in addition more than £5,000 had been raised for endowment and upkeep. This total sum was equivalent to more than £1 a head of the population.

#### MENTAL DISEASE RESEARCH AT BIRMINGHAM.

The Joint Board of Research for Mental Disease of the University and city of Birmingham, the death of whose honorary director, Sir Frederick Mott, we recently had the sorrow to announce, has now issued the annual report of its laboratory for the year ended March, 1926. During the year the work set forth in previous reports has been continued. Some of this has since been published. A new method for estimating iodine in thyroid substance has been described in the *Biochemical Journal*, and a paper on the iodine content of thyroid gland in the *Journal of Mental Science*. The latter dealt with the correlation of the results of iodine determinations with the microscopical characters of the gland and the physical aspects and mental classification of the patient. Interesting results were demonstrated: septic infection and tuberculosis were shown to be accompanied by great variation in the iodine content of different specimens, indicative of disturbance of thyroid activity. Further detailed research is held to have demonstrated the great importance of the conscious and unconscious contraction and relaxation of muscles in relation to the basal metabolic rate. A normal person sitting in

a comfortable armchair, with his muscles relaxed, and making no effort to concentrate his attention, may show a metabolic rate even below that usually regarded as evidence of hypothyroidism. The question is raised whether the numerous publications of results of the bag methods have sufficiently taken into account these factors. The Research Board considers that before any reliable results can be obtained the question of the relaxation of the muscles must be taken into full consideration, and that it is also important to know whether the patient has had any exercise prior to the experiment, for exercise creates an oxygen debt which takes quite a long time to disappear. These results will shortly be published. An investigation into an outbreak of typhoid fever necessitated the examination of a large number of specimens of faeces and blood. As an outcome of this work, research was commenced into the serological agglutination of mental hospital patients who were being treated with typhoid vaccine in the course of some non-specific protein therapy. Certain peculiar reactions were obtained. The results showed that a large number of patients must have had infection in some time past with organisms of the typhoid-paratyphoid class. Investigations into the permeability of the choroid plexus and brain membranes to certain substances is being carried out by Dr. H. A. Strecker. They suggest the possibility of assistance in the prognosis of cases of general paralysis under treatment based upon the permeability ratio established. They may also assist to an understanding of the secretion of the cerebro-spinal fluid. Other work includes the determination of fat, lipid, and cholesterol ratios of the testes and adrenal gland.

#### RETIREMENT OF DR. F. W. ALEXANDER.

Dr. F. W. Alexander is retiring from the post of medical officer of health for the borough of Poplar on August 15th, after more than forty years' public work in East London. He was appointed resident assistant medical officer to the Mile End guardians infirmary, workhouse, and schools in 1884, district medical officer and public vaccinator for Mile End Old Town in 1887, and went to Poplar in 1893 as medical officer of health in charge of the three parishes of Poplar, Bromley, and Bow. During his period of office there has been an extensive clearance of insanitary areas, and he has been on more than one occasion involved in public controversies in this connexion. The establishment of a cleansing station, the tuberculosis scheme, centres for treatment by light, and other health measures have been his special concern, and he was closely associated with the campaign to make ophthalmia neonatorum a notifiable disease in the county of London, prior to this step being taken throughout the country. One of his recent activities was in connexion with observation wards, which are now in process of construction.

## Scotland.

#### RESIGNATION OF PROFESSOR MATTHEW HAY.

The University Court of Aberdeen University on July 13th accepted with regret the resignation of Professor Matthew Hay from the chair of forensic medicine; and minutely its appreciation of his valued services to the University, extending over the past forty-three years. Principal Sir George Adam Smith reported that a committee appointed to confer with Professor Hay had requested him to postpone his resignation, but he had asked to be permitted to retire from the chair at the end of the current academic year. The members of the court believed that no man of this generation had rendered the University such constant, distinguished, and fruitful service, with such abiding results in the scientific and material expansion of the University in its teaching, finances, buildings, and general administration. Professor Matthew Hay had held the chair of forensic medicine for forty-three years, and during thirty-seven of these he had served as one of the assessors representing the Senatus on the University Court. To the immediate duties of the

chair which he had greatly developed he added instruction in public health. During twenty-four years he had served as Convenor of the Finance Committee of the University, and he had taken a leading part in carrying out the University expansion scheme. He had also represented the court on the Carnegie Trust from 1901 to 1920. His fellow members of the court felt very keenly the prospect of parting with a colleague so admired and beloved. Dr. J. Scott Riddell, LL.D., and Professor Ashley W. Mackintosh, as old pupils of Dr. Matthew Hay and fellow members of the University Court, also made appreciative references to his teaching and to his other work on behalf of the University. A copy of the minute of appreciation was directed to be sent to Professor Hay.

#### EDINBURGH GRADUANDS IN MEDICINE.

The Edinburgh and Leith Division of the British Medical Association held a reception on July 22nd for those who had passed the final examination and were to graduate on the following day. Over one hundred graduands were received by the chairman and office-bearers of the Division, and some forty members of the Division and friends were present. The reception was held in the Hall of the University Union. After tea a programme of music was rendered by Miss Armour, Dr. Aitken, Dr. Maxwell, and Dr. E. H. Cameron. During the course of the afternoon a short address was delivered by Sir David Wallace, K.B.E., C.M.G., consulting surgeon to the Royal Infirmary, upon the duties and responsibilities of young practitioners. Speaking of the Rectorial address which Carlyle had delivered to the students of Edinburgh University in 1866, he said that Carlyle's great message to the students of his day had been "Be diligent." In more recent times, Sir William Osler had said that the key to success in the medical profession was work. This attitude of mind was just as necessary at the present day. Carlyle had also inculcated the necessity for a feeling of reverence. The speaker said that at the present day he thought there was a great lack of reverence, in the sense that people overlooked what had been done in the past, and were apt to forget that many modern discoveries had really been known in previous times, as was evident to those who cultivated the habit of reading. He believed it was a good rule for young people to read principally old books and for old people to read new books. There was a great tendency for new ideas to be overdone, especially as regarded new ideas in medicine. To methods of examination and treatment, it should be remembered that there were many ways of doing a thing, and sometimes the way which at the time happened to be attracting public attention was not the best way. It was very difficult, he said, for those of the present generation to realize that modern surgery was very much a growth of the last forty-five years; it might even be said that the greater part of modern surgery belonged to the last twenty-five years. He himself in the eighties of last century had seen the first gall stone that had been intentionally removed from the gall bladder, and this fact alone was an index of the change that had come over abdominal surgery in the intervening years. A modern tendency towards advertising was to be deprecated; practitioners must depend for the increase of their reputation upon the knowledge which accrued to work well done. A copy of the *Handbook for Recently Qualified Medical Practitioners*, of which a second edition was issued in April, 1926, by the British Medical Association, was handed to each graduand, and the chairman made a few remarks upon the value which graduands could derive from its perusal. He also recommended all the graduands without delay to join the British Medical Association, and also for their own protection to become members of some medical defence society. The proceedings terminated with a vote of thanks, proposed by Mr. W. R. Russell, to the chairman and members of the local Division of the British Medical Association.

#### EDINBURGH GRADUATION CEREMONY.

The medical graduation ceremony was held in the McEwan Hall, Edinburgh, on July 23rd. Principal Sir Alfred Ewing capped 16 Doctors of Medicine and 145 Bachelors of Medicine and Surgery. Professor Asbworth, D.Sc.,

F.R.S., acting as promoter, gave an address, in which he said that biology was the very heart and arterial system of medicine, and in recent years the zoologist had come into closer sympathy because of the combined attack which was being made upon diseases that arise from infection with animal organisms or with organisms carried by insects. Investigations in pure zoology had proved to be of the greatest importance in medicine. An illustration of this statement was furnished by the fact that knowledge of phagocytosis was based upon observations made by Metchnikoff, then professor of zoology in Odessa, upon the action of the amoeboid cells in several invertebrates, which, owing to their small size and transparency, could be studied entire and alive under the microscope. Work on zoology in Edinburgh was now done under favourable conditions, because some three years ago a generous gift of £20,000 had been made towards the cost of a new department. This generous patron of science had desired at first that his name should be withheld, and it was not until three days ago that his identity was, with his permission, revealed, and the University had been able to express publicly its gratitude to Dr. Laurence Pellar of Dunbarney by conferring upon him the degree of LL.D. Discussing the bearings of zoology on medicine, Professor Asbworth said that some thirty-five years ago a striking observation had been made upon the egg of a sea-urchin which had undergone its first cleavage into two cells. It had been found that if by shaking the two cells were caused to fall apart each was able to produce an entire individual. This observation had inspired many researches upon the problem of development, and in the last ten years the culture of tissue outside the body had thrown new light on the conditions requisite for the multiplication and differentiation of the cells which built up the body. But this line of investigation, which was yet only at its beginning, was of great promise. No other basal problem was of such importance to medicine as that of growth, and the factors which led to imperfect development, the range of power of regeneration and recovery were all being minutely analysed. The most important element in the treatment of disease was perhaps the fostering of conditions which favoured the natural powers of recovery. It was an integral part of the scientific foundation of preventive medicine that zoology was contributing most directly to human welfare and playing a part in the advance of civilization. In this great endeavour one of the primary factors was the sound education of the student and graduate in his appreciation of the difficulties and needs of mankind.

#### EARLY MENTAL TREATMENT.

The chairman and managers of the Royal Mental Hospital at Morningside, Edinburgh, on July 22nd inaugurated a nursing home for mental cases, which has recently been acquired and fitted up at the mansion house of Vogrie, some ten miles south of Edinburgh. It has a well wooded park and the surrounding policies cover some 300 acres of park land, pleasantly diversified by heavy timber and situated in the beautiful valley of the Tyne. Provision has been made for some thirty to forty inmates, and in the basement extensive kitchen and storeroom premises have been fitted up. Mr. T. M. Gardiner, chairman of the board of managers of the Royal Mental Hospital at Morningside, presided at a luncheon at which were present Professor G. M. Robertson, physician superintendent and President of the Royal College of Physicians, Professor Lorrain Smith, Dean of the Faculty of Medicine of Edinburgh University, Dr. Hamilton C. Marr, and numerous other members of the Board of Control for Scotland and of the medical profession in Edinburgh and surrounding district. The chairman traced the history of Morningside Hospital. In 1773 Robert Ferguson, a poetic genius whose work had been much admired by Robert Burns, was struck down by an attack of furious insanity. His medical adviser at once suggested that he must be placed under restraint, and in those days the only available refuge for such cases was the City Pauper Bedlam; to this miserable institution Ferguson was conveyed. The poet gradually lapsed into a condition of profound melancholy and died some ten months later. His illness and

Duncan, with the determination that some better provision should be made for those unfortunates who lost their reason. Duncan was at that time a young man of 30, and when he visited his patient his mind was profoundly impressed at finding him lying upon straw on the stone floor of a cell whose only window was devoid of glass. In 1790 Duncan was elected President of the Royal College of Physicians, and immediately brought before the council of his college a plan for the better treatment of the insane. Some three years later (in 1793) a campaign was launched to raise the necessary funds, but owing to the Napoleonic war and the disturbed state of the country real headway was not made till 1806, when, with the assistance of the Lord Provost of Edinburgh, the Lord Advocate, and various members of Parliament and other influential persons, a grant of £2,000 was obtained from the Crown out of estates which had been sequestered after the rebellion of 1745. With this sum a site was purchased in Morningside, and on June 8th, 1809, the foundation stone of the Royal Asylum at Morningside was laid, the building being completed and the first patient admitted on July 19th, 1813. Since that time great advances in the treatment of mental patients had been made, and the institution had been kept in the forefront of improvement. Some years ago the managers began to realize that a serious gap existed: for persons showing signs of mental breakdown there was no intermediate stage between going into an asylum or being cared for at home, the latter alternative being in most cases out of the question. It was the fact that a stigma had attached to patients in an asylum, with the result that in many cases proper treatment was not sought and obtained until the disease had got a firm hold. Better knowledge was now evidenced by the fact that of new entrants at the Royal Mental Hospital over 60 per cent. were now voluntary patients—that was to say, they had not been certified but were there of their own free will. This had induced the managers in 1917 to purchase a house and equip it as a nursing home in which early or incipient cases might be treated, thus removing the necessity for such patients to enter an asylum. This experiment had met with such immediate success that they had opened other nursing homes, all of which had prospered. The one weak spot was that, of necessity, these homes were only available for persons fairly well off. For poor patients the problem was not easy to solve, but the managers had before them plans which they believed would do for poor patients what the existing nursing homes had done for the more well-to-do.

Dr. Hamilton Marr, one of the Commissioners on the Board of Control for Scotland, spoke of an advance in the treatment of the insane with which Professor Robertson had been associated. That was the substitution of women nurses for men to look after people who were sick in mind. A deputation of ex-service men had, he said, visited the Board of Control to remonstrate about the introduction of nurses into asylums, as displacing male employees. Each member of the deputation was asked whether as a soldier in hospital he had preferred to be tended by an orderly or by a nurse, and the answer in each case had been, "I preferred a nurse." The speaker's reply to the deputation had been: If they preferred a nurse when they were sick in body, why should they seek to deny the same privilege to those who were sick in mind? The deputation had had nothing further to say. The Board of Control had arranged with the Board of Health to have observation wards, in which persons suffering from mental disease could be treated exactly on the same lines as patients suffering from physical disorders, under the same excellent conditions that obtained in general hospitals. The Board of Control had very great sympathy with the establishment of nursing homes such as that now inaugurated at Vogrie. Professor Lorrain Smith, in moving a vote of thanks to the chairman and board of managers, referred in appreciative terms to Professor Andrew Duncan, whose great work for the Edinburgh medical school had, he said, not been sufficiently appreciated. At the present day, under the superintendence of Professor Robertson, there was a greater development in the care of the type of patient who was to be accommodated at Vogrie than anywhere else in the British Empire.

#### HEALTH OF EDINBURGH.

The annual report by Dr. William Robertson, M.O.H. Edinburgh, for the year 1925 contains many interesting facts about the health of the city. Statistics show that the birth rate in the city for 1925 was the lowest for the last five years, during which there had been a progressive decline. The population of Edinburgh in 1925 is given as 421,968, an increase of 2,677 over 1924. The density of population is 13 persons per acre. The number of inhabited houses was 102,431, being 806 more than in 1924. The cancer death rate was 1.6 and the phthisis death rate 1.0, in both instances the same as in 1924. The epidemic diseases death rate was 1.1, an increase of 0.1 over that for 1924.

**Scarlet Fever.**—The chief epidemic feature of the year had been the occurrence of a considerable outbreak of scarlet fever, of which 2,351 cases had been notified (590 more than in the previous year). The type of disease had, however, been much milder than previously, and the mortality rate had been low. The same factor had, however, rendered the task of detection difficult, and thus the spread of the disease in schools had been more difficult to check. Attention is drawn to the increasing production of cheap forms of sweets, and the suggestion is made that while these may be harmless in themselves their circulation from child to child may be a source of the spread of infection. So far as the Public Health Department knew, there had not been any case of milk-borne infection. Of the cases of scarlet fever, 63 per cent. had occurred in dwellings of two or three rooms, and the suggestion is made that lack of adequate ventilation had much to do with the infection of susceptible members of the families housed under these conditions. It had become necessary during September, when notifications were reaching the department in great numbers, to issue a circular letter to medical practitioners, inviting them to encourage the treatment of cases at home. Suggestions had been made regarding the home treatment of cases by painting the throat with carbolyzed glycerin and anointing the surface of the body with eucalyptus oil in cases where domiciliary treatment was carried out, and it is believed that these measures were of value. The cases removed to hospital numbered 1,944, or 82 per cent. of the total for the year 1925. A sum of nearly £3,000 had been saved through the domiciliary treatment of a proportion of the cases. There was never any evidence that home-treated cases led to a spread of infection to neighbouring houses, and an effort was always made to isolate susceptible persons by transferring the younger members of the households to the houses of relatives. Second cases had occurred among only 8 out of the 407 patients treated at home (1.9 per cent.). On the other hand, the return rate for cases treated in hospital was 3.2 per cent. Dr. Robertson mentions his experience in Leith with 200 consecutive cases of scarlet fever treated in their own homes without any other member of the households becoming infected. Patients with scarlet fever sent to hospital and running a normal course without complications were not kept in isolation for six weeks. It had been found in Leith that the duration of residence in hospital could in many instances be reduced to twenty-eight or thirty-five days, and this procedure had been adopted in Edinburgh. A case is mentioned in which an outbreak of scarlet fever of explosive character had occurred during this year in a large boarding-school for boys. A member of the staff was found to be harbouring the *Streptococcus haemolyticus*, and after this person had been isolated the epidemic died out in the school.

**Diphtheria.**—In furtherance of a scheme begun in 1924, when over 3,000 school children had been immunized against diphtheria, the Public Health Department had carried out the same scheme among children of pre-school age. An appreciable number of children of the pre-school age presented themselves at the centres, but it is too early to give the results of this work.

**Artificial Sunlight.**—Apparatus for artificial sunlight has been established at the City Hospital for the treatment of measles and whooping-cough, and also in the annexes devoted to surgical tuberculosis. Mercury vapour lamps have been installed also at the child welfare departments, and at the Victoria Park Convalescent Home and other

centres. Good results have been obtained both from the use of open arc and mercury vapour lamps. Ozonizing plant has also been installed in apartments used for the treatment of surgical tuberculosis, and this has been found valuable in securing freshness of the atmosphere where patients are stripped for artificial sunlight treatment during the colder months when windows cannot be wide open.

**Clean Milk.**—Reference is made to the establishment of a herd of tubercle-free cows by the local authority at Colinton Mains Farm, and it is stated that the supply of high-grade milk has grown to large proportions in the city. The opinion is expressed that there is at present too wide a gap between high-grade milk and ordinary commercial milk. While much is to be said for the producer who cannot afford to collect a herd of tuberculin-tested cows free from tuberculosis, there is no excuse for any dairyman who refuses to produce clean milk. Constant attention to cleanliness with concentration on keeping everything about the cows clean are the prime factors. Much good in this direction has been done by the milk competitions introduced two years ago by the Edinburgh municipality.

**Tuberculosis.**—A wave of gradual decline in tuberculosis has manifested itself during the past fifty years, and much of this is ascribed to the educational work that has been done. Regret is expressed that millions of pounds have been spent on the erection of types of houses that the slum dwellers could not afford to occupy. It is hoped that the elimination of the breeding places of tuberculosis will be systematically carried out when the new housing schemes begin to give proof of their preventive value.

#### EDINBURGH UNIVERSITY ALUMNI ASSOCIATION.

Under the auspices of the Edinburgh University Alumni Association a dance was held in the M'Ewan Hall on July 20th, at which some eight hundred were present. Sir Harold Stiles said that he had taught in the university for forty years, and its welfare was of great moment to him; the Alumni Association now included some 1,200 members, which was 1 in 10 of the alumni of the university. Sir Arthur Steel-Maitland, the Minister of Labour, also made a plea on behalf of the association. He said that as a graduate of Oxford University he felt that one of the greatest advantages he got at that university was from the corporate life of the college. It was a wonderful advantage in after life for any man or woman to feel that the old university associations and friendships were being kept alive, and that was the reason for asking them to give their help by joining this Alumni Association.

#### HOSPITAL PAGEANTS.

A pageant was held in Edinburgh on July 3rd in aid of the funds of the Royal Infirmary. This has been for some time an annual event, but on the present occasion it had to be deferred for two months on account of the general strike. The fact that the university students were unable to co-operate owing to the change of date deprived the procession of what is usually one of its most striking features. There was, however, a great turn-out of decorated cars, tableaux, and figures in costume, and the carnival, which is really what this effort has now become, must have stretched along the streets for over a mile. As a result of collections made in the street and subscriptions taken at the various works during the day, a sum of about £3,000 was realized for the benefit of the Infirmary.

These galas or carnivals, organized chiefly by students, have now become an annual institution in connexion with the large teaching hospitals of Scotland. Some two months ago Aberdeen students raised a sum of between £4,000 and £5,000 on behalf of the funds of the Aberdeen Royal Infirmary and other local hospitals. Of this sum over £1,000 was collected in the streets of Aberdeen, and in addition there was a house-to-house collection, a fancy dress ball, a carnival in the Duthie Park, and the sale of a special number of the university magazine, *Alma Mater*. Various concerts were at the same time organized throughout towns and villages of the neighbouring counties.

## Ireland.

#### CENSUS OF NORTHERN IRELAND, 1926.

THE Registrar-General's preliminary report on the census recently taken in Northern Ireland contains statistical notes and a series of tables showing the population by sexes; the proportion of females to males; the distribution of persons as between urban and rural areas; the density of population (per acre and per room); the number of habitable buildings; the number, size, and constitution of families occupying one-room tenements in Belfast and Londonderry; and the number of persons aged 70 years and upwards. Statistics are given for each county, county borough, and ward of county borough, urban district, rural district, town created under the Towns Improvement (Ireland) Act, and town of undefined boundary containing 1,000 or more persons, or aggregation of these; and figures relating to previous censuses are included in the tables for purposes of comparison. The estimates of population based on previous census figures corrected for the excess of births over deaths, net migration, and the movements of military, together with the more important vital statistics covering a series of years, are to be found in the *Ulster Year Book*, the second edition of which is now on sale. Both volumes may be obtained from H.M. Stationery Office, 15, Donegall Square West, Belfast, or through any bookseller, and the price of each is 1s., post free 1s. 2d.

#### NATIONAL VETERINARY MEDICAL ASSOCIATION.

The annual congress of the National Veterinary Medical Association was held in Dublin from July 27th to 30th, under the presidency of Professor J. B. Buxton, the director of the recently established Institute of Comparative Pathology at Cambridge.

#### Milk.

Mr. Dolan, the chief veterinary inspector to the corporation of Dublin, read a paper on the production and handling of milk. Milk at its source, he said, must be free from pathogenic organisms, including tubercle bacilli; it should be produced only from clinically healthy cows, be handled under good, clean conditions, and pasteurized only when required. The contamination of milk before it reached the consumer might result from the shed, the cow, or the milker. Sheds must not only be clean but, to preserve the health of the animals, must have a sufficient floor space suitably arranged for cleansing, and be efficiently ventilated and lighted. It was better to fix a minimum height and floor space rather than a minimum cubic capacity, and to draw a distinction between closed and open sheds when considering capacity. Contamination of milk from the cows themselves could be reduced to a minimum by grooming and using a covered pail. Mastitis was more frequently due to cocci than to tubercle bacilli. The milker must be clean and use overalls. To strain milk was a confession of failure; it removed only the grosser particles, and if milk required straining it meant that unnecessary contamination had previously occurred. Even to the small producer cleanliness was not expensive. The ideal condition was to produce milk from healthy cows, under good hygienic conditions, and then to bottle it to prevent subsequent contamination. Milk removed in sterile churns and bottled subsequently under good conditions was also clean; but when sold from vessels or unsuitably bottled it was dangerous. He considered that all milk sold should come under some grading, and suggested that milk not coming within any of the Ministry of Health gradings as at present defined should be called "Grade B," and that such designations as good, pure, new, or guaranteed fresh, should be illegal. He suggested also that the present "certified" and "Grade A (T.T.)" should be combined and sold under the title of "certified." Sufficient control was not exercised over milk that found its way into bakeries and similar places and milk which was made into butter.

#### Diphtheria in Poultry and Man.

Mr. J. P. Rice (Animal Diseases Division, Ministry of Agriculture, Northern Ireland), in reviewing the diseases of poultry which occur in Britain, said that though true avian diphtheria was distinct from human diphtheria the *Bacillus diphtheriae* of man was pathogenic for birds, and produced diphtherial lesions in them. The possibility that occasionally birds affected with the human bacillus might spread infection to man could not be excluded. Avian diphtheria was caused by a filterable virus, and was the cause of avian chicken-pox.

*Swine Erysipelas in Man.*

Mr. J. F. Craig (Principal of the Dublin Veterinary College) read a paper on swine erysipelas, and drew attention to the fact that the disease was communicable to man through wounds or abrasions of the skin, usually from the handling of carcasses or accidental inoculation of cultures. The lesion was local, and most commonly developed about the hand or arm. It consisted of a painful reddening and some swelling, which formed around the seat of inoculation, and might spread over a considerable area, be attended by swelling of the neighbouring lymphatic glands, and, very rarely, swelling of the neighbouring joints. The affection might persist for some weeks, but readily responded to antiseptic treatment. The disease was very common in pigs in this country, and was due to a bacillus very similar to that causing mouse septicaemia.

*Pyorrhoea in Dog and Cat.*

In a paper on pyorrhoea in the dog and cat Mr. Henry Gray (London) said that it had been known for over a hundred years. It attacked any breed, but more especially lap and house dogs fed on soft food. It was never seen in animals which used their teeth regularly for the reduction of their food and gradually wore them down in the process; its incidence and severity increased with the age of the animals. There seemed to be no hereditary predisposition to the disease, and where it occurred in succeeding generations it was due to the same continued pernicious habit in feeding. The causes of pyorrhoea in dogs and cats were dirty teeth and lack of pressure on the alveolar walls. It could be entirely prevented by suitable feeding, and a healthy dog which, as soon as it was weaned, was given suitable food which had to be reduced with its teeth, might be maintained in perfect health if fed only once in twenty-four hours. Pyorrhoea had many complications owing to the absorption of the toxins produced in the alveolus. If the animal became depressed by a chill or some other cause these toxins caused gastric, enteric, neuritic, or meningeal attacks, which coincided with adverse changes in the weather. Arthritis was occasionally encountered, while chronic interstitial nephritis and chronic bronchitis might both be due to the same cause. Although there was no evidence that the disease was transmitted from dog, cat, or man to each other, there was danger of people becoming inoculated with the putrid material from the affected animal's mouth. Many people had developed serious wound infections from this source. This side of hygiene did not seem to have attracted the attention of public health officers, or probably even the notice of the family physician. Owners in general were absolutely ignorant as to how to feed a dog or cat and thereby maintain its health—a fact which was not entirely their own fault. Mr. Gray described at some length the natural methods of feeding these animals, and showed that both dogs and cats from 3 months and upwards could reduce and digest bones and other rough material. Pyorrhoea, he declared, was a preventable disease, which was caused only by feeding on food which did not require to be crunched before being swallowed, and this, he said, was true for man as well as animals.

In addition to the papers here mentioned, addresses on sterility and on liver fluke disease in ruminants were delivered.

## New Zealand.

[FROM OUR SPECIAL CORRESPONDENT.]

### THE HOSPITAL SYSTEM.

THE hospital system in New Zealand is under the control of the Minister of Public Health and the Health Department and of boards of trustees elected on a municipal or borough franchise. The majority of the smaller hospitals have no honorary staffs, and the cost of hospitals is borne mainly by the Government Consolidated Fund and local rates, and only to a minor extent by payments from patients and voluntary contributions. According to law the public hospitals are open to all classes of the community, rich and poor alike, but in practice well-to-do patients seldom take advantage of their legal right to enter hospitals as patients. Middle-class patients are reluctant to enter general wards, and are treated at home or in private hospitals, where the facilities for treatment are not comparable with those provided in the special departments of a large and fully equipped general hospital.

The New Zealand Branch of the British Medical Association recently invited Dr. M. T. MacEachern, in charge of the hospital activities of the American College of Surgeons and President of the American Hospitals Association, to

visit New Zealand and report on the hospital system. By arrangement this report was presented to the New Zealand Government. Dr. MacEachern made a careful survey of a large number of hospitals in the dominion and created a very widespread public interest in hospital work. Prior to his visit the public took little or no interest in hospital administration and reform, and left these matters too much in the hands of the Health Department, the trustees, and the medical superintendents. The members of the honorary medical staff have had little voice in hospital affairs, and if at all vocal are threatened with supersession by the creation of a full-time stipendiary medical staff. Dr. MacEachern, in his report, has pointed out that hospital practice and private practice cannot be divorced without serious detriment to both hospital and private patients. He has also emphasized the fact that voluntary effort should not be discouraged by close reliance on rates and taxes, and that taxpayers and ratepayers have fully as much right to hospital facilities as the class who pay little or nothing to the general revenue. In short, he advocates the "community" hospital, in which the poor are free, an intermediate class pays modified charges, and a paying class contributes the full cost of maintenance and medical services, all paying patients having special wards apart from the general wards for necessitous patients, and the right of choice of their own medical adviser. If the community hospital system is established the result will be that gradually the smaller and least efficient private nursing homes will be forced out of business. The medical profession in New Zealand is in favour of free service for the poor, but when public hospitals are open for all classes of the community there appears to be no reason why the profession should not be fully paid for its services by such as are able to pay. The Labour Party in New Zealand holds that there should be no individual payment for hospital service, and that it is the duty of the State, by rates and taxes, to provide "free" treatment in all public hospitals for rich and poor alike, without, as it is termed, class distinction.

### AUSTRALASIAN MEDICAL CONGRESS.

The Australasian Medical Congress meets in Dunedin in February, 1927, and much preliminary work has been done to ensure its success. The congress is to have twelve sections, and the meetings will be held in the new and commodious buildings of the Medical School. Visitors from the British Isles will be very welcome and will have opportunities for recreation, engaging in trout fishing and other sport, or in viewing the varied attractions of New Zealand scenery. [Information about steamship routes and fares will be found in the SUPPLEMENT this week at page 97].

## Correspondence.

### MINER'S NYSTAGMUS.

SIR,—As ophthalmic referee to two northern districts (1 and 2) I have had good opportunities of studying the subject in this neighbourhood, and on May 5th, 1923, you kindly published my criticism of the first report of the Miners' Nystagmus Committee.

Owing to the courtesy of the owners I obtained details of some thirty-two pits in Northumberland and Durham, and the number of new cases of nystagmus that received compensation during the year 1922. Of 36,232 underground workers, 11,383 were hewers and 24,849 were non-hewers; 103 of the hewers and 59 of the non-hewers acquired nystagmus and received compensation during the year 1922. All these men were subject to the same deficiency of light; if this were the cause of the disease the percentage of the nystagmus cases among the hewers would be equal or nearly equal to that among the non-hewers.

$$\text{But } \frac{103}{11,383} : \frac{59}{24,849} = 0.904858 \% : 0.237434 \%$$

This definitely confutes the first unanimous conclusion of the committee that "the essential factor in the production of miners' nystagmus is deficient illumination."



Electric lamps were advocated in the first report of the committee, and I was not able, until 1924, to find any pits in which electric lamps were used solely. The only two pits which had used them solely gave full corroboration to the views I expressed in 1923.

(1) *The Plenneller Pit*.—In 1922 nearly 4.3 per cent. of the hewers and 1.3 per cent. of the non-hewers acquired the disease—that is, the percentage of hewers affected was 4.7 times greater, and that of the non-hewers was 5.5 times greater where electric lamps only were used.

(2) *The South Moor Colliery*.—Here twenty-five years ago electric lamps were used solely, and the percentage of their nystagmus cases was notoriously high; but on abolishing their electric lamps and installing oil safety lamps they had no cases of nystagmus amongst their non-hewers, and hardly any among their hewers.

The above I quote from my letter to this *JOURNAL* of March 22nd, 1924 (p. 550), in which I give my suggestion for checking the disease. Further comment is unnecessary.

I am in entire agreement with Dr. Freeland Fergus as to the relative insignificance of deficiency of light as a factor in the causation of the disease; indeed, as no one had replied to my letter, I had hoped that that view had been given up.—I am, etc.,

Newcastle-on-Tyne, July 18th.

A. S. PERCIVAL.

### RHEUMATIC HEART DISEASE IN CHILDREN.

SIR,—It can hardly be doubted that the key to the etiology of rheumatic infection lies concealed in its class incidence, and that the narrowing of the class typically affected to the moderately poor, the skilled artisans, is a valuable step towards finding it. The logical next step would seem to be a study of the distinguishing characters of this class, and I would suggest that this study should not be confined to environment, but should include, as being at least of equal importance, the mental outlook of the class on matters of hygiene and the habits of life engendered thereby.

Environment, in almost all its aspects, has been very carefully considered by Dr. Miller in his report (*SUPPLEMENT*, July 3rd, 1926) but the more intrinsic class characters seem to have received less attention.

It will be generally admitted that a profound belief in the evil effects of cold air near the body is a first article of faith with almost the whole of the poorer classes, that they have an almost equal dread of "overheating" by strenuous exercise, and (rather less characteristic) a firm belief that children, especially, need a very generous diet. The familiar plump or well covered child of whom it is said "she eats nothing" or "I have to force the food on her" is witness to this last. As a result the children of the poorer classes wear many layers of close-fitting clothes, the rooms in which they live are kept very warm, strenuous exercise, at least for girls, is disapproved, and they are encouraged to eat freely of a diet largely farinaceous. All this applies more to girls than to boys and more to the moderately poor than to the destitute. The very poor, even if they aim at the same standards of warmth and diet, cannot attain them. Their children are scantily clad, obviously underfed, and spend much time loose in the streets or, if they are lucky, on the swings and giant-strides of public playgrounds.

The children affected by these class habits thus correspond both in sex and social standing with the typical rheumatic subject.

If damp, taken alone, were a chief factor, one would expect the class incidence to vary directly with the degree of poverty; but the combination of an atmosphere both damp and warm, with many layers of clothing, ample diet, and little countervailing exercise, should be capable of a powerful effect on metabolism and is fairly well recognized as a cause of chronic or recurrent catarrhs. I suggest that this combination may be the essential factor in preparing the rheumatic soil, and deserves at least as much attention as damp in buildings or clothes. That it is the factor actually at work would be difficult to prove, though the temperature and humidity of rooms, the caloric value of diet, and the number of layers of clothing are all measurable, and the class incidence of the combination could be ascertained.

The large-scale experiment of the war, when a whole population of young men lived in "damp basements" or their equivalent, with, as Dr. Miller notes, very little acute rheumatism, should not be forgotten; and it would be instructive to know whether the class incidence of rheumatism was the same sixty or eighty years ago when the hygienic ideas of the rich were more nearly those of to-day's poor.

Meanwhile intensified propaganda in favour of fewer and looser clothes, cooler rooms, and more exercise could do nothing but good.—I am, etc.,

Hampstead, July 16th.

LINDSEY W. BATTEN.

### THE PROPHYLACTIC VALUE OF SCARLET FEVER ANTITOXIN.

SIR,—Dr. Harries replies (July 17th, p. 134) to my criticism of the paper published in the *JOURNAL* of May 22nd by himself and two others, but he does not excuse himself for basing a conclusion upon the unreliable supposition that further cases must have occurred amongst fourteen contacts with a scarlet fever case but for the production of "a temporary passive immunity" by inoculation with scarlet fever antitoxin. He has to assume that the positive Dick test is not only "a reliable index of susceptibility, or otherwise, to the toxin produced by the *Streptococcus scarlatinae*," which in this case amounted to practically all the contacts, but that it is also an index to the number of secondary cases of actual scarlet fever that may be expected to arise among the contacts with a first actual case. According to the reading of his Dick test, 100 per cent. of the fourteen contacts would have got scarlet fever, an estimate out of proportion to the numbers indicated by former actual experience of scarlet fever, as registered through many years, for instance, in the infectious diseases registers of the Health Department of the Birmingham Corporation, to which I think Dr. Harries might have applied himself with advantage as a preliminary before starting on his experiments with the Dick test and antitoxin injections. In contemplation of the actualities there recorded, he might have considered whether they are likely to represent the indications of the Dick test, supposing that had been widely applied in the communities of children amongst which the Birmingham actual scarlet fever cases arose. If not, any difference must be placed to the discredit of the Dick test, not, perhaps, as an actually proved thing, but as a very sound likelihood or expectation.

Dr. Harries seeks to buttress his position by reference to a paper published in the *JOURNAL* of January 30th, 1926 (p. 214), by Dr. D. C. Kirkhope, who forms and publishes a conclusion every bit as irrational as that of Dr. Harries, and for a similar reason. As to the first part of Dr. Kirkhope's paper, it is a pity that such a considerable artificial production of symptomatic conditions should have resulted in so little certainty of positive benefit, or increase of our knowledge of the subject. The part of Dr. Kirkhope's paper quoted by Dr. Harries, which concerns scarlet fever in a school, is particularly wanting in detail, and indefinite in expression. The author first concentrated the serum (? by evaporation with heat). He then administered this concentrated serum to "140 contacts with 41 patients," giving them injections of 2½ to 5 c.cm. There were reactions, and no reactions, from which nothing was deduced. Then, in addition, he inoculated 131 school children derived from school classes "where scarlet fever cases were recurring with unhappy frequency. . . . The teachers were instructed to space out the inoculated children alternately with the others. From the time of the inoculation no further cases occurred for a fortnight, and all the inoculated escaped infection." But so also did the uninoculated, according to the statement, and this for a whole fortnight! This highly irrational proceeding is made to suffice for a summing-up to this effect: "It is too early to be dogmatic, but I am disposed to believe (1) that scarlet fever antitoxin is specific against scarlet fever; (2) that when given intramuscularly in 5 c.cm. doses (of concentrated serum) it protects for at least fourteen days." I think I may safely

challenge the attention of all professed statisticians, and scientists devoting themselves to experimental research, and beg them to tell us what these papers prove, if anything, in connexion with the title that heads them. We want to arrive at a determination of this matter if possible, but those who wish to assist in doing it should avoid, by all means, the creation of an artificial and false estimate of the circumstances attending scarlet fever occurrences to suit the occasion, and then, having applied antitoxin, claim to have stayed the imagined forecast as if an actuality.—I am, etc.,

J. H. GARRETT, M.D., D.P.H.,  
Medical Officer of Health, Cheltenham.

July 23rd.

#### CARCINOMA OF THE PROLAPSED CERVIX.

SIR,—Dr. W. E. Fothergill always writes interesting letters, but I do not think it can be maintained that the rare association of cervical carcinoma and prolapse is due to a fixation of the cervix by the parametria because of cancerous invasion. Descent and protrusion of the anterior vaginal wall and adjacent part of bladder, the appearance of a "cystocele," is usually the first event in "prolapse"—not of the cervix. Other conditions, as Dr. Fothergill mentions, are seldom seen with prolapse—for example, complete rupture of the perineum and pelvic cellulitis. But Dr. Fothergill does not refer to the cause of the visceral retention in the former case; and, omitting to consider the effect of the rest in bed, and the possible chronic invalidism of the patient in the latter, imputes it to a fixation of the uterus. But even when the body of the uterus is fixed, for example, to the abdominal wall by operation, if the causes of "prolapse" are present, then with a return to active life the prolapse recurs.

Dr. Fothergill's reference to the possible existence of malignant disease of the uterus, in patients suffering from prolapse, *qua* the treatment of the latter, is more important. His high amputation of the cervix must remove any cancerous nidus in the cervix; and removal of the cervix, from the point of view of preventing a future cervical carcinoma, whether we be dealing with the prolapse or any pathological state of the uterus (for example, fibroids), is certainly the ideal. Thus, panhysterectomy, instead of subtotal hysterectomy, for the latter condition, should always be done—as Herbert Spencer for years has taught us. But Dr. Fothergill, in dealing with prolapse, is content, *qua* the body of the uterus, with curettage. Three times he has found early unsuspected cancer of the body of the uterus; and on each occasion performed the radical operation—removing, I suppose, as much as he could of the parametric tissue, and leaving—I wonder what—for the "suspension" subsequently of the remaining pelvic viscera, and the "bearing-down" intestines now occupying the uterine space.

In women near the climacteric with prolapse I amputate the cervix as high as I can, slit up the anterior vaginal wall, separate its lappets from the prolapsed part of the bladder, cut through into the vesico-uterine pouch of peritoneum, push up the bladder, and bring down the uterine body. I then push a knife through the fundus, at the summit of the uterus, into the uterine cavity, cut away most of the anterior uterine wall, so that one has exposed the endometrium lining the posterior uterine wall, and at the sides of this shelving stretches of the uterine wall. The endometrium of the posterior wall is then removed, bleeding vessels secured by under-stitching, and the remnant of the uterine body stitched to the anterior vaginal wall, which is sewn up after its redundancies have been excised. It is a modified interposition operation, not before described, I believe, in this country; though the late Dr. Watkins of Chicago seems to have practised a similar operation. A small posterior colpo-perineorrhaphy, in which the levator borders are brought together, completes the operation.

I did this modified operation—which must disclose any present carcinoma and prevent the rise of any future one from the endometrium—for the first time on December 10th, 1923. The patient was 50, and had complained of bearing-down pains for sixteen years and had had the prolapse protruding for four years. When I first saw her

she had had bleeding for ten weeks without intermission. No carcinoma was found. I have repeated this operation since on a few occasions. Dr. Fothergill, I understand, however, does not believe in, at least does not practise, the interposition operation. If he did, and removed the endometrium, I think he would be more assured *qua* the existence of uterine carcinoma and more happy as to its possible future rise; and as regards the prolapse itself would recognize the most excellent results obtained from it.—I am, etc.,

Rugby, July 24th.

R. H. PARAMORE, F.R.C.S.Eng.

#### GLYCOSURIA AND ARTIFICIAL SUNLIGHT.

SIR,—Dr. Barrowman, in your issue of June 12th (p. 990), calls attention to the undue susceptibility of a case of chronic impetigo with glycosuria to ultra-violet radiation, and is evidently under the impression that the glycosuria was responsible for this susceptibility. Out of a series of fifty-five cases of diabetes treated in the "light" department here, none showed any undue reaction, even when associated with impetigo boils or pulmonary tuberculosis. Glucose therefore does not appear to act as a sensitizer to ultra-violet rays, although it has been claimed that it is a sensitizer to x-rays (Professor Holzknecht, *BRITISH MEDICAL JOURNAL*, April 3rd, p. 634). If a complete analysis of the urine had been made, some sensitizer such as haematoporphyrin might have been discovered (Professor Dixon, *BRITISH MEDICAL JOURNAL*, September 19th, 1925, p. 499). Continental workers have called attention to the association of hyperglycaemia and skin diseases, and it is suggested that the mere presence of impetigo in an adult should have called attention to the glycosuria and not the reaction to the ultra-violet rays.

The rapid effect of ultra-violet radiation on impetigo has been reported by Goodman (*Physical Therapeutics*, March, 1926) and by P. Chatin (*Médecine*, Paris, August, 1925). Several cases of impetigo and boils amongst the fifty-five cases of diabetes cleared up rapidly, although the conditions had persisted in spite of insulin treatment since 1923. Most of the cases relapsed, however, one to two months after the ultra-violet radiation had been stopped.

The effect on the general condition noted by Dr. Barrowman is also confirmed by our experience, so much so that a course of light treatment is becoming a routine for diabetics with us. R. D. Lawrence (*BRITISH MEDICAL JOURNAL*, April 10th, p. 648) shows that a diabetic on insulin may actually go into a state of hypoglycaemia after vigorous exercise. As ultra-violet radiation is said to increase the rate of metabolism, one would expect a lowering of the blood sugar after radiation. A long series of tests on diabetics, in collaboration with Drs. Willmore and Vatcher, has so far failed to confirm this. In some cases the blood sugar was lowered, in others there was no effect, while in a number of cases it was raised. A. Laqueur and H. Wiener, however (*Medizinische Klinik*, February 15th, 1925, vol. 21), seem to have obtained more definite results, for they state definitely that ultra-violet radiation tends to lower the blood sugar content in the diabetic.

Although we have failed to observe any definite effect of ultra-violet radiation on the blood sugar, we have no doubt of the value of ultra-violet radiation as a general tonic in the diabetic, quite apart from its effect on local skin lesions.—I am, etc.,

M. WEINREIN.

Queen's Hospital, Farnham, Sidcup,  
Kent, July 24th.

#### OBSTRUCTION AT THE VESICAL OUTLET AFTER PROSTATECTOMY.

SIR,—I read Mr. W. K. Irwin's article on obstruction after prostatectomy (July 3rd, p. 10) with great interest. In each of his three cases he had diagnosed a fibrous type of enlargement of the prostate and experienced much difficulty in its removal. This is the variety that in my opinion calls for perurethral removal by diathermy, preferably applied through a Canny Ryall operating cystourethroscope, and not by suprapubic prostatectomy. The

results obtained by the former method are excellent, never leading to subsequent contraction and not interfering with the patient's occupation.

Post-operative obstruction can be readily and painlessly treated by intermittent dilatation with a curved Kollmann's dilator at weekly intervals after preliminary anaesthesia of the urethra. Treatment should be continued until the vesical neck and posterior urethra attain a calibre of 45 French, when the intervals are gradually increased.

Finally, post-operative obstruction may to a great extent be prevented by the routine packing of the prostatic cavity with gauze for forty-eight hours after enucleation of the prostate and the early passage of the catheter.—I am, etc.,

J. C. AINSWORTH-DAVIS, M.B., F.R.C.S.E.,

Assistant Surgeon, All Saints' Hospital,

London, W.1, July 7th.

### MIDDLE-EAR DEAFNESS.

SIR,—In your issue of June 26th (p. 1087) a paper read by Mr. W. C. Stevenson and Mr. T. G. Wilson at the Royal Academy of Medicine in Ireland is reported, in which it is stated by Mr. Wilson that chronic hyperplastic otitis media and oto-sclerosis were fully discussed at the British Medical Association meeting at Bath last year. I would point out that oto-sclerosis was specifically excluded from this discussion.

It is further stated that at this meeting treatment was universally admitted to be most unsatisfactory. In this connexion I would draw attention to the fact that my contribution to the discussion, as reported in your issue of December 12th, 1925, stated that the results of treatment as carried out by me for middle-ear deafness were highly satisfactory, and in the afternoon of the same day a number of cases were shown to illustrate the good results of this treatment, carried out in patients of all ages in whom deafness had been present to a marked degree, and most of whom had had the treatment some years prior to the meeting.

Messrs. Stevenson and Wilson are to be congratulated on treating this most important disability in another and new way, and the results reported are most interesting.—I am, etc.,

Bath, July 6th.

H. NORMAN BARNETT.

### ST. KILDA.

SIR,—Your article on St. Kilda (July 10th, p. 80) was particularly interesting to any who had visited the island.

Two years ago, whilst on holiday, I was asked to see their sick and had opportunities of observing the actual home conditions, going into nearly every house. The sick rate was very high; I examined about twenty, but they had had no opportunity of consulting a doctor for nine months. I remember cases of rheumatism, bronchitis, heart disease, and a case with signs of tuberculosis (but I had no facilities for sputum examination), scabies, and indigestion, of which two cases were no doubt gastric ulcer. The most striking defects were dental caries and constipation, due without doubt to vitamin deficiency. Although in accounts of the islands their diet is described as consisting of mutton, bread, milk, cheese, salted fulmar, eggs, etc., I was told that the food of most in the winter consisted of "salted bird" chiefly.

Some provision for dental treatment was greatly needed. They had a very fine nurse, but she was badly handicapped for want of some simple drugs, like vegetable aperient pills and cod-liver oil. She was expected to manage nearly everything with castor oil. The quantity of milk was not sufficient. There is no doubt the presence of such a woman had a great psychological as well as material effect. She treated sick and sound like children, as their mentality deserved, for they appeared child-like in their dependence. It would be interesting to know whether the initiative of emigrants increased as their mental horizon widened.

In regard to the etiology of the tetanus of the past, noteworthy points are:

1. In view of horse dung being considered a common source of this disease, the absence of such from the island is interesting; but, of course, highland cattle, sheep, and a very large number of dogs might provide an origin.

2. The floors of some of the houses consisted of earth or, if bricked or paved, such a flooring was covered by dirt. One patient expectorated freely on the floor as he stood in the room which was the living room for the family.

3. The fulmar oil dressing to the umbilicus which has been supposed to be the source of the tetanus would afford an excellent anaerobic chamber, just like a blood-soaked first field dressing in war time, or as gutta-serena tissue will cause anaerobic organisms to grow freely. Vaseline spread on lint would have been equally effective in producing such conditions for the cultivation of the bacillus.

—I am, etc.,

Thornton Heath, July 16th.

G. W. LLOYD.

### THE ARMY MEDICAL SERVICE.

SIR,—The strenuous efforts of the British Medical Association's committee are proving of value, but candidates will do well to examine the report published in your issue of January 30th, and to ask their experienced friends to indicate the points of importance still undealt with by the War Office. My letters published on May 2nd and August 8th, 1925, will help them. Especially should they consider two points. One is as to whether the new terms apply to India. If not, it is unsound to think of joining; and there are many other points to be settled as regards India, where officers of the Army Medical Service serve more than anywhere else. The other main point is to be sure that officers will have free play in their work, as without this any intellectual man will find he is living a hopeless, hidebound kind of life. The desired result will be attained only when the Director-General is upon the Army Council, and the Army Medical Service is reconstituted as a branch of the army as separate as the Adjutant-General's or the Quartermaster-General's. To this end all the efforts of the British Medical Association should now be directed. The A.M.S. could then serve the army efficiently, and without the daily obstructions and vexations officers must encounter who keep on the top level of medical science, and yet cannot adequately express their views, knowledge, and convictions. I trust that this idea will be promulgated elsewhere in the public eye. Meantime, that is the main objective, and candidates should be careful not to be led away by seductive monetary advantages that may prove as ephemeral as they have in the past. Ideal service in the army is still only in the making.

I should like to thank correspondents for the letters they have written to me. I have been quite unable to acknowledge them all.—I am, etc.,

Junior United Service Club,  
S.W.1, July 16th.

T. M. CORKER,  
Major-General.

### DEFENCE OF ASSISTANTS AND LOCOMOTIVES.

SIR,—The councils of the Medical Defence Union, Ltd., and the London and Counties Medical Protection Society, Ltd., have agreed that each society will defend a member in an action arising out of the acts or omissions of an assistant or locumtenent who is a member of the other society, as if the assistant were a member of the same society as the principal, and similarly in the case of actions against members on the staff of hospitals against whom actions are brought arising out of the acts or omissions of duly appointed subordinate medical officers.

We shall be grateful, therefore, if you will kindly publish this letter so as to bring this arrangement to the notice of the medical profession generally.—We are, etc.,

JAMES NEAL,  
General Secretary, Medical Defence  
Union, Ltd.

HUGH WOODS,  
General Secretary, London and Counties  
Medical Protection Society, Ltd.

London, July 23rd.

## Obituary.

A. REITH FRASER, M.D. ABERD.

Lecturer on Venereal Diseases, Capetown University.

ON July 10th the death of Dr. Archib Reith Fraser of Plumstead, South Africa, was announced by cable. Dr. Fraser, who was 36 years of age, was educated at the Grammar School, Aberdeen, and graduated M.B., Ch.B. at Marischal College early in 1914. In August of that year he took a temporary commission in the R.A.M.C. He served in France until invalided after the battle of Neuve Chapelle in 1915. On his return to duty he was with the 1st Scottish General Hospital, and later at the Scottish Command Venereal Hospital, Robroyston. He had a wide



and varied experience in the treatment of venereal diseases in these army hospitals, and his clinical and administrative abilities marked him out from the beginning. He was energetic as well as original and resourceful; all these characteristics are well shown in the papers he contributed to the medical journals and in his monograph on gonorrhoea.

In 1919 he took the M.D. degree at the University of Aberdeen, with distinction for his

thesis; in the following year he went to South Africa as a venereal specialist to the Union Government. In a few months his health broke down, and he resigned to take up the appointment of university lecturer in venereal diseases at Capetown University. Here, again, he continued to work too hard. He was honorary secretary to the Cape of Good Hope (Western) Branch of the British Medical Association, and he did most valuable work for it and the profession.

He had a charming personality, although he was down-right and outright to a degree. He was a good speaker as well as an easy writer, and a caricaturist of the first water. The profession is the poorer in the loss of such a promising and able—indeed brilliant—member. He was always ready to go out in defence of the "under-dog" against all the world, and he has restored countless numbers to self-respect and self-help—in some cases kindled an inspiration where it seemed an utter impossibility. He was a very practical Christian. He leaves a widow and two children.

Dr. ALFRED COX, Medical Secretary, British Medical Association, writes:

Dr. Reith Fraser was one of the most successful honorary secretaries the British Medical Association has ever had, and was, in addition, a very brilliant and attractive personality. He radiated vitality all round him. To me he was very kind and attentive during my visits in the area of the Cape of Good Hope (Western) Branch, and he took an active part in furthering the object of my tour in South Africa. His loyalty to the Association, his tremendous enthusiasm, energy, and organizing capacity, will all be greatly missed by his colleagues in Capetown. But I am sure they will think even more, as I do, of the loss of the man, the eager, vivid personality, at the outset of a brilliant professional career; and of his wife and young family and his parents, to whom their and my heartfelt sympathy goes out.

R. H. STEEN, M.D., F.R.C.P.,  
Formerly Superintendent, City of London Mental Hospital,  
Dartford.

WE regret to record the death, on July 12th, of Dr. Robert Hunter Steen, who was for over twenty years medical superintendent of the City of London Mental Hospital, Dartford, Kent. He was born in Belfast in 1870 and was educated in that city, graduating B.A. in the Royal University of Ireland in 1891; afterwards he became a student of St. Mary's Hospital, London, and graduated M.B.Lond., with honours in medicine, in 1894. After serving as house-physician at St. Mary's Hospital and at the Brompton Hospital for Consumption he determined to devote himself to psychiatry; he held the post of assistant at the West Riding Asylum, Wakefield, and at the West Sussex County Hospital, Chichester, before his appointment to Dartford in 1905; four years later he became professor of psychological medicine in King's College, London, and was subsequently appointed out-patient physician in psychological medicine to the hospital. When he retired from Dartford in 1925 he was elected emeritus professor. He graduated M.D.Lond. in 1896; he became M.R.C.P. in 1913, and was elected F.R.C.P. in 1921. He was a member of the British Medical Association; he was secretary of the Section of Psychological Medicine and Neurology of the Annual Meeting held in London in 1910, and chairman of the Dartford Division for 1911-12, and again in 1919; he was vice-chairman in 1913 and 1920, and a member of the executive committee of the Division from 1914 till 1918. He was also a member of the Royal Medico-Psychological Association and had been its honorary general secretary. He contributed a number of papers to its organ the *Journal of Mental Science*, including articles on moral insanity (1913), hallucinations in the sane (1917), and chronic hallucinatory psychosis (1920). In the paper last named he argued that there were cases of this type which could be grouped together, and discussed with acumen the differential diagnosis. He attached great value to the establishment of special out-patient departments at teaching hospitals, believing that through them students would gain a knowledge of the main facts of psychological medicine and so be better able after they went into practice to diagnose disorders of the mind at an early stage.

As an administrator he was very successful, holding and expressing views as to the treatment of patients which, when he first adopted them, were perhaps rather in advance of the general opinion among his colleagues. He was anxious that neither the profession nor the public should look upon asylums as mere places of confinement, but rather regard them as hospitals in which the cure of a considerable portion of the patients might be expected.

ERNEST HENRY HOUTON, M.D.,

Honorary Surgeon, Mansfield Hospital.

Dr. ERNEST HENRY HOUTON, who died on July 4th, aged 54, was educated at Leeds University, where he gained the entrance medical scholarship in 1889, the junior silver medal in 1889-90, and the Thorpe prize for forensic medicine in 1892. In the following year he obtained the diplomas M.R.C.S., L.R.C.P., and in 1894 graduated M.B., B.S.Lond., with honours in obstetrics; he proceeded M.D. in 1899. After holding the appointment of resident obstetric officer to the Leeds General Infirmary he commenced practice in Mansfield in 1903. He was honorary surgeon to the Mansfield Hospital and medical officer of health for the Mansfield-Woodhouse Urban District Council. He took an active interest in the Nottingham Division of the British Medical Association; he was a representative in 1913-15 and a deputy representative in 1918-20 and 1925-26. He was vice-chairman of the Division in 1920, and was a member for many years of the Contract Practice Subcommittee of the Medico-Political Committee, and of the Midland Branch Council. He was a member of the Consultative Council on Medical and Allied Services and secretary of the Notts Panel Committee.

No one has received the following tribute to Dr. Houlton from two of his colleagues: Dr. Houlton was a busy and successful general practitioner and an accomplished surgeon. There is no doubt that if he had devoted himself to surgery in his younger days he would have won eminence in that direction. In spite of the pressing demands of a large practice he devoted much time to the service of his fellow practitioners. About twenty-five years ago he was concerned in the formation of the Midland Medical Union, an association whose main purpose was to organize the general practitioners of Notts and Derbyshire. Much useful work was accomplished until the union ceased to function on the reconstitution of the British Medical Association, the members transferring their energies to the development of the Divisions of the Association. From that time Dr. Houlton was a thorough "B.M.A. man." He had been chairman of the Nottingham Division, and he served as representative during the stormy days preceding and following the passing of the National Health Insurance Act. He was also a member of the Nottingham Insurance Committee, and had served the Local Medical and Panel Committee continuously in the position of secretary, also the Contract Practice Subcommittee of the British Medical Association, and was afterwards appointed to the Consultative Council under the then Minister of Health. Much of his time in latter years was spent in the interest of the Mansfield Accident Hospital, where, in addition to his active work as a surgeon, he was always ready to help the board of management with his advice while the hospital was being enlarged. The colliery surgeons of Notts and Derbyshire will always remember Dr. Houlton with the deepest gratitude for his untiring efforts on their behalf in their many negotiations with the colliery clubs. Only those closely associated with him in this work can appreciate the devotion with which he laboured for the benefit of his fellow practitioners. He never spared himself in the service of his patients or of his professional brethren, and his death at the early age of 54 is a serious loss to the community and to the profession.

#### ROBERT HENRY CLARKE, M.A., M.B.,

Late Demonstrator of Physiology, St. George's Hospital.

DR. ROBERT HENRY CLARKE, whose death in Paris, on June 22nd, we regret to record, had retired from practice for many years, and had devoted himself to physiology and research work. He was born on October 9th, 1850, the son of Thomas Clarke, senior member of the Board of Revenue and member of the Legislative Council of Madras. The son was educated privately and at Queen's College, Cambridge, and entered St. George's Hospital in the winter session of 1872. He obtained the diploma M.R.C.S. in 1876, and graduated M.A. Cantab. in 1882 and M.B. four years later. He was house-surgeon to the Western Infirmary, Glasgow, and later demonstrator of anatomy at Glasgow; he returned to St. George's Hospital as demonstrator of physiology in 1885 and held this post for two years. In his younger years he was a prominent athlete; he represented his college at cricket and football, and rowed in the Queen's boat. While at St. George's he was a member of the hospital Rugby fifteen.

Clarke's latter years were devoted to physiological research; most of his work was done in the laboratories of University College Hospital with Sir Victor Horsley. Clarke's stereotaxic instrument was a splendid piece of apparatus which has hardly received the attention in this country that its importance warrants. For accurate localization in the laboratory it is well-nigh indispensable: the instrument was purchased some years ago by the Johns Hopkins University. He was the joint author with Horsley of several papers in *Brain* on the structure and functions of the cerebellum. His chief contribution to literature was his atlas of sections of the brain of the cat and monkey, which was published in the *Journal für Psychologie und Neurologie* in 1911. In this work he was greatly assisted by Mr. E. Erskine Henderson, who was responsible for all the illustrations. His home of late years was

at Wallington and later at Croydon. Though he was known to be in feeble health, his death came as a great shock to his many friends.

We are indebted to Sir G. R. TURNER for the following appreciation:

Dr. R. H. Clarke had one of the best all-round intellects that I have ever come across. He did an enormous amount of original work for which he did not get adequate credit. He was the inventor of the stereotaxic instrument which bears his name, and by which any nucleus in the brain of a cat or monkey could be reached with absolute accuracy, without the shock of trephining, and stimulated or destroyed by needles without risk to surrounding structure. In this way experimental research on the brain or cerebellum has been much facilitated. Much of his work on the latter has not as yet been published; there is, however, a paper in four chapters, entitled "The divisions of the cerebellum and their relation to function," in the hands of his executor.

He wrote a book on roaring in horses, and devised an ingenious operation of stitching up the aryteno-epiglottidean fold of mucous membrane for its cure. This he practised with success on several broken-down bunters, one of which had been hunted by the late Empress of Austria. He found out many micro-organisms which caused diseases in birds. In the nineties of last century, when he was in Egypt, he made numerous experiments with different coloured thermometers with reference to sun heat, and showed that pigmentation in man, though it lessens resistance to sun heat, is very efficacious against the evil effects of sun light. He was the first, or one of the first, to publish this fact. He was a great psychologist, and believed implicitly in telepathy. He was a very good subject himself, and the late Mr. Capper and he had extraordinary success in thought reading.

He was an excellent sportsman—a very good man to hounds and judge of a horse; devoted to hunting, he never cared about racing. He was a good shot, a good cricketer and golf player, and a charming companion beloved by his many friends of all ages.

#### ANDREW RAE WRIGHT, D.S.O., M.B., B.Ch.,

Brevet Lieutenant-Colonel R.A.M.C.

The death of Brevet Lieut.-Colonel Andrew Rae [Wilbur] Wright, on June 30th, at the General Hospital, Madras, from appendicitis, has cut short a career of considerable promise. He was born at Wigan in 1881, and was the younger and only surviving brother of Professor William Wright, Dean of the London Hospital Medical College. He received his professional education at Owens College, Manchester, and graduated M.B. and Ch.B. in 1904. After holding the appointments, among others, of house-physician at the Manchester Royal Infirmary and senior resident medical officer at the infirmary, Crumpsall, he joined the R.A.M.C. in 1908. Stationed at Malta when the war broke out, as regimental medical officer to the 2nd Battalion of the Royal Warwickshire, he disembarked at Zeebrugge on October 6th, 1914, and took part in the memorable rearguard action fought by the Seventh Division around Bruges, Hansbeke, Ghent, Thielt, Roulers, and Menin. On December 31st he was posted to command "C" Section of the 21st Field Ambulance, and on April 19th, 1915, to be second in command of No. 10 Casualty Clearing Station at Hazebrouck. When it was decided to introduce the practice of pitching casualty clearing stations on open ground, without buildings of any kind, the 10th Casualty Clearing Station was chosen for the experiment, being placed at Rémy Siding, near Poperinghe. He remained there for some time, serving, as Major-General Sir Anthony Bowlby writes, "with great credit, a most zealous and capable officer, and a first-rate organizer." He was several times mentioned in dispatches, and received the D.S.O. Later he served on the staff. For his services in the rearguard action leading up to the first battle of Ypres he received the decoration of the Belgian Croix de Guerre. At the close of the war he became personal



assistant to the Director-General of Medical Services, and later acted in a similar capacity to the adjutant-general, being, we believe, the first officer of the R.A.M.C. to hold this position. For his services in these posts he received the rare distinction of being, while still a captain, gazetted brevet lieutenant-colonel on promotion to major. In 1921 he proceeded to India, serving on the staff at Simla, and later commanding the British Station Hospital at Roorkee. Returning to England in October, 1925, he was posted D.A.D.M.S. to the British Army on the Rhine, and was one of the last to leave Cologne when the army moved south to Wiesbaden. Early in the present year he returned to India, and had just taken up the appointment of senior medical officer at the British Station Hospital, Madras, when he was stricken down with appendicitis, which unhappily proved fatal in the afternoon of June 30th.

A man of commanding presence, he gave an impression of strength and power, which was still further accentuated by his imperturbable composure. Reserved and seemingly austere on first acquaintance, his manner rapidly thawed when, as so often happened, acquaintance ripened into friendship. He was gifted with a refined sense of humour; one of his most successful sallies was commemorated in the *nom de corps* of Wilbur, by which name he was almost universally known. Devoted to the army and punctilious in attending to his duties, he yet found time to become well informed on most subjects and to develop a no mean musical talent. Geniality, modesty, and sympathy were the outstanding features in a very attractive personality. With his natural gifts and varied experiences he seemed destined for positions of still greater influence and honour than those he had already held. It was, however, not to be.

HELEN BEATRICE DE RASTRICKE HANSON, M.D.,  
B.S.LOND., D.P.H.Oxon.,  
Assistant Medical Officer, Public Health Department,  
London County Council.

WE regret to announce the death of Miss Helen Beatrice de Rastricke Hanson, who was killed in a motor-car accident on July 6th, at the age of 52. Miss Hanson received her medical education at the London (Royal Free Hospital) School of Medicine for Women, where, in 1901, she obtained the diploma L.S.A. and graduated M.B. Three years later she proceeded M.D. and B.S., and in 1911 she took the D.P.H.Oxford.

After three years in India, where she was medical officer to the Kinnaird Memorial Hospital, Lucknow, she was appointed assistant school medical officer to the London County Council. When war broke out she became attached to the British Red Cross Society and the St. John Ambulance, and went with Mrs. Stobart's unit to Cherbourg and afterwards to Serbia. In 1916 she published in the *Journal of the Royal Society of Arts* an article entitled "Serbia as seen by a Red Cross worker." She was transferred to the R.A.M.C. in 1916, and served first in Malta and later in Salonika. After the armistice she went with the Black Sea Expeditionary Force to Constantinople, and subsequently returned to her post as school inspector. She was a member of the British Medical Association, the Medical Women's Federation, and the Federation of University Women. Since 1910 she had served on the committee of the League of the Church Militant, and for the last few years had been honorary treasurer. She was buried on July 12th at Finchley, and a requiem service was held in St. Martin's-in-the-Fields on July 20th.

We are indebted to Professor LOUISE McILROY for the following note: In a circular letter issued by the chief of the London County Council medical department acquainting the members of the staff with the news of her death by an accident, reference was made to Dr. Hanson as "our beloved colleague." This was no empty saying, but a sincere expression of the sentiment with which she was regarded by those with whom she came in daily contact. She was most unobtrusive and humble-minded as regards her own attainments, but always first in paying tribute to the worth of others. High and low, rich and poor, young and old, pious and worldly, alike found in her

a staunch friend. The blank that is left will not be realized immediately. It is only from day to day, when her loving energetic presence is no longer with us, that we shall truly miss her. Her work as a school medical officer brought her into touch with parents and children of all social grades, with teachers, nurses, and doctors, by all of whom she was greatly esteemed. However monotonous her daily routine, she never seemed to get tired or bored. A large circle of devoted friends, in addition to those immediately connected with her work, show her wide social interests. Her broad human outlook, sound judgement, and boundless sympathy were always at the disposal of her friends. Her service in the war, when she was temporary medical officer R.A.M.C. from 1916 to 1920, and her courage in the face of danger, were well known to those who were with her in the East. Her tragic end in the midst of her work came as a shattering blow to all who knew her. The sympathy of her friends goes out to her mother and sister, who lived with her, but they have the consolation of a great pride in the memory of one who was indeed a very noble woman.

Dr. JAMES SMITH, who died on June 30th, at Putney, received his medical education at Cambridge and St. Thomas's Hospital, where he was distinguished for his athletic attainments. He was a University Rugby Blue, and was also a very good tennis player. He won a science scholarship at Jesus College, Cambridge, and in 1895 he graduated M.B., B.Ch., and obtained the diploma M.R.C.S., L.R.C.P.; in the following year he became F.R.C.S. After holding the posts of house-surgeon at St. Thomas's Hospital, assistant resident medical officer at the Queen Charlotte's Maternity Hospital, and clinical assistant to the Evelina Hospital for Sick Children, he built up a very large practice in the neighbourhood of Putney, where his untiring devotion to his patients won him great popularity.

Dr. EDWARD H. HUGO, who died on July 17th at Crediton, Devon, was born at Gillingham, Kent. He was the eldest son of the late Dr. E. H. Hugo, and was educated at Epsom College and Charing Cross Hospital Medical School. He graduated M.B., B.S.Lond. in 1897, and held the posts of house-physician and house-surgeon at Charing Cross Hospital. After a tour round the world he commenced practice at Bodmin, and was appointed surgeon to the East Cornwall Hospital, and medical officer of health for the borough of Bodmin. He was honorary secretary of the East Cornwall Division of the British Medical Association. On the outbreak of war he took a commission as temporary surgeon R.N., and served at Gibraltar, Gallipoli, and the Shetlands. After the war he returned to practice in Bodmin, but owing to ill health had to retire in October, 1925. He is survived by his widow and one daughter.

The late Dr. ENNEST G. B. STARKIE was educated at Edinburgh University, where he graduated M.B., C.M. in 1889, and took the degree of M.D. (with commendation) in 1904. He started practice in Poulton-le-Fylde, where he was medical officer of health, but after a few years settled in the suburb of Moseley, Birmingham. His forceful character and earnest purposeful devotion to his work soon made him a very successful and popular practitioner, and enabled him to command the confidence of a very large circle of patients and friends. In 1915 he deemed it his duty to offer his services to the R.A.M.C., and was sent to Malta, where he was able to do much valuable surgical work. Unfortunately, he there fell a victim to dysentery, which left its mark upon him, encouraging in some degree the fell malady the development of which brought about his lamented death. These lines are written by one who was closely associated with him in practice for over eighteen years, as a slight tribute to his memory and in acknowledgement of many pleasant hours spent in his company.—A. B.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons will rise on August 4th, or at latest August 5th, for the recess, and will reassemble for ordinary business about the beginning of November. There may be special sittings earlier to renew the Emergency Regulations. This week the House has discussed the mining dispute, the Mining Industry Bill, and the renewal of the Emergency Regulations for August. All outstanding Estimates have been voted, including that for the Ministry of Health.

The Parliamentary Medical Committee met on July 28th at the House of Commons.

In consequence of the elevation of the Secretaryship for Scotland into a Secretaryship of State, Dr. Walter Elliot, previously Parliamentary Under Secretary of Health for Scotland, has been appointed Parliamentary Under Secretary of State for Scotland.

Dr. Drummond Shiels has been selected as a member of the parliamentary delegation to Australia in place of Mr. William Adamson.

In the House of Lords, on July 27th, the Mental Deficiency Bill was, on the motion of Viscount Gago (Lord in Waiting), read the third time, and passed. The Chartered Associations (Protection of Names and Uniforms) Bill was also read the third time, and passed.

Consideration of the Coroners Bill in Grand Committee of the House of Commons was due to commence on July 27th, but, no quorum appearing, the Committee was postponed.

The Births and Deaths Registration Bill came up on report on July 27th, and was postponed till August 4th. On the same day the second reading of the Venereal Disease Act Amendment Bill, and of the Dentists Bill, was further postponed.

Against the University of London Bill, which had come down from the Lords and had been entered for second reading in the Commons on July 28th, a motion for rejection was tabled by Dr. Graham Little, Sir Murdoch Macdonald, Mr. Atkinson, and Commander Kenworthy.

On July 22nd Dr. Graham Little presided over a meeting of peers and members of Parliament in a committee room at the House of Commons, when addresses against the University of London Bill were delivered by Lord Justice Atkin, Sir William Collins, and Professor Loney, members of the Senate. Sir William Collins said the University was not effete, corrupt, or unsuccessful; the changes proposed by the bill would imperil the future of the University. Other speakers objected to the proposal that the independent members of the Senate should be eliminated.

### The Mental Deficiency Bill.

In the House of Lords, on July 22nd, the Mental Deficiency Bill was read a second time without a division. Explaining the bill for the Government, Viscount Gago said that the most important provision was in Clause 1, where the definition of a mentally defective person was altered and extended to include persons affected by injury or disease since birth or early age. There were cases where some injury or disease, particularly encephalitis lethargica, produced a condition analogous to innate mental deficiency. Under the existing definition it was impossible to certify these individuals as mental defectives owing to the inclusion in the original statute of the words "from birth or from an early age." Under this bill these persons could be attended to in the proper kind of mental home. The next most important provision of the bill was that a local authority might build a larger institution than it required for itself and take cases by contract from other local authorities. An institution with from 500 to 1,000 places was more efficient as well as more economical than a smaller institution. Another provision allowed the local education authority and the mental deficiency authority—both committees of the one council—to provide a joint institution should they deem that desirable. This clause had the approval of the Board of Education. Other clauses merely made small administrative changes which had been found desirable. The bill had been very thoroughly investigated by a committee on which leading specialists on the subject were represented as well as the medical members of the House of Commons, and he understood that it had their entire approval.

The Mental Deficiency Bill formally passed through Committee on July 26th, and was reported without amendment.

### India.

Earl Winterton (Under Secretary for India), in introducing the India Opium Vote, on July 20th, referred to the decision of the Government of India to extinguish exports of opium, except for medical and scientific purposes, by progressive annual reductions of

10 per cent. during ten years. Since this policy had been announced resolutions in support of it had been passed by both Chambers of the Indian Legislature. This decision, which was taken with the hearty concurrence of the Secretary for India, was the culmination of a series of measures, taken over many years past, for the regulation and restriction of the export of opium from India. The overcrowding and disease which followed in the wake of industry in some Indian cities must be deprecated, and no efforts should be spared to better those conditions. Enlightened industrialists in India had developed many excellent housing schemes, and he hoped this good work would continue, but the will to take advantage of better conditions did not always exist, and only education could create that will. The army manœuvres showed that as regards physical fitness and training the men were quite fit to take the field, but a good deal more had to be done before the army could be said to be properly housed in barracks. The bulk of the recommendations of the Lee Commission with regard to the Civil Service, including those of a financial character, had been implemented. The Public Services Commission had been appointed, and the chairman had already gone to India; the Commission would meet on October 1st.

Mr. Scurr, while welcoming the decision of the Government of India with regard to the export of opium, objected to its attitude in refusing to prohibit its use in India.

Sir G. Butler said that there was much that could be done by British people in this country and in India, attached to the Government, to help on progress in the various transferred subjects. In the medical, scientific, industrial, and agricultural research fields it would be wrong to put these transferred services into watertight compartments. He asked what relation existed between the scientific and technical activities of the Government of India and those of the Provincial Governments. What were the relations between the central officials and the various technical officials in the public health departments of the Provinces? Was the central organization going to fade out of the picture? The importance of scientific work in the future development of India could not be exaggerated. Those who wanted to conduct experiments in physiology, and into various forms of disease, and so forth, could not wish for a better field of work.

Dr. Haden Guest said that the outstanding fact of the Indian people was not its prosperity, but its poverty, which was increasing. This was the basic reason of all the troubles in India. The average length of life of the ordinary person in India was about twenty-three years, as compared with forty-five years in Great Britain. The infantile mortality rate reached, in certain industrial areas, between 60 and 80 per cent. Something could be done to raise the standard of life in India by reviving the old village organizations. The standard of life in India was at most only half as good as in England. Many of the thousands of India were living on a diet which was starvation even in the ordinary times.

Brigadier-General Clifton Brown disagreed with Dr. Haden Guest as to the physique of the people of India. He wished the hon. member could go to the Punjab and see some of the Sikh regiments, than whom no finer men physically could be found. Dr. Haden Guest said he had seen the Sikh regiments in Palestine, and he agreed that they were very good, but he had read the medical and social statistics of India, and that was the point.

Brigadier-General Brown said that the climate of India made matters very difficult for any medical officer. Plague alone carried off hundreds of thousands every year, and hundreds of British lives had been lost in trying to stop it. If it had not been for the British Government more Indian lives would have been lost from starvation and hunger.

The vote was agreed to.

**Maternity and Infant Mortality.**—On July 26th Mr. Chamberlain (Minister of Health) informed Mr. Rhys Davies that the death rate of women in childbirth, the birth rate, infantile mortality, and mortality of persons from tuberculosis in all forms in England and Wales for 1923, 1924, and 1925, was as follows:

	England (excluding Monmouth).			Wales (including Monmouth).		
	1923.	1924.	1925.	1923.	1924.	1925.
Mortality of women in childbirth per 1,000 live births	3.68	3.79	4.01	5.42	5.14	4.97
Births registered per 1,000 of the population living	19.6	18.7	18.1	21.6	21.0	20.1
Deaths of infants under 1 year per 1,000 live births	69	75	74	74	77	82
Deaths of persons from all forms of tuberculosis per million civilian population	1,052	1,054	1,036	1,180	1,171	1,106

**Birth Rates in Metropolitan Boroughs.**—On July 20th Mr. Chamberlain furnished tables, in reply to a question by Sir William Davison, which showed that in the metropolitan boroughs of London the birth rate per 1,000 population was 29.0 in 1901, 24.7 in 1911, 18.6 in 1924, and 17.9 in 1925.

**Tuberculosis Dispensaries.**—Asked on July 4th what steps were being taken with a view to the greater utilization of the opportunities provided by the tuberculosis dispensaries, Sir Kingsley Wood replied that the Minister of Health was not clear what further use of the tuberculosis dispensaries Mr. Day had in mind. These dispensaries were provided by the local authorities, and his department had always encouraged their full use as centres for diagnosis, observation, and special forms of treatment.

**Middle-class Nursing Homes.**—On July 19th the Minister of Health told Major Ainsworth that his department had no record of the extension of nursing homes or institutions for the poorer middle class for the use of which payment was made on a modest scale. While he appreciated the need for accommodation of this kind, its provision was a matter for local initiative, and there were no funds at his disposal from which assistance could be given.

**Schools and Playgrounds.**—In Committee on the Board of Education Estimates on July 22nd, Mr. Trevelyan said that in the revised regulations of the Board the detailed building regulations for schools had disappeared. Local authorities were saying they would take advantage of this freedom to go back to the 1914 standard of floor space. What was the objection of the Government to saying, in the case of new schools, that there must be at least so much air space for the children and so much playground space? Dr. Haden Guest said a fundamental defect of the present educational system was that there was so great a difference between the publicly supported type of school and the education of the public schools. The Board of Education might make a large proportion of what were called the public schools available to children from the elementary schools. When he was a medical inspector of schools he frequently noticed that teachers were a very lonely tribe. They never really came into contact with the universities, with other teachers, or with people leading wider lives. The standard of health of the population had been improving. If a high national level of health and a really national system of education were obtained the country would be able to solve its problems. But if all in the nation were to co-operate there must be a common background in the mind of the children, gained through having passed through a common school experience. The Duchess of Atholl said Dr. Haden Guest had exaggerated the gap between public schools and schools provided under the national system. Every day the Board tried more and more to introduce what was known as the public school spirit into the elementary schools. Nothing was more characteristic of education to-day than the desire of every type of person interested in schools to see the children have more opportunities of playing organized games. Dr. Haden Guest said there was not a great opportunity of games in Southwark. Only one here there was for organized games. At the end of the debate the estimates were passed.

#### Notes in Brief.

On July 20th, Sir L. Worthington-Evans (Secretary for War) informed Brigadier-General Clifton Brown that the number of officers not holding permanent regular commissions still employed with the regular army on July 1st was 152. This number included: Royal Army Medical Corps, 35; Army Dental Corps, 60.

On July 20th Sir J. Gilmour presented a bill to amend the provisions of the Prisons (Scotland) Act, 1877, and it was read a first time.

The Prime Minister sees no prospect of time being found for the passing of the Sale of Food and Drugs Act (1875) Amendment Bill during the present session.

Any agreement reached as the result of the discussions now in progress between representatives of the approved societies and of the dental profession will be submitted, before any action is taken, to the consultative council on approved societies' work, which is the recognized statutory body representative of approved societies.

## The Services.

### ROYAL ARMY MEDICAL CORPS.

#### Obligations of Officers.

AN officer of the Royal Army Medical Corps who undergoes in future the senior course of instruction for captains prior to promotion to major, or a specialist course, will be required to sign an honourable undertaking to continue to serve in the army after the termination of the course for a minimum period of three years. This will not preclude the Army Council from releasing him from his obligation should the circumstances justify release; but an officer who receives permission to resign his commission before the expiration of the period for which he undertakes to serve will be required to join the Regular Army Reserve of Officers.

### NAVAL MEDICAL COMPASSIONATE FUND.

At the quarterly meeting of the directors of the Naval Medical Compassionate Fund, Surgeon Vice-Admiral Sir Joseph Chambers, K.C.B., C.M.G., Medical Director-General of the Navy, in the chair, the sum of £55 was distributed among the several applicants.

#### DEATHS IN THE SERVICES.

Colonel James Patrick Rooney, Army Medical Service (ret.), died at Dunkeld on May 23rd, aged 82. He was born on March 22nd, 1843, and was educated in Dublin, where he took the L.R.C.S.I. in 1864 and the L.K.Q.C.P. in 1865, also later the F.R.C.S.I. in 1889. He entered the army as assistant surgeon on March 31st, 1866, and became colonel on July 8th, 1896, retiring on March 22nd, 1905. In the old regimental days he served in the 60th Foot, the King's Royal Rifle Corps. For the last six years of his service he was principal medical officer of the Scottish command.

## Medico-Legal.

### LUNACY CERTIFICATION: THE STATUTE OF LIMITATIONS.

HARNETT v. FISHER.

THE Court of Appeal (consisting of Lord Hanworth, M.R., Warrington and Scrutton, L.J.J.) on July 21st dismissed the appeal of Mr. William Smart Harnett from the judgement of Horridge, J., dismissing his action against Dr. Holdrich Fisher of Sittingbourne for damages for alleged negligence in certifying him to be a lunatic and a proper person to be detained under care and treatment.

The case was reported in the BRITISH MEDICAL JOURNAL (April 24th, p. 762, and May 1st, p. 811).

The jury found that Mr. Harnett was not of unsound mind when he was certified by Dr. Fisher, and that Dr. Fisher did not use reasonable care in certifying him, and they assessed the damages at £500. Dr. Fisher had, however, pleaded that the action was barred by the Statute of Limitations, 1623, Sections 3 and 7, and Horridge, J., after hearing legal argument, upheld the plea.

Mr. J. W. J. Cremllyn and Mr. N. L. C. Macaskie (instructed by Mr. H. Coulson) appeared for Mr. Harnett, and Mr. Neilson, K.C., and Mr. T. Cartliew (instructed by Messrs. Le Brasseur and Oakley) appeared for Dr. Fisher.

The Court heard both counsel for the appellant, but counsel for the respondent were not called upon.

The Master of the Rolls, in giving judgement for the respondent doctor, said the certificate was given and the reception order made on November 10th, 1912, and Mr. Harnett was first received into Dr. Adam's mental hospital at West Malling, being removed later to a mental hospital at Croydon, and from thence to other institutions, until 1921, when he escaped. Afterwards he commenced that action by writ dated May 31st, 1922, the pleadings being delivered by October, but there was then a delay of three years, during which nothing was done in that action, Mr. Harnett being concerned in taking proceedings against Dr. Adam and Dr. Bond for causing his return to Dr. Adam's mental hospital whilst he was out on a leave of absence order in December, 1912. More than three years after the delivery of the defence the defendant redelivered it and pleaded that the action was barred by the Statute of Limitations. By Section 3—"All actions of trespass *quare clausum fregit* . . . and upon the case . . . shall be commenced and sued within the time and limitation hereafter expressed and not after (that is to say) the said actions upon the case (other than for slander) . . . within six years next after the cause of such action or suit, and not after"; whilst Section 7—"provided nevertheless that if any person or persons that is or shall be entitled to any such action of trespass . . . actions upon the case for words, be or shall be at the time of any such cause of action given or accrued, fallen or come within the age of 21 years . . . *non compos mentis* . . . then such person or persons shall be at liberty to bring the same actions, so as they take the same within such times as are before limited after their coming to or being of full age . . . of sane memory . . . as other persons having no such impediment should have done." The plaintiff now contended that he was a person *non compos mentis* within the Statute until he regained his liberty in 1921, but the simple answer to that was that the jury had found that on November 10th, 1912, he was not a person *non compos mentis*. He was endeavouring to assert two contradictory propositions: (1) that he was of sound mind; and (2) that for the purposes of the Statute of Limitations, 1623, he was of unsound mind. It had been pointed out in the course of the argument that the fact that a person was detained under a reception order was not absolutely conclusive on the fact of insanity. It was quite different where there had been an inquisition in lunacy and the patient was found to be insane. It was said that a liberal interpretation should be given to the proviso, so that it should enure to the benefit of the plaintiff and to the disadvantage of the defendant. He (his Lordship) felt bound to say that in many cases great hardship might be caused to the defendant if a cause of action should survive so long as the present one had done. It was, indeed, for that very reason that the Act was passed. The Act did not cut at the root and destroy the cause of action, but it barred the remedy. Section 3 was absolute, and if the relief provided by Section 7 did not cover the facts of the case the action was definitely barred by Section 3. *Non compos mentis* meant a person of unsound mind, and did not include a person wrongfully detained under a reception order as being a person of unsound mind. The appeal would be dismissed, but without costs, as the plaintiff had succeeded on the issues of sanity and the amount of damages.

Warrington and Scrutton, L.J.J., delivered judgement to the same effect.



## ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At a meeting of the Colloquio held on July 23rd, when Dr. A. Logan Turner, president, was in the chair, the following 28 successful candidates, out of 66 entered, having passed the requisite examinations, were admitted as follows:

R. F. Aiken, H. Batra, C. E. M. Blumer, R. R. S. Bowker, W. H. B. Bull, A. W. Davidson, G. V. Davies, H. D. Gandhi, Lieut.-Colonel W. C. Gray, I.M.S., C. W. Harrison, N. R. Houston, D. R. Jönköping, O. J. MacGowan, H. Miller, T. C. M. M. D. M. M. T. Nicol, J. I. Secluna, A. Thompson, E. F. West, R. A. Wilson, W. A. D. Woolgar.

## Medical News.

At the meeting of the Parliamentary Medical Committee on July 28th Dr. Fremantle, who was in the chair, read a letter from the Earl of Balfour announcing that the Committee of the Privy Council had considered the petition of the Royal College of Surgeons of England praying for the grant of a Supplemental Charter, together with the counter-petition of Dr. Redmond Roche and others, the reply of the Royal College to the counter-petition, and the resolutions passed by the Parliamentary Medical Committee in support of the counter-petition. In view of the fact that the counter-petition raised highly controversial points on which there was a division of opinion within the Royal College, the Privy Council could not recommend the adoption of its proposals. The draft Supplemental Charter prayed for by the Royal College had been formally approved by the King at the Privy Council on June 26th. The Parliamentary Medical Committee decided to take no further action in the matter.

THE annual meeting of the British Association will begin at Oxford on Wednesday next, August 4th, and the President, the Prince of Wales, will deliver his address on the evening of that day. He will, it is anticipated, deal with relations between scientific research, the community, and the State, both at home and in the overseas dominions. The meeting of the sections, twelve in number, will begin on the following day and continue until Tuesday, August 10th. The concluding general meeting will be held on Wednesday, August 11th, at noon. The President of the Section of Physiology, Professor J. B. Loaches, will give his address, on function and design, on the morning of Thursday, August 5th. On Friday the section will meet jointly with the Section of Zoology to discuss the value of tissue culture in biology; the opening paper will be by Dr. H. M. Carleton, of the Department of Histology at Oxford, and among the speakers will be Professor Charles Champy, of the Sorbonne, who will give an account of his methods and the results he has obtained.

THE St. Thomas's old students' dinner will be held on October 23rd at the Hotel Victoria, Northumberland Avenue, at 7.30 p.m.; Dr. R. Percy Smith will take the chair. An alphabetical and local list of old students has been prepared, and may be obtained from the medical secretary, St. Thomas's Hospital; included in this pamphlet is a list of past and present officers of the hospital and medical school.

SIR JAMES CRICHTON-BROWNE, who recently resigned the office of treasurer of the Royal Institution after holding it for thirty-seven years, was presented last week by his fellow members with a silver-gilt cup of the Empire period. The president, the Duke of Northumberland, in making the presentation, said that when Sir James took office the endowment fund of the Institution was £22,724, and of the research laboratory £62,000. The endowments at the present time were £122,500 and £88,295 respectively. In him the Institution had had the rare combination of devotion, sound judgment, unflinching tact, and the quality of inspiring friendship and confidence. Sir James Crichton-Browne, in response, predicted that the Institution's educational work would continue with increasing success and that it would promote discoveries which would help the industrial prosperity of the country.

ARRANGEMENTS have been made by the Fellowship of Medicine and Post-Graduate Medical Association with the Dean of the Brompton Hospital to permit graduates to attend the daily clinical practice of the hospital for the month of August. The fee for this privilege is payable to the Secretary of the Fellowship of Medicine, who will issue the necessary permit. The Queen's Hospital for Children, Bethnal Green, will give an all-day course from August 16th to 28th, including the medical and surgical aspect of diseases of children. From August 23rd to September 4th Queen Mary's Hospital, Stratford, has organized an all-day "brush-up" course for those desirous of renewing their acquaintance with up-to-date hospital practice. The programme will include demonstrations in general surgery, medicine, orthopaedics, and laryngo-

logy. The City of London Maternity Hospital provides courses in obstetrics and child welfare; these are held weekly and are limited to four graduates. Practical courses in anaesthetics can be arranged at any time. Full particulars of all those courses can be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

THE sixth British Congress of Obstetrics and Gynaecology will be held in Manchester on April 27th, 28th, and 29th, 1927. The principal subject for discussion will be the treatment of inflammatory conditions of the uterine adnexa, and this will occupy the first day of the meeting. The remaining days will be devoted to the reading of short papers on obstetrical and gynaecological subjects and demonstrations of surgical operations. A museum of pathological specimens is also being arranged. Those intending to take part in the discussion, or to read short papers, are invited to send in their names, together with the title of any proposed contribution, not later than March 1st, 1927. The secretaries of the congress are Dr. Daniel Douglas, 11, St. John Street, and Dr. John Bridg, 2, St. John Street, Manchester.

A THREE weeks' post-graduate course has been arranged at Trinity College, Dublin, from September 13th to October 2nd. It will be conducted as in former years, and will consist of clinical meetings at hospitals in the morning and laboratory classes in the medical school in the afternoon. A limited number of members will be able to reside in college rooms. A prospectus giving details of the course and cost may be obtained on application to the Honorary Secretary, School of Physic, Trinity College, Dublin.

A COURSE in practical orthopaedics will be given at Berck-Plage during the week commencing August 9th, and will deal specially with the treatment of surgical tuberculosis, infantile paralysis, and fractures. The fee for the course is 150 francs, and further information may be obtained from Dr. Fouchet, 69, Quai d'Orsay, Paris, or the Institut Calot at Berck-Plage.

THE fourteenth congress of the Spanish-American Ophthalmological Society will be held at Salamanca from September 15th to 18th, when the subjects for discussion will be: stereoscopic vision, introduced by Dr. Diaz Caneja, and dacryocystorhinostomy, introduced by Drs. Casadés and Basterra.

THE next French congress of oto-rhino-laryngology will be held at the Paris Faculty of Medicine under the presidency of Professor Sébilleau from October 13th to 17th. Further information can be obtained from the general secretary, M. Georges Liébaux, 216, Boulevard St-Germain, Paris VII.

THE German Pharmacological Society will hold its sixth annual meeting in Düsseldorf from September 22nd to 26th; the subjects to be discussed are chemotherapy and protein therapy.

SYMPATHETIC obituary notices of Sir Frederick Mott and Sir William Lelsham will be found in the issue of the *Archivos de medicina, cirugía y especialidades* for June 26th.

THE KING has granted Dr. Roy M. Humphreys, Inspector of the Sudan Medical Service, licence and authority to wear the insignia of the Fourth Class of the Order of the Nile conferred upon him by the King of Egypt for valuable services rendered.

PROFESSOR RAMÓN Y CAJAL, emeritus professor of histology at Madrid, has been elected a member of the Academy of Vienna.

THE epidemic of small-pox in Sutton-in-Ashfield cost the urban council an amount which will probably make it necessary to impose an extra rate of 1s. 3d. in the £. The expenditure of the council on the epidemic during 1925 was £2,267, and of £1,500 allowed last April to deal with small-pox £1,100 had been spent in the first quarter of the financial year. It was estimated that each patient cost £18 for isolation, etc.

THE statistics for 1925 compiled from reports of health authorities of the United States show that there were 43,193 cases of small-pox in the United States. During the first quarter of this year several thousand cases occurred in California, with 163 deaths, 136 of which were in Los Angeles alone. In Providence, on the other hand, where there has been an energetic vaccination campaign, there has been only one death from small-pox in the last fifty years.

OUT of a total of 147,010 medical practitioners in the United States 2,532 died in 1925. Their ages ranged from 25 to 107. Most of the deaths occurred between 60 and 70. Of the 2,420 deaths of which the causes were known, 874 were due to diseases of the circulatory system, including 559 of morbus cordis. Cerebral haemorrhage occupied the second place, with 233 deaths. Pneumonia was responsible for 223 deaths, and influenza for 26. Genito-urinary diseases caused 227 deaths, of which 161 were due to nephritis; 33 deaths were attributed to appendicitis, 118 to cancer, and 62 to tuberculosis. In 230 old age was the only cause assigned.



## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **The Editor, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

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MEDICAL SECRETARY, *Mediscern Westcent, London.*

The address of the Irish Office of the **British Medical Association** is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshigh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

### QUERIES AND ANSWERS.

"P. S. H." asks how he can best deal with a plague of fleas between the boards in an old wing of his house. Some improvement has followed washing the floors with 1 in 1,000 mercury perchloride, but the plague is not altogether stayed.

MR. D. S. PUTTANNA, F.R.C.S. Ed. (Krishnamjendra Hospital, Mysore), asks for advice in the treatment of a girl, aged 7, who is suffering from patches of leucoderma on the face and extremities.

DR. RAWEL CHAND SURI (Suri Medical Hall, Rawalpindi) writes with reference to an inquiry published last December (vol. ii, p. 1252) to inform us that there is a valid medicine named *Yograj*, which is a compound of many drugs. He offers to obtain fuller information if the inquirer desires.

### PAIN AFTER ARTIFICIAL MENOPAUSE.

"D. K. M. D." writes: Comments on the prognosis and suggestions as to the treatment of the following case would be appreciated: A single woman, aged 44, had suffered from pre-menstrual and menstrual pain since puberty. The uterus and adnexa seem normal. The uterus has been dilated and curetted on various occasions with little benefit, and the usual drugs were useless. Pain became so severe that she spent ten days in bed at each period, and on occasions required morphine. Her general health was poor. In September, 1925, she had deep x-ray treatment with a view to inducing the menopause, and has not menstruated since, but she complains of dragging pains which are more or less constant and are aggravated by exercise; they are not usually so severe as the previous menstrual pain, but as they are more or less always present, her condition has, in some respects, been worsened by treatment. She had further x-ray exposures in March last, and is at present taking liquor sedans in doses of 1 drachm.

### THE SPÄHLINGER TREATMENT.

"A. F." writes: In reference to the efforts made for several years past to induce the Ministry of Health to make a grant to enable M. Spählinger to carry on his work, is there any evidence that similar application has been made to any other Government; and, if so, with what result? Also, have the medical men of any other country shown any practical interest in the question of this treatment?

"We understand that the Swiss Government has instituted an inquiry into the value of M. Spählinger's preparations in the treatment of tuberculosis in cattle.

### INCOME TAX.

#### Income from Property.

"H. S. B. J." owns some property, the rents of which are more than swallowed up by interest payable on a bank advance and by the cost of repairs, but he is called upon to pay income tax.

"Apparently the bank interest is allowed for, but not the actual amount of the repairs. There is a percentage deduction from the gross rental value, which has presumably been made, but if that is insufficient a claim can be made for a further allowance based on the average expenditure over the five previous years. In this particular case 'H. S. B. J.' might usefully approach the inspector of taxes with the suggestion that, having regard to the alterations made in the premises, the further special

allowance might be based on the average expenditure incurred since that date. The expense of altering the premises is not, in the circumstances, allowable expenditure.

"W. A. N." inquires as to the assessment of untaxed interest and as to the new regulations with regard to the Irish Free State.

"Assuming that interest was received from a bank deposit and from 5 per cent. War Loan both last year and this year, the interest should be returned for assessment in each case on the basis of the amount received last year. The position with regard to the head rents from the Irish Free State may become clearer when the present proposals have become law; at the moment we are of opinion that 'W. A. N.' will have to allow deduction of Irish Free State tax from the rent and reclaim it by showing that he is chargeable to tax thereon in the United Kingdom.

### Purchase of Apparatus.

"D. M. M." has claimed to deduct as a professional expense the cost of a corneal microscope on the ground that it comes under the statutory rule authorizing the deduction of "sums expended . . . for the supply or repair of implements . . . employed." The inspector objects that the item in question is capital expenditure.

"We are of opinion that the inspector is correct and that the rule quoted does not refer to expenditure incurred in improving the equipment by adding an instrument of a kind which it had not previously included, but to the supply of such articles as 'loose tools' in replacement of similar ones which could not profitably be repaired. 'D. M. M.' will realize that his argument could be pressed to the point at which the original cost of a motor car could be claimed, an argument which is clearly untenable.

### Replacement of Motor Cars.

"C. G. G." refers to the reply given to "A. M." in our issue of July 3rd and desires further explanation as to the arguments against "A. M.'s" full claim.

"It is a fundamental principle of the income tax, enforced by many judicial decisions, that no allowance can be made for loss of capital. The one exception is the allowance given for wear and tear of plant and machinery year by year, which was not in point in 'A. M.'s' case. If a car costing £350 is sold for £100 and a similar one bought for £250, the net result is that the practitioner has expended £150 in replacing his car, and has lost £100 of his original capital through the fall in prices; that £100 was lost whether he bought another car or not, and as the loss was independent of the sale, it is, if allowable at all, allowable whether the sale was made or not. If, instead of buying the £250 car, the practitioner buys a superior car for £350, the foregoing still holds good; the difference is that there is another ingredient in the transaction: £100 of the original capital has been lost, but another £100 has been invested in the improvement of the equipment of the practice. On neither ground is any allowance due. Every practitioner is, of course, entitled to purchase what kind of car he wishes, but in our opinion the authorities are entitled to exclude from the expenditure (a) any loss of capital and (b) any amount spent in improving the equipment. We do not entirely follow our correspondent in his comments on the official notes, but he will no doubt appreciate the fact that they purport to deal with 'any amount expended in replacing obsolete plant'; if a particular item of expenditure includes an element of improvement as well as replacement, it seems open to the authorities to point out that the note deals with replacement expenditure only.

### Motor Car Transactions.

"A. N." bought a motor cycle in 1920 for £106 10s. and sold it in 1925 for £0; he also bought an M. C. car in 1921 for £320 and sold it in March, 1926, for £65, buying an S. car for £365.

"We advise 'A. N.' to claim in respect of the replacement of the M. C. car, £320-£65=£255, less any depreciation allowance he may have received in respect of that car. No allowance is due for the loss on the motor cycle, as it was not replaced; if 'A. N.' should in the future buy and run a second vehicle (cycle or car), he might obtain an allowance against it of £65 as the belated cost of replacing the motor cycle. The claim would be an equitable one.

"F. T. B." has used an L. car for several years and has had also another car as "second string." He has had no allowance for depreciation of either of his two present cars.

"It is now too late to claim any depreciation allowance for 1925-26, but it can be done for 1926-27. The allowance will be at 15 per cent., but on the value of the cars as written down at that rate year by year to, say, December 31st, 1925; consequently it will be small as compared with the original cost of the cars. Seeing that only small allowances will have been received when these cars are replaced, we advise our correspondent to

claim obsolescence allowance when that occurs in each case; that allowance should be calculated in the same way as a replacement allowance, except that the amount of the depreciation allowance actually received for the car replaced should be added to the amount received for it when calculating the claim.

## LETTERS, NOTES, ETC.

## HYDATID CYST OF THE ORBIT.

MR. H. B. WILLOUGHBY SMITH, F.R.C.S. (Gainsborough), writes as follows with reference to the case of hydatid cyst of the orbit reported by Dr. E. A. Seale in our issue of May 29th (p. 900): "I published an account of a case of hydatid in the orbit in a native child in the *Transvaal Medical Journal*, 1906. I forget the age of the child, but the cyst was tense, and on microscopic examination of its walls, etc., hooklets were found."

## TUNGSTEN ARC LAMP IN PULMONARY TUBERCULOSIS.

DR. T. E. LARKINS (London) wishes to know whether others have had good results in the treatment of pulmonary tuberculosis by the tungsten arc lamp. His experience, after three months, is that, with only one exposure a week, the cough lessens, the expectoration dries up, and the patients say that their general health has improved. Clinically, the physical signs are better, and bacteriologically there is a rapid decrease in the number of tubercle bacilli in the sputum.

## ESERINE IN GLAUCOMA.

WE have received from the medical officer of Thar Parka Civil Hospital, Mirpurkhas, Sind, India (B. C. Vachhrajani), a note in which he relates some cases which, in his opinion, indicate that eserine is a most valuable drug in the treatment of glaucoma and should be given a good trial before operation. A solution of eserine of the strength of 4 grains to 1 ounce is used, as a rule, two or three times a day.

## POISONING BY TOBACCO APPLIED TO THE SKIN.

With reference to notes published recently on poisoning by tobacco applied to the skin, Dr. M. CARNEGIE SIMPSON (R.M.O., Ross and Cromarty Joint Hospital) sends the following extract from *Bate's Dispensary* (1699): "Oil of Tobacco.—Anoint the pit of the stomach with gr. v or vi and the patient will presently vomit, but if you would move the body downwards, anoint about the navel therewith and the sick will presently fall a purging."

## DEVIATION OF THE NASAL SEPTUM.

DR. F. DALY (Shirebrook, near Mansfield) writes to express the opinion that deviation of the nasal septum (to the left in left occipito-anterior and to the right in right occipito-anterior) is brought about at birth by the pressure of the maternal parts in the soft yielding bones and cartilage of the child's nose. Firm pressure with finger and thumb on the nasal septum, just above the alae nasae, with traction in a downward and outward direction, corrects the deformity during the first two or three weeks of life.

## MENTAL IRRITABILITY AND BREAKDOWN IN THE TROPICS.

DR. OSWALD HORROCKS, F.R.C.S. Ed. (C.M.O. Annamalai Medical Association, Valparai, South India), in a letter on this subject, writes: "I have read the several letters in the *JOURNAL* during the past three weeks on the above subject. As it is necessary that a thorough investigation should be made and the real causes found, may I help by the following opinion, formed during the last three years I have been resident in Southern India? I believe that a deficiency of thyroid is at the bottom of the whole trouble. The gland may not function owing to hereditary tendencies. All the causes enumerated in other letters—such as bad food, the glare of the sun, drink, isolation, quinine, etc.—may affect a young man, but in spite of all these conditions his friends tell him that he is putting on fat. He is really becoming myxoedematous, with all its terrible symptoms of lassitude, etc. To help himself he drenches his system with salines, which make him worse; he finds temporary relief in drink, eventually taking too much.

The exciting causes in Southern India are high temperatures of disease lasting for some time, as in neglected malaria, typhoid fever, and suppurations—for example, appendix abscess and puerperal fever. I have had patients between the ages of 19 and 70 markedly improved on the administration of thyroid gland tablets.

A lad aged 19 (son of a myxoedematous mother), who had had malaria badly, and suppurated after a motor-bicycle accident, consulted me for lassitude, disinclination for his work, irritability of temper, sudden annoying attacks of frothy diarrhoea, and threatening suicide if he lost his job. I started him on 2-grain doses of thyroid nightly, telling him to increase the dose by half a grain until he found the amount that practically made him well. He is now taking 5 grains and is in perfect health and happy. His diarrhoea was probably the beginning of sprue. He takes no drink. Stop his thyroid for a week and he is ill once more. His mother had suffered from malaria badly before the birth of her son, and put on 4 st. in weight immediately after; she described it as "flabby fat," as if she were a beer drinker. She has not been the same as before. Her heart could not stand any strain: a sudden noise would upset her; looking down from a moderate height made her giddy and feel inclined to throw herself over. There was fear of impending death in a train or

motor car, a terrible feeling of lassitude described as a sinking through the earth. Her temper was becoming unbearable; she was a misery to herself and all around. Three years ago she consulted me for terrible acidity, with severe vomiting and collapse: 4 grains of thyroid at night and 2 grains after lunch keeps her in good health. She has lost all her symptoms; her heart has improved to such an extent that she enjoys a walk and plays badminton. Her memory, which she was rapidly losing, is now quite normal.

I believe a healthy man from home with a little care can live in any part of the world. A small proportion of drinkers abroad take alcohol for amusement's sake, but the greater number have something wrong and take it for the relief of lassitude and other symptoms. What makes the drink worse is the quantity of aerated soft water used to dilute the alcohol. It acts on the sweat glands and kidneys and reduces the salts in the blood. I have often seen six pints of fluid consumed by one man in an hour.

DR. E. HONTOUSE, in the course of a note on this subject, writes: "There are few more obscure problems in medicine than the interaction between the animal organism and its physical environment, climatic and meteorological, quite apart from the difficulty of excluding social and individual factors. I lived for two years in Colorado, at elevations of 5,500 ft. and over. It was well recognized that after a continuous stay many people, especially women, became restless, sleepless, and irritable. But the first effect was that exaltation which the Bishop of Singapore mentions, as described by Dr. Leys in Kenya, and which frequently led to overexertion on the first arrival. A brief return to lower levels every year was sufficient to put most people right; if they stayed on the chief is humidity, in fact, the effect of the solar rays is quite different in Colorado and inland Australia, outside the tropics, both dry regions. Sunstroke, so called, in Colorado is practically unknown, even though summer temperatures of 90° F. and over are common. Both there and in Australia it is possible to ride or work in the open all day with the thermometer standing at from 90° to 110°, without any more protection than in England. I understand this is also true in Kenya and elsewhere, though I believe it would be considered lunacy to attempt the same in India or the Malay Peninsula. At present, so far as I know, there is no sufficient scientific reason to be alleged for these differences, and the whole subject requires much more careful investigation considering its importance to the empire. The problem, for example, of how much of Australia is really a "white man's country" depends on these factors.

## A HUMAN OSTRICH.

DR. J. LIVINGSTON (Barrow) sends a description of the removal by operation of a large number of foreign objects swallowed by a patient—a man, aged 35, who was admitted to hospital with acute peritonitis, the provisional diagnosis of appendicitis having been made. Knowing the patient's previous history, he was questioned as to the possibility of his having taken anything to cause his illness. He denied this and was apparently quite rational. On opening the abdomen the whole peritoneum was seen to be intensely inflamed, and several very hard foreign bodies were felt in the intestinal canal near the ileo-caecal valve. The foreign bodies were: two state pencils 1½ and 1½ in. long; part of an iron boot-heel plate, 3 in. by 1½ in.; a thin iron plate, 1 in. by 1½ in.; a piece of lead piping, 1½ in. by 1½ in.; the blade of a knife, 2½ in. long; two needles, 3½ and 1½ in. respectively; half a safety-pin, 1½ in.; three nails, 1½ in. long; a piece of metal, 1½ in. by 1½ in.; and a piece of glass, 1½ in. by 1½ in. The sharp edge of the larger iron plate had perforated the bowel in several places during its passage. The long objects and the piece of glass were found collected in the second part of the duodenum, and were removed with difficulty. The patient died two days later, and at the necropsy another small needle was removed from the pancreas and a collapsible tube, 1½ in. long, from the intestinal tract.

## LONGEVITY IN A FAMILY.

DR. A. E. ROCHE (London, W.) writes: "Having received from a paternal uncle (one of a family of nine, all surviving, well, and active) a list of the ages of his brothers and sisters, I think it of sufficient interest to justify publication. The three eldest are males aged 79, 77, and 75, and a female follows aged 74. Next come two males aged 70 and 69, after whom there are three females, whose ages are 67, 64, and 63. The average age of the nine is thus 70. Echoing the query so frequently met with in popular publications, I ask, 'Can any reader beat this?'"

## VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 31, 32, 33, 36, and 37 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 34 and 35.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 109.

## British Medical Association.

## PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

## SECTION OF OBSTETRICS AND GYNAECOLOGY.

COMYNS BERKELEY, M.D., M.Chir., F.R.C.P., President.

## PRESIDENT'S OPENING REMARKS.

THE President, in his opening remarks, reminded those present that it had always been the tradition of that Section, at any rate, to select as subjects for discussion those which interested more especially the general practitioner. The committee, in accordance with this tradition, had selected three subjects for this meeting, and it could truly be said in connexion with all three that the family doctor was frequently being called upon to give advice and, in many instances, to make important decisions. The subject of that morning's discussion, the indications and methods for the termination of pregnancy before the viability of the child, was one which members of the medical profession were continually coming up against, and one being worried about, and he was sure that all present were looking forward to a most interesting discussion.

## DISCUSSION ON INDICATIONS AND METHODS FOR TERMINATION OF PREGNANCY BEFORE THE VIABILITY OF THE CHILD.

## OPENING PAPERS.

I.—THOMAS WATTS EDEN, M.D.,

Consulting Obstetric Physician, Charing Cross Hospital.

## THE INDICATIONS FOR INDUCTION OF ABORTION.

## GENERAL CONSIDERATIONS.

THE medical profession has always recognized that its members should not make themselves responsible for the termination of pregnancy unless there are good reasons for believing that completion of the pregnancy would actually endanger the mother's life or prejudice her future health. It has never been possible, and probably never will be possible, to lay down strict rules as to the conditions under which abortion may be or should be induced. If it were possible, these rules would need revision from time to time, to bring them into line with progress in the management of disease. It is therefore a matter of practical interest for us to take stock of the position from time to time, and see to what extent we are agreed upon the conditions which may fairly be regarded as indications for inducing abortion.

I am not one of those who feel that our attitude should be a very rigid one in this matter. Each case deserves consideration on its merits, and sympathetic consideration too, for although to a healthy woman pregnancy is often a period of unusual well-being, to an ailing woman it may be a long-drawn and painful penance. We ought to make it clear to our patients that this aspect of the matter has been duly weighed in the advice we give them.

It is an ethical question of great interest to what extent we as doctors have the right to insist that a woman shall pass through an ordeal which she is unwilling to face, even if we do not think that she will sustain any permanent injury from so doing. I recollect a case that occurred many years ago now, which first led me to relax the rather rigid views in which I had been brought up. I had attended the wife of a distinguished barrister in her first and second confinements. A third pregnancy followed after rather a short interval, and she was very unwilling to go on with it. She was a woman of great intelligence and of a sensitive artistic temperament. Both she and her husband took the view that, the prospective baby being theirs, it was their own

affair whether they allowed their work to be completed or not. They did not care a jot for the rigid views generally taken by the medical profession. They had formed the opinion that a third pregnancy coming so soon would materially affect the wife's health, and they did not see why this risk should have to be faced at the dictation of professional standards. I was a good deal shaken by this view, and persuaded the patient to take the opinion of the late Dr. Horman, a man of much longer experience than I had at that time. A good deal to my surprise, he at once took the side of the patient and her husband. He agreed that their apprehensions were probably exaggerated, but he said we had no right to ignore them, and, after all, it was accepted that rapidly recurring pregnancies often affected the mother's health very unfavourably. So the end of it was that the pregnancy was terminated. The sequel to the case Dr. Horman never knew. Within six months the same thing happened again—that is, the patient became pregnant and wanted it terminated. This time I flatly refused to interfere, with the consequence that they went to one of my colleagues, whom they found more pliable, and I have never seen them since.

I am, however, prepared to defend the view that it may at times be right to terminate pregnancy, even if the mother is not suffering from any condition which could, strictly speaking, be called disease. The cases in which this can be done require, however, the most careful consideration, and the propriety of interfering in such circumstances must be held with a tight rein.

As a rule when we advise the induction of abortion it is for some definite morbid condition which can be classed as disease. I do not propose to weary you by going over all the conditions which can possibly be said to be indications; you will find them all in the textbooks. It will be more congenial to the atmosphere of a summer meeting if I take up a few of the more important ones, which we may all expect to meet with in our ordinary work.

## MEDICAL INDICATIONS.

## PHthisis.

I will first take the subject of pulmonary tuberculosis. You will not be surprised to hear that obstetricians differ as to the necessity of terminating pregnancy in this condition—not only English obstetricians, but those of other countries also. It is not a question for the obstetricians alone, for the views of physicians with large experience of the treatment of phthisis must also be taken into account. The teaching of Osler<sup>1</sup> may be summarized as follows:

1. A woman with arrested or cured pulmonary phthisis, where the family history is bad and her physique below the standard, runs grave risks if she becomes pregnant; if, however, there is no hereditary taint and her physique is good, there is not much risk.
2. If there is active disease—that is, fever, bacilli, etc.—pregnancy usually hastens the process, and the disease advances rapidly after parturition.
3. The risk increases greatly with repeated pregnancies. Osler quotes with approval the dictum of Dubois: "A woman threatened by phthisis may bear the first accouchement well, the second with difficulty, the third never."

In my opinion this is a matter in which we, as obstetricians, should act only in close association with our medical colleagues. We are not, in point of fact, in a position to decide for ourselves. There are a number of points at which midwifery and medicine come into close contact, and these points must be viewed from both sides in order that their bearings may be properly understood. For my own part I am prepared to accept and act upon the views of Osler which I have just quoted. This means that we should be prepared to terminate pregnancy in the early months whenever there is active pulmonary phthisis, except in the case of patients who are obviously dying. And further, that in cases of healed or arrested phthisis the whole circumstances should be reviewed in consultation with a physician before coming to any decision. It will be remembered that we are not considering the question of inducing labour with a viable child; that is another story into which I must not enter.

A word or two on the chances of life of children born to a phthisical mother will not be inappropriate. The statement is usually made that phthisical mothers bear well

developed and healthy children. As a matter of fact they usually do, although we know that tubercle bacilli can pass through the placental filter. There is some reason to believe, however, that apart from the transmission of tubercle the expectation of life of these infants is not normal. The statement is made by Couvelairo<sup>2</sup> that of infants born of mothers with active phthisis (tubercle bacilli in sputum) 38 per cent. do not survive the first month of life; this compares with an average mortality in France for the first month of 4.15 per cent. Couvelairo attributes this, not to direct transmission of the disease, but to the fact that these infants are born with a "diminished coefficient of vitality." I know of no corresponding observations in this country for the first month of life, but some very valuable data on the condition of the children of tuberculous mothers have been published recently by Dr. Ward, the tuberculosis officer for South Devon.<sup>3</sup> Dr. Ward traced the history of 372 of these children born in his district, and found that 34 per cent. became definitely tuberculous and a further 21 per cent. were suspect; of those definitely tuberculous one-fourth died. He concludes from control observations that the children of a tuberculous mother are seven times more likely to become tuberculous than are those of healthy mothers. Dr. Ward's observations led him to the further conclusion that of tuberculous women who became pregnant over 50 per cent. were definitely worse, while 19 per cent. were definitely improved. In addition to the 50 per cent. who became worse, in a further 21 per cent. the disease began during either pregnancy or the puerperium.

There seems no escape from the conclusion that on the whole pregnancy is a definite risk to the tuberculous mother; and further, it is not to the advantage of the community that children should be born over whom there hangs a risk of tuberculosis seven times greater than that which is run by other children. To my mind these considerations form very powerful arguments for the termination of pregnancy in women who are subjects of active tuberculous disease.

#### *Chronic Nephritis.*

To women suffering from chronic nephritis pregnancy is always attended by certain very definite risks. In the first place, complete breakdown of the renal function may occur during pregnancy, leading up to uraemic convulsions; in the second place, an intercurrent attack of acute nephritis may supervene during pregnancy; in the third place, supposing these complications occur and are survived, the working capacity of the damaged organs will be permanently reduced. Further, accidental haemorrhage, especially the toxæmic form which is associated with interstitial haemorrhage and necrosis of the uterine muscle, occurs in a relatively high proportion of cases of chronic nephritis. Lastly, in addition to the maternal risks the foetal risks are very heavy: probably not more than 60 per cent. of the children survive, death being due partly to prematurity and partly to the results of transplacental intoxication.

Notwithstanding these clearly defined risks, it is possible for a woman with chronic nephritis to survive the ordeal of repeated pregnancy, and to produce a fair proportion of children who survive. Herbert French, in his Goulstonian Lectures,<sup>4</sup> mentions the case of a woman who had shown the signs of chronic nephritis for thirteen years, and who bore six children, but he does not state how many of them survived. It is necessary, therefore, to take a reasoned view and to realize that the conditions I have mentioned are, after all, risks and not certainties. A proportion of cases will always escape, and the time may come when we can distinguish, more clearly than at present, the factors which render prognosis grave from those which render it more favourable.

The clinical type of nephritis has an important bearing on the prognosis. The hydraemic type, which is characterized clinically by dropsy, and in which the renal difficulty is in the passage of salt and water, is much more serious from our present point of view than the azotaemic type, in which there is no dropsy, but slowly progressive cardio-vascular and retinal changes, and in which the renal difficulty is in the excretion of the waste products

of metabolism. In cases of the latter class pregnancy may be expected to proceed much more favourably than in the former.

We might, perhaps, put it like this: that a pregnant woman with chronic nephritis who develops dropsy in the early months, especially if this affects the face and upper extremities, is in great danger. In the absence of the early appearance of dropsy the danger is not so obvious at the moment, but if pregnancy is allowed to continue a most careful watch should be kept upon two things: (1) the adequacy of renal elimination as shown by a combination of the blood urea estimation with the urea concentration test in the manner advised by Professor Hugh Maclean, (2) the blood pressure.

I suggest that the following considerations may guide us in regard to the question of inducing abortion: (1) A woman with chronic interstitial nephritis (azotaemic type) may be allowed to carry on under supervision with her first pregnancy. (2) In subsequent pregnancies early abortion should be induced if a serious renal breakdown—for example, uraemic manifestations—occurred in the previous pregnancy. (3) In any woman with chronic nephritis the occurrence in early pregnancy of albuminuria, and oedema of the renal type, justifies, if it does not actually require, the induction of abortion.

#### *Bacillus coli Infection of the Urinary Tract.*

This condition in its subacute form, which is not uncommon, does not lead to serious developments during pregnancy, although it is sometimes the cause of an acute outbreak of fever during the early puerperium which may closely resemble the onset of puerperal sepsis. I have, however, seen a case, early in the present year, in which abortion had to be induced, and the circumstances were so uncommon that it may be of interest to give them in brief outline.

The patient was a young lady about six and a half months advanced in pregnancy when I saw her in consultation. Earlier in her pregnancy she had had a very acute urinary infection which led to the formation of an abscess in the left kidney; this kidney was removed; she survived the operation without interruption of the pregnancy, and her general condition improved very greatly. All went well for six or seven weeks, and then fever reappeared, with acute pain in the right renal region, and the urinary signs of a *Bacillus coli* pyelitis. The patient had only one kidney; it was imperatively necessary to safeguard this kidney from further damage, and in view of the results of the first attack it was decided to terminate the pregnancy at once, which was done by Caesarean section, as the indications for intervention were urgent.

This case is, of course, quite exceptional, and I quote it only to show that a condition which as a rule is comparatively free from risk may nevertheless develop in such a manner as to threaten life.

#### *Diabetes Mellitus.*

I need say very little about this condition because, although in the past we have regarded it as one of the gravest intercurrent diseases in pregnancy, with the resources of insulin treatment at our disposal its risks have been very greatly reduced, though not, I believe, entirely eliminated.

May I remind you that the detection of sugar in the urine is not enough of itself to establish a diagnosis of diabetes? Glycosuria and lactosuria are not uncommon in pregnancy; they are not accompanied by an increase in the percentage of blood sugar, nor are they accompanied by the characteristic symptoms of diabetes, such as polyuria, thirst, and wasting. Glycosuria is apparently due in these circumstances to a lowering of the renal threshold for sugar, and I believe it is at present an unsettled question whether or not there is a risk in such cases of the subsequent development of a true pancreatic diabetes. A case of simple glycosuria is always amenable to dietetic treatment, and never forms an indication for abortion.

#### *Heart Disease.*

Valvular disease of the heart seldom calls for induction of abortion. A young woman with a well compensated valvular lesion will, as a rule, pass through one, or possibly two, pregnancies without suffering serious inconvenience. Repeated pregnancies, especially if they follow quickly upon one another, undoubtedly damage the heart and reduce the patient's expectation of life.

The nature of the valvular lesion is of little importance; it is the state of the cardiac muscle which controls the situation, and it is only when signs of failure occur that the condition becomes serious. In my opinion there are two types of case in which it may be right to induce abortion: (1) the woman who in the early months of pregnancy shows signs of failure of compensation; (2) the woman in whom a previous pregnancy led to a serious cardiac breakdown. In the latter instance pregnancy should be terminated at the earliest possible moment, for there is no doubt the patient is in imminent danger. In the former the risk is less serious, and by careful management she may come through successfully. The risks should, however, be explained to the patient, and if it is her own wish to face them our duty is to do all we can to minimize the danger.

#### *Diseases of the Nervous System.*

*Insanity.*—I have several times terminated pregnancy on the advice of a psychiatric physician in one of the following set of circumstances: (1) the patient had recovered from a previous attack of puerperal insanity; (2) the patient was what is called a "border-line" case, and had a bad family history. I regard such cases as those as pre-eminently suitable for team work. I do not think general practitioners or obstetric surgeons should, either alone or together, assume the responsibility for a decision. The whole of the circumstances of the case should be reviewed by the general practitioner, the psychiatric physician, and the obstetric surgeon in company, and considered in all their aspects before induction is decided upon.

*Chorea* is a disorder which is not very uncommon in pregnancy, and which is, as a rule, amenable to simple management by complete rest in bed (in a room apart), careful feeding, and the administration of arsenic. Occasionally severe cases associated with pyrexia are encountered; these are often obdurate, and it may be that termination of pregnancy may now and then be necessary in the pyrexial cases. In all others, no matter how severe the clonic spasm may be, induction of abortion need not be considered.

#### *Psychopathic Disturbances.*

I have made use of this heading to bring in a case which I do not know how to classify otherwise. The details of the case are briefly as follows:

The patient was a young woman who had had two children; after her second confinement an operation for suspension of the uterus was done (in 1919), which was followed by a very severe and prolonged phlebitis of the left leg, affecting chiefly the thigh. For many months she was in bed, and the leg never completely recovered. During her convalescence she was seen twice by an obstetric surgeon, now deceased, for whose opinion I always held the highest regard. He formed the opinion, and impressed it seriously, not only upon the patient, but also upon her husband and her mother, that it would be most dangerous for her to have another child at any time. When, therefore, at the beginning of the present year, she realized that she had again become pregnant, she, her mother, and her husband were all convinced that her life would be endangered if pregnancy was allowed to continue. I saw her in consultation with her family doctor and another obstetric surgeon, and each one of us was impressed with the seriousness of the effect produced upon the minds of all three of them by the opinion given at the time of her serious illness. The patient's mental condition was pitiable; she was, colloquially speaking, "scared to death," and nothing that any of us could say, although we said it repeatedly for several days while she was under our observation, produced the slightest change in her mental attitude. Her general health was fairly good, her pregnancy was normal, and there was nothing in the pelvis to suggest that any inflammatory residue had been left in the broad ligaments. The left thigh was a bare half-inch larger in girth than the right, but there was no other physical change in the limb. Two points were clear to us: (1) she would have been perfectly willing to continue if she had not been convinced in her own mind that she would never get over it; (2) there was absolutely no reason for intervention apart from her mental condition. What, then, were we to do? The patient, her mother, and her husband believed her life to be in danger; her own attitude was, "It is all very well for these men to say there is no danger, but if they are wrong I shall die, as the other doctor said I should."

We were powerless to get this attitude modified; we therefore decided to terminate the pregnancy, and this was successfully carried out.

If any are disposed to think that we acted wrongly I would ask them to consider what effect six months of mental torment would produce upon both the mother and

the child she was carrying. The effect of fear depends in no way upon the extent to which fear may be justified, and when we cannot eradicate it we must give it due weight in our considerations.

I hope I shall not hereafter be quoted as holding the opinion that any woman who says she is afraid of having a baby may be relieved of it. The circumstances of the above case are, in my experience, unique, and if there is a moral to the story it is this—that it can seldom, if ever, be our duty to tell a patient that it would be impossible for her to survive another pregnancy.

#### *OBSTETRIC INDICATIONS.*

These are, comparatively speaking, few and relatively unimportant. I propose to speak of three only—namely, toxæmic vomiting, vesicular mole, and retention of a dead ovum.

#### *Toxæmic Vomiting.*

Under this heading I include only that form of persistent vomiting in early pregnancy which is accompanied by definite signs of toxæmia, such as a heavy albuminuria, a raised blood pressure, pyrexia, and wasting. Toxæmic vomiting sometimes proves to be incurable by medical means, and must then be arrested by terminating the pregnancy. Cases which come to induction are extremely rare in London, and I have not myself for many years seen a case which I thought required it.

It is difficult to form any estimate of the frequency of toxæmic vomiting. In the year 1913 the Registrar-General's report shows that 42 deaths were certified in England and Wales as being due to "uncontrollable vomiting" out of 3,500 deaths from causes connected with childbirth. In the City of Manchester Lying-in Hospital 9 deaths from the condition were recorded in the ten years 1913 to 1922. Cases of vomiting which end fatally must be presumed to be toxæmic in character, and these figures indicate that, though rare, the condition is not so uncommon as some of our teachers would have us believe.

Although toxæmic vomiting is rare, other forms of hyperemesis are fairly common, and are always amenable to medical treatment. The commonest form is the functional case which can be cured by segregation, or simply by removal from home surroundings to the healthier moral atmosphere of a hospital ward. Induction of abortion is not to be contemplated in these cases, which can be distinguished by the absence of the signs which I have just mentioned as characteristic of toxæmic vomiting.

#### *Vesicular Mole.*

This condition, when diagnosed, is an invariable indication for induction of abortion. Exact diagnosis cannot, as a rule, be made until, after considerable hæmorrhage, the os internum is found to be open and the finger can detect the vesicular contents of the uterus. Before this stage is reached a presumptive diagnosis can be made from the syndrome which is fairly characteristic—namely, hæmorrhage, usually slight and continuous, overenlargement of the uterus, absence of the physical signs which indicate a foetus in the uterine cavity, and a characteristic semi-solid consistence of the uterus. If all these signs are present, the case is either one of vesicular mole or of a dead ovum with retained hæmorrhage. The treatment in either case is induction of abortion, and, as Dr. Barris will no doubt tell you, the circumstances are eminently suitable for the castor oil and quinine method of induction.

#### *Missed Abortion.*

The retention of a dead early ovum in the uterus is as a rule easily diagnosed, when an interval has elapsed which is sufficient to allow of shrinkage of the uterus. I can see no reason for leaving a dead ovum in the uterus; it is true that sooner or later it will be spontaneously expelled, and it very rarely becomes infected. It is, however, a source of annoyance and suspense to the patient, and on general principles a foreign body should not be allowed to occupy a visceral cavity when once its presence has been diagnosed. Here also the castor oil and quinine method is usually effectual.



*Haemorrhage.*

It would not be appropriate to our subject for me to say much about uterine haemorrhage. According to our classification bleeding without signs of uterine action constitutes a "threatened abortion," which is not quite what we are discussing. When, however, in a threatened abortion, active treatment is resorted to, this is hardly distinguishable from induction.

I should like to say this—that my experience is that very free haemorrhage in the early months of pregnancy does not, in all cases, result in abortion. I recollect the wife of a colleague of mine having a really alarming bleeding at two and a half months, so severe that I did not think it possible that the ovum could have survived it. My colleague, who was a general physician, was unwilling that active treatment should be resorted to, and in the event he was justified, for the child was carried to term and she is now herself a mother. I think, therefore, that we should never be in a hurry to interfere with a threatened abortion because it is attended at the onset by severe bleeding. Persistence of bleeding is of more serious import for the life of the ovum than an initial smart haemorrhage.

## REFERENCES.

<sup>1</sup> *Principles of the Practice of Medicine*, eighth edition. <sup>2</sup> *Obstétrique Sociale*. <sup>3</sup> *Lancet*, September 15th, 1925. <sup>4</sup> *BRITISH MEDICAL JOURNAL*, May, 1908.

## II.—A. LOUISE McILROY, M.D., B.Ch., D.Sc.,

Professor of Obstetrics (School of Medicine for Women), University of London.

DR. EDEN has given us what we expected of him—a moderate and well balanced opinion on the indications for the induction of therapeutic abortion. He epitomizes to a great extent the opinion of a large majority of the medical profession.

The subject is of very great interest owing to the diversity of opinions held by practitioners of different nationalities. It has many difficulties, as it is easy to generalize and take a definite line of conduct in a debate; but when faced with an actual patient whose many interests come under consideration no hard and fast rule can be adhered to. Each individual case must be judged on its own merits, and the rule that applies to medical treatment in general must be applied here—namely, that the patient must be treated, and not the disease.

It may be taken as understood that every practitioner, for ethical reasons, is unwilling to perform the operation of induction and is only driven to it by dire necessity. It is a confession of failure and shows the limitations of our knowledge with regard to the treatment of disease. There is no doubt that as scientific research advances the indications for induction of therapeutic abortion will in time diminish almost to vanishing point. Everything depends upon the severity of the condition, the result, and more especially the failure, of treatment. The surroundings of the patient, the facilities for efficient treatment, all must be borne in mind and due consideration given to the conditions which would enable her to endure, or prevent her enduring, a pregnancy without risk to her health or life.

Each case must be given consideration, and the onus of advising intervention should be undertaken by the obstetrician only after consultation with a physician or, possibly, a clinical pathologist. Induction of abortion should not be a substitute for efficient treatment otherwise. Too frequently patients are sent to the obstetrician for the performance of the operation before other methods of treatment have been given a fair chance.

In this discussion I have adopted an arrangement that is somewhat different from that of Dr. Eden in that I do not include under the present classification those cases of induction in which the ovum is already dead—namely, vesicular mole, haemorrhage from separation of the ovum or placenta, and missed abortion. They do not present the same controversy, nor do they involve the same ethical aspects as are found in the case of the living ovum.

Dr. Eden says we must revise our ideas as to induction from time to time so as to keep abreast with the advances

of modern medicine which are constantly presenting new methods of successful treatment in other directions. We are now beginning to recognize that the ovum is only a temporary lodger and that its advent has not always the disastrous or malignant effect upon the maternal organism our medical forefathers were wont to believe. In my own experience, as the years go on I tend more and more to reduce the number of cases of induction of abortion, in the light of a wider knowledge concerning the conditions of pregnancy.

There are three aspects of the question to be considered—the legal, the ethical, and the therapeutic.

The legal aspect is that induction of abortion is always against the interest of the State, therefore legislative measures and precautions have been taken to prevent its performance except in cases of medical necessity. It is a criminal offence. The practitioner should make sure of his ground when confronted with a patient who is desirous of obtaining an interruption of her pregnancy. In all cases whenever possible he should secure a second opinion. In the experience of most of us women have sought our advice and tried to convince us that the pregnancy might result in suicide or great mental strain and possibly mental breakdown. While every sympathy is given to the case which Dr. Eden quotes, that of a married woman, I would like to be able to extend the same attitude of mind to a woman who comes to us distracted because of the occurrence of pregnancy after rape by an unknown assailant. It is just in such cases that complications with regard to the legal aspect of the case arise.

In my practice I have always had conscientious scruples against the performance of induction of abortion, and I teach my students the value of serious consideration before undertaking the operation. No social or economic interests apart from the medical needs of the case should be taken into account. We should not be influenced by any likelihood of defect in the character of the offspring. If completion of gestation is undesirable for medical reasons, we should urge the avoidance of subsequent pregnancies, and the necessity for abortion at future dates would therefore be eliminated. If this course is impossible, the question of sterilizing the patient has to be discussed, and in some cases sterilization is the only course to be adopted. We must not be influenced by the consideration that if we do not perform the operation of induction the next consultant will.

Advanced knowledge has led to treatment of retroversion of the gravid uterus, for example, which is in accordance with ethical teaching—and there is no doubt that a course which is attended with some difficulties to-day will be the recognized method to-morrow. Our present knowledge is limited, and we have perforce to perform induction of labour in a few cases however reluctant we may be to resort to the expedient.

The medical aspect of induction divides itself into two headings—namely, (1) induction for disease complicated by pregnancy, and (2) induction for disease due to pregnancy.

1. *Induction for Disease Complicated by Pregnancy.*

In such cases we must remember that the ovum is of the nature of a parasite to this extent—that it will look after its own interests before that of its mother. During gestation extra strain is thrown upon the maternal excretory organs, more especially in cases of defective renal function and in heart disease. We have to consider, not only the immediate condition, but the effect of pressure and increased strain in late pregnancy.

I am glad Dr. Eden took up the question of pulmonary tuberculosis first, as in my opinion it is now one of the few conditions in which induction is indicated. Acting in consultation with a chest specialist, and provided no alternative treatment is prescribed by him or is available, completion of pregnancy being likely to interfere with cure, one would certainly adopt it.

In my experience the occurrence of pregnancy is a calamity in active phthisis, especially in hospital practice. The well-being is often fictitious, especially in multiparae. The course of the disease—due to a virulent organism—is often rapid after delivery, as resistance is low, and the end may be fatal. Induction should be performed before

the twentieth week. Pregnancy should be avoided in active pulmonary tuberculosis. The pregnancy should, however, be allowed to continue in cases where the disease is arrested and facilities for treatment are available. The provision of continuous sanatorium treatment throughout pregnancy and after would do much to lessen the necessity for induction. Again, before sending patients to the obstetrician the physician ought to try all possible methods of direct treatment for the pulmonary condition—as, for instance, artificial pneumothorax.

Induction is useless if the disease is far advanced or of rapid course, as it is unnecessary to sacrifice the child. It is employed, not as a method of cure in itself, but as a preventive of further advance of the disease. In my experience the infants are born healthy, but their standard of survival is lower than normal.

**Heart Disease.**—The obstetrician is frequently influenced by the physician to induce abortion, as the latter looks upon pregnancy as a disaster and labour an ordeal. I have modified my opinion regarding the serious effect of pregnancy upon heart disease; given sufficient rest during pregnancy the results are very satisfactory in most cases. The day of hurried delivery by forceps is past. In many cases the heart condition is little affected, and in some cases it is improved. In working women pregnancy is sometimes a safeguard, as it brings them under the care of a practitioner, and ensures rest and treatment. If signs of failure in compensation in early pregnancy appear, and medical treatment has failed, then the question of induction should be considered, especially in the case of a multipara. It is important to remove the element of fear from the patient. The interruption of pregnancy sometimes causes depression, and has a bad effect upon the heart. Caesarean section may be necessary if labour appears to be complicated. Sterilization of the patient is performed sometimes, but it is not always advisable, as the heart condition may so improve as to permit of pregnancy in a few years' time.

**Nephritis.**—If there is evidence of kidney damage induction may have to be performed, especially in multiparae. It is not uncommon, however, to have spontaneous abortion of the ovum. The continuance of foetal life in cases of severe nephritis is very uncertain.

**Pylitis.**—The treatment is so successful in most cases that induction of early pregnancy is seldom required. Spontaneous expulsion of the ovum may occur if the temperature is high. Induction is risky owing to the possibility of auto-infection.

## 2. Diseases due to Pregnancy.

Toxaemia is very rare in early pregnancy. Most cases of vomiting are functional; if vomiting is due to toxaemia it is a very serious condition and induction should be performed.

Hydrannios occurs, but is rare in the early months. Insanity may be due to toxaemia and should have appropriate treatment; it is rarely necessary to interrupt pregnancy for this disease.

In chorea abortion is rarely indicated; appropriate treatment gives better results.

In the Obstetrical and Gynaecological Unit of the Royal Free Hospital, out of 5,000 in-patients under treatment induction of abortion was performed 15 times. Of 29 cases of pulmonary tuberculosis, abortion was induced in 5 cases. Of 120 cases of heart disease induction was performed for failing compensation in 3 cases; 2 cases were induced for toxaemia and nephritis, one for progressive disseminated sclerosis, one for progressive tabes dorsalis with paralysis, one for epilepsy, one for arsenical poisoning, and one for acute hydrannios. Advice was given as to the avoidance of future pregnancies, and in some cases sterilization was carried out. X rays hold out a promise of effective sterilization in these cases without the risk of operative intervention.

## Methods of Inducing Abortion.

The methods of induction of abortion may be divided into two headings—slow and rapid.

The slow method is much to be preferred, especially in cases of severe wasting disease such as phthisis, where

haemorrhage has a harmful effect upon the recovery of the patient. Induction can be performed by tents, in many cases with successful results and without the onset of sepsis. The dilatation of the cervix by Hegar's dilators and the introduction of a gauze and glycerin drain causes the uterus to empty its contents subsequently with little or no haemorrhage. But it must be remembered that the stimulation of the uterus to contract and expel its contents is not always an easy accomplishment. A small rubber tube or large catheter inserted into the uterus sometimes acts very satisfactorily. In pregnancies in which the foetus is palpable induction may be brought about by passing the rubber tube, or by rupturing the membranes and pulling down a leg.

The rapid method of clearing out the ovum under anaesthesia, as is done in cases of incomplete abortion, is not advisable except in very early pregnancy, owing to the risk of haemorrhage and laceration in a patient already de-vitalized by disease. It almost comes under the heading of accouchement forcé. The operation of vaginal hysterotomy as described by Mr. Barris seems to be one of risk for a patient who is suffering from active pulmonary or advanced heart disease. The performance of abdominal Caesarean section for removal of a non-viable ovum does not seem to have many arguments in its favour.

## III.—J. D. BARRIS, M.B., F.R.C.P., F.R.C.S., Physician Accoucheur, St. Bartholomew's Hospital.

DR. EDEN, in his address, has confined his remarks to the indications for the artificial termination of pregnancy before the viability of the foetus. We have now, therefore, to consider the methods by which the pregnancy may be brought to an end when the necessity for so doing has been established. As my remarks on this subject must be limited to a short space of time, they will deal with its broader aspects rather than its details.

The methods at our disposal fall into two groups—slow and rapid.

**Slow Methods.**—These consist of rupture of the membranes; plugging the cervix and vagina; dilatation of the cervix by means of laminaria tents or metal dilators or the small hydrostatic bag; introduction of small bougies; and administration of drugs alone or in combination with these methods.

**Rapid Methods.**—These include dilatation of the cervix, followed by rapid evacuation; vaginal hysterotomy; Caesarean section.

The principles by which we must be guided in our choice as to the particular method to be employed may be stated to be—first, to regard the early termination of a pregnancy as a labour in miniature. We must endeavour, therefore, if possible to make the uterus itself expel its contents rather than that we should drag out the ovum through the cervical canal, for to adopt the latter course as a routine would involve a greater risk of laceration, of haemorrhage, and of sepsis; nor is the ovum so likely to be removed completely. Secondly, we must bear in mind that we are not dealing with a woman in as good general health as we usually are when inducing premature labour for contracted pelvis, but with a woman whose resistance has been lowered in many cases by some general disease or by previous loss of blood. Our intervention, therefore, should be of such a nature as will entail the least strain on her already lowered resistance and the least risk of injury or further haemorrhage.

The application of the foregoing principles is governed by two factors: (1) The urgency of the need for the termination of the pregnancy—that is, whether a slow or rapid method is necessary. (2) The date of the pregnancy—that is, whether the period of the gestation is before or after the end of the first three months. Of these two factors the former is not as a rule of so much importance as the latter, for this involves the size of the foetal head and the degree to which the dilatation of the cervix may be necessary. This is the essential point, and methods which may be not only legitimate but desirable during the first three months may be unsuitable and even dangerous at a later date.

### *Induction Before the End of the Third Month of Gestation.*

The uterus can be evacuated readily by the rapid method during the first three months of pregnancy. In this case the ovum is small, and its tissues are of no great density; the head of the foetus will therefore be small and easily collapsible. The degree to which the cervical canal will require to be dilated will in consequence not be great. The uterine cavity will not be too large for the finger to be able to explore its walls completely, and the ovum can be separated readily from its attachments.

The slower methods, although satisfying an underlying principle in that they aim at exciting the uterus to contract and expel its contents spontaneously, are not therefore so definitely indicated. Nor are they always to be relied upon at this early date, for they may fail to excite uterine contractions, with the result that repeated manipulations may be necessary, entailing delay and an added risk of sepsis, so that operative measures may be required to complete the process. Furthermore, it is during the early period of pregnancy that the need for the termination of the pregnancy is more likely to be urgent, so that a more rapid method is required.

During the first three months of gestation, therefore, I think you will probably agree that we are justified in advising that dilatation of the cervix and immediate evacuation of the uterus is the best method. A set surgical technique with strict antiseptic precautions is necessary. A laminaria tent may be needed to aid the subsequent dilatation of the cervix by metal dilators. The dilatation should be sufficient to allow the gloved finger to pass, but the finger must not be forced through or severe lacerations in the region of the internal os and lower uterine segment may result. When the ovum has been gently detached by the finger it may be squeezed out of the uterus or withdrawn by the ovum forceps. The instrument must possess no sharp gripping points, otherwise a portion of the uterine wall may be grasped. Perforation of the uterus and the seizure of bowel have occurred. The decidua should, if possible, be separated by the finger, but the use of a blunt curette may be required; the sharp curette should on no account be used. A case has been under my own observation in which the uterine wall had been scraped through and the bowel damaged owing to the use of the sharp curette. When the uterus is empty the bleeding, which is often profuse, should be controlled by massage of the uterus and a hot intrauterine douche. Plugging may be required temporarily to control the bleeding. The anaesthetic employed should not be chloroform; it is preferable to use ether, or gas and oxygen.

### *Induction After the Third Month of Gestation.*

The evacuation of the uterus after the third month of pregnancy is a far more difficult problem. We are now dealing with an ovum which is larger, and its tissues are of greater density. The foetal head will therefore be both larger and harder. The degree to which the cervix must be dilated will now be considerably greater, and, if it is stretched too rapidly, severe laceration at the level of the internal os extending into the broad ligament and dangerous haemorrhage may result. The uterus also is now much larger, and it will not be possible to feel all over its internal surface with the examining finger owing to the size of the cavity being too great. Complete separation of the attachments of the ovum cannot, therefore, be assured, so that serious haemorrhage may accompany the manœuvre and portions of the placenta may be left behind. Since, also, the foetus is easily broken up at this stage of gestation and the cavity cannot be explored with certainty, it is possible that portions of the foetus may be overlooked. The foetal head may become detached and it may be extremely difficult to bring it out through the cervix. Although it is difficult to credit it, cases have been recorded in which the foetal head has been left behind and passed spontaneously subsequently—an occurrence difficult to explain satisfactorily to the patient. These manipulations, involving as they do a greater risk of damage to the maternal tissues, bring in their train also an added risk of sepsis. While, therefore, we are justified in advising dilatation of the cervix and evacuation of the

uterus before the end of the third month, we are not justified in using this procedure after this date. Even at the earlier date this operation is associated with considerable bleeding and is very repugnant, but after the third month it is fraught with such dangerous risks to the mother that its employment is to be avoided if possible.

In the rare instances when it is necessary to evacuate the uterus rapidly after the third month it is far safer, after having dilated the cervix as much as possible, to incise the anterior fornix transversely, strip up the bladder from the front of the cervix, and then divide the anterior lip of the cervix longitudinally so as to expose the uterine cavity. The membranes should now be punctured, the foetus gripped by a leg, and the uterus evacuated. This operation of vaginal hysterotomy enables us to empty the uterus completely with no risk of lacerating the maternal tissues, and is to be preferred at this stage of gestation to an abdominal Caesarean section.

The slower methods of terminating the pregnancy are, however, more usually indicated at this stage. Of these the best is to insert the small hydrostatic bag through the cervical canal after it has been dilated either by means of a laminaria tent or by metal dilators. It is advisable to insert the bag without rupturing the membranes, and its action may be assisted by the use of pituitrin. The other slow methods are not so reliable and may involve repeated manipulations and a greater risk of sepsis. If the pregnancy requires to be terminated on account of a carneous or vesicular mole the insertion of a laminaria tent in combination with pituitrin will usually induce the uterus to expel its contents spontaneously. The use of castor oil and quinine has also been recommended by some authorities, but I have not personally found it so reliable in these two conditions. In the case of a vesicular mole the evacuation of the uterus by abdominal Caesarean section has been employed with very satisfactory results.

### IV.—FREDERICK W. PRICE, M.D., F.R.S.E.,

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#### CARDIAC INDICATIONS.

The subject of cardiac affections in relation to marriage, pregnancy, labour, and the puerperium is of great importance to the medical practitioner. He is sometimes consulted by those who suffer from some cardiac affection about the question of marriage, or, in the event of marriage, whether pregnancy should be risked—either with regard to a first child or to further pregnancies. If pregnancy has occurred, he may have to decide whether it should be allowed, if possible, to go to term, and as to the best method of delivery, or whether abortion or premature labour should be induced, and as to the best method of emptying the uterus. Furthermore, the responsibility of the management of the pregnancy, the labour, and the puerperium rests upon him. The subject I have to deal with is limited to the cardiac indications for the termination of pregnancy before the viability of the child. I should also like to confine my remarks to the question of the risk to the mother's life, not dealing with that relating to her health after the puerperium.

It will be readily understood that pregnancy, labour, and the puerperium impose a strain upon the heart, even when the organ is healthy. Various factors contribute to this. During pregnancy there is an increase in the body weight, and in the circulation. The growing uterus gives rise to a gradual increase of pressure in the abdomen. It also causes a gradual raising of the upper level of the diaphragm, and interferes with its descent. The upward displacement of the diaphragm causes the position of the heart to become more transverse, and, as a result, the apex beat may appear in the fourth intercostal space and the left border may be displaced outwards. The chest wall becomes widened (Mackenzie). The combined result of the displacement of the heart, the diminution in the descent of the diaphragm, and the widening of the chest wall is an interference with the free movements of respiration. The foregoing factors together act as a mechanical impediment to the carrying on of an efficient circulation, which increases towards

the end of pregnancy. The result of this is that the heart has more work to do. The displacement of the apex beat and of the left border can be accounted for, at least partially, by the displacement of the heart. It is generally believed that it may be due partly to dilatation. Mackenzie has shown that this affects more especially the right side of the heart, and that not infrequently, even in healthy subjects, a certain amount of relative tricuspid incompetence may occur from time to time according to the condition of the patient. It is necessary to point out that what are called "crepitations" heard over the bases of the lungs, which disappear after a few breaths, are not indicative of oedema of the bases of the lungs; when they do not disappear after deep breathing they are indicative of oedema, collapse, pneumonia, or bronchopneumonia. A certain amount of shortness of breath on exertion after the twenty-eighth week of pregnancy is an almost normal occurrence. Oedema of the lower extremities, usually slight, but occasionally very considerable, may occur during pregnancy. This may be due to pressure of the uterus on the pelvic veins, but when it extends above the knees it is the result of albuminuria, or, less frequently, of cardiac failure. Varicosity of the veins of the lower extremities and of the vulva may be observed, as the result of pressure of the uterus on the pelvic veins. It is therefore to be observed that displacement of the apex beat and of the left border of the heart, increased transverse diameter of the area of cardiac impairment, the occurrence of a systolic murmur with its point of maximum intensity in the tricuspid area, crepitations over the bases, disappearing after a few breaths, a certain amount of shortness of breath after the twenty-eighth week, oedema below the knees, and varicosity of the lower extremities and of the vulva occurring during the course of pregnancy are not necessarily indicative of cardiac failure. An additional strain is thrown upon the heart during labour. The first stage does not involve much strain; it is the second stage which involves most strain. During the third stage there is a fall in the blood pressure, with a coincident tendency to collapse. Lastly, the puerperium involves a certain amount of strain on the heart. Acute cardiac failure, including acute pulmonary oedema, may occur immediately, or a few days after delivery. Notwithstanding the foregoing—taking the cases as a whole—the subjects of cardiac affections stand child-bearing surprisingly well.

It is of fundamental importance to recognize that the essential cause of cardiac failure lies in the heart muscle. If that be so, the importance of the relation which chronic valvular disease and disturbances of the cardiac mechanism, such as auricular fibrillation, bear to the myocardium can be readily understood. In a case of chronic valvular disease it is of the utmost importance that we should endeavour to ascertain whether, along with the valvular lesion, there are coincident changes in the myocardium, or blood vessels, or both, and if so, in what degree. But while I would emphasize this, it is necessary to point out that a valvular defect is a mechanical impediment to the work of the heart muscle, and may be of great importance in itself. In attempting to form a prognosis in any given case of chronic valvular disease, the nature and degree of the lesion, its mode of origin, the degree of any existing cardiac failure, the existence of complications, and the risk of sudden death, require consideration. Among the points which may be of assistance in trying to form an estimate of the extent of the lesion are to what extent the character of the pulse and the blood pressure are modified, and the size of the heart; and, in the case of aortic incompetence, the pulse pressure, and, in the case of mitral stenosis, the length of the presystolic murmur, and the presence and length of a diastolic murmur.

I have been surprised at the comparative frequency with which chronic myocardial disease occurring by itself is missed—in my opinion, due to a lack of appreciation of the great importance of determining accurately the size of the heart. Now, with regard to whether the myocardium is involved—either accompanying chronic valvular disease or by itself—it is of extreme importance to ascertain how the heart responds to effort; in other words, the amount

of physical exertion in which the patient can indulge without experiencing symptoms of cardiac distress. In the great majority of cases the first indications of heart failure are symptoms of cardiac distress on exertion, and it is only afterwards that objective signs—such as increased pulse rate, dilatation, or dropsy—appear. These symptoms recur as the result of less and less effort, until ultimately some or all of them are present during rest, and objective signs also become evident. It might be helpful if I indicate what, speaking broadly, and without reference to pregnancy, may be regarded as clinical manifestations of four degrees of cardiac failure—namely, slight, moderate, severe, and extreme.

*Slight.*—Shortness of breath, palpitation, exhaustion, and, it may be, precordial pain, on exertion which the patient formerly could undergo without experiencing this.

*Moderate.*—Shortness of breath, palpitation, and, it may be, cyanosis, on moderate exertion, such as walking quickly on the level; puffiness round the ankles in the evening; some degree of increased rapidity of the pulse while at rest; slight enlargement of the liver.

*Severe.*—Shortness of breath on slight exertion, such as walking at the ordinary rate on the level, or on changing position in bed; cyanosis while at rest; a considerable degree of oedema of the lower extremities in mitral cases, and a moderate degree in uncomplicated aortic cases; a considerable degree of tachycardia while at rest; oedema of the bases; a moderate degree of hepatic enlargement; albuminuria; orthopnoea; cardiac asthma.

*Extreme.*—Continuous shortness of breath; severe dyspnoea on slight exertion; marked cyanosis while at rest; general anasarca in mitral cases, and a considerable amount of oedema of the lower extremities in uncomplicated aortic cases; oedema of the serous membranes; much hepatic enlargement; pulsus alternans in the absence of a severe grade of tachycardia.

A point of the utmost prognostic importance in angina pectoris is the case with which the pain is provoked, and whether it occurs even when the patient is at rest. It remains to add a few observations. The first sound may be short, sharp, and clear, and diminished in intensity when the contractile force of the ventricle is reduced. What is called the tic-tac heart beat or foetal rhythm signifies a greatly impaired vitality, and is often of grave omen. What is termed the gallop rhythm indicates either a failing heart muscle, or a bundle-branch block, or possibly intraventricular block, and is almost always of very unfavourable import.

We now pass to the consideration of the individual cardiac affections.

*Irregular Action of the Heart.*—I am here referring to irregular action of the heart in itself—that is, without reference to the cause or the condition with which it may be associated. What is called sinus irregularity and also extra-systoles may be disregarded. The three grades of auriculo-ventricular block, bundle-branch block, and intraventricular block are indicative of myocardial damage, and in each case it depends upon the degree of associated myocardial disease. It is necessary, however, to add the following: In complete auriculo-ventricular block, if the patient is subject to syncopal attacks—especially if during the period of development of the condition—pregnancy should be terminated. The prognosis of bundle-branch block is usually very unfavourable. Intraventricular block is almost always of grave import, and pregnancy should be terminated. From the point of view of our discussion there are two kinds of pulsus alternans—namely, one in which the condition is associated with a severe grade of tachycardia, and the other in which it is not. In the latter event it is an indication of extreme exhaustion of the heart muscle, and should be regarded as an imperative call on the part of the heart for rest—complete and prolonged. If this is not possible, or if it is not successful, pregnancy should be terminated. With regard to auricular fibrillation, it depends upon the ventricular rate, the degree of any existing cardiac failure, and the response to digitalis therapy. If there is an absence of tachycardia, or tachycardia is at the most moderate, or tachycardia of more severe grade is well controlled by digitalis, and if the degree of cardiac failure is at most moderate, pregnancy may be allowed to continue; while if there is severe tachycardia uncontrolled by digitalis, or severe cardiac

failure—especially if it increases in spite of adequate treatment—pregnancy should be terminated. In the case of persistent auricular flutter, it depends entirely upon whether treatment for terminating the condition is successful or otherwise. With regard to an individual who is the subject of paroxysmal tachycardia, it depends chiefly upon (1) the existence of chronic myocardial or chronic valvular disease, and, if either be present, its nature and degree; (2) to a less extent, upon the average duration, the ventricular rate, and the degree of cardiac failure during former attacks; and (3) the success attending treatment for the prevention of the recurrence of the attacks.

*Chronic Valvular Disease without Reference to any Existing Cardiac Failure.*—It is generally agreed that, with regard to pregnancy, mitral stenosis is the most serious form of chronic valvular disease. This lesion puts a greater strain upon the right side of the heart, pulmonary complications are frequent, and, as I have already pointed out, cardiac dilatation during pregnancy affects mainly the right side of the heart. It should, however, be noted that there may be other factors, such as the frequent association of auricular fibrillation, and, of less common occurrence, chronic adhesive pericarditis. It is justifiable to terminate pregnancy when the degree of the lesion is severe—as evidenced by a very small pulse together with a murmur beginning immediately after the second sound and continuing all through ventricular diastole and auricular systole, especially if the lesion is not the result of antecedent acute endocarditis and is progressive, or there is also auricular fibrillation, mitral incompetence, or chronic adhesive pericarditis. In mitral incompetence pregnancy may be allowed to proceed, unless the degree of the lesion is very severe. The same applies to aortic stenosis when it is due to antecedent acute endocarditis and not the result of primary chronic endocarditis. In aortic incompetence it is permissible to terminate pregnancy when the degree of the lesion is severe, as evidenced by a great alteration in the character of the pulse and of the blood pressure and the size of the heart, and much more so if the lesion is not due to antecedent acute endocarditis; or if the patient is subject to severe syncopal attacks associated with physical exertion. In the case of congenital morbus cordis, it depends upon the size of the heart and the degree of subjective symptoms. I may say that I have known of several patients with patent ductus arteriosus who have borne several children well.

*Chronic Myocardial Disease by Itself.*—In the consideration of this condition, the size of the heart and whether the patient is subject to syncopal attacks are important. It is in chronic myocardial disease that the modifications of the cardiac sounds and cardiac cycle, the presence or otherwise of auriculo-ventricular block, branch-bundle lesion, intraventricular block, auricular fibrillation, auricular flutter, paroxysmal tachycardia, and the degree of cardiac failure are of especial value.

*The Existence and Degree of Cardiac Failure.*—I am fairly confident that with regard to cardiac indications the usual practice of most of my audience is to be guided by the existence and degree of cardiac failure, and I can quite understand this. Whenever indications of cardiac failure present themselves during pregnancy, four points should invariably be taken into consideration—namely: (1) the degree of cardiac failure; (2) at what stage of pregnancy these have supervened; (3) the immediate cause of the present attack; and (4) the response to treatment. With regard to the third of these, inquiry should be made as to whether this can be attributed to some temporary cause, such as a period of undue physical strain, or some intercurrent malady, or whether the symptoms have gradually appeared without any such cause; in the latter event the prognosis is less favourable. In the case of the first degree of cardiac failure, at whatever stage it occurs, in all probability it will be possible for the patient to proceed to full term without risk to life. If the second degree occurs during the first half of pregnancy—more especially during the first three months and without some temporary cause for the cardiac failure—it is unlikely that the patient will be able to proceed to full term, but an attempt may be made; if it occurs in the second half, it is probable that she will. In either

case rest is imperative for a period which may even extend to some months. If the severe degree occurs in the first half of pregnancy, it is exceedingly improbable that the patient will be able to proceed to full term; but even in this case, providing she is able and willing to rest in bed for some months, it is surprising how often a favourable issue will follow; if it occurs in the second half, an attempt should certainly be made. If an extreme degree is present at any stage, pregnancy should undoubtedly be terminated. It remains to add that, except in the case of an extreme degree of cardiac failure, it should be accepted as a general principle that pregnancy should not be terminated until a reasonable period of rest and other therapeutic measures have been tried; while, on the other hand, in the case of the second and third degrees, if proper treatment, carried on for a reasonable period, is not attended by at least a certain measure of improvement, or if a relapse occurs, the termination of pregnancy should be more favourably considered, especially in the case of mitral stenosis.

Lastly, I would suggest that in any case in which it has been decided to terminate pregnancy an attempt should first be made to treat the existing cardiac failure, in the hope of affording a better chance of a favourable result of the induction of abortion or premature labour.

#### V.—ROBERT HENRY COLE, M.D., F.R.C.P.,

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##### THE PLEA OF INSANITY.

INSANITY during pregnancy is a somewhat rare affection, comprising less than 1 per cent. of the total incidence of insanity in women. Although cases are occasionally to be seen in our public mental hospitals where the pregnancy invariably runs its usual course, our individual experience of cases in consulting practice must necessarily be small. Yet pregnancy accompanied by mental disorder of a mild type, as exhibited by subacute depression, morbid yearnings, or transient perversions of one kind or another, is not uncommon, and one would expect that such disorder might easily pass over the border-line, which, indeed, happens in exceptional cases. I think most of us are agreed that when these cases develop, as they usually do, in the earlier months of pregnancy they often clear up after a few weeks and generally before delivery.

The fact that an insane woman has unfortunately been allowed to conceive does not alter her mental condition, as I have observed in the case of a wife suffering from delusional insanity who lived at home with her husband. How far insanity is the outcome of pregnancy it is difficult to say with precision. The association is much clearer as regards cause and effect when mental disease ensues after labour or during lactation. Nature, indeed, ever mindful of the continuance of the race, endows incipient motherhood with increased vitality which counterbalances the anxiety, discomfort, or stress of the pregnant state, and cases of insanity during these months seldom arise in the absence of bodily ill health or a bad inheritance or previous attacks. It would seem, therefore, that a psychosis might eventuate if the patient were not pregnant at all. In the later months of pregnancy, if insanity develops, experience teaches that in recoverable cases it usually persists for some time after the birth of the child, whether the patient be prematurely delivered or not.

In the case of the unmarried girl who has been wronged, or has gone wrong and finds herself pregnant, medical advice is sometimes sought to terminate the condition to alleviate her mental distress, apparently in complete ignorance of the law governing these matters. Illegitimacy or desertion is regarded as one of the minor factors in puerperal cases; but the desperate mental state which the unfortunate single girl sometimes develops, which doubtless would disappear by removing the cause, is barrowing to one's feelings, but I have so far seen no such case in which operative intervention would be justified. It cannot be said that suicidal threats or even attempts *per se* indicate insanity. We are sometimes consulted regarding a young married woman who, finding herself pregnant, is in fear of childbirth, and says she would rather die than



go through with it; she is generally of an hysterical temperament. In spite of threats of self-destruction I believe the right course is that she should be managed by nurses, and that interference with the pregnancy is scarcely ever justifiable until at any rate the child is viable, when I have known Caesarean section and tying of the tubes meet the requirements.

There is another class of phobic cases belonging to the obsessional group. If in such a case the medical opinion formed as the result of consultation, that the morbid fear of death as the outcome of pregnancy is so overpowering as to endanger the patient's life, operative intervention may be indicated. I have seen such a case similar to that quoted by Dr. Eden which he rightly denotes psychopathic. The patient was an elderly primipara, and her fixed idea was having such a profound influence on her bodily health that it seemed possible that she might not survive—and therefore premature labour was induced at the fourth month, as psychotherapy had failed.

Concerning cases in which a previous attack of insanity (or even more than one) has occurred, especially after labour and in borderline cases with bad family histories, I feel obliged to dissent from the view expressed in Dr. Eden's paper—that labour should be induced before the child is viable, unless there are other indications regarding the patient's bodily health. It is open to doubt whether mental disorder would be less liable to occur by premature intervention than after the seventh month or at full time. It is true that we advise that a woman with a strong family history of insanity or one who has had an attack of puerperal insanity should as a rule avoid the risk of becoming pregnant again, but, should this happen, I hold the view that the condition should be allowed to continue. It must be acknowledged that the chances are more than even that there will not be a recurrence of mental trouble. If, however, unfortunately this should occur, it must be remembered that the recovery rate is fully 75 per cent. in these puerperal cases, and the question of some such procedure as obliteration of the tubes to prevent future pregnancies might be considered.

I now allude to a question which apparently is receiving reconsideration. The incident occurs now and then where an insane husband, home on leave from an institution, results in his wife falling pregnant. She becomes distracted at the prospect of bearing a child who she thinks may be mentally defective or become afflicted, and she is haunted by this idea, which becomes a veritable obsession. The first case of this kind in my practice occurred many years ago where the husband had a short remission in general paralysis and the mental state of the wife caused anxiety. This I was able to disperse and she went to full term, and the boy that was born subsequently won an open scholarship at a public school. In the case of a lady who was sent to consult me lately the husband, a chronic delusional patient with a wretched family history, was allowed home on leave from a mental hospital with the same result, that his wife conceived and she was in terror of bearing an afflicted child. Again I considered the grounds for intervention quite inadequate, but I have heard later that a "natural" miscarriage has taken place—whether in this country or abroad I know not. My advice has similarly been sought regarding the fate of the unborn where one of the parents was a chronic epileptic and contraceptive measures failed, but we are yet without sufficient eugenic data to yield to the plea that a pregnancy should be terminated to prevent the birth of a child that might be mentally defective or diseased.

With regard to the types of insanity during pregnancy, my experience is that manic-depressive and dementia praecox are most usual. Should exhaustion symptoms ensue in the first months of pregnancy owing to the severity of the mental disorder I very much doubt whether the termination of the pregnancy would be beneficial, and it might, indeed, make matters worse. Refusal of food, insomnia, and suicidal tendencies are symptoms that require the most urgent attention, but in my view the pregnancy should be allowed to continue. Eliminary treatment and baths are particularly useful, and a change from home surroundings is often beneficial, especially,

as sometimes happens, when the presence of the husband is not helpful.

Dr. Eden's paper, coming from so high an authority, has given us food for reflection. It is no doubt agreed that each case should be considered on its merits, and that we should guard against any narrow-minded attitude. Yet I feel there is a danger that our sympathy can be unduly extended and may warp our judgement, if too much stress is placed on the possible prejudice to the patient's future health. In many cases this is problematical, at any rate having regard to mental health, and it seems to me that it might be capable of being construed in such an elastic sense and applied to improper cases, so that, if generally accepted, it would lead to abuses or laxity in practice, and result in serious comments on our privileged position as medical practitioners.

It cannot surely be granted that an embryonic child should be sacrificed because the mother has had repeated pregnancies at short intervals and is unwilling to face the ordeal. The proposition that some parents hold, that their unborn child should be completed or not as they like, cannot be squared with our ethical or legal standards. We as doctors have no right to curtail a pregnancy before the child is viable, except for bona-fide reasons, which I believe still to be limited to the ill health of the mother jeopardizing her life, and any widening of this principle by entertaining other excuses I regard as contrary to generally accepted opinion even with the advance of medical and sociological knowledge.

Our duty, no doubt, is first towards the patient, but we must bear in mind that she is carrying the germ of another being which demands our consideration, and which the State safeguards by legislation. Whatever may be said as regards tubercle, renal or other disease which may interfere with the life of the mother during pregnancy, it is the exception rather than the rule with brain or mental conditions unless accompanied by disease of other organs.

#### VI.—H. HARVEY EVERS, M.S., F.R.C.S., Newcastle-on-Tyne.

It seems to me that unless we are extremely careful the tendency of this important discussion will be to multiply the indications for what we all agree is a very undesirable and distasteful operation. This would be a most dangerous impression to create at a meeting of such eminent obstetricians, whose most important function, in these days, is the safeguarding of the human ovum. I would submit, therefore, that we should endeavour to inculcate and emphasize extremely conservative views, and lay down as few indications as possible for this operation of "embryocide" or "ovicide." No purely speculative reasons or excuses for emptying the uterus should be entertained for one moment. The procedure should be most rigidly confined to those conditions where it has absolutely proved its value beyond any shadow of doubt. These conditions, I would submit, are extremely few.

Furthermore, I would suggest that the burden of proof of indication or justification rests always with those who recommend the operation, and many of the reasons given thus far have been largely speculative and very unconvincing. Holding these views, I will perhaps be tolerated if my criticisms are largely of the destructive variety.

Dr. Watts Eden even raises the ethical question "as to what extent we as doctors have the right to insist that a woman should pass through an ordeal which she is unwilling to face"—though why he should call pregnancy and labour "an ordeal" it is difficult to understand. Surely this question is neither ethical nor professional, but strictly legal and moral; and such a doubt raises the most dangerous possibilities, as the vast majority of women with one or two children are unwilling to face this so-called "ordeal." Moreover, Dr. Eden's instance of the distinguished barrister's wife is, to my mind, most damning evidence against such a point of view. A patient's or her husband's reasons for getting rid of an ovum should never be accepted, as there will generally be some selfish or sinister reason undisclosed. Again, with regard to psychopathic disturbances, Dr. Eden's instance, to my mind, merely serves to emphasize the folly of warning patients

against subsequent pregnancy on unjustifiable grounds; and the emptying of that patient's uterus was really adopted ultimately as a means of circumventing what was originally a professional error. Surely nothing could be worse than the mental torture of illegitimate or illicit pregnancy! Are we, then, to consider ourselves justified in terminating these?

#### *Tuberculosis.*

There is no convincing argument in favour of interference in these cases. Working in conjunction with Dr. Dickinson, I have details of 43 sputum-positive patients who have had one or more pregnancies since 1913. Of these, 19 have died, but the total duration of illness of these cases was not below the average duration of phthisis in females of the same age period; 11 of these cases were victims of that acute type of disease which occasionally supervenes on labour, or at all events is only detected after a confinement. The prognosis in these acute cases, quite apart from pregnancy, is always bad, and there is no evidence whatever to show that emptying the uterus early would avert the condition.

With regard to the offspring, Couvelaire's statement, quoted by Dr. Eden, is certainly not borne out by the most recent views, and it seems scarcely sound ground for depriving the ovum of its life. Surely a much more logical plan is to segregate these infants as soon as they are born. This is done by the Association for Familial Placement, founded in Paris by Professor Léon Bernard and Dr. Detre; under its auspices no case of congenital tuberculosis has been discovered amongst the young patients, and the mortality from all causes is not above the average for artificially fed infants. Moreover, recent inoculation experiments by Calmette and his co-workers in France, Belgium, and New Guinea have made a great advance in the prophylaxis and have opened up a new avenue for the prevention of tuberculosis in children born into a tuberculous household.

#### *Heart Disease.*

Intervention before the child is viable is purely speculative and not justified. Pregnancy by itself cannot do any harm until the uterus forms a tumour large enough to cause embarrassment. The early failures of compensation are not due to the pregnancy itself and can be overcome by the ordinary medical measures adopted in such cases. In this way an overwhelming majority of the cases, even those which seem quite hopeless, can be forced over to the stage of viability of the child, when delivery can be effected successfully by Caesarean section, under spinal anaesthesia if necessary.

#### *Missed Abortion.*

No intervention is indicated unless the patient is very anxious to proceed as soon as possible to a further pregnancy, or unless the retained mole has become infected. Otherwise intervention is meddling and, though usually safe, has been known to be fatal.

#### *Chronic Nephritis.*

Here we have very definite scientific proof that in some of these cases the pregnancy has a definite baleful influence on the renal function, and can inflict permanent damage. In view of these definite findings we are therefore justified in terminating pregnancies in cases showing severe clinical manifestations such as general oedema, high blood pressure, and lung complications, and especially if accompanied by definite positive biochemical findings—for example, a material rise in blood urea and a progressively poor response to the urea concentration test. A serious attempt, however, should always be made to carry these patients on by medical measures until the child is viable. Albuminuric retinitis is, of course, an absolute indication for terminating pregnancy.

#### *Pernicious Vomiting.*

The vaguo of emptying the uterus in these cases is progressively on the wane, and one ventures to hope that it may ultimately disappear. We are all in agreement that prompt and proper treatment of all cases of abnormal vomiting makes the induction of abortion an extremely rare necessity. Moreover, the results of treatment of bad cases by induction are by no means good, deaths occurring occasionally even after spontaneous abortion. Quite

recently a patient was sent to us at three months, having been told that her uterus must be emptied, as it had been for a similar condition at the previous pregnancy. On admission she was wasted, looked very ill, had a furred tongue, and a pulse of 130, and was demanding that her operation should be done forthwith. She got perfectly well on purely medical treatment, and is now seven and a half months pregnant.

In conclusion, I have been requested by Professor Ranken Lylo to submit to this meeting the three following good reasons why the induction of abortion should now practically never be considered:

1. An enormous importance is attached to the value of intrauterine life at the present time.
2. Great improvements in medicinal treatment of most complications have taken place in recent times.
3. The dangers originally urged against pregnancy under certain conditions were mostly of a speculative nature and mostly groundless.

#### GENERAL DISCUSSION.

Dr. R. A. Young (London) remarked that tuberculosis seemed always to arouse controversy, and that it suffered from a plethora of slogans and aphorisms. One of these—that of Dubois—popularized by Osler, had been quoted by Dr. Eden. He would mention two others. It had been said of the tuberculous: "For the virgin, no marriage; for the married, no pregnancy; for the pregnant, no childbirth; for the mother, no suckling." The other aphorism was that during pregnancy there was often latency or quiescence of tuberculous disease, which flared up acutely after delivery. Before elevating these statements to the dignity of laws or rules of practice, it would be wise to inquire if there were any statistical bases for them. It would then be found that until recently there had been few attempts to investigate the stage and activity of the disease in relation to pregnancy. Recent statistics would seem to show that in cases with arrested disease a large proportion weathered pregnancy and even repeated pregnancies successfully, given due care, especially after childbirth. In active cases, on the other hand, the risk was very considerable, and was the greater the more advanced and the more active the disease. It was true that sometimes during pregnancy there was a temporary lull in the disease, but this was by no means always the case. In active cases the question of abortion had to be considered if the patient were seen before the fourth month. In his experience, those who saw most cases of pulmonary tuberculosis least often recommended abortion in treatment. He himself had rarely advised it, and had generally regretted it afterwards when he had done so. It should not be forgotten that operation, except urgently necessary operation, was inadvisable in active tuberculosis, and that anaesthetics, other than gas and oxygen, were fraught with real danger of spreading the disease or of rendering latent disease active. It was also an open question whether the after-effects of abortion were not in many cases as harmful as those of labour. In any case, abortion should only be performed in such patients after consultation with the general practitioner, the physician, and the gynaecologist, and after due consideration of the family and personal histories, the symptoms, physical signs, the x-ray appearances, temperature range, sputum records, and possibly blood reactions. There were certain complications, however, which might weigh heavily in the deliberation and justify intervention, notably laryngeal or intestinal involvement. Abortion in quiescent or arrested cases was illogical and was more likely to do harm than good. An important point, which was often lost sight of, was that it was quite possible to employ the ordinary forms of treatment, including artificial pneumothorax, during pregnancy. Too often treatment was interrupted or neglected during this period, and it was only after childbirth that treatment was resumed, often when it was too late to be helpful. He urged most strongly the importance of prolonged rest under open-air conditions after the birth of the child. In conclusion, having condemned aphorisms, he wished to be thoroughly illogical, and propound two

for consideration—ono borrowed from Pinard: "Treat the disease and manage the pregnancy." The other he would like to think original, though it was perhaps unconsciously stolen—"Prevention is better than abortion."

Dr. R. C. BUIST (Dundee) said that the appeal of the consultant to the general practitioner was, "When you refer a patient for consideration of the question of terminating pregnancy do not foreclose the question and prejudice the issue by expressing an absolute opinion."

Dr. BINNIE DUNLOP (London) was one of those who did not feel that there was any ethical or moral objection to terminating a pregnancy before the viability of the child. He considered it an indication of the desirability of this merely if the woman wished it, or, rather if the woman could not be persuaded to desire the pregnancy to go on. It was not in the public interest that medical practitioners should not be free to terminate a pregnancy on economic and eugenic grounds as well as on purely medical grounds. It would be better for the race if undesired children were not born. An appalling amount of unhappiness and ill health resulted from medical practitioners not being legally perfectly free in the matter.

Dr. J. S. ENGLISH (Singapore) had never performed anterior hysterotomy. He had always found dilatation to No. 12 and packing with tents sufficient; the ovum being removed in twenty-four hours with ease. After twenty weeks' pregnancy he always used a No. 23 stomach tube, which could be easily sterilized—an obvious advantage over the usual gum-elastic bougies which were generally advocated. Before being shown this method by Dr. FitzGibbon in the Rotunda Hospital he had a good deal of experience of Kraus's method, and many times had to remove the bougies and reinsert them, possibly three times. Using the stomach tube, however, he had yet to see the case where labour had not come on in twenty-four hours at most. The only difficulty was when the tube touched the membranes and a sense of resistance was felt. That was overcome by rotation of the tube on its long axis, and the tube then slipped in easily. The whole tube was inserted and removed only when the cervix was half dilated. If any difficulty was experienced in its removal the tube could be pushed past the presenting part and would be delivered after the child. An anaesthetic was only necessary in primiparae.

Mr. L. C. RIVETT (London) had not had much experience of pulmonary tuberculosis, but such cases as he had seen led him to believe that the puerperium was more detrimental than the pregnancy, and that it was as much so after a three months' abortion as after full term; termination of pregnancy was therefore very limited in this complication. Dr. Eden said that it was not to the advantage of the community that children should be born who had seven times the normal risk of contracting phthisis. Was it the province of the doctor to decide this? If so, what about syphilis? He suggested that if any condition rendered it inadvisable for a woman to become pregnant the Fallopian tubes ought to be tied, or the ovaries treated with x rays. He raised the point of gross deformity of the pelvis or tumours which absolutely precluded delivery *per vias naturales*. If the patient refused to submit to Caesarean section at term, were they justified in terminating the pregnancy early? or was it their duty to insist on Caesarean section later? As regards cardiac lesions, he was in agreement with Dr. Price's remarks. At Queen Charlotte's Hospital many patients were admitted in a state of extreme cardiac failure, and died in spite of any medical treatment, either undelivered or after delivery—sometimes six weeks after delivery. His experience in this class of case made him conclude that cardiac failure was the most serious complication of pregnancy. He advised a miniature Caesarean section—in opposition to Professor McIlroy—at the same time ligaturing the tubes. Patients stood this operation well in early pregnancy. He preferred general anaesthesia to spinal, as spinal anaesthesia lowered the blood pressure in cardiac cases. Every pregnancy was a strain on the diseased heart, and left it worse than previously; the

aphorism of Dubois, quoted by Dr. Eden, was particularly applicable to heart disease. He called attention to polycystic disease of the kidney—where one kidney had been removed and pregnancy subsequently occurred—as an indication to terminate pregnancy. In reply to a question by Mr. Norman Lock (Exeter), Mr. Rivett stated that he did not think Caesarean section at term in cases of cardiac failure had any advantages over normal labour; the patient was just as likely to die after either.

Mr. NORMAN LOCK (Exeter) said that, in his experience, a well given general anaesthetic was well borne by patients with heart disease, even when advanced, and therefore suggested that Caesarean section would be the best method of treatment of these patients, thereby avoiding the muscular strain and exertion of labour.

The PRESIDENT remarked that the importance of the discussion was obvious when it was realized that, as soon as the papers read and the remarks made were published in the BRITISH MEDICAL JOURNAL, medical practitioners would have at their disposal the collective opinion, as to when abortion should or should not be induced, of some of the greatest experts in their own special line of medicine—an opportunity which, as far as he remembered, had never occurred before. The President deprecated most strongly the reprehensible conduct of telling a patient that in no circumstances must she ever have another child, and this without seeking the opinion on this point from a colleague. He was consulted not infrequently by patients who were most anxious to have more children but dared not, or if they again became pregnant implored for abortion to be induced. Why? In the majority of cases for such unwarrantable reasons that since there was a bad post-partum haemorrhage last time a fatal one would probably result in another labour; or again, as he had many times been told, because the perineum having ruptured once would be sure to rupture worse the next time. There were very few indications for which, a patient having had one child, should be advised not to have a second. Excluding legitimate causes for the induction of abortion, the experience of the President, with regard to those women who had been told that on no account must they have another baby, was that the next labour was perfectly normal.

A sharp haemorrhage in the early months of pregnancy did not by any means indicate that the ovum had been destroyed, and great care must be taken, as far as was possible, to make sure that the ovum was dead before emptying the uterus. The President had a patient who bled on and off for nine weeks, during which time there were three serious haemorrhages—one to start with; the second in three weeks, after the bleeding had stopped a week and the patient was allowed out of bed; and the third, which was the worst of all, in seven weeks, after bleeding had stopped a week, this taking place as the patient walked from her bedroom, about four yards, to a couch in the adjoining room, the bleeding being so profuse that the carpet was completely spoilt. The patient and her husband being most anxious to have a child, a further trial of rest was given, and at the end of forty weeks the patient gave birth to a very healthy 9 lb. child.

The President quite agreed that if abortion had to be induced before the fourth month it should be done by dilatation of the cervix and removal of the ovum. He was not afraid of haemorrhage as the uterus was small and could be easily controlled. After the fourth month, however, the difficulties and dangers increased with the length of pregnancy, and it was much preferable, if possible, to induce the abortion by the slow method. If a quick method was necessary, then the speaker thought that unless the practitioner was well accustomed to operating in such cases, he would be wise to avail himself of the assistance of someone who was. The dangers of haemorrhage, laceration of the uterus, retention of the foetal head, necessitating prolonged efforts to get it out, were all very real dangers, and in most of these cases a vaginal hysterotomy was the best and safest treatment; it was an operation which required great skill.

The President had used the stomach tube many times for inducing labour, and was very pleased with this method; he

felt convinced, from his experience, that it was a quicker and more certain method than that of bougies. He remembered that they were only dealing that morning with the induction of abortion, but he had introduced this subject because he thought it might be of interest for them to know that on the last three occasions when using the tube, although it went in easily, very smart bleeding took place, which did not stop till the tube was removed. These were not cases of low implantation of the placenta. The tube having been removed and inserted in another position and the vagina packed tightly, no further bleeding occurred and the children were born alive.

Those present had had the advantage of listening to views of great experts in their own department of medicine—Dr. Young on tuberculosis in pregnancy, Dr. F. Price on heart disease, Dr. Cole on mental disease, and Dr. Eden, Professor McIlroy, and Dr. Barris; and what he had been most impressed with, and he ventured to think also those present, was the great value of team work when dealing with cases such as those that had been discussed.

Professor McILROY, in her reply, advocated sanatorium treatment for the pregnant woman suffering from phthisis.

Dr. BARRIS, replying, said that he understood that Professor McIlroy, while she agreed with him as to the necessity of using slow methods for the termination of pregnancy after the third month, did not agree with rapid evacuation of the uterus before this date. He sympathized with this view, and indeed was prepared to agree if it could be avoided. But what was the alternative? Professor McIlroy advised the use of laminaria tents, or metal dilators together with the glycerin gauze pack. But she admitted very fairly that it was possible to dilate the cervix as far as No. 16 metal dilator without bringing about uterine contraction. Now this was a damaging admission, for it formed the main point of their trouble with the slow methods early in pregnancy. They were so unreliable, they might need to be repeated, there was the inevitable risk of sepsis, and an anaesthetic and operation might have to be resorted to eventually in order to empty the uterus. All this delay when the urgency for the need of termination of pregnancy was great might be detrimental to the interests of the patient. For this reason, and because the uterus could be emptied fairly easily, he thought it was better to adopt the rapid method before the end of the third month. With regard to the use of the oesophageal tube after the sixth month, he had employed it on numerous occasions with satisfactory results for induction of premature labour, but had no experience of its use prior to the twenty-eighth week. He did not see, however, why its use should not be extended to include a somewhat earlier period provided that the uterus was sufficiently enlarged. He had not found that spinal anaesthesia for Caesarean section in patients suffering from morbus cordis had been attended with any serious fall in the blood pressure, to which Mr. Rivett referred, and regarded this method as very suitable in severe cases of this description, but as a general rule he had found patients suffering from morbus cordis bear labour surprisingly well.

Dr. EDEN, in winding up the discussion, said that he had always regarded himself as orthodox, even conservative, until he wrote this paper. He thought that a combined discussion between the obstetricians and the psychiatrists would be profitable. He would never interfere in a case of phthisis except on the advice of a physician. He advocated broad views on the subject of what had been called foeticide—the rigidity of the views of the medical profession drove people to the abortion-mongers. The public held very decided views as to the importance of their own opinions. It was left entirely to the profession to say in what circumstances a patient should have a pregnancy terminated. In regard to the question of inducing abortion when they thought that the child was going to be diseased, they could not divest themselves of all responsibility for the health and well-being of the child yet to be born. Neither could they compel a patient against her will to go to full term and undergo Caesarean section on account of a tumour such as had been referred to by Mr. Rivett.

## The Sections.

### BRIEF SUMMARY OF PROCEEDINGS.

(Concluded from page 203.)

#### SECTION OF MEDICINE.

Thursday, July 22nd.

##### BLOOD TRANSFUSION IN DISEASE.

SIR HUMPHRY ROLLESTON opened a discussion on blood transfusion in disease with a brief historical note, and then referred to the observation on the length of the survival of the transfused blood in the recipient's circulation, and passed on to the post-transfusional reactions produced in the recipient. Assuming that typing of the blood was correctly done and that by a proper technique severe reactions due to gross incompatibility, embolism, and pulmonary oedema were avoided, yet reactions would sometimes occur and it was impossible to foretell them. Possibly the divisions between the four blood groups were not really as sharp as they appeared to be, and their *in vitro* tests might not be sufficiently delicate to detect slight degrees of incompatibility; Doan's suggestion that there is in some cases an incompatibility between plasma and leucocytes was also mentioned. Reactions were more commonly seen after a large transfusion than after a small one, and after repeated injections than after a single one; repeated transfusions from the same donor were especially liable to produce reactions, possibly owing to the production of anaphylactic shock. Anticoagulant, especially citrate, had been blamed by some in this respect. According to Kordenat and Smithies there were three kinds of reaction—acute, delayed, and systemic or constitutional. The speaker next mentioned the variety of ways in which blood transfusion might do good, and then dealt in greater detail with the indications for blood transfusions in particular diseases. In acute anaemia from haemorrhage its life-saving power was generally admitted; in gastro-intestinal haemorrhage perhaps its value was more debatable. In chronic or repeated haemorrhages blood transfusion often made possible or more safe operative procedures for the cure of the main condition; this was particularly the case in gynaecology. In haemorrhagic diseases blood transfusion might supply the missing thrombogenic factor—for example, the platelets in purpura haemorrhagica—and a haemostatic effect was obtained in haemorrhage of the newly born, haemophilia, and jaundice, although in the latter this effect was by no means constant. In pernicious anaemia it was difficult to assess its value owing to the natural irregular course of the disease; chronic cases with remissions seemed to do better than recent acute ones. In leukaemia there was little real evidence that blood transfusion was of any value, though in a few cases of the chronic lymphoid type some improvement had been recorded. In acute septicaemia general opinion seemed to be adverse to transfusion, as it usually failed to benefit and might do harm.

Professor Lovell Gulland thought that the length of survival of transfused red cells had been overstated by the American observers. He had not found that there was any great difference in the methods of transfusion so far as the effect on the patient was concerned. He had used polycythaemic patients as donors with great advantage and convenience. In pernicious anaemia he was convinced of the superiority of arsenic over all other forms of treatment, reserving transfusion for those severe cases when time was an all-important factor. Cases with evidence of cardiac failure, chronic kidney mischief, high fever, or severe gastric or hepatic disturbance were not good cases for transfusion. In leukaemia one must distinguish between the acute and chronic forms; in the former he had had no good results; in the latter the only indication for transfusion, in his opinion, was intractable haemorrhage. In aplastic anaemia it was never of any good in the acute form, and sometimes caused severe reactions. He had been occupied for some time in a long study of haemophilia, and would only say that transfusion was found to bring the coagulation curve nearer to the normal than any other method. Professor René Cruchet gave the results of his

experiments in transfusing animal blood to man. After much preliminary work on animals, he had given sheep's blood to man in eight cases, and horse's blood in twelve cases, and in four of them the transfusion had been repeated a second time. The amount of blood given varied from 25 to 80 c.cm. One patient gravely ill with præmia had died suddenly after the injection of 2 c.cm. of horse's blood, but apart from this no really severe reaction had been observed. Two of the patients showed no change, the others all appeared to benefit by the transfusion. The transfusion must be made very slowly, particularly at the outset; the donor animal must be absolutely healthy and in a state of muscular rest; the blood must be used immediately after removal from the animal; citrated blood was used; blood diluted with physiological serum was preferable to pure blood. Dr. E. I. Spriggs referred to the practical value of transfusion (1) after hæmorrhage from the bowel; (2) as a prophylactic against post-operative shock in malignant disease; (3) in pernicious anaemia. As regards technique, he particularly emphasized the advantage of the air-bag of the sphygmomanometer in place of a tourniquet, the pump of a sphygmomanometer to aid the flow of blood, and sharp needles. Any cutting operation was quite unnecessary. Mr. Geoffrey Keyes reviewed the value of transfusion in surgical practice. The statistics of the London Transfusion Service of the Red Cross Society showed that transfusion was apparently used twice as often in surgical as in medical cases. He dealt especially with its value in cases of gastric and duodenal ulcer; he considered it extremely unlikely that a transfusion dislodged a clot already formed; on the other hand, it might well increase the coagulability of the blood. A series of cases was described in which transfusion and operation had saved otherwise hopeless cases. Dr. Trethowan Rowe spoke of some hopeful results he had had in cases of infective endocarditis. Dr. F. B. Smith (Harrogate) discussed severe reactions and gave details of two cases. Professor Ewatts Graham was enthusiastic over the results of transfusion in well selected cases, and mentioned its possible value in severe burns to counteract the toxæmia. Dr. Robert Platt advocated the use of defibrinated blood rather than citrated blood.

Friday, July 23rd.

#### THE NATURE OF MALIGNANT NEOPLASIA, AND THEIR TREATMENT WITH LEAD.

Owing to Dr. Blair Bell's absence through illness his opening contribution to the symposium on the nature of malignant neoplasia, and the treatment of this disease with lead, was delivered by Professor Adami. In this paper Dr. Blair Bell described the constitution and methods of work of the Liverpool Cancer Research Committee, and concluded with a brief statement of his own views on the nature of malignant neoplasia. There were many factors producing the "precancerous condition"—radiation, heat, trauma, toxæmia, senescence, etc., which reduced the vitality of the cell—a condition which might terminate in recovery, death, or in reversionary development in order that the cell might live. It seemed probable that the metabolic disturbance responsible might be one of oxygen starvation. The ancestral type to which the cell sought to return in the reversionary process was that of the chorionic epithelium. Malignant neoplasia was, therefore, a specific process of dedifferentiation from high specialization towards the most distant ancestral type—the chorionic epithelium. If this were so it would be expected that the chorionic epithelium would be found to resemble the malignant cell in structure, function, chemical composition, and toxicological affinities; an amount of convincing confirmatory evidence in these directions had been obtained, as the later contributions would indicate. Professor W. C. M. Lewis dealt first with the electrical conductivity and permeability of malignant tissue; the former had been shown to be higher in freshly removed cancerous tissue than in normal tissue, and an increased conductivity necessarily meant an increased permeability to such soluble constituents on the part of any membranes or septa in the cells. Of the substances concerned in maintaining permeability or impermeability calcium was important, and appeared to be definitely deficient in malignant tissues, in which case

increased permeability and conductivity were to be expected. Other substances involved were the phosphatides and cholesterol, the two being antagonistic, and alterations in the normal phosphatide-cholesterol ratio were highly significant. This ratio was much higher in malignant tissues than in normal tissues, and it was highest of all in chorionic villi. No striking difference had been noted in the pH of the blood or tumour in malignancy. The antitryptic power of the blood was usually increased in cancer patients. Of all the chemical processes usually regarded as of importance for cell life glycolysis was the only one in which striking differences had been found in malignant as compared with normal tissue. Warburg had found that high glycolytic power was a general characteristic of growing tissue, but that appreciable glycolytic power under aerobic conditions was characteristic only of unordered growth. The problem as to the nature of the condition which made excessive glycolysis possible was still unsolved. Professor Lewis concluded with some notes on lead suspensions. Professor Dilling described investigations to determine whether there was any proof that lead salts had unusual powers in retarding normal growth when compared with other metals; they confirmed previous work, and indicated that (1) lead was distinctly more toxic to germ cells and to embryonic tissues than to mature tissues; (2) its adverse influence was more marked on the ovum, and was responsible for temporary sterility and early abortion in females; (3) in non-lethal doses its retarding influence appeared to be in inverse proportion to the age of the animal, and tended to persist; (4) the inhibiting and retarding power was more a characteristic of lead than of any of the other metals tested. He then turned to the untoward effect of lead on human beings, and described experiments which showed that lead acted directly on the intestine, causing first an inhibition, to be followed later by increased tonic contraction. The action on the isolated uterus was essentially similar to that on the intestine. In conclusion, Professor Dilling described two recent tests of Professor Lewis's colloidal lead and of a similar preparation by British colloids, which it was hoped to issue shortly. Professor F. Carter Wood gave a short summary of the changes seen in the tumours in a large series of animal experiments which he had agreed with Professor Blair Bell to undertake at Columbia University. The experiments were made on white rats, and sarcoma and carcinoma were used. In sarcomas the effect of lead was to produce an extensive congestion due to thrombosis and was followed by necrosis, so that only a thin layer of tumour cells was left surrounding a hæmorrhagic sac. In a few cases the process went on to complete absorption, but in general recurrence followed. There were necrosis in the liver and extensive lesions in the spleen. These tumours were all very rapidly growing ones, and of a degree of malignancy rarely seen in human disease. Professor E. Glynn gave an account of the histological investigation of the tissues removed after lead injections. His tentative conclusions were: (1) There was evidence that lead had damaged a very small percentage of malignant neoplasms examined; among the changes found there was a greater tendency to necrosis and sometimes to a slowing of the rate of growth. (2) There was no damage to malignant growth which was histologically pathognomonic of lead; it most probably acted by increasing the regressive changes that occurred to some degree in all malignant neoplasms. The tendency to thrombosis in cancer was no greater; in sarcoma it might be greater, but was secondary. (3) The effect on the same type of malignant growth varied greatly in different individuals; the patient's tissues probably played a determining part. Dr. L. Cunningham described the clinical effects of lead in the treatment of malignant disease. Careful blood and urinary analyses were made in all cases. Pain was generally felt at the site of the tumour soon after injection. All types of anaemia had been noted, from severe secondary anaemia to aplastic pernicious anaemia. Great stress was laid on the number of stippled red cells present, and this was used as a guide in prescribing continued dosage; stippling he did not consider as a regenerative change, as no stippling had been found in the marrow of animals injected with lead. The kidneys were often involved early, but recovery was usually rapid when



the lesion was produced by large doses; such doses over a long period seemed to produce more permanent damage. Dr. Cunningham gave the details of the technique of administration and the doses given, and ended with a summary of the results of treatment. Out of 227 cases treated 50 had received benefit; these 50 patients were either living normal lives (9), or the disease had been completely arrested (10), or the disease was believed to be cured and treatment stopped (31). Dr. S. Miller gave the results of his experience in treating 18 cases during the last three months. Most of the cases were inoperable, and most of them had so far improved. He had had no really severe reactions. If the haemoglobin fell below 50 per cent. he gave a blood transfusion, and the progress of blood change was carefully watched by a count of the stippled cells. Mr. Frank Coko also described favourable results during the last three years.

## SECTION OF OBSTETRICS AND GYNAECOLOGY.

*Thursday, July 22nd.*

### INDUCTION OF PREMATURE LABOUR IN THE TREATMENT OF CONTRACTED PELVIS.

THE proceedings of this Section on the second day were opened by Dr. J. Bright Banister, who read a paper on the place of induction of premature labour in the treatment of contracted pelvis. Dr. Banister feared that Caesarean section was being performed more often than was justified; there was more in the treatment of labour with contracted pelvis than the employment of Caesarean section. He was sure that induction of premature labour could be successfully employed in many cases where Caesarean section was now performed. His conclusions were based upon an analysis of 745 cases of induction for contracted pelvis at Queen Charlotte's Hospital, Charing Cross Hospital, and in his own private practice. The risk to the mother of this procedure was very small, there being one death only in the whole series, and that from pulmonary embolism; this gave a maternal mortality of 1.3 per 1,000. There had been 99 foetal deaths, 56 being neo-natal and 43 post-natal. In five of these cases the cause of death was wholly unconnected with the induction of premature labour. It was an enormous advantage to obtain a natural delivery if possible. The foetal deaths in unassisted cases amounted to 8.5 per cent., whereas with forceps delivery the mortality rate was 23.4 per cent.; it was relatively much greater with posterior positions of the vertex. Provided there was no undue delay, the result to the baby was better the later induction was carried out. The method had failed in 24 cases; in five of these embryotomy had to be carried out, and in 8 cases living babies were delivered by Caesarean section. The morbidity rate was no higher than occurred in normal deliveries. Prolapse of the cord had occurred in 12 cases with foetal death in 9 cases, but this might be attributed as much to the contracted pelvis as to the operation. If the true conjugate were calculated to be  $3\frac{1}{2}$  in. or less, induction was contraindicated and the rational treatment was Caesarean section at full term. With a larger pelvis the problem to be solved was the optimum time for the operation. The two main points for consideration were—the relative sizes of the presenting part and the pelvic brim, and the shape of the pelvis. Subsidiary to this was the position of the child's head. Frequent examinations were imperative. Patients should be seen once a week, and the size of the head compared with the pelvis should be estimated each time. In a general way it might be said that a pelvis contracted in all directions indicated an earlier induction than one in which the deformity consisted of flattening. When descent of the head through the pelvic brim became doubtful, he advised examination under an anaesthetic; it would then generally be found that the disproportion was not so marked as had been thought. According to the findings induction should be advised in a fortnight, a week, or immediately. He did not think that patients would be found to object to the frequent examinations, even under anaesthesia, in view of the present-day tendency for prospective mothers to demand ante-natal care and protection from the difficulties of childbirth. The employment of induction

provided evidence of great value as to the capacity of a particular uterus to deliver children in subsequent pregnancies. He urged a wider use of induction in cases of contracted pelvis because it was simple, safe, and unaccompanied by untoward complications.

Dr. Rhoda Adamson said that the question of induction of labour depended on the degree of contraction and on the shape of the pelvis. She had found that among her private patients the commonest form of contraction was the small round pelvis. Among her hospital cases contraction was generally due to flattening caused by infantile rickets. The small flat pelvis was not suitable for any treatment except Caesarean section, as the pelvic outlet would not permit the passage of a viable child. She had had good results in cases of the simple flat pelvis, the patients being allowed to go into labour at term. Some had been prepared for Caesarean section and then delivered themselves spontaneously. It was worth remembering that the child's head tended to resemble in shape and hardness the head of its father. In her view actual measurements were far less important than the relative fit of the presenting head at the inlet. Dr. English (Singapore) had always found that estimation of the relation between the head and the pelvis was of far more value than measurements with a pelvimeter. He advocated giving to any patient who had a difficult confinement a history sheet for the guidance of anyone who might be responsible for the conduct of her future labours. Professor McIlroy did not perform Caesarean section nearly so frequently now as before; one reason was that she never operated until labour had commenced. The estimation of contraction at the pelvic outlet was a far more difficult matter than that of contraction at the brim, and an accurate method of measuring the outlet would be a great advance in obstetrics. She did not advocate induction of premature labour till the thirty-eighth week. An exact estimation of the date of pregnancy was very difficult, but was of the utmost importance from the point of view of ascertaining the right time for inducing labour. Mr. Henry Evers thought that the real difficulty was to identify the border-line case in a primipara. He agreed that the really important point was the fit of the head in the brim. He had investigated 150 cases of primigravidae in which the head was above the brim, and in 12 per cent. it had been necessary to perform Caesarean section. Induction here might have saved some unnecessary sections. The most serious trap was the asymmetrical type of contracted pelvis. Mr. L. C. Rivett said that though a trial labour was an enormous advantage it was nevertheless equally important to examine the multipara, as subsequent children might be appreciably bigger than the first. He agreed that the infantile mortality was much higher when forceps had been employed. Mr. Maslin Jones (Wolverhampton) remarked that the problems of induction assumed a different aspect when no maternity beds were available. He had not found the quinine-castor oil method of much value before term. He thought that induction was an operation which could quite safely be undertaken outside an institution.

Mr. Danby had recently been using for induction a solid oesophageal tube in place of the stomach tube, and out of 20 cases 18 had been successful. In 38 cases in which quinine and castor oil had been used 26 were successful. He never induced before the thirty-sixth week, and he did not concern himself with the size of the diagonal conjugate. Mr. T. H. Richmond (Stoke-on-Trent) spoke in favour of the use of pituitrin at full term to prevent post-maturity occurring. The President agreed that induction of labour was ever so much safer than Caesarean section, and referred to the risk of rupture of the uterus after administration of pituitrin. Induction should not be attempted with a conjugate of  $3\frac{1}{2}$  in. and under. Labour was often difficult when the father and mother were of disproportionate physique. He did not think that any vaginal examination in a pregnant woman should be made before the thirty-sixth week. A recent investigation had shown that induction was frequently performed too early; many women who had required induction of labour for the first child had subsequently natural labours. Dr. Adamson, in her reply, spoke in favour of rectal rather than vaginal examination in pregnant women. Dr. Banister, con-

cluding the discussion, said he thought that obstruction at the outlet was of very rare occurrence. He outlined the methods he usually adopted, and mentioned his preference for Kraus gum-elastic bougies. Since the introduction of the 10 per cent. solution of pituitrin he had used this successfully without any ill effects.

Friday, July 23rd.

#### CAUSES AND TREATMENT OF UTERINE HAEMORRHAGE.

At the final meeting of this Section, Mr. Beckwith Whitehouse read a paper on the causes and treatment of uterine haemorrhage without gross physical signs, and mentioned that for five thousand years this subject had been prominent in medical and lay literature. During the past hundred years conflicting theories had complicated the points at issue, but in the last few years more solid knowledge was being based upon the truths of physiological and pathological research. A correct conception regarding menstruation was the key to the proper understanding of the phenomena associated with pathological haemorrhage. In 1914 he had expressed the opinion that at each menstrual function there was a definite shedding of portions of the superficial endometrium and that the menstrual discharge consisted of the autolysed products of the result of this necrosis. The only modification which he thought desirable in the light of recent work was that in most cases autolysis of the clot and tissue commenced while the separating endometrium was actually in anatomical contact with the deeper layers, and while the extravasated blood was intimately associated with the epithelial debris. It was the exception for no clots to be passed at some time during the menstrual function, though these might only be minute coagula and not recognizable as clots. Menstruation apparently corresponded to the death of the unfertilized ovum and was synchronous with the commencing retrogression of the corpus luteum; the products of decidual necrosis were then cast off as the menstrual discharge, for which he suggested the name of "menstrual lochia." The cause of the periodicity of the menstrual function was associated with the high degree of specialization of the human species. The human sexual instinct was independent of the uterus and ovaries, as was shown by its development before puberty and its persistence after the natural or artificial menopause. It was probably the thyroid gland which initiated the maturation and rupture of the first ovarian follicle, and was therefore responsible for the first menstruation. All available knowledge pointed to the extreme complexity of the sexual cycle. In regard to the uterine secretions, though in the human species absorption from the vagina was possible, it was unlikely that they had any great part in the production of sex instinct. When fertilization did not occur he thought that the uterine secretion was responsible for removing by autolysis the necrosed menstrual decidua and coagula. Mr. Whitehouse reviewed the data obtained from an analysis of 200 cases of functional uterine haemorrhage with no obvious physical signs, and classified these cases into four groups: (1) Periods too frequent, or epimenorrhoea. (2) Periods too prolonged, or menorrhagia. (3) Excessive loss of blood, or menorrhagia. (4) Irregular bleeding, or metrorrhagia. Epimenorrhoea meant that the ovaries were working at too high pressure: such ovaries were hyperplastic and often polycystic; they usually contained much retrogressive luteal tissue. This type was common at the beginning and the end of sexual life. Curettage was, of course, not believed, analogous to an incomplete fertile uterine abortion. Chronic endometritis predisposed to the condition, but was not the only cause. He suspected that the corpus luteum was intimately associated with this type of haemorrhage. Simple curetting frequently cured this condition. Menorrhagia was, he thought, comparable to the inert type of post-partum haemorrhage, and was essentially due to "uterine insufficiency." It might be the result of many diverse factors affecting both metrium and endometrium, or a temporary developmental attribute of adolescence. Scarcity was frequently associated with uterine insufficiency owing to atrophy and fibrosis of the

uterine wall. Menorrhagia was much more serious than menostaxis, and a severe degree of anaemia might result. At puberty curetting might be sufficient; in other cases it should be combined with radiation of the thyroid. At the menopause the intrauterine application of radium was the most useful measure available as it destroyed the tissue which aborted. Metrostaxis included all haemorrhages independent of the menstrual cycle. Haemorrhage was frequently severe, was bright red, and large clots were not unusually present. There was usually present a diffuse hyperplasia of the endometrium, but it might be localized as in the case of the simple adenomatous polypus of the endometrium. A polypus might in fact be but a local safety-valve, some deeper underlying unknown cause being present. The sympathetic vasomotor centres in the tractus intermedio-lateralis of the medulla were probably intimately associated with these haemorrhages. Professor Fletcher Shaw said that until recent years they had always looked for the cause of haemorrhage in the uterine body or the endometrium: now they had to remember the disorders of function associated either with the uterine or endocrine changes. He pleaded for a standardized terminology on the lines suggested by Mr. Beckwith Whitehouse. Mr. W. W. King suggested the abolition of the term "endometritis." Chronic subinvolution was the cause underlying very many cases of excessive loss. He discussed the use of luteum and thyroid extracts, haemoplastin serum, cotarnin, and radium in treatment. The President agreed with the necessity for a new and standardized terminology. He spoke very favourably of radium therapy, and much preferred this to x-ray treatment, as in using radium dilatation and curetting would naturally be performed and the chance of missing a possibly malignant condition be much diminished.

#### SECTION OF NEUROLOGY AND PSYCHOLOGY.

Thursday, July 22nd.

#### MANIC-DEPRESSIVE PSYCHOSIS.

On the second day of the meeting in the above Section Dr. E. Mapother opened a discussion on manic-depressive psychosis. After introductory remarks Dr. Mapother said that the range of the term "manic-depressive psychosis" was largely a matter of convention, that there was no constant or specific cause of the condition, and no physical modifications recognizable during life or after death. Under the heading of manic-depressive psychosis were included cases of functional mental disorder which showed as their predominant feature one of a contrasting pair of anomalous types of reaction: (1) melancholia or depressive reaction, and (2) manic reaction. The two syndromes were often seen at different times in the same patient, and were merely deviations from the normal in different directions. It had been emphasized that cases of manic-depressive type did not tend to dementia even after a number of attacks; in pure form during the early stage did sometimes end as typical dementia praecox. Morbid fear with insight had been picked out and labelled "anxiety neurosis," but the condition appeared to merge into other types of depression. As regards pathology, they were still uncertain as to whether the primary change was in the central nervous system or elsewhere. There was gradually accumulating evidence that certain physical changes were primary and essential. Among these were: histological abnormalities in the cerebral, pituitary gland, and gonads, anomalous blood sugar curves, haemoclastic crises, changes in the cortex secretion, etc. Such changes, however, seemed common to dementia praecox and manic-depressive psychosis, the difference being merely one of intensity. The President (Dr. Farquhar Buzzard) dealt with certain practical aspects of the disease. He considered that in mild or moderate form the disorder was more common than generally supposed, but was not recognized. The distinction between mild manic-depressive psychosis and anxiety neurosis was one of fundamental importance, and he disagreed with Dr. Mapother on the question of the latter being regarded as merely a subdivision of manic-depressive psychosis. In the two conditions the prognosis

and treatment were entirely different. In distinguishing them, Dr. Buzzard emphasized the need for a careful and detailed history. Dr. T. A. Ross joined issue with the opener on the question of the identification of psychoneuroses with manic-depressive psychosis. In his opinion the fundamental difference lay in the mental state; by careful attention to this factor the differential diagnosis could be made. One essential difference was that of remorse; the psychoneurotic blamed anything or anybody but himself for his malady, and if remorse was present the patient certainly belonged to the manic-depressive group. Dr. R. D. Gillespie expressed disagreement with Dr. Mapother's definition of manic-depressive psychosis, and considered that the number of cases terminating in dementia was very small indeed. He also disagreed with the proposal to classify anxiety neuroses with manic-depressive psychosis, and reminded the opener that the histological changes in the cerebral cortex and gonads in the latter disorder, to which reference had been made, still awaited confirmation. Dr. R. H. Cole stated that all individuals were liable to manic or depressive reactions of a mild type, and that manic-depressive psychosis was merely an exaggeration of this almost physiological state. He was doubtful, however, if there was sufficient evidence to warrant the statement that a psychoneurosis could become a definite psychosis. Dr. R. G. Gordon said that much confusion existed with regard to manic-depressive psychosis, as they were dealing purely with symptoms. He believed that manic-depressive psychosis and schizophrenia each related to entirely different types of personality. The real advance in psychiatry would probably be made in the differentiation of these personality types. Dr. Mapother then replied to the various criticisms offered.

*Friday, July 23rd.*

#### PITUITARY DISORDERS.

On the third day of meeting a discussion on disorders of the pituitary gland was opened by Dr. Gordon Holmes (London). He observed that in recent years the physiology of the pituitary gland had become a very vexed question, as disturbances in the floor of the fourth ventricle, without involvement of the pituitary, had been shown to give rise to typical dyspituitarism syndromes. Dr. Holmes then gave a general review of the different types of pituitary disorder, including acromegaly, gigantism, and Fröhlich's syndrome, illustrating his remarks with lantern slides of photographed cases. Among the disturbances of growth seen in acromegaly a less well known occurrence was considerable enlargement of the colon. The variations in carbohydrate metabolism and blood sugar curves seen in different forms of pituitary disorder were then described. Increased carbohydrate tolerance was usual in hypopituitarism, and diminished tolerance, and often glycosuria, in acromegaly; it had been found that such glycosuria could be controlled by insulin. The effects of local pressure on neighbouring nervous structures by an enlarged pituitary were next dealt with, and also the various modifications of visual field disturbance resulting from interference with the optic nerves and chiasma. Finally, Dr. Holmes discussed the question of treatment. In his experience endocrine therapy had proved disappointing, while x-ray treatment often gave results as good as those produced by surgical measures.

Mr. Norman Dott discussed the surgical aspect of pituitary disorders. It was necessary to distinguish between tumours or cysts arising within the sella turcica (pituitary tumours proper) and those arising above the sella turcica (suprapituitary tumours), as the surgical approach in each case was entirely different. In suprapituitary tumours the transfrontal method was indicated, while in his experience the trans-sphenoidal route, as advocated by Harvey Cushing, was the operation of choice. X-ray examination was of prime importance in the differential diagnosis. In pituitary tumours enlargement of the sella was often found, while in suprapituitary lesions the sella was not enlarged, but might be unduly flattened. He considered that operation should be urged when the visual fields were progressively diminishing. Mr. M. L. Hine dealt with the subject from the ophthalmological standpoint, and emphasized the need for carefully taking the visual fields with test objects.

Dr. W. J. Adie (London) discussed the relation of the pituitary body to the vegetative nervous centres situated in the hypothalamic region. In his opinion there was a close physiological relationship between the two, and similar symptoms might arise from disease of these nervous centres as from pituitary lesions. He illustrated his remarks with references to certain cases of encephalitis lethargica in which this region was involved. Dr. Gardiner-Hill described investigations on disturbances of growth, obesity, and carbohydrate metabolism in children. There was a high proportion of cases in which the syndromes of obesity and overgrowth were combined and continued up till puberty. Mr. Geoffrey Jefferson described the surgical measures adopted to deal with pituitary tumours. It was scarcely to be hoped to remove such tumours entirely; operation should be undertaken mainly for the relief of pressure, to relieve visual defects, and to prevent blindness. Mr. Jefferson then dealt in detail with the trans-sphenoidal method of approach. Dr. Eaves referred to three cases of dyspituitarism, with post-mortem examinations, which she had investigated. In one case of hypopituitarism the pituitary was small and fibrosed; in a second case of infantilism, with polyuria, both the anterior and posterior lobes of the pituitary were involved; and in the third case, one of post-encephalitic lethargica, the anterior lobe only was fibrosed. She also discussed the effect of insulin on the pituitary gland. Dr. C. G. Imrie described a case of polyuria following encephalitis lethargica in which the urinary secretion was controlled by insulin. He also discussed the influence of pituitrin injections on the blood sugar curve; the effect of 1/2 c.cm. of pituitrin on increasing the rise of the curve was greater than that of 50 grams of glucose.

#### SECTION OF LARYNGOLOGY AND OTOTOLOGY.

*Thursday, July 22nd.*

#### AFTER-TREATMENT AND RESULTS OF THE MASTOID OPERATION.

At the second session of the Section of Laryngology and Otology, with Mr. Norman Patterson, vice-president of the Section, in the chair, a discussion on the after-treatment and results of the radical and the simple mastoid operations was opened by Mr. G. J. Jenkins (London). He said that, as regards the operation for acute mastoiditis, whatever method of treatment was adopted, the primary object should be the prevention of an extension of the septic process, but that it was important to consider how the ear might be left as near normal as possible. By the Schwartze operation the damaged tissues behind the aditus were removed, and at the same time the surgeon made sure that the tympanic cavity was sufficiently drained either by spontaneous opening or by paracentesis. It was also important to deal with all systems of cells in the mastoid, including those which might not appear obviously infected. Since the war many aural surgeons had tried primary closure of the mastoid wound after the Schwartze operation. Mr. Jenkins had come to the conclusion that there were certain extensive irregular cavities where the soft tissues could not be brought into intimate contact with the deep bony parts, and that in such circumstances primary suture was not likely to succeed and was unsafe. He felt that the risk to the patient was too great and the result not always satisfactory. He was in favour of after-treatment by the maintenance of an open wound, using the whole or part of the mastoid incision, or by making another drainage wound into the meatus and closing the original wound. In his experience, even in selected cases, drainage from the lower part of the mastoid wound was more effective than meatal drainage; and the healing was as rapid and was more under control. When there was a small well defined cavity, such as a simple gutter in the anterior part of the mastoid, it was his custom to stitch up the upper part of the incision and to drain from the lower part of the wound. The process of healing was commonly uneventful, and the resulting scar was not in any way objectionable. If there was any serious delay in healing, or if there was a tendency for the epithelium to dip into the wound, Mr. Jenkins strongly advocated secondary suture, which rarely failed if carefully done.

Mr. J. S. Fraser (Edinburgh) said that the first and most important object of the radical and modified radical mastoid operations was to place the patient in a position of safety as regards life—namely, to free him or her from the possibility of an intracranial complication. In twenty years he had known only one case in which an intracranial complication occurred in a patient who had had a radical mastoid operation, but he had known several in which a patient suffering from chronic middle-ear suppuration, without any acute symptoms, had had his name entered on the hospital waiting list for operation, and had had to be taken in as an urgent case of intracranial complication before his turn. With regard to the technique of the operation, he had found that with a primary skin graft the operative cavity healed much more quickly, that the outline of the inner wall was preserved in almost all cases, that the first dressing was nearly painless and subsequent dressings unnecessary, that the duration of the patient's stay in hospital was greatly reduced, that a dry and satisfactory cavity resulted in a larger percentage of cases than with other methods, and, finally, that as regards the hearing power the results were better than when the skin graft was omitted. He applied the graft to the bony surface at the time of operation, by means of a long string of iodoform worsted which was packed into the cavity. The wound was dressed on the fourth or fifth day, the silkworm gut sutures, including that retaining the meatal flap, were taken out, and the iodoform packing was removed. As a rule there was no bleeding and no necessity to clean out the cavity. In most cases he put in fresh iodoform worsted packing, and applied gauze wool and a trefoil bandage for another two days. At the end of that time all dressings were omitted in the daytime, a piece of iodoform gauze being inserted into the meatus at night to avoid staining the pillow, and the meatus was left open. The patient was, as a rule, able to leave the hospital in fourteen days, and printed instructions were given to him regarding keeping the cavity clean by syringing. Mr. Fraser concluded by giving detailed statistics of his results in 628 cases of the radical mastoid operation; the skin graft had proved entirely unsuccessful in only 11 out of 377 cases in which it was employed. The discussion was continued by Professor von Neumann, who proclaimed himself conservative as regards the radical operation, but radical as regards the conservative operation, and gave a demonstration of many instructive lantern slides and specimens.

Friday, July 23rd.

#### RESECTION OF THE NASAL SEPTUM.

At the third session of the Section of Laryngology and Otology, with Dr. Brown Kelly, President of the Section, in the chair, a number of papers were read. Dr. W. Jobson Horne, speaking on the sorrows of the septum, said that in his opinion the younger generation of rhinologists pinned their faith far too implicitly to the operation of submucous resection of the nasal septum, with the idea of remedying all sorts of ailments of the nose. He considered that that operation was far too frequently done, and that its results were not at all so good as they ought to be. In his opinion the old-fashioned Moure's operation was often a better procedure. Much of the attention devoted to the nasal septum ought to be turned towards the turbinates and the nasal sinuses instead.

#### PHARYNGEAL AND OESOPHAGEAL DIVERTICULA.

Dr. William Hill, in a paper on pharyngeal and oesophageal diverticula, said that there was probably no group of lesions in the description of which so much inaccuracy had been perpetuated as in the diverticula of the pharynx and of the oesophagus. Dr. Hill subdivided diverticula which were pharyngeal in origin into congenital lateral post-faucial diverticula, congenital centrally placed anterior diverticula, and deep pharyngeal pressure diverticula or pouches. Those which were oesophageal in origin he separated into traction diverticula situated more or less at the level of the hilus of the lung, the traction-pulsion diverticula of Starek, Leugart's post-bronchial ledge pulsion diverticula, and epiphrenic pulsion diverticula. He then proceeded to give detailed descriptions of

the various types, described the methods of their formation, and detailed their operative treatment. His paper was illustrated by a large number of excellent lantern slides.

#### RETROPHARYNGEAL ABSCESS IN CHILDHOOD.

Dr. Douglas Guthrie read a paper on acute retropharyngeal abscess in childhood. He said that two varieties of retropharyngeal abscess were distinguished in most textbooks, but that the spinal variety of tuberculous origin was relatively rare. The acute variety of abscess, of lymphatic origin, was, on the other hand, fairly common, but, insidious in origin and often presenting no characteristic sign or symptom, it frequently escaped diagnosis or was discovered only at post-mortem examination. The condition escaped recognition perhaps more frequently than any other acute disease in childhood, and if untreated almost invariably ended in death. On the other hand, when a retropharyngeal abscess was recognized and opened, the prognosis was good and the patient recovered rapidly. The most characteristic symptom, almost invariably present, was difficulty of breathing, but the diagnosis was merely a matter of conjecture until the throat was examined, when a swelling could be seen on the posterior pharyngeal wall, to one side of the middle line. Digital examination was the most certain diagnostic test, but should not be practised unless preparations were made to open the abscess at once, if necessary; this should be done without any anaesthetic and from the mouth.

#### SECTION OF PATHOLOGY AND BACTERIOLOGY.

Friday, July 23rd.

#### LEUKAEMIA AND ALLIED CONDITIONS.

PROFESSOR G. LOVELL GULLAND, opening a discussion on leukaemia, gave reasons for his view that this condition was of neoplastic origin—namely, a sarcomatosis of the leucocytes. It might be due possibly to a disturbance of the factor regulating the number of leucocytes. He considered briefly the phylogeny of the white cells and pointed out that the leukaemic process might affect any or all stages of development. He was sceptical of the existence of a really acute lymphocytic leukaemia, since most of the descriptions belonged to a time before the myeloblast was recognized as a separate entity. With regard to "mixed" forms it was evident that almost every case was "mixed" at some stage. Patients did not die of the leucocytosis excess but of anaemia. Chronic cases might go on for years with slight anaemia, while in acute leukaemia the red count might be lowered by a million every few days. Probably this depended on the rate at which the marrow was filled by proliferating leucocytes. In cases of acute myeloblastic leukaemia he had found the marrow pure white to the naked eye and consisting of nothing but myeloblasts. Haemorrhage increased the anaemia and was badly borne because there was no reserve power of regeneration in the bone marrow. The speaker then discussed the differential diagnosis of leukaemia and gave an account of two cases illustrating the difficulty of distinguishing the disease in the leukaemic phase.

In the unavoidable absence of Dr. S. W. Paterson, Dr. Anderson (Melbourne, Australia) read his paper. He reviewed a series of cases of disease of blood-forming organs. From the clinical aspect he grouped them under tumour of glands, tumour of spleen, or tumour of mediastinum; he discussed the leading features of each group. Professor J. Sholto Douglas raised the question of the value of the oxidase reaction. He commented on the fact that cases of leukaemia often appeared in groups, which suggested that it might be regarded as an epidemic disease. Dr. Robert Donaldson said that the textbook classification of leukaemia was too rigid. He disagreed with Professor Gulland as to the sarcomatous origin of leukaemia. There was still complete ignorance about the governing factor of the disease. Examination of cells of the blood and marrow did not help as there were as many classifications as observers.

#### STUDY OF THE LIVING TISSUE CELL.

Dr. T. S. P. Strangeways and Dr. R. G. Canti contributed a paper on the study of the living tissue cell by



dark-ground illumination. Dr. Strangeways entered into a discussion of cell biology and the mechanism of growth and reproduction, in which profound scientific investigation reached the confines of philosophy. Dr. Canti described the method of making tissue cultures and gave an account of cell division as observed under dark-ground illumination.

Dr. Strangeways and Dr. Canti gave a demonstration of living tissue under dark-ground illumination, showing the structure of living cells and intracellular activity. The technique of the method has been described by Dr. Canti and published in the *JOURNAL* of July 24th (p. 155). The outlines of the flattened vegetative cells showed clearly. The cell structures—that is, nucleus, nucleoli, mitochondria, fat globules, and metabolites—were easily visible and their movements fascinating to watch.

## SECTIONS OF DISEASES OF CHILDREN AND ORTHOPAEDICS.

Thursday, July 22nd.

### SPASTIC PARALYSIS.

On the second day of the meeting a discussion by these two Sections on spastic paralysis in children was opened by Dr. W. J. Adie, who defined its scope and said that nothing material had been added to the accurate clinical description of the condition given by W. J. Little more than eighty years ago. While meningeal haemorrhage must be struck out as a cause of any infantile spastic state, birth injury, which might occur even in an apparently normal labour, was most often present, as had been shown by the important researches of Schwartz of Frankfurt and his assistants. The speaker was much struck by the resemblance between the syndrome of Little's disease and the condition seen in men wounded in the region of the superior longitudinal sinus in the war. He gave reasons for rejecting the view that primary neuronic degeneration was the cause of Little's disease, which, it should be noted, was not familial or progressive as such degenerations generally were. Great defect of the powers of speech might accompany a normal or more than average intellect. Epilepsy, athetosis, and chorea were generally contraindications to surgical treatment. After describing various forms of familial diplegias and spastic affections, the speaker briefly referred to the alleged sympathetic innervation of striated muscle; he thought that the evidence was against this view, for complete ablation of the sympathetic had no effect on decerebrate rigidity. Mr. Blundell Bankart said that the condition was most often due to a defect of the upper motor neurone, and was an exaggeration of the postural reflex. Its treatment was operative—on the muscles and tendons when structural shortening had supervened, but in all cases also on the peripheral motor nerves. Foerster's operation of posterior root section was now universally abandoned. The operation of cutting the sympathetic rami, which was based on the work of Hunter and Royle, had proved ineffective in his and other surgeons' hands. The object of all operations was to diminish the effective action of the preponderating group of muscles, either by lengthening them or by destroying part of it. The speaker thought that Stöffel's operations had advantages over others; they consisted in excising the nerve tracts to the overacting muscles, usually before they left the main trunk. Prolonged after-treatment and the use of splints were unnecessary. Dr. John Beattie showed a number of motion pictures to substantiate the contention of Hunter and Royle that muscle tone was influenced by the sympathetic nerves. These very clearly demonstrated the effects of operations on the central nervous system of goats, sea-gulls, and domestic fowls. In the decerebrate goat the hind limb on the side on which the sympathetic rami had been cut was flaccid. Mr. S. W. Daw agreed with Mr. Bankart as to the great superiority of operations on nerves over those on tendons in suitable cases. For secondary contracture of the triceps cruris he preferred incision of the fascia of the soleus and forcible stretching to tendon lengthening. In the upper limb operation was less necessary and less successful in its functional result. Tendon and tendon transfer as for

posterior interosseous nerve palsy were useful, however. The value of the cosmetic effect of such procedures was worth consideration. Mr. Tyrrell Gray said that a selection of cases was necessary, and the patient's desire to walk was a great factor in producing useful results. He preferred the extra peritoneal operation on the obturator nerves. Dr. F. M. R. Walsho maintained that the histological evidence certainly did not establish the sympathetic innervation of voluntary muscle, and consequently he disapproved of cutting the sympathetic rami for spasm. Dr. E. W. Neill Hobhouse thought it was possible to prevent severe spasm in the early stages and prevent need for operation. He emphatically condemned faradization, which the relations and friends and parents were too fond of using on their own responsibility. Dr. W. F. Menzies emphasized the importance of education before spasm became extreme, as there was no rigidity or spasticity at first. Mr. Roeyn-Jones spoke of the beneficial mental effect of physical improvement after operation. In treating adductor spasm by Stöffel's operation he always excised the tendon of the adductor longus. Operations on the arm were disappointing except for their cosmetic effect. Mr. Alan Todd had found biannual exercises useful when the condition involved the upper extremity. He relied much on a keen mother and a wheelbarrow. Dr. H. J. Capou said that treatment begun at the age of 2 years was too late. It should begin at 1 or 2 days, before diplegia developed. Oedema, congestion, laceration, and haemorrhage required lumbar puncture to drain away the blood, etc.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### GANGRENE OF FINGERS DUE TO SUBCLAVIAN COMPRESSION.

DESCENT of the shoulder during growth or through muscular weakness may occasionally cause compression of the lowest trunk of the brachial plexus by a normal first thoracic rib. T. Murphy, Morley, Stiles, Stopford, and Wheeler have each described instances of this condition. The following case illustrates the fact that the subclavian artery may suffer similar compression at the thoracic inlet.

A man, aged about 50, was admitted to Kasr el Aini Hospital, Cairo, with a useless left upper limb and a dry gangrene affecting the two distal phalanges of the index, middle, and ring fingers of his left hand. He had a flaccid paralysis of the majority of the muscles of the left arm, forearm, and hand, but there was some contracture of the digital extensors which caused the fingers to curve slightly in a dorsal direction. The deltoid was contracted and the humeral head had sunk towards the subclavicular fossa, which could at once be reduced by supporting the elbow, with the same sensation of "telescope" movement that is found in a congenital luxation of the hip. The monoplegia had appeared suddenly during sleep a month before admission to hospital, the patient waking to find his limb useless. He stated that fever had accompanied the paralysis and that the gangrene had gradually followed it. There was no sensory loss in the left upper limb; the skin adjoining the gangrenous areas was hyperaesthetic. A very lively left supinator jerk was present, and was accompanied by a very slight increase of the left triceps jerk.

In view of the absence of sensory loss it was difficult to connect the gangrene directly with disease of the nervous system. An examination of the left radial artery at the wrist showed that while its pulsation was distinctly felt when the subclavicular fossa was reduced by supporting the elbow, it disappeared completely when the support was removed and the limb hung vertical.

It seemed at first sight that the axillary artery might be suffering compression by the slightly displaced head of the humerus, but after abducting the arm to a right angle the radial pulse reappeared, in spite of the fact that the head bulged further into the axilla. Radiography revealed no cervical rib or other abnormality, and we concluded that the stoppage of the pulse was due to compression of the left subclavian artery at the thoracic inlet.

Raising the limb relieved the compression, but there was a latent period of some thirty seconds before the pulse returned; due, no doubt, to a persistence of the *stupor arterielle* produced by mechanical stimulation of the outer arterial coat. It was

Stopford, J. S., and Telford, E. D.: *Brit. Journ. Surg.*, xii, p. 168.  
Wheeler, W. I. de C.: *Dublin Journ. Med. Science*, April, 1926, p. 65.



impossible to obtain any shadow of the subclavian or axillary arteries in a radiogram.

A series of sphygmograms gave objective confirmation of what had been found by feeling the radial pulse of the affected side. When the elbow was supported a series of well marked percussion waves were seen on the tracing, while when the arm hung by the patient's side the sphygmogram showed an unbroken straight line.

The distribution of the gangrene in the distal phalanges of the index, middle, and ring fingers is explained by the fact that these parts of the hand are furthest from the heart, and for this reason blood failed to reach them when the subclavian artery was compressed at the thoracic inlet.

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#### GENERALIZED TUBERCULOUS PERITONITIS: ACUTE OBSTRUCTION: OPERATION: RECOVERY.

CASES like that here recorded are sufficiently rare to be of interest.

On May 6th last I was called to see a woman, aged 70, who complained of abdominal pain and vomiting. She gave a history of good health except for occasional slight attacks of a similar kind during the past two or three years. She had been up and about until the previous day, and the bowels had opened slightly on each of the two previous days. The temperature was normal, and the pulse 84; the tongue was rather coated. The patient was of spare build and had a skin over the abdomen was dry and lower abdomen with so mass was felt; rectal elicited over the but no obvious thing abnormal. No physical signs were found in the chest. Aperients were prescribed, followed later by enemas and colon irrigations; there was practically no result, but the general condition remained good until May 11th, when faecal vomiting occurred. She was then urged to go into hospital for operation, but refused until May 15th, when she was admitted to the County Hospital, Haverford-west. Mr. R. G. B. Maerac operated. The abdomen was opened through a right paramedian incision and an obstruction of the small gut was found about 18 inches from the caecum; this was caused by a band which stretched from a loop of gut to a tuberculous gland in the mesentery; a piece of small gut was also adherent to the mesentery and kinked. Further up a second complete obstruction was found, due to a smaller band stretching from omentum to mesentery, the intestine above being acutely distended. Enlarged glands were present throughout the mesentery, some calcareous and some soft, and small tuberculous nodules were scattered throughout the peritoneal cavity. There was a small quantity of fluid in the pelvis.

The bands were divided and the adherent gut freed; the abdomen was closed without drainage. The patient made an uneventful recovery.

G. W. V. PARRY, M.R.C.S., L.R.C.P.

St. David's, S. Wales.

## Reports of Societies.

### RHEUMATOID ARTHRITIS.

A MEETING of the Medico-Chirurgical Society of Edinburgh was held in the Hall of the Scottish headquarters of the British Medical Association on July 7th, the President, Professor RUSSELL, in the chair, when a discussion on rheumatoid arthritis, initiated by Professor Ralph Stockman (Glasgow) and Dr. G. L. Kerr Pringle (Harrogate), was held.

Professor Stockman referred to the varieties in nomenclature associated with this disease. Owing to the fact that the condition resulted from the malign activities of a number of different organisms the clinical designation "rheumatoid arthritis" was satisfactory for the present. Many suggestions regarding the etiology of the condition had been put forward through the ages, but there could be little doubt that it was a germ disease. The probability that there were several different organisms responsible was strengthened by consideration of the different clinical courses noted in the cases met with. In some cases there was a slow, insidious onset with implication of the small joints and gradual implication of the larger joints, perhaps extending over several years. Other cases began as acute arthritis of one of the larger joints with high temperature, rapid pulse, and great constitutional disturbance.

Again, enlargement of the spleen and lymphatic glands might be found, indicating a general blood infection. Ultimately all cases took on a definite chronic course and tended to go from bad to worse. It was important to realize that rheumatoid arthritis was not merely an arthritis but a general disease of which the point of attack was the white fibrous tissue—the connective tissue—of the locomotory system of the whole body. The primary and essential pathology was a fibrositis with swelling and proliferation of white fibrous tissues locally. A perineuritis was set up in the small nerves in the inflamed tissue, and so pains, stiffness, and a fatigued feeling were produced outside the joints. In some cases there was more tendency to attack and erode the cartilage and bone. The sequelae of all this included the well known symptoms—the muscular dystrophies, deformities, and contractures. The origin of the disease in any one case might be difficult, and was sometimes impossible, to define certainly. Professor Stockman had seen cases in association with psoriasis, general dermatitis, and lupus erythematosus; rheumatoid arthritis also followed chronic tonsillitis and many other local septic conditions. Treatment resolved itself into two principal endeavours: (1) to combat the infection and bring it to an end, and (2) to remove the fibrositis throughout the body and correct any contractures of muscles and joints. General tonic measures and local application of heat in various forms, baths and spa treatment, had been used from remote times; these, however, had little effect on the general course of the disease. Vaccines from different strains of streptococci and staphylococci had proved of no specific value in Professor Stockman's experience, but during the past five years he had used protein shock or non-specific protein therapy. The benefit appeared to depend on the sharp feverish reaction which followed the injection. Professor Stockman tried various proteins in rheumatoid cases, but now almost confined himself to the typhoid bacillus as the most satisfactory. Beginning with a dose of 100 million intravenously, it was repeated every six days until six injections had been given, the dose being gradually increased to 200 or 250 million. The reaction started within an hour with a rigor and rise of temperature to 103°-105° with nausea, headache, and possibly vomiting. A profuse perspiration was followed by a return to a normal temperature. There was a very marked polymorphonuclear leucocytosis. The reaction lasted for six to twelve hours. There was also a focal reaction, the affected areas becoming painful, slightly swollen, and tender. This passed off, and next day the patient felt better. In about 60 per cent. of upwards of 250 unselected cases which Professor Stockman had treated the infection was brought to an end. The treatment should be commenced early in the disease. The speaker finally referred to the formidable and tedious task of treating the contractures of muscles and joints.

Dr. G. L. KERR PRINGLE referred to the importance of soil and diathesis in addition to infective foci in the production of the disease. He said that the commencement and cessation of menstruation were associated with the disease, and pregnancy had long been considered a cause. He referred to the biochemical investigations at the Royal Bath Hospital, where it was found that the glucose tolerance was lowered in most cases of proliferative arthritis, and that when a septic focus was removed the tolerance became more normal. These patients improved on a low carbohydrate diet, and the basal metabolism did not appear to be altered in them. With regard to treatment, Dr. Pringle said that infective foci should be removed and hydrochloric acid given if there was achlorhydria. In young women with an abnormal menstrual history thyroid extract in small doses with increasing doses of the French tincture of iodine and a low carbohydrate diet should be given, and lavage where there was intestinal stasis. The speaker referred to the local production of hyperaemia by various agents followed by massage. Surgical measures should not be undertaken when there was active disease, and when operation was considered a low glucose tolerance should be obtained. Vaccines sometimes gave excellent results, and in other cases were very disappointing.

## Reviews.

### THE DEBT TO OUR TEACHERS.

THE appearance of the fourth edition<sup>1</sup> of Professor E. H. STARLING'S *Principles of Human Physiology* is a happy reminder of how much we owe to our great teachers. It has been remarked that the progress of a science may be written in the history of a few compelling ideas, from which have sprung schools of thought that have constrained the studies of a generation. Whence derives such power? It comes, surely, from that quality of genius to invest an idea, not alone with the objective evidences of truth, but with that contagious personal enthusiasm to which the human mind cannot deny response. Science is more than logic and stubborn facts, and they who can put breath into the dead bones are our masters, for they make our science for us.

British physiology has been fortunate in her teachers, and Professor Starling must take high place in this good company. As the title indicates, the book is offered, in particular, to the great family of medical students, but the reader is not allowed to forget that human physiology is but a part of our conception of the behaviour of living matter in whatever form it may manifest itself, and that the problem of life is one whole, whether we observe it in the reactions of amoeba or in the activities of man.

Only five years ago the third edition of this textbook appeared, yet the progress in many fields in the intervening years has been such as to persuade the author that further revision was now demanded. It is not the province of a general textbook to have the last word in all the branches which it covers; it is better that new facts should find their level in the general configuration of knowledge before they take their place in the standard works, for we cannot maintain perspective if we crowd the foreground with ill-focused detail. Professor Starling has made extensive but conservative revision of a sort directed to the simplification of the main theses. Intriguing observations find no place if they do not contribute to the balance of the whole composition. The bulk of the book has been appreciably reduced by the removal of much chemical detail which may now be found in the many available biochemical textbooks, and by some modifications in type. Amongst the subjects which have been considerably amended may be mentioned those on muscular activity, the coronary and capillary circulations, conditioned reflexes, respiration, secretion, and the metabolism of carbohydrate. The chapter on the sense organs has again been contributed by Dr. H. Hartridge, and this departure from the personal character of the book seems justified by the special nature of this subject.

Whilst the continued growth and specialization of knowledge make it increasingly evident that the teaching of physiology, which takes toll of all the physical sciences, can only be adequately met by the co-operation of experts in their several fields summarizing in monograph form the progress in those fields, nevertheless the comprehensive textbook from one pen will remain the foundation of education. Here only will the instinct for the subject be formed. But with the extension of knowledge the task of the author of such a book becomes the greater. Few there are that have the courage to shoulder it, and of these not all are happy in their burden. In the pages of "Starling" the student will find no hint of laboured weariness.

### CARBOHYDRATE METABOLISM AND THE PANCREATIC HORMONE.

FROM Toronto and from Paris have arrived two important monographs upon the role of the pancreas in carbohydrate metabolism. The first betrays its authority in the name of its author, Professor J. J. R. MACLEOD, who now joins the select group of contributors to that excellent series of *Monographs on Physiology* which is edited by Professor

<sup>1</sup> *Principles of Human Physiology*. By Ernest H. Starling, C.M.G., F.R.S., M.D., Sc.D., F.R.C.P. The chapter on the sense organs edited by H. Hartridge, M.A., M.B.Cantab. Fourth edition. London: J. and A. Churchill, 1926. (Roy. 8vo, pp. xiii + 1074; 569 figures. 25s. net.)

E. H. Starling. The title which Professor Macleod has chosen—*Carbohydrate Metabolism and Insulin*<sup>2</sup>—aptly states his case. The pancreatic hormone interests him supremely as a new weapon in the armoury of the experimentalist for the assault upon the mysterious recesses of carbohydrate metabolism. The story, therefore, opens with the discovery of insulin in the Toronto laboratory and its effects upon depancreatized dogs. There follows an adequate discussion of these physiological criteria—such as the D:N ratio, the respiratory quotient, the blood sugar, and tissue glycogen—which have dominated all studies of the metabolism of sugar, and the reactions of these to the administration of insulin in both the diabetic and the normal animal form the data from which the argument is to proceed. So, by way of chapters dealing with experimental hyperglycaemia and hypoglycaemia we are led to a discussion of the mechanism of the action of insulin. This discussion could hardly be satisfying for the author was in a sorry position. It was written when experimental research was at an impasse. It is a story of promises unfulfilled, clues abandoned, illusions destroyed. In our haste we had said that the discovery of insulin provided a key to the main problems of carbohydrate metabolism, that a few conventional experiments with this new agent would carry us far along the road. A riot of experiment engulfed us, unsettled our criticism, damped our easy optimism, and left the subject almost worse confounded than before. What happens to the sugar which disappears from the blood of the normal animal under the influence of insulin? It is not converted into glycogen, it is only in small part oxidized. It is lost. Find it, and the great secret of carbohydrate metabolism will be revealed. Such is the impression that is left by much of the work upon the action of insulin, and, as Professor Macleod's patient review clearly reveals, the search for the hidden sugar led us into many vain imaginings. And now it would seem that where the great mystery was sought there is no mystery. Dr. H. H. Dalo and Dr. C. H. Best are persuaded from work recently carried out by them that the lost sugar is, in fact, converted into glycogen in the normal animal as well as in the diabetic. It is a misfortune that the author's difficult task of summary could not have been lightened by the knowledge of this simplification, but it is of the nature of monographs that they should deal with a live subject, and they must, therefore, be always one stride behind the vanguard of knowledge. Professor Macleod has given us a patient, laborious, critical record of recent work in this great problem in metabolism. The book is a comprehensive chronicle rather than an inspired message—but this is no problem to be pursued amongst the clouds.

The second book<sup>3</sup> to which reference has been made is by Dr. A. CHOAY. In it interest is centred on the hormone itself rather than on insulin as a lever in the machinery of metabolism. We are taken much farther back in the history of physiology—back to Claude Bernard and von Mering. The growth of the faith in a pancreatic hormone is traced in detail up to the discovery of insulin. In still greater detail are considered the chemical and physical properties of insulin and the methods for its preparation, its pharmacology, physiology and therapeutics, and the interesting interrelations of the pancreas and other organs of internal secretion. A very satisfactory feature of the work is an elaborate bibliography, which must approach a complete list of all papers of real interest to the subject. Fifteen hundred original papers are included. The price fixed by the publishers, should it withstand the further vagaries of the exchanges, is modest enough to enhance the attractiveness of this book as a standard work of reference.

Both Professor Macleod and Dr. Choay have achieved a considerable measure of success in turning the great library of pancreatic studies to their special purposes, and the choice of the reader may well rest upon his own particular interests. In these days the writing of a careful monograph in a wide field is a task which brings little satis-

<sup>2</sup> *Carbohydrate Metabolism and Insulin*. By John James Richard Macleod, F.R.S., M.B., LL.D.Aberd., D.Sc. (Hon.) Toronto. *Monographs on Physiology*. London and New York: Longmans, Green and Co. 1926. (Med. 8vo, pp. xii + 357; 33 figures. 18s. net.)  
<sup>3</sup> *La Sécrétion interne du Pancréas et l'Insuline*. Par André Choay. Paris: Masson et Cie. 1926. (Roy. 8vo, pp. xx + 570; 7 figures. 8s. 4d.)

faction of any sort to the author. It is therefore fitting that the spirit of those who discipline their pens to the labour should not pass without acknowledgement.

### THE PITUITARY.

*The Comparative Anatomy, Histology, and Development of the Pituitary Body*,\* by G. R. DE BEER, is the sixth of a series of monographs at present being issued under the editorship of F. A. E. Crew and D. Ward Cutler. The series is designed with a very definite aim. The increasing specialization in biological inquiry has made it impossible for any one author to deal adequately with current advances in knowledge. It has indeed become a matter of considerable difficulty for a research student to gain a correct idea of the present state of knowledge of a subject in which he himself is interested. To meet this situation the textbook is being supplemented by the monograph. De Beer has fully grasped the intention of the editors and has produced a book which will save an infinity of trouble to the student who is embarking on a research into the functions of the pituitary body. It is true that such research lies in the domain of physiology, but it is none the less true that in the planning out of experiments on a complex organ such as the pituitary gland, a good knowledge is required of the various forms exhibited by the gland in different animals, so that the most suitable for experimentation may be selected. Moreover, it is necessary to know the component parts of the gland, with a view to defining their respective functions; and also to know what parts are homologous in the series of animal forms, in order that the results of experimentation may be comparable. The important respects of value in differences, though it may fall short in defining the precise nature of the functions. On all these matters De Beer has furnished a clear and well illustrated account, and in such detail as to render superfluous much reference to original articles. A complete bibliography up to date is, however, appended, as a supplement to the exhaustive bibliography to be found in Stendell's work on the hypophysis.

The book is the product of an original research involving the examination of a large number of pituitary glands, and in order that the work should be true to nature the author has used no material that had not been properly fixed within half an hour of the death of the animals, and for this reason human material has not been employed. After a preliminary chapter dealing with the technique of staining sections, the author discusses, separately, the macroscopic anatomy, the histology, and the development of the gland in the several orders of animals—in mammals, birds, reptiles, amphibia, the bony fishes, selachians and cyclostomes. An interesting chapter is devoted to the evolution of the gland. Thus, in its most primitive form the hypophysis occurs as a depression in the ectoderm in front of the mouth, into which one of the head cavities acquires an opening (amphioxus); later it is displaced into the buccal cavity, its epithelium becomes ciliated, and its function apparently is to create a current of water. In its further evolution the depression sinks beneath the surface and communicates with the exterior by means of a duct, thus taking the form of a secreting gland. The final step is the complete separation of the hypophysis from the surface and its connexion with the infundibulum, the organ thus acquiring the endocrine mode of secretion. A short chapter containing comparative observations, together with some practical advice as to the most suitable forms for experimentation, concludes a very interesting and useful volume.

### THE CEREBRUM AND CEREBELLUM.

*The Nouveau Traité de Médecine*† is an ambitious work, projected to appear in no fewer than twenty-two volumes, of which several have already been reviewed in these columns. The present volume, No. 19 in the series, is devoted to

the diseases of the cerebrum and cerebellum. To this subject more than a thousand pages is given, and this extensive text is richly illustrated by numerous figures and plates, some in colour. The reader is therefore provided with a veritable mine of information, and this at a very reasonable cost. In a work of this magnitude it is inevitable that some inequality of treatment of the various subjects should occur, but this fault is here at least at a minimum, and an adequate presentation of the subjects is guaranteed by the names of the numerous distinguished authors who contribute to its pages.

If any particular sections can be chosen as being of special value, those dealing with the diseases of the cerebellum, from the pen of M. Andre Thomas, and the account of the cerebral tumours, by MM. Roussy and Cornil, deserve mention. There are few modern accounts of the subject which can rival M. Thomas's extensive account of the physiology and diseases of the cerebellum. The chapter on the tumours of the cerebrum is also particularly rich in valuable pathological matter.

The articles on cerebral syphilis and general paralysis of the insane can both be warmly commended; the pathological and clinical descriptions are alike excellent, while the account of the microscopic anatomy of general paralysis is enriched by many illustrations, including some beautiful coloured plates. A useful chapter, and one on a subject which is seldom adequately treated in the ordinary textbook, is that on the senile brain by M. A. Comte. Dr. Levy-Valeusi's account of the infantile encephalopathies is unusually full and good, and here again the value of the text is much enhanced by very graphic figures. The last chapter, on the various forms of labyrinthine disturbance, is a brief but highly useful summary of a subject which often receives scant attention in textbooks.

There can be no question as to the value of this book, both to the neurologist and to the general physician. Its only fault is its weight, which is so great as to preclude it being read in any comfort except at a table or a reading desk.

### MATERNITY AND INFANCY.

In the course of the book *Maternity and Infancy*,\* written with the direct simplicity which characterizes the work of Dame Mary Scharlieb, it is stated that it is intended "chiefly for the instruction and comfort of expectant mothers." This is too modest a claim. Rather it might well be placed in the hands of medical students when they are about to begin a course of practical obstetrics, and to nurses also who are preparing for the C.M.B. To both it will be of great interest and value, but it is just a question whether an expectant mother, however well informed, would be "comforted" by a discussion of the treatment of the possible complications of pregnancy. The author deals fully with these matters, describing in detail the medical treatment, and not hesitating to mention divergent views of obstetricians.

Before practical experience has been obtained in midwifery, the student frequently finds certain gaps in the usual textbooks. It is just these gaps which are here skillfully bridged, and a continuous story thus presented, and a lucid and connected account of ante-natal, natal, and post-natal conditions afforded.

With her long and varied experience Dr. Scharlieb brings to bear upon the whole subject of pregnancy a breadth of vision and a ripe wisdom which appear between the lines of this book. All through it wholesome advice for expectant mothers is given. Controversial points are touched upon with restraint, and dogmatic assertions are not made, though they might well become the writer. Modern ideas are incorporated with the sound teaching that has stood the test of time. In these days, when a certain amount of medical knowledge is found in every household, Dame Mary Scharlieb sounds a timely note of warning against the interference of well intentioned relatives.

The book is dedicated to the First Obstetric Unit in London at the London (Royal Free Hospital) School of Medicine for Women, and to its director, Professor Louise Meffroy. It deserves to be widely read.

\* *The Comparative Anatomy, Histology, and Development of the Pituitary Body*. By G. R. de Beer, M.A., B.Sc., F.L.S. Biological Monographs and Manuals, No. VI. Edinburgh and London: Oliver and Boyd, 1925. (Demy Bro., pp. xix + 193; 218 figures. 12s. 6d. net.)

† *Nouveau Traité de Médecine*. Fasc. XIX. *Pathologie du Cerveau et du Cerebelle*. Paris: Masson et Cie. 1925. (Roy. 8vo., pp. viii + 1016; 261 figures, 40 plates. 75 fr.)

\* *Maternity and Infancy*. By Mary Scharlieb, D.B.E., M.D., M.S. London: Williams and Norgate, Ltd. 1926. (Cr. 8vo., pp. 236. 6s. net.)

## NOTES ON BOOKS.

PROFESSOR MATTHEWS is to be congratulated that within ten years a fourth edition<sup>7</sup> of his *Physiological-Chemistry* should be called for. The material which has been added since the third edition deals with the discoveries of Sir James Irvine and his pupils in regard to sugars, the clotting of the blood, the chemistry of the skin and eye, insulin, and the chemical aspect of the defences of the organism against disease. When the historical order of development of a subject is dealt with it is clearly stated. The chapter on the carbohydrates may be taken as an example: it is made interesting by its account of the work of Berthelot, Priestly, and Baly on photosynthesis and photocatalysis. Professor Matthews himself is an authority on the oxidation of sugars. Again, in the chapter on animal heat, the story of the work of Lavoisier is retold with freshness, and Lavoisier's conclusions are given in his own words from the original papers. No fewer than 275 pages are given up to "Practical work and methods"; and here the watchword is "thorough." When colloids were under discussion we should have expected some allusion to the use of the clay filter. There is no index of authors' names, which, when supplied, is always convenient; but at the end of each chapter there is a full bibliography.

The *Textbook of Physiology*,<sup>8</sup> by Dr. ZOETHOUT, is a more or less judicious compilation, and has very few references to original papers. Such references as are given are almost exclusively to American authors. It would seem that those readers more particularly addressed are students of dentistry, pharmacy, and those at "normal schools." It is difficult to understand the principle on which the various sections or chapters are arranged; why, for instance, the ferments should be treated as early as in Chapter II, before any chemistry has been studied. In this chapter the word "dead" is used as equivalent to "non-living," but dead can properly be applied only to that which has lived. The classification of the properties and characteristics of living matter does not seem to be based on any ascertainable principle. The first property to be mentioned should have been affectability, called in this book irritability; but "contractility" is given the first place; and the reader is left to think that it is as universal as irritability, which it is not. Excretion, respiration, digestion, and even absorption are all set down in the same list with the far more comprehensive term "metabolism." The allusion to "inertia" (p. 21) is misleading, for from it we are left in doubt whether the author is referring to inertia of masses in the ordinary Newtonian sense or to "physiological" or "functional inertia" and "functional momentum" in the sense in which Fraser Harris, J. Arthur Thomson, and Noël Paton have used it. Where the author is practical he is much better; the treatment of respiration, "taking cold," and baths is timely and sensible. Some of the diagrams are excellent; some sketchy, or stiff and formal.

The third volume<sup>9</sup> of the series of ophthalmological monographs, by Professor TERRIEN of Paris, deals with the lens. It is clearly written and freely illustrated, as were the two previous numbers of the series. Anatomical and physiological considerations occupy rather more than half the volume, the remaining portion being devoted to difficulties of accommodation and the occurrence and treatment of opacities and injuries. Like its predecessors the book is authoritative, and is not spoilt by an excess of detailed descriptions.

To the prospective settler and even to the tourist the Union Castle Steamship Company's *South and East African Year Book and Guide*<sup>10</sup> offers a mass of useful information in an admirably concise form. The handbook includes, besides an atlas of 64 pages and a general gazetteer, summaries of the immigration and land laws, and reviews of the present position of industry and agriculture, detailed descriptions of the towns and country, and the routes by which the various districts of the territories covered may be reached, and discussions of the cost of living. Very full accounts of climate are given, with special reference to suitability for invalids, and a section headed "Sport and Research" deals with the distribution of game and fish and the local and general facilities for sport. There is an adequate index.

<sup>7</sup> *Physiological Chemistry*. By Albert P. Matthews, Ph.D. Fourth edition. London: Baillière, Tindall and Cox. 1925. (Roy. 8vo, pp. xviii + 1233; 109 figures. 30s. net.)

<sup>8</sup> *A Textbook of Physiology*. By William D. Zoethout, Ph.D. Second edition. London: Henry Kimpton. 1926. (Med. 8vo, pp. 616; 186 figures. 18s. net.)

<sup>9</sup> *Sémiologie Oculaire: La Cristallin*. Par Félix Terrien. Paris: Masson et Cie. 1926. (Roy. 8vo, pp. 240; 158 figures. 6s.)

<sup>10</sup> *The South and East African Year Book and Guide for 1926*. Edited for the Union Castle Mail Steamship Company by A. Samler Brown, F.R.N.S., and G. Gordon Brown, F.R.G.S. London: Sampson Low, Marston and Co., Ltd. (5s. 6d. post free.)

The *Transactions of the American Climatological and Clinical Association*<sup>11</sup> for the year 1925 include numerous articles dealing with diseases of the respiratory and circulatory organs and with elimatology and hydrology. Dr. V. Y. Bowditch contributes some interesting reminiscences of his student life in Europe in 1879 to 1881, when he visited Vienna, Leipzig, Strasbourg, Paris, and London.

<sup>11</sup> *Transactions of the American Climatological and Clinical Association for the year 1925*. Vol. xli. Printed for the Association, 1926. (Med. 8vo, pp. xxxvi + 216; illustrated.)

## PREPARATIONS AND APPLIANCES.

*Portable Apparatus for Administering Carbon Dioxide.*  
DR. H. WHITRIDGE DAVIES (Department of Therapeutics, University of Edinburgh) has designed a portable apparatus for administering carbon dioxide mixed with air in conditions with respiratory failure, such as shock, anaesthesia, alcoholic and aereotic poisoning, carbon monoxide poisoning, drowning, and some of the accidents in obstetric work. The advantages of carbon dioxide inhalation are that it acts promptly, its maximum effect being obtained in ten seconds, that its action lasts as long as the inhalation continues, and that the increased pulmonary ventilation is obtained without any great increase in metabolism. Dr. Whitridge Davies had the assistance of Professor Briggs of the department of mining in the University of Edinburgh, and of Messrs. Sparklets, Ltd., in designing his apparatus. A sparklet 6½ inches long and 3¼ inch in diameter contains 25 grams of liquid carbon dioxide and will provide twelve litres of gas, so that if the maximum flow allowed be two litres a minute, the sparklet will last at least six minutes. The sparklet is inserted in a holder on to which a cap with a piercing pin, a rubber collar, a needle valve, and a lateral exit pia is screwed. As the cap is screwed up the piercing pin perforates the sparklet, and the rubber collar prevents the escape of gas; the needle valve is then unscrewed to the required amount, and the gas escapes through the exit pia underneath a Schimmelbusch mask, or straight into the patient's mouth, or through a glass funnel attached to a tube, or through a catheter passed into the naso-pharynx. With a little experience the needle valve will supply a gentle, steady, easily regulated stream of gas, and a refill can be easily inserted.

## A Transparent Eye-shade.

Mr. E. N. Hughes, assistant surgeon to St. Paul's Eye Hospital, Liverpool, has designed an eye-shade of celluloid, for use whenever a shade is required which will not exclude light. It is of special value when the only seeing eye needs shading, the other eye being blind. In such a case, after removal of foreign bodies, or after minor operations with cocaine, the sound eye can be protected by the transparent shade and the patient can find his way home. The shade will be useful also, it is considered, when the eye needs protection, and yet the eyelids should be kept open, as in conjunctival conditions and after lid and squint operations. A series of holes along the upper margin prevents moisture from the shade can be used with ordinary eye-glasses. It is called "The Transparent Eye-shade" and can be obtained from Messrs. Boots, Liverpool.

## ROYAL MEDICAL BENEVOLENT FUND.

At a recent meeting the Committee considered forty cases and voted £507 to thirty-four applicants. The following are notes on some of the cases relieved.

Widow, aged 70, of M.R.C.S. Eng. who died in 1896. She has worked hard for the last thirty years, and has kept and educated her three children, who are now able to maintain themselves but no more. She has been removed to a nursing home. Her income is £98 per annum, and the Fund was asked to help with the nursing home fees, which amount to 2 guineas a week. Voted £6 in three monthly instalments of £2 each.

L.R.C.P. and S., aged 69, who practised in Scotland, but is now suffering from the effects of cerebral haemorrhage. His friends asked for assistance to meet expenses; another charity is also being approached. Voted £40 in twelve monthly instalments.

Widow, aged 65, of M.D. Glas. who died in 1905. Of two daughters, one, aged 24, is at home, and has £30 per annum; the younger, aged 22, is now self-supporting. Since 1917 the applicant and her daughters have been fortunate in having a cottage at a nominal rent of 45 per annum, but they now have to vacate it. Voted £10.

Widow, aged 49, of M.B. Edin. who died in March. She has two sons, one, aged 20, who earns £120 per annum; the younger, aged 16, is at present living with friends, but may, it is hoped, be sent to Australia. The applicant hopes to get a post and become self-supporting. Voted £15 in three monthly instalments of £5 each.

M.D. 1900, aged 72, who practised in London, but has had to give up practice on account of failure of sight. His four children help, but the bulk of the household expenses fall on the daughter, leaving insufficient for her own personal needs. Voted £40 in four quarterly instalments of £10 each.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 58, Great Marlborough Street, W.1.

## MEDICAL PROGRESS IN MALAYA.

### KING EDWARD VII COLLEGE OF MEDICINE AT SINGAPORE.

The opening in February of the new King Edward VII College of Medicine at Singapore was briefly described in our issue of April 3rd (p. 623). Additional information has now reached us, together with photographs of the college and the new general hospital, some of which are here reproduced. The frontage of the college measures 120 feet, and its main feature is a lofty façade of fluted Doric pillars, 50 feet high. The façade is flanked by wings set back slightly and adorned by sculptural panels representing the teaching and practice of medicine. Over the central doorway there is a striking mass of relief sculpture, and the names of various sciences appear over the subsidiary entrances along the front. The building is constructed of ferro-concrete, and cost about £58,000. The main hall seats 500 persons, and, in addition to four laboratories, there are lecture and research rooms, good library accommodation, reading rooms, and a museum. An electro-cardiograph has been installed at a cost of £400, and a special effort has been made to bring the equipment in other ways up to the most modern requirements. The building used previously as the college has now been converted into an anatomy school.

There are usually about 100 to 150 students at the college; some are maintained by the Government, some pay fees, and the remainder are in receipt of scholarships and exhibitions. The number of applicants for admission as students is now so large that selection has become necessary, candidates being chosen mainly on the results of the Senior Cambridge examination. At one time many students came from India, and a few from the Dutch Indies, but the Dutch Medical Service has established a well equipped medical school at Weltevreden, and preference is now given at Singapore to candidates from Malaya, for whom two commodious hostels have been erected. A dental school is now being opened for the first time, with a course lasting four years.

Medical education in Singapore may be traced back to 1892, when a course was started for assistant surgeons, but was abandoned owing to the small number who attended. In 1905 a group of enlightened Chinese presented a petition to the Governor, asking for the establishment of a medical school, and proved their sincerity by raising a sum of over £9,000. By the conversion of existing buildings and the construction of a lecture room and chemical laboratory, the Government inaugurated a medical school, which was opened by Sir John Anderson in 1905, and five years later the first group of students received their diplomas. The institution was known until comparatively recently as the King Edward VII Medical School, but has now adopted the title "College of Medicine." In 1913 a professorship was founded by the King Edward VII Memorial Fund, and in 1925 the International Health Board of the Rockefeller Foundation endowed two professorships on condition that the Government provided a third chair; the chairs are in biology,

biochemistry, and bacteriology. The present considerable cost of upkeep is borne jointly by the Government of the Straits Settlements and the Federated Malay States.

### NEW HOSPITAL, SINGAPORE.

As shown in the general view, the college is situated close to the extensive general hospital, which was formally opened by Sir Lawrence Guillemard, Governor of the Straits Settlements, on March 29th. The site on which

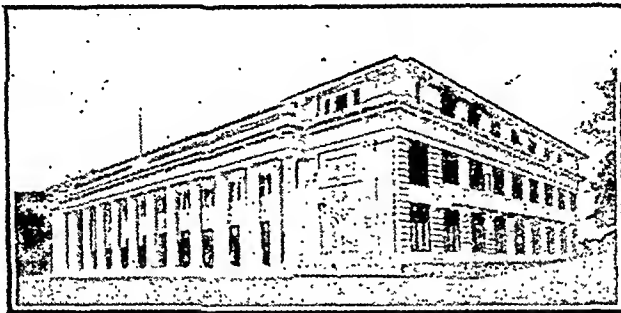
the hospital is built included originally a conical hill and a deep ravine, so that the building of a hospital in one block would have been impossible. The hill has been levelled and the ravine filled, remaining inequalities of level being skilfully used in constructing the new buildings. The hospital consists of three main blocks of wards, hostels for nurses and students, residential quarters for dressers, a pathological

laboratory, an out-patients' block, a maternity hospital, and other buildings. The pavilion type has been adopted throughout, a long central corridor dividing the wards on each side, which thus obtain abundant light and air. Blocks for the first and third class wards have five pavilions of two stories each, the central corridors being 500 feet long, and the pavilions 280 feet from wing to wing. It is hoped that the scheme will be completed next year, when accommodation will be available for 800 patients. The total cost of the building will be about £525,000.

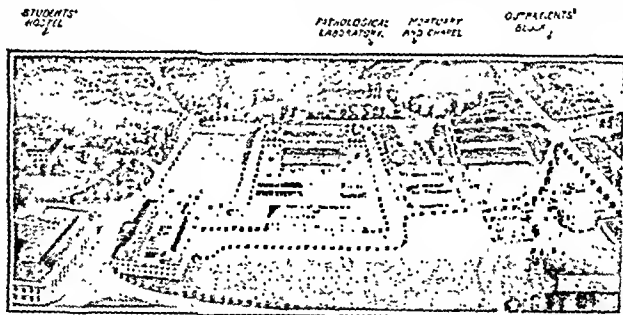
The wards, operating theatres, and x-ray rooms were planned in consultation with the medical officers, who considered carefully all the various details, so that the maximum efficiency might be obtained. The main block of first-class wards provides 256 beds. It has a small corridor ending in a spacious waiting room for the nose, throat, and ear department; in this corridor are entrances to the theatres for clean and septic cases respectively. Each theatre is fitted with a special installation for the provision of illumination similar to that of daylight. Terrazzo floors and sani-onyx and tiled walls facilitate cleansing. Throughout the building

all internal angles are covered, and the doors and fittings are so designed as to avoid there being any projecting mouldings. Sterilizing and disinfecting chambers open off the main corridors of this block, and near them are well equipped kitchens, for Europeans, Chinese, and Mohammedans. As will be seen from the illustration, the wards are high and well lit: adequate artificial ventilation is available, and their floors are covered with rubber sheeting, which renders them noiseless and easily cleansed. Two of the four pavilion wards contain forty-eight beds, one fifty-six, and another seventy-two; there are thirty-two beds in a special ward devoted to the treatment of tuberculosis: the total number of first class beds is 256.

A special ward is provided for seamen. The admission block of this building comprises three floors, and in addi-



King Edward VII College of Medicine.



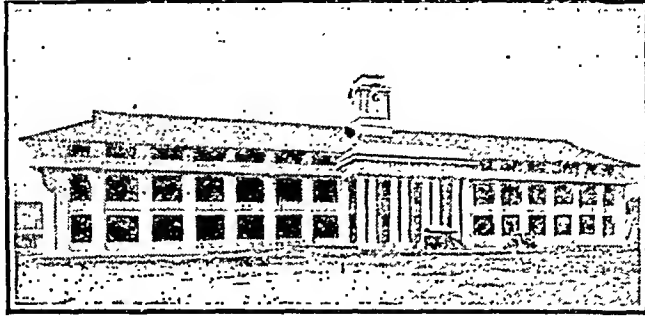
General View of New Hospital.



tion to the administration offices, observation and detention wards are provided. All the wards have verandahs which serve as day-rooms for the convalescent patients; beds can also be moved out on to these verandahs, so that the full benefit of light and air.

The block of third-class wards similarly includes five pavilions connected with each other by corridors, staircases, and lifts. The floors of the wards are in smooth cement, and all the sanitary blocks are cut off from the main buildings by ventilation lobbies. There are seventy-two beds in the reception ward and one of the ordinary wards; the three other wards each contain ninety-six beds. Two second and third class blocks for female patients have each accommodation for seventy-two. The admission block in this building has two floors, and includes subadministrative offices, a dispensary, and observation, detention, and reception wards. There is also a minor operating theatre block, with a theatre on each floor. Provision is made in an isolation block for chronic and observation cases. Separate kitchens for Mohammedans, Sikhs, and Bengalis are provided in the third-class block.

A simple style of architecture was adopted throughout so that all the buildings might be constructed as economically as possible. The new hospital has been designed in accordance with the most modern principles, applied with special consideration for the requirements of tropical conditions. The buildings were erected independently, eleven contractors being employed; each building was equipped and occupied as soon as it was ready. Adequate hospital accommodation is thus now provided for a growing city of over 400,000 inhabitants, for whom previously only 250 beds were available. The building was begun in 1920.



First-class Wards and Administration Block.



Interior of Ward for Seamen

OPENING OF THE HOSPITAL BY THE GOVERNOR.  
Speaking at the opening ceremony on March 29th, Dr. A. L. Hoops, the principal civil medical officer, referred to

the active support for many years given by the Governor, Sir Laurence Guillemard, to the improvement of public health in Malaya, the reorganization of the medical departments after their depletion during the war, and his encouragement of the provision of the most modern methods for the prevention and treatment of disease. He reviewed the progress made, and mentioned particularly the establishment of a school for sanitary inspectors, the highly successful antimalarial and hookworm campaigns, the extension of stationary and travelling dispensaries in many districts, the erection of hospitals and leper asylums in Penang, Malacca, and elsewhere, and the provision of quarantine stations, convalescent homes, and maternity hospitals. The Governor, replying, emphasized the high importance in administering a tropical colony of attention to the public health. For this it was necessary to provide such material agencies as institutions for medical treatment, with fully trained and skilful medical and nursing staffs, but it was also vital that those concerned in this work should be inspired with, and be able to communicate to their patients, that faith which was the central principle of the Aesculapian cult from which the art of healing had sprung. Galen's message, "He cures most successfully in whom the people have the greatest confidence," would be fully accepted and its implications recognized in practice by each member of the staff of the new hospital.

## SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.

THE seventh annual general meeting of the Society for the Prevention of Venereal Disease was held at 143, Harley Street, on July 28th, Dr. J. H. SEQUEIRA, the chairman of the Executive Committee, being in the chair.

The following resolution was proposed by the CHAIRMAN, seconded by Mrs. LATYER, chairman of the Women's Committee, and carried unanimously:

That this annual general meeting of the Society for the Prevention of Venereal Disease respectfully urges the Government to grant facilities to the Venereal Disease Act, 1917, Amendment Bill, in view of the support that it has received from the British Social Hygiene Council and the Society for the Prevention of Venereal Disease and the medical members of the House of Commons.

The CHAIRMAN suggested that the first sentence of the memorandum of Sir George Newman, Chief Medical Officer of the Ministry of Health, entitled *An Outline of the Practice of Preventive Medicine*, should be adopted as the motto of the society, the sentence running: "The first duty of medicine is not to cure disease but to prevent it." The report of the late Sir William Leishman on the health of the army was quoted, and the remarkable fall in the incidence of venereal

disease during the last four years was brought to the attention of the meeting, which, the report stated, was attributable to the advance made in the prevention, diagnosis, and treatment of these diseases, and to the vigorous antiveneral disease propaganda.

Mr. H. WANSEY BAYLY, the honorary secretary, gave an account of the society's work during the past year, and said that "not only in this country, but throughout the civilized world, there were indications that there had developed an appreciation of the danger of neglect of the venereal menace and a recognition that education in immediate self-disinfection was one of the important means of meeting this drain on the health, industry, and purse of nations and individuals."

Mr. BASIL PETO, M.P., was elected president of the society, and stated that the House of Commons was beginning to realize the importance of the society's work, and that all the medical members of Parliament with one exception, and many lay members of all political parties, had promised their support to a bill to amend the Venereal Disease Act, 1917, so as to permit the sale by chemists of approved disinfectants, accompanied by approved printed instructions, as recommended in the report of Lord Trevethin's Committee of Inquiry.

Mr. HARRY MACHIN, the honorary treasurer, emphasized the necessity of obtaining financial support from the public in view of the fact that the society received no Government grant and was entirely dependent upon the subscriptions and donations of those members of the public who realized the national importance of its work.

# British Medical Journal.

SATURDAY, AUGUST 7TH, 1926.

## SCIENCE AND THE STATE.

IN his gracious message to the British Association for the Advancement of Science, which the Prince of Wales as President read at the opening meeting at Oxford on Wednesday evening, King George aptly recalled the only other occasion upon which a member of the Royal Family had occupied the chair. It was at Aberdeen in 1859, as the Prince reminded his hearers, that his distinguished great-grandfather, Prince Albert, held that position and delivered a thoughtful and far-seeing address in which he pleaded the "sacred cause" of science. Although by that time science had attained a more assured position than it held at the Oxford Meeting of the Association in 1832, when a well known hymnologist included Michael Faraday and David Brewster in what he called "a hodge-podge of philosophers" unworthy of honorary degrees, the next meeting at Oxford (in 1860) showed how badly the clerical opponents of Darwin had read the signs of the times, and Wilberforce's ill-judged and ill-informed attack recoiled upon himself. Well might Huxley say: "The Lord hath delivered him into my hand!"

The Prince Consort in 1859 was able to show that the Association had accomplished much, and he claimed that philosophers were "not vain theorists, but essentially men of practice—not conceited pedants, wrapped up in their own mysterious importance, but humble inquirers after truth—God's truth—God's laws as manifested in His works, in His Creation." Even now the Prince of Wales found it necessary to rebuke those who still hold "an attitude towards science which personifies it as the ancients personified the powers of darkness." The attitude of the metaphysical philosopher has changed, and instead of denouncing the natural philosopher as impious, he is inclined to twit him with failure, in an attempt he has not made, to explain this sorry scheme of things. We are too often told by superior persons that Huxley, Darwin, and Tyndall set out to explain everything and that they and their followers have signally failed. But these great men explicitly disowned any such intention or attempt.

It is interesting to note that in the Prince Consort's address in 1859 there was no direct reference to medicine or its allied sciences, save for a passing mention of chemistry, and only a few medical contributions are to be found in the report of the work in the Section of Physiology, but among those who submitted papers were such well known men as G. H. Lewes, Michael Foster, and A. B. Garrod. In the address of the Prince of Wales, on the other hand, medicine occupies an important place, and especially State medicine and hygiene in their widest sense. Nothing more clearly marks the difference between 1859 and 1926 than the attitude of science and the State to one another. As the Prince says: "There was an element of mutual distrust between Science and the State. A strong body of scientific opinion was avowedly afraid (as Sir George Airy phrased it) of organizations of any kind dependent on the State." There may be objections to the

methods of the State, but nowadays men of science, probably the great majority of them, realize that it is better that the State—or the community, as the Prince put it—should interfere and take action rather than that beneficial action should not be taken at all. So far the forebodings expressed by Sir George Airy and others have not been justified.

The appointment of the Medical Research Committee under the Insurance Act and its development into the Medical Research Council directly responsible to the Privy Council has, thanks to judicious direction, led to great gains in knowledge and is leading to advances in treatment. Now that the instruments and methods of research are so complicated and often laborious, it is no longer a question of a microscope, a few test-tubes, and the spare moments of a busy practitioner. Regret it though we may, we have to admit that great advances are only likely to be made by team work in well equipped laboratories and by men who are able to devote most, if not all, of their time to the work. Collective investigation, which was long ago fostered by the British Medical Association, plays a large part in public health studies, and its possibilities have by no means been exhausted; but to be successful it requires the attainment of a certain minimum degree of skill in the investigators. We remember to have seen an estimate of the profit and loss account, if we may so style it, between the French State and the endowment of research, in which it was demonstrated that if only Pasteur's researches had resulted from these endowments the profit from the economic application of his scientific work would be enormous. The Prince told his hearers of more than one piece of research work which missed its original aim yet resulted in valuable results achieved by progress in a direction not anticipated. For instance, the Government's fuel research station has not yet proved the hoped-for commercial possibility of the low temperature treatment of coal which would result in the production of the more economical smokeless fuels, oils and gas, but it has shown the possibilities of unexpected economies which are well in excess of the cost of the research.

Few people, perhaps, fully realize the magnitude of the work undertaken by the Committee of the Privy Council for Scientific and Industrial Research, and the President of the British Association has rendered a public service in drawing attention to it. There are eleven research boards under this department, some of which direct the work of committees to the number of thirty-six in all, as well as the Geological Survey and the National Physical Laboratory. The Building Research Board has made most extensive and valuable investigations into every circumstance affecting house building, and aims at creating a real science of building. The work of the Food Investigation Board is obviously of the very greatest importance. On its researches depend questions and decisions fraught with the very greatest effects on the health and the future physique of the nation. Not only does it deal with the actual composition of food, its adulteration, and the effect of preservatives of various kinds, but also with the great and increasingly important question of cold storage and its drawbacks and advantages. Notwithstanding all these and other Government activities there still remains, as the Prince was careful to tell his hearers, a vast field for the enterprise and industry of societies and individuals who are interested in various branches of science. The Indian Government has always favoured scientific methods, and its

investigations have long been famous. The Dominions are now, like the Mother Country, endowing and carrying out researches into the manifold problems raised by the development of new countries, and the introduction, not always fortunate, of organisms from their old habitats into new environments.

The address of the Prince of Wales ends on a note of cheerfulness and hope and belief in the future benefits to be derived from science. Whether the coming years are to be bright or gloomy, this much is certain—that only by employing scientific methods to the fullest possible extent can this nation hope to maintain its standards of life and comfort.

### THE WRITING OF MEDICAL PAPERS.

A STERN critic has said that the most serious vices of modern English prose are indifference to the origin and proper meaning of words; neglect of order and rhythm; a tendency to prefer the abstract to the concrete; the use of nouns instead of verbs; and an indolent acquiescence in worn-out phrases. But these abuses of language, he added kindly, are less harmful than the general paralysis of structure which deforms almost all modern writing. Criticism of this sort, though it may be salutary, is negative, to say the least. Those who like positive advice will prefer the opening sentence of *The King's English*: "Any one who wishes to become a good writer should endeavour, before he allows himself to be tempted by the more showy qualities, to be direct, simple, brief, vigorous, and lucid."

It would be strange if medical authors—whose main business is not letters but science and sick people—were free from the errors of current prose. For their guidance there are, however, several finger-posts. Sir Clifford Allbutt's admirable book on the composition of scientific papers<sup>1</sup> has helped countless writers of graduation theses to put their material together in clear and logical order, and to express themselves in decent English. Many besides Cambridge men are grateful to that little green volume for its hints on literary craftsmanship, and its warnings against such common blemishes as wordiness, slovenly arrangement, and the abuse of technical jargon. Further practical aid has been given by Sir Humphry Rolleston in his pamphlet on the writing of theses for medical degrees,<sup>2</sup> and by Mrs. M. H. Mellish, editor of the Mayo Clinic publications, in her small manual on the preparation of medical papers.<sup>3</sup> Another pamphlet of suggestions to medical authors, popularly known as the "A.M.A. Style Book,"<sup>4</sup> has been issued for many years past by the American Medical Association, to help would-be contributors in arranging manuscript, and to show the typographical practice laid down for the *Journal of the American Medical Association* and its associated publications. The veteran editor of that journal, Dr. George H. Simmons, some time before he relinquished its active conduct, gave an address on medical periodical literature, and this review of an experience of thirty years of medical journalism was discussed in our issue of April 29th, 1922. Having noted the faults that disfigured so many of the manuscripts sent to him, Dr. Simmons proposed one remedy for them all: that the art of writing should be more carefully

studied and all writings submitted to thorough revision. Medical authors, in short, must learn to write better and take more trouble.

For the benefit of those seeking to follow his good counsel Dr. Simmons and his successor, Dr. Morris Fishbein, collaborated early last year in a series of articles which appeared at weekly intervals in their columns. These were in large part an outgrowth of the "style book" already mentioned, and, with some added matter, they are now republished in book form under the title *The Art and Practice of Medical Writing*.<sup>5</sup> Our colleagues begin by giving their readers an idea of what a paper ought to be, and why three-fourths of the manuscripts voluntarily offered to the *Journal of the American Medical Association* are rejected. Here we are glad to see the point made firmly and plainly that, while an author's rights must be respected, the medical editor's first duty is to his readers, whose rights are paramount. The second chapter indicates some common vices of style, with "specimens from real life"; the third discusses choice of subject and material, with hints on the writing up of a case report for publication; the fourth is mainly about the importance of title and sub-headings in the framework of a well built paper; and the fifth is in effect a protest against the misuse of certain words and phrases (like "to operate the patient") by medical authors on the other side of the Atlantic, and the overdoing of our old friend "marked" as the maid-of-all-work medical adjective. The next five chapters, on such things as spelling, abbreviations, and the use of capital letters, follow American usage, which differs a good deal from that followed by English printers; in this country Horace Hart's rules for compositors and proof readers at the Oxford University Press form a convenient guide. Chapter eleven tells the beginner how to hunt up references and what to avoid in compiling a bibliography. This is followed by three chapters on the technical side of preparing manuscript, pictures, charts, and tables for the press. Would that we could persuade all our own contributors to take it from Dr. Simmons that there really are "practical reasons why editors prefer good, clean copy."

The concluding chapters give sound advice on revising the text of an article and the correction of proofs. The former is especially valuable for its insistence on the pruning knife as the writer's best friend. Here will be found the sad but most instructive tale of an essay printed in a medical journal (American but unnamed) which "presented most of the faults mentioned in this book, as well as many of those referred to in elementary books on grammar and rhetoric." This paper, 2,800 words in length, had evidently been flung to the printer without revision of any kind. The average number of words to a sentence was 84. By way of object lesson one paragraph, consisting of a single inchoate sentence of 208 words, is quoted. The reader then sees, on the opposite page, how a subeditor who knows his business could have cut this down and broken it up, greatly to its advantage, into seven sentences containing 123 words in all. With further pruning, also shown in graphic form, the paragraph is brought down to five sentences and 98 words.

What, then, is the conclusion of the whole matter? It will be found in a sentence of Clifford Allbutt's: "Take pains, therefore; with yourself first, then with your reader." As we have shown, ample help is now

<sup>1</sup> *Notes on the Composition of Scientific Papers*. Third edition. London: Macmillan and Co., Ltd. 6s. net.

<sup>2</sup> *On Writing Theses for M.B. and M.D. Degrees*. Second edition. London: John Bale, Sons and Danielsson, Ltd. 1s. net.

<sup>3</sup> *The Writing of Medical Papers*. Philadelphia and London: W. B. Saunders Company, Ltd. 7s. 6d. net.

<sup>4</sup> *Suggestions to Medical Authors and A.M.A. Style Book*. Chicago: American Medical Association. 25 cents.

<sup>5</sup> *The Art and Practice of Medical Writing*. Chicago: American Medical Association, 1925.

at hand, in guide-books and pamphlets, for those who aspire to the writing of medical papers. The rest is a matter of taking pains. "Write and re-write," says Dr. Simmons, "re-write again, and then revise!" For, contrary to the view of Dogberry (and of some others, even in our profession), writing does not come by nature.

#### ALCOHOLISM IN FRANCE.

SOME months ago we noted the appointment by the Académie de Médecine in Paris of a committee to investigate the increase of alcoholism in France. At that time the sale of absinthe had been forbidden, but some alarm had been caused by the increased consumption of what were known as absinthe substitutes. The report of the committee, presented to the Académie by Dr. Marcel Labbé, is an interesting document of some length written with a fair measure of restraint. It appears that before the war many were becoming concerned at the increase in alcoholism in France. During the war restrictions were imposed on the manufacture and sale of strong alcoholic beverages, with the result that their consumption was considerably reduced. The reduction of alcoholism which followed has not been maintained, and statistics show that the admissions to asylums for lunacy due to alcohol, which during the war had decreased enormously, have since 1919 increased until they now exceed the figures of 1914. The committee attributes this increase in alcoholism very largely to the home manufacture of brandy. The privileges of the *bouilleurs de cru* were greatly restricted in 1916; they were restored in 1923, with the result that in some villages, as one speaker put it, every school child carries in his basket food that has been flavoured with brandy; meanwhile the villagers declare that their spirits must be harmless, since they are a "natural product," made at home. The committee finds that the prohibition of absinthe has been most successful, and that there is no sign of an alcoholism from the popular anise essence by which it has been replaced comparable to that which was formerly caused by absinthe itself. At the same time Dr. Cazenove's demand for more vigorous control of absinthe substitutes is approved. It appears that the consumption of spirits, liqueurs, strong wines, and appetizers, although increasing, has not yet reached the pre-war level. The consumption of wine is also a little less than in 1913. Beer-drinking is very much less, possibly owing to the destruction by the Germans of many large breweries in Northern France. The consumption of cider varies with the productiveness of the apple trees. Speaking generally, the consumption of strong distilled liquors is tending to be replaced by fermented liquor. The committee finds, however, that there has been considerable change in the classes of people who now drink to excess. There are fewer really heavy drinkers than formerly; there are more people, and of a different class, who take too much, and the report deplores the extension of the drinking habit to women. Drinking to excess is as common now among middle-class women as it used to be among washerwomen, cooks, and prostitutes; cirrhosis of the liver, it is stated, is now twice as frequent among female hospital patients in Paris as among male. The encouraging fact is noted that the drinking habit is becoming rare among the younger workmen, from 25 to 40 years of age; this is attributed to the growing love of sports, and to better conditions in the home. The peasant, owing perhaps to the revival of the home manufacture of brandy, does not show the same improvement. The report reviews the various measures which can be adopted for the reduction of alcoholism, from prohibition as practised in America to education and propaganda. Total prohibition is rejected as in itself worse than useless, and because in France,

the land of vineyards, it would be impossible. The recommendations of the report, unanimously adopted by the Académie, are: that laws promulgated against alcoholism during the war should remain in force; that the home manufacture of brandy should be suppressed; that the excise on alcoholic beverages, fermented and distilled, should be increased; that the use of "cocktails" should be regarded as dangerous to health; that regulations as to absinthe substitutes should be revised and enforced; that the number of wineshops should be limited; that temperance should be helped by the construction of healthy dwellings and the provision of popular resorts where only non-alcoholic beverages would be sold; that a law similar to that which has been successful in Norway and Belgium was desirable, prohibiting the sale by retail and the consumption in wineshops of beverages of greater alcoholic strength than 14 degrees, and the selling in grocers' shops of less than two litres; that the utilization of grapes and non-fermented grape juice for food, and of alcohol for industrial purposes, should be promoted; and that anti-alcoholic education and propaganda should be organized among all classes. At the meeting of the Académie on June 29th Dr. M. Letulle made a spirited attack on *apéritifs*, which he described as "infernal drugs" and classed with the medicated wines (as he said, *horresco referens*) with which in his youth the venerable family doctor used to torture his stomach.

#### REGIONAL TOWN PLANNING.

SINCE the Town Planning Act came into force in 1919 thirty-seven joint town planning committees have been formed; they cover an area of nearly six million acres. The matter is specially urgent in respect of London, which is now extending at a surprising rate to the west and north-west into Berkshire and Buckinghamshire. At a meeting at Wycombe last March the Council of the Institution of Municipal and County Engineers discussed the desirability of bringing to the notice of the local authorities of the South Bucks and Thames-side region the importance of regional planning. The district is a countryside of rare beauty crossed by the Chiltern Hills; it contains the Royal Castle of Windsor and some of the loveliest reaches of the Thames. Extensive industrial developments are, however, taking place especially at Slough in the vicinity of Eton College and Windsor Castle, and the area generally is becoming almost metropolitan. The outward spread from London and increased facilities of communication, including electrification of railways, tend to foster building development. Recently the local authorities concerned met to discuss the matter, and most of them decided to form a joint town planning committee. Most of the councils which have taken up town planning, being urban districts with a population less than 20,000 or rural districts, are not under any legal compulsion to interest themselves in the matter. Piecemeal development tends to lead a council into large expenditure, joint development allows grouped communities to arrange economical public services and communications, the countryside is not destroyed, the restfulness of country life remains, and efficient local government is ensured. No large expenditure on public works is necessarily involved; the present aim should be to prepare an attractive programme of developments which would place a definite aim before the public. In joint town planning areas (perhaps better named regional areas), especially those near large and spreading centres of population, the reservation of tracts of country for growing fresh food (vegetables in particular and also for dairying) must be considered. When studying the area such items as surface geology should receive attention so that this factor is given due weight when the allocation of the different

parts of the area for different purposes is being considered. Healthy sites should be reserved for housing, stable soils for heavy industries, fertile soils for cultivation, mineral deposits for exploitation. It would seem somewhat unfortunate that the medical aspects of town planning do not seem always to be sufficiently recognized; county medical officers are not invariably invited to such meetings. Some county councils consider that they should be given powers in connexion with such regional planning; at present they afford voluntary help—for example, the county surveyor often works out a survey designed to assist in the delimitation of all future building lines on county roads. But these are details; the main point is that there is reason for hoping that the England of the future, although a more urbanized England, will still retain some of its pristine beauty, even in the vicinity of large towns.

#### THE SALMONELLA GROUP OF FOOD POISONING BACILLI.

THE importance of the *Salmonella* group of bacteria in causing food poisoning has led to careful study of its various types which can, for the most part, only be distinguished from each other by serological tests. An attempt to co-ordinate the terminology of this group was made by Mr. T. Bruce White, and his conclusions were published last year in the Medical Research Council Report, No. 91 (*JOURNAL*, 1925, vol. i, p. 373). He has since been engaged in studying the antigenic modifications associated with "rough" variations in this group, and in attempting to determine the relative antigenic constitutions of several old and new *Salmonella* types. The results of his work are collected in No. 103 of the Special Report Series of the Medical Research Council.<sup>1</sup> He now suggests that three classes of this group of organisms are distinguishable—namely, the meta-*Salmonella* types, a monophasic, and a diaphasic type, and that the *Aertrycko* type occupies a central and primitive position in the group. Data on which his conclusions are based are presented in detail, and the present publication, which should be read as a sequel to his previous report, appears to be a useful step forward in defining the mutual relations of the members of a hitherto confusing group of micro-organisms.

#### UVEO-PAROTITIC PARALYSIS.

DR. GEORGE PARKER of Bristol<sup>2</sup> has collected and tabulated sixteen cases of a rare syndrome, uveo-parotitic paralysis, which is characterized by inflammation of the uveal tract, parotid swelling, facial paralysis and often paresis of various muscles, multiple neuritis, and an erythematous rash on the legs and trunk, with or without fever. It appears that three cases have occurred within recent years in the Bristol district. Before 1909, when Herfordt first described the syndrome on the basis of three cases at Copenhagen, the condition was regarded as an aberrant form of mumps, and some writers are of the same opinion still; but in none of the collected examples was there any connexion with cases of that disease. Bacteriology has so far failed to reveal the underlying infection, so that an absolute decision can hardly be reached at present; the suggestion that it is a deficiency disease has even been made. The average age of onset is 31 years, and females are more often attacked than males, thus contrasting with the incidence of mumps. The blood has been found to show a leucopenia instead of the lymphocytosis in mumps, but, on the other hand, the cerebro-spinal fluid has shown some lymphocytosis. Both parotids are generally affected,

and as a rule there is double but asymmetrical facial paralysis. The order in which the symptoms appear and their duration show much variation; in one instance the parotid swelling persisted for two years. In addition to erythema, which may resemble erythema nodosum, there may be urticaria and oedema of the ankles, legs, and below the eyes. Occasionally other cranial nerves are affected. In the same number of the journal Miss B. Rogers and Dr. Bodman<sup>3</sup> report a fatal case of polynucleitis preceded by inflammation of the parotid, salivary, and mammary glands, which is included in Dr. Parker's collection but differs from most of the other cases in two important particulars—the absence of definite uveitis or irido-cyclitis and the presence of severe cerebral disorder, and the occurrence of cardiac failure. Dr. Parker has done the profession a service by subjecting this strange syndrome to so thorough a critical analysis.

#### THE PATHOLOGICAL MUSEUM AT NOTTINGHAM.

THE feature of this year's museum was the close collaboration between physician, surgeon, pathologist, and radiographer in the exhibition of specimens. It has always been taken for granted that a knowledge of pathology is essential to correct diagnosis, but seldom has this important truth been more clearly and forcibly presented. The collection consisted chiefly of exhibits by those responsible for demonstrations in illustration of their own topics. The president of the Pathological Section, Professor Shelto Douglas, contributed a number of organs from cases of leukaemia (which formed the subject of Friday morning's discussion) as well as a beautifully mounted series of tuberculous guinea-pigs, which he used to demonstrate the complete failure of diaphyte vaccine in the treatment and prevention of tuberculosis. The vaccine, made by Droyer's method, was prepared from the same human strain of tubercle bacillus as that used for the inoculations. It was injected into different groups of guinea-pigs before inoculation, at the time of inoculation, and after infection with the tubercle bacillus. In no case had the vaccine the slightest effect in checking the disease. Interesting specimens of aneurysm, of lesions of gall bladder and intestines, and many others, also came from the Sheffield department. Mr. E. F. Finch (Sheffield) showed twelve specimens of portions of the stomach removed at operation, chiefly from cases of chronic ulcer. These formed the subject of his demonstration on examples of gastrectomy for gastric ulcer. Dr. H. Gleavo (Sheffield) exhibited specimens, sections, and x-ray pictures from an important case of osteoclastoma (myeloid sarcoma) with pulmonary metastases, a most unusual development in tumours of this kind. Gynaecology was well represented in the museum. Of great interest were the endometriomata collected by Dr. W. W. King, also of Sheffield. Beside them were some beautiful specimens and slides of chorionic carcinomata from a vesicular mole and from a testicular tumour, shown by Dr. W. D. Newcomb of St. Mary's Hospital. An exhibit which attracted a great deal of attention was the series of pituitary tumours from the National Hospital, Queen Square, demonstrated by Dr. Macdonald Critchley. They comprised a great variety of cysts and tumours, including an adamantinoma, and showed clearly the relation between the position of the growth and the patient's symptoms. Dr. Strickland Goodall of the Heart Hospital, London, exhibited some very interesting drawings and slides of thyrotoxic myocarditis, electrocardiograms showing the mode of action of the heart in anginal attacks, and a series of "broken hearts"—that is, rupture of the heart from various causes. In the tropical disease

<sup>1</sup> London: H.M. Stationery Office, or through any bookseller. Price 5s. net.  
<sup>2</sup> Parker, G.: *Bristol Med.-Chir. Journ.*, 1926, xliii, 73-83.

<sup>3</sup> Rogers, B., and Bodman, J. H.: *Ibid*, 84-90.



section was a collection of photographs of jaws in all stages, showing some very unusual lesions. The pictures were taken in the South Pacific by Dr. P. A. Buxton. The subject of basal metabolism was treated by Dr. E. G. B. Calvert, who gave a demonstration on Tuesday afternoon. A number of slides of a supposed cancer-producing organism were on view, but, unfortunately, none of the lesions caused by these organisms were presented. The Museum was a striking testimony to the ever-increasing importance of x rays in medicine, surgery, and pathology. Mr. A. H. Simpson of University College, Nottingham, a pioneer worker in 1895, showed a number of his early plates and photographs, and gave an interesting description of his experiences. In 1895 they happened to have in the department of physics a tube with a high vacuum, which had been made for Professor Crookes. With this they attempted to repeat Röntgen's work. They only had a 5-inch induction coil; there was no target, and the cathode rays went on to the whole side of the tube. Hence it was not possible to take sharp pictures. They worked with very slow photographic emulsions. In taking a picture of the hip-joint they had to use an exposure of forty-five minutes. Later they had a more powerful coil, but even then the exposure for a hand or foot was five minutes. Many children were brought to him for foreign bodies in the larynx or oesophagus, and he was usually successful in finding and removing them. The x ray was a popular amusement for nurses and parents, and for their entertainment he would show them the bones of his hands. The result was that all his nails came off. To protect himself he had a pair of chain-mail gloves made. Nevertheless he was still suffering from dermatitis contracted twenty-five years ago. Fortunately it had gone no further, and he had found that when a patch of dermatitis occurred he could cure it by radium, and it would remain healed for about six months. In spite of the difficulties which had to be contended with, the pictures he showed of thirty years ago of bones and foreign bodies did not compare unfavourably with those produced in more modern times. He was, however, unable in those days to take pictures of soft parts. From 1895 to 1926 is a long stride, and the audience passed from Mr. Simpson's historical demonstration to that of Dr. A. Gurney Yates (Sheffield), who showed the latest method of diagnosis of spinal lesions by lipiodol. This preparation, an oil of black poppy, containing iodine, was heavy, opaque to x rays, and quite harmless when injected into the meninges. Professor Séguard of Paris had introduced the method for the localization of lesions blocking the spinal theca. The lipiodol was introduced by cisternal puncture, and the patient x-rayed as soon as possible afterwards. If no obstruction was present the lipiodol collected almost at once at the lower end of the theca. In cases of obstruction, such as tumour, adhesions, or thickening of the meninges, the lipiodol accumulated at the level of the lesion. In partial obstruction the lipiodol would be held up for a greater or lesser time, and the x-ray examination might show some of the substance above and some below the block. In pictures from a case of meningitis there was a curious network of the substance which had been caught up and entangled in the numerous adhesions. Advances in radiography of the central nervous system were also shown by Mr. A. P. Bertwistle in his demonstration of cerebral localization by x rays. The contribution of radiography to diagnosis and pathology was likewise a prominent feature of the admirable collection from the Brompton Hospital, a collection consisting of specimens of different types of chest disease with x-ray photographs both with and without injection of lipiodol into the bronchial tubes. The cases of bronchiectasis, in particular, were most instructive.

Dr. Killian Clarke, Dr. Lane, and Dr. Bywater deserve the warmest congratulations on the success of the museum for which they were responsible.

#### THE "CRIPPLES' JOURNAL."

THE appearance of the July number of the quarterly known as the *Cripples' Journal* marks what should prove to be an important stage in its development and consequent usefulness, for it is its first issue as the organ of the Central Committee for the Care of Cripples. The journal was started two years ago and published by the Shropshire Orthopaedic Hospital at Oswestry, but, as stated in the April number, the management took the enlightened view that its usefulness to the cripple would be much increased if it ceased to be identified with one hospital and were made representative of all the activities and influences which serve the cause throughout the country. It has therefore been handed over to the Central Committee with a generous donation towards its development, and now appears with the committee's imprint and that of Messrs. John Bale, Sons and Danielsson, Ltd. It should have a prosperous career, for if it keeps up the literary and scientific standard of the past two years it will deserve success. In this number the editorial by Mr. G. R. Girdlestone on the work of the committee reinforces the appeal which he made in his Scheme for the Care and Cure of Crippled Children. Messages of encouragement are printed from, among others, Dr. Murk Jansen of Leyden, Mr. J. St. Loc Strachey, the Duchess of Atholl, M.P., and Sir Robert Jones. Dr. Murk Jansen contributes a suggestive article in which he lays stress on the physical deterioration of the Dutch people, and states that the consumption of tobacco in Holland per head has trebled in the last fifty years, and is now eight times as great as that of the average European. Although he refrains from drawing any conclusion from these facts, without further study, the significance of his figures may be realized when we read in another article in the same issue that in our own country 128,000,000 lb. of tobacco are consumed every year. Professor Edward Mellanby contributes an excellent article on the cause of rickets as revealed by experiment. Miss E. Storr tells a moving story of orthopaedic work in northern Newfoundland and Labrador with which the name of Dr. W. T. Grenfell must always be associated. Miss Maude Royden writes from the point of view of a cripple herself, and condemns—in her own case—all mechanical help, not because of any inefficiency, but for aesthetic reasons and because of its "branding into my perpetual consciousness the fact of my lameness!" Happily, all cripples are not so sensitive. Many other articles and paragraphs help to make up a most interesting number.

#### CLINICAL MEDICINE IN NORTH AMERICA.

IN the current number of *St. Bartholomew's Hospital Reports* Professor F. R. Fraser publishes his report to the Rockefeller Foundation on the teaching of clinical medicine in medical schools in America after his visit in the spring of 1925 to fifteen of these medical schools.<sup>1</sup> Interesting throughout, special attention is naturally attracted to the description of the differences between the American and the British arrangements and methods of instruction, which provides material for consideration of any possible improvements that may be made in our routine. Since Abraham Flexner's report to the Carnegie Foundation on "Medical Education in the United States and Canada" (1910) the number of medical schools in America has diminished by the elimination of the least fit, and there now are more candidates than the better schools can admit. Some schools select a comparatively small

<sup>1</sup> Fraser, F. R.: *St. Bartholomew's Hosp. Rep.*, 1925, lix, 35-47.

proportion of the yearly applicants, and when dealing with a large field are thus able to obtain a select student body of high intellectual attainments; medical schools of this calibre, such as Cornell, Harvard, Johns Hopkins, and Washington University in St. Louis, would tend to produce the type of logical, thoughtful researcher or teacher, who, when *in statu pupillari*, need opportunities and guidance rather than the amount of teaching that students of a more moderate mentality need to make them efficient. Medical schools able to accommodate large numbers and without excessive lists of applicants are more concerned to reject the unsuitable than to be exclusive, and as a result the intellectual level of their students will vary enormously, and the teaching required will on the whole be that necessary to breed the sound, steady practitioners so essential for the efficient service of the public; these conditions were noted at McGill (Montreal), Toronto, and Pennsylvania University (Philadelphia). The circumstances of the American schools as regards the selection of applicants are not familiar in this country, and Professor Fraser, of course, does not draw the fairly obvious moral lesson that, although no medical school in Britain can consist solely of the select intellectual students, the professorial unit, like an *imperium in imperio*, provides the appropriate milieu for the manufacture of original workers and the future teachers of medical students. It is perhaps well to recall this function of the medical unit, as there is a danger that it may be rendered difficult by an undue burden of elementary teaching. In some American schools the teaching of anatomy and physiology is compressed into a comparatively short period and is specially correlated with the actual needs of clinical work, and indeed supplemented by demonstration of patients. This may help to solve the difficulties presented by the ever-progressive overcrowding of the curriculum, especially in the case of the student of mediocre ability, but from an educational point of view, particularly for the abler students, it is not without disadvantage. In general the clinical tradition of British organization is imperfectly developed in America; students seldom act as clerks in the general medical wards for more than six weeks, but this is to some extent compensated by the almost universal practice of holding an internship. While clerking the American as compared with the British student is more highly cultivated, in that he is in the way of being encouraged to do original research and undertake some literary investigation bearing on his cases; but this is open to the danger of trying to teach the average student to run before he can walk. On the other hand, this method would, of course, be well suited for the select intellectual students after a full course of clinical clerking such as they get in Britain. That a house appointment should be part of the training of every qualified man is, of course, highly desirable, but it is difficult to see how in our existing conditions this can at present be attained. Professor Fraser touches with wise discretion on the subject of the full-time clinical teacher; he regards a clinical department controlled entirely by a full-time head as suitable for a school with a select student body of high intellectual level, but not for a school with a large number of students destined in the main for general practice. Further, in a big school with a large department of medicine there is the risk that a whole-time director may get so overwhelmed with administrative duties and details that he will become little more than a dean. The desirability of full-time clinical teachers in certain circumstances no longer admits of doubt, but the conditions under which they are established obviously demand careful arrangement and regulation. This well considered report closes with the definite pronouncement that no school can be regarded as offering an efficient up-to-date education unless it includes full-time laboratory-trained clinicians on its teaching staff.

#### MEDICAL UNDERGRADUATES' TRANSATLANTIC TOUR.

THE members of the Cambridge Medical Society, composed of the medical undergraduates of the University, are this month to visit the universities and medical schools of Canada and the United States. The party will leave Liverpool on August 13th. An enterprise of this kind, we believe, has not previously been undertaken by students of medicine in this country, and the fact that some seventy-five undergraduates have promised to take part in the tour points to the enthusiasm which is essential for success. All international meetings must be good in principle, since they show those taking part something of the problems and difficulties with which other nations have to deal. In science experience has shown that such meetings make entirely for good, but in no science can greater benefits be derived than in that of medicine. The members taking part in the present tour cannot fail to see something of the opportunities afforded for medical work, the nature of the clinics and laboratories, and of the advantages and disadvantages of medicine as a career in America. It is hoped that this tour may be the beginning of a wider movement and that the present visit may be returned from time to time by students from across the Atlantic. The present movement has been initiated and organized entirely by the undergraduates themselves, and they will be accompanied by no senior men. In Canada and the United States the proposed visit has met with general approval, and not only has a cordial welcome been extended by the universities, but most generous hospitality is being offered. The party will visit Quebec, Montreal, Kingston, Toronto, Niagara, Buffalo, Washington, Baltimore (Johns Hopkins), Philadelphia, Newhaven (Yale), New York, Boston (Harvard), where three days will be spent, and from whence the journey home will be begun on September 21st. The Cunard Company has made special arrangements, and inclusive fares which will not exceed £50 for the round tour. With expenses of food and board where necessary the total outlay for each member should not exceed £60.

#### POISONS AND PHARMACY ACTS.

THE Lord President of the Council has appointed a committee consisting of Mr. E. A. Mitchell-Innes, K.C. (chairman), Mr. L. G. Broek, Sir Malcolm Delevingne, Mr. F. W. Gaunle, Sir William Graham-Harrison, Sir Donald MacAlister, Bt., M.D., Mr. E. T. Neathercoat, Mr. Colin Smith, Mr. G. Stubbs, Sir William H. Wilcox, M.D., and Mr. A. E. Young, to consider and report whether any modifications are necessary or desirable in the Poisons and Pharmacy Acts—(1) in regard to the conditions relating to the sale of poisons; (2) in regard to the procedure for the modification or extension of the schedule of poisons to which the Acts apply; (3) in the system of making and enforcing regulations in regard to the keeping, selling, and dispensing of poisons; (4) in regard to the central authority for the purposes of the Acts; and (5), in regard to any other matters to which the attention of the Committee may be drawn. The Committee has decided to take evidence on matters within its terms of reference, and any person, association, or firm wishing to give evidence or place their views before the Committee should communicate with Mr. M. D. Perrins, Home Office, Whitehall, S.W.1. The Committee will enquire generally into the existing machinery regulating the sale (retail and wholesale), keeping, distribution, and supply of poisons; any consideration of proposals for the inclusion in or exclusion from the schedule of poisons of any specific substance is *not* held to fall within the Committee's terms of reference. Mr. M. D. Perrins (Home Office) and Dr. E. W. Adams (Ministry of Health) are Joint Secretaries to the Committee.

## Nova et Vetera.

### WEST AFRICA AND ITS DISEASES A CENTURY AGO.

HUNDRED years ago Sierra Leone was reputed "the white man's grave," and I had always wondered about its health conditions; a century-old account of the climatic diseases of West Africa, by James Boyle, M.C.S.L., Colonial Surgeon to Sierra Leone, in the library of the Royal United Service Institution, "presented by the author," therefore promised welcome explanation. It is a octavo of some 450 pages, published in London in 1831. The author joined the navy in 1813 as an assistant surgeon, was promoted surgeon in 1820, and served till 1835, when his name disappears from the *Navy Lists*. During his time he served in the East and West Indies, and afterwards (1822-24) in H.M.S. *Cyrene* on the West coast of Africa, so that he had a large experience of tropical climates and diseases when he became Colonial Surgeon to Sierra Leone in 1827; he continued there till 1831. He was the author of several other medical works, and it is of interest to examine how the diseases of that time and place appeared to this industrious and experienced medical officer, what objective medical facts he reported, and what ideas emerge of the current illnesses and the causes of a mortality so excessive as to give the West Coast of Africa that terrible reputation, particularly as he prides himself that his is the first book ever published on the diseases of that coast. In the following account of Sierra Leone and its diseases the author's phraseology has been largely adopted.

As to statistics, he states that in three years (1819-21) the number of white men who arrived for the first time was 19, and that 7 of them (37 per cent.) died in their first year; of the general white population, then averaging 10, 5 (12 per cent.) died in each of these years. In 1824 the soldiers who arrived numbered 300, and from April to the end of the year, out of an average strength of 65 whites, 211 (45 per cent.) died of fever. In 1830 Freetown had 120 white and 25,000 native inhabitants. In 1824 there were 600 white civilians, of whom only 1 (0.8 per cent.) died, so that the picture has completely changed. Between 1827 and 1831 inclusive the navy on the station lost 20 per cent. its crews.<sup>2</sup>

Sierra Leone, Boyle says, is a lovely place on a fine day. Freetown has wide, well cambered streets, with two-storied houses for Europeans, and a fine mountain behind. Even the pestilent Bullom shore, seven miles off to the north-east, covered with bush, looks beautiful in fine weather. That shore is marshy, and generally to windward. In the dry season the dry Harmattan wind brings from it much dust; in the rains (April to October) the tornadoes bring over malaria and the poison of yellow fever.

The chief disease of the country, according to Boyle, is the bilious remittent fever, caused by malaria, the result of exhalations from decaying vegetable or animal matter. The climate, too, has an intrinsic quality that makes it deadly. Sol-lunar influence, besides, is powerful in the production of fever. In the sun, men suddenly drop down dead; while men who sleep on the upper deck, exposing themselves to the apparently harmless beams of a brilliant moon, have often been known to be affected suddenly with fevers—too suddenly for this to be ascribed to damp or falling dew. But some diseases (undescribed) are due to overexposure, and are unfairly credited to the climate. Hepatitis and its sequel dysentery are mainly due to bad drinking water. To improve health, the bush should be thoroughly cleared, the area burned over, the ground drained, and the pools filled. The extension of towns and spread of agriculture always lessen malaria, and may even change the type of fever. (This statement may be compared with the views expressed by Sir Malcolm Watson in his *Malaria in the Federated Malay States*.)

The important diseases are fevers and hepatitis (which includes dysentery), and there is also guinea-worm.

Diseases now thought serious—pneumonia, diarrhoea, small-pox, and tetanus—have but the briefest mention.

The characteristic disease is the bilious remittent fever, which may be climatorial, endemic, or irregular; the forms are clinically very similar, and only to be distinguished by the history. Climatorial fever only occurs on board ships; once a person has gone ashore the next to attack him is the local or endemic bilious remittent, which does not recur; later fevers are the irregular forms. This is important as a guide to treatment. There are also the intermittent fever, or ague, with its characteristic stages, and the epidemic fever known as yellow fever, which comes in bursts and is very deadly.

The climatorial remittent fever, Boyle says, begins with chilliness and loss of appetite, severe headache, epigastric pain, constipation, great heat of skin, suffused eyes, pains in the joints, pulse 90 to 140. As regards treatment, blood-letting to 30 oz. is generally necessary—it lessens headache and brings the pulse down; purging is needed, and mercurials are always exhibited. After recovery cinchona should be given. Prevention on board also was necessary; drunkenness should be done away with, and cleanliness, dryness, and ventilation by ports, scuttles, and windsails secured. Brodie's swinging stoves should be used to dry the air, especially after washing decks.<sup>3</sup> In my opinion this is a very good account of the "disease of overcrowding of ships," on which, as a result of experiences at Malta and Zanzibar, I read a paper to the Epidemiological Section on March 26th, 1909<sup>4</sup>; certainly the symptoms and the methods of prevention are the same.

The local or endemic bilious remittent fever is characterized by the vomiting of bile. It occurs chiefly at the beginning and end of the rains. Exciting causes are intemperance, extreme abstinence, fear, and sexual over-indulgence. The symptoms are just these already stated, but it is often preceded by an aguish rigor. Bad cases may become intensified into sporadic cases of the epidemic fever; recovery is often followed by ague. In this type of fever blood-letting does harm and makes convalescence tedious. The blood neither buffs nor cups [polymorphopenia]. The routine treatment is with mercurials, to set up salivation—calomel in 20-grain doses, perhaps every two hours. Above all things, says Boyle, do not move the patient, and beware of collapse; he himself, in collapse, was once declared dead by his medical friends—hence this warning. Apart from clearing the bush, prevention deals only with the avoidance of intoxication. The disease is seated in the stomach, which is always inflamed *post mortem*. Attention is not directed to the spleen, constantly reported enlarged. The irregular bilious fever is a mild remittent; besides there is ague. Blood-letting should not be done for either; for ague, quinine should be given up to 20 grains a day.

There were only occasional outbreaks of the epidemic or yellow fever—in 1823 and 1829, for example. In May and June, 1829, there were 34 cases, of whom 25 died; of 8 with black vomit, 7 died. These last were all in houses on the front, exposed to the wind from the Bullom shore. One victim had survived for twenty years in the colony.

The other great disease of the district is hepatitis; this, says Boyle, is rare in Sierra Leone (except imported), as the water is good; it is common on the Gold Coast, as the water is bad. The symptoms are frequent hard pulse, acute pain in the right side and at the top of the right shoulder. Treatment is by free bleeding and mercurial purges; if these do not relieve the pain, renewed bleeding, or leeches, and blisters. If pain disappears during the acute stage the patient may be poulticed. As to dysentery, its principal cause is drinking bad water, at least indirectly, for it is the liver that is attacked first. In treating this disease, bleeding is discouraged, but salivation is almost necessary. Of ipecacuanha there is no hint. Dysentery was a disease of the slaves in slave vessels, and the navy, which put crews aboard captured ships, suffered horribly. Our author reports some very successful operations, especially for shark bite.

<sup>2</sup> Compare "The Navy of To-day" (*Times*, March 5th, 1926; p. 15, last column): "sore throats are reduced by the application of heat to dry the damp decks after scrubbing."

<sup>3</sup> *Lancet*, 1909, i, p. 1237.

<sup>1</sup> Annual Colonial Office Report.

<sup>2</sup> Admiralty Report on the Diseases of the African Station, 1847.

This book as a whole gives a picture of a good man struggling with puzzling adversity. There is no clear evidence of enteric fever, and his mysterious enemy was, clearly, mosquito-borne fever, malarial or yellow, and he suffered from one or both himself. The troubles of the climate and the local hardships were so severe that the added worry of mosquitos goes absolutely unmentioned. His efforts to discover the cause of these fevers was hampered by his not knowing that malarial fever had an incubation period of a fortnight, though he did observe that men who arrived in ships to load timber up the river did not develop fever for three weeks; the delay he ascribed to the preventive effect of the vigorous physical exertions required of them. He was observant in treatment, for he materially reduced his blood-letting as soon as he took duty on shore, though still giving heroic doses of mercurials. It is surprising to see how little confidence there was in quinine, probably because the current doses were too small. Intoxication is stressed as the cause of fever, but it could rarely be excluded. In those terrible times there was no other recreation. Housing, clothing, food, papers, books, lighting, clubs, cleared space for games, were little considered or were wanting. Officers had a little society, writes Mr. Whitelaw, Surgeon R.N., in 1823, but adds, "How many has care driven to the bottle," even among them.

This book is a monument of zeal and industry, not only at Sierra Leone but at home, where Sir William Burnett and Sir James McGrigor, the Directors-General of the two services, had put at Mr. Boylo's disposal their official information, of which, as his readers will see, he made good use.

W. E. HOME,  
Fleet Surgeon.

## HEALTH ADMINISTRATION IN AUSTRALIA

A ROYAL Commission was appointed in January, 1925, to report upon legislative and administrative changes which it might be advisable for the Commonwealth of Australia to make in conjunction with its constituent States. Its report was presented at the end of November last, and has now been printed. It shows that the Commission took evidence over a wide field from many representative persons, inspected sanatoriums, quarantine stations, and other health institutions, and held eighty-eight public sittings in twenty-two places. The recommendations deal with the general question of ill health in the Commonwealth; the co-ordination of its official medical services, both civil and military; co-operation between State and Commonwealth health departments; the prevention of the spread of disease, including venereal disease; the purity of food and drugs; maternity hygiene; child welfare; industrial hygiene; research work; and the relation of public health authorities to medical practitioners in regard to disease prevention, to voluntary agencies for the promotion of health, and to propaganda.

To investigate and determine the best methods for common action by the Commonwealth and the States in so many departments of activity was in itself a complex undertaking, which was not made simpler by the various geographical and administrative conditions in the great island continent which has a tropical climate in the north, where Cape York is within 11 degrees of the equator, and a temperate climate in the south. For administrative purposes it includes New Guinea and Norfolk Island. Its total area is close on 3,000,000 square miles. It is composed in the main of six States, ranging in area from Tasmania, with 26,215 square miles, to Western Australia, with 975,920. Each State has its own public health laws. In three States public health administration is under a board; in the remaining three there is a permanent official head. Local government has been developed and is operative in most places, though portions of Western Australia and New South Wales are still unorganized. The local authorities, such as the municipal or district councils, are the health authorities, though with varying powers in different areas. Some, for example, are water authorities; in other instances these duties are delegated to water boards; and in still other cases the public works depart-

ment both provides and manages the water supply. The Commissioners have rightly assumed on the part of their readers a knowledge of Australian affairs, and, omitting discursive writing, have limited themselves to those portions of the existing health legislation and administrative procedure which appeared to call for amendment. Their recommendations in general seem both fair and practicable, and they have clearly attempted to adapt their remedies to varying circumstances and conditions. In some cases direct control by the Commonwealth is advocated; in others co-ordination is suggested; and in others, again, where the administrative bond might perhaps prove irksome, co-operation is thought sufficient. It is recommended, for example, that the health of New Guinea should be under the direct control of the Commonwealth Health Department. Its coast is only some ten days' sail from Asiatic ports, from which small-pox might readily reach it, and endemic small-pox in New Guinea would threaten the whole Commonwealth of Australia.

In dealing with the medical services of the fighting forces the Commissioners are content with co-ordination. They advocate one director-general over all, but separate directors for the medical services of the navy, army, and air force, each with power to act independently when emergency arises. In civil administration the Commission would leave to the individual States their present autonomy in questions of health, but advises that the Commonwealth should lay down general principles for their guidance, and should employ the time-honoured reward of the grant-in-aid for those States which effectively conform. A State Council on health, with laboratory and other equipment, is recommended for each State. It should control all health activities within the State, including maternity and child welfare. There should also be, in the view of the Commission, a Federal Health Council for securing closer co-operation between the Commonwealth and State health authorities. On the State councils there should be representatives of the medical profession, and on the federal council, if the Government at any time thinks it would be an advantage, representatives nominated by the Federal Committee of the British Medical Association in Australia.

A feature of the report which is quite distinctive is the recognition by the Commissioners of the principle that a competent general practitioner service is essential to the efficiency of any system of health government. "Medical practitioners," they observe, "are among the first to come into relation with those who are affected with illness. They thus have the first and best opportunity of taking or advising steps for prevention." These observations of the Commission hold true even where the general practitioner is not a part of the health machine, for good medical practice is good preventive work, whether recognized by authority or not; if the doctor does not form a link in the health administration of his area many important services which he alone can render are obviously lost to the community.

The Commission notes that in February, 1925, the Federal Committee of the British Medical Association in Australia, to which reference has just been made, expressed the view that in no State of Australia "is the service of the practising practitioner officially utilized for the prevention of disease to any degree consistent with his knowledge and opportunity," and that "any scheme to rectify existing conditions must have as its immediate ideal the linking up of the general practitioner into active participation in the administrative scheme." The Federal Committee had further put forward an outline of the work the medical practitioner as a public servant should do, including sundry notifications, the ordering of disinfection, the control of contacts and carriers, and the medical inspection of school children. These suggestions the Commissioners adopt, and themselves recommend a model health scheme prescribing definite duties for practitioners. Pending the introduction of formal schemes they say that much could be done to bring doctors into the work by mutual agreement. There is a shortage in Australia generally of highly trained experts in public health. The Commission advises that steps should be taken to increase

the facilities for their training, and also to afford post-graduate instruction in health administration to prospective medical officers of health.

The matter of medical registration in Australia would also appear to need amending. Each of the six States is a registration authority, so that there are six Registration Acts and six registers. Medical qualifications differ in the various States, which is a source of confusion, and prevents the free transfer from one State to another of medical officers of the Commonwealth Health Department intended to be mobile. The Commission strongly urges that there should be one register, kept by one Commonwealth authority.

This report is framed on a broad plan. It is concerned with Commonwealth questions only, as affecting either the Commonwealth alone or the Commonwealth in its relation to States, for intra-State legislation and administration are not included in the remit. It should be of interest to every citizen of the Commonwealth who aspires to be a member of a vigorous race. It should be of interest also to every British subject in other quarters of the empire who wishes well to those of his own blood south of the line now seeking to evolve a co-ordinated health policy. The problem which the report endeavours to solve is one for which the genius of British peoples in the past has shown a certain aptitude. It is the problem of effecting control without tyranny, and of securing liberty which will not go on to licence. The report of the Commission should receive the attentive consideration of those with whom the decision will rest as to any legislative or other action requiring to be taken.

### LEBANON HOSPITAL.

THE twenty-seventh annual meeting of the Lebanon Hospital for Mental Diseases, Asfuriyeh, near Beyrout, Syria, was held at the rooms of the Medical Society of London on June 1st; the chairman of the General Committee, Mr. E. W. G. MASTERMAN, F.R.C.S., presided.

This hospital has been under the direction of Dr. H. Watson-Smith, O.B.E., for the last seventeen years. During the past year 135 patients (83 men and 52 women) were admitted. From the previous year there remained 95 patients, making a total of 230 patients under care and treatment throughout the year. Of this number 33 (16 men and 17 women) were discharged completely recovered and enjoying full mental health; 37 (25 men and 12 women) were discharged improved, although the nature of their malady rendered it possible that they might relapse in the future; 15 men and 3 women were discharged not improved. Primitive methods of treatment in the form of exorcism are still much in use in Syria. Spells are still believed in. Chaining naked patients in damp caves and beating them with whips to trample out the demons are still practised, and patients are still received who have had crosses and other devices cauterized on their heads by red-hot irons. Bleeding is commonly resorted to as a means of treatment.

The CHAIRMAN said that the number of women patients with acute symptoms was increasing, and single-room accommodation for them was becoming pressing. Such cases were unlikely to decrease during the present troublous times in Syria. The payments by the French Government for necessitous cases had fallen in value with the fall of the franc. Mr. Masterman paid a tribute to the valuable work of the Executive Committee in Beyrout.

Mr. W. A. ALBRIGHT, J.P., one of the trustees of the hospital, in moving the adoption of the report, referred to the healthy open-air life lived by the patients and to the cheerful atmosphere. Far more facilities for curative open-air occupation would be opened out when the land could be irrigated and brought under cultivation. Mr. F. HOURANI spoke of the great service of the hospital to the Syrian nation, and hoped that in course of time Syrians would take the burden of the work upon their own shoulders. Dr. J. F. WHITWELL presented the report of the medical director, which included statistical tables showing the prevalent forms of mental disorder in the East.

Dr. FORTESCUE FOX referred to Asfuriyeh as a centre of treatment, of teaching, and of research. The resident

fifth-year students to be supported by the Rockefeller Foundation would be of assistance to the director in his work as clinical professor of psychiatry in the American University of Beyrout. Mr. JOSEPH BUTLER, senior honorary treasurer, stated that over £4,000 a year was contributed in Syria itself on behalf of patients. Dr. PERCY SMITH mentioned that it was at Bethlem Hospital, London, that the General Committee first met. Dr. BEDFORD PIERCE moved a vote of thanks to auxiliary committees in America, Switzerland, and Holland.

Reports can be obtained from the general secretary, Miss Hilda Fox, at 67, High Street, Marylebone, W.1.

## Union of South Africa.

[FROM OUR CORRESPONDENT IN JOHANNESBURG.]

### PLAGUE RESEARCH.

It was realized by 1924 that bubonic plague had spread very extensively amongst the wild rodents of the Union. The deaths reported from time to time, chiefly among native labourers on the veld, from what was proved by laboratory examination of the affected glands to be undoubted plague, began to cause public alarm, and towards the end of 1924 the Union Public Health Department made arrangements with the South African Institute for Medical Research in Johannesburg for establishing and carrying out a definite scheme of research into the whole problem. The Government and the Witwatersrand Native Labour Association have each contributed £2,500, to be devoted primarily to plague research in the Union; it is supplementary to their ordinary grants to the Institute for Medical Research. They have undertaken to continue an annual contribution of this amount for the next three years. Under this scheme a research bacteriologist and a research entomologist have been appointed; and a mobile field laboratory was organized with the institute at Johannesburg as a base. The research bacteriologist is Dr. Pirie, formerly Government bacteriologist at Nairobi in Kenya Colony, and since 1918 in charge of the routine division of the South African Institute for Medical Research. Dr. A. Ingram, previously director of the Medical Research Institute at Accra, Gold Coast, is the entomologist. These officers have been working on this scheme since the beginning of last year. Comprehensive and detailed reports of their investigations are now being prepared by the South African Institute, but meanwhile short interim reports have appeared. Their investigations establish beyond doubt the fact that the disease of veld rodents is indeed the disease which is called plague in human beings. As was pointed out in a previous letter, doubt has been expressed in certain lay quarters, and the Minister of Public Health was carefully questioned on this matter in the House of Parliament. It was feared at the time that the prominence given in the lay press to these expressions of doubt might seriously discourage the efforts by private individuals in rodent destruction. Authoritative statements were made to combat these questionings; but perhaps the most effective stimulus to renewed activity in rodent destruction was provided by some unexpected deaths from plague in the Calvinia district of the Cape. These cases occurred at a point over two hundred miles south of the area in which plague had previously been known to be enzootic among veld rodents.

The animals which have during the past few years been reported as suffering a fairly high mortality from plague are: the common (lobengula) gerbille, multimammate mouse, long-eared mouse, Eastern Karroo rat, ground squirrel, spring hare, and yellow mongoose. All these animals have now been tested experimentally as to their susceptibility to plague. The workers express the opinion that all the veld rodents are more susceptible than the common black rat. The black rats do not belong to South Africa; all three varieties were originally imported by shipping, and they continue to be so imported; of the rats in South Africa they are much the most domesticated, and are usually the only ones found in and about human



habitations. Even these rats sometimes become "wild"; thus in Natal it has been observed that they have taken to the bush near Durban, where they live in hollow trees. The domestic rat being the least susceptible of our rats, all our rodents must be regarded as potential agents in the spread and propagation of plague. But the only animals of practical importance appear to be, on the high veld, the gerbille, multimammate mouse, and ground squirrel; and on the lower, more bushy country, the striped mouse. The Karroo rat, though very abundant and experimentally apparently the most susceptible of all animals yet examined, is not an important agent in the spread of the disease. It appears to escape almost entirely when an epizootic has been raging amongst gerbilles living in close contiguity; this is attributed to the fact that its flea parasites are peculiar to itself—it has none in common with the gerbilles. Spring hares, which have been known to travel as much as twenty miles in a night, and might, therefore, be expected to be capable of causing a rapid spread of the disease, are also excluded as the result of experience. They, too, have their own private set of flea parasites.

Two carnivores, the suricat and the yellow mongoose, have been studied. They live in close relationship with some of the rodents, and have in the past been reported as dying in considerable numbers in the wake of a plague epizootic amongst rodents. Small rodents form part of their normal dietary, and large numbers are probably eaten when they are sick or dying and can easily be caught; at such times the dung of these animals is thick with rodent fur. Experimentally the suricat is easily infected with plague, whereas it has been found impossible to infect or kill a mongoose, even when extreme doses have been employed. One captive mongoose ate four whole carcasses of gerbilles dead of plague, yet did not subsequently show the slightest sign of illness. It is proposed to exploit this insusceptibility of the mongoose to plague in rodent destruction, and to this end Dr. Pirio recommends that it be protected.

Bacteriological investigations have been carried on in many directions. An interesting question is whether there are within the species *B. pestis* serologically distinct groups. Nine South African strains, two from rodents and seven from human beings, were closely studied, and compared with eleven human and two rat strains from Bombay, and five human strains from Ceylon, a Japanese ship which arrived at the Cape with plague patients on board, Manchuria, and Nairobi respectively. Microscopically and culturally all these strains had the characters of *B. pestis*. All the South African strains give the characteristic pathological picture of plague in animals that have been infected with them, and some of these strains are as virulent as any of the foreign strains. All the strains tested with antiplague serum were agglutinated, but to greatly varying degrees. In attempting to differentiate types among the various strains by the method of agglutinin absorption difficulties were met with, both in getting emulsions of *B. pestis* that were not auto-agglutinable, and in obtaining agglutinable serums of high titre. It is, however, hoped to overcome these difficulties.

Reference was made in my last letter (June 5th, p. 962) to the new disease of veld rodents, the so-called "Tiger River" disease. Experiments in the utilization of this virus (which appears to be harmless to man) in the campaign against veld rodents are being made on a large scale; there is considerable promise of success. The disease can be spread both by laying down infected food and by letting loose infected animals.

At the Cape Municipal Congress held at Kimberley recently Dr. J. A. Mitchell, Secretary for Public Health, addressed the delegates. Referring to plague, he drew attention to the Calvina outbreak. Infection was known to exist in the Midlands and other parts of the Cape, but there was now danger through De Aar to the Calvina area. The plague area was also within striking distance of the Far East Rand, and if plague became prevalent it would be impossible to prevent it spreading right along the Reef. The problem from the towns and urban areas point of view was to starve out rats. A campaign lasting only one or

two months simply left matters as they were. He was glad to say that in the greater part of the Union a continuous campaign was being maintained. In his annual report for the year ending June 30th, 1925, Dr. Mitchell gave the following plague figures for the Union: There were 55 outbreaks of the disease; the white cases numbered 22, with 8 deaths; native cases 90, with 60 deaths. The total number of cases was 112, and of deaths 68.

#### INVESTIGATION OF SOUTH AFRICAN REMEDIES.

An investigation of considerable magnitude, and one which is of very great interest to South Africa, is at present being carried on in the department of pharmacology of the University of the Witwatersrand by Professor J. M. Watt, head of the department, and his assistant, Miss Marie G. Brandwijk. These two investigators are making a complete survey of the present position with regard to "huismiddels" (Dutch household remedies) and native medicines. Very many of these remedies are still apparently in constant use among Europeans. Many plants and parts of animals are in demand among natives, and form the main stock-in-trade of the reputable herbalist as opposed to the filthy witch-doctor. In the past scientific investigation of these popular remedies, European and native, has been of a desultory and haphazard nature. Isolated references to them are of fairly frequent occurrence in the scientific and medical literature of the country, but these are so scattered as to be practically inaccessible to investigators. Often the plant whose virtues are described is too inadequately indicated to make botanical identification possible. Some of these remedies are being brought actively to the notice of the public by being commercially exploited, too often without any real foundation for the claims made. Such a state of affairs is manifestly unsatisfactory, and a very real service will be rendered by the present investigators if they are able to place on record the present state of our knowledge of these remedies in a form which will be easily available for reference. It is also hoped that such a record will form a basis for further investigation of those substances which appear likely to be of value in medicine. The research is receiving the active support of Government departments, particularly the Department of Native Affairs, the Division of Botany, and the Forest Department. The Department of Bantu Studies of the University is also interesting itself in the matter.

#### UNIVERSITY DENTAL CLINIC.

The following have been appointed senior honorary visiting surgeons to the dental clinic of the University of the Witwatersrand: A. H. Ackerman, D.D.S. Michigan; M. L. Arenson, D.M.D. Harvard; J. H. Breyer, Tandara (Holland); B. J. Eccles, L.D.S., M.R.C.S. Eng.; G. A. Forsyth, D.D.S. Pennsylvania. These appointments increase the staff of the clinic to twenty. This dental clinic was started some years ago as a charitable organization to meet the great dental needs of the poor in this town by the Johannesburg Dental Society. It was housed from the beginning in the building which had been erected by the Joint Council of the South African Red Cross Society and the Order of St. John for treating diseases of the chest. The sum of £40,000 had been given at the end of the war by the Joint Council of the British Red Cross Society and the Order of St. John to Lord Buxton, then Governor-General of the Union, who handed it over to the Joint Council of the two bodies which was formed in South Africa. Of this sum the Joint Council of the two bodies in the Transvaal was given £10,000 with which to erect a building to house a clinic for diseases of the chest. This building was formally opened in 1922. The requirements of Johannesburg in the way of tuberculosis treatment proved to be entirely insufficient to justify so large an elaborate a building, and the "tuberculosis clinic" became in 1924 a "polyclinic" housing, in addition to the clinic for diseases of the chest, the out-patient clinic of the Transvaal Memorial Hospital for Children, and the clinic of the Johannesburg Dental Society. It very soon became apparent that the dental portion of this polyclinic was proving much the most important, and it has grown to

such proportions that at the beginning of the present year the whole building was handed over to the University of the Witwatersrand on a ninety-nine years' free lease, to be used entirely for dental work.

Apart from its great value to the University as a training school for dental students this University clinic, as it is now called, provides a very necessary service to a community which includes a very large number of "poor whites," natives, Eurafricans, and Malays, who are very liable to dental disease and who were previously almost entirely debarred from receiving treatment. An idea of its activities may be formed from its monthly returns. Thus during May there were 185 new patients, 355 old patients, 936 extractions, 10 fillings, 37 full dentures, 8 partial dentures, and 4 repairs. The clinic, as its name indicates, is now entirely controlled by the University, through a Dental Board which consists of the Principal of the University, the Dean of the Faculty of Medicine, two other members elected by the Faculty, and five members elected by the dental staff of the University. The Dental School is administered by the Faculty of Medicine of the University, dentistry being regarded as one of the special subjects rather than as a course entirely distinct from medicine. A five years' course leads to the B.D.S. degree, but the students are encouraged to take rather the combined medical and dental course of seven years leading to degrees in both medicine and dentistry. There are seven departments in the Dental School—namely, (1) conservation, (2) dental surgery and pathology, (3) prosthetics, (4) orthodontia, (5) dental diseases of children, (6) dental radiology, (7) dental anaesthetics.

#### THE MEDICAL SCHOOL OF THE UNIVERSITY OF THE WITWATERSRAND.

At the June examinations the following candidates were successful in all the subjects of the final professional examination for the degrees of M.B., Ch.B.: M. Chaitowitz, L. I. Cohen, H. Danachin, J. P. Grieve, A. L. Harrington, H. Levy, J. Mazell, L. M. Rodger, H. Simon, J. Tasker, S. Verster, A. P. Vorster. With two exceptions all these medical graduates have been elected to house appointments in the Johannesburg General Hospital or its branches—maternity, children's, urological, or fever. This means that virtually the whole of the Johannesburg General Hospital and its various branches will have for its resident staff medical graduates of this University. The bursary which was founded in commemoration of the work of the late Anno Fenton Cleaver, sometime medical inspector of schools and director of the school clinic at Johannesburg, and which is given annually to the best woman student of the year in the subject of diseases of children, has been awarded to Miss Rachel Getz.

## England and Wales.

#### ROYAL NATIONAL HOSPITAL FOR CONSUMPTION.

The Prince of Wales opened the new nurses' home at the Royal National Hospital for Consumption at Ventnor on July 22nd. The home, erected in memory of the late Mr. Thomas Lampard Green, is three stories high, and is connected with the hospital grounds by a subway. The ground floor includes sitting rooms and bedrooms for the matron and home sisters, writing, recreation, and dining rooms, and the kitchens. On the first floor are bed-sitting rooms for six sisters, and bedrooms for ten nurses. The second floor contains more bedrooms for nurses and maids, and a luggage lift is provided for each floor. The building is warmed by hot-water radiators, and there is a constant supply of hot water on all floors. Ground has been levelled to provide a tennis court, and on the south front of the building there is a long terrace overlooking the sea. The chairman of the board of management, Mr. P. B. Burgoyne, welcoming the Prince, stated that the hospital, which was founded in 1867, comprised now eleven blocks of buildings, with accommodation for 164 patients. During the last year 631 patients had received treatment, of whom 50 per cent. came from London and its neighbourhood. The

Prince, who is patron of the hospital, congratulated the board on the fact that in building the home no debt had been incurred. It is proposed to raise an endowment fund for the expenses of its upkeep.

#### METROPOLITAN HOSPITAL SUNDAY FUND.

At a meeting of the council of the Metropolitan Hospital Sunday Fund, on July 29th, under the presidency of the Lord Mayor, Sir George Makins, the chairman of the committee of distribution, stated that the collection was £4,600 below that of last year, and it was feared that when the final figures up to October 31st were obtained there would be manifest a decrease in church collections and donations. Members of the Church of Scotland, however, had contributed £959, as compared with £908 last year and £809 the year previously. The report showed that the total of the Fund on August 9th next would amount to £80,470. During the year 226 institutions had applied for grants, being one less than in 1925, and the committee had recommended a distribution of £80,005 to the various hospitals selected. Of the total sum available for distribution 7½ per cent. was appropriated for the purchase of surgical appliances during the ensuing year, and 2½ per cent. for district nursing associations. The principal awards to hospitals were as follows:

London Hospital, £7,100; St. George's £3,320; Hampstead and North-West London, £3,250; Middlesex (and Convalescent Home), £3,000; St. Thomas's £3,000; Royal Northern, £3,000; King's College, £2,150; Royal Free, £2,500; St. Mary's, £2,150; University College, £2,610; West London, £1,800; Westminster, £1,600; Seamen's, £1,300; Queen's for Children, £1,800; Hospital for Sick Children, Great Ormond Street, £1,500; Metropolitan, £1,320; Charing Cross, £1,625; Prince of Wales's, Tottenham, £1,500; Queen Mary's, West Ham, £1,200; City of London Chest Hospital, £1,140; Brompton Hospital, £1,100; East London, £1,100; Victoria Hospital for Children, £1,050; Royal National Orthopaedic, £1,100.

#### DUST AND SMOKE NUISANCE IN LONDON.

The London County Council proposes to promote legislation next session to enable it to make by-laws dealing with the nuisance arising from dust during the demolition of buildings. Some part of London is always in the hands of the housebreaker, and the dust and particles of lime which arise when the walls and ceilings are brought down and the debris is carted away can be very distressing. As long ago as 1900 a conference called by the London County Council passed a resolution calling upon owners or contractors when demolishing buildings to prevent annoyance as far as possible by sprinkling water and erecting reed or straw screens. The Home Secretary of that time expressed doubt as to the efficacy of a proposed by-law, and the matter was not proceeded with. But in the City of London the corporation has for some years past had a by-law requiring the placing of screens or mats around the property and the use of water, and this is said to have been effective. The London County Council has also agreed to make an annual contribution of £100 for three years towards the cost of certain investigations by a committee of the Department of Scientific and Industrial Research into atmospheric pollution and the cause of fogs. The work hitherto undertaken by the council in this matter has been limited to the maintaining of soot gauges in the parks and open spaces and analysis of the samples collected. The Department of Scientific and Industrial Research has offered to accept responsibility for the organization of an inquiry, with the co-operation of the local authorities, and under certain conditions to make contributions equal to those made by the authorities. Birmingham has resolved to make an annual contribution of £50 on condition that six other large cities make the same contribution. The City of London has given £50, and other local authorities have given smaller sums.

#### DERBYSHIRE HOSPITAL FOR SICK CHILDREN.

By the provision of eleven additional beds at the Derbyshire Hospital for Sick Children the accommodation for patients has been increased to fifty-two, which, besides relieving the strain on the hospital, will allow the nurses in training there to become eligible for certificates. The isolation block presented by the late Sir Herbert Raphael

In 1906 has now been transformed into a single commodious ward, which was opened by Captain Drury-Lowe on July 8th. Sir Herbert Raphaël had presented the block during his year of office as president of the institution, with a view to its serving as an isolation department for the hospital. For a considerable time it fulfilled that purpose, but eventually treatment became available for such patients at the Borough Infectious Diseases Hospital. In addition to the eleven beds provided by the conversion of the block, some measure of accommodation for the extra nurses has also been obtained, and Mr. Alan Reid, chairman of the board of management of the hospital, announced that the cost of the alterations would be met out of revenue, and that no special appeal to the public in this connexion would be required. Captain Drury-Lowe, in opening the ward, said that the hospital was the only one of its kind in the county. Mr. F. H. Frere, chairman of the House Committee, stated that the hospital had been overcrowded for a considerable time; additional land had now been acquired, and it was hoped that building operations would be begun before long; the conversion of the isolation block would greatly ease matters in the meantime. The new ward is provided with a terrace for open-air treatment.

## Scotland.

### HEALTH OF GLASGOW.

THE report of the medical officer of health for Glasgow for 1925 has been issued by Dr. A. S. M. McGregor, although it is pointed out that his predecessor, Dr. A. K. Chalmers, was still in office as medical officer of health during the first half of that year. The death rate of 13.97 per 1,000, it is pointed out, compared favourably with that of 15.39 for the preceding year, although it is not so low as in 1923 (13.66), which was the lowest recorded for the city. The births during 1925 numbered 25,416, compared with 25,330 in 1924. This was the first year in which an increase had occurred since the high post-war birth rate of 1920. High rates were recorded in the industrial and working-class wards, and low rates in the residential quarters, varying from 34 per 1,000 persons in Mile End Ward down to 7.8 in Kelvin-side and 9.9 in Cathcart.

**Causes of Death.**—The highest death rate was experienced in Mile End Ward (17.7), while that for Cathcart and Pollokshaws Wards was 9.5. The death rate from infectious diseases during 1925 was 1.24 per 1,000, which was the lowest recorded since 1921 and compared favourably with 1.71 in 1924. Malignant disease had been increasing over a considerable number of years, and during 1925 the number of deaths was 100 higher than in 1924. The deaths of children under 1 year of age numbered 2,591, compared with 3,005 in 1924, and the infant mortality rate was 102 per 1,000, compared with 119 in 1924 and 89 in 1923.

**Infectious Diseases.**—During 1925 the number of cases of puerperal fever notified was 300, compared with 239 during 1924. As in 1924 and 1923, no cases of typhus fever occurred, and the diminution in the number of cases of enteric fever continued. The number of new cases of pulmonary tuberculosis (1,600) was the lowest on record. The number of cases of scarlet fever was the highest since 1915. Encephalitis lethargica was contracted by 45 persons, of whom 26 died; the number of patients of all ages disabled as a result of the condition and its sequelae constituted a new administrative problem with important medical and social bearings, because many would require permanent institutional treatment. The number of persons in Glasgow showing definite disability as the result of this disease is estimated at about 200.

**Veneral Diseases.**—The number of new cases of venereal diseases was 5,187, which was a decline on the numbers of the previous years, although the total attendances increased, with an average of 25.6 for each patient. In 523 instances the disease was a reinfection. With regard to ophthalmia neonatorum, the case rate is at present less than 3 per 1,000 births. In 1921, when the rate was 6, the instillation of silver nitrate into the eyes of the newly born became compulsory on all midwives, and the

opinion is expressed that this has contributed to this favourable result.

**Housing.**—In the report of the previous year it had been estimated that in order to replace houses which ought to be demolished and to allow for deterioration of existing houses, as well as to provide for the natural increase of the population, some 5,000 houses annually would be required during the next twenty years. It appears from the present report that not more than one-third of this number is actually being provided. The Public Health Department had found on inquiry that a tendency is growing up among the occupants of new houses to take in lodgers or to sublet a room to other families. This, in some cases, produced overcrowding. It is suggested that, as the aim of rehousing schemes is the ensuring of healthy occupancy, the tenants should be subject to rules governing this. The clearance of back-lands is being gradually accomplished; down to 1919 143 had been demolished, but 591 still remained. By last year the number had been reduced to 450, and of these 50 are included in a clearance scheme. Some inquiry had been made into the view which has been held in regard to the slum dweller and his tendency to make a slum wherever he went into new houses. At Hamiltonhill a detailed survey was made of 347 houses provided for tenants dispossessed through slum clearance in the Cowcaddens area. Of the new houses 31 (9 per cent.) were found to be unsatisfactorily kept, being dirty and bug-ridden. On the other hand, 151 houses were clean and well kept, many of them models of cleanliness, while the remaining 165 were passably good. It is suggested that a probationary period might be arranged for tenants of this class before they are entrusted with new houses.

**Smoke Abatement.**—It is noted that some progress has been made in this direction along the lines of (1) extended use of electricity for power purposes; (2) the use of mechanical stokers and steam boilers; (3) the substitution of smokeless fuel in furnaces where mechanical heating is not suitable, and (4) the substitution of smokeless fuel for raw coal in household fires and boilers for central heating. The first practicable step to produce a smokeless fuel suitable for domestic purposes was taken by the corporation in 1925. The fuel, called "kincoke," is found to produce more radiant heat than an equal weight of raw coal.

### EDINBURGH HOUSING SCHEME.

Edinburgh Corporation has made considerable progress in building houses on the new area in the Lochend district, in accordance with a scheme elaborated after the passing of the Housing Act of 1919. On July 26th the main thoroughfare, which is to be known as Sleight Drive, was formally declared open by Lord Provost Sir William Sleight, who planted a number of maple trees along its border. The scheme comprises 42 acres of ground and two miles of streets. In this area 32 demonstration blocks and 802 houses have been erected. Of the latter, 150 are of the two-roomed type suitable for persons of small means. A number of similar houses together with shops are still to be erected. At a luncheon in the City Chambers the Lord Provost cordially congratulated the Housing and Town Planning Committee on what it had achieved. With regard to the housing problem Edinburgh was now beginning to see daylight. The houses erected by the Corporation under the Housing Acts now numbered 4,560, exclusive of the steel houses which were being provided under Government auspices and also exclusive of the large number of houses which had been erected by the private enterprise with the help of the subsidy. The total capital expenditure on housing was over £2,000,000. When the Corporation purchased the Lochend estate three years ago, one of the criticisms from the financial point of view had been that a large part of the estate would lie idle for a long time before it could be developed. Within this short period, however, what was practically a new town had sprung up at Lochend and all the land allocated for housing had been taken up. Consequently yet another estate had been bought at Saughtonhall for similar development. Great appreciation had been expressed by some of the tenants who had been removed from slums to these new quarters. Councillor P. H. Allan

said that the number of houses erected in connexion with slum clearances was 814, and their provision had enabled the Corporation to proceed with slum clearances in the Cowgate, Grassmarket, and other areas; good progress was being made, although the problem was still acute. It was estimated that the present scheme of slum clearance would be completed in about twelve months and then other areas like St. Giles and the Canongate would be treated, so that the housing question must not be considered as by any means settled. It was an undoubted fact that the health of boys and girls removed from slum areas had greatly improved since they had been taken to Locheend, where they had fresh air and sunlight.

#### PNEUMONIA AND TUBERCULOSIS IN FARM LABOURERS.

Dr. Rae, chief medical officer of health for the county and burghs of Aberdeen, in his annual report described the farm servants in the county as an improvident class in health matters. In other classes cases of pneumonia were notified within two or three days, but the farm servant would toil on until the fourth or fifth day, and then, very often, collapse. Consequently the mortality from pneumonia amongst them was larger than in other classes of the community. Similarly with tuberculosis. From want of education or want of thought the farm hand failed to call in the doctor in time. Dr. Rae gave this explanation in reply to a member of his committee, who attributed the large incidence of tuberculosis amongst farm servants to their carelessness in not changing their clothing after it had been soaked with rain. Another member of the committee asked whether bad housing was the cause of the excess of tuberculosis; but Dr. Rae, while admitting that housing might be improved in some cases, said that he had not found the farm servants in Aberdeenshire worse off than those in other counties in Scotland.

#### DENTAL EDUCATION.

The prizes for the session 1925-26 of the Incorporated Edinburgh Dental Hospital and School were presented by Mr. J. W. Dowden, F.R.C.S. In the report on the work of the school the Dean, Mr. William Guy, F.R.C.S., said that the dentist's field of study was wider in extent even than that of the doctor, while in addition he had to acquire laboriously a great degree of mechanical dexterity. He found a somewhat grim satisfaction in the reflection that in their school the students must either work hard or go under, and there was no place for slackers. During the past year the school had been a little hampered by the building of the extension, but the work submitted for the work-room competitions had given proof of attainment by some pupils of a remarkable standard of craftsmanship. Competition had been keen in general and special classes, and medals had been hard to win. He had been glad also to observe that in the cult of athletic and other sports the school had many enthusiastic and some successful devotees. Mr. Dowden, in a short address, mentioned that it seemed a curious fact that at the present day so large a number of people lacked their own teeth. Whether that was due to hasty or varied diet he could not say. Many diseases were now claimed by physicians as being caused through the teeth, and he would call attention to the importance, not only of fact in dental work, but of imagination, for when dealing with human patients imagination must be given some sort of play. In addition the dentist's knowledge should be carefully systematized.

#### ROYAL (DICK) VETERINARY COLLEGE.

At the annual distribution of prizes at the Royal (Dick) Veterinary College, Edinburgh, Sir Thomas Hudson Beare, chairman of the board of management, said that the extension of post-graduate work was one of its chief aims. There was a great field for post-graduate work in veterinary science, and it benefited the men working for an ordinary diploma that they should be studying side by side with men engaged in original research and post-graduate work. One particular line of work which had been taken up by the instruction of the Board of Agriculture was the diagnosis of poultry disease, which was a matter of great practical value. He pleaded

for further help in the way of endowments, for the College was playing no small part in regard to what he held to be the chief industry of the country—agriculture. It was in particular urgent to develop the department of parasitology under a teacher of eminence who would give his whole energies to the work of research. The Earl of Stair, after presenting the prizes, remarked that veterinary science still needed to acquire much more knowledge, as the experience of the last year or two proved. Although the result of efforts against foot-and-mouth disease was not exactly a defeat, nothing less than a repulse had been encountered.

## Correspondence.

#### POST-GRADUATE HOSTEL, LONDON.

SIR,—There can be no doubt that a foregathering of medical post-graduates in London from a social point of view is just that link which has been wanting in most of the post-graduate efforts in the past. This defect has now been remedied, and the opening of the Post-Graduate Hostel at the Imperial Hotel, Russell Square, London, is most opportune, for many post-graduates will be sojourning in the metropolis during the summer and autumn months. The first informal talk and discussion on operations on the stomach was certainly a success, and those to follow should be well patronized.

I feel sure that the opportunity afforded, in the excellent room placed at the disposal of post-graduates by the management of the Imperial Hotel, of discussing topics taken in the post-graduate courses held in London by the post-graduates making this hotel their headquarters, cannot but bear most valuable fruit.

It would be a pity if a single post-graduate was to stay anywhere in London apart from his or her confreres who will be residing in the Hostel and making use of its facilities.—I am, etc.,

London, W.1, July 31st.

W. McADAM ECCLES.

#### "ATOPHAN DERIVATIVES IN RHEUMATISM."

SIR,—Dr. W. Langdon Brown, in his letter in your issue of July 3rd (p. 37), has done good service to the medical profession and to the public by calling attention to the possibility of the occurrence of toxic jaundice after the administration of atophan, atophanyl, and atoquinol. His experience has been confirmed by that of Dr. Geoffrey Evans and Dr. C. Worster-Drought in the communications in your issue of July 10th, and by that of Dr. Lewis G. Glover in his letter in the JOURNAL of July 17th.

I have no doubt as to the capacity of these preparations to produce in certain cases toxic jaundice. I have seen in consultation three cases of toxic jaundice following the administration of atophan in ordinary doses by the mouth, and I have no doubt that the jaundice was the direct result of the toxic action of atophan on the liver. One of these cases was fatal. The patient, a man of 69, in feeble health and suffering from chronic gout, was given atophan gr. v t.d.s. by mouth for one week, bicarbonate of soda 1/2 dr. in a tumblerful of water being taken night and morning. Deep jaundice developed a few days after the completion of this course, and death resulted twenty-eight days after the onset of jaundice. The main symptoms were those of icterus most of the icteric period the stools showing that the jaundice was not obstructive.

The toxic action on the liver of the preparations under consideration is probably due to the presence of the quinoline nucleus in each. Atoquinol can hardly be regarded as a derivative of atophan, but both are derivatives of quinoline. Atophanyl is a combination of the sodium salts of atophan and salicylic acid.

The inorganic compounds of arsenic rarely give rise to jaundice nor does sodium cacodylate, which is an organic compound of the fatty or aliphatic series. It is well known that jaundice occurs after the administration of the arsenobenzol compounds of arsenic, and the occurrence of jaundice is no doubt due to the combination of the arsenic with a

benzene nucleus. The quinolino nucleus resembles that of benzene in that its presence may be associated with toxic action on the liver.

The occurrence of toxic jaundice after the administration of preparations which may act as liver poisons is dependent on the condition of the liver cells at the time of treatment. If there is any evidence of defect of hepatic function it is advisable to avoid the administration of any remedies which may have a specific toxic action on the liver cells. It has been recommended to give glucose (50 grams) by mouth a few hours before the intravenous administration of an arsono-benzol derivative to act as a protection of the liver cells by reason of the stored glycogen resulting. I believe this recommendation to be physiologically sound and one that should be practised.

It is probable that the occurrence of toxic jaundice after the administration of atophan, and the other preparations in question, only happens in cases where there is defective hepatic function. The letter of Dr. L. C. Dundas Irvine in the *JOURNAL* of July 17th shows that in many cases the preparations may be safely given, and this is no doubt the experience of many other practitioners. It should, however, be remembered that there is a possibility of toxic action on the liver, and in patients showing evidence of defective hepatic function or of general debility the preparations would be best avoided.—I am, etc.,

London, W.1, Aug. 3rd.

W. H. WILLCOX.

#### THE DEVELOPMENT OF VAGINAL OPERATIONS FOR GENITAL PROLAPSE.

SIR,—In the interesting discussion on this subject in your columns I observe the statement of Dr. R. H. Paramore (March 13th, 1926, p. 502) that, so far as he knows, no one has cured a case of complete prolapse of the uterus by operating on the "visceral connective tissues alone."

If by these "connective tissues" he means the mass of musculo-fibrous tissue passing out laterally from each side of the cervix uteri towards the pelvic wall and filling in the base of the broad ligament, I can assure him that the late Dr. Arthur Nyulasy rectified a number of such cases by shortening these tissues alone. After several years of observation, dissection, and operation, he arrived at the conclusion that these lateral masses or bands of musculo-fibrous tissue "are the main elements holding the uterus at a more or less definite level in the pelvis," and that therefore their most correct title is the "cardinal ligaments of the uterus." They are often referred to as "Mackenrodt's ligaments," but this author's description is quite erroneous. Thus, he describes them as "bands of firm fibrous tissue, which form specialized parts of the pelvic fascia; arising in the neighbourhood of the ischial spines, they pass through the pelvic cellular tissue and are inserted into the sides of the cervix and vaginal vault."

Arthur Nyulasy's original dissections, as described in the *Annals of Surgery* and other journals in 1914, prove that these ligaments are not mere bands of firm fibrous tissue, they are not specialized parts of the pelvic fascia, they do not arise in the neighbourhood of the ischial spines, and they are not inserted into the sides of the cervix and vaginal vault.

On the contrary, they arise from the uterus and pass outwards to be inserted into the pelvic fascia on the lateral wall of the pelvis, and they are packed with bundles of smooth involuntary muscular fibres, whose presence Mackenrodt appears to have quite overlooked.

Five years after the publication of Arthur Nyulasy's papers, his views on the structure and functions of these ligaments were absolutely confirmed by Professors Hastings Tweedy and A. F. Dixon, the well known anatomist, at a meeting of the Royal Academy of Medicine in Ireland in February, 1919, and duly reported in the *BRITISH MEDICAL JOURNAL*. Professor Dixon said the support of the uterus

"was mainly applied at the lateral aspect of the cervix and at the lateral aspect of the vagina. Here the subperitoneal tissue was packed with smooth muscle and connective tissue fibres, radiating outwards along the vessels and nerves which abounded in that region. The dense mass was continuous with the muscle

wall of the cervix and vaginal fornix, and not merely adherent to those structures; in front of these it was continuous with the muscular wall of the lateral angle of the bladder, and formed the ureteral sheath."

It would thus appear that the name of "Mackenrodt" should be dropped altogether in connexion with these ligaments; and, as Mr. Victor Bonney remarked in 1923, "it is time there was a consensus of opinion as to the nomenclature of such important structures." "Cardinal ligaments" seems their most appropriate title.

It may be added that Arthur Nyulasy's operation of "looping the cardinal ligaments in uterine prolapse" is fully described in a volume of his selected papers, which may now be seen in the library of either the British Medical Association or the Royal Society.

The essential points in the operation are these: the cardinal ligaments are exposed as in the operation of subtotal hysterectomy; the uterine arteries are tied, the inner ends of the cardinal ligaments are isolated from the posterior layer of the broad ligament on each side, and stitched (as loops) to the front of the cervix. This has the effect of raising the uterus to such a level as to overcome the prolapse. One of the advantages of operating by this method is that ovarian or other complications may be conveniently dealt with at the same time.—I am, etc.,

FRANK A. NYULASY, M.D.

Melbourne, Australia, May 3rd.

#### TUBERCULIN TREATMENT OF TUBERCULOSIS.

SIR,—I regret that in the cause of truth and suffering humanity I must again briefly refer to the report upon tuberculin treatment at dispensaries issued by the Medical Research Council in 1921. It was originally labelled "Confidential," but I had not asked for a confidential report, and was no party to this condition. Owing to my representations the report was eventually published in the *Lancet* for November 3rd, 1925, without this qualification. I was placed at a disadvantage because the investigators did not wish to meet me in person. I saw them once, and once only, and spent the hour they gave me at the dispensary in showing them the simple, accurate, and easy way we had introduced for measuring the exact doses to be given. Though the method can, I think, hardly be improved, in the report it was ignored, and the method I was compelled to use in Australia, and for some time in England, till I had special pipettes made in Germany for this purpose, was made the subject of criticism. Instead of describing the method in actual use, they used pages of the report to criticize the method, described in my book (1912) which I had discarded for many years—certainly for eight years. There were three investigators (Dr. Western, Dr. Burrell, and Dr. McNalty) and each of them signed this criticism, although each of them had been a witness of my personal demonstration. Let others judge of the value of this kind of criticism. It is hard for me to explain why three independent examiners should fall into so many inaccuracies, and it was surprising that these three medical men subscribed to a statement, without any evidence of all, that "this method of tuberculin administration succeeds in immunizing patients to large doses of tuberculin, but there is no evidence that it also immunizes them to tuberculosis." What evidence is there to support the conclusion, which to some must seem unintelligible? Both the effects and the lesions are the products of the toxins; I presume they meant the effects of the tubercle bacilli. Had they any right to make such a statement? Nowhere have I seen any recorded experiences of any of them with large doses, and they confessed to me that they knew nothing about the use of large doses of tuberculin.

My contention, based upon a very long and careful investigation, is, and always has been, that nothing but large doses of tuberculin can ensure lasting results in chronic forms of tuberculosis, and no authority has a right to criticize my views unless my methods have been tried and found wanting. My critics merely deny or assert but produce no evidence. Certainly my reply to their report should satisfy any lawyer who understands the meaning of evidence, that their way of appraising evidence would not find favour in a court of law. Those who state that there



"no evidence that large doses immunize against existing tuberculosis" are giving a mere opinion, which is contrary to the evidence. I would suggest that on this upreino question affecting millions the Government might appoint a lawyer to determine whether my critics or I deserve the verdict.

It is not necessary for me to criticize again the conclusion reached by this committee, but I will gladly send my pamphlet *The Tuberculin Dispensary for the Poor* to any who wish to read my criticism of this report, and would like to have in return their calm opinion upon the justice of my comments. *C'est la juste mesure, qui vaut le mieux.* I might thus obtain from the medical profession a collective idea of the value of the report, which had received the imprimatur of the Medical Research Council. Further, I invite medical men to visit the Tuberculin Dispensary, 32, Fitzroy Street, Fitzroy Square, W.1, on Mondays and Thursdays, at 9 a.m., and learn by experience what we strive to do and thereby judge for themselves.—I am, etc.,

London, W., July 23rd.

W. CAMAC WILKINSON.

#### SEPTIC SORE THROAT COMPLICATED BY ERYTHEMA NODOSUM.

SIR,—The recent letter on septic sore throat complicated by erythema nodosum (June 19th, p. 1062) leads me to report the following case of ulcerative tonsillitis in a woman aged 20: The tonsillitis was accompanied by much swelling and considerable exudation. After about ten days extensive erythema nodosum developed on both legs, and also just behind the elbow-joints, especially the right, with swelling of the joints. After about another ten days the whole of the erythema disappeared, but was followed by a condition of chronic rheumatism with swelling of the joints, accompanied by tenderness and sometimes redness and intense pain; sometimes one or two joints at a time were affected and sometimes several. This has been accompanied by albuminuria. The temperature was above normal only at the onset of the erythema nodosum, when it was 100° for a day or so; there have been relapses of the joint-pains and swellings. The usual treatment, local and general, for these conditions has been given, and also a restricted diet; and it was only after using a particular drug not generally applied in these cases, but which would do good in cases affected by the meningococcus, that the progress towards a satisfactory recovery was made. The drug used was potassium bromide, given at bedtime every night. She is now taking tonics.—I am, etc.,

D. OWEN WILLIAMS, M.B.

Glandyff, Cardiganshire, June 26th.

#### ANTIGENS FOR THERAPEUTIC IMMUNIZATION.

SIR,—Your leading article on this subject (JOURNAL, July 31st, p. 209), referring to the paper by Sir Thomas Horder and Dr. Ferry, p. 177), describes a method employed by these authors for preparing vaccines as "novel."

With reference to living bacterial vaccines may I point out that in the domain of veterinary medicine the demand for Pasteur's living vaccines (chiefly anthrax and swine erysipelas) goes on steadily increasing year by year, and that the output of the Laboratoire des Vaccins Pasteur (pour l'Étranger), Paris, is now over twenty million doses a year, a proof that the economic value of these living vaccines is recognized by stock owners all the world over as the most valuable yet cheapest form of insurance against epidemics of these two dreaded diseases. Living vaccines for prevention of tuberculous disease both in man and cattle have an increasing band of votaries in more than fourteen countries where State laboratories are now issuing the living Calmette-Guérin bacillus (a non-pathogenetic form of the tubercle bacillus of bovine type) for immunization of man and cattle, particularly the newborn, against tuberculosis.

The method described by Horder and Ferry for preparing vaccines, however novel it may appear as applied to human medicine, is well known in veterinary medicine, and in

this connexion I would refer especially to the pamphlet issued by the Toulouso Institute of Serumtherapy on immunization against symptomatic anthrax by amicrobic and integral vaccines (Types B and C). Under Type B, which consists of broth cultures deprived of germs, the following note appears:

"Since 1900 Leclainche and Vallée have shown that candle-filtration lessens the activity of the secretions of *B. chauvoii*. Also no two candle-filters ever behave alike; they retain by adsorption and slime-choking the greatest proportion of the soluble active substances which they are intended to free. . . . In place of filtration, as is utilized by all authors who study antisympomatic anthrax vaccination with microbe secretions, Leclainche and Vallée therefore employ super-centrifugation of cultures. . . . This technique alone yields totally innocuous amicrobic vaccines with a maximum of activity and antigenic value, incomparably superior to those obtained by filtration, however good the latter may be." (The translation is mine.)

There is no reason for supposing that powerful inoffensive antigens may not likewise be found associated with pathogenic organisms in the domain of human medicine, and therefore both Sir Thomas Horder and Dr. Ferry have all encouragement in their interesting, valuable, and patient research.—I am, etc.,

Hendon, N.W.4, Aug. 1st.

MYER COPLANS.

#### ACUTE INTESTINAL OBSTRUCTION.

SIR,—My experience indicates that the tragic rapidity with which acute intestinal obstruction passes the bounds of surgical salvation demands, even at risk of an occasional error, a concise and easily remembered working formula.

(1) In the first instance, after due local (including rectal and vaginal) revision, in every suspect case, examine heart, lungs, and urine, not omitting a good look at eyes and ears, and a sniff of the breath. Should the diagnosis remain dubious, stand by the case—no "going away and coming back later."

(2) Administer a large soap-water and turpentine enema; if this does not cause an immediate, and distinct, evacuation of faeces or flatus, then and there wash out the stomach, and forthwith transfer the patient to the operating theatre, in which a well heated operating table can be promptly procured. The cold slab is the death-bed of the patient with acute abdominal disease, and every minute before, and during, operation counts.—I am, etc.,

Buenos Aires, May 6th.

JOHN O'CONNOR.

#### HISTORICAL ACCURACY.

SIR,—At the recent Representative Meeting of the British Medical Association, when the question of having a Section of the History of Medicine at the Annual Meeting was under discussion, the statement was advanced as an encouragement for the venture that the last Section, that of Medical Sociology, was also brought forward on the initiative of Brighton, and had been most successful. Had this remark not been quoted in your report it would have been unnecessary to refer to it; but if we are to have history, let us begin by being accurate.

When the question of having a Medico-Sociological Section was first mooted the Brighton Division had not become known. This Division's appearance on the stage—at about the time of the commencement of the temporary eclipse of Wandsworth—was first noticeable when, during an early summer morning walk on the Downs in 1912, the late Medical Secretary and I decided that the local professional pulso should be felt with a view to the Annual Meeting being held in Brighton in 1913.

The question of a Sociological Section was first advocated at a Council meeting in 1908; was referred to a committee which trampled on it as being considered to be foreign to the objects of the Association; was brought up again later; was acquiesced in as an experiment; and held for the first time in London in 1910, Belfast being considered to have a too political atmosphere to start it in 1909! That it has proved each year since an undoubted success goes to show that prophecy in 1908 was for once correct.

By all means let us have a Section of the History of Medicine. Not for the purpose of recounting to an expectant public tales of heroic bloodcurdling forms of treatment culled from records of past civilizations, but to



Bt., M.D. *Treasurer*: Sidney Philip Phillips, M.D. *Registrar*: Raymond Crawford, M.D. *Harveian Librarian*: T. H. Arnold Chaplin, M.D. *Assistant Registrar*: Robert Oswald Moon, M.D.

#### *Harveian Orator and Bisset Hawkins Medal.*

The President announced that he had appointed Sir William Hale-White to deliver the Harveian Oration in 1927, and had awarded the Bisset Hawkins Medal, 1926, to Dr. A. T. Stanton.

#### *Harvey Tercentenary.*

The President reported the following recommendation of the Council, which was adopted:

That it be remitted to a committee consisting of the President, Senior Censor, Treasurer, Registrar, and Harveian Librarian, with power to add to their number, to consider and report to the College on the arrangements that should be made by the Royal College of Physicians duly to celebrate in 1928 the tercentenary of the first publication of Harvey's *De Motu Cordis*.

#### *Various Communications.*

At the request of the Secretary of the Medical Research Council, Lord Dawson and Dr. John Fawcett were nominated to confer with that council on the question of continuing the issue of *Medical Science: Abstracts and Reviews*. A specimen copy of the Osler Memorial medal was accepted, with thanks to the Regius Professor of Medicine at Oxford, Secretary of the Osler Memorial Committee, for the gift. The President reported communications with the Home Office concerning the barbitone group of drugs, including copies of the draft amending regulations under Section VII of the Dangerous Drugs Act, 1920.

Various reports from standing committees were received, and the report of the Departmental Committee on the University of London was discussed. The President then dissolved the comitia.

#### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An ordinary council meeting was held on July 29th, when the President, Sir Berkeley Moynihan, Bt., was in the chair.

#### *Diplomas and Licences.*

Diplomas of membership were granted to 174 candidates. Licences in dental surgery were granted to 2 candidates. Diplomas were granted jointly with the Royal College of Physicians: In public health to 16 candidates; in ophthalmic medicine and surgery to 32 candidates.

#### *Appointments.*

A letter was read from Mr. Herbert S. Pendlebury resigning his membership of the Court of Examiners, and suggesting that such resignation take effect on the conclusion of the final examination for the Fellowship in November. The resignation was accepted and the vacancy on the Court of Examiners thus occasioned will be filled at the ordinary meeting of the council on December 9th.

Sir Anthony Bowlby and Sir D'Arcy Power were re-elected, and Mr. Sampson Handley was elected, members of the executive committee of the Imperial Cancer Research Fund.

#### *Lister Memorial Lecture.*

The Lister Memorial Lecture by Professor von Eiselsberg, will be delivered at the College at 5 p.m. on Thursday, July 7th, 1927, and a reception will be held in the museum from 4 to 5 p.m. before the lecture.

#### *The Supplemental Charter.*

The Supplemental Charter, as prayed for by the College, was approved by the King in Council on July 26th.

#### SOCIETY OF APOTHECARIES OF LONDON.

The following candidates have passed in the subjects indicated:

**SURGERY.**—A. C. F. Barrow, A. Henkamp, R. F. Middleton.  
**MEDICINE.**—N. H. Allea, F. W. Barton, T. M. Beattie, W. O. H. Evans, J. B. Lurie, R. I. Richards, G. E. Rowan.  
**FORENSIC MEDICINE.**—C. S. Forrest, H. S. Littlepage, J. B. Lurie, R. F. Middleton, T. E. Moody Jones, A. K. Rama Chandra, G. E. Rowan, R. S. S. Smith, M. Stinnesbeck.  
**MIDWIFERY.**—A. C. Banerji, H. J. J. Fordham, D. Jacobson, V. K. Samy, M. T. Y. Selim, R. S. S. Smith, T. D. L. Walker.

The diploma of the Society has been granted to Messrs. W. O. H. Evans, R. F. Middleton, and G. E. Rowan.

### The Serbices.

#### NAVAL DECORATION.

The Royal Naval Volunteer Reserve Officers' Decoration has been conferred upon Surgeon Commander R. Wilbond.

#### DEATHS IN THE SERVICES.

Colonel B. M. Blennerhasset, C.M.G., Army Medical Service (ret.), died at Rotorua, New Zealand, on May 26th, aged 76. His surname was originally Tincler, and under that name he entered the army, but changed it by deed poll to Blennerhasset in 1879. He was educated in Dublin, taking the L.K.Q.C.P. in 1870, and the L.R.C.S.I. in 1871, and subsequently the F.R.C.S.I. in 1889.

Entering the army as assistant surgeon in 1872 he became colonel in 1902, and retired in 1906. He served in the Ashanti campaign of 1895-96, when he was mentioned in dispatches, and received the star, given instead of a medal for that campaign, and the C.M.G.

Lieut.-Colonel L. J. Pisani, Bengal Medical Service (ret.), died in London on June 22nd, aged 64. He was born at Gibraltar, the son of John Pisani, landholder, and educated at Charing Cross Hospital, taking the M.R.C.S. and L.S.A. in 1886. He entered the I.M.S. as surgeon in 1886, passing first into Netley, but dropping two places during the course there. In 1895 he took the F.R.C.S. He became lieutenant-colonel after twenty years' service, and retired in 1911. After the usual two years' military duty, he took civil employ in the Punjab, but was soon after transferred to the United Provinces. He served on the north-west frontier in the Hazara campaign of 1888, was present at the action at Kotkai, and received the frontier medal with a clasp. He was the author of a work on *The Pathology of Relapsing Fever*, 1889.

Lieut.-Colonel Henry Arthur Bransbury, D.S.O., R.A.M.C., was murdered at Lucknow on July 5th by an Indian servant. He was born on October 2nd, 1877, the son of the late Mr. Henry Bransbury of Southsea, was educated at St. George's, and took the diplomas M.R.C.S. and L.R.C.P.Lond. in 1900. After filling the posts of house-physician and assistant to the medical registrar at St. George's, he entered the army as lieutenant on January 29th, 1901, and became lieutenant-colonel in 1918. He served in the South African war in 1901-2, taking part in operations in the Transvaal and Orange River Colony, and receiving the Queen's medal with three clasps; he served also in the war of 1914-18, when he was mentioned in dispatches in the *London Gazette* of April 5th, 1916, and received the D.S.O.

### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

PARLIAMENT rose on August 4th for the long recess. The House of Commons is to resume its ordinary business on November 9th, but there will probably be a special sitting on August 30th for renewal of the Emergency Regulations. The Government will take the whole time of the House during the autumn session. The London University Bill, being a Government measure, may be carried, but there is considerable opposition to it. No attempt will be made to advance the Factories Bill which has just been introduced.

Though no decision has been officially announced, the Minister of Health is expected to introduce next year a bill founded on the recommendations of the Nursing Homes Committee. The bill, when introduced, will also propose consequential modifications in the Midwives and Maternity Homes Bill which has just been passed.

The House of Commons passed the Lead Paint (Protection against Poisoning) Bill through report and third reading on August 3rd.

#### Public Health in Scotland.

During the debate in the House of Commons on the Scottish Estimates the question of the duties of education authorities as to the feeding of school children during the holidays was raised. The Lord Advocate said that the education authority's duty arose when it found that, owing to lack of food or clothing, a child was not in a condition to take full advantage of the educational course. It was the duty of the parish council to provide relief while the child was at home.

Mr. Johnston said that in Dundee 4,000 persons lived in houses which had been officially scheduled as unfit for human habitation, and that 1,000 families lived each in a share of a room. The medical officer of health had urged development in house building. Mr. Barr said that the report of the Hospital Services (Scotland) Committee, over which Lord Mackenzie had presided, showed that the hospital accommodation was inadequate; in the six teaching hospitals in Scotland there were 3,256 beds and a waiting list of 5,854. Considering the inadequacy of the medical equipment, remarkable progress had, Mr. Barr said, been made. He recapitulated some of the statistics published in our columns, and quoted some about Glasgow, which will be found at page 272. The Labour party desired to see the whole health service a public service, and the best medical skill available to all without distinction.

Mr. T. Kennedy said that in cases of abnormal sickness national health insurance committees had the responsibility of inquiry and action. The Royal Commission of 1924 had recommended their practical abolition on the ground that the duties were of a routine character, and had diminished. The House should think seriously before assenting to their abolition.

Mr. Buchanan urged on the Scottish Office the need for more rapid expansion in the treatment of venereal disease. Medical provision in Glasgow and Edinburgh was not sufficient. In Glasgow it was not uncommon to have thirty or forty cases a night, and to give each the necessary medical attention was impossible. He referred also to the training of the blind; there was a long waiting list of persons anxious to get training. Mr. Wheatley said that Scotland required 100,000 working-class houses.

Dr. Drummond Shiels said there was no finer Government document than the report of the Scottish Board of Health, but he hoped the Board would encourage local authorities to install artificial sunlight for the treatment of surgical tuberculosis, rickets, and general debility. He pointed out that in Scotland about 50,000 school children had been certified as insufficiently nourished, and about 1,300 as very much undernourished.

In reply for the Government, Dr. Walter Elliot called attention to a previous declaration by the Secretary for Scotland to the effect that the Board of Health hoped in time to arrange for the provision of an increased number of hospital beds. With regard to the provision for treating venereal disease in Glasgow, Dr. Elliot agreed that the situation of the Broomielaw centre was not entirely satisfactory. Further building was going on, and it was hoped considerably to improve the situation. In future, venereal disease would be dealt with in accordance with the terms of the International Convention which had just been ratified. He added an assurance that the Government was not considering at the present time the abolition of the housing subsidy.

#### Mental Cases (Certification).

In a reply on July 29th to Mr. R. Richardson, Mr. Chamberlain dealt with the case of a woman patient who had been committed during June on a doctor's certificate to Gloucester County Asylum. Mr. Richardson asserted that this case had been instanced in a communication recently made by a bench of magistrates to the Board of Control, which communication alleged a lack of proper scrutiny by the Board of the grounds upon which persons were committed to asylums. Mr. Chamberlain said that the patient had been committed on an order made by a justice of the peace. Copies of the reception documents were received by the Board of Control on June 14th, with an intimation that the patient had been discharged on June 11th, the medical superintendent being of opinion that she was not then of unsound mind. There was no question of any lack of proper scrutiny by the Board, because the patient was discharged three days before the documents reached the Board. In the opinion of the Board the facts observed by the certifying doctor at the time of his examination afforded ample ground for the conclusion that the patient was at the time of unsound mind and in need of care and control. It was erroneous to assume, because symptoms of insanity were not found on admission, that therefore those symptoms were not present at the time of certification and that the patient was improperly certified.

Mr. Richardson asked whether, as the Board itself admitted in its report for 1923 that twenty-two cases committed in the previous year were found to be sane on admission, the Minister would give directions that certification in all these cases should be declared invalid and their names erased from the roll of lunatics. Mr. Chamberlain replied that it was impossible to invalidate the certification of these persons. They were sent to mental hospitals under proper legal authority and on discharge their names were removed from the list of certified patients. Some amendment of the law might be desirable to facilitate the provisional observation and treatment, without full certification, of doubtful or transitory cases of mental disturbance, and this would be considered in connexion with the recommendations of the Royal Commission, whose report had just been issued.

Dr. Fremantle asked whether there was any chance of this legislation being introduced next session. Mr. Chamberlain said he was not in a position to make a statement.

On August 3rd Mr. R. Richardson asked the Minister of Health if his attention had been drawn to the recent decision in the Court of Appeal, in the case of *Harnett v. Fisher*, from which it resulted that if any sane person was wrongfully shut up in an asylum for six years he was debarred from redress; and if he would at an early date initiate legislation to remove this. Sir Kingsley Wood, who replied, said that the Minister of Health was advised that the deduction Mr. Richardson had drawn from the decision of the court in this case was too wide. As to legislation, all that could be added to what the Minister had already stated to the House was that the recent report of the Royal Commission on Lunacy and Mental Disorders was under consideration.

#### Midwives and Maternity Homes Bill.

In the House of Commons, on August 2nd, the Lords amendments to the Midwives and Maternity Homes Bill were, on the motion of Sir Kingsley Wood, agreed to, without discussion. The chief amendment empowers a local supervising authority to grant exemption from the operation of Part II of this Act in respect of (a) any hospital or other premises for the conduct of which a duly qualified medical practitioner resident therein is responsible; or (b) any hospital or institution not carried on for profit and not used mainly as a maternity home.

#### Rural Housing Bill.

The Minister of Health moved the second reading of the Housing (Rural Workers) Bill in the House of Commons on August 3rd. He explained that it was designed to improve the accommodation for agricultural labourers and other country workers. The bill enabled local authorities to submit for the approval of the Minister schemes for the improvement of houses in the country. The schemes would specify the class of houses to which improvements were to be applicable; the alterations were to be structural assistance, by way of loan or grant, or

both, was only to be given to houses whose value, after they had been altered, did not exceed £400. Slums were excluded from this clause. There was also a time limit, which required that applications for assistance must be put in within five years.

Mr. Greenwood moved the rejection of the bill on behalf of the Labour party. It was, he said, virtually a landlord's relief bill.

Dr. Fremantle, in supporting the bill, said that it would be better to sweep away bad houses and build new ones; but this had been tried for the past seven years, with the result that only a few thousand houses had been built. He suggested to the Minister of Health that more attention should be directed to urging the local authorities to make use of the existing power to enforce the better conditioning of rural houses.

The amendment was defeated by 213 to 71, and the bill read a second time.

**"Loud Speakers" in Public Places.**—The Home Secretary, answering a question on July 29th, said that where the local authority thought a by-law necessary to prevent annoyance to residents or passengers by the use of "loud speakers" in or adjoining streets or public places, he considered they should be allowed to put the by-law into force. In a further reply, on August 2nd, the Home Secretary said he could not intervene against nuisances caused by loud speakers in gardens or open spaces. It was for the local authority to consider if a substantial nuisance existed which could be dealt with by by-law.

**Silicosis in Mines.**—Colonel Lane-Fox, on July 29th, informed Mr. Paling that it was not necessary to report cases of silicosis among mine-workers. The number of cases was known to be small, and, so far as coal mines were concerned, almost negligible. In reply to an inquiry on August 3rd as to whether any cases of silicosis had been reported which were alleged to have been caused through operating the stone-dusting regulations applying to coal mines, Colonel Lane-Fox said that the allegation had occasionally been made, but that in every case in which it had been made the disease had proved on investigation not to be silicosis.

**Cancer Research.**—In a statement, on July 29th, Mr. Chamberlain said that the expenditure from public funds directly assignable to cancer research during the three years ending March 31st, 1926, amounted to, approximately, £20,000, in addition to the use of a stock of radium worth £50,000, the property of the Government. This figure did not include any portion of the salaries of permanent officers of the Ministry of Health engaged in this work, nor take account of the cost, not readily estimated separately, of the work upon cancer undertaken by the scientific staff of the Medical Research Council at the National Institute for Medical Research. The Council's expenditure upon research in the more primary parts of the medical sciences, which was as necessary for the solution of the cancer problem as the direct study of the disease itself, had also materially advanced the knowledge of the subject.

**Tuberculosis Dispensaries.**—On July 30th Mr. Chamberlain said that tuberculosis dispensaries were provided by the local authorities, and it was for them to take such steps as they thought desirable for informing the public of the facilities available at the dispensaries. When next an occasion arose to circulate the local authorities responsible for the carrying out of tuberculosis schemes, he would consider the question of bringing to their notice the expediency of the periodical issue of information as to the location of the dispensaries and the facilities they offered.

**University of London Bill.**—The scheme for moving the headquarters of the University of London to Bloomsbury and for concentrating King's College and other colleges in that neighbourhood has been abandoned. Alternative suggestions for providing accommodation for the central offices of the University were under consideration, but no final decision has been reached. The University of London Bill has reached the Commons, but was not proceeded with before the recess.

#### Notes in Brief.

The terms of reference to the Committee appointed to consider pay and other matters affecting recruitment of officers and nurses to the medical branches of the fighting services do not include consideration of the sick-berth ratings of the navy.

The Prime Minister believes that protective measures are keeping abreast of current developments in gas warfare.

The Home Secretary is instructing the police to take active steps to enforce the law with regard to the use of effective silencers on motor-cycles, and is issuing a warning to motorists to see that their machines are effectively silenced.

Mr. Amery is communicating with the High Commissioner for Palestine regarding a proposal that a medical officer should be appointed whose principal duty would be to attend on officers of the Government and their families. In view of the small number of British officers and their families in Palestine it was not possible to appoint an officer whose sole duty would be to deal with such cases.

Bacteriological investigations into a recent epidemic of unknown nature in Poplar have yielded no positive result up to July 29th.

The Mental Deficiency Bill, received from the Lords, was read a first time in the Commons on July 29th.

The Factories (No. 2) Bill, the object of which is to consolidate, with amendments, the enactments relating to factories, was read the first time on August 2nd.

In the House of Lords, on August 2nd, the Adoption of Children Bill was read the third time and passed.

On August 3rd the Venereal Disease Act Amendment Bill was read a second time.



## Obituary.

JOHN C. McVAIL, M.D., LL.D., F.R.F.P.S.G.,  
Late Member of the Scottish Board of Health and Deputy  
Chairman, Scottish National Health Insurance  
Commission.

It is with deep regret that we have to record the death of Dr. John C. McVail, whose influence on the development of public health during the last five-and-thirty years has been very great. When in 1922 he retired from the appointments of deputy chairman of the Scottish National Health Insurance Commission and member of the Scottish Board of Health, he settled in the outskirts of London (Golders Green) and lived there until towards the end of last year, when he went to winter at Torquay. His health, which had not been good for some years, gradually deteriorated, and he died there on July 29th.

John Christie McVail was born at Kilmarnock on October 22nd, 1849. He is brother. David

for the British Medical Association a pamphlet entitled *Facts about Small-pox and Vaccination*. A second edition was published in 1905, and he revised it again in 1924. The evidence he gave before the Royal Commission on Vaccination, 1889-90, displayed in a remarkable manner his comprehensive knowledge of all matters relating to small-pox and vaccination, and from that time onwards he was generally recognized as one of the ablest exponents of the subject.

In 1885 McVail took the D.P.H. of Cambridge. It was no easy thing for a busy man to prepare for such an examination, and during

In 1885 McVail took the D.P.H. of Cambridge University. It was no easy thing for a busy man with so many other claims on his time and attention to find the leisure to prepare for such an examination, but he adopted the expedient of refraining from reading the daily papers during the preparatory period and of employing the time generally thus spent in serious study. Whenever he had a few moments to spare, some book or pamphlet on health was at hand.

Book or pamphlet on public health was always in his hand. The new health era was then beginning to dawn in Scotland, and McVail was one of the first to grasp its significance and to realize what might be accomplished by improved environmental conditions and the application of preventive measures to bettering the health of the people and diminishing the incidence of disease. His early aspirations in this direction were fostered and encouraged by his warm personal friendship with the late Sir George Buchanan, Sir William Power, and other medical officers of the English Local Government Board. McVail's appointment as medical officer of health for Kilmarnock in 1886 gave him his first real opportunity of practising the principles of preventive medicine. He soon came to be recognized as one of the leading authorities on all matters relating to sanitation and public health, and in 1887 he was elected President of the Sanitary Association of Scotland.

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Photograph by

JOHN C. McVAIL, M.D.

W. Crook, Edinburgh.

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During his early days in Kilmarnock, and Dr. McVail was struck by the fact that this book gave the causes of every death in the burgh of the records, and Dr. McVail was struck by the fact that great prevalence of small-pox among children in the early part of the eighteenth century. This suggested to him an investigation into the subject of small-pox and vaccination, the result of which was a book entitled *Vaccination indicated*, of which the first edition was published in 1887. The wide knowledge that he acquired of vaccination on every point of view led to his being one of the principal witnesses called by the Royal Commission on small-pox, and at a later period, when he gave the Milroy lectures before the Royal College of Physicians of London in 1919, he selected as his subject *Half a Century of Small-pox and Vaccination*, afterwards published in a book with that title. These lectures contain a masterly summary of what is known in regard to vaccination. In 1902 he wrote

a later period, when he gave one of the lectures to his subject *Half a Century of Small-pox and Vaccination*, afterwards published in a book with that title. These lectures contain a masterly summary of what is known in regard to vaccination. In 1902 he wrote



far beyond the immediate sphere of his administration. His special report, dated 1909, to the Scottish Local Government Board on the housing of miners in the counties for which he was medical officer of health was an excellent piece of work.

One of the difficulties associated with the system of county public health administration in Scotland has been the frequent attempts made by burghs to extend their boundaries, which, if successful, entailed loss, and sometimes considerable loss, of rateable areas to the district committee of the county concerned. McVail was engaged as an expert witness in many such controversies, both in the counties for which he acted as medical officer of health and in other parts of Scotland. His intimate knowledge of the whole subject, combined with his grasp of detail of any particular case and the clear and concise manner in which his evidence was invariably given, always carried great weight with the tribunal before which such cases were heard. McVail was a keen epidemiologist, and all outbreaks of infectious diseases in the areas under his control were promptly and thoroughly investigated. His account of an outbreak of small-pox which occurred in 1892-93 among the navvies engaged in the construction of the West Highland Railway illustrated the experiences and problems—difficult but stimulating—which that disease may bring to the health administration of a rural area which was, at that time, unprovided with the preventive equipment of a town.

In 1905 McVail was invited by Cooper Medical College, San Francisco, to deliver the Lane Lectures on preventive medicine. He went to San Francisco in 1906, shortly after the earthquake had devastated the town. This admirable series of lectures was subsequently published in a book, with the title of *The Prevention of Infectious Diseases*.

In 1907 McVail was appointed by the Royal Commission on the Poor Laws and Relief of Distress to report on the methods and results of the present system of administering indoor and outdoor Poor Law medical relief. For this purpose he made a very careful study on the spot of certain unions in England and Wales selected as typical. This report was an excellent piece of work. He described Poor Law medical relief, both urban and rural, as "a cripple supported on two crutches—the general hospitals on one side, and gratuitous medical work on the other." He dwelt on the paramount importance of preventing disease, and suggested that in any scheme of reorganization of the Poor Law medical service the medical functions of the guardians should be transferred to the health authorities, though in this connexion he strongly emphasized his opinion that the rural district councils would be unsuitable bodies for the purpose, and indirectly referred to the need of reformation or reorganization of the sanitary government of rural England.

When the National Health Insurance Act came into operation McVail was appointed, in 1912, deputy chairman of the National Health Insurance Commission for Scotland. It was with sincere regret that he severed his official connexion with the counties of Stirling and Dumbarton, in which he had spent such happy and fruitful years of strenuous activity; but his experience and abilities were required to assist in the inauguration and administration of the new system in Scotland, and he unhesitatingly responded to the call. His work at the Insurance Commission, and afterwards as member of the Scottish Board of Health, is well known.

For many years McVail was an active and influential member of the British Medical Association. In the year 1904 he became chairman of the Glasgow North-Western Division, and in the following year was appointed president of the Glasgow and West of Scotland Branch. For a number of years he acted as a member of Council of the Association. He was secretary of the Section of Public Medicine in 1888, vice-president in 1898, and president in 1903 of the Section of State Medicine, and president of the Section of Medical Sociology in 1912. He was a member of the Constitution Committee which drafted a new constitution for the British Medical Association in 1900-01. The Association had been founded at Worcester in 1832

under the name of the Provincial Medical Association, and by 1856, as it had enlarged very considerably, it changed its name into the British Medical Association. The Association's membership had by this time increased from the original 50 to 2,094, and by 1884 it numbered nearly 12,000 members. In 1899 the organization of the Association, especially as regarded representation of general practitioners in its government, had caused a great deal of discussion. A schism was threatened by the formation of a medical guild at Manchester, in which thirty-five medical societies and six Branches of the British Medical Association were represented. A conference was held, at which it was decided that the objects aimed at could best be attained by reorganization of the British Medical Association. The result was the appointment of a committee to revise the constitution of the Association; McVail was a member of this committee, and took an active part in its work. Later on he wrote a historical sketch of the steps by which the present constitution had been achieved, which was published in the *BRITISH MEDICAL JOURNAL* in June, 1924, and later in a pamphlet. McVail received the Stewart Prize of the British Medical Association at the Annual Meeting in Glasgow in 1922. A testimonial presented along with the prize by Sir William Macewen, then President of the Association, said that it had been awarded to McVail in recognition of the important work he had done during a long life devoted to public health. After recapitulating the steps through which he had passed in public health work, Sir William Macewen declared that his painstaking investigations, his lucid reports, and his wisdom in council displayed during the period of his appointments had placed Dr. McVail in the front rank of public health officers.

Charles Lamb once remarked that his most important works were to be found on the shelves of the India Office, and so Dr. McVail's most important labours are on record in the many reports he issued while a medical officer of health, and afterwards as the deputy-chairman in the Scottish Board of Health. Yet he found time for many published articles, chiefly connected with his own subject of preventive medicine. In addition to the works already referred to may be mentioned his "Report on Medical Relief to the Royal Commission on the Poor Law" (to be found in Vol. 14 issued in 1909), and his article on preventive medicine in Allbutt and Rolleston's *System of Medicine* (1906).

From the time when he first took up public health work and began to write about vaccination he was a frequent contributor to the editorial columns of the *BRITISH MEDICAL JOURNAL*; when he was appointed a member of the Insurance Commission and of the Board of Health in Scotland, he became too immersed in the duties of these offices to continue, but he was still ready to advise on general principles. When he retired and came to live in London he declared that for the rest of his life, which he did not expect to be long, he would do nothing; but, without any very great difficulty, he was inveigled into breaking his resolution on occasions, which, happily, became more and more frequent.

During his long professional life McVail contributed a large number of articles to the medical journals and gave many interesting addresses on different aspects of public health work. His language, whether written or spoken, was always clear, forceful, and to the point, and he did much to educate the public as well as the medical profession in the advantages to be derived from the practice of preventive medicine. To some of his writings reference has already been made; it would be wearisome to attempt to enumerate them all, for he was always ready to step into the breach when he thought his experience would be of service to the public or to the profession; we may, however, recall—for the fact that he gave it is not generally known—the address on small-pox and vaccination which, at the request of the Ministry of Health, he delivered in 1923 to members of Parliament in one of the committee rooms of the House of Commons. He divided his subject matter under four headings—namely, (1) small-pox is worth preventing; (2) small-pox can be prevented by vaccination; (3) small-pox cannot be prevented without vaccination; (4) properly conducted vaccination is very safe. It was a clear and concise

exposition of the subject, and it is difficult to believe that anyone who considered it dispassionately could fail to be convinced of the value of vaccination.

Among the many distinctions bestowed upon McVail may be mentioned the LL.D. degree conferred upon him by Glasgow University in 1908; his appointment in 1912 to be Crown member for Scotland on the General Medical Council, a position in which he succeeded his brother, Sir D. C. McVail, a distinguished Glasgow physician. He was a Fellow of the Royal Society of Edinburgh, and had been president of the Society of Medical Officers of Health of Great Britain and of the Incorporated Sanitary Association of Scotland. In 1906 he was presented with the Jenner Medal of the Royal Society of Medicine, and at the time of his death he was president of its Epidemiological Section. It has been a matter of some general surprise and regret that McVail did not receive any recognition from the dispensers of titular honours of his services to the public.

Like most men of outstanding ability, McVail was of a modest and retiring disposition. His genial manner and kindly disposition endeared him to all, while his anecdotes, failing source of delight to his friends. He was an earnest seeker after truth in the many problems which he was called upon to investigate during his busy life. In all that he did it was only the best that satisfied him, and no sooner was one piece of work accomplished than with undiminished energy and enthusiasm he commenced another. He had always great sympathy with the younger members of the profession who wished to adopt the preventive side of medicine as a career, and many men now holding important positions in the public health service owe him a debt of gratitude they can never repay. To the very end he retained the keenest interest in preventive medicine and all that pertained to it, and the calm philosophy with which he faced his last illness was a fitting termination to a life ungrudgingly spent in the service of his country. He was one of Scotland's great men.

#### Personal Tributes.

Sir GEORGE NEWMAN, K.C.B., M.D., Chief Medical Officer of the Ministry of Health and Board of Education, has been good enough to send us the following appreciation:

Scotland has lost a very good man indeed by the death of Dr. John McVail, and it is a loss which will be quite as much felt in England. For McVail belonged to us all. Not one who knew his long struggle against disease but who other than thankful that it is over. "We must all go out," he said the other day to a friend, "but this is a poor patience and endurance and splendid courage, McVail made it a great and rich way. He was, in fact, a very brave man, and has left a worthy heritage behind, an inheritance for others of work well done and of a spirit which knows not defeat.

I always looked upon McVail as a typical Scotsman. He was strong physically, hard-headed in the sense of wanting facts and abiding by them, thorough-going and downright, with immense stores of energy and persistence. He had also the inquiring mind, which looked forward even though it built on the past. I must speak with due respect for his disposition to inquire and question and probe must have been innate, and probably made him a good student in his Glasgow days. When I joined the Epidemiological Society in 1896 McVail had been a member for seven years, and my first recollection of him was in connexion with that society. He was then county medical officer for Stirling-shire and Dumbartonshire, having previously been in practice for eight years in his beloved Kilmarnock. It was in the cemetery there he now rests.

Somewhere about 1906-07 McVail became an investigator under the Poor Law Commission, and explored the social relations of medicine. He was exceptionally good at this, and brought to it all his experience and his knowledge of domestic life and habit acquired in Kilmarnock.

Undoubtedly it was partly this work which led to his appointment some five years later as an Insurance Commissioner for Scotland and as Crown nominee on the General Medical Council. It was the last lap, but it lasted ten years. They were very happy, busy years during which he was at maturity and rendering invaluable service to the nation. It seems a good order of events, first general practice, then a county medical officer, then a civil servant in a wide and ever-extending sphere. One of the services for which McVail is best known is his work on vaccination. *Vaccination Vindicated* had a wide circulation, and its author inevitably appeared in defence on many occasions. The small-pox records at Kilmarnock were called in witness, and he became a formidable controversialist. He was ever a fighter and smelt the fray from afar. The last address I heard from him on the subject was in a committee room of the House of Commons—a cogent, cautious, and fair statement, addressed, by request, to a large company of members. I always thought he excelled in positive presentation rather than in debate, when he was liable to be enticed by the enemy, or the mischievous, into long-winded argumentations which appeared to have no goal. He was, however, a good talker, and his persuasiveness and logic, and the intonation and pronunciation of his words were, to me, attractive and characteristic. I am afraid I have sometimes found myself, inadvertently, among the mischievous, but it was all very enjoyable, and to be fixed and punnished by him most enjoyable of all, because he was obviously so loving it himself. He was full of humour, a very human, homely, and affectionate person, a true and faithful friend, a hater of humbug, wise in counsel, devoted to duty, and very courageous. He would have signed the Solemn League and Covenant, and gone to the stake, for his conscience and his king. Yet he was a great civil servant, and his life was a unity.

We are indebted to Sir NORMAN WALKER, his colleague in much of the later work he did in Scotland, for the following tribute:

I had known Dr. McVail for many years, but it was after 1911 that I was brought into close contact with him and learned to appreciate his sterling worth. We worked together on the Highlands and Islands Medical Service Board, on the Emergency and Islands Medical Council, and the Scottish Board of Health. He was a very true friend to the medical profession, and gave a great deal of thought to what were its real interests. He somehow inspired confidence, and the comparatively smooth working of the Insurance Act in Scotland was largely due to the confidence which Islands doctors felt in McVail. On the Highlands and Islands Board he spared no pains to ensure that the best possible service should be given to the people under the best attainable conditions for the doctors, and held a very wise balance between the extreme bureaucratic and the extreme professional side. The improvement in the medical service in the Highlands and Islands was a great gratification to him. During the war he took a very large share in the working of the Emergency Committee, and it seems to me only right, now that he has gone, to give him the deserved credit of being one of the instigators of the prominent part the organized medical profession took of service, and argued that, if the medical profession did not do these things themselves, they would be imposed on them from above, and some of us know how very near the truth he came in that! In the proceedings of the General Medical Council, on which he was Crown nominee for Scotland during ten years, he very wisely at first gave time to acquaint himself with the procedure of that body. His direct interest in public health, and his conviction that the general practitioner should take a larger and larger share in preventive medicine, persuaded him that it was not regulations, but education of the medical students, which was the real solution. There were many members concerned in the proposals which resulted in the recent reform of the curriculum, but the man who started them was John McVail.

To Dr. G. MATHESON CULLEN, medical officer of the Scottish Board of Health, we owe the following notes, which show deep understanding of McVail's character and aims:

To those who had the privilege of friendship with John Christie McVail the news of his passing will bring a pang of deep regret. His years had stretched beyond the Psalmist's span, and they had been fulfilled of good work done in various fields, so that there is no grief at unaccomplished purpose. Rather is it the inevitable sadness associated with the vacant chair, the hearty handshake that will grip no more, the merry eye for ever closed. For his was a personality that made pleasing and permanent impressions.

My own knowledge of McVail only began when he entered on the last phase of his official career. He had then reached an age when most men sigh for the easy life, the rest after toil; but to him the attraction of his new duties appeared to lie in the fresh opportunities for work which they offered. And he worked indeed. There can be little doubt that the success which crowned the administrative board of which he was a member was largely due to him; to his abounding energy, tireless work, unflinching tact, breezy good humour, crassaque Minerva. There was nothing of the sexagenarian about him but the years. His vitality was immense, his good humour infectious, his fund of stories inexhaustible.

To every problem McVail brought a fresh and keen interest, with a calm and critical evaluation of all the facts. It was so even when the problem was that of his own life—or death. A dread disease laid an icy hand upon him, but his cheery smile gave no suggestion of the least anxiety; his pain elicited no murmur of complaint. Within an hour of leaving him at a meeting, where he was discussing matters with his usual animation, he telephoned me to say that he would be absent from the office for some time. Thinking that he was holiday bound, I expressed the hope that he would enjoy the rest and change. Then for the first time I learned that he was entering a nursing home that evening for a serious operation. "As I may never come out," he explained, "I did not care to leave without, at least, bidding you good-bye."

The six years that have elapsed since then have been faced with the same spirit. He survived the operation with a struggle; his fine physique triumphed. And when he took up his duties again it was with "scarce abatement of his cheerfulness, or pretermission of the daily craft." No word of his betrayed the fact that his doom was sealed, that in all probability a short month or two would see the end. Only a very few trusted friends knew of the disabling, cruel chain, that fettered his body from that time onwards. And his optimism had its reward. The progress of the fell disease was unaccountably stayed. He finished his term of office, and then retired to London. Even then he did not retire from work, for the time of his residence in the metropolis was filled with interesting and useful occupation.

Such strength of purpose is not seldom associated with a certain sternness of character that does not breed friendship, but it was not so with McVail. It is true that his early training as a school teacher made him somewhat dogmatic in manner; he had no words of glozing courtesy for incompetence; his was not the nature to suffer fools gladly. But no one knew better how to rob directness of its sting; no one could be more spontaneous and generous in his praise of good work. Altogether the elements were so mixed in him that the result was a man whom his opponents could esteem and admire; the type of man that makes many friends and binds them to him with enduring ties. To them, the pain of this rough tearing of the bonds the soothing hand of Time will dull; the ragged wound will heal; but the resulting scar will bear mute testimony of the wrench till for them, too, the inevitable hour shall come.

The death occurred, at the age of 74, at his residence in Musselburgh, near Edinburgh, on July 18th, of Dr. A. D. R. THOMSON. He was the son of the late Dr. L. R. Thomson of Dalkeith. He was educated at a private

school in Musselburgh and afterwards studied medicine in Edinburgh; he obtained the licences of the two Royal Colleges in 1876. In 1882 he became a Member of the Royal College of Physicians and was elected a Fellow in 1890. At the time of his death he had been for over forty years medical officer of Loretto School at Musselburgh; he was also medical officer of Inveresk Parish and certifying surgeon for the district under the Factories and Workshops Act. He became a member of Musselburgh Town Council with the avowed purpose of securing the erection of a modern fever hospital in the burgh; he had to continue his efforts for several years, but was ultimately successful in persuading the Town Council to go forward with the project; he retired from public service when the scheme was completed. Dr. Thomson was a keen golfer and a cricketer also; he was captain of Dalkeith Cricket Club and played also for the West Scotland Club. Latterly his chief recreation was shooting but he continued to ride to hounds till advanced in years. He was an angler also, and was noted as a billiard player. In the old days, before the advent of the motor car, Dr. Thomson was an impressive figure as he went his daily rounds in a high dogcart with a high-stepping horse. His wife, who predeceased him by some years, was also of a medical family, having been a daughter of the late Dr. A. M. Sanderson of Edinburgh. The loss of Dr. Thomson, who is survived by a son and daughter, will be mourned over a wide area and by patients of all degrees in the Lothians; his memory will be cherished by many as that of a good doctor, a valued citizen, and a constant and cherished friend.

Dr. DANIEL MACPHERSON TAYLOR, who died at his residence at the Halifax Sanatorium on July 10th, was born in 1868, and received his medical education in Glasgow where he graduated M.B., C.M., with high commendation in 1891, and proceeded M.D. in 1904; he obtained the D.P.H. in 1906. After a period of general practice in London and York he was appointed school medical officer to Halifax in 1910, and interested himself particularly in the work of the Bermerside Open-Air School and Home. In 1913 he became tuberculosis officer, assistant medical officer of health to the county borough of Halifax, and resident medical superintendent of the corporation's sanatorium at Shelf, appointments which he retained up to the time of his death. During the war he held a commission in the R.A.M.C., and served in Mesopotamia where there is no doubt that his health was seriously impaired by this and by the loss of a son in the war. He devoted himself particularly to tuberculous ex-service men, and won a wide popularity as a diagnostician and an agreeable colleague. He leaves a widow, two daughters in the nursing profession, and a son who is still at school.

Dr. REGINALD ERNEST HORSLEY, who died on July 22nd at the age of 62, was a native of Sydney, New South Wales, and was educated at Sydney Grammar School, Trinity College, Melbourne, and the Universities of Edinburgh, Dublin, and Berlin. He graduated M.B., C.M., Ed. in 1885, obtained the diploma F.R.C.S. Ed. in 1890, and proceeded M.D. in 1893. After serving as secretary to the scientific staff of the Challenger Expedition Commission he held the posts of assistant in the ear, nose and throat wards of Edinburgh Royal Infirmary, surgeon to the Edinburgh Ear and Throat Dispensary, aurist to the Edinburgh Institution for the Education of Deaf and Dumb, and physician and lecturer on biology at Stoneyhurst College. He was secretary of the section of otology at the International Medical Congress in Berlin in 1890. Dr. Horsley was also a justice of the peace and Provost of the Royal Burgh of Crail, Fife, a position which carried with it the ancient title of "Admiral of the Forth." He retired from the active practice of medicine more than twenty years ago, and had since been engaged in literary work; his publications included *The Romance of New Zealand* (in the Romance of Empire Series), *In the Grip of the Hawk*, *The Blue Balloon*, *The Red Hussar*, and other novels.

Members of the Association who have had occasion frequently to visit the Central Offices will learn with regret that the senior porter, Mr. SAMUEL COX, died suddenly on July 28th, from pulmonary haemorrhage, at the age of 54. His early life was spent in the 11th Hussars, with which he went through the Chitral campaign. During the South African war he was General French's personal dispatch rider. He entered the service of the British Medical Association in 1902, and was called up at the beginning of the great war, throughout which he served in the Army Service Corps as saddlery sergeant. While with the British Medical Association he discharged numerous functions, always with courtesy and diligence. Almost his last duty, performed during the recent Annual Meeting, was to carry the Nottingham flag before the President in the procession to St. Mary's Church. Mr. W. G. Spencer, the Honorary Librarian, desires us to add his appreciation of Cox's services as library porter, and particularly during the change from the Strand to Tavistock Square. "He was," Mr. Spencer says, "one of the most obliging and all-round efficient men I have ever met."

## Medical News.

At the Post-Graduate Hostel, Imperial Hotel, Russell Square, London, a discussion on the silhouette radiogram in the interpretation of clinical signs will be opened on Thursday, August 12th, at 9 p.m., by Mr. A. P. Bertwistle, F.R.C.S. Ed. Ladies and friends of medical men are invited to attend. Two discussions were held last week. Dr. Flusterer of Vienna, on his way from Nottingham, where he had taken part in the discussion in the Section of Surgery on gastro-enterostomy, spoke on operations on the stomach; Sir William Wheeler, who was in the chair, emphasized the diagnostic importance of a course of arsene in deciding whether the case was one of anaemia or carcinoma. The second discussion was opened by Sir George Lenthal Cheatle, who dealt with the difference between hyperplasia and inflammation, which he regarded as two distinct entities. He illustrated his remarks by lantern slides.

The late Sir Henry Morris, Bt., F.R.C.S., has left estate of the value of £44,768, with net personality £44,692. He directed his executors to offer the portraits of himself by W. W. Ouless, R.A., to the National Portrait Gallery, and, if not selected by them, to the Royal College of Surgeons and the Royal Society of Medicine.

In aid of King Edward's Hospital Fund for London visits to the Tower of London are being arranged for August 11th, 18th, 25th, and September 1st. Mr. Walter Bell, F.S.A., will give addresses and conduct parties round the building, and an opportunity will be afforded to visit Queen Elizabeth's Walk and the Bell Tower. Parties will assemble at the entrance gates at 2.30 p.m. (nearest Underground station, Mark Lane). Early application for tickets (price 7s. 6d.) should be made to the Secretary of the Fund, 7, Walbrook, E.C.4.

THE Fellowship of Medicine announces that the special course in diseases of children at the Queen's Hospital from August 16th to 28th will include demonstrations, lectures, and operations in the various departments of the hospital. From August 23rd to Sept. 4th the Queen Mary's Hospital, Stratford, will provide an all-day course of instruction in all departments. Regular weekly courses in obstetrics are now offered at the City of London Maternity Hospital; practical courses in anaesthetics can be arranged on application to the Fellowship. The September special courses include: diseases of infants, electrotherapy, ophthalmology, orthopaedics, psychological medicine, and an intensive course in medicine, surgery, and the specialties. Copies of all syllabuses, the general course programme, and the Fellowship journal may be obtained from the secretary of the Fellowship, 1, Wimpole Street, W.1.

A POST-GRADUATE course in non-pulmonary tuberculosis will be held at Heatherwood Hospital, Ascot, Berks, from September 23rd to 25th inclusive. The programme includes discussions on light treatment, diseases of the spine and hip, and the after-care of surgical tuberculosis. It is stated that the course has been approved by the Minister of Health as ranking for a grant. The fee is one and a half guineas, and further information may be obtained from the honorary secretary, Joint Tuberculosis Council, Post-Graduate Courses, 19, Brunswick Square, Cambridge, S.E.5.

THE eighth Karlsbad International post-graduate course in balneology and balneotherapy will be held from September 12th to 18th. Professor George Barger of Edinburgh will

deliver a lecture on the chemistry of hormones. The course is open to all medical practitioners, for whom full opportunities for studying the local therapeutic institutions will be provided. In connexion with the course a Czechoslovakian visa will be supplied without charge and a 33 per cent. reduction allowed on the State railways. Further information may be obtained from the secretary, Dr. Edgar Ganz, Karlsbad.

A POST-GRADUATE course in dermatology and venereology will be held at the Strasbourg Faculty of Medicine from September 20th to November 6th, under the direction of Professor Pantrier, assisted by Professors Barré, Blum, Canuyl, Merklen, and others. A course on the principal laboratory methods and the general morbid anatomy of skin diseases will be held at the same time; the fee for each course is 300 francs. Further information can be obtained from Professor Pantrier, 2, Quai Saint-Nicolas, Strasbourg.

THE twenty-sixth French Congress of Urology will be held at the Paris Faculty of Medicine on October 5th under the presidency of Dr. Marion, when a discussion on the vesico-uterine reflux will be introduced by Dr. Lepoint of Lille. Further information can be obtained from Dr. O. Pasteau, 13, Avenue de Villars, Paris VIIe.

UNDER the direction of Professor Jeanselme three autumn courses will be held at the Hôpital St-Louis, Paris, the fee for each being 250 francs. During October there will be a dermatological course, and in November one in venereal diseases, while from November 29th to December 22nd the two subjects will be treated from the therapeutical standpoint. Further information may be obtained from Dr. Burnier, Hôpital St-Louis, Paris.

THE twenty-second international medical post-graduate course will be held at Vienna from September 27th to October 9th, the subject being modern therapeutics; in connexion with it there will be a course in public health. Further information may be obtained from Dr. A. Kronfeld, Porzellengasse 22, Vienna IX.

WITH the co-operation of the Union of American Biological Societies a monthly periodical, *Biological Abstracts*, will appear shortly and include epitomes of the literature of the world dealing with theoretical and applied biology, excluding clinical medicine. Individual biologists can obtain the journal for an annual subscription of nine dollars. Further information may be obtained from the editor, *Biological Abstracts*, University of Pennsylvania, Philadelphia, Pa., U.S.A.

A BOOK entitled *Les Héros sans Gloire* has been prepared by Madame A. Roué-Bronillhot, the widow of a French army medical officer who died during the war. She has collected material industriously, and the volume is dedicated to the memory of the surgeons who died for France. It will be published shortly (price 25 francs) by G. Lavauzelle et Cie, 124, Boulevard St-Germain, Paris, to whom subscriptions may be sent.

A NEW publication entitled *Archives médico-chirurgicales de l'appareil respiratoire* has been established in Paris (G. Doin et Cie); it deals with physiological, medical, and chemical researches into the pathology of respiration. The editors are Drs. Pierre Fievet and Jean Quénu.

A WELL illustrated pamphlet entitled *At the Meeting of the Ways* has been issued in support of an appeal by University College Hospital for money to provide an additional annual income of £15,000. As reported at the time, the Prince of Wales opened the new hospital extensions—namely, the obstetric hospital and the nurses' home—at the end of May, and unveiled a memorial tablet at the new Royal Ear Hospital, which has been rebuilt as part of University College Hospital. The hospital was founded ninety-three years ago, and was, we believe, the first hospital established in this country as part of a medical school and with a direct connexion with a university. The pamphlet describes the nature of the work in the various departments; copies of it may be obtained from the secretary of the appeal committee at the hospital.

THE sterilization of milk and butter by the electric current, ozone, and ultra-violet rays forms the subject of an interesting article in the *Revue générale des Sciences pures et appliquées* for May 15th, by the agricultural engineer, M. Antonin Rolet.

IN the recent massage examinations four blind students from the National Institute's massage school were successful, one of them being the holder of a Gardner scholarship. This examination is held in open competition with sighted candidates.

THE London County Council has added the name of Professor Alfred Huey, M.B., director of pathology at Charing Cross Hospital, to the panel of expert pathologists who may be called in by coroners in connexion with inquests of exceptional difficulty.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the **BRITISH MEDICAL JOURNAL** alone unless the contrary be stated. **Correspondents** who wish notice to be taken of their communications should sign their names, not their initials.

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The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

### QUERIES AND ANSWERS.

#### PAIN AFTER ARTIFICIAL MENOPAUSE.

"GLENSTRAL" writes: In reply to "D. K. M. D." (July 31st, p. 235), from the data which he gives, I should imagine his patient has suffered from viscerotaxis, and consequently some degree of pelvic floor prolapse, since puberty. I would suggest posterior colporrhaphy and ventral fixation of the uterus, as well as the wearing of a Curtis support.

#### INCOME TAX.

##### Production of Accounts.

"J. O. R." complied with the request of the local Inspector of taxes to send him copies of the accounts of his practice for the past three years; he has since received a request to state the names and addresses of the locumtenents whose remuneration is included in the expenses.

Probably the official in question desires the information, not with a view to verifying our correspondent's accounts, but to see that the locumtenents have accounted for any liability there may be on their part. The request is one which can be enforced as regards any locumtenents who may have had other employment in the same financial year. No doubt they have accounted for their own liability, and this request may, we think, be met.

### LETTERS, NOTES, ETC.

#### OPEN AIR FOR COWS.

FORESEEING the difficulties that were coming for arable farming a Berkshire farmer, Mr. A. J. Hosier, resolved to take to grazing and purchased a farm of 1,000 acres on the Wiltshire Downs, where he put into practice certain new principles he had thought out. He determined to specialize in milk production on an all-grass holding, to keep his cows out night and day (winter and summer), to give up mixed husbandry, and to that end to bring such tillage land as there was on the farm under grass. His only crop is hay, and the only additional food he purchases is cake. Every calf is sold. He buys heifers, which are brought into milk at an early age (about 2 years and 9 months), and sold in their prime as cows. The milk is good—about 720 gallons. The farmer is a most optimistic and of the good health of the cows. Perhaps the most novel feature is that instead of bringing in the cows to be milked in sheds a movable milking establishment is taken to them. It is moved about to suit the herds and to ensure equal distribution of manure and the treading of the soil that is so effective in breaking up the matted covering of old grass on the surface. By this plan, moreover, the cost of carting manure is saved. No pails are used and the cows are milked by a machine; provision for the cleaning and sterilizing of the milking apparatus, and the pipes through which the milk passes to the churns, is part of the movable establishment. The cows, enticed by their customary ration of cake, come at stated times into a sort of compound and there they take their turn in the milking stalls. They receive their allowance of cake while the milking machine is drawing the milk from them. They are given 4 lb. of concentrates to a gallon of milk, and in winter at the rate of 14 lb. of hay a day. For ease of feeding the hayricks are built in the middle of the fields.

Mr. Hosier attributes the exceptional health of his cows in winter to the altitude of their pastures (up to 870 ft. above the sea), which are above the mists and fogs of the valleys. The farm is now carrying 500 cattle, including 180 cows in milk. The number of cattle could be increased by 100, and probably will be next year. In that case the number of cattle on the farm will be very likely as large as that of the sheep formerly maintained on the same area. The experiment is of great interest to agriculturists, but many of the details essential to follow are not here mentioned. The public health, for it is the last word in cow husbandry, so far as experience at present goes, is not affected.

#### CURIOSITIES OF MEDICAL HISTORY.

DR. DAN MCKENZIE is already well known as a graceful writer on non-medical as well as professional themes. His latest contribution is a paper on some curiosities of the Newcastle-on-Tyne and Northumberland last December, which will not far from paper he propounded sixteen questions on medical folk-lore, some of which he discussed in detail. It is interesting to see that in answering the question, "Why ground skull bone cures epilepsy?" Dr. McKenzie quotes Paracelsus as saying: "There is a bone in the head called the centrum. If it is drunk it cures the disease. This bone is not more than a krentzer bread; it is somewhat angular, bluish posteriorly, and is not found in the skull." This bone, according to Dr. McKenzie, is obviously a vomer. Perhaps such an interpretation comes naturally to a rhinologist, but to us it seems rather far-fetched. The avers student usually finds the vomer an elusive bone, and we can think that it was likely to be chosen as a charm in the days of Paracelsus. Certainly it could not be used as an antiseptic modicum. Would not the description apply better to one of the ossa triquetra or wormian bones, whose situation lies open to operation in the living by so-called trephining or scraping? We offer this suggestion to Dr. McKenzie with due diffidence. The odor of a medical journal in the past seems to have treated him badly and exposed his own ignorance when he wrote on the margin of a rejected contribution, "Never heard of such doctrine," apropos of the doctrine of signatures. We think that we are not as other editors may have been, for we discuss the doctrine of signatures in a leading article on August 14, 1923. One more criticism is suggested by this interesting paper. In discussing what happened to the Assyrian who came down like a wolf on the fold, the meaning of the word *emerod* comes in question. The Oxford Dictionary gives *haemorrhoid* as its modern equivalent, but to make a convincing golden image of a pile, whether internal or external, would seem a task of some difficulty. Dr. McKenzie accepts the suggestion that the *emerods* were really plague bunoes, but it would not be easy to make recognizable images even of these. The origin and purpose of ritual circumcision, the powers of fasting, spittle, and the Hawaiian god of abortion, are some of the other topics treated in this paper. "Quot homines, tot sententiae" might well be expanded into "So many countries, so many beliefs." To suppose upon a person is in Europe a contemptuous insult and a breach of good manners, yet in some African tribes it is a mark of friendship and high esteem, for

"... the world is wondrous large—seven seas from mares to mares—  
And it holds a vast of various kinds of man;  
And the wildest dreams of Kew are the facts of Khatmandu,  
And the crimes of Clapham chaste in Martaban."

#### CHILD WELFARE IN THE UNITED STATES.

THE national importance of paying attention to the health of infants and children received further practical recognition in the United States in 1919, when a division of the State Board of Health was created to deal with child hygiene. In 1921, with the passing of the Federal Maternity and Infancy Act, Federal aid became available for those States—forty-four out of forty-nine—which accepted the provisions of what is known as the Sheppard-Towner Act. The issue of the *Medical Woman's Journal* (Cincinnati) for June contains the first instalment of a series of articles on the work in the various States under this Act, which encourages the study of the causes of infantile mortality and the control of the diseases of infancy and childhood. The report of the work in Missouri shows that birth registration has been considerably improved, and that demonstrations and conferences have been arranged in ninety-seven counties of this State, where an appeal is being made for a full-time health service. There has been a decline in the infantile mortality from 82 per 1,000 live births in 1919 to 69 in 1924. In Rhode Island a systematic follow-up of the infants from birth to 5 years is being organized and prenatal classes are being extensively held. The *Medical Woman's Journal*, which appears monthly, is devoted primarily to recording the work of medical women throughout the world, and the June issue includes reports on the American Hospital in Paris, and the twelfth annual convention of the Medical Women's Association, including its work in Russia, Greece, Serbia, Japan, and Mexico.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 30, 31, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33. A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 112.



## A British Medical Association Lecture ON THE MECHANISM OF INHERITANCE.

GIVEN TO THE DUNDEE BRANCH.

BY

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As the facts concerning inheritance, secured by observation, accumulated, it came to be noted that in them could be recognized an orderliness, an interrelationship. It was then inevitable that the human mind, in its inherent desire to trace and describe order in nature, should seek some mechanism that in its working could account for these facts. So the idea of an "idioplasm" (Nägeli and others), a special substance the function of which was to transmit and control the hereditary characters, details of form and of function, in the developing individual came into being. This idioplasm remained a purely theoretical conception until Wilhelm Roux (1883), out of his work on cell division, was able to point out that many of the functions of this hypothetical substance could be performed efficiently by the nuclear chromatin. Upon this suggestion Weismann (1886, 1894) modelled his theory of the germ-plasm; but inspiring as his hypothesis was, it was constructed at a time when knowledge of the essential organization of the cell was still incomplete and insufficient. Since that time, however, a considerable body of knowledge concerning the cell has emerged from investigations in cytology, microdissection, and tissue culture, and to-day there exists a very clear picture of the living cell which allows the statement to be made with a certain degree of confidence that the chromosomes, because they most nearly satisfy the demands made upon the mechanism of inheritance by the accumulated facts of experimental breeding, are to be regarded as this idioplasm. It can be shown that the only identifiable cell organs that can satisfy these demands are the chromosomes; in their behaviour is realized the precise conditions of hereditary transmission demanded by the results of countless breeding experiments. The theory relating to the functions of the chromatin in inheritance is known as the chromosome theory of heredity.

Of the characters of the living organism known to be hereditary there are two classes—those in which the mode of inheritance has been amply demonstrated, and those as to which 'sufficient' knowledge is as yet not available. Critically controlled experimentation soon demonstrated that the inheritance of characters was not haphazard, but subject to definite rules or laws. It also quickly became apparent that the most striking fact which emerged from a survey of these laws of inheritance was that they applied with equal force to all sorts of living things, that laws established from a study of one organism applied with minor, often readily interpretable, exceptions to all the rest. It can be stated that the principles established by a study of experimentally convenient animals may be applied with success to forms with which, because of various practical difficulties, there has been as yet insufficient experimentation. Man, exceptional in many ways, is essentially similar to those forms of life with which the geneticist has worked; in fact, investigation has already shown that many of his characters—morphological, physiological, psychological—are subject to the universal laws of inheritance. Knowledge of inheritance in the human is essential for accurate diagnosis and prognosis in medicine, and must become the basis for any sound and scientific effort in racial improvement. Problems of human inheritance must be studied by somewhat different methods from those employed in the case of the ordinary experimental stocks. Direct experimentation is impracticable, and the only method now available is that of collecting and analysing sufficient data gleaned from family histories. For examples that clearly illustrate the fundamental orderliness and precision in the transmission of hereditary characters it is desirable to turn to the usual experimental

materials of the geneticist. Examples of similar modes of inheritance in the case of human characters are abundant.

It is most convenient to call upon the Dipteran, *Drosophila melanogaster*, the fruit-fly, for illustrations of the different modes of inheritance of characters, for the reason that to its study we owe most of our knowledge of the hereditary mechanism.

(A) If as a parental generation ( $P_1$ ) a fly with the wild type "long" wings is mated to one with vestigial wings (this character, "vestigial wing form," appeared as a sport or mutation in a long-winged stock) the first filial generation ( $F_1$ ) are all long-winged. The character "long-winged" is dominant and in relation to it vestigial is recessive. If these  $F_1$  long-winged flies are interbred they will produce a second filial generation ( $F_2$ ) which includes two classes of flies in respect of wing form—long-winged and vestigial—and in every four on the average there will be three of the former to one of the latter.

(B) If a vestigial-winged fly with the wild-type body coloration grey is mated with a long-winged ebony-coloured fly (the ebony coloration appeared as a mutation in a grey stock) the  $F_1$  flies will all be long-winged greys (grey is dominant to ebony). They will exhibit the two dominant members of the two contrasted pairs of characters. If these  $F_1$  flies are interbred they will produce four classes of offspring in  $F_2$ —long-winged greys, long-winged ebony, vestigial greys, and vestigial ebony—and in every sixteen, on the average, these four classes will appear in the relative proportions of 9 : 3 : 3 : 1. It is to be noted that the two characters of respective parents, vestigial grey and long-winged ebony, have become dissociated and recombined.

(C) If a long-winged grey  $F_1$  male out of the mating vestigial grey and long-winged ebony is mated with a vestigial ebony female, there will be produced four classes of offspring in equal numbers—long-winged greys, long-winged ebony, vestigial greys, and vestigial ebony.

(D) If a vestigial black fly (not ebony, but another mutant character very similar on inspection) is mated with a long-winged grey, all the individuals of the  $F_1$  generation will exhibit the two dominant characters—long-winged and grey. If a male of this generation is mated to a vestigial black female (that is, one exhibiting the two recessive characters), only two classes of offspring will appear—vestigial blacks and long-winged greys—and these will be produced in equal numbers. It will be noticed that the character associations in this generation are exactly those that were exhibited by the two flies with which the experiment started.

(E) If instead of the  $F_1$  male (as in D) an  $F_1$  long-winged grey female is mated to a vestigial black male, then four classes of offspring will be produced, not two as in (D), and not in equal numbers as in (C), but in the following relative proportions: long-winged greys 41.5 per cent.; vestigial blacks 41.5; long-winged blacks 8.5; and vestigial greys 8.5. It is to be noted that this result differs from that in (D) in that there is a dissociation and recombination of characters, but only to a certain limited extent.

(F) If a white-eyed male is mated to a (wild type) red-eyed female, all the  $F_1$  males and females, alike, will be red-eyed, and if these  $F_1$  individuals are interbred the  $F_2$  will consist of three reds to one white in every four on the average (see A); but all the white-eyed individuals will be males. The recessive character of a grandfather is exhibited by none of his children, by none of his granddaughters, and by only 50 per cent. of his grandsons.

(G) If, on the other hand, a red-eyed male is mated to a white-eyed female, then all the males of  $F_1$  will exhibit the white-eye character of their mother, whereas all the  $F_1$  females will exhibit the red-eye character of their father. There will be criss-cross inheritance, sons "taking after" their mother, daughters after their father.

These are the main modes of inheritance that have to be accommodated by the hereditary mechanism. It is now to be shown how the chromosome mechanism can accommodate them. From a consideration of these facts there can emerge an appreciation of the exact demands that must be made upon the hereditary mechanism. The chromosomes in their architecture and behaviour must be examined in the light of these demands.

In medical practice the questions that are asked and have to be answered are these: If an individual with a certain characterization marries and has children, will these be normal? How is it that to perfectly normal parents a child with a peculiar characterization is born?

The geneticist is not concerned with the nature of a character, whether it is helpful or harmful; he is concerned solely with the mode of its inheritance. If accurate pedigrees are available, it is usually a simple matter to answer these questions. Most of the human characters so far investigated belong either to type (A) or (F) or (G) above. If it is established that a certain character, such as brachydactyly or diabetes insipidus, is a simple dominant, or that it is sex-linked as in (F) and (G)—for example, haemophilia or colour-blindness—reference to the interpretations given in this paper will enable the practitioner to predict and to explain.

It is to be stated that even yet there exists but little definite knowledge concerning the chemical nature of chromatin; it is known, however, that it is intimately related to the activities of the cell as a whole; that it has a definite architecture and disposition within the nucleus; that it is a semifluid colloid which undergoes gellations and liquefactions of a limited and definite order, and is continuous with the nuclear matrix and thence with the cytoplasm. It is known that during mitosis the chromatin becomes condensed and homogeneous and then displays most clearly the nature of its organization into units, the chromosomes. It is established that the number, size, form, and behaviour of the chromosomes are constant in a species and are characteristic of that species (Fig. 1). It



FIG. 1.—The chromosomes of man. (After Painter.)

is known that even when the chromatin is thus condensed in the form of chromosomes it still retains its organic contact with the non-chromatin part of the cell of which it is but a part, though an essential part. It is to be understood that the modern theory of inheritance does not require a special idioplasm concerned solely with hereditary transmission. Reproduction is a function of the cell as a whole, dependent, however, like all its other properties, upon the presence of nuclear chromatin. However, it can be stated that all the evidence there is points to the fact that in the gamete the chromatin alone possesses those attributes of constancy of proportion and behaviour which would appear to be necessary to satisfy the theoretical requirements of an idioplasm. It will be noted that among the bisexual species reproduction is effected by the combined activities of two sexually differentiated parents, each of which contributes to the new individual but a single cell. Yet these gametes, which in their union form the zygote in which the new individual has its being, constitute the only material link between the generations, the narrow bridge across which all the organic inheritance must pass. The fertilized ovum is a new individual, specific to the highest degree, embodying all the possibilities of individual development and racial perpetuation. In certain favourable cases (such as that of *Ascaris megalocephala*, Boveri) it has been possible to trace back in a continuous series to the fertilized ovum in which all the cells of the body have their origin the gametes elaborated by that particular individual. There is a definite cellular continuity through all cell generations.

There are four pairs of homologous chromosomes in the body cells and immature gametes of *Drosophila melanogaster*, the members of any one pair being identical in size and shape (with the exception about to be stated). In the ripe gamete, egg or sperm, there are four single chromosomes, and because the chromosomes of the different homologous pairs differ one from the other in their size, shape, and relative position, it can be demonstrated that in the ripe gamete there is present one member of each pair, and that in the fertilized egg the diploid (double) number

is restored, and that of each reconstructed pair one member has been brought into the zygote by the sperm, the other by the egg. In respect of its chromosomes, the new individual receives from each of its parents one member of each homologous pair.

The chromosome picture differs in the two sexes. In the tissues of the female the members of each pair of chromosomes are identical. In the case of the male tissues one member of one pair is exactly similar in form, size, and disposition to the two members of the corresponding pair in the female, but its mate is unequal, is dissimilar. Since in respect of this pair the sexes



FIG. 2.—Conventional diagram of the chromosomes of *Drosophila*. (After Morgan.)

differ, these chromosomes in the two sexes are referred to as the sex-chromosomes. The three chromosomes that are alike, two in the female and one in the male, are referred to, for descriptive purposes, as the X-chromosomes; the unequal mate of the X in the male is known as the Y-chromosome. Since of each pair of chromosomes only one can be present in the ripe gamete, then in respect of the sex-chromosomes all eggs must be alike, each containing an X, whereas there will be two sorts of sperm—the X-chromosome-bearing and the Y-chromosome-bearing. If an X-bearing egg is fertilized by an X-bearing sperm, an XX-bearing zygote will result. The male is digametic, the female monogametic in *Drosophila*, as also in man. The XX type of chromosome content is the female. If an X-bearing egg is fertilized by a Y-bearing sperm an XY type of individual will result, and this constitution is typical of the male. Here, then, is a simple and satisfactory self-perpetuating sex-determining mechanism.

The 3:1 ratio in the  $F_2$  of an experiment such as that dealt with in (A) above can be explained if the following assumptions are made. The chromosomes are the idioplasm. In them are resident the agents or factors or genes which in their action determine the future characterization of the individual, controlling the differentiation of the organs and tissues during ontogeny. There is a gene for long-winged and another gene for vestigial, but only one of these can be present at any one time in the particular chromosome that carries them. In each of the chromosomes of a particular pair in the long-winged race there is a gene corresponding to the character long-winged; in the case of the vestigial race there is instead a gene for vestigial. In respect of this same pair of chromosomes the  $F_1$  individual will have received one from each parent; each will carry the factor for long-winged in one chromosome of a pair, the factor for vestigial in the other. Why one gene in its action dominates the other we do not know; the observed fact is that in their relationship to vestigial and long-winged the latter is dominant. When these  $F_1$  individuals elaborate their gametes, into each passes either the chromosome bearing the gene for long-winged or else the chromosome bearing the gene for vestigial. If there are equal numbers of the two sorts of eggs and equal numbers of the two sorts of sperm, and if fertilization is at random, the following chromosome associations will result, and the four sorts will be equally frequent:—long-winged : long-winged; long-winged : vestigial; vestigial : long-winged; and vestigial : vestigial. Since the character long-winged is dominant to vestigial, there will be on the average in every four three long-winged flies to each vestigial in  $F_2$ .

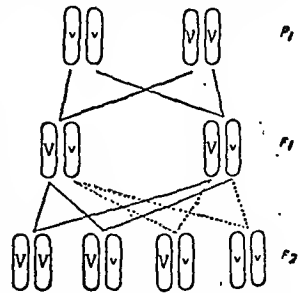


FIG. 3.—The chromosome interpretation of a monohybrid experiment.

The 9:3:3:1 ratio in (B) above can be explained if it is assumed that the genes for the body colour characters, grey and ebony, are not resident in the same chromosome pair as are those for vestigial and long-winged (E=the gene for grey; e that for ebony). Grey and ebony

in their relations to each other are exactly similar to long-winged and vestigial. Grey is dominant, and in the  $F_2$  of a grey by ebony mating there are three greys to each ebony on the average in every four.

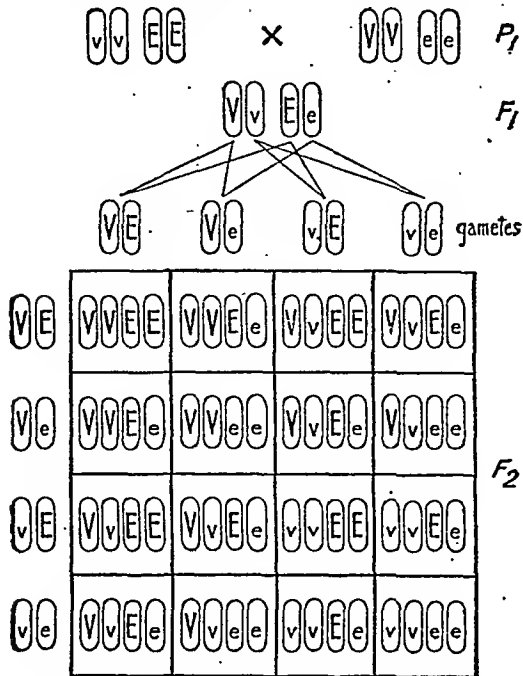


FIG. 4.—The chromosome interpretation of a dihybrid experiment.

Any zygote with the genes—  
V and E will be long-winged grey — 9  
V but not E will be long-winged ebony — 3  
E but not v will be vestigial grey — 3  
Without E and V will be vestigial ebony — 1  
The results obtained in (C) can be explained just as simply as seen in Fig. 5. The sperms of the male will be

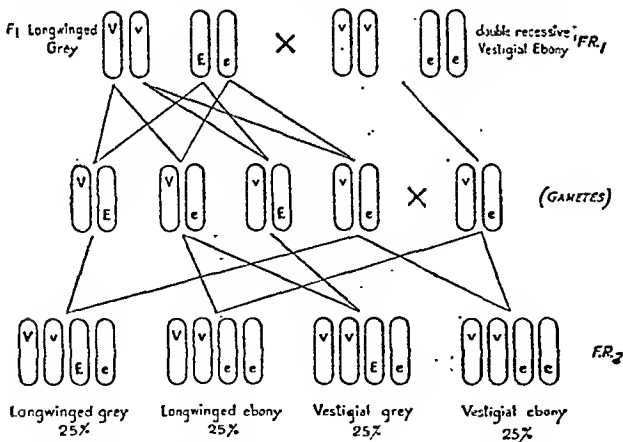


FIG. 5.—The chromosome interpretation of a back cross, showing free assortment.

of four sorts (as above) and they will be produced in equal numbers. All the gametes of the female will be alike in respect of the genes for vestigial and ebony. It follows, then, that since vestigial ebony are recessive characters, the number and proportion of the classes in the resulting generation are predetermined by the number and proportion of the different sorts of sperm elaborated by the male.

VvEe ...	Long-winged greys ...	25 per cent.
Vvee ...	Long-winged ebones... ..	25 per cent.
vvEe ...	Vestigial greys ... ..	25 per cent.
vvee ...	Vestigial ebones ... ..	25 per cent.

It will be recognized that so long as there are as many chromosomes as there are independently heritable characters there is no difficulty in accounting for the mode

of their transmission, as will be seen from the following table.

No. of chromosomes in the gamete (the haploid number)	No. of possible combinations of maternal and paternal chromosomes in the zygote.
1	4
2	16
3	64
4	256
5	1,024
6	4,096
7	16,384
8	65,536
9	262,144
10	1,048,576

In the case of the human there are twenty-four chromosomes in the gamete, so that it can be seen that infinite variety in the zygote is possible, even though only one gene were borne on one chromosome.

In *Drosophila* there are many hundreds of characters that can be paired off in the same way as vestigial and long-winged, grey body colour and ebony, yet in each gamete there are four chromosomes to bear their genes. It follows that either the chromosome hypothesis fails to satisfy the demands made upon it, or else more than one gene is resident in one and the same chromosome. If the genes for several different characters are resident in one and the same chromosome, then if that chromosome preserves its integrity during its transference from cell to cell the characters corresponding to the genes resident therein should be transmitted together and should remain linked in inheritance.

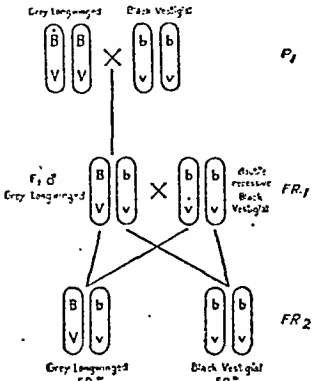


FIG. 6.—The chromosome interpretation of a back cross, showing linkage.

If the genes for black and vestigial are resident in one and the same chromosome, then the results obtained in (D) above can be interpreted.  $FR_1$  is a symbol indicating that an  $F_1$  individual is backcrossed to a recessive.  $FR_2$  represents the resulting generation.

It has been found that all the characters so far examined in *Drosophila* fall into four groups. The members of any one group give this 50 per cent. : 50 per cent. ratio when any pair of them are involved in a breeding test similar to that above; but when any one of them is associated with a member of any other group the result is a 25:25:25:25 ratio, similar to that in the vestigial-ebony experiment described above. There are four linkage groups, and four chromosomes. It is reasonable to argue that upon a particular chromosome are resident the genes of a particular group of characters. More will be said of this conception later.

In (E) it is seen that this 50:50 ratio is not obtained when an  $F_1$  female is mated with the double recessive. It will be agreed that the reason for the production of four classes of offspring instead of two must be that the  $F_1$  female elaborated four sorts of eggs instead of two, for the sperm of the double recessive male are all alike, and since the characters vestigial and black are recessive, they will not disguise the results. The classes and the proportion of these can be explained if the  $F_1$  female elaborated the following kinds of eggs in the proportions suggested.

B	V	b	v	B	v	b	v
41.5	41.5	8.5	8.5				

In order that these four sorts shall be elaborated in these proportions, it is necessary that in the maturation of 17 per cent. of the eggs there shall be an interchange of chromatin between the chromosome B-V and b-v in such a way that the part of the one chromosome carrying the gene B shall be detached from the rest carrying V; that the parts of the other chromosome shall be similarly separated; and

that these chromosomes shall then reunite in such a way that part of one unites with part of the other, as in D of Fig. 7. It will be noted that interchange leads to

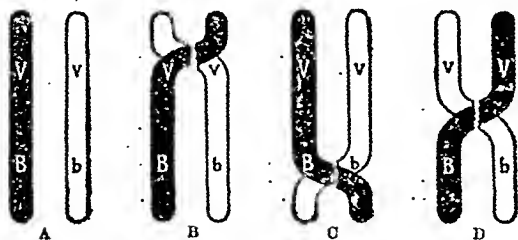


FIG. 7.—Crossing-over.

significant results only when the chromosomes concerned are dissimilar in their genetic constitution. It is in the case of the "heterozygous" female that crossing-over leads to the production of recombination classes. For reasons at present unknown crossing-over does not occur in the case of the digametic sex of *Drosophila*, though it does in other forms.

The two new combinations after the interchange has taken place show again the same linkage relations to each other as did the former associations, showing that the linkage relation is independent of the characters that form the combination. Linkage between black and vestigial is exactly similar to that between grey and vestigial, and between black and long-winged. Such an interchange of chromatin between the two members of a pair of homologous chromosomes is known as crossing-over, and the percentage of the recombination or cross-over classes is referred to as the crossing-over value (C.O.V.), whilst the linkage between two genes is expressed by the percentage of cases in which they remain together. If the linkage in a particular case is 50 per cent. and the C.O.V. 50 per cent., the result would exactly simulate the effects of free assortment giving a 25:25:25:25 per cent. ratio. As a matter of fact, this situation has not arisen in the case of *Drosophila*, being prevented by the occurrence of double crossing-over, fracture and reunion at two points in the chromosome some distance one from the other.

It will have been recognized that this theory of inheritance, like many of its predecessors, postulates the existence of a number of individual particles of substance each of which controls the development of some particular tissue or character in the developing organism. Like the gemmules of Darwin, the biophors of Weismann, the physiological units of Spencer, the pangens of de Vries, the genes of Morgan are required to be minute yet distinct units of, or areas in, the chromatin. It is, therefore, of profound interest to know that the chromosomes are indeed made up of small aggregates, the chromomeres. It has been established in favourable cases that a particular chromosome always exhibits the same series of chromomeres in any stage when they can be identified. Wenrich (1916) in the grasshopper (*Phrynotettix magnus*) has shown that any particular chromosome, to be recognized by its

distinctive shape, size, and behaviour, is built up of a definite number of chromomeres, and that these are to be individually recognized by constant differences in form and relative position. The chromosome has a definite and constant organization.

The fact that the chromomeres are arranged in the chromosome in a linear series and that each chromomere has its own particular place or locus in this series is of prime importance in the interpretation of linkage and crossing-over.

During the maturation divisions in the production of the gametes the segregation of homologous chromosomes is complicated by the fact that the members of each pair, prior to their separation, become most intimately intertwined. This apparently single but really double chromosome then splits longitudinally. This conjugation of homologous chromosomes provides the opportunity for

crossing-over. It cannot be shown to have occurred, but if during this conjugation the two chromosomes stick, fracture, and rejoin before separation, then interchange of chromatin will have occurred. It is not without significance that conjugation occurs when the chromosomes are drawn out to their greatest attenuation so that the homologous chromomeres derived from the two parents achieve the maximum degree of association in a linear series. It is seen that the equivalent chromosome contributions of the two parents and their random assortment in maturation and chance recombination in fertilization, together with the possibility of an inner reorganization of each chromosome through its most intimate association with another of identical structure but different content, provide an infinite range of new combinations of characters which can be tested out by environmental agencies. The chromosome mechanism can supply the variations upon which the forces of selection can operate. It becomes apparent also that this conjugation of chromosomes in synapsis excludes the possibility of fruitful crosses between species widely different in chromosome constitution.

If the conjugation of homologous chromosomes is accepted as evidence in support of the conception of crossing-over, and if the genes are strung like beads upon a string, each particular gene having its own particular locus upon a particular chromosome, then it follows that the percentage of crossing-over between any two loci can be regarded as an indication of the distance between them. If the members of a pair of homologous chromosomes during their conjugation are as likely to fracture and reunite at one point as at any other point along their length, it follows that the further apart any two genes lie in the chromosome, the greater is the chance of crossing-over occurring; and conversely, the nearer together the genes lie, the smaller is the chance of crossing-over occurring. If this is so, then it is possible to construct a map of the chromosomes, showing the relative positions of the different genes resident in each. If A, B, and C form a linear series, and if B lies between A and C, then the crossing-over percentage occurring between A and C should equal the sum of the C.O.V.'s between A and B, B and C. The conception of the localization of the genes in linear alignment is due to the peculiar differences between the C.O.V. between genes of the same character linkage group. The relation of three or more points to each other is a relation of linear order and cannot be represented in space in any other manner than by a series of points arranged in a line. The linear order of the chromomeres is established beyond question. Linearity is the expression of a system in which there is a fixed succession of elements. The distance between any two elements is constant, but is variable throughout the series. In the case of the more simply organized forms of life it is possible to conceive the idioplasm having the form of a congeries of chromatin units, the members of which can exist separately within the nucleus and become associated by chance. In the more complex forms, however, the precision exhibited in the inheritance of a most complicated characterization demands a very precise and more complex hereditary mechanism, such as is supplied by the chromosomes in their constitution and behaviour.

In order to learn how the chromosome map is made, let us assume, for example, that the character Dachs (short legs) appears as a mutation in a stock of *Drosophila*. Breeding experiments show that it is an hereditary character, for when mated with the wild type it gives a 3:1 ratio in  $F_2$ . We then, let us say, mate a black normal-legged individual with the new form, grey Dachs, to get an  $F_1$ . The  $F_1$  male is then back-crossed with a double recessive female, and we get a 50:50 ratio. We then know that Dachs belongs to the same linkage group as does black. The  $F_1$  female then back-crossed with a double recessive male gives black normal-legged 41.25, grey Dachs 41.25, black Dachs 8.75, grey normal-legged 8.75 per cent. The C.O.V. between Dachs and black is 17.5 per cent. We already know that the C.O.V. between black and vestigial is 17 per cent. We can, therefore, anticipate that the C.O.V. between Dachs and vestigial will be either 0.5 or 34.5 per cent., the actual figure being decided by the relative positions of the three genes. If a Dachs long-winged



FIG. 8.—Chromomeres in linear series. Conjugating chromosomes of the mar-supial *Petaurroides*. (After Agar.)

fly is mated with a normal-legged vestigial, and the  $F_1$  male mated to the double recessive female, a 50:50 ratio will be obtained. Dachs is in the same linkage group as vestigial. If the  $F_1$  female is mated with the double recessive, it is found that the C.O.V. between Dachs and vestigial is 34.5 per cent. It can now be stated that the relative positions of Dachs, black, and vestigial are in the order given, black coming between the other two almost exactly midway.

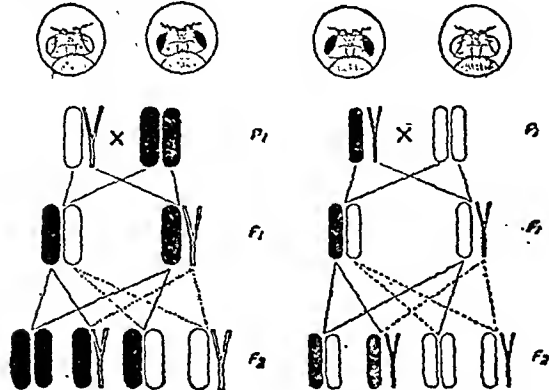


FIG. 9.—Chromosome interpretation of sex-linked inheritance. FIG. 9A.—The reciprocal cross giving "criss-cross" inheritance.

One per cent. of crossing-over is taken as the unit for expressing linkage relations. This unit can be represented in a diagrammatic map of the chromosomes as 1 cm. or any other convenient size. A line is drawn to represent the position of the gene for black. Seventeen units of distance to one side of it another mark is made for the gene for vestigial, and 17.5 units to the other side of it the mark for the gene for Dachs is made. The making of the map is begun. Some 107 genes require to be placed in this chromosome. Their characters all show linkage with black and vestigial and Dachs, and with each other, and the C.O.V. between any two of them is characteristic. Out of crossing-over work with them it is soon possible to arrange them all in their proper order. In the other linkage groups of *Drosophila* there are 70, 106, and 3 characters respectively. This map gives to the breeder those powers which are possessed by the synthetic chemist in the manipulation of his materials. It can be compared to a railway time-table which shows the sequence of the stations and the distance between them.

All that remains is to show which particular chromosome carries the genes for a certain character linkage group.

A consideration of the facts related in (F) and (G) will lead to the conclusion that the characters red and white eye are being transmitted from generation to generation by some mechanism which is also concerned in the determination of the sex of an individual, and that the simplest interpretation of the facts can be made if it is assumed that the male, in respect of the elements of the sex-determining mechanism, elaborates two sorts of sperm—one, the X-chromosome-bearing, the other the Y-chromosome-bearing. If it is assumed that in the X-chromosome are resident the genes for those characters that in their inheritance behave as does white-eye, being sex-linked, and that in the Y-chromosome there are no genes, the facts can be accommodated. In Diagram 9 the solid chromosome is the X carrying the gene for red-eye, the open one the X carrying the gene for white-eye; XX is a female, XY a male; red is dominant to white.

Other evidence exists which demonstrates that the X-chromosome is concerned in the transmission of the sex-linked characters. It has been shown that when a white-eyed female is mated with a red-eyed male, criss-cross inheritance is observed, the daughters being red-eyed like their father, the sons white-eyed like their mother; and it has been shown further that this type of inheritance can

be explained perfectly satisfactorily on the assumption that in the single X-chromosome of the father there is resident the gene for red-eye, and that in each of the X-chromosomes of the mother there is a gene for white-eye, that red is dominant to white, and that the male is digametic, the female monogametic. (Fig. 9A.) It so happened that Bridges found in his stocks exceptions to this rule, and it was not until the chromosomal constitution of the individuals concerned was examined that the exceptional cases could be explained.

During the maturation of the egg the two X-chromosomes, like the members of every other pair of homologous chromosomes, disjoin, one passing into the polar body, the other remaining in the ovum. If the X-chromosomes of a white-eyed female failed to disjoin two sorts of egg would result, one containing two X-chromosomes and the other without an X-chromosome. If the XX egg is fertilized by a Y-bearing sperm, an individual with an XXY sex-chromosome constitution would result. This has been shown to be the case, and the individual looks like and functions as a female. If this non-disjunctional XXY white-eyed female is used, instead of the ordinary XX female, exceptional results will ensue.

Bridges was able to explain all his exceptions to the rule of criss-cross inheritance by reference to the sex-chromosome constitutions of the individuals. The exceptional white-eyed daughters are white-eyed because they do not get one of their X-chromosomes from their red-eyed father; the exceptional red-eyed sons are red-eyed because they get their X-chromosome from their father, whereas normally the son gets his Y-chromosome from this source.

It can be accepted that the X-chromosome (chromosome I) bears the genes of the sex-linked group of characters. It can be shown that the small, round, centrally placed chromosome (chromosome IV) carries the genes for another group of linked characters. Individuals with but a single IVth chromosome (Haplo-IVs) and others with three instead of two (Triplo-IVs) have been identified, and these abnormalities in chromosome number are associated with definite abnormalities in general characterization. On chromosome II, one of the larger boomerang-shaped chromosomes, are placed the genes of the characters linked with black; on the other large curved chromosome, chromosome III, those linked with Star.

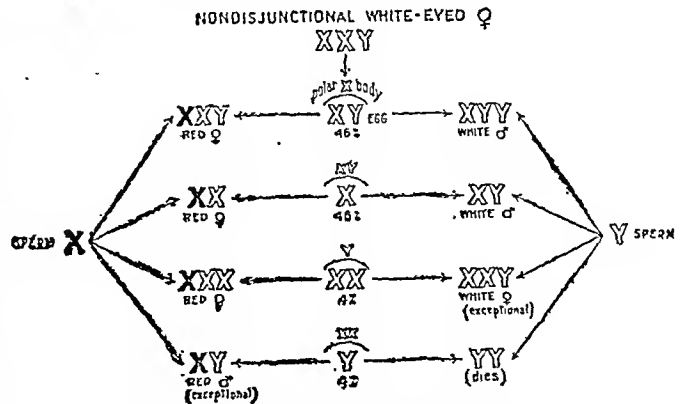


FIG. 10.—Non-disjunction. Chromosome interpretation of exceptional sex-linked results. (After Morgan.)

The story that I have endeavoured to tell is but a brief outline. I have told it because I know of its interest and am convinced of its usefulness. It is desirable, in my opinion, that the medical man should be well acquainted with the principles of the science of genetics, which will give to him a better understanding of his many and varied problems. If I have aroused your interest, I may hope that you will seek further information from the masters at whose feet I am so proud to sit.

For further information consult:

Gates, R. R.: *Heredity and Eugenics*, Constable, London.  
Morgan, Sturtevant, Müller, and Bridges: *The Mechanism of Mendelian Heredity*, Henry Holt and Co.  
*Eugenics Review*, London, quarterly.



## British Medical Association.

PROCEEDINGS OF SECTIONS AT THE ANNUAL  
MEETING, NOTTINGHAM, 1926.SECTIONS OF ANAESTHETICS AND  
SURGERY.

SAMUEL JOHNSTON, M.D., C.M., F.A.C.P., in the chair.

At the invitation of Sir James Berry, President of the Section of Surgery, Dr. Samuel Johnston, President of the Section of Anaesthetics, took the chair, and, expressing his appreciation, said that for once there could be an association of surgery with anaesthesia without the question of sufficient relaxation arising.

DISCUSSION ON  
ANAESTHESIA IN ABDOMINAL SURGERY.

## OPENING PAPERS.

I.—PROFESSOR H. FINSTERER,  
Vienna.

WHEN I received the invitation to read the opening paper on anaesthesia in abdominal surgery at the combined meeting of the Sections of Anaesthetics and Surgery of the British Medical Association I felt highly honoured, but at the same time I had great doubts as to being able to carry out the task, on account of my inadequate knowledge of the English language, and for this I must ask your consideration. In the first place, I beg to tender my warmest thanks to the President, Mr. Hogarth, for the invitation, which I regard as a great honour and distinction, and I beg to thank the secretaries of the Surgical Section for the interest they showed in operations under splanchnic anaesthesia on their visits to Vienna. I think it is due to their influence that this important theme was suggested for this combined session.

In abdominal surgery anaesthesia is of greater importance than in operations on the extremities, for through diseases of the abdominal organs, such as acute appendicitis or cholelithiasis, serious changes in the liver are caused, so that a complete anaesthesia with chloroform or ether, by which the liver is affected, may cause fatal hepatic insufficiency, which in cases of operations on the extremities is not to be feared. If the power of resistance of the peritoneum is weakened by a prolonged deep narcosis, the infection of the abdominal cavity, possible in every abdominal operation, can more easily lead to fatal peritonitis. Finally, many abdominal operations, such as radical operations for gastro-jejunal ulcer, belong to the greatest and most difficult operations, in which death from shock is to be feared. In view of this, every endeavour to improve anaesthesia in abdominal surgery is justified. Since it is impossible in this small paper to discuss the development of all the methods of anaesthesia, I will devote myself more particularly to the most important.

Naturally during my experience I have used all methods of anaesthesia for abdominal surgery, but for many years I have practically employed only the regional and the combined methods. I am so convinced of the advantages of combined and regional anaesthesia over general anaesthesia that I do not now operate on patients who insist upon a general anaesthetic. The methods of anaesthesia can be classified into three groups:

**A. General Anaesthesia.**—The whole operation is completed while the patient is unconscious and the anaesthesia occurs exclusively in the cerebrum.

**B. Combined Anaesthesia.**—Pain is eliminated partly as a result of interruption of the sensory nerves, and partly through unconsciousness during part of the operation as a result of temporary exclusion of the cerebrum, through general narcosis.

**C. Regional Anaesthesia.**—The conduction of pain is interrupted by injecting effective drugs near the sensory

nerves, but consciousness is unaffected. This interruption may be effected (1) in the spinal canal (spinal anaesthesia); (2) near the spinal column (paravertebral, parasacral anaesthesia); or (3) the splanchnic nerves themselves (splanchnic anaesthesia) or their branches in the mesenteries (mesenteric anaesthesia) can be blocked.

## A. GENERAL ANAESTHESIA.

Ether and chloroform, alone or mixed, are commonly used to-day. Chloroform is gradually being used less frequently because of its injurious effect upon the parenchymatous organs (liver, heart, kidney).

The advantages of general narcosis are: complete loss of consciousness, which is of great importance in nervous patients; complete muscular relaxation with the associated greater ease in laparotomies; and the ability to examine the entire peritoneal cavity for diagnostic purposes.

The unfavourable features of general anaesthesia are:

1. *Primary danger of the anaesthetic*—death during the narcosis; but in the hands of a trained anaesthetist and with the use of ether this is no longer to be feared.

2. *The drop in blood pressure* which results both from the action of the anaesthetic upon the vasomotor centre and from the injuries to the heart musculature. This fall in blood pressure is of extreme danger inasmuch as the blood pressure, which may be already low as a result of disease (peritonitis or intestinal obstruction), is further decreased as the result of the loss of the intra-abdominal pressure secondary to eversion of some of the intestinal loops.

3. As already shown by Crile, in general narcosis the conduction of pain to the cerebrum is not interrupted, and this fact leads to marked changes in the higher brain centres. These changes (confirmed by Crile) and the increased hydrogen-ion content of the blood (acidosis) are the causes of the so-called "operative shock."

4. *Injuries of the parenchymatous organs.* The narcotizing agent which is absorbed in the blood not only injures the brain, but also the liver, heart, kidney, adrenal, etc. This injury rapidly disappears in healthy organs after the cessation of the narcosis, but in diseased organs this damage may lead to an insufficiency, especially in the heart and liver, which often terminates fatally. This injury of the liver occurs not only with chloroform but also with protracted ether narcosis; similar changes of the heart are shown by König, of the adrenals by Schur and Wiesel. These injuries are proportionate to the depth and duration of the narcosis, which in turn vary with the extent and duration of the operation. Of course, they can be diminished by sparing use of the anaesthetic by a very competent anaesthetist, but not completely eliminated.

5. *Lung complications* are increased with general narcosis. The experimental work of Snel has shown that the normal resistance of the lungs is diminished by protracted narcosis, so that pneumonia more readily occurs either from bacteria already in the alveoli of the lungs or from aspirated sputum. The ultimate outcome depends directly upon the heart, which is itself damaged by the general narcosis.

The injury to these parenchymatous organs can be diminished if less of the anaesthetic be used. This is achieved through the use of morphine or pantopon, which affect the cerebrum. Scopolamine acts as an excellent synergist, but is dangerous. Atropine decreases the secretion of the mucous membranes, and both morphine and atropine should be used together prior to every ether narcosis. The quantity should be proportioned to the strength of the patient.

To eliminate the disadvantages of general narcosis chloroform or ether is substituted by the gas anaesthetics, primarily nitrous oxide, which favourably impressed me in America. When properly used, it is practically without danger (Crile told me personally that he had no fatalities in over 50,000 cases). It does not cause a drop in blood pressure or damage to the brain, liver, etc. (as shown experimentally by Crile), and on this account it has been a marked advancement in the question of general narcosis. Its disadvantages are, that frequently there is not enough relaxation of the abdominal musculature, necessitating the associated use of ether to obtain complete relaxation. This, however, can be obtained more simply and more effectively by the injection of novocain

into the muscoli recti, through which measure nitrous oxide becomes an important agent in the so-called "combined anaesthesia."

In a similar fashion we may use ethylene, which was developed by Luckhardt. Mixed with 10 to 20 per cent. oxygen it has given a deep narcosis with marked relaxation in 100,000 cases without any bad effects on the patients. Its only disadvantages are its inflammability and explosive character. Acetylene (narcylene), whose anaesthetic qualifications were discovered by Wieland and made practical by Gauss, is equally as efficacious as ethylene. It is now used in many German clinics, as seen from papers written by Eggers, Hurler, Kurtzahn and Teichert, Philipp, Reis, Schmidt, Solbach, etc. Its greatest disadvantages—namely, its inflammability and explosiveness—can be practically eliminated by caution and use of Gauss's "rebreather." The failure to get complete muscular relaxation can be overcome by local novocain injection.

#### B. COMBINED ANAESTHESIA.

Grife's method of anoci-association is a type of combined anaesthesia in which in every laparotomy the sensory nerves are blocked central to the operative field by injection of novocain and unconsciousness is effected by using nitrous oxide. Combined anaesthesia was recommended as the method of choice by Lennander in 1901, and since then has been adopted by many surgeons (Bakes, Eiselsberg, Goullioud, Hillman and Apperly, Laeven, Wheeler, etc.). Through careful anaesthesia of the peritoneum of the anterior abdominal wall the greater part of the narcotizing agent can be avoided. The theory of Lennander, that manipulation of the mesentery is painless, is no longer accepted. The experimental work of Pannett has proved that the injection of novocain into the mesentery of animals has not only guarded against shock, but also eliminated rigidity of the abdominal musculature. Therefore with combined anaesthesia it is necessary to inject novocain also into the mesentery.

Combined anaesthesia represents a marked progressive step over general, because with its use injury to the parenchymatous organs practically disappears. For this purpose nitrous oxide or narcylene, which are completely satisfactory, may be used. Unfortunately these substances are too expensive to be used in our Austrian hospitals. This necessitates the use of ether as a supplemental agent. Ethyl chloride has also been used as a supplement to local anaesthesia by different surgeons (Braun, Payr). But it is dangerous. Fatalities are reported by Hofmann, Jaeger, Kausch, Renner, etc.

#### C. REGIONAL (LOCAL) ANAESTHESIA.

To make extensive laparotomies really painless it is necessary to anaesthetize the peritoneum of the posterior as well as the anterior abdominal wall. In stomach resections for cancer anaesthesia of the abdominal wall alone was sufficient for the painless performance of the operation in exceptional cases only, and when large doses of morphine were given. In the majority of cases ether was required after opening the peritoneal cavity ("combined anaesthesia"). Real painless resections have been possible through the injection of novocain into the mesenteries, as recommended by me in 1912, only in cases when every pull at the mesentery can be avoided. But an absolutely painless operation in every case can only be obtained when the peritoneum on the posterior abdominal wall is anaesthetized. This can be achieved by paravertebral or spinal anaesthesia.

The dangers of regional anaesthesia increase as the spinal canal is approached. Mesenteric anaesthesia is practically harmless, while with spinal anaesthesia one has to deal with the danger of cerebral anoxia.

On this account Braun's advice to anaesthetize as far as possible from the spinal canal should be followed. The amount and concentration of the agent used should be in proportion not only to the extent of the operation, but also to the vitality of the patient. The agent generally employed is novocain, of which on the average 200 c.cm. of 1/2 per cent. solution is used. In very cachectic and anaemic patients it is better to use 1/4 per cent., which is

also satisfactory. Tutocain has been greatly employed for the last three years in Germany. It is found to be much more effective than novocain, necessitating the use of only 1/5 to 1/8 per cent. solution. As a pre-operative measure the patients receive, one hour before operation, 0.02 gram pantopon, and then, a quarter of an hour before operation, 0.01 to 0.02 gram morphine with 0.00025 to 0.0005 gram atropine. Although scopolamine is used by many surgeons, I have not used it since I saw its use result in a fatality eighteen years ago.

In all cases of regional anaesthesia it is necessary to have a complete anaesthesia of the anterior abdominal wall. In order to obtain this, besides the external injections on the lateral border of the rectus muscle, it is advisable to inject novocain after opening the abdomen from the inside as far laterally as possible into the properitoneal tissue.

#### 1. Mesenteric Anaesthesia.

Mesenteric anaesthesia is the simplest and least dangerous method of regional anaesthesia; it is satisfactory in all cases in which all pulling can be avoided. It is entirely satisfactory in cases of resection for a movable ulcer or cancer in ptotic stomach; but when the ulcer penetrates into the pancreas a supporting narcosis is necessary. Mesenteric anaesthesia should be used in every operation begun under general narcosis in order to decrease the operative shock (Pannett).

#### 2. Paravertebral Anaesthesia.

Paravertebral anaesthesia is of advantage only in operations in which injection on one side suffices—for example, in colon resection, cholecystectomy, etc. Therefore in 1912 I advised the employment of this method in these cases only. In cases of doubtful diagnosis it is far better to infiltrate the anterior abdominal wall prior to incision, examine the abdomen under short ether or nitrous oxide narcosis, and continue the operation with mesenteric or splanchnic anaesthesia. Up to the present I have used paravertebral anaesthesia in 151 cases, and ether was necessary fourteen times. There were 49 colon resections in this series, and in 45 of these paravertebral anaesthesia was quite sufficient. Paravertebral anaesthesia cannot be adopted in all laparotomies, but will be found of great advantage in exceptional cases, such as resection of the colon, cholecystectomies, etc.

#### 3. Splanchnic Anaesthesia.

In upper abdominal surgery, instead of blocking each ramus communicans by paravertebral injection, the united nerve trunks of the splanchnic can be anaesthetized. This can be done posteriorly according to Kappis's method, or anteriorly after opening the peritoneal cavity according to Braun's method. Less commonly used are Farr's and Roussiel's methods, where the splanchnics are blocked by injection of novocain into the hepatico-duodenal fossa and thus into the retroperitoneal space. The technique recommended by Roussiel, in which novocain is injected into the retroperitoneal space near the superior mesenteric artery, is said to anaesthetize not only the small bowel, but also the organs innervated by the splanchnic nerves. This method is not used very much, and only 30 cases are reported by Guttierrez. Kappis's method is used in France by Billet and Laborde and by Pauchet, in England by Cade, and Hillman and Apperly. In America Labat introduced Kappis's method, and during my sojourn there in 1923 I saw that it was used almost exclusively. Only Skillern reported in 1922 that he used both the Kappis and Braun technique; and in 1923 Bland published the fact that he used Braun's method instead of that of Kappis. Since I demonstrated Braun's method it has been adopted by Beck, Burke, and Meyer. In Germany Braun's method is used, and it has recently been adopted by the clinics of Haberer and of Payr.

The Kappis method is a little more risky than Braun's technique because of the danger of intravenous and intraspinal injection. In my book on local anaesthesia in abdominal surgery (translated into English by Burke) I pointed out the possibility of lateral spinal anaesthesia. As a matter of fact, several fatalities caused by the use of Kappis's method are reported in the literature, which

are only to be explained by intravenous or intraspinal injection. With greater experience intravenous or intraspinal injection can be avoided; then this method is certainly not as dangerous as maintained by many. Kappis has personal experience with over 1,000 cases of splanchnic anaesthesia without any accident.

There is little reported in the literature about Braun's method. My personal inquiry as to the experience gained in the clinics of Braun, of Haberer, and of Payr, and the hospitals of Kirchmayr (Vienna) and Linhard (Graz) resulted in the following statistics. There is a total of 1,566 cases of splanchnic anaesthesia, of which 875 were performed by Braun, 209 by Haberer, 210 by Payr, 91 by Kirchmayr, and 181 by Linhard. In about 5 to 9 per cent. of the cases a short general narcosis with ether or ethyl chloride was necessary, but no accidents happened except in Haberer's clinic, where by mistake 1/2 per cent. instead of 1/5 per cent. tutocain solution was used; but in all these cases there was no fatality (Tschelbul). In 807 cases I myself have had only one of poisoning, which was characterized by cramps, coma, and paralysis of the respiratory centres, this being the result of intravenous injection. This accident was caused by the vomiting of the patient, which moved the needle so that a part of the last 10 c.cm. was injected intravenously. This patient was revived by artificial respiration and intravenous use of lobelin. The fall in blood pressure which is reported by many authors with Kappis's method (Hillman and Apperly, Metgo) is said in Braun's method not to occur in a higher degree, as shown by Buhre and Bachlechner.

As novocain is a poison, the amount and concentration must be measured according to the patient's strength. Braun uses for his splanchnic anaesthesia 100 c.cm. of 1/2 per cent. novocain or 1/4 per cent. tutocain solution, while I use on an average 70 c.cm. In cases of severe anaemia secondary to acute or chronic gastric haemorrhage, or in cases of advanced cachexia, I have used 1/4 per cent. instead of 1/2 per cent. novocain solution, and have found that 50 c.cm. will give a very satisfactory anaesthesia in most cases. In my opinion it is better in these grave cases to use a weaker solution and add ether when necessary. The ether in small amounts serves as a stimulant. Naturally, as a result of this weaker solution there is an increase in the number of cases in which ether as a supporting anaesthetic is needed.

Occasionally when it is impossible to separate the aorta from the vena cava because of firm adhesions, as in penetrating gastric ulcers, the introduction of the needle becomes either impossible or may puncture the vena cava. Then mesenteric anaesthesia must be used instead of splanchnic, and if necessary a little ether given to mobilize the stomach (combined anaesthesia). Puncture of the vena cava with a thin needle is of no significance except that, once it occurs, further attempts at splanchnic anaesthesia must be forgone, and mesenteric employed. It is very important to avoid intravenous injection and be sure of this prior to the injection of every syringe. By aspiration I assure myself that the needle point has not penetrated the vein.

My experience consists of 879 cases of splanchnic anaesthesia, of which 72 were done with Kappis's method and 807 after Braun's method. In the latter ether was used 71 times, or in 8.8 per cent., either at the beginning of the operation owing to unusual insistence of the patient, or during the operation because the anaesthesia did not last till the operation was finished. Ether is most frequently needed in cases of gastro-jejunal ulcer where strong adhesions must be separated before the splanchnic anaesthesia can be completed. The amount of ether used for the entire operation is usually very small, being as a rule 20 to 50 c.cm.; only in one case was 150 c.cm. used. These 807 cases of splanchnic anaesthesia can be subdivided as follows:

1. 112 cases of resection of the stomach for cancer, in which ether was needed 5 times.

2. 468 resections of the stomach for ulcer, ether being used 33 times.

3. 63 cases in which the stomach and gastro-intestinal anastomosis loop were resected either for an unhealed ulcer or gastro-jejunal ulcer, ether being used 25 times.

4. 89 cases of cholecystectomy or choledochotomy, ether being used 8 times.

5. 75 cases of gastro-enterostomy, exploratory laparotomy, etc., in which ether was not used.

If the amount of novocain is adjusted exactly to the patient's strength, pallor, restlessness, and air hunger, which are undesirable by-effects, can be avoided. With the use of tutocain vomiting during the operation is seen much less frequently.

Splanchnic anaesthesia is a progressive step over mesenteric anaesthesia, because through its use there is a complete anaesthesia of the peritoneum of the posterior abdominal wall. For this reason I cannot agree with Driner that splanchnic anaesthesia is superfluous and dangerous and therefore mesenteric anaesthesia alone should be used. It is self-evident that with splanchnic anaesthesia it is impossible to explore the entire abdomen or operate in the lower abdomen, because the lumbar segment is not anaesthetized. For these purposes a short narcosis must be instituted. Meeker of the Mayo Clinic abandoned splanchnic anaesthesia after an experience of 42 cases of splanchnic anaesthesia with Kappis's technique, in which he had 38 per cent. failures, and because of its dangers. This experience is in contradistinction to the favourable results of Kappis in over 1,000 personal cases and to the good results with Braun's method in more than 2,300 cases. Even when a little ether is given in every case of splanchnic anaesthesia, as is done by Hillman and Apperly, sufficient is gained to make this "combined anaesthesia" the method of choice over general narcosis in cases of resection of the stomach.

#### 4. Parasacral Anaesthesia.

Braun's parasacral anaesthesia does not suffice for removal of the rectum, because the nerves supplying the mesosigmoid are not blocked off. This can be achieved by injecting the novocain at the base of the mesosigmoid from behind, as I described in 1922. Or it may be done during laparotomy, after opening the peritoneal cavity, through injection on the anterior surface of the fifth lumbar vertebra. Through this procedure it is possible to remove the pelvic colon by the abdomino-sacral operation without narcosis, by which the results of the operation can be considerably improved. I have used this type of parasacral anaesthesia in 38 cases of abdomino-sacral resection and needed the support of a general narcosis in 27 cases. The mortality of the abdomino-sacral operation for cancer, which in many clinics, in consequence of the numerous deaths from so-called operative shock, amounted to 60 per cent., could be considerably decreased by parasacral anaesthesia. Up to 1922 I had a relatively high mortality (19 cases, with 6 fatalities=31 per cent.), but since then I have had 20 cases with only 2 fatalities, or 10 per cent.

Although not within my field of work, I should like here to remark that, in my opinion, parasacral anaesthesia combined with injection of novocain on the front of the fifth lumbar vertebra and into the ligamentum suspensorium ovarii would be sufficient for every hysterectomy and for other gynaecological operations.

#### 5. Epidural (Sacral) Anaesthesia.

Sacral anaesthesia, which was suggested by Læwen, may be applied in operations in the true pelvis, but for laparotomies high epidural anaesthesia is necessary. This is done with the patient in the exaggerated Trendelenburg position and through the use of large doses (50 to 70 c.cm.) of 1 1/2 per cent. solution of novocain. With this technique the anaesthesia will include the lower thoracic segments. High sacral anaesthesia, which has been used largely in gynaecology (König, Schlimpert, Schneider, Kehler, etc.), is not reliable, and is also dangerous; Schweitzer has collected 10 fatalities in 3,450 cases. On this account it will hardly be accepted as the method of choice. Fidel uses epidural anaesthesia even in stomach resections. He injects 25 c.cm. of 2 per cent. novocain solution below the eighth spinal process, just beneath the ligamentum flavum, which is just punctured by the needle. A complete anaesthesia results in fifteen minutes, and lasts for from one to one

and a half hours. Although surgery in the true pelvis can be satisfactorily done with deep opidural anaesthesia, it is far better to use the less dangerous parasceral method.

#### 6. Spinal Anaesthesia.

With spinal anaesthesia both the rami communicantes and the spinal nerves are blocked. It results in a complete anaesthesia, which includes the abdominal wall. With the patient in the proper position, the anaesthetized field can be made to include the sixth dorsal segment, so that surgery in the upper abdomen is painless. This method is recommended by many surgeons, who emphasize its safety (v. Bloch, Ceccarelli, Chaliel, Chaurin, and Moya, Lober, Lane, Morrison, Vaquié, etc.). Morrison states that he uses spinal anaesthesia in 97 per cent. of all his surgery, and always for laparotomies. In the last ten years he has a total of 11,000 cases without fatality. On the other hand, many authors caution against the use of spinal anaesthesia in surgery of the upper abdomen. Fatalities are reported by Chevasson, Featherstone, Hower, and others. In the last ten years I have not used spinal anaesthesia because of its dangers and disadvantages, but before 1914 I used it only in very exceptional cases. Spinal anaesthesia is recommended by Farr, Skillern, and Southam for emergency surgery—for example, intestinal obstruction and peritonitis—but it is dangerous, because it tends to decrease an already low blood pressure. This further decrease can lead to collapse. In such cases at least pituitrin, which is recommended by Hagedorn for every spinal anaesthesia to diminish the drop in blood pressure, should be given. I consider local anaesthesia of the abdominal wall and mesenteric anaesthesia combined with a little ether, or in cases of stomach resection splanchnic anaesthesia, preferable to spinal anaesthesia.

#### INDICATIONS.

Crile's teachings of anoci-association should be followed in all abdominal surgery; even when operating with general narcosis the sensory nerves should be blocked to decrease the amount of narcotic used and also the shock. With simple operations such as appendectomy an equally good result can be obtained with local anaesthesia as with nitrous oxide or narcylen. But in major operations, particularly in gastrectomy, intestinal resections, or cholecystectomy, the advantages of combined anaesthesia are so marked that it should be used in every case. It may be advisable to use general narcosis at first with extremely nervous young patients to produce temporary unconsciousness while anaesthetizing the abdominal wall and splanchnics. In many cases with complete painlessness a further narcosis is unnecessary, and in all cases the greatest amount of the narcotizing agent is spared. Despite the fact that local anaesthesia is not only difficult but unsatisfactory in very stout patients, it should be used as much as possible, because with combined anaesthesia the amount of narcotic used is diminished, which is of great importance as these patients have fatty hearts.

With old people it is a great advantage to avoid every other narcosis, as these patients almost always have some chronic respiratory disorder. A combined anaesthesia of nitrous oxide or narcylen may be used with these older patients. Where a deep or long narcosis is contraindicated because of heart trouble, lung disorders, or advanced cachexia, the operation can be done with success under local anaesthesia, thus eliminating operative contraindications. In no case have I as yet refused to operate, and despite the liberal indications have not impaired my total results. I have successfully done large resections under regional anaesthesia on patients who, because of their poor general condition, were refused the smallest operation by surgeons who always use general narcosis. It is significant that my abdominal surgery in very old patients has given almost as good results as in the young. There are 455 patients between 60 and 88 years of age in 3,315 laparotomies. Of these there were 55 post-operative deaths: but as a rule these were hopeless cases from the start, being moribund from gangrene of the entire small intestine, or advanced peritonitis from perforated gall bladder or colon, etc. Beyond this the mortality of the old is not much greater than that of the young. But in these cases it is

specially important to prevent as far as possible pneumonia by very careful after-treatment (regular deep breathing, free expectoration, helped by the use of camphor, etc.).

#### OPERATIVE RESULTS.

The fact that patients can be successfully operated on under local anaesthesia in cases in which surgeons have declared it impossible under general narcosis was stated by Gottstein, a pupil of Mikulicz, thirty years ago. The fatalities due to the so-called operative shock which, thirteen years ago, I asserted should be regarded as late anaesthetic deaths, can be decreased either by local or combined anaesthesia, providing haemostasis is exact and little blood is lost during the operation.

Fatalities from lung complications following operations under regional anaesthesia are seldom seen. Pneumonia does occasionally occur in patients with chronic bronchitis who have had operations in the upper abdomen. But the prognosis depends upon the functional capacity of the heart, which is not injured as would be the case with general narcosis. In addition, the diagnosis of pneumonia is made too frequently after laparotomy because the mere presence of râles is used as a basis for this diagnosis. Wheeler has shown that the râles are secondary to acute oedema of the lungs resulting from fixation of the diaphragm, which is a protective measure against pain. I have not had a single fatality from pneumonia in 841 stomach resections for ulcer, 185 intestinal resections, and 259 cholecystectomies. There were 7 pneumonia fatalities in 264 stomach resections for cancer, 4 of which were secondary to combined anaesthesia and 3 occurred after local anaesthesia. It is of significance that in my material there is practically a complete absence of fatalities secondary to acute stomach or intestinal paralysis. Thus there remain those fatalities which result from insufficient asepsis before or during the operation and which naturally terminate fatally both in old and young patients.

Some examples of how the results of the operation may be improved by systematic use of regional anaesthesia may be introduced here. As my work is confined exclusively to private hospitals, in the last ten years I have performed almost every operation under local or combined anaesthesia, as patients objecting to local anaesthesia are not admitted.

The results in gastric resection for ulcer are markedly improved, as no fatalities due to pneumonia and stomach or intestinal paralysis occurred, although in the last ten years I have practically always done a resection even with old people and patients in a risky state for operation. In 841 resections there were 45 fatalities = 5.3 per cent. mortality. Moreover, the rate of mortality in operations for acute gastric haemorrhage was very high (54 resections with 8 deaths), the highest being in cases where the operation was performed several days after the commencement of the acute bleeding (23 resections with 7 deaths), whilst in early operation—that is, twenty-four to forty-eight hours after the onset of acute haemorrhage—the results are much better (26 resections with 1 death). In all other resections for ulcer I have had a mortality of 4.7 per cent. During the war the mortality was unusually high (81 resections with 11 fatalities = 13.5 per cent. mortality), this being due to poor asepsis. Since 1919 it has gone back to 2.7 per cent. in resections for gastric ulcer, and in resections for duodenal ulcer from 8.1 to 2 per cent. The results are also good in radical operations for gastro-jejunal ulcer, in which not only the greater part of the stomach but also the anastomosing loop of the bowel is resected, there being 4 deaths in 68 cases, or a mortality of 5.9 per cent. I wish to emphasize that in my 841 resections for ulcer there were no fatalities from pneumonia although 87 patients were 60 to 78 years of age. This refutes the teachings of Gottstein, who asserted that the danger of lung complications is not diminished with local anaesthesia in comparison with general narcosis.

In radical operations for cancer of the stomach the mortality depends upon the extent of the resection. It is greatest in cases where the cancer has invaded the neighbouring organs, necessitating the resection of part of the pancreas, liver, transverse colon, etc., there being 44 fatalities in 109 resections (41.7 per cent.); whereas in 155 resections of the stomach alone there were 11 fatalities

(7.1 per cent.). The importance of the anaesthesia is seen by the fact that in cases of advanced cachexia the resection can still be successfully performed; even in 13 cases where the patients weighed less than 80 lb. before the operation, they all recovered. On this account a two-stage resection of cancer is unnecessary.

Fatalities within forty-eight hours after the operation are very rare. Even with my extended indication for resection (435 cancer operations, 264 resections, 7 complete gastrectomies, 75 gastro-enterostomies, and 89 exploratory laparotomies) I had only one death within forty-eight hours after the operation—in a man aged 73 years who had undergone subtotal resection of the stomach.

The results of resection in old patients are not really worse than among the younger; for in the 88 patients over 60 years of age there was a mortality of 22.4 per cent., as contrasted with 20.8 per cent. in all the resections. In 52 cases of uncomplicated stomach resections the mortality was 9.6 per cent., while in 36 cases complicated with liver and pancreatic resection it was 41.7 per cent.

My results in a small series of gall-bladder operations also show the satisfactory effect of the anaesthesia, in so far that fatalities from operative shock and liver insufficiency as well as from pneumonia are absent, and also that the results are satisfactory in old patients.

There were 5 fatalities in 216 cholecystectomies, of which 2 were due to lung emboli, 2 to peritonitis, and one to post-operative haemorrhage in a case of Basedow's disease which also had an associated gastro-enterostomy. The mortality is therefore 2.3 per cent. In 43 cases of cholecystectomy and choledochotomy for obstruction due to stone there were 4 fatalities. These were: a woman, aged 65, who died four weeks after operation from a subphrenic abscess; an emaciated patient (poor food after the war), aged 35, who died from a haemorrhagic diathesis (haemothorax and haemo-pericardium); and two deaths from peritonitis. In 20 old patients (aged 60 to 77 years) there was only one death, despite the fact that three had had common duct obstruction for six months.

In 143 cases of resection of the small intestine there were 87 cases of resection of stomach and intestine for unhealed ulcer following gastro-enterostomy or gastro-jejunal ulcer which will not be considered in this series. As in the 56 remaining cases the resections were necessitated by necrosis of the intestinal wall, the prognosis depended first upon the presence of peritonitis at the time of operation. There were 8 post-operative deaths: of these, 5 were due to peritonitis and gangrene, and one to haemorrhage into the adrenal; one was a woman, aged 76, who died one day after resection of 4 metres of strangulated gangrenous bowel; one was a man, aged 62, who died twenty-four hours after resection of 2½ metres of gangrenous jejunum caused by thrombosis of the superior mesenteric vein; death was probably due to thrombosis of the vena porta, which may have been present at the time of operation. Despite the fact that 19 patients were over 60 years of age, there was no fatality from pneumonia. Out of 9 patients who were between 71 and 81 there was only one fatality—that of the 76-year-old woman already mentioned.

In colon resections the results have been markedly improved; this is due to the fact that among my cases not only have there been no deaths from pneumonia, but also that post-operative intestinal atony, which endangers the suture, has not been observed; and again, that with local anaesthesia the operator has ample time to make an exact intestinal suture in three layers, so that with lateral anastomosis no leakage need be feared. It is important that the bowel be empty in one-stage resection. There were 17 fatalities, or 13.1 per cent. mortality, in my 129 cases. In cancer resections the mortality is 23.6 per cent. (55 operations with 13 deaths). In the two-stage resections the mortality was higher (16 operations with 6 deaths), because, in consequence of the invasion of the adjacent organs in 6 cases, beside the colon resection it was necessary to do an extensive resection of the small intestine, in one case nephrectomy, and in one case splenectomy. In the one-stage resection of the caecum and colon ascendens the mortality is high (20 cases with 5 fatalities), because formerly the one-stage operation was done also for

nento obstruction. In the one-stage resection for cancer of the descending and sigmoid colon the mortality is lower (19 cases with 2 deaths). One patient, operated on during the war, died from peritonitis without insufficiency of the suture line, and the other was a patient aged 68, who died two weeks after operation from a recurring heart insufficiency, from an attack of which he had suffered three months previously. It is of further interest that there were 11 patients in this series who were 60 to 75 years of age with only the one above mentioned death.

#### CONCLUSION.

In major abdominal operations general narcosis with ether or chloroform injures the parenchymatous organs on account of its longer duration. This may lead to death through insufficiency of the organ.

These injuries to the organs may be avoided by the use of combined anaesthesia; therefore it should be employed in every greater laparotomy in which it is impossible to perform the whole operation under regional anaesthesia. In combined anaesthesia nitrous oxide or narcoylen is the least injurious.

Mesenteric anaesthesia is almost harmless and may be resorted to in every case. It is the most effective agent in the combined anaesthesia.

Paravertebral anaesthesia should be used only in operations in which the injection on one side is sufficient.

Splanchnic anaesthesia after the method of Braun is almost without danger, and in about 80 per cent. of operations on the upper abdomen sufficient.

Parasacral anaesthesia, combined with blocking of the lumbar segment, is sufficient for radical operation for cancer of the rectum and for all gynaecological operations.

By the use of regional or combined anaesthesia the results of major abdominal operations are improved, because death from so-called operative shock, pneumonia, and atony of the bowel can be almost always avoided.

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## II.—CHARLES W. MOOTS, M.D., F.A.S.C., Toledo, Ohio, U.S.A.

### EVALUATION OF RISK, BLOOD PRESSURE PROTECTION, AND NITROUS OXIDE-OXYGEN ANAESTHESIA AS VITAL FACTORS IN SAFER GASTRIC SURGERY.

SAFER gastric surgery with precise methods of risk evaluation to the patient has in forty-six years reduced the operative mortality from 56 to 4.6 per cent. for the year 1925, as reported by several of our leading surgical centres. To appreciate the factors entering into this improvement, and to approach more nearly the Utopian dream of no morbidity and 100 per cent. cures, I beg of you to bear with me in their consideration as follows: (1) The evaluation of the patient's resistive strength, or the potentiality of each individual case. (2) Blood pressure protection. (3) Nitrous oxide-oxygen anaesthesia.

The mensuration of potentiality in gastric surgery offers a nicety that is found in no other field. While this class of patient is coming to surgery considerably earlier in their disease than formerly, yet there exists an astonishingly high percentage that have been treated for years with no more definite diagnosis than "dyspepsia" or "indigestion." This, of course, leads to a great loss in nutrition, which must necessarily affect the physiology of all important organs, particularly the blood chemistry. Whether the pathology present is that of an ulcer or whether it be malignancy, one is apt to be dealing with a patient who has been ill for a very long time, and is therefore far below par in many respects. Unusual care is needed to bring him safely through the operation and assure him of the least further disturbances to his alimentary tract.

In estimating the risk it is customary in most clinics during the last decade to carry out certain routine investigations that are thought by all to be a necessity. Among these might be mentioned a most careful clinical investigation, with stress upon history-taking, to be followed by laboratory aids, such as chemical, bacteriological, physiological, roentgenological, electro-cardiographs, and others. These are all exceedingly important, and are to be encouraged. However, may I here interject the thought that our graduates in medicine may become so accustomed to relying upon laboratory and technical apparatus that they may fail to develop the faculty to draw reasonably proper conclusions from the history and general clinical picture; at least, is it not reasonable to give the clinical picture a bit of thought before writing orders for the use of every appliance in the hospital? Fearing, however, that I may be misunderstood, let me insist that we bring to every case every known aid for determining the exact condition present; for it is certainly possible by so doing to change many cases of extremely bad risks to at least fair risks. Many cases needing gastric surgery will have been vomiting, probably for some time, resulting in a great lack of fluids, and probably a profound acidosis, due to a lack of nourish-

ment. It is also possible to have the opposite condition, alkalosis, and this is especially true if the patient has had persistent emesis with loss of hydrochloric acid, or has been treated by means of large doses of sodium bicarbonate. These conditions are easily determined by finding the carbon dioxide combining power of the blood plasma, and a urinalysis. The determination of chlorides in the blood is highly important, for while we may not know what becomes of them we do know that they are a necessity in combating the toxæmia so often present in the obstructive type of cases. Being aware of such conditions, we are forewarned and forearmed, and the treatment is easy and reasonably certain in its effects. Most certainly the blood must receive much further study, demanding at least the tests for lues, sugar, red and white cell count, and haemoglobin. More and more we feel the grave importance of a full knowledge of the character of the spinal fluid. We believe the liver and kidney functions to be exceedingly important in surgical cases, and no effort to measure these should be neglected. We are rapidly gaining confidence in skillful interpretation of roentgenograms of the chest as useful aids in determining the condition of the lungs, heart, and larger vessels. The psychology of the patient has been too long neglected, and we may do well to seek his co-operation in all our efforts. It is probably true that the function of all important organs is markedly influenced by the psychical attitude of the patient.

Many years ago—twenty to be exact—long before the general and special laboratories were giving the aid that we find to-day, we were confronted by the fact that we had no standardized tests for measuring the risk confronting us. An incomplete urinalysis and hasty examination of the heart and lungs comprised the usual investigations. It was at this time that in America the question of blood pressure was attracting attention among our leaders. True, one heard of only one pressure, the systolic. We soon found that this information fell far short of giving us the necessary guidance for formulating a rule. It probably does represent the total labour that is being expended by the arterial system at a given time. It is affected by many factors, including even psychical disturbances—as anger and fear, for example.

With the inestimable aid of my anaesthetist, Dr. McKesson, we then commenced a systematic study of the whole question of blood pressure, keeping records of our findings previous to, during, and subsequent to operations. We had little aid in this work from the literature, as Janeway's book, which was published in 1907, advocated the observance of only the systolic pressure in guiding surgeons. It was the first formidable treatise on the subject of blood pressure we found. Every case operated on furnished us with interesting data. These results finally gave us the necessary information to enable us to formulate an index for operability. In this work we received valuable aid from Dr. W. J. Stone, who was then medical chief of Flower Hospital, where most of our investigations were made. In order to express this index in percentage we coined the term "pressure ratio." This is obtained by dividing the pulse pressure by the diastolic pressure, thus:

$$\frac{\text{Pulse pressure}}{\text{Diastolic pressure}} = \frac{\text{Pressure ratio per cent., or}}{\text{Index for operability.}}$$

$$\frac{40 \text{ P.P.}}{80 \text{ D.P.}} = 50 \text{ per cent. normal.} \quad \frac{20 \text{ P.P.}}{80 \text{ D.P.}} = 25 \text{ per cent. inoperable.}$$

Rule.—If the pressure ratio is high or low there is reason to apprehend danger. If it lies between 50 and 70 per cent. the case is probably operable; if below 25 per cent. or above 75 per cent. it is probably inoperable.

In applying the rule during the operation it gave us early warning of shock, and enabled us either to apply remedial treatment or to bring the operation to a close. Finally, after eight years of testing this rule, I read our results and conclusions at the twenty-ninth annual meeting of the American Association of Obstetricians and Gynecologists in 1916, in a paper entitled "Observations on blood pressures during operations." The rule has been checked by numerous leading anaesthetists in America on many thousand cases, notably by Dr. Miller of Providence and Drs. Ruth and Tyler of Philadelphia, reporting their conclusions in two papers. As our continued use of this rule

has only added to our then acquired confidence, I take the liberty of repeating the conclusions given in 1916.

1. The systolic pressure alone is of very slight, if any, value.
2. The diastolic pressure alone is of much more value than the systolic alone.

3. The pressure ratio is the essential factor, and offers the earliest danger signal.

4. There are certain elements in technique which have marked and constant effect upon the pressures. These are as follows:

- (a) The psychical or emotional state of the patient.

- (b) The position of the patient upon the table, the extreme Trendelenburg being the worst.

- (c) Overdosing by the anaesthetist.

- (d) The amount of traumatism inflicted by the actual operation, such as cutting and tearing the tissues with the hands, scissors, or other dull instruments; the packing of large gauze packs instead of rubber tissue into the abdominal cavity.

- (e) The preservation of the fluids in the body up to the hour of the operation, this being absolutely necessary to maintain the usual pressure.

In an article appearing in the *Canadian Medical Association Journal* during 1925 the author, Dr. F. H. McMechan, very kindly refers to our work, and very properly makes the following additional statement:

"However, what happens during an operation may invalidate any assurance of safety first under Moots's index of operability, and for this reason the Anaesthesia Research Society insists upon five-minute blood pressure guides and protection during the entire period, and has established certain degrees of circulatory depression for the information of the surgical team. These, as first formulated by McKesson and then adopted by the committee of the National Anaesthesia Society, are:

"(1) *Safe*.—Fifteen per cent. increase in pulse rate without increase in blood pressure; or 10 per cent. decrease in blood pressures without a decrease in pulse rate.

"(2) *Dangerous*.—Twenty-five per cent. increase in pulse rate, plus 10 to 25 per cent. decrease in blood pressures.

"(3) *Shock*.—A pulse rate of 100 and rising with progressively falling blood pressures reaching a systolic of 80 mm. or less. If shock continues for thirty minutes or more during operation, without effective remedial measures, death is almost inevitable in twenty-four to seventy-two hours. This guide discloses the onset of shock at least twenty minutes earlier than it is indicated in any other way."

During the past year we have, at the Lucas County Hospital, added another test, known as the "Energy Index." This is the sum of the systolic and diastolic pressures multiplied by the pulse rate. The numerals of thousands only are used. Thus:

Systolic plus Diastolic times pulse rate = Energy index.  
 120 " 80 " 72 = 14,500 mm.

This result would be read as "fourteen." Cases with this index at 12 to 18 would be considered safely operable.

While this test seems to coincide with our own rule, we have used it but a short time, and will require experience with it before making a positive statement as to its utility. May I add at this time that the determination of our own rule and that of the energy index rule, at the completion of the operation renders a most useful guide to post-operative convalescence or for subsequent therapy?

Now as to the question of the relationship of nitrous oxide-oxygen anaesthesia to our general subject, let it be fully understood that I do not urge this agent to the exclusion of all others. Rather, I would advocate *professional anaesthesia* as the most important factor, in that this will ensure continued professional research, which will bring the largest measure of safety to the patient.

There is considerable discussion at this time as to the nature of the action of the different agents used in causing narcosis. Personally, we have held to the idea that the chemical reactions which favour nitrous oxide anaesthesia are, briefly, as follows:

It procures anaesthesia by reason of its interference with the use of oxygen by the brain cells, apparently exerting no other influence except this oxygen interference; furthermore, its total effect on the body continues but a few minutes beyond the termination of its administration. In fact, the dangers and difficulties of nitrous oxide administration are practically all technical and therefore controllable.

Ether, on the other hand, probably produces anaesthesia by dissolving the lipoids of the brain; in addition, it also dissolves the lipoids in many other exceedingly important structures, such as the lecithin in the red corpuscles, the fats in the kidneys, the liver, and even the lipoids in the

phagocytes. Its difficulties, therefore, come from a chemical source, often delayed, and apt to be uncontrollable.

In 1907 Dr. McKesson and I became interested in nitrous oxide-oxygen in a small way. At first our difficulties were many, ignorance of the necessity of joint study and co-operation, poorly devised equipment for administration, and a lack of experience in the signs of this form of anaesthesia being the causes, in the light of our present knowledge.

It is true that for two or three years we had some of the troubles commonly attributed to gas anaesthesia, but we felt that as the apparatus was improved and our experience broadened, these difficulties might be overcome and we could offer our patients some decided advantages. Our great difficulty was due to less relaxation than we had secured under ether, and the necessity of adding ether to the gases too frequently. This problem was not solved in a month, or even a year; but, instead of condemning the principle, we intensified our investigations. Finally, we found that by sympathetic co-operation it was quite possible to perform any major operation under this form of anaesthesia, with very few unpleasant experiences on the part of the patient. There being no unpleasant odours, the period of inception of narcosis being very brief and tranquil, post-operative nausea averaging 4 per cent., all have much to do in removing the dread of surgery, and add much to the brevity of morbidity, and it especially to be sought in gastro surgery where nutrition is greatly needed. To-day we are happy in the conscious enjoyment of a technique which leaves little to be desired.

To obtain the benefits of such a technique, which includes complete muscular relaxation without added danger, requires the combination of skill and hearty co-operation between surgeon and anaesthetist, as well as of all who have to do with the pre-operative preparation of the patient, which preparation should be of the nature to prevent as many adverse stimuli as possible from entering the patient's nervous system. While haste is to be condemned, yet when an operation has been decided upon it should be done without unnecessary delay. This minimizes adverse stimuli coming from well meaning but uninformed friends. Officials and nurses about the hospital must understand the importance of proper psychological suggestions. Complete rest during the night preceding the operation is secured by whatever sedative is considered best for the individual case. We always use some preliminary narcotic, except in the cases at the two extremes of life—the very young and the aged. In the latter, we do not hesitate to use morphine alone, believing that it is the best single agent for preventing shock during and following operative procedures.

For the average sized adult patient our usual dose is morphine sulphate 1/6 grain with scopolamine 1/200 grain, given hypodermically two hours before the operation; this is repeated one hour before operation; the dosage is varied according to the age, size, and psychical state of the patient as well as the type of operation to be done. All visitors, including relatives, are excluded from the patient during these two hours. By these means the patient reaches the operating room practically asleep, at least with absolutely no fear, and therefore with an exceedingly high threshold to external as well as internal stimuli.

The operation started, we believe that it should be completed in the briefest possible space of time compatible with the best work. Our blood pressure records show that time is a factor not to be ignored. They also give us convincing evidence of the depressing effect of rough handling of the abdominal viscera and tight packing with gauze. One of the great blessings of nitrous oxide anaesthesia is that it fosters the same gentle touch by the surgeon that is necessary in the use of local anaesthesia. This is a very distinct gain for the patient. All of these points affect not only the mortality, but the morbidity as well. We are realizing more and more that it should be our aim not only to save life, and to cure the disease, if possible, but to return the patient to his position in society in the briefest possible time, subjecting him in the meanwhile to the least possible danger and discomfort. We feel that expert professional nitrous oxide anaesthesia.

when used in connexion with gentle and skilful surgery offers just those things to the patient.

In closing, I wish to offer these few following conclusions, which Dr. McKesson and myself both feel have been proved during twenty years of more or less constant team work:

1. Nitrous oxide-oxygen as an anaesthetic, although difficult of administration, is by far the safest anaesthetic in skilled hands.

2. It produces anaesthesia without appreciably injuring any cells in the body, in a pleasant manner, in a brief time, and without, except in rare instances, the much-dreaded debilitating nauseous experiences which are the rule with ether.

3. Notwithstanding many published statements to the contrary, it may be successfully used in all abdominal surgery, and is especially indicated in cases requiring great length of time.

4. It favours the production of the very best psychical condition of the patient, and therefore predisposes to a higher percentage of permanent cures, with shorter periods of morbidity.

5. It favours the growth of more skilful anaesthesia, which is greatly to be desired.

6. While the degree of M.D. carries with it the legal right to administer anaesthetics, there is a moral responsibility which requires special training for this work.

7. The surgeon must realize constantly that he is dealing with a living organism and not a mere mechanical device, and that rough traumatic attack will be followed by depression and shock in many cases.

### III.—Dr. T. BRANDT,

Bergen.

#### ACETYLENE-OXYGEN ANAESTHESIA IN GASTRIC SURGERY.

DURING examinations regarding the effect of nitrous oxide gas, H. Wieland thought of trying a gas which in pharmacological respects acted like nitrous oxide gas, but which at the same time was more soluble in the blood—namely, acetylene. Thereby he hoped to be able to simplify the narcotic apparatus considerably, and also to provide a means that possessed all the advantages of nitrous oxide gas anaesthesia. Together with C. J. Gauss, the Würzburger gynaecologist, he prepared an acetylene narcotic, and this seems now to have triumphed throughout Germany.

Chemically pure acetylene is employed for the narcosis. It possesses a faint smoky smell and a slightly sour taste; thus in no way does it resemble the "acetylene odour" we are acquainted with from carbide lamps. It has been placed on the market under the name of "narcylon," in large (1.6 metres high) steel cylinders; such a cylinder is sufficient for twenty hours' narcosis. The gas is produced from calcium carbide, but is thoroughly cleansed of all impurities, including  $H_2S$  and the extremely poisonous phosphoric hydrogen. Possibility of explosion of the cylinder has been quite eliminated by a patent arrangement. During the narcosis oxygen must also be administered from an ordinary oxygen cylinder. The mixing and dosing of the gases take place through a narcotic apparatus, which has been constructed by the firm of Draeger, and somewhat resembles that firm's apparatus for ether and chloroform anaesthesia.

From the oxygen containers and the "narcylon" cylinder the gases are directed to their respective manometers, which show the quantity of gas in the container. The acetylene passes first through two purifying bottles of ordinary water—in order to remove the acetone—before mixing with the oxygen in the "gas mixer," thence it is led into a large balloon, which serves as a reservoir. The gas mixture is administered to the patient through a strong tube, and a special narcotic mask made of rubber which can be easily adapted to fit the patient's face. The mask has a ventilating apparatus similar to Sudeck's ether mask, and allows the respiratory air to pass in one direction only. One half of the apparatus is arranged like Roth-Draeger's, so that it is also possible to administer an ordinary anaesthetic, or a mixture of ether and acetylene. The whole

mechanism has a somewhat complicated appearance when seen for the first time, but it is easily learnt, and acts well.

The administration of the anaesthetic is very simple. The apparatus is first examined to see that it works properly. The mask is then applied very carefully, as it must fit tightly round the face. The mask covers the nose, mouth, and parts nearest to these, but not the eyes, in order that the corneal and pupillary reflexes may be observed. When employed for long narcosis it is generally fixed round the head with a strap arrangement. When placing the mask in position a little oxygen is given; if all is then in order, the gas mixture is administered—70 per cent. acetylene and 30 per cent. oxygen. It has been proved that such a mixture is the most suitable when introducing the narcotic. The correct proportion of the gases is read in percentages from their respective manometers.

Most people find the smell of "narcylon" almost pleasant, and it is a rare occurrence for patients to be unable to breathe freely on account of the smell, as is often seen with ether or chloroform anaesthesia.

The patient becomes unconscious quickly, in practically all cases after one, or at most two, minutes. If it takes longer than this, it may almost always be attributed to the fact that the mask does not fit properly. In certain cases there is slight excitement, but nothing compared with what is seen in chloroform, ether, or ethyl chloride. As a rule it is quite absent. It is possible to commence operating one or two minutes after administration of the narcotic; but if really perfect relaxation of the muscles is desired it is advisable to wait five minutes.

When the patient is under the anaesthetic the quantity of acetylene is reduced (5 per cent. for every five minutes) in order to find the concentration that produces the most effective relaxation of the muscles and deep narcosis respectively. Then it is desirable to remain at this proportion. As a matter of fact, experience has proved that the patient can be kept under the anaesthetic for hours with 20 to 30 per cent., and that with 40 to 50 per cent. there is generally less tension of the muscles than with a greater concentration.

If the patient has partaken of food immediately before, it may happen that he will vomit, but vomiting or retching scarcely ever takes place if the anaesthetic is given on an empty stomach.

When it is desired to finish, the mask is removed, and if a low percentage of acetylene has been employed the patient awakens practically momentarily. In the case of more concentrated mixtures, perhaps two, but seldom more than five, minutes elapse before the patient regains consciousness. Excitement is even rarer than during induction. In the majority of cases the patient feels quite well afterwards. Headache and sickness are seldom met with, and by no means as frequently as after chloroform or ether narcosis.

When under the anaesthetic the face becomes slightly flushed. Cyanosis is rare, but it may, of course, appear here as in any other anaesthetic when the tongue falls back and the passage to the windpipe is obstructed, or when an insufficiency of oxygen is administered. The cyanosis encountered when in very profound ether or chloroform narcosis, which is attributable to poor ventilation of the blood on account of respiratory paralysis setting in, does not occur during acetylene narcosis. The reason for this is that acetylene is a very weak anaesthetic, which even in the greatest concentrations is not capable of paralysing the respiratory centre. Overdose is therefore an impossibility.

The anaesthetic does not appear to have any effect on the function of the heart, although the blood pressure—as is the case in nitrous oxide gas anaesthesia—rises quite considerably, and can increase up to 20 to 40 or even 50 mm. of mercury. The cause of this is not known. The pulse remains unchanged. Acetylene does not appear to have any effect on the liver or kidneys either. It is possible, therefore, to anaesthetize the same patient several times without fear of symptoms of intoxication, such as occur in the repeated use of ether or chloroform.

Acetylene anaesthesia reminds us very much of nitrous oxide gas anaesthesia, and from the experience gained it

seems to possess all its advantages, but also some of its disadvantages.

Let us look at its advantages. It must first and foremost be mentioned that it is harmless. A decided opinion can, of course, only be arrived at after some years of experience; but no case of death has up to the present been reported. It is undoubtedly a very pleasant form of anaesthetic for the patient. As far as the anaesthetist is concerned, a great advantage is that unconsciousness sets in rapidly and without any excitement, and also that recovery takes place, so to speak, immediately after removal of the mask. Another great advantage is that it is practically free from after-effects in the form of sickness or vomiting. Moreover, it is so simple to administer that it can be entrusted to less experienced anaesthetists, as overdosing with resultant respiratory paralysis is not possible.

But it has its drawbacks also. It requires a complicated and expensive apparatus. "Narcylen" and the oxygen cylinder are not cheap either, so that the anaesthetic, apart from the apparatus, is three or four times as costly as ordinary ether. Merely on account of the expense, therefore, it will be difficult for it to compete with ether or chloroform, if experience should not prove that its advantages—especially its harmless nature—are considerably greater than we are at present aware of.

As we all know, acetylene gas is very inflammable, and the acetylene-oxygen mixture highly explosive. It might therefore be thought that with this anaesthetic it would be impossible to make use of a naked flame in the operating room (boiling of instruments, thermo-cauterization); such is not the case, however. As is also the case with ether, a certain risk is always present, and especially in abdominal and gynaecological operations, where we often have recourse to thermo-cauterization, this proves a disadvantage. To be on the safe side, certain operators never make use of it in operations where they think they may have to cauterize. An accident in Munich showed that this is no exaggerated precautionary measure.

The greatest drawback is, however, that pure acetylene is not always sufficiently powerful, even though it be quite sufficient for most surgical operations. In laparotomy, where, of course, a deep narcosis is often required, the continuance of muscular rigidity may give rise to some anxiety, and it has happened that surgeons have had to resort to ether or chloroform during the operation. If a scopolamine-morphine injection (0.0003/0.015 g.—0.02 g.) has been administered beforehand—as recommended by Wieland and Gauss—then we may certainly depend on satisfactory muscular relaxation; but, on the other hand, we have no longer a purely acetylene narcotic: it becomes now to a great extent a mixed one. As previously mentioned, the apparatus is so arranged that it is possible to administer to the patient an ether-acetylene mixture when the narcosis is not profound enough, but experience seems to show that this mixture is not a particularly good one. Others, again, recommend it.

Some operators assert that acetylene anaesthesia causes increased capillary bleeding; in certain cases it is said to have been very troublesome. Several operators have, however, not noticed this, and personally I am of the opinion that capillary bleeding is no more intense than with ordinary ether anaesthesia. Again, as previously mentioned, the blood pressure rises quite considerably, and the acetylene narcotic ought, therefore (as is the case with nitrous oxide gas), to be contraindicated in patients with hypertonia. This is, so far as is known, the only contraindication. It has, as a matter of fact, been made use of in several instances of haemorrhagic diathesis, in badly compensated defects of the heart, in pulmonary tuberculosis, and chronic bronchitis, without noticing any unpleasantness from its use; but for the present, having regard to the capillary bleeding, we ought also to regard the haemorrhagic diathesis as a contraindication.

If I may—on the basis of the experience obtained up to the present—give my opinion briefly about the anaesthetic, it would be as follows.

"Narcylen" anaesthetic is a clinical anaesthetic, excellent for all surgical work where a very profound narcosis is not required. It is also well suited for laparotomies, but only in conjunction with a previous scopolamine-

morphine injection. On account of its simple administration, the rapidity of the narcosis, the rapid coming to, and the inconsiderable after-effects, it seems to be most suited for use in surgical polyclinics. It is also a form of narcotic that deserves the physician's full attention, and quite surely has a future before it, even if it will never quite take the place of ether or chloroform.

The narcotic apparatus has been improved of late. I have, however, no personal knowledge of the new pattern. In it the expired air is conducted back to the apparatus again, where it is purged of the carbonic acid by passing through sodium hydrate. The acetylene passes through the caustic soda unchanged, and is collected in the gas reservoir; thus it circulates in an enclosed circuit. In this way the anaesthetic has become considerably cheaper; so cheap, in fact, that, as regards price, it can compete with ether; at the same time fear of explosion has been reduced to a minimum, as the acetylene gas no longer escapes into the operating room. Those who make use of the new apparatus state that the anaesthesia is as satisfactory as with the older pattern.

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#### ENDOTRACHEAL NITROUS OXIDE-OXYGEN-ETHER ANAESTHESIA IN GASTRIC SURGERY.

It will be admitted by all that gastric surgery makes large demands upon the anaesthetist. In the first place, the incision is made in that part of the abdomen in which respiratory movement is at its maximum, so that it is essential that anaesthesia should produce as small a respiratory excursion as possible. Secondly, in order to obtain the best exposure, the recti and other abdominal muscles must be completely relaxed. This desirable result may be difficult to attain owing to the fact that severe traction upon the peritoneum and diaphragmatic attachments may result in reflex laryngeal spasm. In the third place, operative trauma in the upper abdomen gives rise to more shock than is the case in the lower abdomen and pelvis. Lastly, gastric operations tend to be followed by more pulmonary complications than do those on other parts of the body.

The problem, then, is to provide an anaesthetic which affords (1) minimal respiratory movement; (2) absolute muscular relaxation with no possibility of laryngeal spasm; (3) protection from operative shock; (4) absence of post-operative pulmonary complications.

It will be seen, therefore, that an ordinary inhalation anaesthesia does not fulfil all these conditions. If ether be used, either alone or in combination with nitrous oxide and oxygen, the respiratory movements will be comparatively large, although, as an offset to this, the blood pressure will be somewhat raised, thus tending to counteract the fall due to operative shock. The same remarks apply to acetylene-oxygen and ethylene-oxygen mixtures. Chloroform, on the other hand, while affording shallow breathing, is inadmissible on account of the low blood pressure induced during a prolonged administration. Furthermore, in all the foregoing cases laryngeal spasm is always liable to occur and thus prevent complete muscular relaxation.

Turning next to regional analgesia, it is possible to perform high abdominal operations under a combination of splanchnic and anterior field blocks, or splanchnic and paravertebral blocks. In either case, however, we have to contend with an abnormally low blood pressure and poor relaxation towards the end of a prolonged operation. Both disadvantages can be partly overcome by using a light general anaesthesia as well, but this method demands the closest co-operation between surgeon and anaesthetist. In addition, the time taken in preparing the patient is long (about half an hour), and the technique requires a good deal of practice. I have used this combined method for 25 cases of upper abdominal operations, nearly all of which were partial gastrectomies, but the results, although fairly good, were below those obtained with the technique described below.

We now come to the method which in my opinion gives

the best results of all in gastric surgery; this consists in administering a mixture of nitrous oxide, oxygen, and ether through a tracheal catheter. I have now employed this method as a routine for five years in about 3,500 cases, of which about 1,100 were for upper abdominal operations.

Although endotracheal anaesthesia has been practised for some years, the war brought it into prominence as affording the only satisfactory technique for plastic facial surgery. The anaesthesia obtained was so uniformly excellent that in 1920 I tried the same method for major abdominal surgery, and the results were so encouraging that I have continued it up to the present time.

The apparatus required is not extensive. Any sight-feed gas and oxygen machine can be employed, although it is better to have either a pressure gauge or mercury manometer connected with the exit tube to give an indication of the endotracheal pressure. If all the 'connections' are rigid, an adjustable safety-valve is also advisable, but in most types of apparatus the corks will blow out of the bottles long before a dangerous pressure is reached.

The technique is as follows. The patient is given a preliminary atropine injection and is fully anaesthetized by any method which the administrator prefers. When the jaw muscles are completely relaxed a direct-vision laryngoscope is passed along the dorsum of the tongue until the epiglottis is seen. This is gently pushed forwards with the curved end of the laryngoscope, and the glottis will then come into view. The end of a tracheal catheter is then smeared with sterile vaseline and slipped between the vocal cords and pushed onwards for another three to four inches. The laryngoscope is then withdrawn, and the proximal end of the catheter connected up to the exit tube of the gas and oxygen machine. Difficulties in passing the catheter are nearly always due to the patient being insufficiently anaesthetized. In this case it may be almost impossible to see the glottis, and even if this is accomplished the cords will probably be in a state of adductor spasm. If a catheter is then forced between them some post-operative laryngitis will almost certainly ensue. Opinions differ as to the best position for the patient's head. I have found that if it be placed just flat and exactly in the middle line little difficulty is usually experienced in finding the glottis. Hyperextension of the head, on the other hand, although favoured by laryngologists, stretches the soft parts and should be avoided. When the catheter is in position, a mixture of 50 per cent. nitrous oxide and 50 per cent. oxygen passing through ether is first employed. This may cause a certain amount of coughing, which soon passes off as the anaesthesia becomes more profound. The amount and proportions of the gases are then regulated until the colour of the mucous membranes is just pink and the manometer shows a pressure of about + 5 mm. Hg on inspiration. In an average case the breathing becomes shallow and regular as in a sleeping patient, but occasionally there is a certain amount of obstruction to the return airway due to a large tongue, in which case an artificial airway should be inserted. Two catheters are, as a rule, quite unnecessary in gastric cases. By increasing the proportion and pressure of oxygen the respiratory movements can be brought down to practically zero, and, indeed, complete apnoea may occur for a considerable time, the oxygen diffusing through the bronchioles and alveoli sufficiently rapidly to oxygenate the blood. This, of course, is of great assistance to the surgeon when performing anastomoses, as the suture line is perfectly still.

In long gastric operations it is always advisable to take blood pressure and pulse records at least every five minutes. This can easily be done by strapping a stethoscope end over the brachial artery in the antecubital fossa just below the cuff of the sphygmomanometer. Systolic and diastolic pressures should both be taken, and, if possible, recorded as a graph. In my opinion the best indication of the patient's general condition is given by observing the tendency of the pulse pressure and pulse rate. By this means ample time is given for antishock methods to be adopted before severe collapse has occurred.

Post-operative pulmonary complications can be minimized in two ways. First, at the end of the anaesthesia the gas-oxygen-ether mixture should be switched off and a mixture of 90 per cent. oxygen and 10 per cent. carbon dioxide from

a separate cylinder substituted. This will cause immediate forced breathing by the stimulation of the respiratory centre by the carbon dioxide. The ether vapour will consequently be rapidly washed out of the lungs, the blood will be fully oxygenated by the 90 per cent. oxygen, and the bases of the lungs will be expanded by the hyperpnoea. Patients can be brought round very rapidly by this de-etherizing process, but in gastric cases it is better to discontinue it after about five minutes. The patient will then relapse into a state of light anaesthesia and will remain free from pain for a considerable time. The second way to avoid respiratory complications is to give small doses of atropine repeatedly for three days after operation—gr. 1/200 hypodermically three times a day is a useful average dose. The only possible objection to this treatment is the antispasmodic action of the drug, which might possibly predispose to paresis of the bowel, but I have never seen any trouble follow from this cause.

Let us now consider how the four requirements mentioned at the beginning of this paper are met by the endotracheal nitrous oxide-oxygen-ether technique.

1. Minimal respiratory movement. It will be admitted by most that this method affords less respiratory excursion than any other form of general anaesthesia. It is, in fact, the only way in which we can produce prolonged apnoea with safety.

2. Muscular relaxation. This should be complete. It is obvious that if a catheter is lying between the vocal cords, laryngeal spasm from peritoneal traction cannot occur, and so relaxation should be continuous throughout all stages of the operation.

3. Protection from operative shock. If the suggested practice of recording graphically the systolic and diastolic blood pressures and pulse rate is adopted, the first signs of shock can be detected and treatment instituted without delay. The endotracheal method does not, of course, protect the central nervous system from traumatic stimuli transmitted by the sympathetic system in the same way as does splanchnic block, but I am doubtful whether this is not more than counterbalanced by the continuously low blood pressure involved by the latter method.

4. Absence of pulmonary complications. I have found that if the two suggestions mentioned above are carried out the endotracheal method compares favourably in this respect with any other general, local, or combined technique. It is impossible to eliminate respiratory complications entirely from upper abdominal surgery, as a certain proportion are undoubtedly due more to the operation than to the anaesthetic.

Finally, the best argument in favour of the method which I have endeavoured to describe is that when a surgeon has once operated with it he almost invariably prefers it in future cases.

#### GENERAL DISCUSSION.

Mr. K. W. MONSARRAT (Liverpool) said that in abdominal surgery the surgeon required an anaesthesia which was rapid in induction, gave complete muscular relaxation, did not add to the influences producing shock, and was not followed by pulmonary complications, vomiting, and meteorism. None of the toxic substances by the administration of which general anaesthesia was produced could singly fulfil all these desiderata. No method and no anaesthetic should be considered as routine. Thus, in the case of a powerful, somewhat stout man on whom a gastro-enterostomy was to be performed, gas and oxygen with ether anaesthesia, though valuable in many other cases, was not a good method. In order to get adequate relaxation a proportionately large amount of ether had to be used, and gas, ether, and oxygen anaesthesia, when a considerable quantity of ether had to be used, was very liable to be followed by pulmonary complications. Such a patient had a smoother time if anaesthetized with warmed ether vapour by the Shipway plan. Mr. Monsarrat next remarked on the value of combining the general with a regional anaesthesia; in his own practice a local or regional anaesthesia was always employed. He infiltrated two planes with 0.5 per cent. novocain—the skin and the sub-peritoneal; this local anaesthesia was the general rule, but in a minority of cases he injected intercostal nerves,



in the subcostal grooves in particular, in operations on the upper abdomen. This local or regional anaesthesia had two advantages—it gave a satisfactory relaxation under a comparatively light general anaesthesia, and it obviated a very definite risk. If a skin incision was made when the patient was but lightly anaesthetized (and unless the surgeon invariably operated in association with one anaesthetist this must occur from time to time) the shock was sometimes definite and a fatal syncope might supervene, particularly in children. He wished to emphasize this risk, and he had had experience of two fatalities. In an operation several years ago, for inguinal hernia on a girl aged 8, ether anaesthesia was used and the patient was reported anaesthetized. When the skin incision was made a movement of the legs occurred, followed by blanching of the face, dilatation of the pupils, and a syncope from which she failed to recover. In the second case the syncope occurred at the end of an operation for acute appendicitis in a girl aged 13; no local anaesthetic was used. When completing the operation Mr. Monsarrat remarked that the anaesthesia was light. As the first stitch was put through the skin there was a kick of the right leg and syncope occurred, the respiration gradually failing. It might be said that such accidents should not happen, but even the experienced anaesthetist would admit that under ether anaesthesia the depth of the anaesthesia was not always easy to estimate. Such accidents were, he believed, eliminated by the use of the local in combination with the general anaesthetic. In gastric and bowel resections he infiltrated the mesenterics, using 0.5 per cent. novocain solution.

Professor Finsterer had referred to the damaging effect of chloroform and ether on the viscera, instancing in particular the liver and kidneys; the influence of ether on pancreatic function appeared to be of still more importance. Dr. R. J. Minnitt, who gave the majority of the anaesthetics in Mr. Monsarrat's operative work, had studied and reported on the incidence of ketosis and acidosis following ether anaesthesia, and had also investigated the effect of ether on sugar tolerance. There appeared to be no doubt at all that ether interfered with pancreatic function. This interference was sometimes transient and sometimes prolonged, and its degree had a direct association with post-anaesthetic vomiting. In insulin they had a specific remedy for this complication. It should be given prophylactically; in ether anaesthesia 10 units were administered immediately the operation was completed, and if vomiting occurred the dose was repeated as often as might be necessary. Mr. Monsarrat did not think it was possible to foresee an unusual degree of susceptibility to ketosis and acidosis. This complication was serious when it occurred in the course of convalescence from an abdominal operation. Happily it appeared to be capable of elimination or control by insulin. Dr. Minnitt's investigations had also shown a parallel relation between blood pressure curves and pancreatic disorganization. Gas and oxygen was generally preferable for the majority of abdominal operation cases, but warmed ether vapour was almost its equal, and, in the robust, was on the whole preferable. In critical cases the surgeon and the anaesthetist should meet before the operation and discuss the method of anaesthesia to be used.

Mr. G. GORDON-TAYLOR (London) said that Professor Finsterer had advanced strong and convincing claims for the use of splanchnic anaesthesia in abdominal surgery. He personally had tried local and splanchnic anaesthesia with light ether anaesthesia throughout, as less scopolamine and morphine could thus be used. Splanchnic block was much more easily performed with the patient under general anaesthesia, as psychic shock was thus abolished. In long operations he found that local and splanchnic anaesthesia were satisfactory only for a time, and less so towards the end, so that in this way it was a simple matter to increase the depth of general anaesthesia if necessary. Moreover, with a general anaesthetic there was less strain upon the surgeon and his assistants. There were certain disadvantages in local and splanchnic anaesthetics: they took time to inject, and the blood pressure tended to fall considerably. In one of his cases the fall was sufficient to be very

alarming, but the pulse rate was not diminished and the patient recovered. There was no doubt that splanchnic anaesthesia and regional block were great helps to the abdominal surgeon, both during the actual operation and afterwards, as the incidence of chest complications was greatly lessened, indeed almost to vanishing point, and shock and pneumonia had almost disappeared. In lower abdominal cases caudal block was also of use.

Mr. STANFORD CADE (London) stated that he had performed some 200 operations under splanchnic anaesthesia induced by Kappis's method, in which there were three types of danger. In the first, which was accidental and so avoidable, the drug might be injected directly into the blood stream unless repeated aspiration were performed before the fluid was injected. The second was physiological and consisted of the unavoidable fall of blood pressure after the injection of novocain. This could be combated by the prophylactic use of 1.5 c.cm. of pituitrin by hypodermic injection prior to the injection of novocain. The third danger was surgical and consisted in a delayed reaction—namely, a fall of blood pressure with a rise in the rate of the pulse; in his experience this danger was commoner when combined anaesthesia was used. On the whole he was opposed to ether or chloroform being given in combination with regional anaesthesia. The psychic effect could be dealt with by the rectal administration of paraldehyde or by the injection of trivallin with hyoscine, which caused a condition he found the nearest approach to natural sleep. Splanchnic anaesthesia diminished the mortality in cases of intestinal obstruction.

Mr. LOCKHART-MUMERY (London) said that this meeting marked a definite event in the history of the surgery of the abdomen. Chloroform and ether were certainly not satisfactory in the case of long operations, while regional and local anaesthesia were handicapped by the fact that a really satisfactory local anaesthetic had not as yet been evolved. Regional anaesthesia was still in its infancy. He preferred combined anaesthesia with twilight sleep. He could see no advantage in parasacral over spinal anaesthesia, and the former was very much more difficult of application. The most satisfactory form of general anaesthesia was probably that advocated by Dr. Moots, but he was curious to know how a difficult case of intestinal obstruction could be dealt with under nitrous oxide and oxygen anaesthesia alone.

Dr. S. R. WILSON (Manchester) was anxious to know which was the best method to employ when so many had been described; personally he preferred to judge each case on its merits. The psychic condition of the patient was of the greatest importance, though apt to be entirely neglected. Even the routine administration of atropine was not without danger; he had had a case which showed most alarming symptoms after such an injection, probably due to adrenal exhaustion following the injection of atropine. It was quite conceivable that symptoms might follow when this drug was used in cases of thyroid disease as there seemed to be some connexion between thyroid disease and the condition of the adrenals. Nitrous oxide and oxygen would do all that a subcutaneous injection would do in cases where regional anaesthesia was employed. Only from the English-speaking races had there evolved a body of men who were specialists in the administration of anaesthetics; many of Professor Finsterer's difficulties were probably the result of the inexperienced being in charge of the anaesthetic. A drawback of complicated technique was that it consumed a considerable time in its application and a busy surgeon operating as he did in this country, in scattered homes and hospitals, would be seriously hampered by methods which involved great increase in the time necessary for each individual case. Interest was mostly confined to post-operative results, which were undoubtedly much better of recent years than formerly, no matter what type of anaesthesia was used.

Mr. M. MAMOURIAN (Ashton-under-Lyne) emphasized the necessity of progress, but thought that the emphasis laid on the necessity of team work was becoming grossly

exaggerated. The surgeon was not only the first violin but the conductor of the surgical orchestra, and consequently the work to be played should be decided by him and not by the anaesthetist, whose role was supplementary. He thought that much could be done in the schools by determining who was and who was not a good anaesthetist before letting a man take up a specialty regularly or occasionally for which he was temperamentally quite unfitted. Teachers should have clear ideas of the capacities of the men they were teaching, and should as far as possible prevent the round peg getting into the square hole.

Dr. F. H. McMECHAN (Avon Lake, Ohio) desired to record his appreciation of the debt overseas visitors owed to the British Medical Association for the chance of taking part in an international reunion. He reaffirmed his belief in the necessity of co-operation between the surgeon and the anaesthetist in the matter of operations, mainly for the benefit of the patient. Everything should be done to make operations as safe, as little unpleasant, and as satisfactory in their results, both immediate and remote, as was humanly possible; to that end co-operation was essential, so that surgeon and anaesthetist should have an intimate knowledge of each other's work and requirements.

Professor FISTERER, replying, said that the discussion showed that the speakers were of the opinion that in major operations general narcosis with ether or chloroform should be replaced by nitrous oxide or combined anaesthesia. He referred to several papers that had been read, and commented on their main conclusions. The discovery that with endotracheal nitrous oxide-oxygen-ether anaesthesia the muscular relaxation, which was absent in the ordinary administration, could be obtained was very interesting. This relaxation could be more easily obtained by the injection of novocain into the anterior abdominal wall. A deep general anaesthesia was also necessary before introducing the catheter, and he would therefore prefer combined anaesthesia (injection of novocain into the abdominal wall and mesenterics and nitrous oxide) to Hower's method. He did not insist on regional anaesthesia, as his patients were given ether at once if they felt pain. In all major operations, even when starting with general narcosis, he produced complete local anaesthesia of the abdominal wall and mesenterics, so as to diminish the amount of general narcosis necessary and to prevent shock. This was absolutely necessary if nitrous oxide or narcylan could not be used for the general anaesthetic. In very old or cachectic patients he tried to avoid any ether, as it was in these cases that death from pneumonia was most to be feared.

# INTRAVENOUS SOMNIFENE ANAESTHESIA IN GASTRO-INTESTINAL SURGERY.

BY

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In abdominal and gastro-intestinal surgery anaesthesia has advanced with technique, and inhalation anaesthesia by modern methods in the hands of an expert anaesthetist, combined with Crile's method in the abdominal wall, gives most satisfactory results. In the ordinary case the surgeon obtains ease in operating and the patient awakes to an almost painless convalescence. But conditions arise when the surgeon must rely on ordinary, not expert, assistance, and in some countries the qualified specialized anaesthetist does not yet exist. Therefore, especially abroad, efforts are made continuously to eliminate the general anaesthetic or to reduce it to a minimum.

Before, however, adopting new methods surgeons will, I think, exact certain conditions of anaesthesia. The patient must be quite unconscious, the method must be simple, available anywhere without the need of specially trained assistants, the return to consciousness must take place in a reasonable time, and there should be no late toxic effects. These postulates place local anaesthesia alone, or the splanchnic block outside practical anaesthesia. The results of the latter in certain clinics are

excellent, in others patients complain most bitterly during the progress of the operation. Splanchnic anaesthesia also usually requires an extra and specially trained assistant. Besides, the objection that the deep bilateral insertion of the long needle constitutes an "anaesthetic operation" seems justified, as some anaesthetists give a general anaesthetic before beginning the splanchnic block. Recently in Franco the experimental and clinical researches of Fredet and his associates on the use of somnifene in intravenous injection for surgical anaesthesia prove that by the use of this preparation general anaesthesia may be reduced to a minimum—in some cases it may be eliminated. Fredet's interesting researches demonstrate that the seat of action of somnifene is chiefly in the nerve centres; its effect on the liver and kidney is extremely small. He further found that in the commercial product of this name there are two constituents, one with a slow and needlessly prolonged anaesthetic effect. He has eliminated this body, and now employs only the other—namely, allylisopropylmalonylurea, the action of which is rapid and more transient. To obtain surgical anaesthesia with this product it must be combined with morphine, or with morphine and scopolamine. In some cases nothing more is needed, but as a rule a small amount of a general anaesthetic is used to make and to close the incision. The technique of Fredet's method is as follows:

1. A hypodermic injection of morphine is given, varying from a minimum of 1 cgr. up to 2 cgr. as a maximum. It is advantageous to associate scopolamine with the morphine in doses varying from 2/3 mg. as a minimum up to 3/4 mg. as a maximum, according to the weight of the patient, and whether his general state is cachectic or satisfactory.
2. Twenty minutes later as a minimum interval, or forty-five minutes as a maximum, after the morphine-scopolamine injection, the intravenous injection of allylisopropylmalonylurea is made in a vein at the bend of the elbow with a fine needle and very slowly; three minutes at least should be spent in the injection. The dose is calculated according to weight, age, and the general state of the patient. Generally in fairly robust adults 1 gr. per kg. of body-weight is used, never passing 0.07 gram; personally, we have never passed 0.06 gram. In aged or cachectic patients 0.04 or 0.03 gram should be enough. Ampoules of the drug may be obtained containing 0.01 gram in each cubic centimetre of water.
3. Five minutes after the intravenous injection a small amount of chloroform or ether may be given to permit the incision being made about ten minutes after the intravenous injection. During the operation the general anaesthetic can often be dispensed with, to be resumed should the patient move and at the end to facilitate the suture of the wound.

This technique in practice is extremely simple, the anaesthesia is excellent, post-operative vomiting very rare. Patients awake four or five hours after operation to fall asleep quietly again. Excitement, which was frequently observed after somnifene anaesthesia when first used, is often quite absent with the latest preparation. I have used this anaesthesia in 33 cases during a period of two years, and, though it has not replaced routine methods, it is my choice in two types of cases—when the patient is a bad risk from pulmonary complications or from probable hepatic and renal insufficiency, and again when we are certain the operation must be prolonged. Thus I have used it in most types of gastric operations—gastro-enterostomy, gastrectomy, Balfour's operation combined with pyloroplasty and duodeno-jejunostomy, colectomy, and the prolonged operations needed for the cure of gastro-colic fistulae. In the tedious operation for large ventral hernia in a bronchitic patient and in exploratory operations when cancer is inoperable it has served me well. In several cases of gastro-enterostomy in most debilitated patients, by the addition of some local anaesthesia of the wall, no general anaesthetic was required. In a case of colectomy of the sigmoid for a ring carcinoma neither local nor general anaesthesia was employed; the patient slept deeply, never resenting the inevitable drag of the mesentery during mobilization of the descending colon, which was anastomosed to the rectum by Mayo's tube method. He never vomited afterwards; the pulse never passed 100. One death occurred in this series of cases in a case of intestinal obstruction, the fatal result being in no way connected with the type of anaesthesia. In 9 cases no general anaesthetic was required. In the others, when chloroform or ether was required to make or close the incision or during the progress of the operation, the

quantities used varied from 8 grams (3 drachms) of chloroform to 50 grams (1½ oz.) of ether. Only in two cases were these amounts exceeded. These anaesthetics were always given by the open method, so that in a hot country where evaporation is rapid patients did not actually inhale these amounts in full. Novocain was generally injected into the recti muscles, 6 oz. of a 1/2 per cent. solution being rapidly administered with a Babcock's self-filling syringe.

Of the 33 cases the results of the anaesthesia and the after-state of the patients were excellent in 29. In 4 cases some post-operative excitement occurred, which was very marked in one alcoholic patient in whom 6 oz. of ether had to be used. In the 3 other cases the agitation was slight and very soon over. With the most recent preparation patients usually awake five or six hours after operation to fall asleep quietly again, and excitement is absent. In my experience, the more caecetic the patient the better the result with this anaesthesia. Though not replacing routine methods, it is at present my method of choice in the type of case I have described. I believe it to be of incontestable value, especially for the isolated surgeon far from the large centre who cannot have the aid of expert anaesthetists.

## Memoranda;

### MEDICAL, SURGICAL, OBSTETRICAL.

#### POTASSIUM CHLORATE AND CONGENITAL GOITRE.

CONGENITAL goitre was first recorded in 1796; since then several hundred cases have been reported, the vast majority from goitrous districts on the Continent and America. H. H. Skinner in 1924, in the *Journal of the American Medical Association*, reported 12 cases—all, however, from goitrous mothers; he mentions 96 cases from sixty goitrous parents reported by Denno and Richard, and 130 cases collected from the literature by Thóvenot in 1909.

In England, however, very few cases have been reported; in fact, I have been able to find records of only 6; of these, 4 occurred in Dorsetshire and Cumberland, where goitre is not uncommon. The remaining 2 were reported by Sir J. Y. Simpson and A. R. Simpson, in 1855 and 1866 respectively. The mothers of these two cases had been taking potassium chlorate throughout their pregnancies on account of previous abortions or stillbirths. The parents were healthy and apparently did not reside in a recognized goitrous area.

Other cases must have occurred, but of those cases I have found recorded the mother in 33 per cent. had been taking potassium chlorate; if the cases from Dorsetshire and Cumberland are excluded the percentage is 100. These numbers are too small, and even with the two cases I now record may merely be examples of coincidence.

Mrs. S., pregnant for the sixth time, stated that there was a family tendency to miscarriage, stillbirth, and neo-natal death. Her mother's first three children were either stillborn (two) or died in early infancy (one); these were followed by three boys and three girls. The girls all married.

K., the eldest, had first a stillborn boy, and secondly a boy who lived three days. She then took potassium chlorate and had four healthy children.

M., another sister, had a miscarriage at six months and an abortion at three months. She then took potassium chlorate throughout her next pregnancy until the thirty-eighth week, when labour was induced, a female child with a goitre, but otherwise healthy, being born; a subsequent pregnancy, during which she again took potassium chlorate, resulted in a healthy non-goitrous boy.

Mrs. S., the remaining sister, suffered from albuminuria in her first two pregnancies; in the first a macerated foetus was born at term; in the second the foetus (dysplastic) was born at the eighth month. In the third pregnancy there was no albuminuria, but the child was stillborn at term. In her fourth and fifth pregnancies she took potassium chlorate. Premature labour was induced at the thirty-eighth week, and living healthy children were born. Throughout her sixth pregnancy she took potassium chlorate (gr. x thrice a day). She did not weigh it, but helped herself with a spoon to what she thought was enough. There was no albuminuria. Labour, in spite of deficient flexion, was easy. The child, a girl, was normal except for a large bronchocoele, filling up the whole neck; the swelling was soft and at first ill defined. For the first twenty-four hours the baby's colour was not good;

beyond this there was no difficulty in deglutition or in respiration. By the third day the swelling was smaller; the lobes of the thyroid gland extending on either side up under the ears were well defined. The enlargement steadily diminished in size and by the eighth week all obvious enlargement had disappeared.

The goitre in M.'s child was also transient.

There was no previous history of any goitre in the family. No Wassermann test was performed, but neither the mother nor her children showed any stigmata of syphilis.

Potassium chlorate reacts with iodine to form the iodate, and I suggest, as a possible explanation, that the prolonged administration of the salt may result in some of the maternal iodine becoming "fixed" and not available for utilization by the foetus, and that the enlargement of the foetal thyroid is an endeavour on its part to obtain and utilize the necessary iodine for its internal secretion. Such an explanation seems capable of being tested, and the results, if confirmatory, would throw some very interesting light on the causation of goitre in general.

Southsea.

R. K. WHITE, M.R.C.S.

#### HERPES AND VARICELLA.

In view of the relationship supposed to exist between herpes zoster and varicella, it may be of interest to report three cases, supporting this view, which I have seen during the past three years.

Case 1.—On September 19th, 1923, a married woman, aged 26, developed intercostal herpes. On October 4th (that is, fifteen days later) her child, aged 5 months, was seen with a typical attack of varicella.

Case 2.—On March 17th, 1926, a man, aged 79, developed supra-orbital herpes, which ran a rather severe course, and which left considerable scarring. On April 1st (that is, fifteen days later) his grandson, aged 2, who was living in the same house, developed varicella. The next day his granddaughter, aged 7, also showed signs of a mild, though typical, attack of chicken-pox.

Case 3.—On March 24th, 1926, a child, aged 13, was seen with intercostal herpes, and on April 11th (that is, eighteen days later) her sister, aged 11 months, fell ill with chicken-pox, exhibiting a profuse rash, with the typical distribution of the latter disease.

Apart from the herpes, no other source of infection could be traced in any of these cases. Conclusions cannot be drawn from a few cases, but it certainly seems a very remarkable coincidence when, in one practice, in a short time, three cases of this nature are seen.

Ibstock, Leicester.

W. J. MELDRUM, M.B.

#### CEREBRAL SYPHILIS: CONVULSIONS: DEATH.

The following case seems of sufficient interest to warrant recording.

W. J. V., a farm hand aged 45 years, was seen by me at 6 a.m. suffering from "fits." The history given by his wife was that he had been quite well until a week previously, and had since been "queer"; he had complained of headache, had "looked ghastly" at times, and threatened to throw himself out of the window. He had continued at work, however, until that morning, when on getting up he "had a fit." He had had no previous illnesses except malaria. He had served twelve years in the marines, and had seven healthy children. His wife gave no history of miscarriage or stillbirth.

He was found to be a muscular man, extensively tattooed. Every two or three minutes he had a convulsion, at first tonic, then clonic. There was no opisthotonos or rigidity of the neck or jaw; between the convulsions he was stuporose and could not recognize persons or obey orders. There was no paralysis or weakness of the face or limbs; the knee-jerks were brisk and equal and both plantar reflexes were normal. The cranial nerves appeared normal; the pupils were equal, moderately dilated, and reacted well to light; the fundi were normal. The heart, lungs, and abdomen were clear and the bladder was empty. There was no penile sear.

An injection of 1/4 grain of morphine and 1/200 grain of hyoscine had no apparent effect on the convulsions. He could not be moved to hospital owing to the inaccessibility of his cottage. At 10 a.m. his condition was unchanged, but he appeared so cyanosed that I removed 20 oz. of blood by venesection and gave him 1 grain of calomel. At 6 p.m. he was obviously moribund; the fits had continued all day and he was then pale, clammy, and with a slow deep respiration and thready pulse. He died at 9 p.m.

A post-mortem examination was refused. The Wassermann reaction of the blood was found by the Hampshire county health authorities to be strongly positive.

The rapidity of the fatal issue and the entire absence of any localizing signs would seem to be the chief points of interest.

Lymington, Hants.

N. M. GOODMAN, M.B.

## A MEDICAL REVIEW OF SOVIET RUSSIA.\*

## IV.—CHANGE IN TYPE AND INCIDENCE OF DISEASE.

BY

W. HORSLEY GANTT, B.Sc., M.D.

(Formerly Chief of the Medical Division of the American Relief Administration, Leningrad Unit.)

## PART I.

MODIFICATIONS in disease have taken place all over the civilized world as a result of the war, influenza pandemic, and social changes, but not on the same great scale as in the Union of Soviet Socialist Republics (Russia). In no other country were the conditions so bad, and in no other country were the changes in morbidity so enormous. Some diseases became epidemic, others remained unchanged, and a few disappeared altogether.

We have been able to see in Russia the effects of war and famine on all kinds of diseases—surgical, internal, nervous, etc. Some of these changes have been so remarkable, so little has been written about them (even in Russian, almost nothing in English), that I have, during my two and a half years in Russia, collected these facts with a great deal of pains. An enormous number of original MSS., official statistics, and Russian medical articles have been gone over for this purpose, and a certain amount of unpublished detail is included.

The sources of information have been: a large number of original articles written by eminent Russian specialists in the various branches of medicine during the famine, and handed to the author in 1922; the records of the American Relief Administration; inspection trips and observations in the various parts of Russia; statistics of the Soviet Department of Public Health.†

In past wars the greatest destructive element has been disease. Only in the great war and in the Franco-Prussian war of 1870 have the deaths from wounds and from disease been nearly equal. Russia was the exception, if we consider the civil war also; for in 1918-20 there were more deaths from disease than from both the world war and civil war. Dr. Semashko states that, of the 14,000,000 men mobilized, 11,000,000 were lost through wounds and disease together. In 1828 Russia lost in the Russo-Turkish war 80,000 from disease and 20,000 in battle; in 1878 she lost 86,000 from disease and 16,000 in battle (Viry); and in 1917-20, although accurate figures are not available, it is estimated (Karcfa-Korbut) that 20,000,000 Russians died, and in 1917-24 40,000,000 died, only a small percentage of which could have been due to the casualties of battle.‡

## FACTORS.

The limits of this paper make it possible merely to enumerate the factors underlying the morbid changes. The war in Russia brought with it the usual disease-producing concomitants of war—restriction of food, disorder, physical and mental suffering. These factors were of much greater magnitude in Russia than in any of the other nations. They combined to produce a tremendous effect on the health of the people, probably involving larger numbers and causing more disease than any other war or calamity in the medical history of Europe.‡

From 1914 to 1917 the decline in living conditions in Russia was similar to that in the other combatant nations; from 1917 through 1919 there was civil war of greater magnitude and destruction than the previous world war, involving nearly every person in Russia; and from 1919 into the summer of 1923 there was famine and starvation

affecting three-fourths of the people, and accompanied by epidemics of typhus and relapsing fever afflicting one out of every four adults, and of smaller epidemics of cholera and small-pox. These events completely smashed Russia, to say nothing of the other changes consequent upon two social revolutions. During part of this period everyone led the most primitive life and suffered from indescribable physical, mental, and moral hardships. Since 1922 there has been a gradual return toward normal life for the great mass of the Russian people.

**National Resistance.**—While the disease-producing factors were greater in Russia, the national resistance was less than in the other European countries. (Under this term are included those forces at the disposal of a nation for fighting disease, such as medical personnel, hospitals, field equipment, public health education, national finances.)

**Shortage of Doctors.**—Although the individual Russian doctor was well educated, the relative number of doctors in pre-war Russia was smaller than in any other civilized country.\* The mobilization of doctors and the large number of deaths among them left many districts entirely without medical assistance. For example, in 1921, when the epidemics were raging, in the Penza Government on the Volga, where one of every twelve people was down with fever, there was only one doctor for the 180,000 people.‡

A discussion of the hospitals has already been given.‡ The public health organization which the Soviets inherited from the Tsarist regime was almost nil, and there was thus a strong contrast between Russia and such countries as Germany and Finland. These two countries also were devastated by war, revolution, famine, and disorder, and epidemics appeared in them at the same time as in Russia, but thanks to their highly organized public health systems, and the general education and cleanliness of the people, typhus was soon checked.

## VITAL STATISTICS.

The following table shows the high death rate and low birth rate which resulted during the bad years in Russia, as compared with other European countries. The death rate for 1920-22 was, according to Professor C. A. Novosilsky and other Russian authorities, much higher than the recorded figure of 33.2; in many parts of Russia it reached 85 during the worst period.

TABLE I.—Birth and Death Rates, 1913 and 1920-24.

The figures are taken from the Annual Reports of the Registrar-General of England and Wales; from the *Statistisches Jahrbuch für das Deutsche Reich*, 1925; and from the records of the "Statburo," Leningrad. The figures for 1913 are for European Russia, exclusive of Poland and Finland.

	1913.	1920.	1921.	1922.	1923.	1924.
<b>RUSSIA.</b>						
Births ...	44.7	33.0*			42.2	41.1
Deaths ...	22.4	33.2*			22.9	22.9
<b>ENGLAND.</b>						
Births ...	24.0	25.5	22.4	20.6	19.7	18.8
Deaths ...	13.8	12.4	12.1	12.9	11.6	12.2
<b>FRANCE.</b>						
Births ...	19.0					19.2
Deaths ...	17.7					17.2
<b>GERMANY.</b>						
Births ...	27.5	25.9	25.3	22.9	21.0	20.4
Deaths ...	15.0	15.0	13.8	14.2	13.9	12.1
<b>ITALY.</b>						
Births ...	31.7	31.9	30.4	30.0	27.9	
Deaths ...	18.7	18.8	17.5	17.6	15.8	
<b>U.S.A.†</b>						
Births ...	25.6			22.5		
Deaths ...	15.0			11.9		

\* Average for 1922-23 for R.S.F.S.R.

† Figures for U.S.A. include only the States in the registration area.

The populations of the chief European countries have doubled or trebled during the past century, as a result of the reduction of death rate.‡ This has been brought about mainly by the control of infectious epidemics and the lowering of infantile mortality.

\* The proportion of doctors in Russia was 1 to 6,000; in Germany, 1 to 1,500; in Great Britain, 1 to 1,400; in United States of America, 1 to 800. Many young doctors have been graduated since the revolution, so that the number of physicians in 1925 in Soviet Russia was 29,000, as compared with 14,000 before the war.

\* Previous papers on medical and scientific work in Soviet Russia by Dr. Horsley Gantt were published in the *BRITISH MEDICAL JOURNAL* in 1924: I. A Review of Medical Education in Soviet Russia, vol. i, p. 1055; II. Hospitals and Health Conditions, vol. ii, p. 336; III. Scientific Work, vol. ii, p. 633.

† I am indebted to Doctor Semashko and other officials of the Public Health Department for the unrestrained use of their figures. See also N. Semashko: Health in Russia, *Dokl. med. Woch.*, 1924, Nos. 4, 7, 8, 11, 17, 18, 22, 27, 32, 37, 46, 51.

‡ Sir Humphry Rolleston called attention in 1916 to some of the factors of war in producing disease (*Practitioner*, January, 1916), and in 1920 to some theories as to the change in type of disease. The reader is referred to these for a fuller discussion and bibliography.

TABLE II.—Population.

	1800.	1910.
Great Britain ...	16,000,000	44,000,000
France ...	27,000,000	39,000,000
Italy ...	17,000,000	34,000,000
Sweden ...	2,000,000	5,000,000

A decline in death rate has taken place also in the decade 1914-24, except in Russia. However, in 1918-19, in practically every country for which we have any record the death rate equalled or exceeded the birth rate, owing to the pandemic of influenza. Although racial and other conditions affect the birth rate, it has been also influenced in Europe by the disastrous circumstances following the war, and in America by increased standard of living and of economic pretensions.

#### FAMINE AND DEFICIENCY DISEASES.

In addition to the underfeeding of the poor and the general lack of vitamins always present in civilized nations, there was during the world war, in nearly all the combating countries, a widespread caloric deficiency, especially marked in proteins, fats, and milk. In Berlin, in 1917, the rations fell to 1,400 calories.<sup>4</sup> In America this shortage lasted only one or two years, and to a very limited extent, but in Europe for a much longer time, and in Russia—the Capital of Famine—until 1924, and affected nearly everyone; at one time about 20,000,000 were starving, and in 1920-22 about 10,000,000 died from starvation.

#### Food Shortage in Russia.

In order to explain the nutritional and other diseases which arose during the famine period I shall give a few details concerning the food shortage. This deficiency began in 1915. After the Soviet revolution in 1917 people in the cities were rationed, and there was little possibility of buying more food as money was abolished and barter prohibited until September, 1921. After this famine reigned. The official ration for the civil population of Leningrad in 1918, 1919, and 1920 is given by a professor of medicine as follows: from 272 to 611 calories, depending upon the employment. The Red soldier who was not in active service was then receiving 1,467.6 calories instead of the normal 4,300. In 1921 the civil ration was raised to 1,500 calories, with a proportion of 75 per cent. carbohydrates, 17 per cent. proteins, and 8 per cent. fats. The quality was poor, consisting mainly of coarse black bread, salt herring, and potatoes, and later of grits made of millet. Salt as an article of diet was absent.

#### Results of the Famine.

A leading internist of Leningrad gives the following as results of the famine: (1) General loss of weight of 20 to 40 per cent., and the entire disappearance of fat people. (2) Decrease in the capacity for mental work and a decrease in mental activity manifested by apathy, inability to concentrate, impairment of memory, weakness of will, a dulling of the feelings, especially of compassion, love, and the desire to be clean. (3) The development of the famine diseases, "hunger oedema" and "hunger cachexia." These showed a mortality of 50 per cent. (4) The increase in deficiency diseases such as scurvy, noma, and rickets. (5) The increase in some gastro-intestinal diseases—as meteorism, peptic ulcer, acute colitis, and occlusions caused by the indigestible food. These will be discussed under Internal Diseases. (6) Anthropological changes (to be discussed later).

The following is another description of famine disease which I have abstracted from an unpublished account given me by Professor Chernoroussky of the Leningrad Medical Institute:

Marked insufficiency of food lasting for a long time caused rapid loss of weight and splanchnoptosis. When this loss reached a certain degree it resulted in a definite disease—"famine inanition." Typical early symptoms were decrease of sexual activity; in men decrease of libido and impotencia, and in women amenorrhoea; a relaxation of sphincters, particularly of the bladder, causing a frequent desire to micturate.

Further decrease of nutrition led to a non-albuminous oedema, characterized by weakness, apathy, subnormal temperature, bradycardia, anaemia, and polyuria. There was

disturbance of metabolism and an alteration of the capacity of the tissues to retain water.

Famine disease which was not accompanied by oedema ("famine cachexia") showed more pronounced nervous symptoms, and its course was more acute and serious. Professor Chernoroussky concludes that the oedema has a compensatory value.

#### Gastro-intestinal Disorders.

The change in the nutritional conditions (decrease in proteins and fats, relative increase in carbohydrates, and great increase of indigestible residue) resulted in trauma of the gastro-intestinal tract, and a marked increase in hyperacidity and hypersecretion and gastric and duodenal ulcers; on the other hand, there was a decrease in gastritis, appendicitis, and constipation.

#### Scurvy.

Scurvy was one of the deficiency diseases least affected by the famine. It was more often seen in hospitals and kitchens where the inmates received a fairly ample caloric ration than in those in whom starvation was more marked but who were not confined to an institution. This was probably because they satisfied their appetite by eating berries, bark, leaves, etc. Scurvy was sometimes seen in the American kitchens where the children received cocoa, sugar, white bread, and evaporated milk.

#### Noma: Rickets: Pyorrhoea.

Noma increased enormously during the famine, and this was thought to be due to an abrasion resulting from coarse food (as wheat chaff) in a debilitated person. In a hospital at Syzran on the Volga which I inspected in 1922, 20 per cent. of the children had noma. It was always fatal. During the famine period 80 per cent. of the children were said to have rickets. In 1926 it is less prevalent, though still above the pre-war rate. This disease had also increased eightfold in Germany between 1916 and 1923. In Russia I did not see or hear of the keratomalacia and blindness which were present in Germany, owing to the food deficiency, in 1923. Pyorrhoea, which is so common in America, is rarer in Russia, although it has increased markedly in the past few years.

At the present time all these deficiency diseases have practically disappeared, and the feeding conditions are back to what is normal for Russia.

#### ACUTE INFECTIOUS DISEASES.

##### Typhus and Relapsing Fever.

The lice- and insect-borne diseases, such as typhus and relapsing fever, and plague had practically disappeared from the earth except as endemics until the world war. With the squalor and malnutrition following the war the first two of these diseases assumed epidemic proportions in Eastern and Central Europe. Even in such ordinarily well ordered countries as Germany and Finland there were epidemics of significant size in 1917-19—for example, there were over 3,000 cases of typhus in Germany in 1919.<sup>5</sup> In Poland these epidemics were of enormous size, and in Russia, where lice were universal, practically everyone who was not immune was attacked (35,000,000 cases of typhus and relapsing fever together in Russia followed the world war).

Wherever there is constant dirt, lice, and overcrowding, typhus is likely to be present (for example, New York, Ireland, China, India). When these conditions become universal the disease spreads from an endemic into an epidemic. War furnishes ideal conditions for its spread. Sir Humphry Rolleston, former Surgeon Rear-Admiral in the British Navy, says:

"War, by massing together in close quarters large numbers of men, and especially of young recruits, facilitates the spread of infection, and thus fevers which in peace are endemic or sporadic become epidemic; this has been the universal experience, as was shown in the case of typhoid fever in the South African war, of typhus in Serbia, and of paratyphoid and, to a lesser extent, of cerebrospinal fever among our own men during the present campaign."

Famine also has some effect on the spread of these epidemics. It has often been noticed in Russia that they coincided with famine years. In the recent famine the incidence of the epidemics was remarkably greater in those



districts where the food shortage was most pronounced. For example, in Tsaritzan and Leningrad districts, where the famine was very acute, the number of infectious diseases was much greater than in the adjacent Don and Koporsky districts, even though the population of the two latter was two or three times as great. The only explanation that could be given was their greater food supply (H. Beeuwkes).

TABLE III.—Correlation of Food, Cleanliness, and Infection for the City of Leningrad.

Year.	Population.	Official Ration—Calories.*	Amount.	Days.	Population.	Hospitals per 100 Patients.
1916	2,317,851	3,000	?	100	12.3	6.3
1918	1,434,737	1,800	100	50	21.8	9.3
1919	700,000	1,500	25	14	50.1	17.8

\* The actual number of calories received was much lower than the official figures.

The recent epidemic of typhus in Russia was probably the largest on record. The last important epidemic before this was that of 1880-81, when there were 15,000 cases in Leningrad and approximately 3,000,000 in the whole of Russia.

TABLE IV.—Number of Cases of Typhus and Recurrent Fevers, with the Rate per 10,000 Population.

Year.	Typhus Exanthematicus.		Typhus Recurrens.	
	No. of Cases.	Rate.	No. of Cases.	Rate.
1913	105,637	7.2	28,773	2.0
1918	141,538		16,662	
1919	2,240,858		227,927	
1920	2,667,500		1,030,624	
1921	545,587		623,199	
1922	1,556,312	158.9	1,573,120	171.0
1923	245,876	18.4	253,110	18.8
1924	126,946	9.5	49,586	3.7
1925 (Jan.—June)	50,000	3.9	10,000	0.7

These official figures are far too low for the years 1918-22; in 1923, when statistics had improved, we found that they should be multiplied by a factor of 2 to 4 to obtain the correct number.\*

These epidemics spread from the south northward, affecting the towns more than the country, and reaching their peak during the famine years. The subsidence may be attributed not only to improved living conditions but to the fact that practically everyone who was not immune had been attacked, and perhaps also, as Sir Humphry Rolleston points out, to the attenuation of the infecting organism. The mortality of typhus was 8 to 9 per cent., and of relapsing fever 4 to 5 per cent., but 14 to 17 per cent. if complicated by paratyphoid.

In 1919 compulsory vaccination of some of the medical personnel (1,000 in Leningrad) was carried out by Handi's method (citrate blood, or vaccine of heated defibrinated blood), and it was alleged that among the vaccinated the morbidity was only one-fifth as great as in those who were not vaccinated, and that no deaths occurred among them.

#### Typhoid Fever.

In the history of wars, only in the last great war has typhoid fever been an insignificant factor as compared with the casualties from wounds. During the past decade this disease has not increased in Russia. Russian authorities state that there is an antagonism between typhus and

typhoid (Jakoleff). The absolute number of cases for the whole of Russia was:

For 1913 ...	374,862	For 1921 ...	308,000
" 1914 ...	355,000	" 1922 ...	391,815
" 1918 ...	109,000	" 1923 ...	142,012
" 1919 ...	252,000	" 1924 ...	166,399
" 1920 ...	424,000		

The mortality rate per 100,000 population was:

For 1913 ...	25.7
" 1922 ...	31.7
" 1923 ...	10.0
" 1924 ...	12.4
" 1925 (January to June) ...	4.4

The mortality during the famine was low—only 4.5 per cent. Leningrad was formerly one of the worst of the large cities of the world for typhoid fever owing to its poor filtration system. Its rate in 1910 was 33.7, while that of the largest cities in America was 23.5, and in thirty-three large European cities it was only 6.5. Since the advent of the Soviet Government the chlorination system of some of the cities has been greatly improved, and the rate reduced in spite of the inefficient and worn-out sewage and filtration systems. For example, in Leningrad the rate decreased from 45.2 for the ten years preceding 1916 to approximately 20 since 1916, and for 1924 the rate was 14.6. The vaccination of two million people by the American Relief Administration and subsequent vaccinations by the Soviet Government may have helped.\*

#### Cholera.

Cholera reached its maximum in 1921, when 205,000 cases were reported, and the actual number was many times this. There were 93,232 in 1922, 159 in 1923, only 10 in 1924, and 9 in the first six months of 1925 (Dobritzker). Beeuwkes says: "The recurrence of cholera has increased in the past years, the intervals have become shorter, and the virulence has augmented." Altogether there have been eight epidemics in Russia since 1823. That of 1908 was much smaller than the recent one, although there were 200,000 cases. The mortality in 1908 was 59 per cent., in 1911 and 1915, when there were only a few cases, 48 and 27 per cent. respectively, and for the first three and a half months of 1921, according to Dr. Beeuwkes, 50 per cent. (A.R.A. Reports.) Transportation formerly was from India and Persia, but it is not known how the present epidemic arrived. Professor Jakoleff says (personal communication) that the organisms probably lie dormant in healthy carriers between epidemics, as they have been found in man in the South of Russia, and also in fish of the Caspian Sea. During the epidemic which coincided with the famine of 1892 the number of people who died of cholera (Hiss and Zinsser) was 800,000.

It is difficult to form an opinion as to how far the present epidemic was influenced by the six million vaccinations done in two million people (by the American Relief Administration) in 1922-23 with the Pasteur "tetra-vaccine" against typhoid, paratyphoid (A and B), and cholera. It is interesting to know that in this large number of cases not a single death was reported from the use of the vaccine, although there were some extremely severe reactions. Castellani and Mendelson also had no untoward results in 170,000 Serbians who were similarly inoculated.\*

#### Small-pox.

Small-pox has always been serious in Russia, as there was no compulsory vaccination before the revolution. Only in 1919 was there a marked increase in the disease. The official figures given below should be multiplied by two or more during the famine years.

1914 ...	91,000	1921 ...	83,000
1918 ...	57,000	1923 ...	40,000
1919 ...	166,000	1924 ...	28,553
1920 ...	98,000		

The rates (per 10,000 population) were: 4.1 for 1913, 3.6 for 1923, and 2.1 for 1924. Since 1918 the mortality has been 10 to 20 per cent. The Soviet Government has made vaccination compulsory (decree of 1919), and now

\* In the city of Petrograd alone, in the three years 1918-20, there were registered in the hospitals 75,000 cases of typhus fever, and 25,000 cases of recurrent fever, or one-sixth to one-eighth of the population.

\* In the above discussion ... included with typhoid as there were no accurate ... the two. Statistics for Russia are from Ja. ... Chernomousky, and "Stalburu."

that it is manufacturing its own vaccines (in 1922 two million children were vaccinated by the A.R.A.) we may look forward to this disease being reduced to the limits of other civilized countries.

#### Dysentery.

With dysentery, as with typhoid and small-pox, there was no great increase during the famine and war years. The figures for the morbidity of this disease were:

1913 ...	445,955	1921 ...	197,000
1918 ...	59,000	1922 ...	365,691
1919 ...	137,000	1923 ...	239,231
1920 ...	324,000	1924 ...	338,567

The rates (per 10,000) were: 30.5 for 1913, 29.7 for 1922, 17.9 for 1923, 25.2 for 1924.\* In spite of there having been no marked change in morbidity, the mortality increased sharply after 1918, which was attributed to the famine and the quality of the food. In 1919 the mortality was 20 per cent., and in 1920-21 it was 63 to 70 per cent. The prognosis of patients with typhus was especially poor (Chernoroussky). The usual type was the Flexner; the Shiga type was rarer, and the amoebic was found only in the South of Russia, where there were many cases of hepatic abscess. In the treatment of the bacillary form excellent results were obtained with Lister Institute serum; but the Pasteur serum was of little value. Even better results were obtained from the vaccine treatment than from serum.

#### Summary.

To sum up the situation in regard to infectious epidemics, we can say that the epidemics of typhus and relapsing fever which coincided with the famine were probably the largest ever seen in Russia, that the cholera epidemic was exceeded only by that of 1892, and that the malaria epidemic which followed the famine was decidedly the largest of its kind on record in Russia. Small-pox was slightly increased during the first year of the famine, but typhoid decreased. There was a small epidemic of even the plague during the famine. Since 1922 all of these infectious diseases have markedly decreased, except malaria and children's infections, which have increased. In 1924 there were 2,198 cases of epidemic encephalitis as against 958 in 1923.<sup>10</sup>

#### MALARIA.

Epidemics of malaria, syphilis, and tuberculosis have followed on the heels of the deadly typhus, and they remain problems of the present Russia.

Malaria had always been prevalent—for example, in 1914 there were reported 3,170,547 cases; but in 1922 the disease spread over the whole of Russia, even to Archangel and Murmansk on the shores of the Arctic, where it had hardly been known before, and indeed the tropical form was seen so far north. The peak of the epidemic was reached in 1923, when over six million cases were registered, and this probably represents only one-third of the actual number. Whole villages in the south and on the Volga were stricken. The average number of cases per 10,000 was 216 in 1913; 474 in 1923, 421 in 1924, and 175 in the first six months of 1925 (Dobreitser). For thirty-eight years preceding the war the cases in the Moscow district numbered 80.5 per 10,000; the rate was 258 in 1921, and 600 in 1923, according to official reports. In Vologda, between Leningrad and Archangel (latitude 60° N.), 72 per cent. of the workmen of the Water Traffic there suffered from malaria; in Archangel before the war there were 10 cases per 10,000, and in 1923 410 per 10,000. The tropical form was much more common in the south than in the north (Siberia 1.5 per cent., Middle Volga 25 per cent., Caucasus 50 per cent., and along the Caspian 80 per cent. in 1923). The mortality was extremely high where the tropical forms were present; "in the absence of quinine and other methods of treatment it is even said to amount to 40 per cent. in some places."<sup>11</sup>

This unprecedented spread of malaria was probably

\* It is out that of the soldiers landing at used as dysentery, 71 per cent. were either same error may have existed in Russia, has affected the figures as a whole. For connexion with those for typhoid, we see change in either series. (Practitioner,

brought about by the constant movement of enormous masses of people and hordes of refugees during the war, revolution and famine, and the lack of quinine and medical personnel. Several Russian authors mention, as additional factors, the general lack of sanitation, the destruction of drainage systems, and the decrease of cattle and tillage of the soil. Previous epidemics occurred in 1894, 1899, 1903, and 1908, but on a smaller scale. Each epidemic has come in the years immediately following famine, but not during the famine.

#### Characteristics of the Present Epidemic.

Dr. I. A. Dobreitser, in the Pan-Russian Congress of January, 1924, pointed out the following interesting facts. Before the war the highest incidence was in spring, after the war in September; a high autumnal incidence indicates malaria for the ensuing year. Anopheles has been found in the past few years on the shores of the Arctic, and in the Caucasian Mountains, 6,500 feet above sea-level, and it lives during the winter in the houses of the peasants. Sixty per cent. of the cases have occurred between the ages of 18 and 60 years. A large number of infants have recently been seen with malaria (in Samara 30 per cent., and in some institutes of Moscow and of Turkestan 80 per cent. of the total number of infants observed). During 1924 and the first seven months of 1925 malaria had receded somewhat from its peak of 1923, but when I was along the Volga in the autumn of 1925 tropical malaria was again spreading rapidly. In Saratov Professor Kuschoff of the Malarial Station told me that malaria had then mounted during three weeks to equal its former highest record (1923), and that 80 per cent. of the cases were tropical—an alarming situation.

Of 5,322 malarial patients examined in the Leningrad district in 1921 the spleen was markedly enlarged in 5.6 per cent. Where the disease is endemic the spleen is said to be enlarged in a greater percentage of children than of adults, but here the reverse was true, for only 1.6 per cent. of the children showed marked enlargement (A. P. Zelheim).

#### Treatment.

In the pernicious forms excellent results were obtained by large intravenous doses of quinine hydrochloride (1 to 2 grams) repeated for two or three doses on successive days. Even advanced cases yielded to this treatment (Dobrotin). The disease was nearly always fatal when treated by the mouth. After intravenous injection the spleen often returned to normal in one or two days. In 1922 Dr. A. N. Dobrotin in Saratov showed me such a case; in a girl aged 12 with the pernicious form the spleen reached to the umbilicus, but three days after the first intravenous dose it was reduced to normal. Professor N. E. Kuschoff, however, limits the intravenous method to the comatose forms, as death may rarely occur from its employment. He uses the following as a hypodermic injection:

R. Quinine bichlor.	...	...	10 gm.
Methylene blue (Merck)	...	...	0.6 gm.
Aq. dest. q.s.	...	...	40 gm.
M. et sig.:	2 gm. hypodermically q.d. for twelve days; for following month 1.8 gm. per os.		

#### TUBERCULOSIS.

Tuberculosis was increased in all the combatant nations of Europe during and after the war. The peak of the curve was reached in England in 1918 (17.3 deaths per 10,000, compared with 13.6 in 1914); in Germany in 1918 (23.0, compared with 14.3 in 1914); in Austria in 1917 (43.2, compared with 25.9 in 1913); in Petrograd in 1920 (55.2, compared with 33.5 in 1913). The fact that such countries as Switzerland and Sweden, have shown a more constant death rate for the past decade puts the blame more on the conditions of war than on the influenza pandemic.

The extreme conditions of life caused a dying off of all chronics. This removal of the most susceptible was naturally followed by a low death rate from tuberculosis in most of the countries where the death rate had been unusually high, notably in Germany and Russia. Thus in Leningrad, which we may take as an index for Russia, the rate has fallen gradually to 26.9 in 1924—lower than in

1913. The following figures for other years have been furnished through the courtesy of Professor S. A. Novosilsky of the "Statburo," Leningrad:

1881-85 ...	...	54.8	1920 ...	...	55.1
1909-13 ...	...	36.9	1921 ...	...	38.5
1917 ...	...	36.8	1922 ...	...	41.0
1918 ...	...	38.6	1923 ...	...	29.8
1919 ...	...	48.0			

Current reports indicate that, although the death rate is lower, the disease is yet very prevalent. For example, in the universities where systematic examinations have been made, we get active tuberculosis in: Odessa, March, 1923, 6.9 per cent. of all university students; Kiev, November, 1923, 12 per cent. of all students; in 1924 another report, testified as to its accuracy by leading physicians there, gives 47 per cent. of the students.\*

#### SYPHILIS.

Not only during the war, but for the years immediately following, syphilis increased all over the civilized world, in neutral as well as in combatant nations—for example, Sweden and Denmark.† In Germany in 1923, according to Möller, syphilis had increased 20 per cent., or 100 per cent. between the ages of 18 and 25 since 1919.

In Russia there was not only every social reason why syphilis should increase, but another important one absent in other countries—the lack of means of treatment: there were no arsenicals and few institutes. Overcrowding and filth contributed their share toward the increase. Under such conditions (the augmented chances of infection and the lack of treatment) syphilis mounted until in 1922 Dr. Semashko said that 80 per cent. of the population was infected in some sections (L. H. Guest). In 1923 doctors from north-western Russia reported to me that 95 per cent. of the population of their districts were syphilitic and the available supply of arsphenamine was far too small. In the same year the disease was so prevalent that I saw many who had been infected other than by sexual means—primary lesions in the nose, etc., whole families infected by ordinary contact under the extreme conditions of filth.

In 1920-22 there were officially registered in Leningrad institutes nearly 12 per cent. of the total population as having venereal disease, one-third of which (that is, 4 per cent. of the total population) were syphilitic. The actual number of cases must have been considerably greater. During these three years arsenicals were given to only 5 per cent. of the cases registered.

Present reports indicate that syphilis has decreased since 1923. In the autumn of 1925 Dr. Semashko, Commissar of Health, told me that although syphilis had greatly decreased throughout Russia there were yet some places where 80 per cent. of the people were infected. Where systematic examinations have been made the figures are very low. Dr. Semashko says:

"An examination of 70,000 Red soldiers gave 0.4 per cent. syphilis and 0.7 per cent. gonorrhoea in Moscow, and 0.9 per cent. syphilis and 2.0 per cent. gonorrhoea in Leningrad, at the moment of examination; of 1,600 university students of Moscow, 1.2 per cent. syphilis; of Moscow workers, 1.5 per cent. syphilis, 20 per cent. gonorrhoea; of some of the worst villages, 12 per cent. syphilis."

The examination of whole student bodies gave: in Odessa in March, 1923, 1.9 per cent. of the total as venereal; in Kiev in November, 1923, 12 per cent. of the total as venereal, one-tenth of which (1.2 per cent.) were syphilitic. The proportion of women to men was 1 to 6. In American universities 5 per cent. of the total are said to be syphilitic, and 20 per cent. of those that enlist in the regular army (M. J. Rosenau). At the Soviet sanatoriums in the Caucasian Mountains the chief of the department (Dr. Kishkin) told me that 1.1 per cent. of the 20,000 patients there in 1925 were found syphilitic. These low Russian figures can probably be explained by the difference in the methods of examination, such as the omission of the Wassermann test, etc.

It is interesting to note in connexion with the treatment of general paralysis by malarial infection that Russian

psychiatrists have reported that there has been no decrease in this disease, although malaria has increased several fold.

An analysis of several thousand cases of syphilis at the Netchinson Hospital, Leningrad (April to September, 1925), gives the following<sup>12</sup>: Most of the cases were between 20 and 30 years; 52 per cent. were married. Only a small number were from the educated classes—6 per cent. had an average education, and 0.3 per cent. a higher education. Twice as many women as men contracted the disease innocently. Many answered that they received the infection from sisters, brothers, daughters, or friends, but 87 per cent. of the men admitted infection from prostitutes; 24 per cent. contracted the ailment while drunk. Most of the men said that they began to go with prostitutes at the age of 16, and that they began to have sexual intercourse when 9 years old.

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- <sup>1</sup> Shitko: Effect of Famine on the Organism of the Child, Moscow, 1925. (Russian.)
- <sup>2</sup> Report of Dr. H. Beeuwkes, chief of the American Relief Administration Medical Division in Russia.
- <sup>3</sup> BRITISH MEDICAL JOURNAL, August 23rd, 1924, p. 326; also L. H. Guest, *Lancet*.
- <sup>4</sup> Rosenau: Preventive Medicine and Hygiene, 1921.
- <sup>5</sup> Gesundheitswesen und Wohlfahrtspflege in Deutschen Reich, Möllers, Berlin, 1923.
- <sup>6</sup> H. D. Rolleston: Practitioner, London, January, 1916.
- <sup>7</sup> Sir H. Rolleston: Journ. Amer. Med. Assoc., vol. 74, Mar. 1920, p. 1435.
- <sup>8</sup> Report of Colonel H. Beeuwkes, Chief of the A.R.A. Medical Division in Russia.
- <sup>9</sup> BRITISH MEDICAL JOURNAL, 1915, ii, 711.
- <sup>10</sup> L. A. Dobretzky: Epidemic State of the U.S.S.R., *Teknik Sovremennoi Meditsiny*, Moscow, June, 1925 (Russian).
- <sup>11</sup> L. H. Guest: BRITISH MEDICAL JOURNAL, October 23rd, 1923.
- <sup>12</sup> *Krasnaya Gazeta*, Leningrad, November 11th, 1925, No. 273, p. 3.

## Revielus.

### CHRONIC RHEUMATIC DISEASES.

Long famous for the treatment of arthritic affections, Bath has been fortunate in its medical authors, such as John Haygarth (nodosities), William Falconer, Caleb Hillier Parry, and J. K. Spender, to mention a few only of those who have enriched medical knowledge by the records of their experience. That the present medical generation of this ancient spa have not rested on their oars is shown by their recent contributions to our pages and to other publications, and now the last year's President of the British Medical Association, Dr. F. G. THOMSON, and his colleague Dr. R. G. GORDON in *Chronic Rheumatic Diseases: Their Diagnosis and Treatment*<sup>1</sup> have brought out a well written and thoroughly practical summary of a subject which has been so much discussed that it is sometimes rather difficult to see the wood for the trees. This compact and clearly expressed handbook is divided into three parts, dealing with the clinical aspects, the common mistakes in diagnosis, and the principles of treatment respectively. In a brief summary of the etiological factors, the authors, while giving full weight to infection, set before the reader the reasons for considering that diathesis and personal idiosyncrasies play a disposing part; they also consider that primary osteo-arthritis is entirely due to strain and malnutrition of the joint.

While not attempting a scientific classification, for which the time has hardly arrived, the authors present a series of clinical pictures, including fibrositis, lumbago, sciatica, periarticular fibrositis, focal arthritis, osteo-arthritis, spondylitis, climacteric arthritis, and gout. The much used, and somewhat abused because vaguely used, term "chronic rheumatoid arthritis" is dropped, and for much of what it has covered "focal arthritis" is substituted, and may be welcomed as a reminder that the responsible site of infection must be sought and removed. This point is rightly emphasized, as is the futility of wasting time on palliative treatment, such as drugs and local applications. After removal of the causal focus the most efficient form of medication is said to be the freshly made chlorino mixture, which the late Burney Yeo recommended in the treatment of typhoid fever, other reputed intestinal anti-

\* From reports furnished by Mr. O. J. Frederiksen of the European Student Relief.

† Competent physicians in Sweden told me that they attributed this to increased movements of the population, increase of industrial life, etc., occasioned by the war.

<sup>1</sup> *Chronic Rheumatic Diseases: Their Diagnosis and Treatment*. By F. G. Thomson, M.A., Cantab., M.D., F.R.C.P. Lond., and R. G. Gordon, M.D., D.Sc., M.R.C.P. Edin. Oxford Medical Publications. London: Humphrey Milford, Oxford University Press, 1925. (Demy 8vo, pp. viii + 202. 8s. 6d. net.)

septica, with the exception of mercurial preparations, particularly in gout, being dismissed as "singularly ineffective." Climacteric arthritis, which is held to be chiefly of metabolic rather than of infective or degenerative origin, is described as a special and definite form, which usually begins in stoutish women about the time of the menopause, and is implanted on thyroid insufficiency, thus contrasting with focal arthritis, which is often associated with symptoms of hyperthyroidism. Early treatment is very successful, and consists in reduction of excessive weight, detoxication and improvement of the general tone, and the correction of endocrine deficiency.

The authors' apology for a certain amount of repetition, which is almost inevitable and sometimes useful, and for some degree of dogmatism, which the general practitioner, for whom the work is intended, will probably welcome, forestalls any possible criticism; indeed, there is none to make. The last section, on the principles of treatment, shows sound common sense, good judgement, and an entire absence of any tendency unduly to insist on the undeniable claims of Bath as a remedial spa.

### THOMSON'S "DISEASES OF THE NOSE AND THROAT."

In presenting a copy to the reviewer, Sir St. Clair Thomson inscribed as follows on the fly-leaf of his new edition<sup>2</sup> of *Diseases of the Nose and Throat*: "George III to Gibbon the historian: 'Another damned fat book, Mr. Gibbon! Scribble, scribble, scribble, eh, Mr. Gibbon?'" The author can well afford the jest against himself because there is here neither scribbling nor obesity, and though the third edition is larger than either its father or its grandfather, the increase is due to the natural expansion, both intrinsic and extrinsic, of the subjects treated. There is good reason to believe that had it not been for the inflexible opposition of the publishers the grandchild might have turned the scale a few more ounces still. Externally the new edition is shown by a change of colour from the familiar blue to green—not the dingy green of an old blue suit, but a placid shade indicating a green and vigorous old age.

The oesophagus, certain diseases of the nose, cocaine substitutes, and malignant disease of the larynx represent some of the more important items calling for revision and extension. An instance which shows the changing point of view is tonsillotomy, which at least received recognition in the first edition. In the second its funeral oration was pronounced, and in the third it has been decently interred. Although the author only refers in the preface to a few changes and additions it will be found that nearly every section has undergone some alteration, always with advantage.

It is a common experience to find that a writer, especially a medical writer, has exhausted all he has to say in a first edition and that later additions only result in a scrap-book. There is no such patchwork effect here. Fresh work has been introduced and sections rewritten with such skill that a perfect blend results. The art is only revealed by the dates of the references, which as before adorn the pages in profusion, and it is right to say here that Sir St. Clair Thomson has been particularly generous in acknowledging the efforts of his younger colleagues.

It was stated dogmatically in the review of the first edition that this is the best book of its kind in the English language, and there is every reason to ratify that opinion now, fifteen years later. It is therefore refreshing to find that the author betrays his humanity by an occasional slip of the pen, albeit they are of a nature that could mislead nobody. A single example is enough: he takes some trouble to make it clear that mucous polypi of the nose are not new growths, and in almost the next paragraph refers to them as neoplasms.

It may be permissible to conclude these remarks with a text from Edward Gibbon, whose name adorns the opening; Gibbon wrote: "The sophist of Antioch professes to admire the moderation of Sapor in contenting himself with so small

a portion of the Roman Empire." If Sir St. Clair Thomson has contented himself with a small portion of the empire of the human body, he has cultivated the study of it in a manner that may well excite admiration, and he has truly achieved his openly avowed intention of making a good book into a still better book.

### MEDICAL PATHOLOGY.

THE *Précis* of medical pathology by Drs. F. BÉZANÇON and A. PHILIBERT is the work of several authors, and is ultimately to consist of seven volumes. So far only two have been published.<sup>3</sup> The first treats of the common infectious diseases, and the second of diseases caused by spirochaetes, filterable viruses, and protozoa, of diseases whose cause is as yet unknown, of cancer, and of the intoxications. Pathology and morbid anatomy play only a small part in the composition of the work, which is in reality a textbook of medicine; indeed, far greater stress is laid on the clinical than on the laboratory side of the subject. For this reason it is not unnatural to find that the bacteriology, in particular, is poorly done, and is spoiled by the inclusion of a number of erroneous or unconfirmed statements, and by the omission of some well substantiated facts.

It is curious to find it said in the discussion of the diagnosis of enteric fever that a titre of 1/100 to *B. typhosus* or of 1/500 to *B. paratyphosus* B is significant, without the mention of the reactions encountered in inoculated persons, or the necessity of following the agglutination curve in doubtful cases. With such teaching as this it is not to be wondered at that mistakes in diagnosis are said to be not uncommon. Recently we had a striking example of this in the case of an officer living in Paris, who, on the basis of a Widal reaction, was told that he was suffering from typhoid fever; he—wisely as it turned out—hurried over to this country, only to find on a thorough investigation that the agglutinins in his blood were entirely referable to his previous inoculation with T.A.B. vaccine.

The classification of diseases adopted is not free from objection; dengue and trench fever are included under the spirochaetoses, whereas a disease such as spirochaetosis icterohaemorrhagica, of whose etiology there is no doubt, is omitted altogether. Scarlet fever is placed among the diseases of unknown origin; for this a reasonable case might be made out, but for the statement that the streptococci of scarlatina are identical with those from other sources there is no justification.

Some of the illustrations are poor and even misleading, but the book is well written and eminently readable. No doubt, however, if it is likely to find favour in this country.

### THE CHEMISTRY OF PROTOPLASM.

*The Effects of Ions in Colloidal Systems*,<sup>4</sup> by Professor L. MICHAELIS of Baltimore, contains the substance of various lectures given by him last year at certain American universities.

The application of the laws of physical chemistry to living protoplasm is one of the most difficult of the problems that at present confront physiology. The theoretically correct course would be for the chemists to enunciate the laws and the biologists to seek to apply them. In actual practice the biologists have had in many cases to establish physico-chemical laws to explain the phenomena observed in living matter. Professor Michaelis in particular has rendered outstanding service in helping to clarify the confused question of the fundamental nature of the process of adsorption. He apologizes in the preface for the fact that his book deals more with physical chemistry than with physiology, but points out that the biologists' problems are so complex that they are forced to help to organize certain branches of chemistry and physics which are most likely to be of service to physiology.

The book deals with the fundamental nature of the process of the adsorption of ions by colloidal systems. This problem is still very largely unsolved, but the author gives

<sup>2</sup> *Diseases of the Nose and Throat, Comprising Affections of the Trachea and Oesophagus*. By Sir St. Clair Thomson, M.D., F.R.C.P. Lond., F.R.C.S. Eng. Third edition. London: Cassell and Co., Ltd. 1926. (Med. 8vo, pp. xvi + 943; 375 figures, 12 colour and 12 black and white plates. 55s. net.)

<sup>3</sup> *Précis de Pathologie Médicale*. Tomes I et II; *Maladies Infectieuses*. Par Fernand Bézançon et André Philibert. Paris: Masson et Cie. 1925. (Cr. 8vo, Tome I: pp. 539; 75 figures. Tome II: pp. 651; 51 figures. 28 fr.; bound, 34 fr., a volume.)

<sup>4</sup> *The Effects of Ions in Colloidal Systems*. By Dr. Leonor Michaelis. Baltimore: The Williams and Wilkins Company; London: Baillière Tindall and Cox. 1925. (Cr. 8vo, pp. 108; 7 figures. 12s. 6d. net.)

a very clear account of the salient facts that have been established. It is doubtful if anyone else could have summarized this 'difficult' subject so shortly, simply, and yet so accurately. A considerable proportion of the volume deals with the interpretation of experimental results obtained by the author and his pupils.

All persons interested in the colloidal chemistry of protoplasm will find this book extraordinarily interesting and suggestive.

### THE PEAKS OF MEDICAL HISTORY.

In his attractive outline of the evolution of medicine, entitled *The Peaks of Medical History*,<sup>5</sup> dedicated to Lieut.-Colonel Fielding H. Garrison, Professor C. L. DANA of New York divides the history of medicine into seven periods—the pre-Hippocratic, the Hippocratic, the Alexandrian, the Galenic and post-Galenic, the Renaissance, the sixth of theories and speculations, ending with Jenner (1800), and the seventh of modern medicine down to the middle of the last century, the six peaks being Hippocrates, Alexandrian medicine, and so on. The oaths of the Hindu physician and of Hippocrates are printed, and the work is liberally and artistically illustrated; among the pictures is a rubbing from the breastplate of the leaden sarcophagus containing the remains of William Harvey in the vault of the church at Hempstead, made in 1880 by the late Weir Mitchell.

In a small space the volume contains a pleasant account of the great men of old, but the chapter on modern medicine, which is the most difficult to view in proper perspective, is perhaps the least attractive and certainly is the one most easy to criticize. Like all the works on medical history issued by the house of Hoeber, it is admirably got up.

### "BRAIN."

THE issue of *Brain* for July (vol. xlix, Part 2)<sup>6</sup> contains a paper on combined disease of the pyramidal and extra-pyramidal systems, with special reference to a new syndrome, by Professor Lhermitte and Dr. Douglas McAlpine, from the Laboratory of Neuro-Pathology, University of Paris. A clinical and pathological account is given of a case showing a degree of spastic paralysis with extensor plantar responses, which in the later stages developed choreiform movements and rigidity of extrapyramidal type. This is followed by a review of the literature and a discussion of the pathological basis of choreiform movements. Professor Leonard S. Dudgeon and Dr. A. L. Urquhart describe an investigation of the viscera and muscles in nine cases of exophthalmic goitre. In eight they found in various muscles, chiefly the ocular muscles; lymphorrhages, exactly similar to those found in myasthenia gravis. They consisted of collections of lymphocytes with some plasma cells and endothelial cells, separating the muscle fibres; in some cases the neighbouring muscle fibres showed atrophic or inflammatory changes.

Dr. O. M. Duthie, of the anatomy department of Manchester University, records some observations on deep sensibility in continuation of the work of Professor Stopford. He examined the sensibility of twenty patients suffering from division of tendons in the forearm uncomplicated by lesions of peripheral nerve trunks. He concludes that division of nerve fibres proceeding along tendons results in only slight loss of deep sensibility, tactile pressure being chiefly affected. Drs. Henry W. Woltman and Alfred W. Adson, of the Mayo Clinic, record a case of abscess of the spinal cord which made a remarkable recovery after operation, and give a valuable summary of the literature of this rare condition.

Drs. Curt P. Richter and Leo Henry Bartemcier, of the Johns Hopkins Hospital, contribute an important paper

on decerebrate rigidity of the sloth. They selected this animal because its 'normal' posture at rest and during progression is a hanging one—that is, the opposite of the attitude of quadrupeds such as were employed by Sherrington in his experiments on decerebrate rigidity. They establish the interesting fact that the decerebrate sloth exhibits reflex hanging; thus bringing decerebrate rigidity into relation with normal posture. They draw some conclusions respecting the probable clinical counterpart of decerebrate rigidity in man.

### GUY'S HOSPITAL REPORTS.

THE second quarterly instalment of the 76th volume of the *Guy's Hospital Reports*<sup>7</sup> opens with an obituary notice of Dr. G. H. Hunt by the Editor, who gives an account of the large amount of work his late colleague had accomplished in a comparatively short time. Dr. J. M. H. Campbell has expanded into an article the late Dr. Hunt's notes on heart disease and pregnancy based on 156 cases, which show that, provided the heart is not enlarged, mitral disease does not add much risk; when, however, there is cardiac enlargement the degree of risk depends on the amount of enlargement, and in auricular fibrillation the results are so serious that pregnancy should be prohibited. Dr. G. W. Rake describes a case of annular muscular hypertrophy of the oesophagus and shows good reason for his view that it is compensated achalasia of the cardia without dilatation. A curious point in Mr. W. E. Tanner's record of a case of dysphagia due to a posterior pharyngo-oesophageal pouch was the absence of any fetor of the breath, due, as is supposed, to the fact that the patient's addiction to neat whisky kept the pouch clean. Four short records of the association of chronic duodenal ileus with gastric and duodenal ulcer by the Editor and his colleagues are followed by a discussion of the indications for enterostomy and its technique by Mr. R. P. Rowlands. In recording a case of chronic volvulus of the pelvic colon simulating pyloric obstruction but correctly diagnosed by radiological methods before its successful excision, Dr. Hurst refers to Sir Arbuthnot Lane's demonstration that a volvulus is only the terminal stage of a condition which usually takes years to develop. Dr. F. A. Knott's experimental researches suggest that salicylates taken by the mouth exert hardly any antiseptic action on the bile; accepting Cartier's observations as to their strongly cholagogue action, they confirm Chaffard's view that salicylates alone are chiefly of use in non-infective cholecystitis and that hexamine should be added when infection is known or suspected to be present. About half of the number is occupied by the ninth of Dr. G. W. Nicholson's studies on tumour formation; it deals fully with endometriomas, though he modestly says that he has "only skimmed" the subject, the weary "length of which has dragged itself to rest."

### NOTES ON BOOKS.

DR. OSKAR TEICHMAN has compiled an interesting little book on *The Cambridge Undergraduate 100 Years Ago*.<sup>8</sup> His information is derived from sundry Cambridge publications of the period. Thus in 1823 a little book of poems and epigrams, called the *Cambridge Tort*, was published as a counterblast to the *Oxford Sausage*. From this anthology we learn that the dean of those days used to set impositions of a hundred lines of Homer for non-attendance at chapel; that the barber was on the college foundation like the cook, and had his shop inside the gates; that undergraduates attended hall at 3 or 4 o'clock in the afternoon in breeches and gaiters, subsequently retiring to a wine party and ending the evening with something hot. In the meantime the Fellows spent a couple of hours in the combination room, and if still more or less sober finished the evening with beakers of brandy. From time to time the undergraduate's life was enlivened by town and gown conflicts; and a particularly stirring attack by

<sup>5</sup> *The Peaks of Medical History: An Outline of the Evolution of Medicine for the Use of Medical Students and Practitioners.* By Charles L. Dana, A.M., M.D., LL.D. New York: Paul B. Hoeber, Inc. 1926. (6 x 9, pp. 106; 40 plates and 16 illustrations in the text. 3 dollars net.)

<sup>6</sup> Published in London by Macmillan and Co., and in New York by the Macmillan Company. Yearly subscription in this country 2s., to be sent to Messrs. Macmillan, St. Martin's Street, London, W.C.2. Price of this part 6s. net.

<sup>7</sup> *Guy's Hospital Reports.* Vol. 76 (Vol. 6, Fourth Series), No. 2, April, 1925. Edited by A. F. Hurst, M.D. London: Wakley and Son (1912), Ltd. (Med. 8vo, pp. 127-252; 6 plates, 20 figures. Annual subscription, 12 2s.; single numbers 12s. 6d. net.)

<sup>8</sup> *The Cambridge Undergraduate 100 Years Ago.* Compiled, with extracts and illustrations from contemporary sources, by Oskar Teichman, D.S.O., M.C., M.A. Cambridge: W. Heffer and Sons, Ltd. 1925. (Cr. 8vo, pp. vii + 108; illustrated. 4s. net.)



500 gownsmen on 2,000 "snobs" after the acquittal of Queen Caroline was described in the *Gradus ad Cantabrigiam* in a parody of Campbell, beginning "On Granta, when the sun was low." A later riot, the battle of Rose Crescent, was described in the metre of Macaulay's "Horatius" in an early volume of *Punch*; and Dr. Teichman gives us Calverley's acrostic poem, beginning "On pinnaled St. Mary's lingers the setting sun." There are interesting little chapters on the boating man, who before 1825 was chiefly an undergraduate who went for picnics and water parties, and had altercations and more or less sanguinary encounters with barges; on the reading man, for whom the writers of these skits and squibs have, naturally, small respect; on the sporting man, then known as the varmint man, who, after drinking much wine and indulging in Cyprian adventures—in Barnwell of all places—finds himself compelled to send for a surgeon, and is obliged to get an aegrotat. Dr. Teichman concludes his book with a useful index of colloquial or cant terms, and another of college nicknames. From this it appears that Hall was the gay college—the most lawless of all; Cats men were doves; men of Sydney owls; while for some unaccountable reason Johnians were always called Johnian hogs. There are illustrations in the book showing the academic costumes of Masters of Arts, Proctors, Fellow Commoners, and various other members of the University. The two distinguished classes of persons who wear top-hats with their gowns are noblemen and M.D.'s!

Otologists will be pleased to learn that Mr. RICHARD LAKE, though seldom seen amongst them now, still retains an active interest in aural surgery, and has exercised it by publishing in a book about fifty of his lectures and papers.\* They range over the whole subject of otology, but they serve to recall in particular his pioneer work in the surgery of the labyrinth, work for which, although by no means unknown, he has scarcely received full credit. There is one feature in common to all which can scarcely escape notice, and that is his commendable brevity, for the whole book only contains 255 pages, and includes a number of illustrations. The precision with which the essential points in each article are packed into a few pages recalls vividly Mr. Lake's own forcible and vigorous personality. The book is disfigured by an excessive number of misprints; there is far more than a reasonable allowance, especially in the portions in French. In other respects it is presented in a very convenient form, and the younger generation would do well to read it carefully, remembering that it is natural there should have been some changes and advances since the dates of the earlier papers. Any otologist who takes a serious interest in the literature of the subject should show his gratitude to Mr. Lake for rendering his work accessible by keeping a copy in the study for reference.

In his monograph on the treatment of bronchial asthma by intravenous injections of peptone<sup>10</sup> Dr. P. BOOR reviews the articles published in this JOURNAL in 1917, 1918, 1920, and 1921 by Dr. A. G. Auld, and records his own observations on twenty patients treated by this method. Of the eighteen patients in this series suffering from asthma eleven were more or less improved and seven derived no benefit from it. While admitting that twenty cases are not sufficient to estimate the value of Auld's method, the author maintains that peptone has the power to suppress an attack of asthma, though not always to the extent desired, and therefore cannot be regarded as a sovereign remedy. The treatment has no effect on the blood picture. Dr. Boor attributes the success of peptone treatment to the more or less complete destruction in the blood of a substance which, according to Sturm van Leeuwen, produces contraction of the smooth muscle fibres, and so gives rise to an attack of asthma.

The third edition of Professor R. H. DENNETT'S *Simplified Infant Feeding*<sup>11</sup> has been brought up to date, particularly with regard to the use of dried milk, the occurrence of acidosis, and the care of the hypertonic infant. The chapters on diarrhoea have been revised. As we mentioned when we reviewed the second edition on February 18th, 1922 (p. 274), the book is full of practical directions; it remains a valuable handbook of infant feeding.

\* *Contributions to the Art and Science of Otology. Lectures and Papers by Richard Lake, F.R.C.S., 1892-1925.* London: Macmillan and Co., Ltd. 1926. (Demy 8vo, pp. 255; illustrated. 15s. net.)

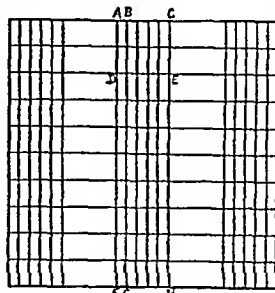
<sup>10</sup> *Die Behandlung van Asthma Bronchiale met Intraveneuze Pepton Inspuitingen.* By Dr. P. Boor. Amsterdam: H. J. Paris. 1925. (Roy. 8vo, pp. 125; 3.25 florins.)

<sup>11</sup> *Simplified Infant Feeding.* By Roger H. Dennett, B.S., M.D. Third edition, revised and enlarged. London: J. B. Lippincott Co. 1925. (Med. 8vo, pp. xi + 415; 14 figures. 21s. net.)

## PREPARATIONS AND APPLIANCES.

### Decimal Ratios in Haemocytometer Rulings.

THE accompanying figure represents the central square of the ruling of a modified haemocytometer which in general construction is an the model of that of Thoma. It is designed to eliminate the necessity of calculation involved in the use of the latter instrument. For the enumeration of red cells a dilution of 1 in 200 is used, and an area of 1/5 sq. mm. (ACFH) is counted. To the number thus found it is necessary only to add four cyphers to obtain the content of 1 c.mm. of the original specimen. The percentage in relation to the normal—assuming this to be 5,000,000—is equal to the number of cells in 1/25 sq. mm. (ABFG or ACDE), for this area will contain exactly 100 in the case of a normal specimen. For the enumeration of leucocytes a dilution of 1 in 10 is employed, and 1 sq. mm. is counted. To the number found two cyphers are added to give the total per cubic millimetre of undiluted blood.



Dimensions: 1 mm.  $\times$  1 mm., divided vertically into fifth and twenty-fifths, and horizontally into tenths.

the size of ACDE, which are equal in area to the narrow columns (ABFG). An eyepiece ruling, similar in design but on a larger scale, is available. It is less tiring to use than stage ruling, as the marking is more pronounced, but it is necessary to employ an appropriate microscope combination and tube-length, in order to secure exactly equivalent values. The scale used is 7 to 1, which is intended for use with a 2/3 in. objective. For differential counting of cells or bacteria on a plano slide the eyepiece ruling, which is carried on a simple glass disc, may be used with any power of objective.

The instrument is obtainable from Messrs. Allen and Hanbury, Ltd. The eyepiece fitting is not supplied as standard, but may be had separately.

### A Desk for the General and Panel Practitioner.

Dr. E. W. Sharp (Bradford) has designed a desk to simplify the work of keeping medical record cards, and the book-keeping necessary for private patients. Eight drawers are provided, each of which will hold approximately 500 medical record cards, or 1,000 ordinary cards for private patients, together with index cards. The cards for private patients are arranged in three sections according as the accounts have to be posted, collected, or have been paid and no attendance is now being rendered. On the open part of the desk there is ample space for writing, and pigeon holes can be constructed at the back for storing certificate books. Part of the desk is closed and in it is a well containing a removable box, divided into four sections, the two front ones containing all the cards of patients, both private and panel, who are receiving attention, while those at the rear are used for storage. One side is devoted to patients who are being visited; on the other are kept the cards of patients who are attending the surgery for consultation. The cards of the patients who are being visited are divided by index cards showing the numbers 1 to 31 and the days of the week. By using two sets of these the cards can be changed from one week or from one month to another. The daily visiting list is made up from the cards which are behind the index card of the particular day. At the end of the day the visits are entered up and the cards transferred to the next dates on which visits are due. Dr. Sharp adds that all the information is readily available while sitting in the desk chair, and the work of book-keeping is reduced to a minimum. The necessary index cards are made by Messrs. Reynolds and Branson of Leeds, and have the advantage of combining the day book and ledger. Prescriptions and treatment can be recorded on them and they are of the same size as the record envelope issued by the Ministry of Health. A complete year's accounts can be kept on each card.

### A Portable Mercury Sphygmomanometer.

The Baumanometer is a simple form of mercury sphygmomanometer with an ingenious arrangement to prevent spilling of the mercury during carriage. The makers claim that it is safe, portable, and efficient, and that the mercury does not oscillate at either systolic or diastolic pressures, so that it is well adapted to the auscultatory method of reading blood pressures.

Of the two types of sphygmomanometer—namely, the mercury and the aneroid—the latter is very widely preferred owing to its greater portability. The mercury manometer is, however, not only simpler but more accurate, inasmuch as it is not subject to errors due to changes in elasticity, etc. The makers of the Baumanometer (Messrs. Hawksley and Sons, Ltd., 83, Wigmore Street, W.1) claim that in their instrument there is no risk of loss of mercury during transportation, and that it is as convenient for use as the aneroid type.

# British Medical Journal.

SATURDAY, AUGUST 14TH, 1926.

## A HARVEIAN TRICENTENARY.

At its last meeting the Royal College of Physicians of London resolved duly to celebrate in 1928 the tricentenary of the first publication of Harvey's *De Motu Cordis*. This decision is amply justified by the importance of the occasion. Harvey's investigation into the physiology of the circulation of the blood had, indeed, been brought to a successful conclusion nine years before the publication of this celebrated book, and the truth of his discoveries had been accepted by many of his colleagues. In his eloquent dedicatory letter to the President and Fellows he wrote: "Having now for nine years and more confirmed these views by multiplied demonstrations in your presence, illustrated them by arguments, and freed them from the objections of the most learned and skilful anatomists, I at length yield to the requests, I might say entreaties, of many, and here present them for general consideration in this treatise."

The time was ripe for publication, and the dissemination of the truth all over the civilized world could no longer be delayed; the date of publication, and not that of the first statement of his views in the Lumleian Lectures, is necessarily that of which the tricentenary is to be honoured. We have referred to the importance of the occasion, and by this we intend to lay stress not only on the value of the great discovery to the future progress of medicine and surgery, but still more on the method by which the discovery was made. This has perhaps attracted less attention than its importance merits in the intellectual history of mankind. The end of the sixteenth and the beginning of the seventeenth centuries were astonishingly fertile in the production of men of great mental power, and of these our country is proud to claim a large share. Shakespeare, Reginald Scott, Bacon, and Harvey were to be closely followed by Hobbes, Locke, Hooke, and Newton, while among their contemporaries on the Continent were Galileo and Descartes, to name only the greatest. Reginald Scott, like Harvey a "man of Kent," stands out in the sixteenth century conspicuous for the modern spirit of his writings. His *Discoverie of Witchcraft*, published in 1584, in which he ridiculed and disproved the charges on which poor old women were sentenced to be burnt or drowned, was itself afterwards condemned to the flames by a demonologist king who had imported the practice of witch-baiting from Scotland. For a generation Scott had no successors. It is of interest to note that to Harvey in 1634 was committed the duty of examining four poor women known as the Lancashire witches. He found no devil's teats or other imagined horrors, and as a result of his report of their normality they were pardoned—for crimes of which they were guiltless.

Bacon's *Novum Organum* appeared in 1620 after a long incubation. In that immortal work the right use of the inductive and deductive methods of reason-

ing was set forth, and the importance of observation and experiment was insisted upon as a means of forming correct premisses, without which all conclusions must be unsound. Yet the old reproach, "Physician, heal thyself," might have been applied to Bacon, for in his last work, *Sylva Sylvarum*, he showed himself as credulous as his predecessors, and he rejected the Copernican theory. He was probably unaware of Harvey's discovery, for he died in 1626, and a comparison of dates shows that Harvey could not owe anything to the *Novum Organum*, yet no better example of the right use of the Baconian methods of reasoning could be produced than the treatise *De Motu Cordis et Sanguinis*.

After discussing the views then generally held as to the functions and action of the heart and the lungs and blood vessels, and showing how untenable they all were, Harvey describes his own investigations. He tells us that for the purposes of this research he had thoroughly dissected more than eighty species of animals—cold- as well as warm-blooded—and that at first in his vivisections he could not follow the sequence of events or understand the meaning of what was happening before his eyes, so that he "was not surprised that Andreas Laurentius should have said that the motion of the heart was as perplexing as the flux and reflux of Euripus had appeared to Aristotle." But "at length and by using greater and daily diligence, having frequent recourse to vivisections, employing a variety of animals for the purpose, and collating numerous observations, I thought that I had attained to the truth." All the world now knows that he did not deceive himself.

Although there seems no reason to doubt that the Fellows of the College of Physicians were convinced by his arguments and demonstrations, it is remarkable how little evidence of their conviction is to be found in contemporary medical literature, or for a good many years afterwards. In the works of Glisson, for instance, the weight of the heavy hand of Galenical authority is everywhere manifest, and nowhere in them do we find evidence that he had understood and accepted the newly found truths. Yet it might have been expected that a physician of the intelligence and originality of the author of the *Tractatus de Rachitide* would have eagerly absorbed and promulgated Harvey's views on the circulation. Sir Thomas Browne—who, it is true, was greater as a euphuist and man of letters than as a physician or natural philosopher—is silent on the subject. Had he understood and accepted Harvey's methods he could not have gravely discussed the question of why a badger has the legs on one side longer than those on the other without verifying his premiss by examining a specimen of that interesting animal, which must have been easily procurable at Norwich in his day. But *non omnia possumus omnes*, and had Browne devoted himself to observation and experiment we might have lost a charming writer without gaining a valuable man of science.

Harvey's later work, *De Generatione Animalium*, while it embodies a mass of accurate observations, could not in the nature of things be so fruitful in results as the earlier one. He had not the instruments which were necessary for the discovery of the ovum and the spermatozoon, and in his ignorance of their very existence he could not even guess at the parts played by them.

Among laymen, Dryden is one who pays a tribute to Harvey, but Cowley's ode is far more worthy of

<sup>1</sup> This and other quotations are from the Sydenham Society's translations of the works, by R. Willis, M.D. London, 1847.

its subject and shows an appreciation of the circumstances which is quite surprising.

"Thus Harvey sought for truth in Truth's own book  
—Creation—which by God himself was writ;  
And wisely thought 'twas fit  
Not to read comments only upon it,  
But on th' original itself to look.  
Methinks in Art's great circle others stand  
Look'd up together hand in hand:  
Everyone leads as he is led,  
The same bare path they tread,  
A dance like that of Fairies, a fantastic sound,  
With neither change of motion nor of ground.  
Had Harvey to this road confined his wit,  
His noble circle of the blood had been untrodden yet."

The little dark-complexioned physician was truly magnanimous. He wrote: "I would not charge with wilful falsehood any one who was sincerely anxious for truth, nor lay it to any one's door as a crime that he had fallen into error. I avow myself the partisan of truth alone." In him was re-incarnated the spirit which animated Aristotle, and which had long been dormant. He was a high priest of the God-of-things-as-they are, and a forerunner of Hunter and Pasteur and Lister. As Professor Stirling has well said: "For all time he set the method, viz., that of experiment and induction, which has led to all modern progress in physiology." Well may the College which he loved celebrate this tercentenary.

### MILK AS A GROWTH STIMULANT.

A SUMMARY of a report of an investigation on diets for boys during the school age, carried out by Dr. Corry Mann for the Medical Research Council, will be found at page 318. This report may, perhaps, be usefully set beside the results of the investigations on child life in Scotland undertaken by Professors Noël Paton and Leonard Findlay for the Medical Research Council, of which we gave an account a fortnight ago (July 31st, p. 214). Dr. Corry Mann's report has furnished the popular press with a headline because he discovered, among the advantages of adding a pint of milk to a boy's daily diet, that the boy developed more "spirit," and consequently was more often in trouble. The report from Scotland, which finds that maternal efficiency is the only factor manifestly correlated with nutrition in the young child, has not had the same journalistic attraction, but is of not less practical importance. The two reports, however, are not directly comparable, for the Scottish report dealt with children of pre-school years, whereas Dr. Corry Mann's dealt with boys in a boarding-school. Professors Paton and Findlay were concerned mainly with the influence of slum life on the growth and nutrition of children; Dr. Mann with the results of different diets on one class of boy living under well defined conditions. The Scottish investigators concluded that diet is not the main factor in determining the smaller size of the slum child as compared with the rural labourer's child; and they are of opinion that no statistical method can answer the question whether the weight of the child depends upon the diet or whether the diet is determined by the size and habits of the child. They think the suggestion that the consumption of fresh milk is the factor determining the difference in weight between town- and country-bred children is negated by the fact that in rural miners' families with heavier and larger children even less milk is consumed than in slum families. In fact, Professors Paton and Findlay are led to the conclusion that income, condition of the home, diet,

and maternal occupation and health have little to do with the small size of the slum child. Rather are they of opinion that urban populations differ racially from rural; that smallness is to some extent hereditary; that the smaller town dweller begets smaller children than the larger country dweller; that the difference is becoming accentuated by the decrease of emigration from country to town; and that the question may be asked whether the smaller town race is not really an adaptation to environment. The small machine-tending male, and the small, not too prolific female, requiring little food and little exercise, are better suited to urban surroundings than the big brawny man and the large prolific woman, whose energies are more appropriate for rural surroundings. Professors Paton and Findlay find, in fact, that in the slum child after 18 months of age the inherited growth impulse is sufficiently potent to carry it on to the average size of its parents, and that the average diet of the population must be at least sufficient to supply the material and energy required for growth.

Of Dr. Corry Mann's investigation the Medical Research Council, in its preface, says that its chief value may prove to be that it raises many more questions than those to which it gives a definite answer. At all events, there have been no recorded observations comparable in scope and in experimental validity. The startling results due to the addition of a pint of milk a day to a basic diet which already satisfied the appetite of growing boys, were proved to be due, not to the small increase in the fuel value of the diet, nor to the extra protein in the milk, but to more specific, but unexplained, qualities of milk as a food. The addition of this pint of milk converted an average annual gain of weight of 3.85 lb. into one of 6.98 lb., and an annual average increase of height from 1.84 to 2.63 inches. Were these increases due to vitamins or to some other factors? The results were checked by a comparison of the effects produced by replacing the milk with other substances giving a similar number of calories. Thus a measured quantity of sugar was given, with very poor results, showing that the improvement in the physical condition was not due merely to the addition of calories. With a diet containing more vitamin A provided by watercress there was a definite improvement in weight increment, but not in height, and there was some improvement in the skin (chilblains and roughness) and in the general physical condition, although the increase in the calorie value of the diet was negligible. The addition of casein, which altered considerably the protein quality in the basic diet, produced singularly little effect on nutrition. The only approach to the effects of adding milk to the basic diet occurred when butter was substituted for the milk. The average annual gain in weight was then 6.30 lb., and the average increase in height 2.22 inches. Vegetable margarine, which was deficient in vitamin A, showed an increase in average annual weight increment to 5.21 lb., but the average growth rate remained the same as with the basic diet, 1.84 inches.

Whether these results should add new weight to the "Drink more milk" slogan, or whether it would be well to await the result of further observations, it is not easy to say. It would be interesting to know, for example, whether the boys continue to lengthen and expand at the same rate—all the boys examined were between the ages of 7 and 11—and whether increase of "spirit" continues *pari passu*. And if a race of giants is gradually established, what is to be done with them in view of the hint of Professors

Paton and Findlay to the effect that perhaps small people are more appropriate for modern industry? Agriculture in this country is not sufficiently remunerative to absorb a large number of extra workers; and notwithstanding the healthiness of the families of rural coal-miners, an influx of recruits in the depressed condition of coal-mining can hardly be contemplated. Perhaps at the present moment the best attitude of mind to Dr. Corry Mann's researches is that the questions he raises are not yet ripe for dogmatic statement, and that action should be withheld pending the result of further observations and experiments. This need not alter the view that milk is an excellent food for those who like it.

#### THE BRITISH ASSOCIATION.

SINCE the Prince of Wales, on the evening of August 4th, delivered his presidential address, of which we gave some account last week, the sections of the British Association have met on four days, according to plan, and the members have found recreation in garden parties, evening entertainments, and excursions, and on Sunday they listened to a number of sermons, including one by Sir Oliver Lodge and another by Dean Inge. On Monday afternoon the University conferred the honorary degree of D.Sc. upon eleven distinguished men of science attending the meeting; among them were Dr. Bohr, professor of physics in the University of Copenhagen, the Abbé Brenil, palaeontologist, the Astronomer Royal, Professor H. F. Osborn of Columbia University, New York, and Sir Edward Sharpey-Schafer, professor of physiology in the University of Edinburgh. On the evening of the same day a general meeting, very largely attended, was held to hear Professor Osborn's discourse on discoveries in the Gobi Desert by the American museum expeditions; it was illustrated by lantern slides and cinema films. In a lecture to the Section of Zoology Dr. G. D. Hale Carpenter raised some debatable points as to sleeping sickness. One was whether *T. brucei* of nagana was essentially the same as, and could become, *T. gambiense* of sleeping sickness, and whether *T. rhodesiense*, which caused the more acute disease in man, was derivable from *brucei* or *gambiense* or from both. He thought it possible that the nature of these trypanosomes might depend largely upon the mammalian host rather than upon the species of *Glossina* transmitting them, but that the method of transmission might have much to do with the degree of virulence. Another question was whether insects other than *Glossina* transmit sleeping sickness. Still another was whether big game was a danger; this problem could be solved only by experiment on a volunteer, but there was evidence that prolonged sojourn in an autelopo rendered the trypanosome less able to live in man, so that big game might be beneficial rather than harmful. The Section of Physiology suffered somewhat from the fact that the International Physiological Congress was meeting simultaneously in Stockholm, as reported elsewhere. The president of the section, Professor J. B. Leathes, in his address on function and design, sought a definition of life. It was, he said, exhibited only in aqueous systems, containing unstable, perishable combinations of carbon with hydrogen, nitrogen, sulphur, phosphorus, and oxygen, in the presence of certain inorganic ions. The inalienable property such matter exhibited was that these unstable organic combinations were for ever re-forming themselves out of simpler combinations which did not exhibit this property; living material constituted so as to behave in this way appeared to be largely, if not entirely, of a protein nature; this power of self-reformation, spontaneous regeneration, operated not only when living organisms, cells, or com-

munities of cells were growing, or reproducing their kind, but also during their maintenance. Properties and behaviour of cells resulted from those of the material composing them. When a muscle cell contracted there was a reversible rearrangement of its parts, but in other cells, such as connective tissue cells, certain reactions were irreversible. Such cells discharged into their vicinity some material, the chemical constitution of which was usually collagen, in which they became embedded, to form aponeuroses, tendons, and ligaments. After referring to the production of cartilage and bone, he said that the way in which the vertebrate connective tissues took their shape transferred a large share of the developing of the bodily form back into the nervous system, in which was stored machinery that directed and determined the habitual movements and postures. The work of Pavlov had made it clear that by a physiological reaction in the nervous system machinery might come into existence which did not exist before. It was probable, if not proved, that this new machinery was situated in what might be called the growing point of the central nervous system, the cortex of the cerebral hemispheres, the part where all is not cut and dry, where cells retain more of the properties of the developing neuroblast. In the formation of a conditioned reflex two events were made to occur in the cerebral cortex at times uniformly related to one another; one of these events necessarily, from the constitution of the nervous system, resulted in a certain activity of some muscle or gland. After many repetitions of the association of these events it was found that one which previously had never resulted in a particular activity came to have this result as certainly as the other. On Friday the section held a joint session with the Section of Zoology for a discussion on tissue culture; it was opened by Dr. H. M. Carleton, and in the course of it Miss H. B. Fell, Ph.D., said that the method of tissue culture *in vitro* was specially valuable as a means for investigating the capacity of isolated embryonic organs and fragments of organs for self-differentiation. Other discussions in this section were on the relation of vitamin B to "beriberi"; on the meaning of the symptoms of beriberi, introduced by Dr. J. C. Drummond; and on reflex posture, to which Dr. F. M. R. Walshe, Sir Charles Sherrington, Mr. D. Denny-Brown, and Professor J. A. Gunn contributed. On August 10th Dr. J. S. Haldane, F.R.S., gave his promised lecture to the section on acclimatization to high altitudes; in the course of it he dealt with the physiological facts elicited by the Mount Everest expeditions, which, he said, were of a striking character. It had been shown that acclimatization sufficient to prevent any symptoms of mountain sickness could be obtained at a height of even 27,000 feet, and probably higher. He proceeded to discuss this observation, which might seem to be in conflict with laboratory experiments. To account for the acclimatization on Mount Everest without the assumption of active secretion of oxygen inwards by the lungs appeared to him to be a hopeless task.

#### MR. CHAMBERLAIN ON THE VOLUNTARY SYSTEM.

AFTER opening a new Ear, Nose, and Throat Hospital in Glasgow last week the Minister of Health made an interesting statement of his views as to the future of the voluntary hospital system. Mr. Chamberlain said that not very long ago those who were interested in voluntary hospitals felt serious anxiety as to their future, and had wondered whether it would be possible for the voluntary system to survive the after-effects of the war. This fear had been due largely to the enormous increase in the maintenance costs following the war, and in particular to the improvement of the conditions under which nurses worked, a reform which had been long overdue. Disaster

had been averted by a grant of about half a million pounds by the Government of the day some five years ago. To-day the position was very considerably improved, although it could not yet be described as entirely satisfactory. Population was still increasing, and during the war it had not been possible to make those extensions of voluntary hospitals which were from time to time necessary. The result was that to-day the needs of the public were far from being adequately met, and further beds were urgently required. The Hospitals Committee had recommended 13,000 extra beds, but if they were got anxieties would be increased, because every new bed meant an increase in the heavy annual cost of maintenance. In an ideal state of society institutional treatment would be available for everyone who needed it. He hoped to advance the solution of the problem by the proposals he had recently made with regard to the reform of the Poor Law. Under them boards of guardians in England and Wales would cease to exist, and their functions would be taken over by local authorities. In England something like 30,000 beds were under the control of boards of guardians, in many cases almost exactly of the same character as in those in voluntary hospitals. These beds would come under the control and supervision of the local authorities. The question would arise whether it would be possible to devise a scheme under which municipal and voluntary hospitals could work together in close co-operation. He had not in contemplation, at any rate at the present time, any legislation which would interfere with the working of the voluntary hospital system. One aim should be to establish some central health authority in every district. The area of such a district might well be the local government area or the area of the county council. Such a body as he proposed would have to survey what hospital accommodation was necessary, and to consider the question of duplication, which was a waste of money and effort; it should therefore have the power of veto over extensions of individual institutions. On the other hand, it would naturally be called upon to give assistance to individual institutions, provided they conformed to generally approved lines of policy. To preserve the best features of the voluntary system it would not do to work too much in watertight compartments. A greater amount of co-operation seemed to be the ultimate goal. He believed that any system under which people looked all the time to the State to help them would be disastrous. He believed in self-help, in initiative, and in independence, but, at the same time, he thought that if the country was to get the best out of its resources there must always be someone to see that there was co-ordination.

#### MINER'S PHTHISIS IN SOUTH AFRICA.

DR. W. WATKINS-PITCHFORD is leaving South Africa after some thirty years spent there in pathological, bacteriological, and public health work. After holding several appointments in Natal and the Transvaal, Dr. Watkins-Pitchford became the first director of the South African Institute for Medical Research, Johannesburg. In 1916 the Legislature of the Union established a Miner's Phthisis Medical Bureau to administer the medical sections of the Miner's Phthisis Act, and Dr. Watkins-Pitchford was appointed chairman. We have received a copy of Dr. Watkins-Pitchford's swan-song in the shape of the report of the bureau for the year ending July 31st, 1924. The report is a sufficiently voluminous proof of the energy and activity he has displayed. The bureau consists of whole-time officers responsible directly to the Government. Their work is of great pecuniary importance to the gold-mining industry of the Transvaal, which has to pay compensation to mine workers and their dependants in cases of miner's

phthisis; the expenditure involved is about £800,000 a year. The medical officers undertake an "initial" examination for fitness of all those who wish to work in the mines, and a "periodical" examination of all who are exposed to quartz dust in the mines, every six months of Europeans and every three months of natives; a "benefits" examination of any worker who believes he has contracted miner's phthisis; and *post-mortem* examination, in the interests of the dependants, of all deceased mine workers. The disease, whether it is complicated by tuberculosis or not, is always referred to by the officers of the bureau as "silicosis." It appears that at the initial examination from 42 to 73 per cent. of the candidates for mine work have been rejected in various years, almost entirely for pulmonary defect. As a result of this stringent test, amongst 6,000 Europeans passed since 1916 only seven cases of silicosis have occurred, and only twelve cases of simple tuberculosis. Periodical examinations of 12,000 European working miners showed an incidence of simple tuberculosis of 80 per 100,000, as compared with 321 per 100,000 in 1920. The rate of incidence of simple silicosis, however, has risen from 1,756 to 2,652 per 100,000; 319 fresh cases have occurred in the 12,000 workers during the year under review. But practically all these now cases were amongst men who were working before 1916. The mean duration of employment in the mines before the appearance of signs of the disease—the "average effective period"—has risen from 113 months to 125. It has been found that early retirement from the work does not affect the prognosis of silicosis. Retirement is compulsory for simple tuberculosis and for tuberculosis with silicosis; the rate of incidence for the last mentioned condition has fallen from 800 to 164 per 100,000. The diagnosis of silicosis has been greatly helped by radiography. In 225 out of 541 ex-miners who had been compensated for silicosis before the bureau was formed, no evidence of either silicosis or tuberculosis could be found on examination for a further compensation claim. *Post-mortem* examination of 122 miners showed that silicosis was responsible for death, or contributory to it, in 41 per cent. of the cases. The 178,000 native labourers are not all submitted to examination; but only those who are sent by the mine medical officer as suspected cases of tuberculosis or silicosis. Consequently the rates of incidence of the diseases are not strictly comparable with those amongst Europeans. But there is no doubt that silicosis is comparatively infrequent amongst natives. This is accounted for by the fact that few natives work more than six or nine months at a time, and then have long holidays at their kraals. Dr. Watkins-Pitchford has come to the conclusion, as the result of a special investigation of natives who had worked continuously for longer than five years, that the native is neither less nor more susceptible to silicosis than the European. During this special investigation several cases of simple tuberculosis and tuberculosis with silicosis were discovered which had not been suspected. Dr. Watkins-Pitchford attaches great importance to "this unsuspected reservoir of infection" from carriers, and thinks that they may reasonably be credited with having originated many of the 878 other cases of tuberculosis and of the 438 fresh cases of silicosis which occurred during the year. He advocates the creation of a small but energetic organization for the detection of tuberculosis amongst native recruits and employed labourers. The report contains notes upon cancer of the lung, upon the pathological changes in the lungs which are specific to silicosis, and upon the non-prevalence of syphilis, Bright's disease, and miner's nystagmus. This report of the Miner's Phthisis Medical Bureau shows that Dr. Watkins-Pitchford has indeed deserved well of the country of his adoption.



## A CODE OF MANNERS FOR MOTOR DRIVING.

LORD MONTAGU OF BEAULIEU, who before now has told motor drivers some plain truths, published recently an article in the *Times* on road manners, and a few days afterwards our contemporary published a leading article which began by saying that road manners might be not only bad, but wicked, and even in their milder manifestations bad road manners were inconvenient and a nuisance. As a remedy for dangers as they exist the *Times* wants a slogan so direct and simple that "the wayfaring men [and women], though fools, shall not err therein." We commend to the notice of the *Times* the "offside rule" for the motor driver; it has been adopted by the Automobile Association, and provides a slogan than which nothing can be more direct and simple: "Watch for traffic—horse, motor, or pedestrian—on your right hand." Incidentally a study of this rule will reveal that without some such rule police and magistrates are not in a position to distinguish amid the chaos of conflicting evidence, and so fix the responsibility for accidents with some measure of justice. It is just this fixing of responsibility which will reduce the toll of accidents to those which are really unavoidable. The article by Lord Montagu of Beaulieu raises yet another problem, though the adoption of a code of manners such as he suggests would undoubtedly contribute to solving it. It is well that he notes the uncertainty about the convention of hand signals, for the fewer the signals the better; and that he also calls attention to the bad manners of neglecting to keep to the near side of the road, of blocking the road with stationary cars, of leaving a car directly opposite an entrance, of smoky exhausts, and of glaring headlights in towns where only de-lights are necessary. Of the complaints to which he gives utterance that which perhaps has most medical interest is about the making of unnecessary noise by too frequent sounding of the horn, or by using open exhausts or inefficient silencers. These noises are a growing nuisance, especially at night, and, as Lord Montagu points out, cause suffering not only to the sick, but to all classes of the population who desire to sleep. The use of the horn is a difficult problem for the motorist. The experienced motorist can drive perfectly safely with hardly any sounding of the horn, and at night in the country the use of headlights renders its use almost completely unnecessary. On the other hand, the first cry of every pedestrian who thinks he has missed being run over is usually, "Why didn't you hoot?" For the "cut-out" and the inefficient silencer there is now no excuse whatever. The motor cyclist is the worst offender in this way, and he becomes a danger on the road because the noise of his open exhaust prevents him from hearing the warnings of overtaking vehicles. As magistrates are empowered to impose fines on the owners of vehicles not properly silenced, there should be no difficulty in dealing with this nuisance. At present it continues apparently unchecked, so that the Home Secretary has been impelled to issue a warning to all users of motor cars, and particularly motor cyclists, that he has instructed the police to take active steps to enforce the law relating to the use of silencers. The law is twelve years old, and was last amended four years ago; the Home Secretary described the nuisance as intolerable. The prefect of police in Paris speaks of the intolerable noise made by cars not fitted with silencers, and has called a special meeting of the permanent traffic committee to consider rules he proposes to make. Lord Montagu says that "the motoring organizations are trying all the time to inculcate good manners and due consideration for others by publishing rules to be observed." One of the questions raised by his article seems to be whether the time has not arrived for these organizations to meet together and discuss the whole subject of the courtesies of

the road. It is by no means certain that the various bodies are at present so fully agreed on these courtesies that they could be embodied in a code sufficiently simple and not too lengthy. But without such a code driving is bound to be unnecessarily dangerous to drivers and pedestrians, more and more unpleasant, at least to residents along arterial roads, and increasingly chaotic.

## THE SCIENCE OF GENETICS.

SOME months ago the members of the Dundee Branch succeeded in persuading Dr. F. A. E. Crew, director of the Animal Breeding Research Department at Edinburgh, to give them a British Medical Association Lecture on the mechanism of inheritance, and we are now able to present it to a larger audience, some of whom may find it stimulating holiday reading. A new department of biological science, with its own body of observations and theories and a special terminology, has sprung up since the majority of those now in practice left the schools, and those engaged in its prosecution believe, with Dr. Crew, that the medical man will do well to make himself acquainted with its principles, since they will help him to a better understanding of some of his many and varied problems. The rapid advance of genetics may be dated from the early years of this century, when, as Professor J. B. Leathes said in concluding his address at Oxford, the forgotten experiments of Mendel came to the surface again, and found corroboration in the cytological studies that from about the same time had pursued their slow obstructed way in the attempt to elucidate the changes in the nucleus of maturing germ cells. He went on to express the view that to-day the study of genetics and of the topographical anatomy of the chromosomes, with its groupings and crossings-over, seems to call out for chemical assistance. Those who wish to pursue one aspect of the matter further may consult the small volume *An Introduction to Experimental Embryology*, by Mr. G. R. de Beer, Jenkinson Memorial lecturer in comparative and experimental embryology at Oxford. Perhaps because the units with which they deal are beyond the powers of the microscope, exponents of the new science, like Dr. Crew, consider it necessary to be extremely precise and logical in their expositions; and though Mr. de Beer does not suffer to so large an extent from this disadvantage he also is severely logical in his explanations, so much so that the book is by no means easy reading. It is full of facts as well as theories, and neither by his manner of using the new terms nor by his literary style does Mr. de Beer do much to conciliate his readers. Nevertheless the book is well constructed and extremely informing.

## AN ESSAY ON THE UNKNOWNABLE.

THE Dean of St. Paul's, invited to deliver the Fison Memorial Lecture for 1926 at Guy's Hospital Medical School, bravely set forth to explain his views on *Science and Ultimate Truth*, and the lecture has been published in pamphlet form.<sup>2</sup> It is extremely interesting, even if at times the ideas and the language which clothes them are not too easy to understand. The Dean, like every human being who takes the trouble to think, has a philosophy of his own; and in his lecture he strives to explain how his philosophy differs from that of Hume, Kant, and Hegel, no less than from materialism, epistemological positivism, agnosticism, and pluralism. It would appear that he accepts the existence of a Supreme Being, independent of the universe in the sense that

<sup>1</sup> *An Introduction to Experimental Embryology*, by G. R. de Beer, M.A., B.Sc., F.L.S. Oxford: The Clarendon Press, 1926. (Crown 8vo, pp. 143, 7s. 6d. net.)  
<sup>2</sup> *Science and Ultimate Truth*. London and New York: Longmans, Green and Co. 1926. (5½ x 8, pp. 32. Paper cover, 1s. net; cloth, 2s. net.)

Shakespeare was independent of his plays. But the plays are the necessary expression of the mind and character of Shakespeare. We gather that, similarly, he holds the universe to be the necessary expression of the mind and character of the Supreme Being, though we know nothing of the motives of creation. The world is a solid fact, says the Dean, which we have to accept, not to account for. Although the innermost nature of the Supreme Being is unknown to us, He has revealed Himself under the three attributes of goodness, truth, and beauty. These are eternal and ultimate values, and not inactive thoughts. The whole duty of man and the path by which he can claim his status in the eternal world is in the apprehension of these eternal values, and in earnestly striving to co-operate with the Divine will in actualizing them. The values are three paths up the hill of the Lord, which may be supposed to unite at the top. And three specialists, apparently, lead men up the paths—the saint, the poet, and the man of science. At present religion, science, and art are jealous of one another, because each claims, in a sense, to cover the whole field—that is, to interpret all experience from its own point of view. Philosophy tries to mediate between them, and the task has so far been beyond its powers. But the eternal values are not entirely separate from each other; they are, in Dean Inge's view, a triple star, the attributes under which the one Supreme Being has revealed to us His nature and His will. The Dean's most arresting statement is, perhaps, that "the world is a solid fact, which we have to accept, not to account for." The facts of the world, and some of the facts of the universe, can be dealt with by man's intelligence. The unfortunate thing about philosophy is that it is bound to lead to realms which are beyond man's comprehension. It may be that the only attitude of mind towards the nature of those realms that is consistent with man's shortcomings is recognition that the finite cannot comprehend the infinite. And perhaps the man of science, as he slowly plods his way to such knowledge as is within his powers, may sometimes ask himself, "What is truth?" Whether the saint and the poet should also ask themselves "What is goodness?" or "What is beauty?" is not for us to say.

#### RESEARCH DEFENCE SOCIETY.

THE *Journal of the Research Defence Society* for July, in addition to an obituary notice of its founder, Mr. Stephen Paget, illustrated by an excellent portrait, and a report of the annual general meeting, of which we gave an account on July 3rd (p. 27), contains an article by Mr. Leslie R. Aldous of the League of Nations Union, entitled "Fighting disease internationally." Mr. Aldous sketches the work already done by the Health Organization of the League of Nations. In the early days its energies were occupied by epidemics of typhus and typhoid in Eastern Europe; and a line of hospitals, and of disinfecting and quarantine stations, was established along the whole Polish frontier. Since this emergency action the Health Organization has been dealing with sleeping sickness, tuberculosis in South African mines, cancer researches, and malaria. Its Malaria Commission is concerned at the inadequate supply of quinine available, and is carrying out experiments with substitutes. The League of Nations has also supplied health advisers to certain countries, such as Albania and Persia. The president of the Research Defence Society is Lord Lamington, and its chairman is Lord Knutsford. Sir David Ferrier and Lady Horsley are the honorary treasurers of the society, Dr. G. P. Crowden is honorary secretary, and Dr. Alfred Salter, M.P., its parliamentary honorary secretary. The Research Defence Society's address is 11, Chandos Street, London, W.1.

#### THE PROFESSIONAL CLASSES AID COUNCIL.

THE Professional Classes Aid Council has now completed five years of work since it was reconstituted from the Professional Classes War Relief Council formed in October, 1914. The report of the council for 1925-26 shows that it does much useful work upon rather a slender income; and this year, for the first time since 1921, there is a slight excess of income over expenditure. The council wisely devotes much of its effort to assisting in the education of the children of applicants; but help is also given in illness, towards maintenance, and for bridging a period before the recipient is in a position to be independent of further help. The necessity for inquiry into the good faith of applicants seems to be fully recognized; and the council would appear to have established satisfactory relations with the numerous professional societies which are represented on it. Existing medical charities probably render it unnecessary for any large number of members of the medical profession to apply for relief. The British Medical Association is represented on the council by Mr. Bishop Harman.

#### THE HALF-YEARLY INDEXES.

THE usual half-yearly indexes to the *JOURNAL* and to the *SUPPLEMENT* and *ERRATA* have been printed; they will, however, not be issued with all copies of the *JOURNAL*, but only to those readers who ask for them. Any member or subscriber who desires to have one or all of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this desire.

AN Order of Council has been issued altering the composition of the Committee of Privy Council for Medical Research, the ministerial body under which the Medical Research Council conducts its work. The Committee originally consisted of the Lord President of the Council, the Minister of Health (England and Wales), the Secretary for Scotland, and the Chief Secretary for Ireland, but the last named office has become obsolete as a result of the changes in the government of Ireland. In view of this vacancy, and of the increasing relation of the Medical Research Council to research work in overseas parts of the empire and in industrial medicine, the Secretaries of State for Home Affairs, for Dominion Affairs, and for the Colonies have now been added to the Committee.

THE first number of the *Journal of Neurology and Psychopathology* to be issued by the British Medical Association (that for July) has been published. The *Journal* continues to be edited by Dr. Kinnier Wilson, with the assistance of an Editorial Committee of psychologists. It is published quarterly. The annual subscription, which should be sent to the Financial Secretary and Business Manager of the British Medical Association, Tavistock Square, London, W.C.1, is 30s. The price of single numbers is 8s. 6d. post free. The new number contains an analysis of the affective symptomatology of disseminated sclerosis founded on 100 cases, by Dr. S. S. Cottrell of Richmond, Virginia, and Dr. Kinnier Wilson; the first part of a lecture on the psychology of character, by Dr. William Brown; a report of a case of recovery from spontaneous subarachnoid haemorrhage, by Dr. Parkes Weber and Dr. Bodo, from the German Hospital, London; an editorial article on perspective in psychiatry; and a set of abstracts.

## THE INTERNATIONAL PHYSIOLOGICAL CONGRESS AT STOCKHOLM.

(FROM L. E. BAYLISS, a Member of the British Physiological Society.)

THE twelfth International Physiological Congress, which began on Tuesday, August 3rd, at Stockholm, is undoubtedly one of the largest and most truly international that has ever been held, since there are 600 members, from absolutely every country in Europe, from China and Japan, and from the United States and Canada. We are having presented to us 272 communications and 40 demonstrations, with the result that it is quite impossible to hear more than a very small fraction of them, although it is possible to get some idea of a certain number more with the help of the summaries printed in the *Skandinavisches Archiv für Physiologie*.

*Address of Welcome.*

The congress opened with an address of welcome on behalf of the Swedish universities by the Archbishop of Sweden, who made an appeal, in excellent English, for the purity of science and the necessity for the pursuit of knowledge as an end in itself, without thoughts of practical utility. The Governor of the City of Stockholm then welcomed (in French) the congress to the city and placed its resources at our disposal, and the principal of the Caroline Institute expressed (in German) the delight with which his institute received us in Stockholm.

*The Mechanisms of Biological Oxidation.*

After a short address by the president, Professor J. E. Johansson, in which he deplored the deaths of so many famous physiologists in the last three years, Professor Sir F. Gowland Hopkins gave a lecture on the mechanisms of biological oxidation. Opening with a defence of the modern tendency of biochemical laboratories to separate themselves from the physiological, and though emphasizing the necessity for close co-operation, he advocated the development of institutes of general biochemistry, which would not be tied down to the study of animal problems, but would deal also with those of plants and micro-organisms. These introductory remarks were well justified by the subsequent more technical statement, in which much of the experimental evidence that has led to the modern conception of biological oxidations has been obtained in the lecturer's own laboratory at Cambridge.

In order to account for the fact that in living tissues substances are oxidized quite readily, which can only be dealt with *in vitro* by means of powerful chemical reagents, Warburg has supposed that the molecules of oxygen are activated probably by traces of iron. Wieland, on the other hand, regards the activation of the substance to be oxidized as more important, or, more exactly, the activation of a constituent hydrogen atom, so that it can combine readily with a "hydrogen acceptor"; this may, of course, be molecular oxygen, or in its absence some easily reducible organic compound.

After presenting the evidence in favour of these two views in a beautifully critical manner, the lecturer went on to the most recent developments of the subject, which take into consideration the possible effects of the electrical fields at charged surfaces, which may be quite large, the conceptions of oxidation and reduction as essentially a transfer of electrons from the substance oxidized to the substance reduced, and described the two forms of "hydrogen transporter," whose function it is to act as

intermediaries in the transport of the activated hydrogen to the final hydrogen acceptor, which in the case of normal living cells is oxygen. In plants the chief hydrogen transporters are polyphenols, and in animals the organic sulphides, notably a dipeptide of glutamic acid and cysteine—"glutathione."

Finally, Professor Hopkins reached the conclusion that, of the two views, Wieland's was the more important, although it would be absurd to suppose that activation of oxygen never occurred in the living cell—there is too much evidence in favour of it—but the subject is complicated by the fact that not only does iron activate molecular oxygen, but it can also catalyse the transport of activated hydrogen by glutathione.

*The Sections.*

The sessions of the congress began in the afternoon, taking place in four sections simultaneously, each devoted, more or less, to one branch of physiology; they are to continue every morning and afternoon till Friday, August 6th. So far the work which has been reported here that will probably have the most interest to those engaged in medicine have been the experiments of Magnus and his fellow workers in Utrecht on the function of the cerebellum in the balancing reflexes; the measurement of the heat produced by a nerve on stimulation, by A. V. Hill and R. W. Gerard of London; and the recording of the electrical response of a nerve stimulated through its own end-organ—for example, touch and pain—by Adrian of Cambridge. Kato, from Tokio, has brought forward his theory of the decrementless conduction in narcotized nerve, and Girard and Peyré of Paris have defended their theory that by injecting caesium eosinate into an animal it is protected from subsequent injections of substances which would normally produce shock. The modern conception of the spleen as a reservoir of blood corpuscles, to be discharged into the blood as soon as there is any tendency towards asphyxia in the tissues, has been demonstrated by Barcroft of Cambridge on a dog brought over specially; this conception has been confirmed by Seheunert and Krzywanek of Leipzig. Recent observations on the heart occupied the whole of one section on Tuesday afternoon (August 3rd), notably the work of Anrep and co-workers of London on the coronary circulation, and Loewi of Gmz on the production of an inhibiting substance, believed to be a complicated ester, by stimulation of the vagus.

*Distractions.*

On Tuesday evening the whole congress made an excursion to Skansen, which is an open-air museum and zoological gardens on a rocky height overlooking Stockholm. Here are to be seen replicas of old Swedish houses and Lapland huts, and here were arranged folk-dancing and folk-singing. Refreshments were obtained in a restaurant built and decorated as an ancient Swedish house, and were served by attendants in old-fashioned costumes.

This evening (Wednesday) the city of Stockholm gives a banquet in the city hall, which, together with the concert hall, in which the opening meeting was held, is a very fine example of modern Swedish architecture, undoubtedly some of the finest in the world.

Stockholm, August 4th.

## DIET FOR SCHOOLBOYS.

BETWEEN 1921 and 1925 Dr. H. C. Corry Mann conducted an investigation into diets for boys, and his report has been published by the Medical Research Council.<sup>1</sup>

Dr. Mann's observations were made at an institution near London, where some six hundred boys are housed under the "villa" system; there are thirty to thirty-five boys in each house, and the rate of sickness is low. During four

years records were made by weighing sample rations daily for each of the three meals, thus obtaining minimum and maximum helpings for smaller and larger boys. This was called the basic diet; and it supplied from 1,679 to 2,154 calories daily—37.3 calories per lb. of body weight for a boy of 45 lb., and 35.9 calories per lb. of body weight for a boy of 60 lb. For the purposes of investigation boys of southern English stock were selected, excluding all trace of colour or of foreign, Latin, Scandinavian, or Hebrew type. Their ages varied from 7 to 11 years, their

<sup>1</sup> Medical Research Council, Special Report Series No. 105. *Diets for Boys during the School Age*. By H. C. Corry Mann, O.B.E., M.D. H.M. Stationery Office, London, Manchester, Cardiff, Edinburgh, Belfast; or through any bookseller. Price 2s. 6d. net.

weights from 45 to 60 lb. Any disabilities observed in the boys were due to deficiency of weight and height for age, and not to infective disease. An equal number of the same age and rating was assigned to each of the houses in which the investigations were carried out. After a preliminary period of observation, the group of boys in House I, receiving only the basic diet, were kept under strict observation, and records made of their general health, gain in weight, and increase in height. In House II each boy received in addition to the basic diet one pint of fresh cow's milk daily. In House III a daily ration of 3 oz. of castor sugar was added to the basic diet; in House IV  $1\frac{1}{2}$  oz. of butter; in Houses V and VI  $1\frac{1}{2}$  to  $3\frac{1}{4}$  oz. of watercress; in House VII  $3\frac{1}{4}$  oz. of casein, and in House VIII the same amount of vegetable margarine. The object of these researches was to discover whether an increase of height and weight could be best obtained by giving the boys merely more calories by means of the sugar ration, by adding fat alone, by giving fat with vitamin, or by adding vitamin alone. The casein ration was chosen for the purpose of discovering whether improvement in the biological value of the protein might not be more necessary than any other change in the basic diet.

The basic diet in use at the institution contained only a relatively small amount of fat. In a diet of good average quality the fat accounts for 30 to 35 calories. In the basic diet it accounted for only 18. The protein was adequate for growth, although only 25 per cent. instead of the normal 35 to 45 per cent. was from animal sources. The carbohydrates, consequently, were in excess and accounted for 68 per cent. of the calories of the basic diet, as compared with 50 per cent. in a good average diet. The calorie value of the basic diet appeared adequate, though an improvement in nutrition would probably occur if the balance and quality were altered. Boys on the basic diet grew an average of 1.84 inches a year, and gained 3.85 lb., as compared with an average increment of 5.5 lb. observed in healthy school children of the industrial class. The boys who received in addition the cow's milk ration gained an average of 6.98 lb. and grew an average of 2.63 inches. With sugar the average gain was 4.93 lb. per boy and 1.94 inches; with butter 6.30 lb. and 2.22 inches; with margarine 5.21 lb. and 1.84 inches; with casein 4.01 lb. and 1.76 inches; with watercress 5.42 lb. and 1.70 inches. Incidentally it was found that on all diets there was invariably rather more growth during summer than during winter, and usually more gain in weight. A further point of interest is that the boys who got the extra ration of milk not only did best in weight and height but were "obviously more fit than those of the other groups." There was a general absence of illness. The boys lost the marked tendency to chilblains in the winter, and a roughness of the skin and tendency to pet-belly which were common among those eating only the basic diet. They became far more high-spirited and irrepressible, and for this reason were often in trouble, but there was no indication of greater proficiency at school.

The conclusion reached in the report is that in an institution where there was no deficiency of fresh air or sunshine an immediate improvement in physique followed an alteration in the quality of a diet which was adequate from a physiological standpoint. This improvement was most marked when fresh cow's milk, recently pasteurized, formed the additional item of food; and the improvement, both in weight and height increments, was not temporary but was maintained over a period of one, two, or three years. In an appendix the findings are confirmed statistically by Dr. Major Greenwood and Miss G. M. Newbold, who say:

"**Weight.**—On the whole the milk and butter groups both show definite excess increases in weight over the basic group, and of about the same order, but slightly higher for the milk group. Summer shows a definite increase over winter; this is greater in the milk and butter groups than in the basic, and is of about the same order (slightly less) as that of the milk and butter over the basic group.

"**Height.**—On the whole the milk group shows a definite excess growth in height over the basic, and very slightly greater in summer than in winter. The excess growth of the butter group over the basic is not significant, and is only about one-third that of the milk group. Summer growth shows a definite increase over winter, very little lower than that of the milk group over the basic, and on the whole greater in the milk group than in the butter or basic."

## OPERATIONS FOR CANCER.

We announced a fortnight ago that the Ministry of Health has issued two reports on cancer—the one (No. 33) by Dr. Major Greenwood, on the natural duration of cancer, and the other (No. 34), on the late results of operation for cancer of the breast.<sup>1</sup>

### LATE RESULTS OF OPERATION FOR CANCER OF THE BREAST.

The report on the late results of operation for cancer of the breast is based on 357 cases in which operations for cancer of the breast were performed in Leeds at the General Infirmary and the Hospital for Women and Children, during the years 1910-13 and 1919-21. The after-histories are unusually complete, ten cases only being untraceable, and in all but a few the cause of death was accurately obtained. The diagnosis of the primary growth was in all cases confirmed by microscopical examination.

The cases are grouped, according to the stage of the disease at the time of operation, under three headings—namely, Class I, the breast alone affected; Class II, the axillary glands also implicated; and Class III, other structures involved. In some instances, naturally, it was impossible to decide into which class a case should be placed, but this has not invalidated the final results of the investigation, which was directed to three main points: (a) the average duration of the disease prior to operation; (b) the results of operation as found at three, five, and ten years afterwards; and (c) survivorship, or the number of cases surviving in successive years after operation, compared with survivorship in healthy persons.

#### A. Average Duration of the Disease Prior to Operation.

The average duration of the disease prior to operation is exhibited in the following two tables.

Mean Period for Alleged Duration of Five Years and Under.

	Years.	Months.	Weeks.	Days.	Cases.
Class I ... ..	—	6	3	2	82
Class II ... ..	—	9	2	0	110
Class III ... ..	1	2	2	3	91

Mean Period.

	Years.	Months.	Weeks.	Days.	Cases.
All cases ... ..	1	0	2	4	321
Under five years ...	—	8	3	4	310
Under three years	—	7	1	6	295

In a few cases the alleged duration was as much as ten, fifteen, and even twenty years, but the above calculation was restricted to five years and under, because it seemed doubtful whether the growths could have been malignant during the whole of more prolonged periods. The figures show a sensible difference in the alleged durations in the several classes, indicating, as might have been expected, a definite relationship between the duration of the tumour and the stage of the disease.

#### B. The Results of Operation after Three, Five, and Ten Years.

In tabulating the late results of operation all the cases were available for the three-year period; all except those operated upon in 1921 for the five-year period; and all the 1910-13 cases for the ten-year period. The results

<sup>1</sup> Ministry of Health. Reports on Public Health and Medical Subjects. No. 33: *The Natural Duration of Cancer*, by Dr. Major Greenwood; price 9d. No. 34: *The Late Results of Operation for Cancer of the Breast (Leeds)*; price 6d. H.M. Stationery Office, London, Manchester, Cardiff, and Edinburgh.

appear in the following three tables, which are abbreviated from those in the report.

*Table showing Fate of 357 Patients Operated on for Cancer of the Breast, at Three Years after Operation (1910-13 and 1919-21).*

	Cl. I.	Cl. II.	Cl. III.	Unclassed.	Totals.
Cases ... ..	87	124	100	46	357
Alive at three years...	78	45	28	23	174
Died from other causes ...	4	6	10	5	25
Died within three years after operation	5	73	62	18	158

Percentage alive after deducting deaths from other causes: Class I, 94.0; Class II, 33.1; Class III, 31.1; unclassified, 56.1; all classes, 52.6.

*Table showing Fate of 286 Patients Operated on for Cancer of the Breast at Five Years after Operation (1910-13 and 1919-20 inclusive).*

	Cl. I.	Cl. II.	Cl. III.	Unclassed.	Totals.
Cases ... ..	74	97	74	41	286
Alive at five years ... ..	63	18	10	11	102
Died from other causes ...	5	7	8	5	25
Died within five years after operation	6	72	56	25	159

Percentage alive after deducting deaths from other causes: Class I, 91.3; Class II, 20.0; Class III, 15.1; unclassified, 33.6; all classes, 39.1.

*Table showing Fate of 171 Patients Operated on for Cancer of the Breast, at Ten Years after Operation (1910-13).*

	Cl. I.	Cl. II.	Cl. III.	Unclassed.	Totals.
Cases ... ..	49	58	40	24	171
Alive at ten years ... ..	35	3	2	4	44
Died from other causes ...	9	6	4	6	25
Died within ten years after operation ... ..	5	49	34	14	102

Percentage alive after deducting deaths from other causes: Class I, 87.5; Class II, 5.6; Class III, 5.5; unclassified, 22.2; all classes, 30.1.

A comparison of these three tables shows that the percentage of survivors in Class I (in which the disease had not extended beyond the mammary gland at the time of operation) is not only higher than in any other class, but that, if allowance is made for deaths from causes other than cancer, it remains almost constant up to the end of the ten-year period, the figures being 94 per cent., 91.3 per cent., and 87.5 per cent. The unabbreviated tables in Major Greenwood's report also show that a considerable percentage of the more advanced cases survive three years after operation, a smaller number survive five years, but only an occasional one survives up to ten years.

#### C. Survivorship.

The object here was to ascertain the number of survivors in the several categories, in successive years after the operation, and to compare this with the normal decrease in an equal number of healthy subjects. The chief interest centres round Class I. It is shown that the survivors of this class ten years after operation number only 14 per cent. below the normal average figure for healthy people. "It is," the report remarks, "impossible to regard this result without feelings of the greatest satisfaction."

#### THE NATURAL DURATION OF CANCER.

Dr. Major Greenwood's report (No. 33), on the natural duration of cancer, is partly theoretical in its aim. In discussing the relative advantages which different methods of operation confer on patients, it is obviously desirable that there should be a clear understanding as to the terms in which the "advantage" is to be expressed. Some mathematical formula which would serve as a standard of comparison is what seems to be required, and in Dr. Greenwood's opinion three conditions should be taken into account in the construction of such a formula—namely:

(a) the average duration of the life of a healthy person of the same age as the patient; (b) the average duration of the life of a patient untreated; and (c) the average duration of the life of a patient operated upon. With these data given, the following procedure might be followed, taking a purely imaginary case for illustration: If the average duration of life in health (a) is eighteen years and that of the untreated patient (b) only three years, the disease reduces the expectation of life to three-eighths of the normal; if now we find the average duration of life in the operated patient (c) to be nine years, his expectation of life has evidently been increased six years by the operation—that is to say, the advantage gained is six-eighths of the average duration of life in the healthy. The advantage is expressed by the formula

$$A = \frac{c-b}{a}. \text{ It has to be remarked, however, that since the}$$

normal expectation of life diminishes with age, the denominator in the above formula would be very small in an old patient and the calculated advantage would be correspondingly large, although, counted in years instead of ratios, the advantage would not in reality be greater than in a young patient. In short, the advantage would appear to increase with age, and Dr. Major Greenwood notes that this would need to be borne in mind. In order, further, that the formula should be consistent, it is necessary that the other two averages should not be materially affected by differences of age; according to the report they are not, there being no significant relation between age at onset and duration, if the data may be considered numerous enough to establish the point.

With regard to the three averages referred to above, the first (a) is known with considerable accuracy, the third (c) is known to a rough approximation in certain forms of cancer only; for the "natural" duration of life of untreated cancer patients (b) we have rather more information, and one object of the report was to collect it. The data analysed are from several hospitals, and include 4,238 cases relating to seven primary sites—namely, the tongue, breast, uterus, rectum, oesophagus, larynx, and stomach. The two longest series are those of Drs. Lazarus-Barlow and Leeming and of Dr. Wyard, and the conclusions reached confirm the conclusions of those authors in all important points. The average duration for all ages, of cancer of the above-named organs, when untreated, is exhibited in the following list; where more than one figure is given opposite the same organ the figures are from separate series of cases.

Breast .....	39.8; 39.57; 32.78; 36.54 months
Stomach .....	17.08 "
Rectum (females) .....	27.14; 25.71 "
" (males and females) .....	23.65; 25.46 "
" (males) .....	21.42 "
Cervix uteri .....	22.72; 18.76; 20.12; 15.35 "
Uterus and cervix .....	18.22 "
Tongue and mouth (males) .....	16.49; 15.25; 16.94 "
Oesophagus (males and females) .....	11.35 "
Larynx (males and females) .....	14.09 "

#### THE MIDWIVES AND MATERNITY HOMES ACT.

The Midwives and Maternity Homes Act (1926) received the Royal Assent on August 4th. Part I of the Act comes into force at once, and Part II, referring to the registration of maternity homes, on January 1st next.

##### *Practice of Midwifery.*

The Act prohibits the attendance by a male person or by a woman not certified under the Act upon a woman in childbirth unless under the direction and personal supervision of a duly qualified medical practitioner; but this provision is not to apply to a person who, while undergoing training with a view to becoming a duly qualified medical practitioner or a certified midwife, attends a woman in childbirth as part of a course of practical instruction in midwifery recognized by the General Medical Council or by the Central Midwives Board. The next clause provides that where a midwife has been suspended from practice in order to prevent the spread of infection she shall, if not herself in default, be entitled to compensation from the local supervising authority.

Subject to the sanction of the Minister of Health, local supervising authorities may make arrangements with pregnant women in their area for the payment by such women to the authority, by instalments or not, of sums to cover any liability which the authority may incur under Section 14 of the Midwives Act, 1918,



in respect of fees payable to medical practitioners who may be called in by midwives.

The Central Midwives Board is to divide the roll of midwives into two parts—one, of practising midwives, to be published yearly, and the other at not more than five-yearly intervals. The Board is empowered to make rules as to the wearing of badges by certified midwives.

#### Maternity Homes.

Part II of the Act deals with the registration of maternity homes. After January 1st, 1927, any person carrying on an unlicensed maternity home will be liable to a fine up to £50, or, for a second offence, to three months' imprisonment. "Maternity home" is defined as any premises used, or intended to be used, for the reception of pregnant women or of women immediately after childbirth, but does not include any hospital or other premises maintained or controlled by a Government department or local authority, or by any body constituted by special Act of Parliament or incorporated by Royal Charter. A local supervising authority may grant exemption from registration in respect of any hospital or other premises for the conduct of which a duly qualified medical practitioner resident therein is responsible, or any hospital or institution not carried on for profit and not used mainly as a maternity home. A local supervising authority may at any time withdraw such an exemption. The local authority may refuse to register an application if the applicant or any employee is not a fit person to carry on or to be employed at a maternity home, or if the premises are unfit, or are used for improper or undesirable purposes. It is not now necessary to obtain a licence for the establishment of a lying-in hospital in accordance with the provisions of the Lying-in Hospitals Act, 1773. The new Act does not affect the provisions of local Acts already giving municipalities power over maternity homes. Opportunity is given for appeals against a refusal to license. Authorized inspectors may at all reasonable times enter homes which they have fit cause to believe are used as maternity homes. The certificate of registration must be displayed conspicuously in each home, and the local supervising authority may make by-laws with regard to the records of patients received, children born, and of children removed otherwise than to the custody of parent, guardian, or relative. By-laws may also be made about the notification of any death in a maternity home and of its cause.

The local supervising authority remains as under the previous Midwives Act.

## England and Wales.

#### CLASSIFICATION OF FEEBLE-MINDED OFFENDERS.

The Mental Hospitals Committee of the London County Council has raised objections to certain wider definitions of mental defect recommended by the departmental committee appointed by the Home Secretary in 1924 to consider the question of sexual offences against young persons.<sup>1</sup> The effect of these definitions, in the Mental Hospitals Committee's opinion, would be to make it unnecessary, in order to find defect within the meaning of the Mental Deficiency Act, to prove more than an existing condition of mental enfeeblement. In this way every case of mental degeneration in which the conduct showed the need for care, supervision, and control would be brought, along with every case of congenital defect, within the scope of the Act. The Lunacy Acts and the Mental Deficiency Act would in that event overlap, for in practice it would be found that under both Acts the real standard for decision would be whether a person acted with reasonable regard to his environment. The question of whether a given case should be dealt with as one of lunacy or of mental defect would probably resolve itself into one of institutional accommodation. This, in the view of the Mental Hospitals Committee, is not desirable, nor is it desirable to run the risk of getting together into one institution cases of definite mental degeneration or disease and cases of congenital mental insufficiency. The committee believes that the Government desires the definitions of defect in the Mental Deficiency Act to be somewhat widened in scope by the omission of the awkward limitation imposed by the words "birth or early age," and the substitution of some form of words which would suggest arrest of development. The committee would not object to this, but it believes that the real motive behind the desire for the speedy amendment of the definitions in the Act is to enable more cases suffering from the sequelae of encephalitis lethargica to be dealt with in institutions under the Mental Deficiency Act. This might have some advantages, but it would also give rise to difficulties. The

committee raises no objection to another recommendation of the departmental committee, that after the conviction of a person, but before sentence, the bench shall remand for medical examination and report cases in which mental disease, disorder, or defect is suspected; this might add somewhat to the work of the medical officers, but not greatly. With regard to the recommendation that all courts shall make arrangements for the services of a mental expert, the committee points out that so far as London is concerned the courts of criminal jurisdiction have an arrangement similar to that which the departmental committee proposes. If an offender appears to be mentally defective one of the Council's certifying medical officers examines him, and should the case prove to be one of defect the Council advises the court as to the institution to which the case might be sent. The committee suggests that this arrangement works better than would one whereby the courts were advised by a specially appointed mental expert, whose judgement might not coincide with that of the Council's advisers, and who could not in any event give the court information as to what the Council was prepared to do with the case. Another recommendation of the departmental committee, for the prolonged detention of habitual offenders, raises a matter of principle. The Mental Hospitals Committee thinks that if there are numbers of defectives who are habitual practitioners of public indecency, and not merely a few who attract attention because of the flagrancy of the offence, it would be better to get special legislation providing for their indeterminate detention than to extend the scope of the Mental Deficiency Act.

#### CANCER CAMPAIGN IN YORKSHIRE.

At a meeting of the Yorkshire Council of the British Empire Cancer Campaign, on July 26th, at Leeds, under the presidency of Sir Berkeley Moynihan, it was announced that £100,520 had already been raised in the county. Arrangements were being made for dietetic research in relation to cancer to be conducted at the University of Sheffield, under the direction of Professor Mellanby, at an estimated cost of about £10,000, for which the council would be responsible. Professor Jamieson, reporting on the progress in the development of the Research Laboratory in Leeds, said that two houses and shops, formerly occupied by the Leeds Tuberculosis Committee, had been acquired on a five years' lease, and would be converted for use as a temporary research laboratory, which it was hoped would be able to start work on October 1st. The sum of £1,000 was voted for the equipment of this laboratory, which will be replaced eventually by a new building, towards which Sir Algernon Firth has given £20,000. In the districts of Halifax, Huddersfield, and Keighley the appeal is about to be closed; in each case at least three times the money originally asked for has been received. The inaugural meetings of the Campaign in Hull and Rotherham were very successful, and a substantial increase to the fund appears to be probable, though the continued coal strike has seriously hampered the appeal in some towns in Yorkshire.

#### BRISTOL CRIPPLED CHILDREN.

Crippled children in the city of Bristol are looked after mainly by the Orthopaedic Hospital, the Royal Hospital for Women and Children, and by the Bristol Crippled Children's Society. This society is a purely local organization founded four years ago for the care of crippled children of all descriptions. It arranges for the admission of patients to an orthopaedic hospital in Bristol or elsewhere, pays all hospital and convalescent home fees, and provides any necessary appliances. The society also does much valuable after-care work. The Bristol Orthopaedic Hospital and Home for Crippled Children is a considerably older institution; it contains forty beds for children whose ages range from 3 weeks to 14 years. It is situated on high ground close to the Durdham Downs, about one mile from the centre of the city. A large proportion of its patients are tuberculous. It has no out-patient department, but patients are admitted either from the Royal Infirmary, the General Hospital, or by direct recommendation of doctors

<sup>1</sup> BRITISH MEDICAL JOURNAL, January 16th, 1926, p. 112.

practising in the Bristol area, or, finally, through the intermediary of some benevolent society. A part of the Orthopaedic Hospital is equipped as an open-air school, and special attention is paid to the education of such patients as may suffer from some degree of mental dullness not amounting to certifiable deficiency. Children on reaching the age of 14 years have to be sent home, unless acutely ill, and the only medical care they receive after their discharge is by private medical attendance in their homes or by attending the out-patient department of the Royal Infirmary, the General Hospital, or the Royal Hospital for Women and Children. In the last named hospital about 350 out of an average annual total of 500 surgical in-patients treated are orthopaedic cases. A small proportion of children and adults are treated at the Royal Infirmary and General Hospital; adults requiring prolonged treatment have to be sent to other centres. Children suffering from tuberculous bone or joint disease who do not require operation are admissible to Frenchay, a children's sanatorium situated just outside the city, maintained by the Bristol Health Committee. Here a large number of non-surgical cases of tuberculosis are also treated. Many schemes for co-ordinating and extending orthopaedic work in Bristol have been considered. Negotiations are in progress for combining the work of the Orthopaedic Hospital and the Cripple Children's Society in some closer union than at present exists. If this is accomplished it may be possible to build a much larger hospital containing several hundred beds on a fresh site at a convenient distance outside the city. The numerous hills by which Bristol is surrounded offer almost embarrassing choice of admirable situations. The Cripple Children's Society has already collected £10,000 towards a building fund, but at least another £10,000 will be needed before any scheme can be embarked upon. It is hoped that in any new scheme the claims of cardiac cripples will be stoutly urged and favourably considered.

#### PORT OF MANCHESTER HEALTH REPORT.

The report of Dr. W. F. Deardon, M.O.H. to the Manchester Port Sanitary Authority for the year 1925, just published, contains a series of tables recording the cases of infectious diseases, notifiable to the authority, reported during the year. The total number so recorded was 139, and shows no definite prevalence of disease in Manchester-bound vessels or in the port. In the ports having communication with Manchester, however, plague and cholera are shown to have existed at Alexandria and Karachi, and there were isolated cases at several other ports, notably Roumanian ports on the Black Sea. The origin and destination of each of the 139 notifiable cases are given in detail in a table occupying a considerable section of the report. Other sections deal with rat destruction, the total number of rats obtained from ships during the year being 2,240, and from dock premises 3,116. Trapping appears to have been the chief method employed for their destruction, and in fact was the only method on ships arriving from infected ports. The remainder of the report gives the results of inspection of food imports and of the sanitary inspection of vessels. In 1925 the number of ships inspected was 2,069, of which 582, or 28.04 per cent., were found insanitary. There has been very little variation in this percentage during the last twenty years; 465 out of 1,494 British ships were insanitary, the next highest numbers being 47 out of 179 Norwegian, and 27 out of 102 United States vessels. The crews numbered 47,164, of whom 34,703 were on British, 3,386 on American, and 3,445 on Norwegian ships. Swedish and Danish ships had crews of 1,492 and 1,489 respectively, but no other nationalities had any great number of ships or crews. The crews of the British ships, it may be noted, were composed of 27,854 Europeans, 6,354 lascars, and 495 Chinese. Details are given of the sanitary defects under the Canal Boats Acts. Tables are also included showing the import and export trade of the Port of Manchester; the most interesting being a record of the live cattle trade from Canada; 21,612 were shipped, and of this number only 20 were lost at sea during the year.

**THE WELSH NATIONAL MEMORIAL ASSOCIATION.**  
The quarterly meeting of the council of King Edward VII Welsh National Memorial Association was held at Swansea on July 29th. The president, Mr. David Davies, M.P., who was in the chair, said that the financial position was not satisfactory; he suggested that a deputation should be appointed to wait on the Treasury and recall it to a sense of its duty to Wales, which, as compared with English counties, was not receiving a fair share of assistance. He alluded to a report presented to the council by the Medical Committee as to the Spahlinger treatment; he said, recently visited Geneva, as arranged at the last meeting of council (BRITISH MEDICAL JOURNAL, May 1st, 1926, p. 802). Their report had now been presented to the Medical Committee, which recommended that for the present it should be regarded as confidential, and that three subcommittees should be appointed to consider it and conduct further investigations. These committees would be (1) clinical, (2) bacteriological, and (3) general purposes. The report led to a lively discussion, in the course of which Mr. J. Games, a member of the Monmouthshire County Council, asked for assurance from the chairman of the Medical Committee that the recommendations now submitted by that committee would not in any way thwart the wishes of the council. The chairman, Dr. Enoch Moss of Wrexham, said that there was no such intention. Dr. John Jones (Dolgelly), speaking on behalf of the Merionethshire County Council, opposed the recommendations on the ground that the ratepayers of Wales should not be put to further expense. He thought the true test was whether M. Spahlinger would supply sufficient vaccines and serums to permit of a fair trial, and moved that the council should proceed no further in the matter. The amendment was seconded, but appeals, supported by the president, were made to Dr. John Jones to withdraw it, and eventually he consented. The matter was left in the hands of the Medical Committee to take such action as it might think fit. The report of the principal medical officer stated that decidedly favourable results had followed the further trial of sanocrysin, and that the effects of light treatment at the Glan Ely Hospital had been most striking. He appealed for additional equipment, since many patients, including some thirty sufferers from lupus, were awaiting diagnosis and treatment for both pulmonary and surgical tuberculosis. Such installations were already at work at several of the association's hospitals, but more were needed.

#### THE CARDIGAN HOSPITAL.

The Cardigan Hospital, one of the best of cottage hospitals, owes its present state of efficiency in very large measure to the care which Sir John Lynn-Thomas, K.B.E., F.R.C.S., has given to it. When the people of the district were casting about for a suitable site for a war memorial hospital he pointed to a vacant residence just outside the town, with a garden whose containing wall skirted the foreshore of the river Teifi. It was bought and remodelled internally, and now a flat roof for sun treatment has been formed. Last week Dame Margaret Lloyd George visited the hospital and opened a new electric lift to this flat roof. In doing so she mentioned that when she first visited the hospital it had only six beds; now it had fifteen, which was evidence that the institution was meeting a want. On the same occasion the Valo of Teifi Medical Society, through Dr. T. J. Jenkins, its honorary secretary, presented to the hospital a portrait of Sir John Lynn-Thomas painted by Mr. E. T. Copnall of Liverpool. The portrait was unveiled by the Earl of Lisburne, Lord Lieutenant of Cardiganshire and president of the Cardigan Society in London.

#### PENSION SCHEME FOR HOSPITAL OFFICERS AND NURSES.

Considerable progress has now been made with the plan for a general contributory system of pensions for hospital officers and nurses in London institutions, on the lines of a memorandum issued towards the end of 1924 by a conference of representatives of King Edward's Hospital

Fund for London; the British Hospitals Association, the Incorporated Association of Hospital Officers, and the College of Nursing (JOURNAL, December 19th, 1925, p. 1195). In April the King's Fund invited all the London hospitals to send representatives to a conference at the Mausion House. This conference, which was held on May 19th, was attended by representatives of 89 out of the 136 hospitals on the books of the King's Fund. A memorandum was subsequently drawn up outlining the scheme as approved by the King's Fund for the purpose of special grants-in-aid, and was sent to the hospitals represented at the conference, together with an invitation to a further meeting to decide the preliminary steps. This meeting was held in the House of Lords on July 5th, and was attended by representatives of sixty-two hospitals and of the societies concerned. A provisional council was then formed, including one representative of each participating hospital, two representatives of the Hospital Officers' Association, and two of the College of Nursing. A provisional executive committee to work out the details was constituted as follows: five representatives of participating hospitals with medical schools, five from other participating hospitals, one nominated by the Hospital Officers' Association, and one appointed by the College of Nursing. Hospitals are now invited to submit to this executive committee any point of detail on which they may desire information or decisions. Such questions should be sent to the committee, care of King Edward's Hospital Fund, 7, Walbrook, E.C.4, not later than November 1st. Any hospital which desires to participate and to send a representative to the next meeting of the provisional council is requested to notify the executive committee not later than November 15th. Particulars of the scheme in its present form are embodied in papers entitled *Outline of Scheme as approved by the King's Fund*, and *Steps taken to start the Scheme*, obtainable from the printer, George Barber, 23, Fumival Street, E.C.4, price 6d. each net, post free.

## Scotland.

### TYPHUS FEVER IN GLASGOW.

A MAN was removed from one of the Glasgow infirmaries to Belvedere Infectious Diseases Hospital on July 30th, suffering from typhus fever. The patient resided in Govan. An inquiry among his family for contacts led to the removal to hospital of a brother and sister who had been taken ill one day and two days previously; another sister became ill on the following day, and a married sister living at some distance was also found to be ill, and was admitted to hospital. Two days later a fourth sister, who is a maid on the staff of a large institution, also sickened, and was likewise transferred to hospital. All these cases are definitely diagnosed as typhus fever. The contacts were removed to a reception house, and on August 2nd one of these persons also developed typhus fever and was removed to hospital. No definite conclusion has been reached as to the source of infection of this group of cases, for the last recorded case of typhus fever in Glasgow was in January, 1923.

### NEW GLASGOW EAR HOSPITAL.

A want has been felt in Glasgow for facilities to deal with diseases of the ear, nose, and throat. There are large special departments in the three infirmaries of the city, but the special hospital was a very small institution. On August 6th the Right Hon. Neville Chamberlain, M.P., Minister of Health, opened the new Glasgow Ear, Nose, and Throat Hospital, a large three-story building, which has just been completed in St. Vincent Street. It contains facilities and modern apparatus for a large out-patient department, and has six wards, containing 48 beds. The hospital also includes an out-patient operating theatre on the ground floor, with well equipped anaesthetic and recovery rooms, and an in-patient operating theatre on the first floor. There are also a large x-ray room, diathermy apparatus, and a laboratory to provide for research work being done in the hospital. The ceremony

was brief owing to the fact that the hospital is now in full operation. After the opening a luncheon was held at the Royal Scottish Automobile Club. Mr. Chamberlain said that the building which he had just opened was a magnificent example of what could be achieved by the voluntary system of the British hospitals. This hospital had begun its career of usefulness fifty-four years ago in a very small way. Under the leadership of Lord Weir, the committee had succeeded in raising no less than £60,000, and to-day the new hospital started upon its career free of debt. This was a great demonstration of the energy, public spirit, and generosity of the Glasgow citizens. Mr. Chamberlain then went on to discuss the future of voluntary hospitals. His remarks are reported elsewhere (p. 313).

### THE ROYAL ASYLUM, PERTH.

The ninety-ninth annual report of James Murray's Royal Asylum, Perth, records the number of admissions for the year ended March 31st, 1926, as '84, the largest number in any year of its history; 59.5 per cent. of the total admissions were on a voluntary basis. During the year 14 patients died, of whom 7 were voluntary boarders. Problems arising in the treatment of mental cases are discussed by Dr. W. D. Chambers, the medical superintendent. Rest in bed in the open air, combined with the process of "insolation," a strictly regulated exposure of increasing areas of the body to the direct rays of the sun, and the use of the ultra-violet rays produced by a mercury vapour lamp, have yielded good results. In addition to these general measures, foci of infection are sought for and eradicated. Psychotherapy is in constant use, and is considered to be of great service, and the only line of treatment yielding good results in treating the psychoneuroses.

### CENTRAL MIDWIVES BOARD FOR SCOTLAND.

The examination of the Board, held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, has just been concluded with the following results: Out of 142 candidates who appeared for the examination 127 passed. Of the successful candidates, 32 were trained at the Royal Maternity Hospital, Edinburgh, 26 at the Royal Maternity Hospital, Glasgow, 7 at the Maternity Hospital, Aberdeen, 9 at the Maternity Hospital, Dundee, 14 at the Queen Victoria Jubilee Institute, Edinburgh, and the remainder at various other recognized institutions.

## Ireland.

### MEDICAL REGISTRATION (IRISH FREE STATE).

THE Free State Medical Act was to expire this month, but as a decision on the medical registration question has not yet been reached the power conferred by it to maintain the existing registration machinery in operation from month to month has been taken advantage of, and the Executive Council has made the first continuance order under the Act, extending the period for which the Act is to remain in force until September 21st next.

### MILK SUPPLY IN THE FREE STATE.

The committee appointed by the Minister for Local Government and Public Health to inquire into the conditions of milk production in the Free State consists of Mr. R. Wilson, T.D. (chairman), Dr. T. Hennessy, F.R.C.S.I., T.D., Mr. P. K. Hogan, T.D., Sir William J. Thompson, M.D., Dr. E. F. Stephenson (Ministry of Local Government and Public Health), Dr. M. J. Russell, F.R.C.S.I. (Medical Officer of Health, Dublin), Messrs. P. F. Dolan, M.R.C.V.S., J. Johnson, P. O'Connor, and L. S. Smyth, and has held its first meeting, when it was decided to invite evidence, at the outset, from the Dublin Corporation, from organizations connected with the Dublin milk supply, from the Irish Agricultural Organization Society, the Irish Farmers' Union, the Creamery Managers' Association, and from inspectors of the Local Government Department. The committee will be prepared to hear any person who notifies his readiness to give evidence.

and submits a précis to the Secretary, Committee on Milk Supply, Department of Local Government and Public Health, Upper Merion Street, Dublin.

#### HEALTH OF A NORTH OF IRELAND SEAPORT.

Coleraine, a small seaport of some seven thousand people on the north-east coast of Londonderry, was recently visited by Dr. Patrick, one of the medical inspectors of the Ministry for Home Affairs of Northern Ireland, who found the general sanitary conditions satisfactory, but recommended that one of the slaughterhouses should be closed. He recommended further that a public abattoir should be established, and the meat supply systematically inspected. The condition of the cowsheds was, on the whole, fair, but the Ministry recommends that samples of the milk sold in the district should be submitted from time to time to bacteriological examination. Some of the houses are of a poor type in the urban district, but the council is considering the building of new houses. The maternity and child welfare scheme was working satisfactorily, but there had been some difficulty about the water supply. It was sufficient in quantity, being equivalent to 35 gallons a head of the population, but when the higher levels were being supplied the water had to be turned off in other parts—a dangerous state of things. Sanitation generally had improved, and there was not the same amount of promiscuous dumping of house refuse and rubbish on waste ground; but there were still heaps of manure which should be removed at least once a week, and the cleansing of ashpits, which should be covered, should be insisted on at frequent intervals. The fever hospital accommodation was not up to date.

## Correspondence.

### MINER'S NYSTAGMUS.

SIR,—Dr. A. S. Percival, when discussing the relation-ship of miner's nystagmus to illumination (*BRITISH MEDICAL JOURNAL*, July 31st, p. 224), states that the new cases of nystagmus, 163 in number, which were observed in certain pits in Northumberland and Durham in 1912 were by no means evenly distributed among the underground workers, for the coal hewers showed an incidence of 0.90 per cent., and the other underground workers one of 0.24 per cent., or about a fourth as much. Again, in one pit where electric safety lamps were used exclusively nearly 4.3 per cent. of the hewers acquired the disease, but only 1.3 per cent. of the non-hewers. In a second pit where at one time (twenty-five years ago) electric lamps were used exclusively the percentage of cases of nystagmus was notoriously high, but on replacing these lamps with safety oil lamps the number of cases among the non-hewers fell to zero, while there were very few among the hewers. Dr. Percival considers that this evidence definitely confirms the conclusion of the Miners' Nystagmus Committee to the effect that "the essential factor in the production of miners' nystagmus is deficient illumination."

Dr. Percival's conclusion does not by any means follow from the facts stated, for he has omitted to take several important factors into consideration. The coal hewers suffer more eye-strain than most other underground workers for two reasons. First, they have a greater need of accurate vision, and especially so when they are setting the props which keep the roof from falling. To do this job properly they have to fix the props and wedges in position by accurately placed blows with a hammer. Then again it is desirable for the hewers to see the coal face clearly, so that they may strike with the pick to the best advantage. Further, the hewers do not get such a good light as the other underground workers. The air around them is frequently thick with coal dust, and though I have not made any measurements I should think that this dust often reduces the effective illumination of the coal face by a half. In the airways of the mine, however, where most of the other underground men are working, there is very little suspended coal dust. Moreover, some of these airways are stone dusted, and this greatly increases the proportion of light reflected from the surface, as compared with that from the coal face.

Dr. Percival's argument that electric lamps, though more powerful than safety oil lamps, have a greater nystagmus effect, is a doubtful one. The Miners' Nystagmus Committee found that the safety oil lamps tested by them had an average luminous intensity of 0.54 candle, whilst the electric lamps had one of 0.655 candle, or 23 per cent. more; but these observations were made with the flame or filament of the lamp in the broadside-on position. According to my own observations, these values, if converted into terms of the mean all-round luminous intensity of the lamps, would fall to 0.516 candle for oil lamps and to 0.515 candle for electric lamps; that is to say, they would show no difference in favour of the electric lamp. It should be pointed out, however, that the lamps were tested at the surface of the pit and not at the coal face, where the oil lamp may lose much of its luminous intensity owing to deficient oxygen. In any case, the present-day electric lamp is not a great improvement on the present-day oil lamp, and the electric lamp of twenty-five years ago, which is referred to by Dr. Percival, may have been worse than the oil lamp which was used subsequently.

On the other hand, the electric lamp has one defect which may be of great importance in the causation of miner's nystagmus, though direct evidence is lacking. The lamp causes a pronounced glare effect, owing to its white-hot filament, whereas the oil lamp flame is soft and pleasant to the eye. The glare causes discomfort and even pain when the lamp is viewed by the dark-adapted eye, and it is noticeable that the coal hewer, when shifting his lamp from place to place, as he has to do at frequent intervals, does not look at it directly if he can avoid doing so. Mr. S. Adams, Mr. T. Bedford, and I found that the pain caused by looking at an electric lamp (fixed two feet from the eyes) for two seconds, continued to increase for the first three hours we were underground, owing to increasing dark-adaptation. The viewing causes pronounced after-images, persisting for one or two minutes, and these images are strong enough to diminish appreciably one's accuracy of aim—for example, when attempting to prick small white spots on a black background. Fortunately the glare effect of electric lamps can easily be reduced by frosting the lamp glasses, though this remedy has not yet come into general use.—I am, etc.,

Oxford, July 31st.

H. M. VERNON.

### ORAL ADMINISTRATION OF PANCREATIC PREPARATIONS IN THE TREATMENT OF DIABETES.

SIR,—We do not share the optimism displayed so prominently among your advertisements by the makers of "trypsinogen" and other similar products regarding the value of such preparations in the treatment of diabetes. From close and fully controlled observations on patients we have never found any preparation of pancreas taken by mouth to be of the slightest value in the treatment of diabetes. We would welcome concrete proof that some useful mouth preparation really exists, because oral administration of tablets is obviously preferable to injections of insulin and the tedious necessity of dieting. But until we are convinced, by the results of detailed experiments in which the diet and other factors are fully controlled, that any such exist, we feel bound to affirm that such preparations are utterly useless. In such a disease as diabetes, in which the results of treatment can be controlled and estimated with something approaching the accuracy of pure mathematics, definite proof can be obtained.

We are not prepared to accept optimistic reports of their therapeutic value unless such reports are based on carefully controlled work. Patients usually commence a restricted diet at the same time as they begin to take these preparations, and, in our opinion, the benefit is derived entirely from the dietetic change. The fact that the patient has to swallow some half-dozen pills at the end of his meal also tends to make him careful in what he eats, and may contribute largely to the apparently happy action of these pills in some cases.

We therefore feel justified in asking space to warn the profession against undue optimism over such preparations. It is not conducive to silence to have seen patients grow

steadily worse in spite of the prolonged use of such preparations, and to have had to rescue them from a miserable death by the use of insulin.—We are, etc.,

H. MACLEAN.  
R. D. LAWRENCE.

London, W., July 29th.

### THE PROPHYLACTIC VALUE OF SCARLET FEVER ANTITOXIN.

SIR,—Dr. J. H. Garrett's reply in your issue of July 31st at least serves to make clearer to me what our difference is. He is not satisfied that the Dick test is a reliable index of susceptibility or otherwise to scarlet fever; whereas we, after a daily experience of the test for the past two years, believe it to be so.

Working in conjunction with two groups of bacteriologists of repute, and with toxins produced independently by them, our aggregate of Dick tests approaches 3,000. We believe as a result of our experience, which is daily being enlarged, that an individual who gives a negative response to an adequate skin dose of Dick toxin is immune to scarlet fever—by which we mean the toxicæmic manifestations produced by the *Streptococcus scarlatinae*. We know, for example, that cases sent in with a diagnosis of scarlet fever but who present no signs or symptoms of the disease, or who are palpably suffering from something else, may be safely nursed in a scarlet fever ward (a) if they are primarily Dick-negative, or (b) rendered Dick-negative by a prophylactic dose of scarlet fever antitoxin. In the latter case they remain immune for a matter of days only, and then again become Dick-positive and susceptible. Whether they are Dick-negative on admission or the condition is produced artificially, the presence of scarlet fever antitoxin can be demonstrated in their blood; their own serum in either case will produce local blanching when injected intradermally in a dose of 0.2 c.c.m. into a recent scarlet fever rash—the well known Schultz-Charlton reaction.

For the moment I must ask Dr. Garrett to accept this brief statement. Some of our work on the Dick test has already been published (*Public Health*, May, 1926); a more extended series of observations is at present being prepared for publication.

Nobody realizes better than ourselves that there are difficulties and things not as yet satisfactorily explained; but the broad facts outlined above stand out. May I reiterate that a skin test dose of Dick toxin was the criterion adopted in the paper which Dr. Garrett criticizes? These readings might, indeed, have been carried out on any series of individuals with, *mutatis mutandis*, the same results: so many susceptible to a skin test dose of toxin; so many rendered temporarily immune, as shown by a negative test after administration of serum; so many, again, showing waning or complete loss of immunity—for example, the Dick test again becomes positive—after a lapse of days. As a fact, the occurrence of an initial case of scarlet fever in the ward formed a mere *point d'appui*.

The assumption with which Dr. Garrett credits me that 100 per cent. of susceptibles would necessarily contract scarlet fever is one which it would never occur to me to make. Neither did I quote Dr. Kirkhope's paper "to buttress my position," but only to draw attention to an independent series of observations under different conditions and with another criterion of susceptibility.

With a further assurance to Dr. Garrett that I write only of what I know from very careful and repeated observations, I must take my leave of him in your columns.—I am, etc.,

Birmingham, Aug. 2nd.

E. H. R. HARRIES.

### DEFENCE OF ASSISTANTS AND LOCUMTENENTS.

SIR,—The letter in your issue of July 31st from the secretaries of two of the defence societies (Medical Defence Union and London and Counties Medical Protection Society) records a reciprocal arrangement which is both welcome and obvious common sense. Might I ask why the Medical and Dental Defence Union of Scotland—to which a large number of doctors belong—is not included in such an agreement? Until all such societies are linked

up by reciprocal agreements, doctors cannot be adequately protected.

The importance of medical defence to the individual cannot be overestimated, as no doctor can foresee when his services may be called in question. The letter referred to deals with the specified condition that all the parties concerned belong to one or other of the two defence societies mentioned. It would have been valuable had they in addition warned those who are anxious to be protected of some of the existing weak spots in their armour.

**Assistants.**—A member of either of these societies is not protected against an action arising from the acts or omissions of an assistant who is not also a member of one or other of them, nor is he protected, unless a reciprocal arrangement exists, if his assistant belongs to the Medical and Dental Defence Union of Scotland. Many assistants are engaged by doctors without, so far as I know, any inquiry being made on this important point.

**Hospital Consultants.**—It is only implied that they will defend a member if his subordinate is also a member of one or other of the two societies. No reference is made to the hospital consultant who is a member, and who is liable to legal expenses should his treatment be called in question, and whose junior (the resident responsible for the action) is not a member, which is usually the case. Consultants are all too prone to feel that the committees of management or house committee—whichever term is used—will be held solely responsible for the acts of the residents it appoints. In strict law I understand this is not the case. Sisters and nurses, of course, are not members of any defence society.

**Locumtenents.**—The Medical Defence Union, in the *BRITISH MEDICAL JOURNAL* of March 27th, stated that it will afford the usual cover to its members for the acts or omissions of "any registered medical practitioner, while temporarily employed as a locumtenent." The other defence society (the London and Counties Medical Protection Society) makes no statement on the matter. It is highly important that this point should be settled at the earliest possible date. The vast majority of locumtenents are recently qualified men who have not yet realized the risks and responsibilities of practice, but there are others who engage in locumtenent work—namely:

1. The habitual locumtenent, who may be quite a senior member of the profession.
2. The man engaged in whole-time administrative work who does a casual locumtenency.
3. The neighbouring practitioner (not a member) who looks after the practice of a friend (a member) during his absence.

One might reasonably ask for a clear definition of what constitutes a "locumtenent" and "assistantship," and is No. 3 recognized as a locumtenent? Also, When does a long locumtenency become a short assistantship?

The Medical and Dental Defence Union of Scotland, in the *BRITISH MEDICAL JOURNAL* of August 7th, states that its members are covered against actions arising out of the acts or omissions of their assistants or locumtenents. There are very strong reasons why the medical defence societies in these islands should have a comprehensive reciprocal arrangement, and that the protection on the matters referred to should be on a sound and clear basis.—I am, etc.,

E. FARQUHAR MURRAY, M.D., F.R.C.S.,  
Honorary Secretary, Newcastle-on-Tyne Division,  
British Medical Association.

Newcastle-on-Tyne, Aug. 9th.

### OBSTRUCTION AT THE VESICAL OUTLET AFTER PROSTATECTOMY.

SIR,—Mr. Ainsworth-Davis (July 31st, p. 226) credits me with diagnosing a fibrous type of prostatic enlargement in the three cases I recently described under the above heading, and suggests that diathermy was the proper treatment. Even had I diagnosed the exact conditions I found on operating, I should not have tried diathermy with any brand of instrument. However successful it may be in cases of an obstructing bar or membrano, it is certainly not suitable for every fibrous enlargement of



the prostate. Ho says it never leads to subsequent contraction, but "never" is a very wide term. I certainly should not have operated effectual. In these cases it is an opening.

I certainly should not have operated had dilatation been effectual. In these cases it is sometimes impossible to find an opening at all, and frequently difficult to get a fine bougie through. I can imagine using a Kollmann's dilator once, but cannot see the patient returning for a repetition of the process.

I tried to emphasize the importance of the operation. Routine packing for eight hours.

I tried to emphasize the importance of early catheterization. Routine packing of the prostatic cavity for forty-eight hours after the operation would involve quite unnecessary discomfort, pain, and danger for the patient, and could not have any good effect on the condition to which I refer in my article.—I am, etc.,  
London, W.I., Aug. 7th.

London, W.I., Aug. 7th.

W. K. IRWIN.

MIDDLE-EAR DEAFNESS.

**MIDDLE-EAR DEAFNESS.**  
 Sir,—We are indebted to Mr. Barnett for pointing out (July 31st, p. 227) the mistakes in the synopsis of our paper on the effects of radium treatment in chronic non-suppurative middle-ear disease, with resulting deafness, as published in the *BRITISH MEDICAL JOURNAL* of June 26th (p. 1087).  
 Both these errors were made only in the synopsis, neither was made in the original paper, and were corrected before the proof was made up.

neither was made in the communication itself as read before the Surgical Section of the Royal Academy of Medicine in Ireland on May 21st, 1926.

In reading the paper we quoted Sir William Milligan's opening remarks, and also gave the views of later speakers at the meeting of the Section of Otology of the British Medical Association conference at Bath last year. We did not state that treatment was universally admitted to be most unsatisfactory. We also gave due credit to the fact that oto-sclerosis was specifically excluded from the discussion on this occasion.—We are, etc.,

Dublin, Aug. 4th

W. C. STEVENSON.  
T. G. WILSON.

## Obituary.

AFTER some months of illness Dr. HERBERT EDMONDSON, of Burnley, died at his residence on July 13th, at the age of 50. He was educated at Repton, Cambridge, and the London Hospital, graduating M.B., B.Ch. in 1901. He became widely known in East Lancashire as an ophthalmic surgeon, and had been in practice in Burnley for about twenty-five years. Dr. Edmondson was honorary ophthalmic and aural surgeon at the Burnley Victoria Hospital for over twenty years, and also held the appointments of ophthalmic surgeon to the Burnley Miners' Relief Society, and honorary ophthalmic surgeon to the Acerington Blind Society. He was an active and enthusiastic member of the British Medical Association, and for several years was on the executive committee of the Burnley Division, of which he was chairman in 1922-23. He leaves a widow and one son.

Dr. EDGAR WILLIAM SEYMOUR (formerly Hoffmeister), who died at Cowes, Isle of Wight, on July 25th, aged 58, was the son of the late Dr. William Hoffmeister, M.V.O., whom he succeeded as Surgeon Apothecary to Queen Victoria and the Royal Family in the Isle of Wight. Dr. Seymour received his medical education at Cambridge and St. Bartholomew's Hospital; he graduated M.B., B.Ch. in 1883, and obtained the diplomas M.R.C.S., L.R.C.P. in the same year. He was surgeon-in-ordinary to Princess Beatrice, surgeon to the Royal Yacht Squadron, and was at one time consulting physician and medical officer to the Osborne House Officers' Convalescent Home. He was made a Member of the Victorian Order in 1912. He took an active interest in cricket and had been a member of the Cambridge and Hampshire elevens. He was for some time honorary secretary of the Cowes Golf Club. Dr. Seymour retired from general practice some years ago, and leaves a widow, but no children.

## The Services.

MEMORIAL TO SIR HARRY THOMPSON.

MEMORIAL TO SIR HARRY THOMPSON.

A stained glass window, erected in the chapel of the Queen Alexandra Military Hospital, Millbank, in memory of the late Major-General Sir Harry Thompson, A.M.S., who died in 1925, was unveiled, on August 4th, by Lieut.-General Sir Matthew Fell, Director-General of the Army Medical Service. In the course of the ceremony, Sir Matthew Fell referred to an incident at Lucknow, in 1850, when Sir Harry Thompson, regardless of his own personal safety and comfort, nursed a camp full of men suffering from cholera. The window, which is next to one shortly to be unveiled to the founder of the hospital, Queen Alexandra, contains two subjects: "The Healing of Bartimaeus" and "The Raising of the Widow's Son at Nain"; it bears the inscription "In loving memory of Major-General Sir Harry N. Thompson, K.C.M.G., C.B., D.S.O."

Universities and Colleges.

UNIVERSITY OF LONDON  
of the Senate held on 11th  
Members of this Council

At the meeting of the Senate held on July 21st the following were recognized as teachers of the University in the subjects indicated:

<i>St. Thomas's Hospital Medical School.</i>	Dr. A. St. G. J. M.
<i>(physiology).</i>	
<i>Guy's Hospital Medical School.</i>	Dr. A. St. G. J. M.
<i>(medicine).</i>	
<i>Bedford College.</i>	Dr. A. St. G. J. M.

The resignation of Dr. Major Greenwood from the University  
 Recepted as from July 31st. It was resolved to institute a Reader-  
 ship in Medical Statistics at University College was  
 a grant of £20 has been made to Dr. E. N. Hughes  
 Thomas Smyth Hughes has been made to Dr. E. N. Hughes  
 certain strains of the Fund to Dr. E. N. Hughes

The Senate adopted the following resolution:

That the Co-ordination and Developments Committee be authorized to take immediate steps to secure for the University the best possible continuance of the temporary site for the Malet Street site, on the understanding that the Senate will be prepared to continue negotiations for the acquisition of so much of the Malet Street site as is practicable, having regard to the urgent importance of increased accommodation for the University at South Kensington.

**NATIONAL UNIVERSITY OF IRELAND.**

**NATIONAL UNIVERSITY OF IRELAND.**  
The Calendar for 1926 of the National University of Ireland has recently been issued. It contains an account of the establishment and constitution of the University, together with a description of its general organization. Details are given of the regulations of the University and its constituent colleges, together with lists of the successful candidates at the examinations in 1925. Full information about the travelling studentships in connexion with the University and the various examinations is included.

**CONJOINT BOARD IN SCOTLAND.**  
g candidates have been approved.

CONJOINT BOARD IN SCOTLAND.

The following candidates have been approved at the examination indicated:

FINAL EXAMINATION.—(Medicine): O. D. Beetham, Forbes, W. L. G. Jewitt, H. S. E. Swami.

(Surgery): A. E. F.

**FINAL EXAMINATION.—(Medicine):** O. D. Beetham, B. S. Ellis, A. E. F. L.  
Forbes, W. L. G. Jewitt, H. S. Kent, P. R. C. Peterson, K. M. H.  
Swami. **(Surgery):** Elizabeth Bell, N. M. Eadie, B. S. Ellis,  
A. E. F. L. Forbes, J. Hendry, S. A. J. de Silva, H. B. Martin,  
J. V. O'K. Murphy, J. Hendry, S. A. J. de Silva, H. B. Martin,  
**(Midwifery):** A. S. Arora, S. E. W. Boland, N. M. Eadie, B. S. Ellis,  
Ganawadenra, O. Ap V. Jones, G. M. Macintyre, J. A. Muir,  
H. B. Martin, P. R. C. Peterson, D. B. J. de Silva, Rosie Swaminathan,  
**(Medical Jurisprudence and Public Health):** J. R. J. Cameron, A. G.  
Coulter, J. J. Craig, S. W. Cruickshank, L. A. C. Lowrie, J. A. Muir,  
F. H. Emery, M. Ennis, A. J. Law, P. M. Davies, I. C. Lowrie,  
Campbell, J. W. A. M. McQuinn, N. Mackay, G. W. Milledge,  
V. Nath, W. T. A. Pearce, G. D. Roche, J. J. S. F. e Souza, E. E. M.  
Steen, E. M. Sloan.

The following, having passed the final examination, are  
admitted L.R.C.P.Ed., L.R.C.S.Fd.  
Gwendoline R. A. J. ...  
Bridget ...

The following, having passed the final examination, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., and L.R.F.P.S.Glasg.:

Gwendoline R. Andrews, W. B. Anderson, M. M. B. Brown, G. V. Boyle, S. B. Catterjee, J. Clark, J. Cook, A. H. Edwards, E. Fischbacher, E. G. Fraser, J. G. Gibson, P. McK. Logan, A. A. Lovett, J. Macleod, G. W. Mitchell, J. M. Pearce, G. D. Roche, J. J. S. F. e Sonza, E. E. M. Stoen, E. M. Stone, J. Davies, E. A. Ron, A. G. S. Green, E. M. Stoen, J. G. Gibson, P. McK. Logan, A. A. Lovett, J. Macleod, G. W. Mitchell, J. M. Pearce, G. D. Roche, J. J. S. F. e Sonza, E. E. M. Stoen, E. M. Stone.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.  
College will close for the long vacation on August  
Monday, September 20th.

**ROYAL COLLEGE OF PHYSICIANS OF LONDON.**  
The College will close for the long vacation on August 14th, and  
reopen on Monday, September 20th.  
*The National University of Ireland: Calendar for the Year 1925. Dublin*  
*Alex. Thom and Co., Ltd. 1925. (41 x 7½)*

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

On August 4th, on the motion that the House of Commons adjourn till November 9th, Mr. Hardie remarked that after an excessively strenuous period of work it was impossible to recuperate in three months. The work of the House should be arranged so that there never would be any all-night sittings nor any attempt to crush six months' work into three months. They should organize so as to get the rest necessary for recuperation and to carry on work continuously at a high level of nervous expenditure. At present the House did not do that, and after the first three weeks of the session the occupants of the Government front bench looked as if they were going to have early funerals. They would never get health with the self-inflicted over-strenuous periods of the present system. The motion to rise till November 9th was carried.

### The Factories Bill.

The Factories Bill, which was introduced into the House of Commons on August 2nd by the Home Secretary, Sir William Joynson-Hicks, closely follows, though with some omissions, the bill tabled by Mr. Arthur Henderson when Home Secretary in 1924. It is chiefly a codification of existing Factory Acts and Orders, but makes considerable changes in the law, not only in nomenclature, as when "certifying surgeons" become "appointed doctors," but in substance.

The bill abolishes the distinctions between factories and workshops and between textile and non-textile factories. Provisions relating to the sanitary conditions of workshops, to cleanliness, overcrowding, ventilation, and the drainage of floors, and to the provision of sanitary conveniences, are now enforceable in the first instance by the local sanitary authorities—with certain exceptions in the last regard. The bill proposes that they shall be enforceable by the factory inspectors save in any factory where mechanical power is not used and which forms part of a dwelling-house or shop in the same occupation. There the provisions are to be enforced by the sanitary authority, to whom the Home Secretary may also delegate similar powers over other factories not employing mechanical power. The bill expands previous legal definitions of a factory to include railway lines and sidings, premises where materials or articles are sorted as a preliminary to work in any factory, where bottles or containers are filled or articles packed, and for adapting stage properties and dresses. The application to electricity works is extended. Premises adjacent to a mine or quarry used solely for processes ancillary to the getting and preparation of minerals are not to be deemed a factory.

In the clause dealing with cleanliness in factories provision is made that the floor of each workroom must be cleaned at least once weekly. The obligation to paint or whitewash walls is extended to partitions; those with smooth, impervious surfaces must be washed with soap and water at least every fourteen months. The provisions about whitewashing or painting will not apply to factories without mechanical power and employing fewer than ten persons unless the inspector so requires.

Under the existing law, the cubic space to be allowed to each person is 250 ft. at ordinary times, and 400 ft. during overtime. The clause substitutes 400 ft. at all times for rooms not used as workrooms before the passing of the Act. It also excludes from the calculation of the cubic space, space more than 14 ft. from the floor. A new provision enjoin that where the work is chiefly done sitting the temperature shall not after the first hour fall below 60°. The Home Secretary may by special order prescribe a reasonable temperature for any class or parts of factories and prohibit means which may be injurious for maintaining temperatures. He may also prescribe a standard of lighting for factories. All windows and skylights are to be kept clean as far as practicable on both sides and free from obstructions. A new provision lays it down that "Where it appears to the Secretary of State that in view of the amount of sickness among the workers in any factory or class or description of factories or for some other reason that special provision ought to be made at that factory or at factories of that class or description to secure the health of persons employed therein, he may, after consultation with the Minister of Health, by order require the occupier to make such reasonable provision by arrangements for the special medical supervision of the workers and otherwise (but not so as to include medical treatment) as may be specified in the order."

The law relating to the fencing of machinery is extended and a new statutory provision made for fencing vessels containing scalding, corrosive, or poisonous liquids. Safeguards are made about work in places where dangerous fumes may be encountered. Suitable breathing apparatus and oxygen reviving apparatus must be provided. The provisions relating to means of escape from fire are amplified and applied to factories employing fewer than forty persons. Fire drill is ordered in some factories. The maintenance of a supply of drinking water is to be enforced, and the provision of first-aid boxes, which has been in force since 1921, is continued. Seats must be provided for female workers whose work is done standing, and protective clothing where prescribed as necessary. In making orders about welfare the Home Secretary may impose duties upon employees.

(Clauses in Mr. Henderson's bill relating to washing facilities and facilities for drying clothes are dropped from the new measure. So also is the clause prohibiting after five years the use of shuttles capable of being threaded by suction of the mouth.) The present bill extends the obligation to protect workers from dust and fumes. No meals are to be allowed in any workroom where highly siliceous dust is given off, and a penalty is provided against employees spitting where that is prohibited by notice. The age at which girls may be employed in salt works is raised to 13. In tannery factories where metals are ground the provision made by Order for a clear space between the grindstones and the wall is amended to allow the use of splashboards. Provision is made for the maintenance of wet and dry bulb thermometers in all factories where humidity is artificially produced, and a table of the permitted relation between the two readings is provided. Inspectors are given power to forbid the carrying on of certain trades in unsuitable underground rooms. These trades include the preparation of food for human consumption. No basement bake-houses are to be established after the passing of the Act. The district council is to enforce this provision. In general the Secretary of State takes power to make regulations for the safety or health of persons employed in any process without the need for a prior certificate that the process is dangerous.

To the obligation of any medical practitioner attending on a patient suffering from lead, phosphorus, arsenical, or mercurial poisoning, or anthrax, contracted in a factory, to report the illness, is now added the obligation to send the Chief Inspector of Factories the name and address of the factory. The court can order the expenses of witnesses at inquiries into factory accidents or diseases to be paid by the person held responsible in any way for the occurrence. In the next clause "appointed doctors" are substituted for "certifying surgeons" but with no change of powers. Hours of employment are made the same in textile as in non-textile factories, and the overtime regulations are altered. An extended provision enjoins that where the Home Secretary thinks a special provision requisite for the protection of the health of women or young persons employed under a special exception he can order the provision to be a condition of employment.

The bill recasts the rules for the issue by the appointed doctor of certificates of fitness for employment of young persons under the age of 16. Power is given to the Home Secretary to exempt from the section any works where mechanical power is not used. A later clause provides that the Home Secretary shall fix the fee to be paid to the appointed doctors. The fee for examination of young persons, or of other employees in pursuance of regulations, is to be paid by the occupier of the factory; in other cases by the Treasury.

The application of factory legislation to docks, wharves, quays and warehouses is widened. Certain provisions of the bill are extended to all building works. These include those relating to sanitary conveniences. Similar extension is made to engineering works and to lines and sidings in connexion therewith. The bill is also applicable to building operations and engineering work undertaken for the Crown.

### The Lead Paint Bill.

On August 3rd the House of Commons considered, on report the Lead Paint (Protection against Poisoning) Bill. Mr. Rhy Davies moved a new clause to prohibit the use of lead paint for interior painting, with certain exceptions. He said the amendment would implement the Geneva Convention, for which the Labour party stood. Regulations somewhat similar to those which the Government proposed for painting had been introduced in 1913 for the pottery industry, but had not prevented lead poisoning, which had increased in that industry during thirteen years. Mr. Montague said medical evidence was overwhelming in favour of prohibition. Major Hills said that eventually lead would have to be prohibited, both in paint and in pottery glaze. Mr. Wallhead said lead poisoning induced nervous diseases, and added to the danger of Bright's disease. Dr. Watts asked if Mr. Wallhead was aware of the danger in the use of zinc. Mr. Wallhead said there was no danger when zinc was prepared as a paint. Captain Hacking, for the Home Office, thought that regulations failed to reduce the death rate from lead poisoning very largely the Home Secretary would introduce a more drastic bill with prohibition as its essence. The proposed new clause was rejected by 198 to 74. Dr. Watts moved that the medical examination of painters proposed in the bill should be "monthly" instead of "periodical" and Dr. Watts withdrew his amendment and "periodical" was inserted. The House rejected a further amendment by Dr. Watts which proposed that the examination should be by a certifying factory surgeon. Sir Robert Newman moved that the clause "employment of women or young persons in lead paint should be amended by leaving 'women or.'" He asked why, if the proposed regulations were to remove the danger of lead poisoning, women could not join in the occupation as well as men. Mr. Hurst seconded, and said hundreds of women were employed in this work. Dr. Haden Guest said that the fact that lead poisoning was an important cause of abortion was a sufficient reason to protect women more than men. Captain Hacking hoped the House would not accept the amendment. Sir Thomas Oliver had said that "on the whole females suffered more severely from plumbism than males" and Sir Thomas Legge, Chief Medical Inspector of Factories at the Home Office, said "women are more susceptible to poisoning by lead than men." The amendment was rejected, and the bill was read a third time. It was read a first time by the House of Lords on August 14th.

## Medical News.

At a meeting at the Post-Graduate Hostel, Imperial Hotel, Russell Square, W.O.1, on August 5th, Dr. Manson-Bahr maintained that the clinical side of tropical medicine could be studied best outside the tropics. In the course of his remarks he referred to a drug introduced for the treatment of amoebic dysentery which had been successfully employed in ulcerative colitis, Blackwater fever—which, he said, always affected mild or latent cases of malaria—was, he thought, probably anaphylactic in nature. He praised Bayer 205, which had gone a long way in the successful treatment of sleeping sickness, and made a plea for increased help of the chemist in the fight against tropical diseases. Lieutenant Mackie, I.M.S., who was in the chair, observed that at the clinical side of tropical diseases was best studied in a country, where hospital and laboratory facilities were excellent.

THE Fellowship of Medicine announces that a special all-day course will be held at the Queen's Hospital for Children from August 16th to 28th. An all-day revision course in medicine, surgery, and the specialties at the Queen Mary's Hospital, Stratford, will continue from August 23rd to September 4th. Continuous weekly courses in obstetrics are given at the City of London Maternity Hospital, and the Fellowship can also provide practical courses in anaesthetics. From September 6th for four weeks special lectures on the more important diseases of the eye, demonstrations, on the more important diseases of the eye, will be arranged at the Central London Ophthalmic Hospital. From September 6th also eight bi-weekly lecture demonstrations in psychological medicine will be given at the Bethlem Royal Hospital. From September 13th to 25th the Infants' Hospital will hold a course for medical officers of welfare centres and others. Between September 20th and October 1st the Westminster Hospital will provide an intensive course in medicine, surgery, and the specialties; the National Orthopedic Hospital will hold an all-day course from September 20th to October 2nd, and on successive Wednesdays, beginning September 22nd, Dr. Heald will give four lecture demonstrations on electrotherapy. Copies of all syllabuses, the general course programme, and the Fellowship journal may be obtained from the Secretary, 1, Wimpole Street, W.1.

A THREE months' course of lectures and demonstrations in hospital administration complying with the regulations of the General Medical Council will be given by the Medical Superintendent on Monday, October 4th, at the North-Eastern Hospital of the Metropolitan Asylums Board, St. Ann's Road, Tottenham, N.15. Further particulars can be obtained from the Clerk to the Metropolitan Asylums Board, Victoria Embankment, E.C.4.

THE Lord Mayor of Liverpool (Mr. F. C. Bowring) has accepted the invitation to be chairman of the Liverpool School of Tropical Medicine in succession to the late Sir Francis Danson.

THE Rockefeller Institute has presented the Norwegian Government with a million gold crowns for a State serum and vaccine institute.

PROFESSOR CAESAR ROUX, the well known surgeon of Lausanne, and Professor G. Winter, who held the chair of obstetrics at Königsberg, have been made emeritus professors in their respective universities.

At the recent congress held in Brussels entitled "Journées médicales de Bruxelles" papers on the following, amongst other subjects, were read: the antisyphilitic campaign in Belgium, by Professor A. Bayet; vaccine therapy of acute microbial affections, by Dr. Bertrand; the surgery of cerebral tumours, by Dr. de Martel; the surgery of pain, by Professor Sicard; the onset of human tuberculosis, by Professor Léon Bernard; treatment by ultra-violet rays, by Dr. Dekeyser; and radium treatment of cancer, by Dr. L. Mayer. A special excursion was made to Louvain, where the degree of doctor honoris causa was conferred on Marshal Lyautey by the university.

THE History of Medicine Institute at Leipzig, founded by Professor Karl Sudhoff, and now under the direction of Professor Henry E. Sigerist, in addition to a well stocked library, contains a collection of over 10,000 photographs, as well as models and instruments for teaching purposes.

THE German Röntgen Society will hold its annual meeting at Düsseldorf from September 22nd to 24th, when the following subjects will be discussed: X-ray treatment of inflammation, introduced by Heidenheim of Worms, Porges of Vienna, and Wagner of Prague; the Compton effect, introduced by Friedrich of Berlin; irradiation of the ovary and offspring, introduced by Marlinus of Bonn and Nürnberg of Hamburg.

THE following international post-graduate medical courses will be held in Berlin in October. From October 4th to 16th there will be a course in general medicine, with special reference to the latest progress in therapeutics, and from the 18th to the 30th a course in neurology; a fortnight's course will commence on October 18th in specialties, and a month's course on October 4th. Further information may be obtained from the secretary of the International Post-Graduate Medical Courses, Kaiserin Friedrich-Haus, Luisenplatz 2-4, Berlin, N.W.6.

THE congress known as the Journées médicales de Montpellier, organized by Professors Ducas, Delmas, and Faucon, will be held at Montpellier from November 4th to 7th, when the centenary of the medical clinic and the discovery of bromine by the Montpellier chemist Balard will be celebrated.

THE German society for the study of diseases of digestion and metabolism will hold a congress in Berlin under the presidency of Professor von Bergmann of Frankfurt from October 13th to 16th.

THE third International Congress of Individual Psychology will be held at Düsseldorf from September 26th to 29th. Further information can be obtained from Dr. Maximilian Reis, Friedenstrasse 20.1, Dortmund.

DR. H. ALDERSHOFF, director of the State Serological Institute at Utrecht, has prepared a serum from sheep immunized against vaccinia for use in cases of post-vaccinal encephalitis. The serum, which should be administered as early as possible after appearance of the symptoms, will be sent free of charge to practitioners attending a case of post-vaccinal encephalitis.

THE July issue of *Boletín Técnico de la Dirección general de Sanidad*, a bi-monthly journal recently started by the Spanish Ministry of Health, contains articles by Dr. Andrés López Prior on a focus of pellagra in Caldas de Reyes, by Dr. F. Beato on the etiology of scarlet fever, and by Dr. F. F. García on an official method for the examination of oysters; and statistical tables of births and deaths in the various provinces of Spain during the months of January, February, and March, as well as abstracts from current literature and medical news.

PROFESSOR ROGER has been re-elected dean of the Paris Faculty of Medicine.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to THE EDITOR, *British Medical Journal*, British Medical Association House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBERS of the British Medical Association and the *British Medical Journal* are: *MUSEUM* 9361, 9362, 9363, and 9364 (internal exchange, four lines).

THE TELEGRAPHIC ADDRESSES are: EDITOR of the *British Medical Journal*, *Aitology Westcent*, London.

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent*, London. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacilla, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

## QUERIES AND ANSWERS.

LEAKAGE AFTER OPERATION ON THE BLADDER.  
DR. ALFRED MERRIN (Kingstown, co. Dublin) asks for help in the following case: A gentleman, aged 80, eighteen months ago was submitted to an operation for prostatectomy, but the prostate could not be removed and he was left with a suprapubic apparatus. A Jaques oesophageal tube, size 18, was threaded through a rubber brick-shaped pad with one end in the bladder and the other in a rubber bag fixed at the thigh. The pad was held in position by a broad abdominal belt. This worked well for a few months and then the fistula began to get smaller; stretching it with sinus forceps and using a smaller tube

answered for a time. At last no tube could be introduced and Dr. Merrin had to enlarge the fistula by a knife, until it took a 24 size. There was no trouble then for another few months, when leakage occurred from the side of the tube. Pads of various shapes have been tried—round, oval, square, hollowed out in the centre, hinged at the place where the leakage seems to occur—but all to no purpose. The leakage is not constant; it always ceases when the patient lies down, and sometimes he may be able to walk and sit about for a few days and keep dry. Varying the length of the tube in the bladder has been tried, with the idea that kinking might occur if too much projected into the bladder. My own view of what has happened (says Dr. Merrin) is that the pad has worn a sort of hollow above the symphysis pubis, the result of months of continual pressure, and that when the old gentleman stands up or sits down the pad rotates and causes a partial occlusion of the tube, with leakage at its side. The pad was dispensed with, but matters got worse. A 22 or 24 tube is used at present and is a very tight fit.

\*. We have referred this to Mr. R. Ogier Ward, F.R.C.S., who has been good enough to state in reply that the operation of permanent drainage for enlarged prostate is generally successful, and the apparatus described usually keeps the patient quite dry. It is impossible to be sure of the cause of the trouble in this case without seeing the patient. The fault does not lie in the pad, but possibly in the tube, although this does not seem likely, since variations in both length and size have been tried. The other source of trouble is that the sinus is not long enough to make watertight contact with the tube, a matter of technique in performing the operation. All that can be suggested is that the tube be introduced for about 3½ in. Another way to check the length is to palpate the end of it per rectum and then withdraw it slightly. If this fails it is to be feared that nothing short of further operation, either to improve the sinus or to remove the prostate, can put the patient right.

#### INCOME TAX.

##### Motor Car Depreciation Allowance.

"T. F." desires further explanation as to the interaction of the depreciation and renewal allowances.

\*. It has been held (*Caledonian Railway Company v. Bnikes*) that the motor car depreciation and renewal allowances cannot be granted concurrently, but under Rule 6 of Cases I and II, Schedule D, as extended recently to professions, depreciation allowance and "obsolescence" allowance can both be claimed. For practical purposes the difference between the latter allowance and the renewal allowance are (1) that obsolescence applies only where the car has ceased to be suitable for the purpose to be served (this may generally be presumed), and (2) that there should be added to the amount received for the sale of the displaced car the total amount of any depreciation allowances which have been given for income tax purposes in respect of that car. The depreciation allowance is correctly calculated on the basis of the written-down value as at the commencement of the year. In several cases that have come to our notice 20 per cent. has been taken as the basis, but the rate would presumably vary with the type of car—the better the construction the longer it will be fit for professional use, and therefore the smaller will be the appropriate percentage allowance. The annual depreciation allowance is valuable as giving something at once, but it is important to bear in mind that the obsolescence allowance is the ultimate remedy. If "T. F." temporarily loses the £75 allowance for 1925-26 he will pick it up again when he makes his obsolescence claim on his present car. We regard the inspector's action in refusing the £75 allowance for that year as unusual; "T. F." has, we believe, a valid title to it, but it might necessitate the loss of the renewal allowance, and it is perhaps best to accept the position, looking to the obsolescence claim to rectify the matter in the long run.

#### LETTERS, NOTES, ETC.

##### DRUG ADDICTS.

Dr. A. G. WINTER (Crowthorpe) writes: I see we are to be subjected to more vexatious laws governing the administration of "dangerous drugs." Plain men like myself want to know where the drug addicts are that call for such measures. I have never seen a case in general practice; my partner has never seen one; more than that, a very eminent London neurologist whom I met in consultation told me he had been asking general practitioners their experience of such cases for two years—and none of them had ever seen one!

##### MENTAL IRRITABILITY AND BREAKDOWN IN THE TROPICS.

Dr. V. D. WYBORN (Federated Malay States), after experience in several countries in the East having widely differing climatic conditions and environments, has formed the opinion that mental irritability and breakdown is due solely to a psychological cause, that of a "lack of associations." He writes: A person removed from his native surroundings, to which his mentality is adjusted, to a new environment, whether tropical or polar, will suffer

until new and mentally satisfactory associations and mental adjustments have dealt with the change. This may or may not occur, depending primarily upon his mental condition as judged from infancy upwards. All physical causes, such as heat, light, and glare, are merely aggravating agents, and are not to be confused with this, the prime cause of the trouble.

Dr. T. A. G. HUDSON (Nakachari, Assam), in the course of a letter on the subject, writes: My observations have all pointed to the fact that it is work *per se* which is responsible for irritability of temperament. A man decides to make the tropics his home, either for a long spell or a short one—and I would emphasize that a short spell means at least three years. He comes out to new conditions of life in all its phases, and it is easy to picture that man trying, during his probation spell, to increase the output of the work done by the natives under him, and the result. In all cases, I might say, no physical or mental effort on the part of the newcomer will influence the native, who still regards him with suspicion. . . . I would urge that all Britishers who are domiciled in the tropics should, in addition to their home leave, have at least a fortnight's complete rest and change locally every year. I have considered mental irritability and breakdown as they arise without any pathological cause, or as they may be finally responsible for pathological changes.

Dr. J. M. MACPHAIL (Middlesbrough) writes: With reference to mental irritability and breakdown in the tropics, I am surprised at the scant attention paid to the problem of colour: are the invalids dark or fair, and in what proportion? In England there is an impression that the fair people are dying off and are being replaced by the darker people, who are probably more akin to the original inhabitants. This tendency seems more marked in the large towns. Do not fair people (he asks) suffer more from the attacks of fleas, etc., and are they not more liable to tuberculosis? How do they compare in their reaction to drugs, and to prolonged direct or indirect sunlight? But (he continues) who are the fair? The average man finds in the hair no certain guide, and it is necessary to bring into review the colour of the skin, eyes, eyebrows, and moustache, as men may have indistinguishable or darkish hair, with very blue eyes, and fair eyebrows and moustache. This side of the problem may be of interest, and, in any case, it bears an interest of its own.

##### MEDICO-HISTORICAL POSTCARDS.

AMONG its issue of "old Ashmolean postcards," the Oxford University Press has included a history of medicine series. No. 50, reproduced in colours, represents an amputation scene from a window in the Bodleian, dated 1650. No. 71 shows a Zodiac man illustrating the application of the twelve signs of the Zodiac to the principal regions of the body. No. 72 is an anatomical diagram of the fourteenth century, given by Ashmole to his museum. No. 73 depicts the human brain and the recently discovered "circle of Willis"; it is one of several anatomical drawings made by "C. Wren of Wadham College; 1664." No. 74 is from a diagram of 1631, representing a sick man in bed being besieged by microbes from the four quarters. The walls of his Castle of Health are still secure against the attack from east, south, and west, but the northern bastion has been breached by microbes from the icy regions, which are swarming round the invalid. A physician is feeling his patient's pulse and is holding up a vessel that looks like the urine glass used in uroscopy. The price of this interesting packet of postcards is 6d.

##### A MEDICAL TREATISE FOR NON-MEDICAL MISSIONARIES.

REFERRING to medical missionary work in Africa, as described in a recent issue of the *International Review of Missions*, it was mentioned (BRITISH MEDICAL JOURNAL, July 31st, 1926, p. 212) that one of the contributors to the *Review*, Dr. P. H. J. Lerrigo, had suggested that a special medical treatise for the use of non-medical missionaries should be prepared by a committee of medical practitioners with a knowledge of the special requirements of the entire African field. We have received a letter from Messrs. John Bale, Sons and Danielsson, Ltd., stating that they publish a *Manual of Tropical Disease and Hygiene for Missionaries* by Drs. E. A. and T. Miller Nenthy (1923), price 12s. 6d. act.

##### "THE MEDICAL DIRECTORY."

THE editors of the *Medical Directory* ask us to state that the annual circular has been posted to each member of the medical profession, and that they will be grateful for its return by an early post. If the form has not been received a duplicate will be sent on a request addressed to 7, Great Marlborough Street, London, W.1.

##### THE ANNUAL DINNER: CORRECTION.

IN the report of Sir Berkeley Moynihan's speech at the annual dinner at Nottingham (SUPPLEMENT, July 31st, p. 92) reference is made to Dr. H. N. Anderson. This is a mistake; the old friend to whom Sir Berkeley alluded was Mr. A. R. Anderson, C.B.E., late senior surgeon to the General Hospital, Nottingham, now retired and living at Bonnemonth.

##### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 40, 41, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 132.



# A British Medical Association Lecture ON DANGERS ASSOCIATED WITH MEDICAL PRACTICE AND HOW TO AVOID THEM.\*

BY  
W. E. HEMPSON,

SOLICITOR TO THE BRITISH MEDICAL ASSOCIATION.

THE title of my lecture is of your own selection. It covers a wide field, which extends to and embraces both ethical and legal aspects of medical life and practice, though within the compass of time at my disposal I cannot hope to do more than lightly touch the fringe of either.

The responsibilities which a medical man assumes appear to fall within three distinct categories—to himself and to his profession, to his patients, and to the State. I will analyse them briefly in this order, and will then proceed to ascertain what dangers are attributable to each, the circumstances in which they arise, and the means which are to hand for avoiding them. In doing so it will be my endeavour to avoid legal technicalities.

The most valuable attributes a man may claim to be endowed with are those of sound common sense and breadth of understanding, and a medical man is not to be excepted from this general observation. As a general practitioner he is, within the households of those to whom he stands in the relationship of family doctor, regarded and accepted as guide, philosopher, and friend by those who grow up around him, and his ministrations extend as frequently to alleviation of the cares and worries of the afflicted as to the cure of their bodily ailments. It is in these circumstances that fundamental common sense and knowledge of human nature stand him in greater stead, and contribute more materially to the welfare of the patient, than the most highly cultivated "bedside manner."

I counsel you to beware of false gods and the pursuit of the mirage of illusive attractions which are not to be regarded as orthodox. The necessity for observance of the orthodox obtains in every walk of life, and in none is it more urgently needed than in the medical profession.

I read with interest and approval a leading article in the *Times* of March 4th, headed "Doctors and the public," and should wish to adopt as my own sentiments the following paragraph which I extract from it:

"To contend . . . that the public interest can possibly be served by exempting anyone who is to enjoy the status of a registered medical practitioner, from training in those sciences by means of which alone a diagnosis of disease can be made, is on the face of it ridiculous. There can be no 'backdoor' to the *Medical Register*. Nor can the public suffer for a moment any depletion by doctors of their right to determine the nature of a patient's complaint."

Of late years there have sprung up many new cults, such as osteopathy, chiropractic, Abramsism, and Eddyism, which have led to much discussion not free from controversy. Such lures as they may possess are to be avoided by the self-respecting practitioner as presenting features which may tend to imperil his good name and professional reputation.

I feel it incumbent upon me to accoutnate this, as I was present not long ago at a medical gathering at which a paper on Christian Science teaching and faith healing was under discussion. The laxity of views then expressed by certain members was a revelation to me, and I did not mince my words in the whole-hearted condemnation which I bestowed upon them. It is playing with fire to flirt with unorthodox practices of the nature indicated, and plain speech on the subject must therefore not be resented.

A few years ago I was retained to represent the relatives of a man who died a death of lingering agony under Christian Science treatment when operative measures would most certainly have relieved his sufferings, if not actually have effected a cure. I was successful in obtaining the committal of the healer for manslaughter; and let it be

\* Delivered at Leicester, March 26th, 1926.

remembered that the man who had been drawn into the mesh was a member of your own profession. The path of professional rectitude is the only safe one to travel if you desire to retain your self-respect and be accounted a man of accepted position within your profession.

Consider what are the assets which a medical man can claim. In my conception they lie in his professional good name and reputation, and the preservation of them unsullied should be and must be, in the case of every self-respecting man, his lifelong endeavour. It is well written:

"This above all—to thine own self be true;  
And it must follow, as the night the day,  
Thou shalt not then be false to any man."

You will perhaps ask me where guiding light to the uninitiated is to be found in these matters, and my short reply is—by reading the *BRITISH MEDICAL JOURNAL* and studying the transactions of the British Medical Association. Assistance upon every phase of ethics and ethical teaching is to be obtained through that body, and the annual *Handbook* issued by the Association should be in the consulting room of every practitioner. A new and enlarged edition of this work is in the course of preparation; it will contain material of inestimable value to every practitioner, be he newly qualified or of many years' standing.

It is, moreover, to be borne in mind that no one is turned down who applies to the Association for advice in circumstances of either doubt or difficulty, and special facilities are afforded to those who have but recently entered the profession.

I cannot refrain from quoting the following passage, which recently caught my eye in a leading article in the *Medical Journal of Australia* dealing with the position of the Association in regard to the medical profession.

"To-day the British Medical Association is stronger, more important, and more firmly established in Australia than ever. No voices are now heard advocating the establishment of an Australian Medical Association. No one wishes to weaken the bond. Just as the Empire encircles the earth and arouses pride in the breast of each and every citizen, the ideals of Charles Hastings have been cherished by British subjects through ninety-three years and awaken the pride of each member of the British Medical Association in the Commonwealth."

It was my privilege five years ago to visit our overseas dominions of Canada, British Columbia, New Zealand, and Australia, and, holding the accredited position which I do with your Association, I was accorded a gratifying welcome wherever I went; it opened my eyes to the power which the Association holds, not only at home, but also throughout His Majesty's dominions beyond the seas. The position in Australia at that time was somewhat unsettled, and through conversations which then took place were of assistance in establishing matters upon a footing which is represented by the sentiments now expressed in the quotation from the *Medical Journal of Australia* which I have just read.

Let me warn you against the practices of fee-sharing and accepting commissions. Any principle of fee-sharing, or diethotomy, as it is called, is only to be permitted within the terms of a partnership arrangement or in circumstances where one medical man acts for or assists another. The accepting of commissions from life insurance companies, manufacturers, or under like trade conditions, does not conduce to the dignity of the medical man, nor can it be done without the possibility of danger.

Associations of the nature of partnerships are frequently entered into light-heartedly by members of the profession. I regard them, in the light of many years' experience, with a much more serious eye. They assume to me the character of a business marriage, in which, if it be possible, a preliminary courtship is eminently desirable. I have now been associated with medico-legal work for something like thirty-five years, and during that period many hundreds of cases of partnership disputes have come under my consideration; this shows that more thought bestowed upon the arrangement prior to its being entered into and cemented would have avoided much trouble.

The responsibilities of a medical man towards his patients, regarded from a legal standpoint, were aptly summarized by a learned judge in the following words:

"Every person who enters into a learned profession undertakes to bring to the exercise of it a reasonable degree of care and skill. He does not undertake, if he is a surgeon, that he will



perform a cure, nor does he undertake to use the highest possible degree of skill. There may be persons who have higher education and greater advantages than he has, but he undertakes to bring a fair, reasonable and competent degree of skill, and the question which always arises is whether the injury must be referred to the want of a proper degree of skill and care in the person whose conduct is sought to be impeached."

This may be taken as the standard which has to be established to the satisfaction of a jury in any case in which a medical man is sought to be mulcted in damages in an action for malpraxis.

The arrangement between a medical man and his patient has for its foundation and basis that of "contract." On the one hand, the patient who retains the services of a medical man undertakes to pay his proper fees for treatment received, and the medical man reciprocally undertakes to bring a due and proper measure of skill to bear and to treat the patient with every reasonable care.

Every man is, however, bound to keep himself abreast of matters moving within his profession, and to show reasonable knowledge concerning them and the application of them in relief of the ailments he is called upon to diagnose and treat.

The obligations of a medical man to the State arise under the head of criminal liability for negligence, and the following extracts from the dicta of learned judges will suffice to make the position clear in this respect.

"Where death is occasioned by negligence on the part of anyone professing to deal with the health of others whether he be a licensed practitioner or not the offence may, under certain circumstances, indicate a wanton and malicious disregard of human life, amount to murder. Of course a medical practitioner who should intentionally and with malice cause the death of a patient would be held guilty of this crime, but in no case will an indictment for murder lie unless there be a felonious destruction of life with malice either expressed or implied. The law holds, however, that every person, whether licensed or unlicensed, who deals with the life or health of any of His Majesty's subjects, is bound to have and to use competent skill, and sufficient attention, and that if the patient die for want of either the person is guilty of manslaughter."

The late Lord Ellenborough expressed himself as follows:

"To make out a case of manslaughter, the prisoner must have been guilty of criminal misconduct arising either from the grossest ignorance or the most criminal inattention."

You have thus before you a brief summary of the obligations and responsibilities which devolve upon a medical man under the three heads embraced within this address, and we may now examine more closely the dangers resulting from the non-observance of them.

To keep within the true and proper standard of ethics secures for you, not only a professional recognition which is worth having lived for, but it inculcates within you a sense of rectitude and pride which is a man's truest guide to right conclusions in matters of doubt or difficulty. Such is the influence so far as both mind and matter are concerned. Deviation from this true course is sure to bring trouble in its wake, with professional penalties or opprobrium attaching which leave their mark upon the reputation of the individual concerned. It is, moreover, to be borne in mind that the memory of quality, be it of services rendered or articles of commerce, remains long after the price is forgotten.

To your credit be it said that in no profession is the standard of ethics higher than your own, and in none is the teaching upon it more clearly laid down than is to be found through the sources which I have already indicated. It is therefore for you to read, mark, learn, and inwardly digest what you have at hand to guide you, and follow the true course thus mapped out for you.

You will, I feel, look for a word from me on the subject of the General Medical Council, against which so violent a storm of public criticism has been directed during the past few months. It has been my privilege to plead before that body for more years than I care to count, and I can personally vouch for the even-handed justice which is meted out to all who come before it as respondents. The Council is invested with statutory powers necessary for the preservation of self-respecting action and discipline within the profession, and anyone who flagrantly contravenes either cannot complain if, in the review of such conduct,

an appropriate measure of censure or penalty, as the case may be, is visited upon him. An able exposition of the "Constitution, functions, and procedure" of the General Medical Council, by Mr. Norman King, the Registrar, was published in the SUPPLEMENT to the BRITISH MEDICAL JOURNAL of March 20th (p. 96). I trust that it will be widely read, and that the foolish misconceptions which appear to be so prevalent, together with the unmerited prejudice which has been created as arising out of them may be thereby removed.

The measure of responsibility of a medical man toward his patient has already been defined, and so long as the standard thus established is conformed to he is rendered free from legal responsibility in point of damages or otherwise.

It is, however, to be recognized that the medical profession is peculiarly open to attack in two particular respects—namely, so far as actions for malpraxis are concerned, and with relation to imputations upon the practitioner's professional good name and reputation.

My experience points to the conclusion that of all professional men the medical man is the one most popularly selected for speculative actions. The explanation may be the ease with which the decision of or the treatment by a medical man can be impeached owing to there being no actual fixed science in either medicine or surgery, and to the further fact that, proverbially, "doctors differ."

There are, moreover, unfortunately, within my own profession ready sources available for fostering litigation on terms of easy recompense if the would-be litigant is a person of limited pecuniary resources. Nothing is easier than to attack a medical man on the ground that he has inaccurately or imperfectly diagnosed a particular case, or that, having correctly diagnosed it, he has improperly treated it, or, in the case of an injury by fracture or otherwise, that he has failed to appreciate the severity of the injury, or, having correctly diagnosed it, has failed to apply to it modern and skilled recognized surgery. With people of the class who are responsible for actions of this nature it would seem that anyone's opinion is better than that of the medical man involved.

It is also to be found that little difficulty is experienced within the ranks of the medical profession itself in obtaining evidence whereby to give some shadow of support to the allegations of negligence or incompetence which are preferred. With every allowance made for difference of opinion, it is important—and I should have thought embarrassing—to the profession to find it accentuated to such a degree that, in certain instances to which I can speak, medical men in equal numbers have appeared in open court before judge and jury, of whom one half gave evidence in approval and the other half in condemnation of the treatment or diagnosis by one of their colleagues.

The medical man also incurs a risk, pregnant with danger to reputation, arising out of slanderous attacks upon his professional good name, knowledge, and skill, in circumstances similar to those which prevail in malpraxis actions. A patient, burning under the secret grievance of alleged incompetence or unskilful medical treatment, takes every opportunity of sharing his views on the subject with his friends and neighbours, and the ball thus set rolling increases in magnitude as it travels, until the medical man whose diagnosis or treatment is thus brought into question finds himself the object of unenviable notoriety, the cause of which, in many instances, it may be extremely difficult for him to trace. There is truth in the saying that "Scandal is like an egg—when it is hatched it has wings." We shall, I think, also be unanimous in our agreement with Socrates that thanks are due to the Creator for having invested the human subject with two eyes, two ears, but only one tongue.

As practical evidence in illustration, I may inform you that during one period of fifteen years, in which 2,467 cases were referred to me by the Medical Defence Union, nearly 500 involved the defence of members of the profession in actions for damages founded upon allegations of want of care and skill in the treatment of their patients, and nearly 800 had relation to libel and slander actions either prosecuted or defended on behalf of medical men.

To my mind the realization of the risks to the profession in the two respects I have mentioned led to the formation in 1885 of the Medical Defence Union, which I believe to have been the pioneer society in this protective movement. Do not fail to observe and do not ignore the danger signal which is ever present in these cases. Some complaint in regard to the account rendered, with a carefully veiled innuendo that the patient had not made satisfactory progress or recovery, is usually to be found as the starting-point, or alternatively a suggestion that, if some other remedy than that prescribed had been resorted to, better results would have been obtained. There are various methods of wrapping it up so as to obscure the hidden poison, but, rest assured, it is there right enough, and needs to be dealt with strongly and diplomatically. Do not allow a communication of this nature to "lie on the table"—it marks a falling barometer as a prelude to trouble brewing. If you experience doubt or difficulty as to the manner in which it should be dealt with, then seek advice on the subject through those channels of knowledge and experience which are open to you. If you elect to sit under imputations upon either your professional honour or your skill, take it from me that you are heading for trouble.

One further point which flows from this advice must also be accentuated—namely, "beware of compromise." I say unreservedly and in all seriousness that nothing can be more disastrous. The admissions to be read into this *proceduro* are in every respect prejudicial to reputation, and form but the prelude to further embarrassment in the future. If time permitted I could give hundreds of instances, within my own experience, in which the truth of these sentiments has been borne out.

If your account for services rendered is impeached on the ground that you did not give value for money, your duty to yourself and to your profession is to enforce payment of it through the proper legal channels. By the same token, if your patient, or his or her near relatives, impugn your treatment, insist upon a full and complete withdrawal of such allegations, and refuse to continue further to attend them if this be not forthcoming.

I am convinced that if this high standard of thought and action which I advocate were uniformly observed throughout the profession, fewer cases of actions savouring of thinly veiled blackmail would be heard in our courts. Let me give one instance in point, so as to drive the matter home.

My client, a member of your profession, was threatened with an action for damages arising out of his alleged unskillful treatment of a patient. Left to himself he would have settled it on any terms within the compass of his means as he dreaded the publicity which would follow upon its being heard in court. To this I absolutely refused to be a party. The solicitor acting for the claimant came and saw me, having travelled some 200 miles to do so. He opened with an offer to accept £100 and his costs, coming down by gradations to his travelling expenses to London, which I incontinently refused. He left much chagrined, and did not trouble me further.

But now comes the tribute—a brother professional friend of this solicitor was placed in similar case with regard to another medical man whom he purposed suing, and, meeting him and hearing the facts, my friend gave him this salutary advice: "If you are up against Hempson, drop it—you'll get nothing out of him; I've tried it myself, and it is worse than kicking a stone wall." Forgive the egoism with which this story is tinged, and you will, I think, agree that good service resulted to the profession due to my hardness of heart.

No one, whatever his professional status or reputation may be, is immune from risk in regard to these two particular classes of action. They occur in circumstances wholly unlooked for, and are not infrequently associated with cases in which the medical man concerned has felt cause to congratulate himself on the results attained. One example I quote, fertile both in its unlikelihood of occurrence and in its baseness of ingratitude.

A medical man who was going away for a couple of days was driven to the station by his groom, who, on the return journey, took the opportunity of getting drunk. As a result he had a bad spill, was thrown out of the trap and was trampled on by the

horse, sustaining a compound comminuted fracture of the right ulna and radius. His arm was temporarily put up at a local hospital and the man got home, the damage to horse and trap representing a loss to his employer of some £50 or £60.

Instead of dismissing him and leaving him to his own devices, the doctor generously retained the man in his employ for three months and gratuitously treated him during that period. Owing to the severity of the injuries sustained, a false joint resulted, with consequent impaired use of the limb. On these facts an action was launched in which damages to the amount of £500 were claimed, based upon allegations of wrongful and negligent treatment leading to loss of full use of the arm.

The late Sir William Thorburn of Manchester finished off the case for us with judge and jury in the evidence which he gave on behalf of the doctor concerned. He certainly was without exception one of the best witnesses I ever called. Under cross-examination by the eminent King's Counsel who had been briefed for the plaintiff he admitted—apparently with reluctance—that he did not agree in all respects with the doctor's treatment of the case. This was, of course, joyfully welcomed, and he was pressed to state fully and explicitly to his lordship and the jury the grounds of this difference. This he did in the most dramatic manner by emphatically stating:

"Dr. X was too humane, he tried to save the arm—I should not have done so—I should have amputated."

Judge, jury, and I think everyone else in court, except the King's Counsel, who was caught napping, rocked with laughter, and the jury then and there declined to hear any further evidence, and gave a verdict for the doctor, which was recorded with costs as against the groom.

This was satisfactory to the doctor, you will say, and yet from one point of view what a farce a verdict of this nature is—namely, so far as "costs" are concerned. In this case the expenses incurred in defence of the doctor were certainly not less than £250, and the groom had not a five-pound note in the world to bless himself with.

Therefore, left to your own resources, it comes to this—namely, that if attacked as this doctor was you have to be prepared to deplete your pocket to the amount I have indicated in vindication of your professional reputation as a self-respecting member of an honourable profession.

Even more apt in illustration of this lamentable phase of matters is to be found in the action of "*Vonn v. Todesco and Eldor*," which has been before the courts within the last few weeks, and is fully reported in the *Times*. It was being tried for the second time, as the jury at the first trial disagreed.

At this second trial the judge, Mr. Justice McCardie, directed the jury as follows:

"If doctors were to be held liable on the documents and testimony which was before them, then no doctor would be safe." He moreover stated in explicit terms that: "He had formed the conclusion on the evidence before the court that the defendants ought not to be held liable." Notwithstanding this, the jury again failed to agree on the merits of the case, and were discharged without giving a verdict, certain technical legal points being reserved for further consideration.

This was an action brought under the orders of the court relating to poor persons, from which it follows that, win or lose, neither of the doctors concerned could hope to recover anything in point of costs, and yet the expenses incurred in their defence in these two trials must have been at least £600 to £700.

I much doubt whether many of you appreciate the value which lies in taking and preserving notes of your patient's cases, thereby recording the treatment prescribed or recommended and refused, as the case may be. The observance of this simple precaution has won many a lawsuit which otherwise might have been lost. I shall probably be told that the general practitioner has not time for this sort of thing, but I can only point out to you the road of prudence and protection, leaving it to you to decide as to the wisdom of following the advice given.

The responsibilities of a medical man to the State are for criminal negligence, the definition of which I have already given.

Civil liability for neglect lies in the failure to exercise reasonable care and skill, whilst gross ignorance or criminal inattention are necessary incidents to support a charge of manslaughter, and a wanton and malicious disregard of human life in the treatment of a patient have been held to amount to murder.

The minds of the profession were seriously disturbed about twelve months ago by the criminal prosecution of Dr. Hadwen of Gloucester arising out of his treatment of a child for diphtheria. Had this resulted in a conviction

it would, indeed, have been a serious thing for the profession, but I predicted from the first that, in the circumstances of the case as I knew them, this was impossible without perilously straining the law, and I therefore confidently anticipated the acquittal which resulted. Personally, I strongly hold the view that it was a case in which the criminal law should never have been put in force.

Another recent case was that of Dr. Percy Bateman, resulting from his treatment of a woman in confinement, and the judgement in his favour delivered by the Court of Criminal Appeal forms a valuable contribution to the law on this highly important phase of professional life.

It must not be thought that I have painted the picture I have presented in too vivid colours; I have endeavoured to confine myself within the limits of moderation based upon those matters which are with me the subject of daily observation, and have been so for nearly thirty-five years. That you as medical men undertake those legal responsibilities which I have outlined is clear, and that you are required to discharge them towards your patients and the State within the limits and to the extent I have shown is equally clear.

It remains for me to give you some guiding light as to protecting yourselves from those legal risks which I have accentuated.

I know of only one source through which this can be done efficiently and economically—namely, by securing membership of one of the defence societies immediately after you have registered. Outside this protection a man stands alone, never knowing when or in what circumstances his treatment of a case may be impeached, or the extent to which such an impeachment may be carried. The subscription to any one of these societies should be within the competence of all, and it is a species of insurance which no prudent man should neglect.

The material benefits to be secured are financially great, as a complete indemnity from any expense is to be obtained whether the action be wholly successful or otherwise. Outside this there are other benefits which flow from membership which are perhaps not sufficiently appreciated.

First and foremost is peace of mind and absence of apprehension arising from the knowledge that you are thus protected. This sense of security is extended by the further knowledge that in the event of any complaint which conveys merely a sense of dissatisfaction of treatment received, you have the society at hand to guide you as to the most prudent course of action to adopt, and you have the further knowledge that a wholesome respect is entertained by all would-be litigants as to the thorough manner in which these cases are dealt with, and which does not extend to the medical man himself and his private advisers.

An address of this nature cannot be closed without giving expression to one reflection which inevitably occurs to the mind—namely, the immense amount of work which is done gratuitously by every medical man, and the small meed of gratitude which is shown in return.

I say with confidence and without fear of contradiction that in no other walk of life is there to be found an example of equal merit than that which the medical profession has set.

Take the hospitals throughout the length and breadth of the world, with their honorary and consulting staffs giving yeoman service of their best in the alleviation and cure of disease, but nevertheless the same responsibilities attaching as pertain to general private practice. Do not disguise from yourselves the fact that the law does not afford relief from liability on the ground that the services of which complaint may be made were voluntarily given, and it is the physician or surgeon (as the case may be) who is personally responsible for the acts which he performs, and for the due and proper discharge of the duties of those who are assisting him.

The high ideals by which your profession is animated are aptly conveyed in the words of Lord Dawson of Penn: "The medical profession are actuated by singleness of purpose, and try to keep aglow the lamps of science and service to lighten the path of public welfare."

I commend these sentiments to your keeping.

## British Medical Association.

### PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

#### SECTION OF DERMATOLOGY.

H. G. ADAMSON, M.D., F.R.C.P., President.

#### DISCUSSION ON ECZEMA.

##### OPENING PAPER

BY

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I SHOULD like first to thank the Committee of this Section and especially my old friend the President, for the honour they have done me in inviting me to open a discussion on eczema, for if we disagree on every other point I feel confident we shall be united in considering it the most important subject in the whole of dermatology.

It appears to me that in any discussion of this kind it is important to find some base from which to start upon our various paths, and if we can find as our base some definite condition which we all agree to be invariably present in eczema I think we shall help the clarity of the subsequent discussion. Now the attempt to find this base has been an object of search with me for many years, as it has been of course, with several others. One could attempt to define eczema purely from the etiological standpoint, but this is to assume at once that it is a specific disease in the sense that tuberculosis and syphilis are diseases. Next, we may take up the clinical manifestations of eczema. These are at first sight somewhat multiform, but if we include with the clinical manifestations the appearances in microscopic sections which we can associate with those that we observe with the unaided eye or with the hand lens I believe we can find what I may call an elementary lesion which is always present, though in varying stages of development. Thirdly, we may be guided by the physiological state of the skin, taking into consideration its vasomotor stability, and its reactions to various stimulants.

We thus have before us three standpoints on which to base our definition—namely, the etiological, the anatomical and the physiological. Of these three I propose to discard the first, because if eczema is a disease of multiple causation it is obvious that cause cannot be used for defining purposes, and if it is a disease due to a single cause then we are in entire ignorance of the nature of that cause and again we cannot make use of it for definition. This leaves us with the anatomical and physiological grounds and with these combined I think we can construct some sort of a conception which may command a general if not a unanimous agreement.

##### Anatomical Considerations.

As far as my knowledge goes it is to the acute observation of Willan, as quoted by Bateman, that we owe the anatomical conception of eczema, and I believe that we shall find a reasonable unanimity on one point. This is that although some may claim that Willan's clinical characteristics are found in conditions to which they would refuse the term of eczema, all will agree that they are certainly found in eczema.

Now Willan described the essential lesion of eczema as a small vesicle of the size of a pin's head, many such vesicles being crowded together, with little or no inflammation round their bases, and unattended by fever. He stated that the disease was not contagious. Since he attributed different varieties to different causes (eczema solare from the sun; eczema impetiginoides from various chemical irritants—sugar, lime, Indian varnish, etc.; eczema rubrum from mercury and other causes), it is obvious that what he had in mind was not a disease in the sense of an etiological entity, but a condition varying in severity yet always founded on his primitive vesicle and called forth

by many causes. I would draw special attention to the fact that his description implies that these vesicles do not enlarge, since he describes them as forming "a brownish-yellow scab of the size of a pin's head."

Here, then, we have an admirable description of the clinical conditions to be found on careful examination with the naked eye alone or with the aid of the simple lens. By the aid of serial microscopic sections we can now see how accurate this description was and how the condition is brought about.

The earliest lesion is a congestion of the capillary loop in the head of a single papilla followed by exudation of lymph from this vessel. This works its way through the epidermis from the base upwards, at first causing a localized swelling by distension of the intercellular channels (the eczema papule), then forming a deep-seated vesicle in the middle of the stratum mucosum by rupture of the intercellular fibrils, and finally working its way up to a position immediately below the horny layer with the formation of the obvious translucent vesicle of Willan. During all of these stages in the acute disease proliferation of histiocytes is slight and leucocytosis of the polynuclear variety absent. The lesion is microscopically and, as far as can be determined, culturally non-bacterial.

I have gone into some detail over these points because I want to build a little further on this conception. This deals adequately with the acute form, but what about the chronic forms of eruption to which we still give the name of eczema?

It is obvious that at any stage the further development of the lesion may be checked. The congestion may be chronic but not intense, exudation may be slight, causing some thickening by oedema over the papilla head (spongiosis), but never becoming sufficiently intense to rupture the interepithelial fibrils and produce a frank vesicle. There will, then, be a sheet of these small papules with some thickening due to overgrowth of the epithelium (acanthosis), accompanied by disturbance of the keratin function and secondary scaling (parakeratosis). Such cases are generally called forth by local traumatism, and when infected with pyogenic organisms the infection is a secondary consequence of the disturbance of the horny layer combined with scratching and inoculation. Willan's conception thus still holds true, even in the more chronic forms, though the lesion may not be obvious to the naked eye. For those forms of pyogenic dermatitis which do not show the fundamental papule or vesicle I would prefer not to use the term "eczema" at all, though this would entail some alteration of our nomenclature.

Such, then, is the anatomical part of the definition of eczema which we are trying to construct, and I turn now to the physiological state of the skin in eczema.

#### Physiological Considerations.

When we view the ready congestion of the capillary loop in the head of the papilla and its consecutive exudation of lymph from it into the papilla and overlying epidermis and the oedema of the pars papillaris generally, we see at once that these two reactions must be called forth by some stimulus—that is, the papule or vesicle is the anatomical expression of a physiological reaction to irritation (I am using physiological to include both normal and morbid processes).

In this connexion I consider we owe a great deal to Jadassohn, who analysed the reactions of the skin to various agents in a very careful manner. It would take too long to detail his rather elaborate thesis, but I may remind you briefly that, compared with the normally reacting skin, he recognized, first, skins with either a special susceptibility to one irritant so that they reacted to very small doses, or a general susceptibility where the reaction was present to many such bodies; secondly, skins with an idiosyncrasy reacting to minute doses of bodies which to most skins could not be classed as irritants at all. This idiosyncrasy may be shared by a large number of skins in the case of certain bodies, such as *Rhus* and *Prunella clypeata*, or may be very exceptional, as, for instance, in a patient of mine, who suffered from eczema on approximation to Malva leaves.

Recent American observers have maintained that, at any

rate in the case of *Rhus*, complete immunity does not obtain, and if this prove to be true not only of *Rhus* but other "idiosyncratic" bodies it impairs the validity of Jadassohn's separation of susceptibility from idiosyncrasy. Nevertheless, as a working hypothesis I think it may be allowed to stand, since the difference between the two types is certainly marked.

What I think we shall all be agreed upon is the fact that exposure to various external agencies will call forth eczema in the suitable patient when it would not do so in the normal individual. That is to say, that in eczema there is a special or general irritability of the skin which we may call in general terms a susceptibility. If we accept this statement as true, and also admit that this susceptibility may be exhibited almost from birth or may develop later in life, we have, I think, all that we can at present obtain for the construction of our definition. This will then run as follows:

"Eczema is an eruption consisting of oedematous papules and vesicles arising in the deeper part of the epidermis and caused by an abnormal susceptibility, congenital or acquired, to the action of external irritants."

I am hoping that what I have already said will not meet with much opposition from those who have devoted close attention to the study of eczema, and this hope is inspired by my belief that the chief point of dispute relates to the importance of constitutional states in the production of eczema.

#### The Constitutional Factor.

If I may trespass on your patience for a few more moments I will endeavour to put before you my views of the constitutional factor in the etiology.

As a form of introduction I will draw your attention to a frequent complication of varicose eczema. I may say that I regard varicose eczema as a mixed pyogenic dermatitis on an irritable basis—that is, that it is a hybrid eruption.

It is a quite common thing to come across such a case as this, chiefly in hospital practice. A patient is seen with a recent papulo-vesicular eczema of the arms, extending perhaps to the neck. The eruption is a typical eczema of the scattered variety, showing no particular figurate arrangement or marginal limitation and spread. On seeking for the etiology one finds that there is present in one leg a chronic patch of varicose eczema of long duration. Owing to some recent adverse condition, which may well be an unsuitable local application, the chronic patch has been excited into a more active state. Shortly after this occurrence the rash on the arms has supervened, this rash having, clinically at all events, no similarity with the marginate infection or infected dermatitis, which we dismiss as septic eczema or dermatitis, according to our fancy.

Now in such cases I have repeatedly performed the experiment of treating the patch on the leg to the best of my ability and leaving the eruption on the arms alone, merely explaining to the patient that it will die away untreated, and when I have been successful with the patch on the leg the prophecy has come true.

It seems to me, therefore, that something occurs in the chronic patch which produces the generalized eruption. This might well be either a nervous action, a spreading of irritability from the local patch to the whole cutaneous surface, or a generalized cutaneous intoxication by the absorption of some poison generated at the local patch; or, again, it might be due to a combination of the two processes.

In this connexion I would remind you of two facts. First, that many years ago Bockhart, Bender, and Gerlach found that they could not induce eczema by rubbing live staphylococci into the skin if these were washed, but that they could do so by using the culture filtrate without any organisms; secondly, that Professor Arthur Hall, who has done so much excellent work in the investigation of the etiology of eczema, was unable to cause a generalized eczema in a girl by the local application of the irritant from imitation pearl beads to which she was susceptible. In this instance I must admit that Professor Hall thought he might have been successful had he gone on longer, but

the local inflammation was so severe that the patient refused to submit to further experiment.

It would appear to me, therefore, that there is rather more evidence in favour of the toxic theory. Further in favour of the toxic theory I will refer for one moment to cases of food poisoning. I suppose that we all recognize two forms: first, the frank urticaria, where the chief change is in the deeper part of the corium and sometimes even in the subcutaneous tissue, and a second type characterized by the presence of minute papules, generally follicular in situation, scattered thickly over the body and limbs, and not so evanescent. This second type lies mostly in the papillary body, and is succeeded by desquamation. If rubbed, as it generally is, it develops rapidly into a vesicular eczema, needing only the slightest trauma to do so. I suggest to you that this is the result of some bacterial poisoning absorbed from the intestinal canal, and is analogous to the generalization from the pyogenic varicose dermatitis referred to above. If this idea be correct, it would, of course, account for the association of eczema with focal sepsis, on which so much stress has been laid by some observers.

We may conceive, then, that there is one type of toxin which acts on the deeper vessels and nerves of the corium in such a way that the slightest rubbing or pressure determines the development of an urticarial wheal, whereas another type so affects the epidermo-papillary system that by the same kind of local stimulus an eczematous reaction is produced. If we accept this theory then I think we can explain those cases in which mental anxiety or shock seem to be active in helping to produce eczema by supposing that digestive disturbance, errors of gastro-intestinal motility and secretion, result in erroneous chemical cleavage of the food, whether bacterial or otherwise, with the production of an alimentary poison of the same type as that present in food which is decomposed before ingestion.

#### "Seborrhoeic Eczema."

Before concluding this somewhat sketchy survey it is, I think, necessary to refer as shortly as I can to that terrible bono of contention "seborrhoeic eczema" or "seborrhoeic dermatitis"—the idol of some and the bane of others.

Dealing first with the simplest form—the dry micaceous scurfy head—I believe that Sabouraud is quite right in maintaining that this is neither eczema nor seborrhoeic, but a definite infection of the superficial horny layer by the organism commonly known as the "bottle bacillus." Where I think Sabouraud was too limited in his conception is in the fact that, in my opinion, he failed to recognize a constitutional side to the question.

We are all exposed to infection with this organism, and most of us are infected, and, further, the infection in any individual varies greatly from time to time.

It is now some years since I first learned from a patient who was susceptible to "hay fever," and also had an idiosyncrasy to strawberries, that there was another factor besides the mere infection with the bottle bacillus. This patient had at most seasons of the year an only slightly scurfy head, but during the grass pollen season she always suffered, if in the country, from hay fever, and during the attack her head became intensely irritable and scurfy, microscopically showing almost purely the bottle bacillus. If she went to sea in her yacht during this season her scalp remained almost clear, but if while at sea she ate strawberries she developed the symptoms of hay fever and the scurfy head, so that it is probable that the scurf was not the result of local irritation of the scalp by the pollen.

Since this time I have collected one or two more cases of patients whose scalps become violently scurfy and irritable when they suffer from hay fever. Some of them always suffer to some extent from scurfy head, whereas in others it is not noticeable except during these exacerbations. This disease I prefer to separate entirely from eczema under the heading of "pityriasis capitis."

Sabouraud has also pointed out that as a complication supervening upon the disorganized horny layer there may ensue an infection with the non-liquefying staphylococcus which he calls the "*Coccus butyricus*." The moment that this secondary infection occurs the histology of the disease

is changed and the hitherto dry scales become mixed up with blocks of dried serum. This is the condition which is so commonly seen in the scalp from puberty onwards.

Now on the body when this double infection takes place it is associated with reddish rings, and has been given all sorts of names: "lichen circumscriptus," "seborrhoea corporis," "seborrhoeic eczema," etc. Microscopical examination shows that it is in reality a combination of a superficial scaling—to use the French term, "epidermitis"—and a low-grade but not entirely aleucocytic folliculitis. It is not, therefore, in my opinion, an eczema any more than tinea circinata is an eczema.

Lastly, there is a third form, commonly seen with a V-shaped distribution over the shoulders and upper back. The lesion here is a discrete spongy papule or abortive vesicle, which may be in places aggregated, but is not arranged to form rings or polycyclic figures. Microscopically I cannot distinguish the lesion in this case from that of simple eczema, except that the oedema is localized rather specially to the mouth of the sweat gland. I therefore believe this form to be a true eczema of chemical origin, the offending chemical being in all probability an irritating fatty acid (butyric acid?) produced by bacterial decomposition of the sweat.

#### Summary.

To sum up my position, then, I will put forward the following view:

Eczema is a clinical condition and not a disease with a single specific cause.

It is the result of irritation of the skin, and is associated with an undue susceptibility.

This susceptibility may be congenital or acquired. When acquired the susceptibility may be the result either of repeated external trauma or a generalized toxæmia of a particular type.

Perhaps I may be allowed, in conclusion, to quote to you some sentences from the preface of Dr. Bateman's incomparable synopsis.

"I am aware, indeed, that there are many individuals, professing themselves to be practical men, who affect a contempt for all nosological disquisitions, and deem the discussions relating to nomenclature, in particular, very idle and frivolous, or at the best, a sort of literary amusement, which is not conducive, in the smallest degree, to the improvement of the medical art. But this I conceive to be a mistaken view of the subject, originating perhaps from indolence, or from a want of habitual precision in the use of language. The inferences of slight and superficial observation may, indeed, be detailed without recourse to a very definite vocabulary; for where little discrimination is exercised very little nicety can be requisite in regard to the import of the language employed.

"But it is not by such means that the boundaries of science are extended."

#### GENERAL DISCUSSION.

Dr. W. Dyson (Manchester) said that eczema was a non-microbic superficial inflammation of the skin, the result of external irritation in a predisposed subject. He divided predisposing causes into two categories—congenital and acquired. They produced a sensitization of the skin, which caused it to react to an irritant which would not produce inflammation in a normal individual. What was the cause which brought about sensitization of the skin? Was it a localized anaphylaxis? In some respects it corresponded to an anaphylactic state, but, so far as was known, anaphylaxis was an absolutely specific reaction to one substance, whereas a sensitized skin would often react to any external stimulus; moreover, a localized sensitization might occur following injury to a portion of the skin, in which predisposition to eczematous outbreaks remained confined to the damaged part and was probably the result of local loss of vitality—a different phenomenon from a generalized sensitization. It was a common occurrence in occupational dermatitis to find the whole skin becoming sensitized and to see areas, untouched by the irritant, the site of a sympathetic dermatitis. Again, a dermatitis might be in the first place a skin reaction to a specific irritant, but subsequently the reaction might cease to be specific, and the skin react to any external stimulant. The speaker made the suggestion that the epithelium was a secretory organ and that at some future date it would be found in function to



be in the same category as the ductless glands. The histological appearances and staining reactions of epithelial cells closely resembled those of other glandular structures. If this could be proved it would help them to understand many of the problems of dermatology of which they were at present ignorant. If this were a fact it would be possible that the epithelium, when irritated, secreted a substance which produced a general anaphylactic state of the whole skin and thus produced a general sensitization. He had found small stimulating doses of x rays the most efficacious method of desensitizing the skin. Might it not be that by this method of treatment they were passing into the circulation small doses of the specific virus which produced the anaphylactic state, and in this way caused an anti-anaphylactic condition of the skin?

Dr. RUPERT HALLAM (Sheffield) thought that all would agree with Dr. Whitfield's view that an abnormal susceptibility to the action of external irritants was present in these patients, but he wondered whether Dr. Whitfield would not also be prepared to admit that an internal or endogenous irritant might sometimes replace the external irritant and cause precisely the same anatomical lesions. Did not the train of circumstances which took place in the case of the varicose ulcer with a secondary dermatitis support this view, and was not this the response of the skin to a toxin carried by the blood stream? Could it not equally well come from some lesion in, say, the alimentary canal? A very interesting case quoted by Schoenhof in 1924 seemed to support this view. The patient was occupied in preparing asparagus for cooking; a dermatitis developed, not only on contact with the vegetables, but also on ingestion of the same. Bloch was able also to produce a dermatitis in a young woman by giving iodide orally, intramuscularly, or by contact with the skin. If this view could be accepted it would help to explain the etiology of many of their cases.

As regards the individual hypersensitiveness, which might apparently be hereditary or acquired, Bloch's pupil Jaeger had performed some interesting experiments. He standardized his irritants by means of plasters containing a definite percentage of various chemical substances, such as formalin, iodoform, or primula juice. These were placed on the skin for a definite time on 1,100 individuals, among whom were 333 patients with eczema. A positive result was obtained in 35 per cent. of the eczematous and in 5.4 per cent. of the healthy. This showed that the eczematous were seven times more sensitive to these irritants than other persons. The greater proportion of positive results were obtained in chronic cases, less in occupation dermatoses and in the so-called seborrhoeic eczema.

Dr. H. W. BARBER (London) endeavoured to distinguish certain clinical types of the eruption with a view to seeing whether it was not possible to deduce the probable cause in a given case from the distribution, configuration, and type of lesion present.

First, as regards "seborrhoeic eczema" he agreed with Dr. Whitfield that seborrhoeic dermatitis was not a true eczema, but an inflammatory reaction of the eczematous type (eczematoid of Darier) due to infective organisms, comparable with that produced by a ringworm fungus. But they must all admit that not uncommonly in seborrhoeic patients, particularly in hot weather, an acute true amicrobial eczematous reaction did occur—for example, on the hands and feet, producing one type of what was formerly called cheiropompholyx. This might be comparable with the third type of "seborrhoeic eczema," referred to by Dr. Whitfield as occurring on the back, which he had suggested might be due to irritation by a fatty acid, such as butyric acid, produced by bacterial decomposition of sweat. But such an eczema—at any rate when it occurred on the palms and soles—was more likely, in the speaker's opinion, to be due to the actual excretion of fatty acids by the sweat glands, as the palmar sweat was always strongly acid in these cases, although sebaceous glands were absent on the palms and soles. This type of eczema might occur in seborrhoeic subjects, apart from any active seborrhoeic dermatitis being present.

Secondly, with regard to the condition labelled "infec-

tive eczematoid dermatitis" by American authors, this, Dr. Barber thought, had been shown to be a definite entity due to epidermal sensitization to a staphylococcus, and he had confirmed Sutton's observation that in 25 per cent. of cases an urticarial eruption accompanied the eczematous dermatitis, and that positive cutaneous reactions could be obtained to staphylococcal protein.

Thirdly, the type of eczema in which Dr. Barber was at present most interested was that often termed "nummular eczema"; bilateral symmetry was characteristic of this type, the eruption occurring chiefly on the limbs. The primary lesion was often a single eczematous papule which became a vesicle of considerable size, drying up to form a single brownish scab. The nummular patches were more or less circular with sharply defined margins, and were characterized by the relatively large size of the vesicles and resulting scabs and their tendency to remain discrete. The evolution of this type of eczema made it almost certain that the toxin to which the epidermis was sensitized was borne in the blood stream either from a focus in the skin itself or from within. He mentioned three cases of this type, the source of toxin being in one a maxillary antrum, in another the teeth, and in the third apparently the gut.

Fourthly, with regard to true gouty eczema, Dr. Barber thought they were all agreed that in these days it was rare; it could be recognized clinically and distinguished from other forms of eczema. Dr. Oriel had obtained very interesting results from the investigation of the blood uric acid in various types of eczema and in seborrhoeic patients. He found that in the latter the blood uric acid was normal and the blood pressure not raised, whereas in the cases that Dr. Barber had diagnosed as gouty eczema the uric acid content of the blood was markedly increased and the blood pressure invariably high. It also appeared from Dr. Oriel's series of cases that the great majority of patients with true gouty eczema died before old age, for eczema in the aged was found to be unaccompanied by an increase in the blood uric acid or blood pressure.

Lastly, there was the type of eczema that occurred in patients who had inherited what Dr. Barber termed the ichthyosis—asthma—hay fever—prurigo—eczema—urticaria complex. They almost invariably suffered from infantile eczema, and later developed circumscribed prurigo, the sites of election of which were nearly always the antecubital fossae, the popliteal spaces, and the dorsal surfaces of the wrists. The majority were, perhaps, ichthyotics, but, apart from this, their skin was curiously sallow, thickened, and oedematous-looking, so that they could be recognized at a glance.

Dr. G. B. DOWLING (London) asked if the term "dermatitis" should be used for any of their cases rather than "eczema." He thought it would be convenient to retain the term for those cases of eczema which were due to contact with a known irritant, such as lime, sugar, and furniture polish, for the word "dermatitis" had an industrial significance which "eczema" apparently had not, so much so that when a patient was labelled "eczema" it was often difficult for that patient to obtain an award under the Workmen's Compensation Act, even when an award was justly due. Nevertheless, Dr. Whitfield had made it perfectly clear that there was no difference between such dermatitis and eczema on anatomical, histological, or indeed physiological grounds, if they accepted his view that an internal stimulus of some kind was essential to the production of all eczema. On this point, however, Dr. Dowling was in some doubt, and he was glad that Dr. Hallam and Dr. Barber had referred to cases in which it was exceedingly difficult to find any evidence of external irritation.

They were all agreed, as Dr. Whitfield had said, that a constitutional factor was present in all cases of eczema, and it was this that interested and concerned them most. The question arose whether many such factors might be considered to underlie different cases, or whether such a factor was essentially the same for all cases. All the evidence pointed to the view that multiple types of constitutional disturbance were responsible, and these might be either congenital or acquired. Other speakers had

drawn attention to the congenital factors which were said to create an eczematous diathesis. Of the acquired types of constitutional disturbance Dr. Dowling could think of no better example than that mentioned by Dr. Whitfield in relation to chronic varicose eczema. Dr. Dowling was convinced that this type of case was so common that in examining any case of eczema, even when the exciting factors would appear to be exposure to a definite irritant, he had made it his practice to search the whole surface for a chronic focus on the skin. He thought that such cases were etiologically of the same nature as the type of case to which Engman drew attention in 1902, and to which he gave the name of "infective eczematoid dermatitis." He then demonstrated the close relation of many cases of eczema to an antecedent pus infection, such as infected scabies, infected wounds, boils, abscesses, discharging sinuses, chronic discharging ears, and a host of other septic foci in direct relation to the skin. Generally the area of skin in the immediate neighbourhood of the septic focus was primarily the seat of eczematous vesicle formation. The eczematous eruption did not, however, remain confined to the original focus, but spread either by continuity or to distant foci on the skin, often selecting exposed parts, and usually not sparing the large flexures where friction and moisture might afford an external stimulus. The eruption was auto-inoculable, as Sutton and Fordyce had pointed out, but often the spread to distant foci was too sudden and too rapid to be accounted for in this way.

The rapidly produced general eruptions were of the most diverse types, being sometimes of papulo-vesicular type, as Dr. Whitfield had described in relation to varicose eczema, sometimes a patchy erythematous-squamous eruption, and Dr. Dowling had seen an urticarial eruption in combination with eczema of this origin. To the same group belonged those common and difficult cases of infective dermatitis of the scalp in children, following an antecedent pus infection from pediculosis capitis, spreading at times by continuity to the post-auricular sulci, the face and neck, and giving rise sometimes to patches of true eczema in distant parts. Apart from cases of eczema due to contact with a known irritant, and which, for convenience, Dr. Dowling preferred to call dermatitis, he believed that these cases supervening upon antecedent foci in the skin formed a majority of the cases of eczema with which they had to deal, and he agreed with Dr. Whitfield that it was all-important to attack the primary focus in treatment. In the present state of their knowledge it was impossible to say to what factor in the primary infective lesion the secondary reaction was due. Presumably some toxic substance was absorbed from the focus into the circulation, which had a directly poisonous action upon the skin, rendering it susceptible to the minutest stimuli from without; but they did not know whether the toxin was of bacterial origin or the result of tissue autolysis. He mentioned a case which supported the view that such toxins were not necessarily bacterial; it was a case of lupus vulgaris in a healthy butcher, no doubt of inoculated type. Dr. Dowling had used pyotropin for treatment, a preparation that acted by producing selective destruction of lupous tissue with marked suppuration. After three applications the butcher developed a crop of eczematous vesicles immediately around the patch of treated lupus, upon skin that had been bathed in pus for about a fortnight. Although pyotropin was discontinued, a week later there appeared an extensive patchy erythematous-squamous eruption over the trunk, limbs, face, neck, and scalp. It seemed that bacterial toxins could not have been responsible for the general eruption in this case, since the suppuration produced was of chemical origin and not due to infective organisms. Although in this case the primary focus of eczema healed quickly under local treatment, the general eruption persisted for about two months. The important point to decide was whether there existed, apart from the alimentary causes of which Dr. Whitfield had spoken, internal foci capable of sensitizing the skin with the production of eczema, in relation to which Dr. Barber's remarks on his cases of mummular eczema were particularly interesting.

Dr. Dowling agreed with Dr. Whitfield that Sabouraud was right in saying that pityriasis of the scalp had nothing to do with seborrhoea, although it must be admitted that pityriasis and seborrhoea were commonly associated; they arose from a common soil. In relation to pityriasis of the scalp or dandruff, however, a certain common type of true eczema did arise, as Dr. Barber had said, apart altogether from the whole group of eczematides, commonly called seborrhoeic dermatitis. Dr. Dowling's view of seborrhoeic eczema was that pityriasis of the scalp was a mild chronic infection due to the bottle bacillus. It was slightly irritable, and at times, from friction or some more obscure cause, it assumed an inflammatory aspect due to super-added staphylococcal infection. The picture was then the common dry seborrhoeic dermatitis, or it might be an acute weeping dermatitis of the whole scalp. In either case, apart from a tendency to spread to the post-auricular sulci, the neck and face, true eczema might develop in distant parts of the body. The speaker believed that an important group of infantile eczema belonged to this class. In his opinion these cases fell into line etiologically with the cases related to chronic varicose dermatitis, and with the cases of infectious eczematoid dermatitis of which he had spoken, the primary sensitizing focus in the skin being in this case the scalp, as in children suffering from pyogenic dermatitis due to pediculosis capitis. The important point to elucidate was what gave rise primarily to the acute inflammatory condition of the scalp, for all had dandruff, though few; fortunately, had seborrhoeic dermatitis. There must be another factor in this connexion.

Dr. SEMON (London) said that the known facts governing the etiology of eczema sadly needed revision and tabulation. In his view they were all contributory or associated rather than causal. He agreed with Dr. Whitfield that eczema was a condition rather than a disease—a condition which, in his experience, might be lighted up by such heterogeneous associations as glycosuria, hypochlorhydria, focal sepsis in teeth, tonsils, or appendicitis, old gunshot wounds, varicose ulcers, or the repeated and daily stimulus of chemicals as used in trade, if the subject were susceptible. The number of such possible stimuli was unlimited and ranged from simple trauma to a complex sensitivity to foreign proteins. In the case of each and all of them it seemed certain that an essential and hitherto undefined state of the skin itself must be presumed. An American author had suggested the term "tissue idiosyncrasy," which would suit as well as any other at the present time. Some slight hint as to the mechanism involved in the production of eczema was suggested by the fact that eczema never occurred on a naevus, no matter what its size or location—and all naevi lacked vaso-constrictor and dilator nerves. It might be, then, that for the exudation of eczema to take place there must be a local neuro-vascular abnormality at work.

Dr. HALDIN-DAVIS (London) approved the definition put forward by the opener of the discussion. He did not minimize the importance of the external factor in the causation of eczema, to which all dermatologists ascribed increasing importance, but there remained a large number of cases in which this factor was almost inappreciable. In his opinion more research was necessary on biochemical lines in order to discover the underlying biochemical basis of the constitutional factor. At one time he had had the idea that certain dermatoses might be correlated with one or other of the four well known blood groups characterized by their agglutinating relations; but the investigations he had made on these lines had yielded no definite result. The whole problem was exceedingly difficult, because, up to the present, their chemical methods were much too coarse to detect the minute differences between the tissue fluids of eczematous and non-eczematous individuals. He did, however, think that there was one line of investigation which might be worth while following up. Starting from the traditional idea that sugar was bad for eczema, and from the undoubted fact that diabetic subjects were unduly liable to that condition, he had examined a number of cases of eczema with a view to ascertaining whether or not

their blood behaved in an abnormal manner towards sugar. The abnormality might show itself in one of three ways: (1) there might be an abnormally high starring sugar content in the blood; (2) the sugar tolerance curve, after the ingestion of a measured quantity of glucose, might reach an abnormally high point; (3) the sugar tolerance curve, although the peak might not be higher than normal, might be abnormally slow in falling to the starvation level—it might show a "lag." With the help of Miss Wills, M.D., he had been able to demonstrate that in about two-thirds of the cases of eczema investigated there was some abnormality shown on these lines. On the other hand, he had found no abnormality of the kind in a number of healthy medical students who had acted as controls, nor in three cases of exfoliative dermatitis. But up to the present he was unable to predict from the clinical characteristics which case would and which would not exhibit the abnormality. The speaker also desired to suggest that the nervous system played a more important part than was usually suspected in determining the distribution of eczematous lesions. He had never been able to explain their marked tendency to a definite symmetrical arrangement. He did not think this could be explained by supposing that a toxin was distributed by the blood stream. If that were the explanation, why should there be symmetrically arranged lesions in isolated patches only, while the rest of the surface escaped? One would expect a generalized eruption on this theory. The system which was most symmetrical in the body was the nervous system, and he suggested with some diffidence that an eczematous patch of skin on one side influenced, through its afferent nerves and their synapses in the spinal cord with the afferent nerves of the other side, the symmetrically corresponding patch. He thought that possibly experimental work might be devised to test this hypothesis.

Sir NORMAN WALKER said it was thirty-four years since he first attended an Annual Meeting of the British Medical Association, and it was at Nottingham. He thought that Dr. Whitfield, in his definition of eczema, laid rather much stress on external irritants, yet the speaker believed that it was possible to arrive at a definition of eczema which would be generally accepted. The Dermatological Section had discussed eczema in Newcastle about thirty years ago. Allan Jamieson was in the chair, and Crocker, Colecott-Fox, Brooke, Malcolm Morris, Pringle, and Limont were present; Sir Norman Walker believed he was almost the only survivor. Then the younger generation was fighting for recognition of the very existence of external causation, and a great deal was heard about gouty eczema. That day, they had been told that it hardly existed. He did not imagine that those who strove so hard for external recognition really believed that internal influences could be ignored; but he thought they were right, in their generation, to stress the external side. Now that field had been won, and, while some had travelled further than others, nobody now denied that a very large number of all cases of so-called eczema were due to external causes. In some respects the pendulum seemed to have swung the other way, and there were those who, leading fresh advances, were concentrating on causes other than external. He was convinced that focal sepsis and internal causes, particularly substances taken into the stomach, were responsible for many cases which, for the purpose of the discussion, he was willing to call eczema. Dr. Dowling had suggested that the word "dermatitis" should be limited to such inflammations as were demonstrably due to external causes, and that the rest should be called eczema. Through his teaching career the speaker had endeavoured to direct the attention of students to the causes of disease rather than to the names attached to them, and so he believed that dermatitis, which was an admission of ignorance, was the better term until it was possible to put an adjective at the end of it. Dr. Dysou had referred to small, stimulant doses of x rays; Sir Norman Walker reiterated his warnings against the hazardous use of this powerful and dangerous weapon. He had seen so much serious damage, so many fatal cases, that it was only when he could convince himself that no other treatment would do as much good as x rays in a

particular case, that he administered them. It might be that the evil effects did not appear until years after exposure. He agreed with Dr. Haldin-Davis that they must make more use of biochemical and other laboratory methods. Advancing science was bringing to their aid other means of investigation, and the training of the dermatologists of the rising generation must be longer and broader than that of their predecessors. He was himself making use of the cutaneous tests.

The PRESIDENT felt that it was first of all essential to come to an agreement as to the characteristic clinical features of the eruption for which the title of "eczema" should be retained. While they discussed the etiology of eczema they ought first to be sure that they were referring to the same complaint. One observer might maintain that a dermatitis which he called eczema was the result of internal causes, another that eczema was of external origin; but if they used the word "dermatitis," or even the word "eczema," in a vague sort of way it might well be that the two observers were dealing with different eruptions, and that both were right. If they employed the term "eczema" as a sort of refuge for those forms of dermatitis which did not belong to a definite category such as that of impetigo, of psoriasis, of urticaria, or other eruption with clearly recognized characters, they were possibly dealing with several eruptions of different nature and origin. Even if they said that to be an eczema an eruption must be a dermatitis with redness and vesication or weeping and itching, they were still too vague. It was not many years since a common eruption with all these characters was confidently regarded as an eczema of gouty origin, but now, as was first shown by Dr. Whitfield, it was known to be of external microbial origin, and was labelled eczematoid ringworm of the extremities. He was quite in agreement with Dr. Whitfield that unless they restricted the meaning of the term "eczema" to one decided type of inflammatory reaction they were not likely to come to any clear conclusion as to its etiology.

Dr. Whitfield had taken as his base the essential lesion of eczema as defined by Willan—namely, the crowded, pin-head sized, deeply formed vesicle—and he had very rightly emphasized the fact that this was a vesicle formed, not on the surface of the skin, but in the deeper parts of the epidermis—that it was, indeed, what they now called an intradermic vesicle. The President would add to this statement that these crowded pin-head sized intradermic vesicles were set upon a red and oedematous base. It might be that in the very earliest phase the minute vesicles were not accompanied by any obvious inflammation at their base, but this phase soon passed, and in the matured patch of eczema they saw a roughly circumscribed area of red swollen skin studded with minute vesicles or with weeping points. This swelling of the epidermis was particularly obvious when they pinched up the patch between the fingers, for it was then found to be twice or three times the thickness of the normal skin around. In Bateman's *Delicacies of Cutaneous Diseases according to Willan* (1817) there was a coloured drawing, Plate LV, Fig. 2, "Eczema Impetiginoides," in which this condition was exactly described. The President regarded, then, the essential lesion of eczema as a roughly circumscribed patch, red and swollen, and studded with minute vesicles or weeping points, and accompanied by itching and burning. For many years past he had been accustomed to refuse the name "eczema" to any lesion which did not present these characters. The eruptions called dermatitis traumatica or dermatitis venenata, which were frankly the result of contact with certain local irritants, such as prunella and hair-dye, did not present these characters. Such a dermatitis presented an area of very closely set, quite superficially formed larger vesicles, which might even run together into bullae; or there might be an erythema without deep oedema, and with a tendency to superficial vesication or blistering. The lesion he considered to be the essential lesion of eczema was seen in its most characteristic form in the facial eczema of infants and in patchy eczema of the arms and legs and hands of adults.

He had never been able to satisfy himself that there was any inherited or acquired susceptibility of a gastro-

intestinal toxæmic nature which rendered eczematous patients more sensitive to external irritants. He was inclined to believe that eczema was a normal reaction in normal persons to small repeated external irritations. A combination of local circumstances had, he thought, more to do with the first onset of an eczema than any predisposing supersensitiveness due to internal causes. A small irritant, and particularly some form of chemical irritant, combined with heat from warm clothing, or from warm weather or sun exposure, with friction from the clothes or from scratching, led to the first patch of eczema, with subsequent spread to other parts from irritation of the discharges, or possibly from absorption of toxins from the original patch.

A true eczema might arise also as a sequel to a more violent dermatitis, such as dermatitis traumatica. If the special irritant which had given rise to the dermatitis traumatica was removed the dermatitis speedily disappeared, and did not become an eczema. But if the contact with the irritant was continued the type of reaction might alter and the dermatitis be converted into a true eczema. Thus they might sometimes find a true eczema taking its origin from what was primarily a dermatitis due to some special irritant, such as a hair-dye or a dyed fur collar; or an occupation dermatitis might be converted by repeated irritation into an occupation eczema. In all cases of eczema he believed that if they diligently traced back the history of the eruption they would generally find that the earliest onset was associated with some such combination of local irritation with other conditions such as he had mentioned. Dr. Whitfield's apt quotation from Bateman, with which he had concluded his address, was very appropriate to the subject of eczema, and if at this meeting they had done nothing more than define exactly what was meant by eczema, he thought that they had accomplished very much.

Dr. WHITFIELD replied, dealing with the points raised by various speakers.

## DISCUSSION ON TREATMENT OF PSORIASIS.

### OPENING PAPERS.

I.—ROBERT W. MacKENNA, M.A., M.D.,

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THOUGH psoriasis is one of the oldest and commonest diseases of the skin, we do not yet know how to eradicate it. We may know how to treat it, and in most cases we may venture to promise a sufferer that his eruption can be made to disappear; but we cannot, with any degree of confidence, assure him that his first attack will be his last. Indeed, if we do not allow a groundless optimism to nullify experience we are bound to warn him that, in all likelihood, he will be the victim of recurring attacks for the rest of his days.

We are in the dark as to the cause of the disease; therein lies our chief difficulty, for we are aiming at a target which we cannot see, and until the etiology of psoriasis has been established beyond cavil much of our treatment must be empirical.

I take it that my duty in opening this discussion is not so much to indicate some stereotyped method for the treatment of the disease as to touch upon some points that may stimulate controversy. I do not, therefore, propose to waste your time by passing under review the numerous remedies that may be employed to cleanse the skin of the eruption. I intend to speak only of those agents or methods of treatment of which I have made careful trial, and I shall give a brief account of some clinical experiments in therapeutics entered upon in the hope that they might yield fruitful results. This will, I imagine, afford ample ground for discussion; and as subsequent speakers will probably contribute something from their own experience we shall, I trust, have a profitable exchange of ideas and learn in what measure the prognosis in psoriasis has been altered by the application to its treatment of some of those

modern methods that have yielded good results in the treatment of other dermatological conditions.

May I begin with a simple statement about which there can be no diversity of opinion? Our treatment must be modified according to the stage of the disease and the character of the eruption.

Probably we have all seen the disastrous results that may follow the injudicious use of a powerful remedy like chrysarobin in a case of acute psoriasis. In its stage of evolution psoriasis must be treated with soothing remedies. If the eruption is coming out with great rapidity, in small punctate lesions, associated with subjective symptoms of heat, itching, and a sense of tenseness of the skin, the patient should be put to bed, the bowels should be kept freely opened, the diet should be light and non-irritating. In such a case all that is required for local treatment is an oily calamine lotion to which a small proportion of ichthyol may be added. This will afford great relief, and if at the same time antimonial wine, a remedy that is all too often forgotten, is administered in doses of 7 to 10 minims three times a day, the acute stage soon passes into the quiescent stage, when more active remedies may be safely employed.

Negative results have their value, more particularly when they do not accord with the more optimistic results of others. So I shall begin by mentioning some failures.

*Emetine Injections.*—Shortly after the termination of the war I heard that emetine had been used with some success in the treatment of psoriasis among our soldiers in the Near East. I made a trial of it at once, administering it hypodermically in doses of 1/8 grain of emetine hydrochloride, progressively increased to 1 grain daily, given in two doses of half a grain each. During the treatment the use of all other remedies was discontinued. In all, each patient received from 7 to 10 grains of the salt. Eight patients were treated; all were in the quiescent stage. The results were disappointing. I was not able to satisfy myself that a single one of them derived the slightest benefit from the treatment.

*Arsenic and Salvarsan.*—Arsenic has long been reputed to have beneficial effects in psoriasis. But I believe our forefathers greatly overrated its efficacy. It is unsuitable in the acute or subacute stage. It is, I think, most useful in the first attack of the disease, when the process of involution or retrogression has already commenced, and then it has to be pushed to the limits of tolerance before its effects become appreciable. But it was natural that on the introduction of salvarsan and neosalvarsan, which presented us with the opportunity of administering an arsenical salt in massive doses, one should seek to test their efficacy in the treatment of psoriasis. My experience with these arsenical preparations has been disappointing. Salvarsan, whether administered intramuscularly or intravenously, does not have any marked or predicable effect on a psoriasis eruption. At the best the effect is uncertain. I have never seen its administration cause the eruption to disappear. Any improvement has been transient, and I am convinced that in two cases salvarsan, administered intravenously, made the eruption more rebellious to the local treatment which was subsequently applied. These are negative results which, possibly, may not fit in with your experience.

We know how psoriasis reacts to the impact upon it of some systemic infection, such as scarlatina or measles. We are aware that its lesions almost always disappear during pregnancy, to reappear during lactation. We know how a change of climate or locality may influence it and how its outbreaks are characterized by a seasonal periodicity. All these facts would seem to point to the conclusion that psoriasis can be influenced beneficially by various disturbances in systemic equilibrium. It is natural, therefore, that we should seek some solution of the problem by endeavouring so to disturb artificially this systemic equilibrium as to cause the eruption to disappear. The "shock" of "foreign protein" injections would, *a priori*, seem to afford us a possible means of achieving this end. Of recent years the literature has contained sundry reports of results following the use of peptone injections—milk injections, homologous and heterologous serum injections, etc. These results have varied greatly and a judicious review of them leaves a vague sense of uncertainty in the mind.

With the help of my clinical assistant Dr. Elizabeth Hunt, a series of observations has been carried out in my out-patient department, and I should like to take this opportunity of acknowledging my great indebtedness to Dr. Hunt for her invaluable co-operation. Unfortunately, as all our patients were out-patients, we were compelled to limit our investigations to the effect of remedies not likely to produce a profound degree of shock. But there were other agents available.

In the reports of other investigators one finds that all too often vigorous local treatment of recognized efficacy has been carried out simultaneously with injection treatment of all kinds. This introduces a disturbing factor and makes it extremely difficult to assess accurately the value of the "foreign protein" or other injections. To eliminate as far as possible this source of fallacy we were careful to confine local medication to a mere dermatological placebo—a weak borie ointment—until at least five or six injections had been administered.

**Auto-haemotherapy.**—Ten patients were treated by auto-haemotherapy. This is a method of treatment of recognized value in some of the pruriginous dermatoses, but it would seem to be of no use in psoriasis. The patients received from four to eight injections, at intervals of four days or a week, of 5 c.cm. of their own blood drawn from a vein and injected straightway into the buttock. In no case was there any appreciable improvement. This method does not seem able either to shorten the period of evolution, to influence beneficially the quiescent stage, or to hasten the process of involution or retrogression. Nor does it seem, as has been suggested by some observers, so to act upon the patients as to render them particularly amenable to whatever local treatment might subsequently be applied.

#### *Injection of Vaccines.*

It is beginning to be recognized in "foreign protein therapy," vaccine therapy, and all treatments of the kind, that it is the manner in which the tissues of the patient react, rather than the particular substance injected, which gives the result. There is no recognized relationship between *Bacillus typhosus* and psoriasis. But Engman and McGarry,<sup>1</sup> injecting intravenously doses of vaccine containing 100 to 500 million of typhoid bacilli, brought about a rapid disappearance of the lesions of psoriasis. But relapses were speedy. The results must be attributed to the response of the bodily economy to the violent shake-up produced by the vaccine, rather than to any direct and specific action of the organismal content of the injections on the lesions of the disease.

Similar observations have been made by Scully and Cadbury, while Sutton<sup>2</sup> claims good results from the use of an autogenous colon bacillus vaccine. But Sutton combined with his vaccine therapy active treatment with chrysarobin.

I have not tried typhoid vaccine for psoriasis, but I have used a mixed polyvalent staphylococcal vaccine, in doses of 50 to 100 million hypodermically, in several cases without any appreciable result. In addition Dr. Hunt and I have made a careful trial of a polyvalent mixed vaccine, prepared by Dausz's method from the intestinal flora. We have treated patients with such a vaccine made from their own bowel cultures, and, in addition, we have used a mixed stock entero-vaccine which contained in each cubic centimetre 20 million colon bacilli, 20 million enterococci, besides staphylococci and diplococci of different kinds.

Sixteen cases were treated with this entero-vaccine. Beginning with small doses of 0.2 c.cm., the injections were repeated at intervals of four days or a week in increasing dosage until 1 c.cm. was reached. No single dose was larger than 1 c.cm. In all, the patients received from three to ten injections. Local reactions were slight. Systemic reactions occurred occasionally, usually taking the form of diarrhoea. Occasionally there was a subjective focal reaction, the lesions itching intensely. This subjective symptom we may, I think, interpret as the evidence of a focal reaction not gross enough to produce visible changes in the lesions. In three of the patients there was a

marked indicanuria at the beginning of the treatment, and it is noteworthy, as Dr. Hunt pointed out, that those patients who had indicanuria derived most benefit from the injections.

Reviewing the records of the sixteen cases, we find that in four cases there was a noticeable improvement. In six cases there was no definite improvement. In five cases the patients attended so irregularly that the treatment did not have a chance; and in one case, after ten injections, there was a slight, but definite change for the better. In no case did entero-vaccines alone produce a complete disappearance of the lesions. Their place would, therefore, seem to be, if they are to be conceded a place at all, that of an aid to other treatment, rather than a complete treatment in themselves.

Man in his puny way tinkers at things. When Nature takes a hand in effecting a cure she can act dramatically and with vigour.

In 1922 a nurse, aged 23, who had suffered from intermittent outbreaks of psoriasis from the age of 11, but who had been free for nine months, consulted me about an eruption which had broken out on her wrists and the flexor aspects of her forearms. The lesions were tiny, red, pin-head papules which itched intensely, and which looked like the papules of lichen planus. There were on the first occasion when I saw her no lesions on the "sites of election" of psoriasis. Almost with the rapidity of one of the infectious exanthemata the eruption broke out on the trunk and limbs, the lesions closely resembling in shape and character those on the wrists and forearms. There was a slight rise of temperature during the onset, but it did not exceed 99.5° F. Soon the older lesions on grapple yielded the characteristic signs of psoriasis and over the prepatellar regions and at the back of the elbows there was a characteristic grouping of lesions which quickly became confluent. The patient felt out of sorts, and the intense itching disturbed her sleep. She was put to bed, freely purged, kept on a milk diet, and given 5 minim doses of antimonial wine thrice daily, with calamine lotion as a local application. A week after the appearance of the lesions she complained of a dull ache in the left arm. On examination there was a deep-seated tenderness and some infiltration. She was developing an axillary abscess. As the abscess grew the eruption on her skin began to pale, the intense itching diminished, fresh lesions ceased to appear, and except for the pain of the ripening abscess the patient's condition was much more comfortable. Recognizing in this concomitant septic infection a useful ally, I was in no hurry to open the abscess prematurely. I waited until it had penetrated almost to the surface, and on the twelfth day from the date when she had first complained of pain in the axilla I opened it by Hilton's method. By this date—that is, nineteen days from its first appearance—the eruption had almost completely disappeared, and on the twenty-third day after the first outbreak—that is, four days after the opening of the abscess—the last skin lesion had disappeared. It had been a fulminating outbreak, controlled, subdued, and conquered by a coincident septic process. The patient did not have an outbreak again for close on fifteen months.

With this case I have always associated the boast of an old general practitioner who twenty-five years ago told me that he could cause an outbreak of psoriasis to disappear by rubbing undiluted tar ointment into the hairy parts of the legs or thighs until he set up a violent folliculitis. The cure seems almost worse than the disease, but that shrewd old practitioner had made an observation that is quite in the line of some of our modern practice.

#### *Treatment by "Fixation Abscesses."*

In a mild way I have tried to imitate Nature; but a "fixation abscess," such as was commonly produced by our forefathers in the treatment of pneumonia, puerperal fever, and deep-seated inflammations, is a poor substitute for a violent infection such as the nurse developed. For the purpose of producing "fixation abscesses" I have made use of the preparation known as terpichin. It contains a very pure turpentine, free from rosins and oxides, and in addition a small proportion of quinine, which is said to increase its efficacy, and a local anaesthetic. The dose is 1 c.cm., administered weekly or twice a week. The injections are practically painless. Introduced into the gluteal muscles, terpichin is said to produce small necrotic areas—sterile abscesses.

Fourteen patients were treated with these injections. Seven showed distinct improvement within a few days of their first injection. One of these patients was a woman who previously had had a course of six injections of her own blood, and also a course of injections of intramine, without much, if any, apparent benefit. The improvement noticed in these seven cases after the first injection was



maintained and increased by each subsequent injection. Two patients showed slight improvement after two injections. Two patients ceased attending after the first injection, and one after the second injection. Two showed no improvement after four injections. In no case did terpinchin unaided bring about the disappearance of the eruption, but in a majority of cases—in nine out of fourteen—it exerted a beneficial effect. Its use certainly helps any local treatment that may be employed. It can quieten down the period of evolution, shorten the quiescent period, and promote the rapidity with which the lesions disappear.

For many years I have been persuaded by clinical observation that the administration of sulphur in some assimilable form exercises a curative effect upon psoriasis in all its stages. For the past eight or nine years I have given colloidal sulphur in doses of 1 to 2 drachms thrice daily to patients suffering from psoriasis, and in many cases it has been of indubitable value. But its use has always been combined with some local application of known efficiency.

**Injections of Intramine.**—In my search for a sulphur derivative that could be administered intramuscularly, my choice fell upon di-ortho-amino-thio-benzene, better known, perhaps, as intramine. I had had experience of its usefulness in cases of seborrhoeic dermatitis, so I decided to try it for psoriasis. Fifteen cases have been treated with intramine. The dosage given was 0.75 c.cm. to 1.5 c.cm. once weekly. Two of the patients gave a positive Wassermann reaction; they showed a definite and rapid improvement. Six others began to improve slowly—that is, after the third or fourth injection—and in six no appreciable change was visible, while one woman stated categorically that the injections made her worse. In no case did intramine alone cause a complete disappearance of the lesions. In every case in which it was administered during the evolution of the eruption it hastened the onset of the quiescent stage, and when local treatment was superadded the lesions cleared up fairly rapidly, even in cases where the administration of the injections had produced little, if any, visible effect.

**X Rays and Ultra-Violet Light.**—Brief mention may be made of x-ray and photo-therapy. In the x rays we have a powerful remedy that may be relied upon to cause the disappearance of any patch of psoriasis subjected to their influence. The drawback is that general irradiation with x rays is impracticable; and, further, the treatment is not one that can be repeated with impunity whenever an attack occurs. But in the x rays we have a means whereby we can quickly, safely, and cleanly cause the disappearance of psoriasis lesions from such limited exposed areas as the face, the neck, and the hands. Three-quarters of a pastille dose, repeated if need be at the end of a fortnight, will usually suffice to cause any but the most obstinate psoriatic lesion to disappear. The reaction is, however, an entirely local one, and affects only the lesions irradiated. There is no reaction either in remote lesions or in adjacent lesions which have been protected from the rays. But a caution must be entered. When the skin is actively throwing out psoriasis lesions—when a mere scratch mark upon it will be followed by a trail of psoriasis papules, the unaffected skin is in an extremely sensitive state, and may react violently to radiations which at other times would produce no disturbance. Therefore, the normal skin between the lesions should be guarded; and, if possible, x-ray treatment should not be given during the acute stage.

Generalized irradiation with the x rays is impracticable; but general irradiation with the ultra-violet rays is not only a practical but extremely efficient, rapid, and cleanly method of treating the disease. My experience is that it is useful in all stages of the disease, though in the acute stage it is best to proceed cautiously until one sees how the disease reacts. I have used an air-cooled mercury vapour lamp, and so far I have not encountered a case in which there has not been a prompt and gratifying response to the treatment. One patient in particular deserves mention.

A woman, aged 52, had been a sufferer for twenty-seven years from the most rebellious form of psoriasis I have ever had the misfortune to meet. The only remedy that seemed to have the

least effect on her eruption was chrysarobin—but she had been so disappointed with the fact that though chrysarobin caused her eruption to disappear it had no effect in delaying its return that she refused to use it. Six generalized erythema doses of ultra-violet light at intervals of a week or ten days caused her eruption to melt down from thickened scaly plaques to little more than pigmented areas with scaly borders, and from my experience in other cases I am hopeful that there will be a complete disappearance of her eruption.

According to Jesionek ultra-violet rays exert their greatest influence upon the basal cell layer of the epidermis, and as it is in the basal-cell layer that the keratoplastic changes begin we have in the ultra-violet rays a means of reaching with a fair degree of accuracy the layer in which the pathological changes take origin.

Having touched on several matters that may promote discussion I should like in conclusion to say a word or two on the more orthodox lines of treating psoriasis.

#### Other Methods of Treatment.

First, as to diet. I have kept patients on a pure rice diet till they rebelled vigorously—and their psoriasis remained unchanged. There is, in my experience, no special merit in a purely fruit and vegetable diet in psoriasis; and a purely meat diet, though it is said to have worked wonders in the classic case of Dr. Passavant of Frankfurt, has failed in other cases. I believe that what comes out of the bowel is more important than what goes into the month. Schwartz found that 20 per cent. of patients with psoriasis gave evidence of protein putrefaction in the bowel, and 26.6 per cent. of carbohydrate fermentation. Therefore, keep the bowels freely opened, and, if need be, use high irrigation. A golden rule is to cut down excess both of carbohydrates and of proteins, for in this age everyone tends to eat too much. An ordinary mixed diet, suited to the digestive capacity of the individual patient, is all that is necessary. Tobacco should be cut down, and alcohol absolutely forbidden.

As to general hygiene, the patient should lead a quiet life, free from excesses of exertion, bodily or mental, and frequent baths, either with ordinary soap and water or medicated with sulphur or tar, may be taken.

As for internal medication, I have already mentioned arsenic, sulphur, and antimonial wine; potassium iodide is sometimes useful, and salicin is of undoubted value; it is specially useful in the acute and subacute stages of the disease, and also in the rapidly spreading varieties, as well as in cases associated with arthritis. It should be given in doses of 10 to 15 grains thrice daily, preferably in solution. Most of us, from experience, will, I think, be able to endorse Pernet's opinion as to its value.

Glandular extracts I have found uncertain and disappointing.

Of local applications I need not say much. Doubtless each of you has his favourite ointment or mixture of ointments. I need do no more than mention chrysarobin. Its remarkable powers of clearing up an eruption are indisputable; the method of its use has been stereotyped by custom and experience, and any textbook will supply the details. But it has disadvantages and limitations, and in my opinion an attack of psoriasis cleared up by its use tends rapidly to recur.

Tar in one of its many forms comes next in efficacy to chrysarobin. I think the use of tar delays the return of the eruption for a longer period than the use of chrysarobin. Sulphur, salicylic acid, mercury, each has its place in the external treatment, and pyrogallol acid is specially useful for small obstinate patches.

Time will not permit of my devoting any attention to the regional treatment of the disease, and discussing special remedies for such regions as the scalp or the nails.

A cardinal principle that ought never to be forgotten is to begin with weak concentrations of remedies, and increase their strength as need arises.

I have found the following ointment extremely serviceable—namely, equal parts of tar ointment, salicylic acid ointment, dilute mercury nitrate ointment, and ointment of the glycerole of lead. The proportion of tar ointment may be lessened or increased according to the stage of the disease. There is a rational basis for this polypharmacy for tar and mercury are powerful reducing agents, salicylic acid is keratolytic, and glycerole of lead is hygroscopic.

and soothes inflammation. The ointment is tenacious and adhesive, and requires fairly heavy massage to rub it in. This in itself is an advantage, because massage promotes the lymph flow in the skin and consequently tends to drain the papillae which in psoriasis are always somewhat oedematous. But we must not forget this—our treatment of psoriasis to a very large extent consists simply in removing the visible lesions. The dyskeratosis, which exhibits itself to the naked eye in the reddened plaques covered with micaceous scales, is a mere external expression of some deep-seated pathological change. Of the true nature of this deeper-seated process we know nothing. The microscope reveals histological changes—it leaves us groping for the cause behind them; and we shall continue to grope until the physiologists and the biochemists can tell us a little more about the intimate processes of cell metabolism, and the response of the individual cell in the skin to stimuli from without or within.

As yet we have no remedy that can cure psoriasis; nor, with the exception of chrysarobin and possibly tar, any agents that can cause the eruption to disappear with precision and promptitude. Nor can we prevent the recurrence of the eruption. Indeed, we may say of psoriasis what Horace long ago said of Nature:

*Naturam expellas furca, tamen usque recurret.*

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#### II.—E. F. SKINNER, M.B., F.R.C.P.,

Physician in Charge of the Skin Department, Royal Hospital, Sheffield.

PSORIASIS is one of the oldest known diseases of the skin, and yet in spite of innumerable observations its secret still eludes us. It is, moreover, one of the most striking of the dermatoses, and its frequency and saliency render its mystery all the more remarkable.

In a discussion last year I stated that, in my opinion, many of the dermatoses were pattern-reactions of one kind or another, due to some underlying metabolic change, and that certain skins reacted to changes in cell metabolism with a production of a definite pattern rash—that is to say, an individual whose skin tissues are in any way interfered with biochemically will always tend to show reaction in the skin according to a certain pattern. Psoriasis, I think, pre-eminently illustrates this, since attacks of the disease may be precipitated by the most varying of causes. For instance, I have seen in one patient a severe attack of psoriasis follow a definite trauma to the skin of the leg, an attack which lasted some six months; it cleared up completely, only to be followed about twelve months later by a second attack, which was precipitated by severe mental shock—the patient, a lady, awoke to find herself in bed surrounded by flames, the bedroom having caught fire. It appears to me that the secret of psoriasis lies in some intimate biochemical change in the cells of the growing skin, and until many more chapters have been written on the subject of the cell colloids our understanding of various rashes which constitute the dermatoses must remain incomplete. Any treatment, therefore, of one of these rashes must be entirely empirical and dependent on past experience, and in approaching the discussion of psoriasis it may be useful to take one or two well recognized therapeutic measures and compare them in detail rather than to refer to several methods, many of which are of recent origin.

Chrysarobin and x rays have now taken their place as reliable allies, and the method of comparison has been as follows. I chose a certain number of cases of psoriasis as nearly as possible in the same state and of the same type, submitting one group to the routine chrysarobin treatment and the other group to x rays. The dose of this was one-third of a pastillo dose over any single area; many areas were treated at one sitting, the intervals between them being seven days. Both groups were kept

under the same conditions of environment, rest, diet, etc., and no internal remedies of any kind were employed. Photographs were taken before, during, and after the completion of the course of treatment, and biopsies were made in all cases from the same area of the body (front of the thigh) to ensure a comparable skin architecture.

In my opinion chrysarobin gives the most satisfactory results; its effects are more quickly produced and last much longer, and I am quite sure that anyone who cares to master the few rules of chrysarobin treatment can confidently attack any case of psoriasis with a fair hope of success.

[Dr. Skinner here showed a number of slides illustrating the results of his treatment.]

I think it will be found that a very widespread chronic eruption of psoriasis can be removed entirely within the space of three or four weeks by the careful use of chrysarobin; and further, that a similar result is obtainable with x rays, though it requires a much longer time. The interval of freedom in the latter cases would seem to be much shorter.

I would now like to present to you my conception of the manner in which these two therapeutic agents exert their influence, deduced from the histological appearances of the skin during the various stages of the treatment. Deductions from histological appearances are open to the objection that such changes are poor indications of the nature of intimate biochemical processes; but the ruins of a house will give some indication as to the nature of the destructive agent and in what direction its forces have been exerted, and similar deductions can, I think, be made from a study of sections of skin.

I am of opinion that the vital change in psoriasis is one which occurs in the epidermis, and is represented by a rapid and irregular growth of the prickle-cell layer showing itself by an invasion of the derma. It is difficult to look at the irregular finger-like processes of the Malpighian layer without being driven to the conclusion that these cells are actively invading the derma. This may be the result of a varying resistance in the subpapillary layer of the skin, the interdigital areas representing peaks of greater resistance. It may be suggested that this hypothetical resistance results from the varying vascular conditions obtaining in the papillary layer, and may be due to differences in oxygen tension in different parts of the vascular bed in this situation. But whatever the explanation there can be little doubt of the altered vascularity, since the dilatation of the venous channels in the papillae is easily seen. This engorgement causes exudation of serum and a few leucocytes, giving rise to the spongiosis of the epidermis and the so-called "miliary abscesses" in the upper layers of this structure.

The histological changes are very definite, and it seems to me that they must bear some relation to the marked change taking place in the clinical condition. Although I have examined only a few cases for the purpose of this discussion from this point of view, I cannot help thinking that a possible explanation of the action of chrysarobin other than the usual unsatisfactory one of a germicide may be adduced. It has been shown many years ago by Stricker, and more lately by McDowell and Hemmingway, that the abstraction of oxygen brings about constriction of capillaries. Chrysarobin is admittedly a very powerful reducing agent, so that it appears reasonable to consider the action of chrysarobin as one of abstraction of oxygen from the capillary loops, whether it is easily conveyed by inunction, bringing about an immediate constriction in the previously dilated channels. Such constriction will have as a result an increase in the vascular resistance throughout the rest of the derma, with a consequent resultant inflammatory exudate both of cells and serum. This will in consequence raise the intradermal tissue pressure and the invasion of the epidermal line will be straightened out. Not only is this line straightened out but the pressure is increased beyond the normal and the epidermis is actually driven back. I would venture to suggest, then, that the essential change in psoriasis is brought about by a lessening in the intradermal pressure and seems to be associated with an altered oxygen tension in the capillary venules.

What brings about the ill balance between the epiderm and the derm is the secret of psoriasis, and will doubtless be found eventually in cell electrophysies; but the action of chrysarobin is definite and points to a readjustment of this balance. The action of  $x$  rays is apparently very similar, at any rate so far as the histological appearances go, but I do not know sufficient about the chemical effect of such rays to suggest that they also act by an abstraction of oxygen from the tissues.

With regard to other methods of treatment I can only record a very brief experience. Arsenic in my hands, given to the limit of tolerance by the mouth, or by intravenous administration of arsenobenzol compounds, has proved disappointing, nor have I ever seen any results from administration of thyroid extract, except in one young woman whose psoriasis was connected with pregnancy and in whom exhibition of the gland extract certainly appeared to have a very decided influence.

In spite of Dr. MacKenna's statement to the contrary, I have found no benefit from ultra-violet light therapy, though I admit that my experience in this has been very slight, and I should be delighted to hear the opener's views corroborated, as any method of light therapy which can be applied over a large area has obvious advantages over  $x$  rays.

I would summarize my conclusions as follows:

1. Psoriasis may be treated with some prospect of success both by chrysarobin and  $x$  rays, the effects being produced more quickly and lasting longer by the former method.

2. Both remedies appear to produce the same histological picture—namely, a remarkable flattening of the papillary body and a probable increase in the intradermal pressure, which suggests that the cause of psoriasis may be a process which lowers the general dermal resistance.

#### GENERAL DISCUSSION.

Dr. W. Dyson (Manchester) said that, in his opinion, the first and most important line of treatment was rest. In his experience diet had little or no influence on the disease, but he always insisted on the absolute prohibition of alcohol in every form. As regards drugs, he found that salicin was most useful in the acute irritable stage, and arsenic when the inflammation had subsided and in the more chronic types of the disease. He had not seen any benefit from thyroid extract unless given in doses sufficiently large to make the patient ill. Locally, in addition to chrysarobin and tar, which Dr. MacKenna had mentioned as the most useful applications, he should like to add pyrogallol acid. Tar had the disadvantage that its long-continued use was apt to cause a pustular folliculitis and obstinate furunculosis. He had had no experience of haemotherapy as a treatment for psoriasis;  $x$  rays he no longer used, although he had done so in the past, as he found it gave no better results than other remedies and it entailed some risk to the patient. He had used injections of various bacteria—*B. coli communis*, typhoid bacilli, and staphylococci; they certainly had some influence on the disease, but he had never been able to clear a case by this method without the aid of local treatment. He did not think that it made any difference to the results obtained whatever species of micro-organism was employed. Lately he had been in the habit of using, after he had cleared a case by the usual methods, and for the purpose of preventing recurrences, a polyvalent staphylococcal vaccine (1 c.cm. = 1,000 million staphylococci) detoxicated by being heated for half an hour at 70° C. He gave a dose of 1 c.cm. and repeated it every three months, being of opinion that it diminished the chances of recurrence. In some cases this method failed, possibly owing to wrong dosage, or wrong length of interval between the doses in the individual case.

Sir NORMAN WALKER found himself in agreement with the opinion that a great many of the recently vaunted remedies had not stood the test of experience. He thought that Dr. MacKenna was too pessimistic about the old Fowler's solution. For years the speaker had taught that arsenic was certain to do harm in acute cases, and he had advised his students never to use it in such, but a pub-

lished opinion of Dr. Whitfield's to the contrary made him reconsider the matter. The results of his experiments were that quite a number of patients to whom previously he would not have ventured to give arsenic were greatly benefited. Sir Norman Walker was interested in Dr. Whitfield's reference to  $x$  rays and ultra-violet light. Many years ago Novins Hyde had argued that psoriasis was one of the prices of civilization, and that it was hardly known among negroes living in uncivilized conditions in Central Africa. Hyde had constructed in Chicago glass house (dim glass houses) on the top of a sky-scraper building where patients were exposed to such rays of light as penetrated the glass. He claimed that the effects were quite remarkable, and, when it was first noticed that  $x$  rays could cause patches of psoriasis to disappear, the possibility occurred that some rays were common to  $x$  ray and sunlight and that to these the benefit might be due. In the days when ladies' blouses were known as "peek-a-boo" the speaker had observed that the very large V which they often exposed was an area which was generally free from psoriasis. Dr. MacKenna seemed almost to prefer tar to chrysarobin. Sir Norman Walker agreed with him that the effects of tar lasted longer than those of chrysarobin unless the latter was very efficiently used. But he should not forget that the skin showed idiosyncrasies to remedies as well as to accidental irritants, and that a person whose skin was irritated by pine tar might be benefited by birch or coal tar. Like Dr. MacKenna, he had not found that diet, however unpalatable it might be made, could be depended on to give much help, but he agreed with him still more cordially in the remark that alcohol always did harm. Patients who had psoriasis should be total abstainers. Dr. Skinner's demonstration had been most interesting, and, to one who had long pinned his faith to chrysarobin as the most efficient treatment, it was very gratifying to find so valuable a recruit demonstrating its effects so strikingly. The first outbreak of psoriasis should always be treated seriously, and the same care and attention should be given as in the case of an acute illness; the child should be put to bed and treated until the eruption had disappeared. If that were always done, there would be far fewer cases of recurrence, and there would also be fewer if patients did not somehow get the idea that psoriasis was bound to recur.

Dr. MacKENNA replied very shortly, and the proceedings of the Section terminated with a hearty vote of thanks to the President.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### RECOVERY AFTER MASSAGE OF THE HEART.

I READ Mr. Girling Ball's article, in your issue of April 24th (p. 732), with much interest. About eighteen months ago I had a somewhat similar experience, which I only refer to now as it may have some bearing on Dr. Harrington Sainsbury's letter (May 22nd, p. 883) relative to Mr. Girling Ball's case.

A man, aged 40, was admitted to the Royal Infirmary, Dumfries, on November 27th, 1924, with a history of persistent vomiting. There was nothing in the history or the clinical examination which pointed to a definite diagnosis, and  $x$ -ray examination was negative. Nothing abnormal was found in heart, lungs, or secretions. I performed exploratory laparotomy on November 30th. My house-surgeon, Mr. M. C. Wright, gave chloroform, and the patient took the drug well. I thought the stomach was normal in appearance and size, but detected something abnormal, round and hard, behind it. On lifting the omentum, transverse colon, and stomach forward, I found a hard gland, with rough uneven surface, about the size of a Tangerine orange—probably the product of an old tubercle mesenterica—lying fixed in the tissues of the root of the mesentery, in the duodeno-jejunal angle. At this point, without the slightest warning, the patient's heart and respiration absolutely stopped. His colour was ashen grey, the conjunctivae were dry, the pupils dilated and fixed. The usual restorative measures were adopted—head lowered, tongue brought forward, artificial respiration, warm fomentations, chest wall over the heart, etc.

It was soon apparent that these measures were hopeless, and I had thus wasted several minutes before I enlarged the wound in the abdominal wall and massaged the heart through the

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diaphragm. The heart was still and flaccid, but after a considerable interval (about two minutes) it began to beat—very feebly at first, but gradually increasing in strength. The respiration started again soon after the heart. Warm applications were maintained on the chest wall, and I dissected away the gland. This took some time, fully half an hour, as the tumour was very adherent to surrounding structures, mesenteric vessels, etc. The patient remained quite well till the end of the operation and I had no further anxiety about him. He was discharged from hospital three weeks afterwards quite well and has remained so.

I now come to the point in Dr. Sainsbury's letter. Mr. Girling Ball injected adrenaline into the heart muscle, and Dr. Sainsbury inquires whether that was not the chief agent in the recovery of the patient, and not the heart massage.

I injected no drug into the heart muscle, or elsewhere. No doubt adrenaline may be useful by itself, or as an adjuvant, in some cases of heart failure. The prick of a needle alone may also be useful. Possibly adrenaline should always be used along with heart massage, as in Mr. Girling Ball's case, but, of either alone, I believe heart massage is the more dependable in such cases. The surgeon must make up his mind quickly as to the extreme gravity of the case, and act early, if such extraordinary measures as heart massage or injections of adrenaline are to be of any avail.

It would perhaps be unwise to make any definite statement as to lines of treatment in such cases. The cause of the heart failure may be obscure and very different in one case from another. Even research would not promise much, because obviously it would first be necessary to reproduce syncope as it occurs on the operation table and in similar circumstances, which would be difficult.

ROBERT M. GLOVER, M.B., F.R.C.S. Ed.  
Dumfries.

**NERVE ENLARGEMENT IN LEPROSY.**  
The diagnosis of advanced leprosy is not difficult, but very often by the time the disease is recognized the patient is permanently deformed and beyond the possibility of cure. The following three cases are published to lay stress on the importance of enlargement of nerves in leprosy. When a nerve is grossly enlarged it is not an uncommon experience to find that it is the only nerve affected; unless the possibility of one superficial nerve being grossly enlarged in leprosy is recognized the disease may not be diagnosed. Two out of the three cases reported were not diagnosed.

**Case 1.**—An Indian male complained of a swelling on the inside of the arm; it was about an inch in diameter, and was attached to the ulnar nerve, which was extremely thick, but not to the skin; fluctuation could be elicited. Along the outer side of the left hand, in the distribution of the affected ulnar nerve, was an area of depigmentation with anaesthesia. The history given was that a depigmented anaesthetic patch appeared on the outer part of the dorsum of the hand; this was followed about three months later by the appearance of the swelling described above. It had the appearance of a neuro-fibroma. On the diagnosis of leprosy being made the patient was frightened, and went to another doctor, who, being doubtful of the diagnosis, was found on opening the supposed fibroma a semi-neurotic mass was found in connexion with the ulnar nerve, such as is typical of the disease. Unfortunately the patient disappeared, and his subsequent history was not ascertained.

**Case 2.**—A well-to-do Indian male, who had been in a good leprosy hospital for some time with extensive anaesthesia along the ulnar aspect of the right hand, and depigmented patches on the back, complained of acute pain and swelling of the ulnar nerve, which was very thick and very tender and tense. The skin near the internal epicondyle became red and hot, and as an abscess was suspected the nerve sheath was opened; nothing, however, was found, except a very large thickened nerve. On treating by rest in a splint, and 10 grains of phenacetin at night (30 grains every four hours), and the acute reactions the pain and inflammation gradually subsided, and the patient was able to use his hand again. During the acute reactions the subcutaneous injections of hydnocarpus oil were discontinued, but subsequently resorted to, and the patient improved that permanent changes set in as the result of the formation of scar tissue in the nerve sheath.

**Case 3.**—A Burmese had had leprosy for three months so far as he knew. He complained of a swelling in the neck, which was found to be an enormously enlarged great auricular nerve; it was as thick as the little finger, the swelling was uniform down to the point where it disappeared behind the sterno-mastoid muscle; it was hard and tender to pressure, but there was no fluctuation. In addition, there was a raised erythematous patch

over the right eyebrow, and another similar rash at the angle of the nose. On examination of these areas for *Microbacterium leprae* a few were found. The nasal secretions, however, were not positive.

While enlargement of the great auricular nerve is common in India, Burma, and Siam, this is the largest I have yet seen. In other countries, particularly the Philippines, enlargement of the great auricular nerve is not commonly seen to any extent. Case 3 was not diagnosed as leprosy at first; therefore it is important to look upon any enlargement of a superficial nerve with suspicion in countries where leprosy is endemic.

ROBERT G. COCHRANE, M.B., M.R.C.S.,  
D.T.M. and H.  
Medical Secretary for the Mission to Lepers.

## NITROUS OXIDE ANAESTHESIA: STATUS EPILEPTICUS: LUMBAR PUNCTURE: RECOVERY.

The paper by Professor Ernest Glynn in the *Journal* of May 29th (p. 895), reporting a death due to fulminating pneumonia after nitrous oxide anaesthesia, has recalled the following case to my mind.

A girl, aged 14 months, on June 4th, 1925, attended the outpatient department of the David Lewis Northern Hospital, Liverpool, with a small submental abscess. At 6.15 p.m. nitrous oxide anaesthesia was induced at the urgent request of the parents, but before the incision could be made the child entered into a state of status epilepticus. I admitted the child to children's ward at 7 p.m. A hot mustard bath was given, and 6 ounces of normal saline with 1 ounce of glucose and 1 drachm of brandy were administered by the rectum. As the fits continued I withdrew, at 8.15 p.m., by lumbar puncture, 15 c.cm. of cerebro-spinal fluid under pressure. Chlorotone gr. v was given by the mouth. At 11 p.m. the temperature was 107° and the child vomited twice, a trace of blood being present. Tepid sponging was resorted to. A rectal enema (the other had not been retained) produced only a clear fluid result. At 2.30 a.m., as the fits continued, the same dose of chlorotone was repeated and chloroform anaesthesia induced. The patient slept for four hours, and at 9 a.m. was greatly improved and unconscious. Two days later the submental abscess was opened without an anaesthetic, but on June 9th nystagmus to the left and twitching of the left side occurred; on the following day the hands assumed the accoucheur position. Acetone was present in the urine and glucose was being given at this time. At 5 p.m. 20 c.cm. of cerebro-spinal fluid were withdrawn under pressure. Neither this nor the previous specimen contained organisms; the Wassermann reaction was negative. Under treatment with chlorotone, calcium lactate, and glucose the patient improved, and a few days later was discharged in good health.

The case appears to add weight to the rule that anaesthetics in very young children are best avoided, if possible. I am indebted to Dr. J. Murray Bligh, physician to the department for children's diseases, for permission to publish this case.

C. W. HEALEY, M.C., M.B., M.R.C.S.  
Liverpool.

## RASH IN SCARLET FEVER DELAYED TILL THE FIFTH DAY.

The following remarkable case of delayed appearance of rash in scarlet fever is considered to be of sufficient interest to merit publication.

A child, aged 2½, was admitted to St. Mary's Hospital, Paddington, on June 7th, for cleft palate. Before the operation could be performed the ward had to be closed on account of an outbreak of measles. Further cases occurred and the ward remained closed. No visitors were admitted.

On July 2nd the patient had a temperature of 105°, which was maintained, with slight variations, for five days; on the fifth day it dropped slightly, and a faint erythematous rash appeared chiefly on the legs, abdomen, and back. There was marked circumoral pallor, some evidence of sore throat, and the child had the general appearance of a case of scarlet fever. The rash apart from its distribution, was typical, and I sent the child to the fever hospital. Next day (July 8th) I telephoned to the medical officer, who informed me that the rash had developed into well marked distribution of scarlet fever, and was beginning to peel, and that there was no doubt about the case being one of scarlet fever.

The interesting point, of course, is that there were no signs before the fifth day, except the temperature. I have never before heard of a rash being delayed so long as this. The child was well examined every day.

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## Reviews.

### LEAD POISONING.

It has been known for some time that a band of workers in Harvard University and the Massachusetts General Hospital, headed by Dr. Aub, was trying to solve some of the problems connected with lead poisoning. The monograph on *Lead Poisoning*<sup>1</sup> is the outcome of their labours, and is an excellent illustration of what team work can accomplish. Plumbism is an interesting study, but with too many ramifications for any one individual student to follow up. Gaps in knowledge are being gradually filled, and to that the researches of Dr. Aub and his co-workers have materially contributed. The subject is approached by them more from the chemical and physiological points of view than from the clinical. The inquiry is mainly concerned with the reaction of lead in the body. There is generous recognition in the book of the work done by British, French, and German writers, also by American contributors, in the field of industrial plumbism.

The detection of lead in inorganic compounds is, chemically speaking, easy, but the same cannot always be said when the metal is combined with organic material. Before tests can be applied the organic material must be destroyed. Sulphuretted hydrogen may thereafter throw down a black precipitate in an aqueous solution, but if serum be present it will only give a wine-red colour. Yet the authors maintain that when the technique described in the monograph is applied, 1 part of lead in 10,000,000 parts of urine may be detected. Various methods of testing for lead are described, including the colorimetric, the electrolytic, the chromate, and the microchemical.

Most of the ordinary lead compounds are soluble in the gastric juice, but in varying degrees: the carbonate has a solubility of 40 per cent., sulphate 9.5, and natural sulphide 2.5. These varying solubilities indicate how readily plumbism may occur when the metal enters the body by the gastro-alimentary canal, but while this is a common route probably the larger bulk of industrial lead poisoning is a consequence of absorption of dust through the respiratory tract. The fine dust, for example, given off during the dry sand-papering of a lead-painted surface is, when inhaled, a fruitful source of poisoning. The amount of lead in the blood at any time is small, so that its isolation and identification are difficult. The authors lean to the view that the absorbed lead is present in the form of colloidal phosphate rather than alkuminate, as suggested some time ago by Sir Thomas Oliver. The slow accumulation of lead in the body and its deposition in the bony tissues provide the opportunity to the authors of drawing attention to the formation of lead phosphate. They have found that under equilibrium conditions di-sodium phosphate and lead chloride react to form di-lead phosphate; also that, when the two reacting substances are first mixed, tri-lead phosphate is formed. The presence of any localized acid product transforms the tri-lead salt to di-lead phosphate. It is these two salts—the tri-lead and di-lead hydrogen phosphates—which are of interest, since the one can be transformed into the other within the body, and thus influence the health of the individual.

Most are familiar with the fact that lead can be stored within the body without giving rise to symptoms, until through some defect in the diet, or the presence of infection, the reaction of the tissues becomes altered, and a larger amount of lead appears in the circulation. In the blood of animals fed with lead salts only a few thousandths of a milligram may be found so long as the animal remains in apparently good health; but when acidosis develops the amount of lead circulating in the blood becomes increased. In a fatal case of lead encephalopathy in a man there were found 2.8 mg. of lead per litre of blood, equal to 3.64 mg. of tertiary lead phosphate. The Harvard research workers are of the opinion that the bulk

of the colloidal lead phosphate is held by the plasma, and that little is carried by the blood corpuscles. In the case of a rabbit poisoned by lead the amount of lead in the blood amounted to 0.75 mg.; of this 0.53 mg. was in the plasma and 0.16 mg. in the red corpuscles; in other words, 80 per cent. was held by the plasma. When a soluble salt of lead is added to blood serum a precipitate is formed which the authors state may probably be lead alkuminate, but this white precipitate soon dissolves, for it is sensitive to changes in acidity. Prévost and Binet in 1869 taught that the lead present in the bones of animals experimentally poisoned by lead was in the form of phosphate. Owing to the small amount of the metal present—10 to 20 mg. in 150 grams of bone—Aub and his colleagues admit that it has been impossible to separate the lead compound so as to identify it absolutely as phosphate. The chemical problems connected with this aspect of the question have been, however, most carefully studied by them.

The three channels by which lead enters the system (the skin, respiratory tract, and alimentary canal) are considered and contrasted. While the principal channel is the respiratory, it is difficult to exclude simultaneous absorption by the alimentary canal. When absorbed through the respiratory tract lead gains entrance almost directly into the blood stream, but when swallowed part of it is eliminated in the faeces, while soluble particles which are absorbed may be held up in the liver. It is thus, as Legge properly maintains, that work carried on in dusty lead processes becomes so dangerous; moreover, poisoning through the respiratory tract occurs more rapidly.

It is in the skeleton, as already stated, that Aub and his colleagues have found lead deposited in largest quantities. The circumstance is interesting, for, although it might be expected that the metal would become specially fixed in the marrow, this is not the case, since the greater amounts were found in the solid portions of bone, usually in the form of tertiary phosphate. The authors confirm the statement made by previous writers as to the comparative absence of pathological changes observable *post mortem*, even where well marked symptoms were in evidence during life, and they affirm that incorrect conclusions have frequently been drawn from autopsies revealing lesions characteristic of conditions other than lead poisoning. It is an equally interesting circumstance that, while the liver bears the brunt of comparatively large quantities passing through it, the opinion expressed by Oliver is confirmed that *post-mortem* examination of the liver by the naked eye reveals no changes which can be regarded as specific for lead. Mention is made of the minute haemorrhages found by Mott, Legge, Goadby, and Courtney in the perivascular spaces in the brain; also of the examination of the cerebrospinal fluid by Mosny of the Hôpital St. Antoine, Paris, and by Malloizel. Experimentally lead is shown to alter rather the surface of the red blood corpuscles than to exercise any special influence upon their contents. While "stippling" of the red corpuscles is dealt with, the presence of punctate basophilia in the blood cannot be regarded as a specific sign of plumbism. It occurs in pernicious anaemia, leukaemia, and in the anaemias associated with the presence of neoplasms in the body; but in these conditions basophilia is slight compared with what it is in lead poisoning. The authors describe the symptomatology of plumbism, and allude to Ocker's treatment by the daily intravenous injection of sodium hyposulphite (0.6 gram); they state also that in their hands the intravenous injection of calcium chloride, 15 c.cm. of a 5 per cent. solution, slowly administered, promptly relieved colic.

It is appropriate that the closing chapter of the book should have been written by Dr. ALICE HAMILTON. She deals with the prevalence of industrial lead poisoning in the United States. Her work in this direction is not less well known and appreciated in Great Britain.

The book is a record of investigations thoughtfully organized and carefully carried out. As these cover ground hitherto largely untouched, valuable information has been gained which will be of the greatest assistance to all who are interested in the problems of lead poisoning, and to that end the well prepared and extensive bibliography will also contribute.

<sup>1</sup> *Lead Poisoning*. By Joseph C. Aub, Laurence T. Fairhall, A. S. Minot, and Paul Reznikoff. With a Chapter on the Prevalence of Industrial Lead Poisoning in the United States by Alice Hamilton. *Medicine Monographs*, Vol. VII. London: Baillière, Tindall and Cox; Baltimore: The Williams and Wilkins Company. 1926. (Med. 8vo, pp. x + 265; 35 figures, 16s. net.)



RADIATION IN EMBRYOLOGY AND  
GYNAECOLOGY.

PROFESSOR DORLAND and Dr. HUBERT of Chicago have produced a very beautiful volume entitled *The X-Ray in Embryology and Obstetrics*.<sup>2</sup> Dr. George W. Bartelmez contributes a short introductory chapter on the nature of the x rays and upon their physiological action. The authors then proceed to a general discussion of the influence of x rays and allied radiations upon living tissue. It is important to notice that, in the view of these experts, their application in pregnancy is not without an element of danger to the unborn infant. Naturally, the danger is greatest where radiation is employed in the early months. Radiation during late pregnancy is not likely to produce gross deformities or abnormalities in the child at birth, but it may ultimately cause retardation of growth subsequent to birth. A short exposure for purely photographic purposes in the later weeks is not likely to have any bad effect upon the child. In the next six chapters the development of the embryo as revealed by x rays is discussed systematically. This is a most valuable portion of the work, and will be read with interest and profit by surgeons and physicians, as well as by obstetricians and radiologists. The x-ray photography of the vascular system in different organs provides a fascinating study. The employment of x rays in the investigation of the maternal pelvis is next discussed, and various methods are explained and illustrated. The diagnosis of normal and abnormal pregnancy and the various forms of pelvic contraction are fully dealt with and illustrated. Then follows a chapter on the diagnostic value of x rays in teratogenesis, and several chapters upon different varieties of foetal monstrosities, with x-ray photographs, showing the nature of the skeletal deformities.

The volume, as has been said, is beautifully illustrated throughout, and the authors and publishers alike are to be congratulated on the illustrations. The authors appear to have based their conclusions on sound data, and do not attempt to claim too much. The result is that their book is stimulating, and should do much to encourage further study along similar lines. It is a mine of information into which workers in all branches of the medical profession may delve with profit.

## NUTRITION AND METABOLISM.

We have received a copy of *Lectures on Nutrition*,<sup>3</sup> which contains a series of six given by well known authorities at the Mayo Foundation and the Universities of Wisconsin, Minnesota, Nebraska, Iowa, and Washington (St. Louis). As is pointed out by Dr. Louis B. Wilson in the introduction, the lectures contain a large amount of fresh and interesting information without attempting to cover in detail the entire subject of nutrition. Dr. F. G. Benedikt, who contributes the first lecture, entitled "The measurement and significance of basal metabolism," shows that basal metabolism, while undeniably in a state of flux and subject to the influence of factors other than those of age, is a very good index of the general state of vital activities, and as the result of the introduction of simplified methods can be determined by a much simpler technique than that for counting the blood corpuscles. In his lecture on "Problems of metabolism" Professor Graham Lusk, after an interesting historical introduction in which he jocosely remarks that inadequate knowledge of the older literature is one of the problems of metabolism requiring treatment and cure, discusses the variability of heat production, the relation of heat production to surface area, the effect of protein and protein derivatives on heat production, and the metabolism of fat and carbohydrate, terminating with the practical application of glucose in cases of nervousness and prostration. Professor Eugene F. Du Bois, who in the following lecture discusses the proportions in which protein, fat, and carbohydrate are metabolized in disease,

especially in typhoid fever, tuberculosis, and circulatory and renal disorders, maintains that there is no valid reason for the protein-free diet sometimes advocated in the two last named diseases. Muscular activity and carbohydrate metabolism form the subject of a lecture by Professor A. V. Hill, who presents several instructive charts indicating the effect of exercise on metabolism. In his lecture on our present knowledge of vitamins, Professor E. V. McCollum gives an admirable survey of the subject, and indicates the role which vitamins play in influencing metabolism. The relations between fertility and nutrition are discussed in the last lecture by Professor H. McLean Evans, who brings forward evidence of the existence of vitamin E, the absence of which gives rise to sterility. A bibliography of recent literature is appended to each lecture.

## THE MIND OF THE YOUNG CHILD.

"A psychological outline of normal development from birth to the sixth year, including a system of developmental diagnosis" is the subtitle of a book entitled *The Mental Growth of the Pre-School Child*,<sup>4</sup> written by Dr. Arnold Gesell, the director of the Yale Psycho-Clinic. In his introductory remarks he states that in observing the young child his object is to bring the familiar and the scientific into closer relation. The purpose of this rather bulky volume is to report the data gathered during investigations on some 500 children. The material is arranged in four parts, of which the first three are mainly descriptive and interpretive. A description is given of the gradual development of motor power, language, adaptive behaviour, and personal-social behaviour, and reproductions of action photographs show various stages in development. Part IV deals with practical applications in developmental diagnosis, and an attempt is made to devise an adjustable clinical instrument. Though the physical needs of school children have received considerable attention, it is only now being realized that the needs of the pre-school child, both physical and psychological, should receive more attention. Behaviour is considered as the functional index of developmental maturity. The neurone pattern concept is used as a formula to assist interpretation and observation. "The mental development of a baby becomes somewhat less elusive if we regard the progress of his attainments and his propensities as the maturation of both inborn and acquired neurone patterns." Interest in development is universal, and now, thanks to the rapid multiplication of infant welfare centres, interest in the health of children is increasing. It is probable, therefore, that in the near future health examinations will broaden into developmental examinations, and include a psychological inquiry into the health, habits, dispositions, capacities, and personality traits of the child. Helped by medical teaching, parents may then be able to assist the child to achieve mental as well as physical health. To those interested in such possible developments the summary of data given in this book will prove useful.

## NOTES ON BOOKS.

Dr. W. J. Stone's handbook on *Blood Chemistry Colorimetric Methods* is addressed to the general practitioner. Since a second edition<sup>5</sup> has followed the first in two years we must believe that the author has not wooed in vain, though we find it difficult to believe that any considerable body of medical men will be persuaded to institute their own laboratories and adventure on a path which is as yet poorly prospected. The new edition has swollen both in bulk and in price. The price, indeed, will appear high to those whose traffic in medical books has not extended to those made in America, since the book is but a modest labour, and its production, though attractive, is not—it has no cause to be—sumptuous. The usual colorimetric methods for the determination of the chief constituents of blood are included, together with clinical comments on diagnosis. Particularly we note a discussion

<sup>2</sup> *The X-Ray in Embryology and Obstetrics*. By W. A. Newman Dorland, A.M., M.D., F.A.C.S., and Maximilian John Hubert, M.D., F.A.C.R., F.A.O.P. London: H. Kimpton, 1925. (7x9½, pp. xv+420; 254 figures. 50s. net.)

<sup>3</sup> *Lectures on Nutrition*, 1924-25. Philadelphia and London: W. B. Saunders Company, 1926. (Post 8vo, pp. 243; 22 figures. 12s. net.)

<sup>4</sup> *The Mental Growth of the Pre-School Child*. By Arnold Gesell, Ph.D., M.D. New York: The Macmillan Co.; London: Macmillan and Co., Ltd. 1925. (Demy 8vo, pp. x+447; 225 figures. 15s. net.)

<sup>5</sup> *Blood Chemistry Colorimetric Methods*. By Willard J. Stone, B.Sc., M.D. Introduction by George Dock, M.D. Second edition, revised. New York: P. N. Hoesber, Inc. 1925. (Med. 8vo, pp. x+123; 7 figures. 3.25 dollars net.)



## THE INTERNATIONAL PHYSIOLOGICAL CONGRESS AT STOCKHOLM.

(Concluded from page 517.)

THE twelfth International Physiological Congress ended with a meeting in the Hall of the University of Upsala, to which the members were taken from Stockholm by a special train. Here, after an address of welcome from the Rector of the University, invitations for the next congress, in 1929, were read from Milan and the United States of America; after a little discussion the meeting decided to accept that from America.

Upsala, the oldest and largest university in Sweden, possesses spacious, well equipped laboratories of physiology, anatomy, pharmacology, and chemistry. Stockholm has no university, but several independent institutes, notably the Caroline Institute of Medicine, which has small but exceptionally well equipped laboratories. The only other university in Sweden is at Lund, which, unfortunately, there was no opportunity to visit. The meetings of the congress were all held in the Stockholm City Hall and the demonstrations in the Carolus Institute.

### *The Parathyroid Hormone.*

Of the papers read bearing more or less directly on medicine, perhaps the most important was that of Collip (Edmonton, Canada) on the parathyroid hormone. His conclusion is that tetania parathyreopriva is due to a hypocalcaemia, and that injection of an extract of the parathyroid gland increases the concentration of calcium in the blood and arrests the tetany. Injection of the extract into normal animals sets up a hypercalcaemia and results in death in forty-eight to seventy-two hours; large amounts of calcium are then found in the kidneys, heart, and liver, as well as in the blood. Collip recommends as treatment for tetany, both post partum and resulting from parathyroidectomy, the raising of the blood calcium to a normal figure by injection of parathyroid extract, and then its maintenance by calcium lactate.

### *Diabetes.*

Several papers were read on the subject of diabetes; notable among them were that by Peserico (Milan), who has shown conclusively that the tissues of a diabetic animal can burn sugar; and those by Mansfeld (Pérez) and Voronoff (Paris) on the operative treatment of diabetes. Mansfeld prevents about one-third of the pancreas from secreting the digestive juices, with the result that the internal secreting glands hypertrophy, so that normal animals operated on in this way get a hypoglycaemia. Voronoff has succeeded in grafting the pancreas of one dog into another previously depancreatized and with severe glucosuria; complete recovery resulted.

### *Sex Reversal.*

Pézar (Paris) reported an interesting observation with regard to sex reversal in fowls. By implantation of varying amounts of testicular substance into ovariectomized hens, he has shown that there is always a complete sex change or none at all—that is to say, that implantation of half the amount of testicular substance that is just sufficient to give a sex reversal does not give a partial reversal; it has no effect. The sex of the birds was very ingeniously determined by implantation of a comb on the back—in a male the graft takes and the comb grows to a full size; in a female it atrophies completely.

### *Ovarian Transplantation.*

Voronoff and Didry (Paris) read a report on what may prove to be a very important piece of work, although considerable scepticism was expressed at the meeting. They have transplanted a human female ovary into a female chimpanzee, previously ovariectomized, with the result that normal menstruation returned. They then fertilized this chimpanzee with human sperm, and menstruation ceased, so that they now await the birth of a human child. Even if this actually occurs there is no doubt that confirmation in other laboratories will be required before the explanations given can be fully accepted.

### *Some Other Papers.*

Koppanyi (Chicago) gave an account of experiments showing that regeneration of the central nervous system is possible in fish, larvae of amphibia, and embryonic and young rats. Mann (Rochester) read a summary of his observations on the results of extirpation of the liver, in which he states that there is a decrease in blood sugar, no formation of urea or deamination, uric acid is not destroyed, and that there is no change in the formation of bile; and Howell (Baltimore) described the results of his attempts to determine the constitution of the anticoagulant heparin. It appears to be largely glycuronic acid, and there is no nitrogen or phosphorus. He stated also that haemophilia is due to the platelets not breaking up on coming into contact with foreign bodies; there is no lack of prothrombin.

### *Demonstrations.*

The two most important demonstrations were those of Mrs. Kerridge (London) on the glass electrode method of determining the hydrogen ion concentration of solutions, and of Yandoll Henderson (New Haven) on the ethyl iodide method of determining the rate of circulation of the blood. The determinations by the glass electrode are rapid, taking about two minutes, are independent of the nature of the solution, and are very accurate. The apparatus is portable, and is to be put on the market by the Cambridge Instrument Company.

### *Distractions and Gratitude.*

As a relaxation the congress made an expedition to Saltsjöbaden, the pleasure resort of Stockholm—a place of pine trees and granite islands, on an arm of the Baltic sea—in two specially chartered steamers. Here the members bathed, dined, and danced.

In this way Stockholm entered magnificently for our amusement as well as for our instruction, and every member of the congress owes the city a deep debt of gratitude for the wonderful way he was entertained.

L. E. BAYLISS.

## THE HEALTH OF LONDON, 1925.

### REPORT OF THE LONDON COUNTY COUNCIL.

THE reports of the medical officer of health and of the school medical officer of the London County Council for 1925 have been published in one volume as Volume III (Part) of the Annual Report of the Council.<sup>1</sup> They have been prepared by Dr. Menzies in collaboration with Sir William Hamer, and the occasion of the latter's retirement at the end of 1925 has prompted the introduction, into the report of the medical officer of health, of a short review of the Council's public health work during the period of its existence and since the appointment of its first medical officer of health, Sir Shirley Murphy, in 1890. The late Dr. Niven, on his retirement three years ago from the post of medical officer of health for Manchester, prepared *Observations on the History of Public Health Effort in Manchester* during the period 1894-1923, and the opportunity is taken to compare and contrast the conditions in London with those of Manchester and to refer to points of resemblance and difference in the health problems of the two cities during these two similar periods.

### VITAL STATISTICS.

The population of London in the middle of 1925 was estimated at 4,612,000. The marriage rate was 17.2 per 1,000, the birth rate 17.9, and the death rate 11.9. With the exception of abnormal fluctuations during and immediately after the war, birth and mortality rates have steadily declined during the last fifty years, the decline in the birth rate being particularly rapid since 1900. But the most striking statistical result is the remarkable decrease in infantile mortality. For the period 1841-1925 the mean of the rates is 141.7 per 1,000 births. In 1899 the rate was 170 per 1,000, but from then onwards it has steadily fallen to 61 per 1,000 in 1923, 69 in 1924, and 63 in 1925. These figures indicate the influence of collective sanitary effort

<sup>1</sup> London County Council: Annual Report of the Council, 1925, Vol. III (Part): Public Health (including the Reports for the Year 1925 of the County Medical Officer of Health and School Medical Officer). (10 x 6½ in., pp. 170.)

on the public health, and especially of the maternity and child welfare activities of recent years.

An analysis is made and a chart introduced of the mortality from different groups of disease since 1841. The chart, however, is not attractive. The contours are on different scales for different groups, and are not based on death rates per 1,000 of population, but on the actual deaths as registered, so that its value for comparative purposes is negligible. Deaths from diseases of the circulatory system and cancer, and to some extent from influenza and pneumonia, have steadily increased, but this is attributed to greater accuracy in diagnosis and certification and to change of fashion in nomenclature more than to actual increase.

#### INFECTIOUS DISEASES.

Some interesting facts are to be gathered from this section of the report. In describing a comparatively slight outbreak of small-pox in Bethnal Green in 1925 the report states that in a school in the heart of the affected area 799 out of 1,370 children had never been vaccinated, and, when the public vaccinator visited the school, the consent of the parents to vaccination was obtained in 27 cases only. There were 304 cases of encephalitis lethargica as compared with 605 in 1924. The case mortality showed considerable fluctuation, however, being only 22 per cent. in 1924 as compared with 40 per cent. in 1925.

#### Influenza.

A considerable amount of space is devoted to a discussion on periodicity and forecasts of influenza epidemics. The conclusion arrived at is that although forecasts as long ahead as two years can be made the number of instances is too small to justify any reliance being placed on them. An hypothesis of a thirty-fifth week recurrence fails, by the authors' own confession, in several instances. Yet they indulge in forecasting the calamity of a prevalence of influenza about the end of 1926. The reservation of failure is comforting.

#### Typhoid Fever.

The epidemiology and causation of typhoid fever are also discussed in a somewhat controversial criticism of American writings as compared with the London experience. The latter seems to favour the consumption of ungutted plaice and shellfish as the cause of enteric, the former polluted milk and water and healthy carriers. The discussion, however, leads nowhere, and appears unnecessary in a report of this kind. All it tells us is that the London experience of typhoid differs in some respects from the experience of other communities. For example, the once familiar autumnal increase has practically ceased since 1912 in London, while still exhibited in other parts of England and Wales; and typhoid fever fails to show special incidence on the poorer areas. The actual number of cases notified in London in 1925 was 395 with 49 deaths, as compared with 410 and 53 deaths in 1924.

#### Tuberculosis.

The deaths from pulmonary tuberculosis show a rate of 0.95 per 1,000 of population in 1925. The rate has declined since 1922 and preceding years, when it exceeded 1.0 per 1,000. The number of cases notified in the London boroughs was 9,661 for all forms of tuberculosis and 7,554 for pulmonary tuberculosis. The number on the register at the end of the year, prepared in accordance with the Public Health (Tuberculosis) Act of 1924, was 39,551 pulmonary and 15,074 other forms. In the administrative section of the report an interesting and full account is given of the London County Council's tuberculosis scheme, together with a history of the movement which led up to it, and which commenced in 1909.

#### Veneral Diseases.

A page of special interest deals with the control of venereal diseases. Under the London and Home Counties scheme 5,902 cases of syphilis, 11,321 of gonorrhoea, and 279 of soft chancre, or a total of 17,502 new cases, voluntarily came for treatment at the hospital clinics. This is 779 fewer than in 1924, the decrease being almost entirely due to a reduction of 724 in cases of syphilis. The total attendances at the clinics amounted to 646,131, or 36 for each new case, a considerable advance as compared with

previous years. It is significant that the ratio of attendances in countries where there is compulsory notification of venereal diseases has never been greater than the London ratio with its voluntary system.

#### THE BACTERIOLOGICAL LABORATORY.

The remainder of the medical officer of health's report contains a report from the bacteriological laboratory by Dr. Graham Forbes, with some important details of the examination of cerebro-spinal fluid as an aid to clinical diagnosis in a variety of conditions of meningitis and cerebral lesions, and a special investigation of the role of the streptococcus in relation to throat infection and the transmission of puerperal fever and scarlet fever. The investigation was, however, too limited in extent to admit of definite conclusions.

#### REPORT OF THE SCHOOL MEDICAL OFFICER.

In an introductory note attention is drawn to the phenomenon presented by infantile mortality, to which reference has already been made, and to the influence on public health of the Education Act of 1870, which is considered to have operated mainly in developing in parents a sense of responsibility for the health and lives of their children. Seven important developments in connexion with school medical service were contemplated by the London County Council in 1925—namely, the examination of children leaving school, the extension of dental treatment, inauguration of centres for in-patient treatment of tonsils and adenoids, establishment of special ionization centres for treatment of ear disease, and further provision for remedial exercises, for open-air education, and for special medical services.

The report contains a mass of facts, too numerous to consider here, but of great interest and importance. It may be noted, however, in connexion with the report on rheumatic heart disease in children by the special subcommittee of the British Medical Association, published as a SUPPLEMENT to the JOURNAL of July 3rd last, that a special section is devoted to the manifestations of rheumatism in childhood. A spot map of London shows that the distribution of rheumatic children was chiefly in areas along the alluvial valleys marking the courses of old rivers running into the Thames. It has not been found possible in the present state of knowledge to suggest specific steps for preventing attacks of rheumatism. The most hopeful measures, it is considered, include greater attention to nose and throat ailments, improvement of housing conditions and home care, and special facilities for convalescent treatment, provision for which is totally inadequate at present. As regards school attendance, administrative action on the lines already worked out for the tuberculous child is recommended. All this confirms the conclusions arrived at in the British Medical Association Subcommittee's report.

Several statistical tables conclude the report of the school medical officer. It appears that the total number of routine inspections of children in elementary schools was 238,713; in addition 1,652 children were inspected in special schools. A considerable number of special inspections were also made; in 42,882 instances special notes were made, and in 33,475 the children were inspected collectively. In 159,388 cases re-inspections were made. The defects found at medical inspections in elementary and special schools are set out in a table, from which it appears that the most frequent condition found, at routine inspections, to require treatment was dental disease; the cases numbered over 70,000. Defective vision was noted in 26,000 children, and called for treatment in over 20,000. There were in addition about 2,600 cases of squint, and over 2,000 of them were recommended for treatment. The number of cases of enlarged tonsils was 20,417, of adenoids 3,168, and of cases with both enlarged tonsils and adenoids 4,493; of these the numbers requiring treatment were respectively 11,653, 2,235, and 3,780.

The reports form part of Volume III of the annual report of the Council for 1925, but there is a curious discrepancy between the table of contents and the text. The contents shows two chapters, XXI and XXII, whereas the text indicates that the whole report forms Chapter XXIII of the Council's annual report.

## British Medical Journal.

SATURDAY, AUGUST 21st, 1926.

### TUBERCULOSIS AND THE STATE.

MODERN governments are faced by two irreconcilable demands. On the one hand, there is the need for economy in order to repair the loss of wealth caused by the war; on the other hand, there is the continual demand for State support for various measures designed to improve the health and well-being of the community. Often enough the two demands are made by one and the same person; so that a taxpayer, anxious for some relief from his burdens, is found in the incongruous position of asking the State for money or officials to aid his pet scheme for social amelioration. In health matters it is probable that most of the schemes originate from members of the medical profession, who succeed in invoking the assistance of distinguished laymen in forming a society for the purpose of impressing upon the Government the need for action. We have recently published reports of various societies engaged in the prevention or cure of tuberculosis; and it may be useful to attempt a dispassionate review of the present position of this matter from the social aspect.

Tuberculosis is a disease which invites the attention of the social reformer. It is so widespread that there can hardly exist a family in which some instance of its ravages has not occurred. Its infective origin is well known, so that, theoretically, it should be capable of extinction; being for the most part a chronic disease, its extinction would result in a great saving of wealth to the community. But though the reduction in mortality has been very great during the last fifty years, the death rate from this disease still remains high, in spite of the concentrated efforts of many societies for some thirty years past.

It is possible that in the campaign against tuberculosis the advocates of a particular measure are apt to forget certain facts. In the first place, the mortality from the disease began to decrease long before campaigns were thought of, even before the cause of the disease was known. Was this reduction in mortality due to acquired immunity, to a change in the character of the disease, to better habits of the people, or to better conditions of life? The answers to these questions are of importance to the statesman called upon to decide whether he shall spend State money on the elimination of the disease. Secondly, the *Bacillus tuberculosis* is ubiquitous in all civilized communities; so much so that it is generally agreed that most of us have at one time or other been infected. Some of those engaged in antituberculosis campaigns appear to base their proposals on the supposition that the bacillus can be exterminated. The statesman is entitled to ask whether this is a practicable proposition. Thirdly, failure to remember the two previous facts has led to confusion between prevention and cure in the aims of the various societies engaged in antituberculosis campaigns. Let us try to enumerate the methods that have been advocated for combating the disease. At the conference of the National Association for the Prevention of Tuberculosis held recently at Glasgow Sir Robert Philip described the "actual place and function of the tuberculosis dispensary in the tuberculosis scheme." It is now forty years

since Sir Robert Philip conceived the idea of the tuberculosis dispensary. It is curious that after forty years' experience Sir Robert still thinks it clear that the principles effectively applied to other infective conditions are applicable likewise to the ubiquitous *B. tuberculosis*. The tuberculosis dispensary is admirable as a centre for diagnosis, for the treatment of ambulant cases, for the examination of contacts, and as a clearing house for other institutions engaged in treatment of the disease. Its only contribution towards the extermination of the disease is statistical; whereby also it may help to prove the ultimate futility of some of the other measures adopted. The tuberculosis dispensary "has collected," says Sir Robert Philip, "living proof of the universality of tuberculosis throughout the community." And his remark about hospital beds in former times applies still, possibly, to sanatoriums; "the small percentage [of patients] which attained admission enjoyed the available benefit for a relatively short period." Dispensaries have shown also the frequency of tuberculosis in children, and the spread of the disease by mass infection in crowded households. Yet even after all these years Sir Robert Philip is constrained to the view "that the ideal of the dispensary and its great possibilities are not realized everywhere."

If we examine sanatoriums from the point of view of the cure of the disease, it will probably be admitted that they have not fulfilled expectations. Sir Robert Philip says that the dispensary has proved "how valueless may be the result of short periods of residential treatment—as, for example, the classic three months in a sanatorium." It is for this reason that officers at sanatoriums continually demand very early cases. At an early stage no one can say whether the disease is likely to be progressive, or whether the case is one of those slight infections from which nearly all of us are supposed to suffer, and from which the majority of us recover in any case. Probably the real truth about sanatorium treatment is that, while of value to the individual, it is mainly educative; that it is expensive; and that from the point of view of prevention or the extermination of tuberculosis its value is small compared with the magnitude of the whole task.

From the statesman's point of view, however, the interest in sanatorium treatment is that it leads to a fresh demand. The navy, who has been mended to some extent in a sanatorium, is obviously unfit to return to navvying. It becomes necessary, therefore, to provide training centres in order that he may learn some lighter job within the measure of his capacity for work. In this matter also confusion creeps in. The training is not only good for the community by affording the damaged man an opportunity for work; the work is also good for the individual and helps his betterment by giving him an object in life.

One feature of tuberculosis schemes is the appointment of Tuberculosis Care Committees. These are at present voluntary bodies which endeavour to supply some sort of supervision of the person who has been found to suffer from the disease, who may or may not have had a period of treatment at a sanatorium, with or without training in some occupation. Tuberculosis Care Committees have been somewhat perturbed lately by the proposal that they should find suitable work for patients from training centres, as is shown in the report of the employment sub-committee of the Joint Tuberculosis Council which was summarized on July 3rd (p. 20). The care committees find it difficult to steer between the Scylla of the man



who is incapable of making a success of his job and the Charybdis of the trade unions, who object to the competition of subsidized labour.

A further attempt to deal with tuberculous persons is found in colonies such as that at Papworth in Cambridgeshire. To such colonies the tuberculous man is transplanted with all his family; he is placed under hygienic conditions; he is watched and treated by a medical staff; and the products of his labour are disposed of in a commercial manner. In some places this method of treatment has been successful up to a point, although it is hardly to be expected that the venture can ever be a complete commercial success.

The methods of campaign which we have described have, speaking generally, a curative aim. Incidentally, of course, they may have a preventive effect in removing a potential source of mass infection from too close contact with his fellows. But the ubiquity of the bacillus must render any preventive effect comparatively ineffectual, and certainly enormously costly. There are other measures which offer some hope in prevention by attacking the bacillus at some of its main sources of origin, or by raising the resistance of the community to its invasion. No one doubts that better housing accommodation, more light and air, a pure milk supply, all help to check the growth of the bacillus, or at least to render resistance stronger. Probably these factors were instrumental in reducing the mortality before the germ was discovered. Latterly, however, more direct efforts have been made to render the host of the bacillus more immune. The unfortunate experiences of the use of Koch's tuberculin delayed researches in this direction enormously, though tuberculin has continued to be used for diagnostic purposes in cattle. Dr. Camac Wilkinson and his followers have always maintained that with proper supervision tuberculin is not only useful for the diagnosis of tubercle in the human being, but also has very marked curative effects. More recently we have had occasion to publish some of the results obtained by Calmette in Paris by pre-immunization with the bacillus Calmette-Guérin (B.C.G.).<sup>1</sup> Pre-immunization is defined as a vaccination, comparable with that produced by vaccinal viruses, but with the difference that it is bound up with the persistence of the vaccinating organisms in the lymphatic tissues of the immune subject. The vaccine is given by the mouth in three doses on alternate days, within the first ten days after birth. The reason assigned by Calmette for this limitation of time is that the intestinal mucosa of newly born animals easily absorbs bacteria, but loses this power in a few weeks. Experiments on calves and monkeys have, as we have already reported, yielded encouraging results, but the method is still in the preliminary stage, and Calmette writes with great caution about it. He has, however, consented to its use at a considerable number of tuberculosis dispensaries in France and in the French colonies. The possibility of arranging for a trial of it in this country is under consideration, but it would be premature at present to say more than this.

We have attempted a brief and impartial review of the various methods by which tuberculosis is being attacked. In doing so we have tried to bear in mind the information required by a statesman who is called upon to assist the experiments that are in progress. For throughout all the reports that we have examined there runs the thread of State assistance and subsidy;

and it is interesting to note that when government embark on large schemes of social amelioration each successive plunge in welfare schemes brings with it fresh difficulties. The tuberculous patient whose health has to some extent been mended in a sanatorium may need, and in perhaps the majority of cases does need, some more suitable occupation than his own. Training centres become necessary. When the course of instruction at a training centre is finished, the ex-patient needs a job. The local committee is asked to help in the difficult task of finding one for him; and when the job is found it seems clear, from hints in the reports, that the ex-patient sometimes makes a mess of it, and is once more thrown upon the State. Hence one of the causes of the development of settlements. The difficulty in settlements is to make them pay their way. The employees are damaged persons, and, as a rule, unfit for more than six hours' work a day. They are working in competition, not only with labour that is sound in wind and limb, but also with labour that is organized in trade unions with pronounced, and sometimes disputable, views on economics. And so there comes the appeal to the State for assistance. The granting of that appeal by the State naturally involves some voice in the management of the venture and the position is reached in which some begin to advocate absorption by the State. Without any wish to minimize the misfortunes of the consumptive, nor any desire to undervalue attempts to reduce or control possible sources of infection to the rest of the community, it is possible to feel doubts as to the wisdom of embarking on a large expenditure of State money, in what are, at present, experiments. Neither sympathy for the unfortunate consumptive, nor fears of extension of infection, should be allowed to lead to hasty and ill considered expenditure. As private ventures settlements, for example, are interesting experiments; in the hands of devoted enthusiasts they may, to some extent, be made to pay; in any case as experience is gained difficulties will be sifted out. With State interference it is possible that enthusiasm will evaporate, expenses increase, and a burden be added to the State without commensurate benefits. For it is evident that settlements can only touch the fringe of the tuberculosis problem, and that lavish expenditure upon them may cripple more remunerative enterprises for the benefit of consumptives. And behind the whole method of settlements, sanatoriums, and other attempts at curative measures there looms the question whether research should not be directed mainly to the production of resistance to the attacks of a ubiquitous and unexterminable germ.

## MOTOR ACCIDENTS.

It is a commonplace to say that of the changes in the externals of life which anyone over forty can perceive, the transformation of road traffic is the most striking. Most of us can recollect the golden age of him now derisively termed the "push cyclist": it was between 1895 and 1904, when pneumatic tyres had become reasonably reliable and the mere cyclist was still a welcome, almost an honoured, guest in country inns. In those happy and not very far off times the cyclist was the king of the road, and there were even people who accused him of a selfish disregard of the comfort of other road users, and of an addiction to dangerous speed. For some years after 1904 touring with a bicycle on the main roads of England was still agreeable, but by 1910—in which

<sup>1</sup> BRITISH MEDICAL JOURNAL, March 27th, 1926, p. 531.

for the number of persons slain by mechanically propelled vehicles passed the five hundred mark—began to be, if not essential, at least desirable to choose secondary roads connecting important towns, and for the next three years the quiet cyclist developed a taste for road strategy; the good strategist was he who found an effective route by secondary roads without being actually forced to carry his machine over stiles or through quagmires. Such a man congratulated himself that he had better glimpses of the countryside than the mechanically propelled enemy who occupied the high roads in force. After the war those whose gluteal regions and nerves were not both of iron had sadly to realize that for the man or woman past 40 the "push bicycle" was not a suitable instrument of pleasant locomotion along any motor-infested roads for more than an hour at a time.

Like all revolutions this has had to be paid for in blood and, it is to be supposed, tears. There is no doubt about the blood, for while in 1904 only 171 deaths were attributed to mechanically propelled vehicles, in 1924 there were 2,990, giving a rate of mortality of 77 per million, the highest yet recorded. Two attempts to analyse this mortality and to point the moral have been made—one by Major P. G. Edge in a paper read before the Royal Statistical Society this spring and just published,<sup>1</sup> the other in the Registrar-General's Statistical Review of 1924.<sup>2</sup> The statistical study of this matter is a very much more difficult undertaking than the outsider might suppose. To set out the actual increase of mortality and to allocate the deaths to the type of vehicle responsible is easy enough and has been satisfactorily done in both the papers. The mere rate of mortality per million rose from 5 in 1905 irregularly to 14 in 1910, and then without faltering to 36 in 1914, and since the war has risen from 46 in 1919 to 63 in 1923 and 77 in 1924. In 1904 motor cars were responsible for 33 per cent. of the small total mortality due to mechanically propelled vehicles, and have pretty well kept station since they had 34 per cent. of the much larger total in 1924. Motor omnibuses—not a sensible factor in 1904—have shown very large variations, and, since 1920, have increased their percentage claim by one unit a year, from 6 per cent. in 1920 to 10 per cent. in 1924.

Owing to changes in the registration laws it is not possible to show over the whole period comparable ratios of deaths to registered vehicles, and, with the exception to be noted below, it is not possible to show the ratio of deaths to users of motor vehicles, which is evidently what one would like to know. To judge from one of Major Edge's tables, it would appear that there has been no consistent increase in the ratio of deaths to registered motor vehicles between 1906 and 1921 in England and Wales; the table he gives for the County of London is not, of course, relevant, since deaths within the county need not be caused by motor vehicles registered in the county.

The Registrar-General is able to make an approximate comparison of fatal accidents due to motor buses and trams within Greater London in terms of mileage. In 1921-23 the approximate mileage, in millions of miles, of buses was 361 and of trams 273; the numbers of passengers carried by the two types of vehicle were almost equal—in each case rather more than 3,000 million. Of fatal accidents re-

corded by the police, the buses were responsible for 226 and the trams for 91. In terms of either miles run or passengers carried, the trams were safer than the buses. The Registrar-General has also studied, in rather more detail than Major Edge, the age distribution of fatal accidents classified by type of vehicle, and brings out the interesting point that while, speaking broadly, motor car drivers kill other people, especially children, motor cyclists kill themselves and the girls behind. Thus of every 1,000 fatal accidents due to motor cars 310 happen to persons under 10 years of age, but only 63 of every 1,000 accidents associated with motor bicycles. Only 94 per mille of the deaths due to motor cars are of persons aged 20 to 35, but 368 per mille of the deaths due to motor cycles are in this age group. The motor lorry is relatively quite as fatal to children as the motor car, but the electric tramcar is less fatal than the motor bus.

The moral the Registrar-General draws is that "probably the greater safety of the tram is largely due to its ample braking power, which may also account for its special superiority at ages 10-20, those at which boys fall off bicycles in front of trams and buses. If so, it would appear that it is very largely to increase of braking power that we must look for decrease (relatively to mileage run) of the mortality under consideration. From this point of view the recent tendency to fit four wheel brakes on motor cars is of much importance, and should in time effect a considerable reduction in the disproportionate mortality at 5-10, since at this age especially it may be possible to avert a fatal accident only by full and timely use of ample braking power."

Major Edge, being less weighted by official responsibility, makes more revolutionary suggestions—namely, (1) compulsory examinations to determine physical fitness, technical skill, and driving capacity before the issue of driving licences; and (2) compulsory insurance of the vehicle against mechanical defect (including third-party risk). These suggestions did not commend themselves to such experts as took part in the discussion of his paper. The objections certainly read like those which are invariably made to any reform, but it is not for us, without technical knowledge, to judge whether they are or are not sound. We can follow the speaker who urged that technically competent drivers might be, and sometimes were, grossly inconsiderate road users, but we do not see how this leads to the conclusion that a technical examination is useless. Indeed, most of the arguments seem equally to favour free practice in medicine, the law, and every other occupation entrance upon which involves passing a technical examination. No sensible person ever supposed that such a qualifying examination ensured that the successful candidate should be an efficient surgeon, lawyer, or actuary; what has been claimed, and admitted, is that such a test does prevent the letting loose on the public of dangerously ignorant persons. Law, drugs, surgical instruments, and even figures, are certainly dangerous weapons in the hands of the ignorant, but a high-powered motor car is no toy, and observation of some of our country roads in the holiday season, supported by the Registrar-General's figures and a perusal of the reports of inquests, suggests that some fatal accidents are due to inefficiency.

It is not improbable that the present state of affairs is only a passing phase. Motor traffic has of course come to stay. Its commercial use will no doubt

<sup>1</sup> *Journ. Roy. Stat. Soc.*, LXXXIX, 1926, pp. 405-451.

<sup>2</sup> *The Registrar-General's Statistical Review for England and Wales for the Year 1924*. Text, pp. 104-111.

increase, but whether as a sport motoring will be permanent is perhaps doubtful; indeed, just as the car has made the main roads unpleasant for the bicycle, so the lorry, charabanes, and motor buses may push the small pleasure car off the roads, and those plutocrats who rejoice in the Rolls-Royce will betake themselves to the air. What the effect of this upon mortality statistics will be is a question for prophets of the school of Mr. H. G. Wells.

#### AGRICULTURE AND HELMINTHOLOGY.

THE duties of the Ministry of Agriculture are many and various, but they all have to do with the food of man, its quantity and quality, but in particular perhaps the former, which is apt to be diminished by a vast number of parasites, animal and vegetable, including bacteria, fungi, protozoa, and worms. In the study of animal pathology the Ministry already assists in the maintenance of the department in Cambridge now under the direction of Professor J. B. Buxton. For the study of the preventive side—that is to say, for the observation of infestations of animals and plants—the Ministry has recently enabled the London School of Hygiene and Tropical Medicine to establish a small experimental field station near St. Albans, which has been appropriately placed under the directorship of Professor R. T. Leiper, F.R.S. It is not yet in full working order, but already certain researches are under way. In a new field of experimentation like this it is probable, of course, that not a few results, at the beginning at any rate, will be negative. The field station consists of a small farmhouse and outbuildings and thirty-three acres of land pleasantly situated, partly surrounded by woods, and bounded on two sides by the Herts County Council Agricultural Institute. The barns have been converted into laboratories for the accommodation of at least five research workers, for in addition to the director there must be assistants dealing with helminthology, protozoology, bacteriology, and fungi. The stabling is at present used mainly for goats, and other buildings have been converted into habitations for cats and rabbits, or for housing incubators for poultry and pheasants. Attached to the buildings are kennels and runs for dogs, and pens used at present chiefly for the breeding of guinea-pigs. The pasture is being used for experiments on the roundworms and tapeworms of lambs, and the arable land for the investigation of the attacks of eelworms on various roots and crops. Many interesting results have already been obtained. Thus lamb tapeworm disease was supposed to be communicated through the mother's milk. But here may be seen a sheep brought up by the ewe and showing no sign of tapeworm, while its brother and cousins, brought up on cow's milk—with a curious stunting of growth as a result—and then pastured on infected grass, are passing innumerable tapeworm segments. So far the intermediary host of this tapeworm has eluded research. To eelworms has been attributed one of the forms of potato disease. But it is possible that the presence of the cysts of the worm on the rootlets which attracts the attention of the cultivator is rather a coincidence or a sequel than the actual cause of the disease. At all events, potato plants infested with eelworm may show very little difference in growth or produce from those not so infested. These eelworms are of topical interest because of the development of the beet-sugar industry in this country. Abroad the beet is very liable to infestation; the crops in this country have been grown from seed, so that the variety infesting beet has not been imported, though it is, of course, not at all certain that it may not find its way here. Many kinds of plants in this country are infested with eelworms, and it appears that the eelworm of one vegetable, such as the potato, does

not, although morphologically identical, attack a different vegetable, such as the beet. This opens up great possibilities for the study of host varieties, and researches of this kind, directed by an able director, cannot fail to be of enormous value to the cultivator.

#### THE PREVENTION AND EARLY TREATMENT OF MEASLES.

FROM much experience of naval cadets and boys at Dmouth and in training establishments and ships, Surgeon Commander B. Pickering Pick<sup>1</sup> brings out some points showing the benefit to be obtained by the patients and preventing the spread of the infection as a result of early recognition and isolation of the first case or cases: a collection of young non-immune boys. This process has also enabled him to make some observations on clinical features at a stage of the disease which does not commonly come under notice. Early rest in bed in a warm temperature for four days before the appearance of the rash was found to be definitely valuable as a prophylactic of complications. In a recent epidemic involving 110 cadets this plan was followed by complete freedom from pulmonary affections, although there was a pharyngeal and tracheal cough. Isolation of the first and of the contacts at the earliest possible moment was shown to be capable of obviating an epidemic; an important factor is the close inspection of the records of the temperature in the potential cases, a morning rise after a normal temperature on the previous evening being suggestive of infection. In quite a large number of cases there was a lentil-like eruption of widely scattered spots, rose-colored to brown in colour, on the trunk twenty-four to forty-eight hours before the true rash came out. It may be noted that these prodromal rashes, which are variable in nature and transient in duration, have been estimated to occur in 50 per cent. of the cases. Commander Pickering's experience showed that the longer the pre-eruptive stage the more severe was the exanthem, but that the rash was sometimes scanty and transient; he thinks it probable that it may be absent. Little reliance was placed on Koplik spots, which did not assist much in diagnosis, as they were not frequent in one epidemic, thus differing from the usual estimate of 90 per cent. or more. The potential cases which actually developed did so with remarkable uniformity on the eleventh day from exposure to infection. As a last practical point attention may be directed to the author's conclusion that the period of treatment usually recommended is not sufficiently long, and that twelve days' rest in bed, including three days after the temperature is normal, is followed by rapid convalescence.

#### THE FUNCTION OF THE SPLEEN.

SIXTY or seventy years ago students were taught that the spleen acted as a reservoir for the blood, which was emptied from it into the general circulation when the body required it. This theory was for long under a cloud, but Barrer and others have recently shown that the spleen does act as a reservoir, and empties itself when the body requires more haemoglobin. Then the reservoir is filled again. The only source from which it can be filled is from the blood supplied to it by the general circulation. The question has been raised whether this blood differs from that of the general circulation, or whether it is detained without selection. Answers have been sought by two workers at the Physiological Laboratory, Cambridge—Orshovats, Rockefeller Fellow from the University of Sofia, and E. W. H. Cruickshank.<sup>2</sup> The particular quality chosen by the former was the resistance of the blood of the spleen

<sup>1</sup> Pick, B. P., *Journ. Roy. Nav. Med. Serv.*, 1925, xii, 201-206.

<sup>2</sup> *Journ. Physiol.*, vol. lxi, pp. 436 and 455.

haemolysing agents. Previous work had shown that the spleen has an effect on the red blood corpuscles. After splenectomy the red cells of the general circulation are more resistant to hypotonic solutions. Brinkman, investigating the resistance curves of normal blood, concluded that in circulating blood there are three groups of red cells with different resistances to hypotonic solution. First, a most resistant group of about 10 per cent.; secondly, a middle group of about 80 per cent.; and thirdly, a group of very little resistance, the cells being disintegrated at a very low degree of hypotonicity. He called these three groups young, average grown, and old cells. The blood of the spleen, when examined in a similar way, differs. The red cells of the spleen are less resistant than the red cells of the general circulation. They cannot be divided into the same groups. The average group is present, but less resistant. The other groups are not marked off from the middle group, and the type of old or least resistant cell does not seem to be present in the blood of the spleen. It is therefore concluded that the blood of the spleen is a selected blood, and that it is less resistant to hypotonic solutions. When haemolysed by saponins the blood of the spleen is more resistant than the cells of the general circulation. From other observations it is inferred that the lessened resistance to hypertonicity and the greater resistance to saponins are due to a smaller content of phosphoric acid. The red corpuscles of the spleen would therefore contain less phosphoric acid than the cells of the general circulation. That these differences do not arise owing to residence in the spleen was shown by emptying the spleen and then immediately collecting the blood as it was allowed to re-enter the organ. This blood was found to contain corpuscles whose resistance was the same as that of corpuscles obtained from the spleen before it was emptied. Cruickshank found that the spleen, when made to contract by electrical stimulation of the splanchnic nerves, will expel in the cat an amount of blood that represents 2.5 to 5.6 per cent. of the total blood volume of the animal. This blood is more concentrated and therefore richer in haemoglobin, to the extent that 8 c.cm. of splenic blood is equivalent to 9.5 c.cm. of normal blood. So far as these investigations go the functions of storing and concentrating blood seem to be peculiar to the spleen.

#### CONTAGIOUS BOVINE ABORTION AND UNDULANT FEVER.

ALL medical men are now familiar with the recent work—mainly French and American—which has shown the existence of a relation, apparently very close, between contagious abortion of cows and pigs and undulant fever of goats and man. It is now generally believed that the same organism is responsible for both diseases, but that the caprine strain is normally pathogenic for man while the bovine strain is harmless, only becoming pathogenic in exceptional circumstances. Bevan<sup>1</sup> reported outbreaks of what appeared to be human undulant fever in Rhodesia, and believed that he could definitely exclude goats or sheep as the source of infection. Contagious abortion, however, existed in cattle, and he considered that this was the origin of the disease in man. More recently Moore and Carpenter<sup>2</sup> have reviewed our present knowledge of the position. As early as 1913 Larson and Sedgwick tested by complement fixation the serum of women who had aborted, and found that a larger number reacted when the contagious abortion organism was used as antigen than when the usual Wassermann test was applied. Similarly, children from bovine abortion districts often showed the presence in their blood of antibodies of the *Bacillus abortus*, while those from districts free from that organism did not give a positive reaction. This has been the experience of sub-

sequent workers. The number of recorded cases of undulant fever in patients who have had no opportunity of contracting the disease from goats is gradually increasing. Kennedy in 1914, for example, found two cases in England in people who had never left the country. Kcefer in 1924 reported a case in America in which the organism was actually isolated and in which the clinical picture was that of an undulant fever. Other cases have been recorded from many parts of the world in which the source appeared to be either raw cow's milk or else actual contact with infected bovine placental or other material. Moore and Carpenter report six new cases from America. The first was diagnosed originally as typhoid fever, later as miliary tuberculosis, and then as malaria; but blood cultures on six occasions revealed the *B. abortus*. The patient presented the typical syndrome of undulant fever. The microbes isolated from several other cases have produced typical bovine abortion in heifers. The source of the infection in this series appeared to be cow's milk. After tuberculosis, contagious abortion is the most important and widespread disease of dairy cattle in England. The organism is frequently excreted in the milk, and undoubtedly many people ingest it daily. English people, moreover, have no natural immunity to undulant fever, though there is no general infection. The results quoted above, however, indicate that its presence cannot be ignored as a source of some of the low-grade fevers of unrecognized etiology found in this country. The *B. abortus* has another importance to those engaged in public health work. Injections of this bacillus in milk into guinea-pigs produce a pathological picture which is very similar in many cases to that produced by the tubercle bacillus, and unless the lesions are examined microscopically for the presence of acid-fast organisms the milk may be unjustly condemned as tuberculous.

#### KITCHENER MEMORIAL MEDICAL SCHOOL AT KHARTUM.

THE buildings of the Kitchener School of Medicine, Khartum, were completed by the end of 1923, and the school was formally opened by the late Major-General Sir Loo Stack on February 29th of the following year, this being his last public act in the Sudan. The inaugural address which he delivered on this occasion is published in the first report of the medical school, which has now been issued. A general outline of the proposed curriculum was published by Dr. O. F. H. Atkey, director of the medical department of the Sudan, in our columns on September 29th, 1923 (p. 581), and the first report of the school, which covers the years 1924-25, shows that good progress is being made in every way. The building stands on two and a half acres of land, and contains laboratories for teaching chemistry, physics, biology, anatomy, physiology, and pathology, with a lecture room and a library. Clinical instruction is given at the Khartum Civil Hospital, where a new out-patient department has recently been completed. Medical research laboratories are shortly to be built in the hospital enclosure immediately opposite the school buildings; increased facilities will thus be afforded for tuition in pathology, including bacteriology, protozoology, and parasitology, while opportunities will be afforded for post-graduate research. An additional school hostel is proposed, in order that the increased number of students expected in 1927 may be accommodated. These students will be drawn for the most part from the final year of the Gordon College. At the opening of the school ten students were admitted, and in 1925 an additional eight were received. A four-year course is the rule; the first year is devoted to chemistry, physics, and biology, the second to anatomy and physiology, the third to medicine, surgery, pathology, and pharmacy,

<sup>1</sup> BRITISH MEDICAL JOURNAL, March 21st, 1925, p. 554.

<sup>2</sup> Cornell Vet., 1926, xvi, p. 147.

while the fourth includes the last four subjects with the addition of gynaecology, forensic medicine, and public health. The first objective of the school is to supply a simplified medical education for young Sudanese, who will work subsequently under British doctors at the larger hospitals, take charge, under some supervision, of smaller hospitals and dispensaries, and engage in campaigns against endemic diseases. Later on, when the present urgent need for doctors has been met, it is proposed to raise the standard of training by increasing the length of the curriculum to five years, thus bringing it into line with that of European medical schools. Post-graduate classes will also be established for students who have previously graduated. It is hoped to supply an average of six doctors each year, beginning in January, 1928. The anticipated expenditure of the school for the years 1925, 1926, and 1927 is approximately £3,000, £5,000, and £6,000 respectively. An annual income of £3,019 is provided by the interest on the endowment fund, together with an annual grant from the Lord Kitchener National Memorial Fund; it will be necessary, therefore, to supplement the income from other sources.

#### PROTECTION OF SEAMEN AGAINST VENEREAL DISEASE.

We published recently (July 31st, p. 205) a report of an international conference in Norway to consider an international scheme put forward by the Norwegian Red Cross Society for the promotion of the health and welfare of the sailor. One of the resolutions of the conference was to the effect that the League of Red Cross Societies should invite the International Health Office, the Health Organization of the League of Nations, and other international organizations, to appoint a standing committee on the welfare of seamen, which should provide, in particular, for medical treatment and recreational facilities at ports. The matter has been for some time under the consideration of the International Labour Office, which has issued recently, as one of its series of studies and reports, a history of the movement, initiated some years ago, for the protection of the health of seamen against venereal diseases.<sup>1</sup> While venereal diseases were being actively attacked amongst the civil and military populations during and after the war, nothing had been done, either nationally or internationally, to combat them in the mercantile marine, notwithstanding the obvious danger of disease being introduced into the country through the ports. We understand that this was strongly brought to notice by the chairman of the Services Committee of the National Council for Combating Venereal Disease some seven years ago, and, although the document under review does not record this fact, the opportunity is taken of referring to it here, as the credit of a movement, which has developed into an international convention and is bound to have a beneficial influence on the mercantile marine of all nations, should be granted to those who worked with the National Council for Combating Venereal Disease in the early years after the armistice. The movement passed from national to international spheres of action at the International Labour Conference held at Geneva in 1920 specially to consider maritime questions. The present report relates how it developed from that time, until eventually an agreement, drafted originally in 1921 by the Office international d'hygiène publique in Paris, providing for the maintenance of venereal treatment centres at the chief river and sea ports for merchant seamen and watermen of all nationalities, and for enabling continuous treatment to be carried out at sea and on

shore, was signed in April last by several States as an international convention. It is unfortunate that certain countries—notably Germany, Japan, Spain, and the United States, as well as Australia and South Africa—have refused to adhere to it, so that there are still several gaps to fill in the benefits afforded by it. The movement, however, is still in its infancy internationally, and the International Labour Office has done good service in issuing a report on the subject at the present time. Co-ordination of and uniformity in measures of prevention and treatment in different countries are needed, and the information now published in our columns and in the report of the International Labour Office should go far towards the attainment of an object which all civilized nations must have equally at heart.

#### TUBERCULOSIS IN NOVA SCOTIA.

The Department of Public Health of the Province of Nova Scotia has issued a statistical study of tuberculosis in the province during the years 1909 to 1925. It is noted that there has been a marked diminution in the number of deaths and a lowering of the rate. The improvement is limited almost wholly to the pulmonary form of the disease, and is most noticeable in the age group 20 to 49. From 0 to 5 years there is also a very marked drop in pulmonary tuberculosis, but from 5 to 14 very little change. The improvement in infants and young children is attributed to improved conditions in the home and to education in preventive measures. In the first half of the period the rural deaths were at a higher rate than the urban. In the second half of the period the position is reversed. In Nova Scotia, unlike England, the female rate is higher than the male. For these and other observations made the report offers various explanations. We deprecate, however, the implication conveyed in the statement: "The improvement shown has been limited largely to certain age groups, notably the sanatorium age groups." With so elusive a disease as tuberculosis it is perhaps a pity in giving statistics to label particular age groups in this manner. It is surely sufficient to establish the fact that mortality has been reduced at certain ages, to note then that many patients at those ages undergo sanatorium treatment, and subsequently to investigate any other possible factors in tuberculosis mortality at those ages, for the purpose of finding out if it is possible to correlate these factors. Further investigation seems to be needed to justify the inference drawn in the report that "for at least some of the improvement observable in connexion with the pulmonary disease credit ought to be given to the treatment facilities of the province."

#### HEART DISEASE IN NEW YORK.

We have received from the director of the New York Tuberculosis and Health Association a report from its Heart Committee (formerly called the New York Heart Association) of an investigation undertaken to explore the ground before attempting to deal with the prevention of heart disease on a national basis. The report is founded on a study of 1,000 heart cases, most of them attending the Bellevue Cardiac Clinic for Adults. The authors carefully guard against their conclusions on 1,000 cases being taken as true of 10,000 or 100,000. While pointing out the necessity of further detailed study if we are to proceed with intelligence in preventing heart diseases, they present certain conclusions, of which the following is a summary. The mortality from heart disease was about equal for the sexes in the higher age groups. Rheumatic heart disease seemed to be as common among males as among females. But in syphilitic heart disease the ratio of males to females was about 7 or 8 to 1, and arterio-sclerotic heart disease appeared to be much more common among males

<sup>1</sup> *Protection of the Health of Seamen against Venereal Disease*. International Labour Office, Studies and Reports, Series P (Seamen), No. 2. Geneva, 1926. London: P. S. King and Son, Ltd. (9½ x 6 in., pp. 72. Price 1s.)



han females. The reasons for this discrepancy between the sexes have not yet been ascertained. In about three-fourths of the cases of rheumatic heart disease, rheumatic fever, either alone or in combination with other infections, was an etiological factor; tonsillitis in one-fourth; chorea a little more than one-tenth; and "growing" or joint pains in about one-twentieth. With the exception of chorea, which occurred twice as often among females as males, the relative frequency of these infections was about equal for the two sexes. Rheumatic heart disease was rare after 50 years of age; from 90 to 95 per cent. of the cases occurred before the age of 50 years, and more than half of these before the age of 30. About 50 per cent. of the syphilitic cases occurred before the age of 50, and 50 per cent. after this age; the disease appeared to be rare before the age of 40 and after the age of 60. From 80 to 95 per cent. of the cases of arterio-sclerotic heart disease occurred after 50 years of age. Two-thirds of the cases of unknown etiology presented lesions typical of rheumatic heart disease, and occurred before the age of 50. The available mortality statistics for organic heart disease are considered to be inadequate to justify any attempt to study the age incidence and duration of the disease, because they are based on deaths recorded in accordance with the International List of Causes of Death, which is not so classified as to make it possible to distinguish between the infectious and degenerative varieties of the disease. It should be added that in this investigation the proportion of cases in children was slightly lowered by the method of investigation used.

#### UNDESIRABLE IMMIGRANTS IN MARSEILLES HOSPITALS.

A FEW months ago (April 3rd, p. 631) our French correspondent called attention to some recent statements made by M. Weil to the Académie de Médecine, and M. Mario to the Medical Society of Paris, as to the large proportion of foreigners in the hospitals of Paris, and M. Berthoumeau raised the same question in relation to the great convalescent home for patients discharged from the hospitals of the capital. He found that the percentage of inmates born outside French territory had risen from 5.6 in 1914 to 14.6 in 1925. He added that the number of British subjects in Paris hospitals is negligible. A similar question has now been raised before the Académie de Médecine by Dr. Léon Imbert, who described the effect of post-war immigration of foreigners of the pauper class on the hospitals in Marseilles. After each catastrophe, he said, such as the disaster to Wrangel's army, the burning of Smyrna, the expulsions from Constantinople, a fresh influx of undesirables has occurred, with the result that 25 or 30 per cent. of patients in Marseilles hospitals are foreigners, and even at Lyons the proportion has risen in three years from 4.5 to 7.3 per cent. Very often admission has to be refused to a French patient. Dr. Imbert does not object to Italian immigrants, whose assimilation into the Marseilles population is rapid; though he hints that Italy, with her lively consciousness of her personality and the role she has to play in the world, might establish a hospital of her own in Marseilles, or, better still, subsidize existing hospitals. But he would like discussion raised on the motley crowd of Syrians, Armenians, and so on, who flood the hospitals. It is only too evident that the Governments of the native countries of these people have washed their hands of them, although they have embarked for Marseilles at the orders of those Governments. In the discussion which followed Dr. Imbert's paper, Dr. Jeanselmo enumerated the sixteen different nationalities of 27 out of the 211 patients treated in the venereal disease clinic of the St. Louis Hospital. He stated also that 11 out of 42 in-patients were foreigners. Dr. Léon Bernard

suggested that as many of Dr. Jeanselmo's patients had probably contracted syphilis in Paris, the right to complain was perhaps on their side. Apparently an attempt is to be made to deal with the situation by appointing a commissioner of immigration and naturalization; it is suggested also that an international understanding is necessary.

#### AVIAN TUBERCULOSIS.

RECENT years have shown an increasing tendency to consider the problems of human and bovine tuberculosis as merely aspects of the same great problem; but avian tuberculosis has not received the same amount of attention, though cases due to this strain have been reported in practically all the domestic mammals and in man. To the rabbit, and to the pig also, avian is almost as pathogenic as is bovine tuberculosis, but to other mammals it is less infective than the mammalian strains. Tuberculosis in birds is exceedingly common throughout the world, and practically all species may be infected. The barnyard fowl is the chief reservoir, but the disease is often conveyed by pigeons and other smaller and more mobile birds. Parrots have a peculiar susceptibility to all three strains, and may suffer from human, bovine, or avian tuberculosis. Apart from the great economic loss to poultry farmers, the problem of avian tuberculosis has a twofold interest. That it is a very common source of infection in pigs—producing, however, a more benign disease than does the bovine virus—has been known since the time of the Royal Commission on Tuberculosis, but from the results of a recent inquiry in Nebraska, U.S.A., it appears that nearly 90 per cent. of the cases of tuberculosis in pigs are due to the avian bacillus. Recent studies in Denmark of contagious abortion have shown also that the avian bacillus may cause tuberculous metritis in cattle, leading to placental detachment and subsequent abortion, and that this strain has a certain predilection for the pregnant uterus. So far the prevalence of avian tuberculosis has had only an economic importance, but the influence of poultry diseases on human medicine has been so considerable that we cannot afford to neglect this aspect of the general disease. Pasteur began protective vaccination with chicken cholera; Ross did his preliminary work on the transmission of malaria with the avian disease; and more recently Gye has advanced his theory of the causation of cancer from a study of Rous's infective sarcoma of fowls. These three examples serve to show how unwise it would be to neglect the study of diseases of birds which in themselves may not seem to cause danger to human health.

THE University of Sydney is about to appoint a professor of psychiatry, who will be required to give both undergraduate and post-graduate instruction. He will be expected to engage in research, but to be interested in clinical rather than in pathological work. He will have access to all mental hospitals, and will have the assistance of the departmental pathological laboratory. He will be required to act as honorary physician in connexion with the out-patient department at the Royal Prince Alfred Hospital, as visiting officer to Broughton Hall Hospital (150 beds) for uncertified mental patients, and to take charge of the patients in it. He may engage in consulting practice, but approximately half his time must be devoted to University and State duties. The salary is £1,100 a year; he will be appointed for seven years, but may be reappointed. A notice of the vacancy will be found in our advertisement columns, and full particulars can be obtained from the Registrar of the University, or from the Agent-General for New South Wales, Australia House, Strand, London, W.C.2.

## England and Wales.

### NOTIFICATION OF PUERPERAL FEVER OR PYREXIA, AND OF OPHTHALMIA NEONATORUM.

THE Minister of Health has issued amended regulations, to come into force on October 1st, relating to the notification of puerperal fever and puerperal pyrexia, and of ophthalmia neonatorum.

In a circular to the local authorities the Ministry states that experience has shown the incompleteness of the notifications of puerperal fever, and that this has resulted, not only in inaccurate and misleading statistics, but in hampering the effective prevention and treatment. The term "puerperal fever" is not precisely defined, and frequently a genuine doubt exists as to the correct diagnosis, while the implication of some slur on the patient or attendant may act as a deterrent against notification in doubtful cases. It is intended ultimately to replace the term "puerperal fever" by "puerperal pyrexia," but this cannot be done on the notifications without amending legislation. For the present, therefore, two forms of notification are to be used, one as at present, though with some alteration in its terms, embodying the words "puerperal fever," and the other "puerperal pyrexia." Puerperal pyrexia is defined as

"any febrile condition (other than a condition which is required to be notified as puerperal fever) occurring in a woman within 21 days after childbirth or miscarriage in which a temperature of 100.4 deg. F. (38 C.) or more has been sustained during a period of 24 hours or has recurred during that period."

Medical practitioners, therefore, will now be required to notify, not only puerperal fever as heretofore, but all cases of pyrexia during the puerperium, irrespective of the cause to which the fever may be attributed. It is recognized that this requirement will lead to a great increase in the number of notifications, and that many cases reported will be relatively trivial, but the importance of securing adequate treatment in the early stage of infection is held to outweigh these objections. The Ministry believes, on the basis of reports from various maternity institutions, that pyrexia during the puerperium is not infrequently looked upon as a comparatively unimportant incident, and that proper precautions to prevent the spread of infection are at times neglected, with disastrous results. The new forms of notification declare that, in the opinion of the notifier, the patient is suffering from puerperal fever (or, in the second form, puerperal pyrexia), with the date of onset of the disease and of the birth of the child, and continue:

I desire

- (i) to have a second opinion on the case;
- (ii) to have a bacteriological examination of (a) lochia, (b) blood;
- (iii) that the patient be admitted to hospital;
- (iv) that trained nurses be provided;

or

Facilities are available for all necessary treatment.  
(The inappropriate words are to be struck out.)

In the notification of puerperal fever a special form for the metropolis has still to be used, providing for the information required under the Public Health (London) Act, 1891, as to the origin of the case and whether it occurred in private or institutional practice. The covering circular adds that the facilities for assistance in diagnosis and treatment can most readily be provided by the local authority which administers schemes under the Maternity and Child Welfare Act, 1918, and such authorities and their medical officers are urged to do all that is possible to meet the requests of practitioners for special assistance. Practitioners so requesting may be required to supply information as to any conditions prior to labour which might have been factors in producing pyrexia, the names of all persons who made internal examinations, particulars of the clinical course of labour, the history subsequent to delivery, and any cases of specific fever, erysipelas, or puerperal pyrexia visited recently by the doctor or other attendant.

The amended regulations with regard to ophthalmia neonatorum place the duty of notifying such cases solely upon the medical practitioner in attendance. Under the

existing regulations an obligation rests upon a cert midwife to notify any case in which she has reasonable grounds for supposing the existence of this condition unless the case has already been notified by the practitioner. This dual responsibility has in some cases resulted in complete failure to notify; moreover, as midwives are required to call in medical help for any inflammation or discharge from the eyes, however slight, and to give a notice to the local supervising authority, the requirement to notify ophthalmia neonatorum tends to confuse them to their duty. It is to be made clear to midwives that they will still be required to summon medical assistance in cases of inflammation or discharge and to advise the local supervising authorities.

The Ministry is of opinion that, following the regulations or notifications, the proper authority to carry out necessary measures of visiting and home nursing, or provide hospital treatment where required, would be one entrusted with the scheme for maternity and child welfare. In notified cases of ophthalmia neonatorum the medical officer of the maternity and child welfare authority should personally ascertain from the practitioner whether nursing or other assistance is needed. It is added, as parents sometimes object to the recovery from the patient by the supervising authority of the fee paid to the practitioner called in by the midwife, the authorities may consider the advisability of refraining from exercising their power of recovery in this class of case in view of the importance of promptitude in seeking medical aid.

### KING EDWARD'S HOSPITAL FUND FOR LONDON.

Three gratifying features of modern hospital administration are indicated in a statistical report on the income and expenditure of London hospitals for the year 1925 just issued by King Edward's Hospital Fund for London. These are the great expansion of work, a relative reduction in its cost, and an increase in income. The report deals with 118 hospitals, containing 13,700 beds. During the year under review 240 additional beds became available and the average number occupied increased by 500 over the corresponding figure for the previous year, thus raising the percentage of occupied beds from 81.4 in 1924 to 86.2 in 1925, and approaching what used to be considered a normal percentage of 86. The increased celerity in medical treatment is shown by the fact that, whereas the number of patients per occupied bed was 14.3 in 1913, it was 16.2 in 1923, 16.2 in 1924, and 16.4 in 1925. The average duration of stay for each patient has fallen from 25.5 days in 1913 to 23 in 1923, to 22.6 in 1924, and to 22.3 in 1925. The number of new out-patients, which showed an increase in 1923 of 37,000 over those of 1913, and a further addition of 56,000 in 1924, rose still higher in 1925, when there was an increase of 89,000 over the total for 1924, and of 182,000 over that for 1913. Out-patient attendances increased 349,000 over those of 1924, and by 2,006,000 over 1913. The average attendances of each out-patient were 4.4 each of the three years 1923-25, as compared with 3.5 in 1913. The total out-patient attendances in 1925 were 7,026,000, and the total number of new in-patients 187,500.

The combined income of the 118 hospitals amounted to £3,029,000, as compared with £2,918,000 in the previous year; the increase was wholly in ordinary income, legacies and other sources of extraordinary income showing a decrease of £115,000, as compared with 1924. Subscriptions and donations increased by £98,000, payments by patients by £74,000, and receipts from public authorities by £18,000. It is interesting to note that, whereas in 1913 payments by patients were £105,000, as compared with £648,000 in the year under review, receipts from public authorities amounted to £247,000, as compared with £21,000 in 1913. Grants from public authorities now amount to 30.1 per cent. of the total Fund income, as compared with 8.2 in 1913; payments by patients represent 21.4 per cent. of the total income. The income of the Fund as a whole is more than double that of 1913, and the great increase comes under the heading of "Receipts for services rendered by hospitals."

to deal with their past deficits and to maintain a continually increasing number of beds. The number of hospitals whose annual income failed to meet their expenditure has fallen from 77 in 1920 to 49 in 1925. In addition to annual income the 118 hospitals have raised £167,000 for endowment, and £691,000 for building and equipment. The difficulties of these hospitals in the years immediately following the war are attributed to increase of expenditure and not to decrease of income. After having risen from £1,204,000 in 1913 to £2,808,000 in 1920, expenditure began to decrease, and fell to £2,594,000 in 1922, when there was some curtailment of work. Since then there has been an increase in work, and expenditure has increased; it reached £2,756,000 in 1924 and £2,906,000 in 1925, when there was a marked expansion in both in-patient and out-patient work; while the increasing expenditure in 1925 over 1920 was 3.5 per cent., the increase over 1920 in work was 8 per cent. in the in-patient department and 10 per cent. in the out-patient department. The increase in the volume of work was thus accompanied by a relatively lower expenditure in spite of the cost of the additional medical and surgical benefits provided by hospitals as the result of advances in medical and surgical practice since 1920.

The report contains sections of the nature of appendices giving details of the work and accommodation in the 118 hospitals, analyses of their income and ordinary expenditure, particulars of the more controllable items of expenditure, and group comparisons of the cost of working in the cases of the larger general hospitals, with and without medical schools; smaller general hospitals; cottage hospitals; hospitals for women; children's hospitals; ophthalmic hospitals; and hospitals for epilepsy and paralysis. It is announced that a fresh series of reports will begin next year when the new edition of the *Revised Uniform System of Hospital Accounts* will be in operation.

#### TREATMENT OF TUBERCULOSIS IN LANCASHIRE.

Sir Henry F. Hibbert, Bt., chairman of the Lancashire County Council, opened the Rufford Pulmonary Hospital, near Ormskirk, on August 5th. This new hospital has been constructed by adapting the buildings composing Rufford Hall, which was purchased by the Lancashire County Council in 1920; it provides fifty beds, and will receive patients more especially from West Lancashire. The total cost of the purchase and equipment was £31,844, and grants had been received from the Lancashire Insurance Committee and the Ministry of Health. Sir Henry Hibbert stated that the average cost per bed would be about half that in other hospitals. He added that the deaths from pulmonary tuberculosis in Lancashire had fallen from 107 per 100,000 in 1918 to 67 in 1925, and that the death rate in the county was less than the average for England and Wales. Lancashire had spent £170,000 on the treatment of tuberculosis; there were now fourteen dispensaries in operation, and the total hospital accommodation in the county had increased from 144 in 1913 to 860.

#### RURAL COMMUNITY COUNCILS.

We have received the report of the Kent Rural Community Council for 1925-26. The council was established two and a half years ago as an independent non-official body of representatives of many organizations—official and voluntary—which are concerned in the welfare of the countryside. Apparently fourteen counties in England and Scotland have rural community councils, linked together through the National Council of Social Service. The council in Kent has assisted in organizing such movements as the County Playing Fields Association and the British Empire Cancer Campaign; it has convened conferences on such subjects as village organization, agricultural training and apprenticeship, the welfare of hop-pickers, and the development of drama in villages; it has given concerts in villages, country towns, and at schools; and it is now extending its activities in the direction of juvenile welfare and public health. By the promotion of juvenile welfare committees, the council hopes to obtain the discussion of social developments from the young people's standpoint, and to foster their interest in the Kent Education Committee's schemes for juvenile welfare and the County

Council's proposals for the treatment of crippled children. Through a standing committee on public health, the council proposes to spread in the villages a better knowledge of public health administration. It is encouraging the formation of public health committees by village community councils. The experiment sounds interesting, though it has plainly many dangers. An enthusiastic public health reformer in some of our villages would not only find much to occupy his mind; he would possibly occupy his body in defending himself against the irate perpetrators of private and public nuisances.

#### MORISON MEMORIAL AT HARTLEPOOLS HOSPITAL.

On August 1st Princess Mary opened the new wing of the Hartlepoons Hospital as a memorial to the late Dr. A. E. Morison, who was connected with the institution for twenty-three years. The new wing is a three-story building, and contains two wards and a children's ward, with accommodation for the whole of the nursing staff of the hospital. The cost of erection was about £10,000, towards which the joint committee of the British Red Cross and the Order of St. John of Jerusalem has contributed £5,000, and Messrs. J. Nimmo and Sons provided the children's ward. The hospital was originally built in 1857 and on two previous occasions additions have been made. By this new extension its accommodation will be raised from fifty to eighty-six beds.

#### NEW HOSPITAL AT EBBW VALE.

The new hospital of the Ebbw Vale and District Voluntary Fund was opened by Dr. Roeyn Jones on August 11th. The fund was started in 1922, and the building contains three wards with accommodation for ten beds, an x-ray room, and staff quarters. Sir Ewen Maclean, who attended the opening ceremony, recalled his visit to Ebbw Vale fifteen years previously, when they had been struggling to establish the "free choice of doctor," a matter of the greatest importance both to patients and to the medical profession. The health scheme formulated by the Welsh Consultative Council had been temporarily held up by the difficult economic conditions. Sir Ewen Maclean believed, however, that before long it would be possible to put the recommendations into operation and so benefit the many crowded districts of Wales. As soon as the new scheme became effective all available hospital accommodation would be required, and the best consultative and executive skill would be provided in all localities. The council intended to establish a consultative centre in Ebbw Vale, and this would result in the statistics of the district being studied and plans made for the improvement of the public health of the community. Sir Ewen Maclean added that he believed that in his own lifetime they would see the materialization of a great scheme which would place Wales in the forefront in health matters in Great Britain, and perhaps in the whole world.

## Scotland.

#### SCOTTISH RESEARCH WORK IN ANIMAL DISEASES.

THE annual meeting of the Animal Diseases Research Association was held at Moredun Institute, Gilmerton, near Edinburgh, on August 12th. The report for the year to March 31st last stated that research work was being carried on in laboratories rented from the Glasgow Veterinary College, pending completion of the new institute at Gilmerton and of laboratories in the Royal (Dick) Veterinary College. The research staff concentrated upon braxy, lamb dysentery, louping-ill, scrapie in sheep, and grass disease in horses. Lack of accommodation for the maintenance of farm animals at the laboratory at present available had seriously handicapped the work, but would be ample in the new institute, the building and equipment of which had already cost nearly £13,000. The Board of Agriculture continued to pay, as in previous years, two-thirds of the maintenance expenditure, and the association had to raise one-third from private sources. Part of this had been contributed by various county councils and agricultural associations.

## UNVACCINATED CHILDREN IN THE WEST OF SCOTLAND.

In the report on the health and sanitation of Dumbartonshire for 1925, Dr. T. L. Thomson, medical officer of health, draws attention to the large percentage of unvaccinated children. It was highest in the Vale of Leven, where it amounted to 44.5 per cent. Attention is drawn in the report to the danger which would attend the accidental introduction of a case of small-pox into this community, for it would almost certainly produce an epidemic of great magnitude. Attention is also drawn to the fact that there is not yet any accommodation for the treatment of small-pox in this county.

## DIAGNOSIS OF SMALL-POX.

A recent bulletin of the public health department of Glasgow refers to the case of a patient who had been removed from a liner outward bound from Glasgow to Canada, which left on June 25th. The patient had, before his departure, resided in the central district of Glasgow. He had sickened on a liner on July 2nd, and had been removed from the ship at a quarantine station. It is obvious from the dates that if he suffered from small-pox he must have been infected in Glasgow. There had been four cases of chicken-pox in the patient's home, and there had been a small school epidemic of the disease in the district where he had resided. Two of the members of the patient's family suffering from chicken-pox at the time when the patient was infected had been successfully re-vaccinated. From the evidence it is therefore clear that the disease to which the patient had been exposed was chicken-pox. In the meantime examination of the patient's skin showed that its appearance was consistent with the disease from which he suffered having been chicken-pox. The case is interesting as showing the difficulty that exists in diagnosis between cases of chicken-pox and small-pox, and the complications that may ensue should the diagnosis be mistaken.

## Ireland.

CENTENARY OF THE COOMBE LYING-IN HOSPITAL,  
DUBLIN.

The centenary of the Coombe Lying-in Hospital, Dublin, will be celebrated next month by a congress. The governors of the hospital will hold a reception on the evening of Tuesday, September 14th, in the Royal College of Surgeons, where, on the following morning, the congress will be opened by the president, Sir William J. Smyly, M.D. Afterwards a paper on obstetrical teaching in Sweden will be read by Professor E. Möller of Lund, and a discussion will be opened by Professor Couvelaire of Paris, who will be followed by Professor Munro Kerr of Glasgow, Dr. Cassidy of Dublin, Professor Fletcher Shaw of Manchester, and Mr. Conyns Berkeley of London. A film on abdominal hysterectomy will then be shown by Professor Faure of Paris, and papers will be read by Professor Eardley Holland of London, on the unnecessary induction of labour, and by Professor Werner of Vienna, on the treatment of climacteric haemorrhages. In the afternoon a visit will be paid to the Coombe Hospital, and there will be a public meeting in the Royal College of Physicians. In the evening a dinner will be given in the Royal College of Surgeons by Alderman J. Hubbard Clark, chairman of the board of governors of the Coombe Hospital. On Thursday, September 16th, a discussion on "The lower uterine segment Caesarean section operation" will be opened by Professor Munro Kerr, who will be followed by Professor De Lee of Chicago, Professor Möller, Professor Eardley Holland, and Professor Werner. Afterwards some historical notes on two important advances in the practice of obstetrics and gynaecology will be read by Professor Donald of Manchester. "Three obstetrical principles" will be set out by Professor De Lee, and Professor Louise McIlroy will read a paper on some problems in ante-natal diagnosis and prognosis. There will be a polo match between Coombe Hospital and the All-Ireland Polo Club in Phoenix Park in the afternoon, and in the evening a special performance by the Abbey Theatre Company. On Friday, September 17th, Professor Hinselmann of Altona will read a paper on eclampsia, which will be discussed by Professor

Eardley Holland, Dr. J. Hendry of Glasgow, Dr. Hugh Davidson of Edinburgh, and Dr. Gibbon FitzGibbon of Dublin. After this papers will be read by Professor R. V. Johnstone of Edinburgh on the early diagnosis of cancer by Professor Beckwith Whitehouse of Birmingham on the cause of menstrual pain, and by Dr. F. Browne on intra-uterine infection in the newly born. In the afternoon there will be a garden party in the Zoological Gardens.

## India.

TREATMENT OF CANCER AT THE RANCHI RADIUM  
INSTITUTE.

We have received from Lieut.-Colonel J. C. Vaughan I.M.S., superintendent of the Radium Institute at Ranchi an account of the treatment of uterine cancer and some statistical returns of general interest in view of the discussion at the Annual Meeting at Bath last year on the treatment of inoperable cancer of the female pelvic organs (JOURNAL, 1925, vol. ii, p. 827).

He states that the practice has been to give an intracervical application of 100 mg. of radium bromide in a glass capsule of 0.5 mm. section contained in a silver capsule of 0.5 mm. thickness enclosed in a brass capsule of 1 mm. thickness surrounded by a rubber tube of 1 mm. thickness. This is kept *in situ* generally for twenty-two hours, and the application is repeated on the seventh or eighth day and again about ten days later. Fourth and fifth applications have been employed only when there has been an insufficient disappearance of the growth about three weeks after the third application. The first application is generally associated with an external application over the fundus uteri of usually 250 to 300 mg. radium bromide, which is only repeated with the second or third application in cases of extreme growth. This external application is generally kept on for the last fifteen hours of the twenty-two hours of the whole treatment. The whole period of treatment usually lasts from about a month to six weeks, of which the first three weeks cover the period on which three applications have been given. The outside applications consist of radium screened with glass, silver, and brass, as described above, with a distance screen of loofah sponges or cotton-wool of 4 to 5 cm. in thickness. In exceptional cases with very large cervical growth involving the vault of the vagina where the os has been practically occluded with growth the first application is made by either placing the tube in contact with the growth, or burying it in the growth, or inserting it just inside the os and packing the vaginal wall round it. At the second and third applications it has been occasionally possible to make the application an intrauterine one, and it is in these cases of very extreme growth that usually a fourth or even a fifth application has been employed. The interval between applications was usually determined by the intensity of the reaction (nausea, vomiting, and general malaise) after the removal of the radium, allowing an interval of at least five days after these symptoms have ceased. There was no variation in dose in cases of cancer of the body of the uterus or of the vaginal wall. In the latter there was always an intrauterine as well as an intravaginal arrangement of applicator tubes where there was fixation and involvement of the uterine ligaments. The outside application took the form of many small tubes, usually of 5 to 50 mg. of radium bromide each, spread out over the area between the symphysis pubis, the spot where the fundus was palpable, and the anterior superior spine of the ilium of the affected side, or more often over both these triangles where both sides were affected, and even when bilateral involvement was not absolutely demonstrable by a digital vaginal examination, but when from the patient's general condition it was judged wisest to apply the external radium pack as well as the intra-uterine application. An application over the sacrum has been often combined with the above. In this way each patient received 2,002 milligram hours of each intrauterine application and about 4,500 milligram hours of external application, or 3,551 milligram hours combined in external and internal applications.

The Ranchi Radium Institute was opened on April 1st, 1922, and from then until December 31st, 1925, it has dealt with 27 cases in 1922, 37 cases in 1923, 57 cases in 1924, and 51 in 1925, making a total of 172. Excluding patients who were not treated, being too advanced for any treatment, those who abandoned treatment, and who died in the first few months after having been seen, Lieut.-Colonel Vaughan has classified the remaining 134 in four groups, from which conclusions as to the value of the treatment can be drawn. Of these cases 21 have not been traced definitely; he believes that some are clinically free from disease, but in the absence of

y definite information he has specified them as not traced. results are as follows :

of 27 cases treated until the end of 1922, or earlier, 3 patients died after six months, 11 after one year, 4 after one and a half years, and 4 after two and a half years. Of the patients living, only one has survived since 1918, and 2 are in the fourth year. Cure appeared in 2 other patients after two and a half years of clinical freedom; after further control treatment they again became clinically free. Two patients were not traced at all; one was known to be living in January, 1923. Of 28 cases treated to the end of 1923, 2 died after six months, 6 after one year, and 3 after one and a half years, 2 after two years, after two and a half years. Four patients are living to-day, 11 have not been traced. Of 42 cases treated to the end of 1924, 6 died after six months, 12 after one year, 4 after one and a half years, 11 after two years, and 9 have not been traced. 37 cases treated to the end of 1925, one died after six months, after one year, and 4 after one and a half years; of the remaining 26 cases 6 have relapsed already and have been receiving treatment up to last March.

#### THE CONNAUGHT HOSPITAL, POONA.

The new British Station Hospital, to be known as the Connaught Hospital, was opened in Poona on April 14th by the Commander-in-Chief of the Bombay Presidency. The main building consists of ground and first floors, which comprise three sets of wards each capable of accommodating from twelve to twelve patients. At one side of this building is a smaller block containing the operating theatre and a theatre for x-ray work. A separate building is provided for diseases of the eye, ear, nose, and throat, and some 200 yards away is a block of infectious wards. In addition to administration buildings, connected by covered passages, bungalows are being erected for the staff. The hospital still requires some internal rearrangement before it can be taken into full use, but when completed it will be the most up-to-date hospital in the Presidency of Bombay. It has been built on an open site at a high level, and takes its name from the fact that the Duke of Connaught was the originator of the old British Station Hospital, which forms part of the new institution. During the alterations which are necessary the temporary wing of George's Hospital is being used for medical treatment.

#### DELHI MEDICAL ASSOCIATION.

The heavy mortality among adults and children in India was the subject of an address given recently by the President of the Delhi Medical Association at its annual dinner. It was stated that whereas the death rate in 1923 in London was 12 per 1,000, in New York 13, in the city of Bombay it was 49.73, in the whole of India 25, and in Calcutta 28.4. The infantile mortality in London was 38, and in New York 181, but in Delhi it was 212, in Calcutta 294, and in Bombay city 624. To combat this high mortality the President urged that the Government should inaugurate a health insurance scheme to provide expert medical advice and treatment, especially in the villages, where more than 90 per cent. of the Indian population lived. The money required for this purpose could, he said, be obtained partly from funds acquired under this scheme, and partly from State grants. Local self-governing bodies should also be stimulated to greater activity in public health work, including educational campaigns. The Delhi Medical Association strongly approved the bill introduced by Dr. Rama Rao in the Council of State, to provide for the constituting of a General Medical Council in India to regulate medical education and keep a register. The President, referring to the scheme of reorganization of the Indian Medical Service, stated that a great injustice would be done to Indian officers if they were to be transferred to military employment to make room for British military officers who, henceforward, would alone treat British civil officers. He paid a high tribute to the Indian Medical Service with its long list of distinguished physicians and surgeons and research workers. He thought the Government should permit the Delhi Medical Association to send an accredited representative to the University of Delhi and the municipal committee. Colonel Franklin, supporting the proposal for a General Medical Council in India, claimed priority in having suggested such a scheme many years ago with Dr. Chand Parshad in Indore. He believed that quackery would diminish with the growth of sound

public opinion, and thought the day was not far distant when the civil surgeon would have disappeared and the whole country be included in a panel system.

#### PUBLIC HEALTH IN BENGAL.

Severe criticism of the way in which vital statistics are being kept in Bengal is expressed by Major A. D. Stewart, I.M.S., the director of public health, in the Bengal Public Health Report for the year 1924. Some improvement has occurred in this respect in rural areas, but in the towns, where the registration of births and deaths is compulsory, great laxity still obtains. Out of 115 municipalities offenders were only prosecuted in thirty-seven, and it is emphasized that until greater attention is paid to this matter improvement in the public health must be retarded. Although the cholera mortality in Bengal in 1924 showed a slight increase on that in 1923, the decline in the curve noticeable during the last few years continued. This is attributed in part to the fully trained staffs now employed in anticholera work by the municipalities in disinfecting water supplies, arranging anticholera inoculations, and providing for the education of the people; voluntary agencies have co-operated in this work with very good results. During the first six months of 1925 there was a recrudescence of small-pox in epidemic intensity. The mortality, though high, was not so severe as in the previous epidemic of 1919 to 1920. The number of deaths in the various places appeared to bear a definite relation to the density of the population; the towns were the chief centres of dissemination, and the improved travelling facilities led to increased spread of infection. The general decline in malaria observed since 1921 continued; it was more prevalent and the death rate higher in the rural areas than in the towns. The consumption of quinine throughout the province is as yet not commensurate with the prevalence of the disease. Antimalarial operations in the form of drainage schemes have been put into operation in the Banka Valley, at Meenglas, and in connexion with the rivers Singaran and Bhagirathi. Many voluntary village societies have been formed to spread information about malaria prophylaxis and to provide treatment; grants have been made by the Government in support of this work. The mortality attributed to kala-azar increased during the year, but this may have been due to better registration or more careful diagnosis; enteric fever was less prevalent. Deaths from rabies, pneumonia, and pulmonary tuberculosis were rather more numerous than in 1923, while the incidence and death rate of influenza diminished. The work of the Bengal Public Health Laboratory considerably increased during the year under review; it was found that the quality of the drinking water supplied by the municipalities had improved appreciably; settlement and slow sand filtration appeared to be better processes of purification than rapid filtration, which, when employed, required the assistance of chlorination.

#### AMBULANCE AND HYGIENE TRAINING.

The annual general meeting of the St. John Ambulance Association and the Indian Red Cross Society was held at Simla on June 24th, with the Viceroy in the chair. Field-Marshal Sir William Birdwood, presenting the annual report of the St. John Ambulance Association, emphasized the importance of education in treating accidents and sudden illnesses. Many deaths from drowning and snake-bite were being prevented through the first-aid training now available. Considerable progress had been achieved during 1925, and Indian States, railways, police, educational institutions, prisons, and mines had all joined actively in the work. The course in ambulance training had been taken by 10,340 persons, of whom 1,820 were railway employees. In the All-India ambulance competition at Madras teams consisting of warders, convicts, and boys from the reformatory schools took part, and one convict team came second in the contest for the Jagmull Raja All-India Labour Ambulance Challenge Shield. The Mackenzie school course in hygiene, sanitation, and first aid, which had proved very successful in the United Provinces, had been recently instituted in other parts of India, and the Indian States had provided instruction



for 1,500 students. Sir B. N. Mitra, reporting on the work of the Indian Red Cross Society, announced that the total membership of the branches had increased from 2,815 in 1924 to 4,200 in 1925. The headquarters organization had carried on an active public health propaganda, and the society was represented at three conferences outside India. During the coming year its representatives would visit the fourth English-speaking conference on child welfare in London and the second Oriental Red Cross Conference at Tokyo in November. The Viceroy, congratulating both organizations, observed how the Government needed and welcomed the assistance of such voluntary bodies in promoting good health, sanitation, and general hygiene throughout the country.

## Correspondence.

### ANTIGENS FOR THERAPEUTIC IMMUNIZATION.

SIR,—In company doubtless with other clinical pathologists in search of the ideal antigen, I welcome Sir Thomas Horder's researches on immunogen antigens (July 31st, p. 177) as a new hope.

At the same time, it does occur to me that there are conceivably vulnerable points in this research work, brilliant though it is. First of all, does it follow that agglutination, complement fixation, and bacteriotropin tests are necessarily criteria of immunity? Admittedly they imply infection, but we know that in gonorrhoea and tubercle, for instance, victory over infection is signalized by a negative complement fixation test, and in syphilis by a series of negative tests. And, again, the healthy human body furnishes its own immunity from the virus, the whole virus, and nothing but the virus, and it seems that in so far as we adhere to nature's methods we shall succeed, and in so far as we deviate from nature we shall fail. Hence I still pin my faith to the autogenous vaccine. The production of a good autogenous vaccine demands very great care in the selection of culture media and the separation of organisms, and also upon a rapid intensive growth of the first subcultures. More failures are probably due to faulty preparation than is commonly believed, and there are some organisms—for instance, certain strains of streptococci—which need very special inducement for rapid growth. May not the autogenous vaccine fall into partial disrepute from insufficient individual attention in an over-worked laboratory? Very easily.

I believe that to deprive an antigen of its toxin is a mistake. Is not the toxin of diphtheria the best immunizing agent we know? Is not diphtheria antitoxin the very crown of immunological success? Can we disregard the toxic element in other instances? I do not think we can afford to do so. To do so is to deviate from nature's principle, and we are not above nature in this matter.

My experience of detoxicated and defatted vaccines and other mutilated products is that they are clinically inert, and I am not alone in this view. I have used immunogens, but only in three instances, so perhaps it is unfair to state the result.

With others, I await convincing clinical records, and, whilst admiring the ideal and the brilliant technique, such experience as I have leads me to be a little sceptical as to the future of "immunogens."—I am, etc.,

Eastbourne, Aug. 10th.

GEORGE SHERA.

### THE DEVELOPMENT OF VAGINAL OPERATIONS FOR GENITAL PROLAPSE.

SIR,—Dr. Frank A. Nyulasy (August 7th, p. 274) is quite right in his opinion that the so-called Mackenrodt's ligaments "are not mere bands of firm fibrous tissue" arising from the ischial spines and inserted into the cervix and vaginal vault. As he says, "they arise from the uterus and pass outwards to be inserted into the pelvic fascia and the lateral wall of the pelvis, and they are packed with bundles of smooth involuntary muscle fibres. . . ." This was pointed out by Ednard Martin in 1911<sup>1</sup>; and in vol. i of my *Statics* (1918), p. 263, I say: "It is, moreover, to be noticed that these thickenings,

<sup>1</sup> Martin: *Der Hoftapparat der weiblichen Genitalien*, Berlin, 1911, pp. 47, 51.

which are most marked centrally—that is, where the cervix happens to be—all disperse and fray out peripherally." It is clear that these thickenings are not "ligaments" in the ordinary sense; nor are they "tendons," comparable with those we meet in relation with striated muscle. They contain, as Dr. Nyulasy asserts, much non-striated muscle, which emanates from the uterine musculature. Dr. Nyulasy, however, misses this point, that from their structure—in virtue of the non-striated muscle content—they are not capable of sustaining the pressure which during active life is continuously tending to depress the uterus, and which during growth from the infantile to the adult form not only caused the uterus, at one time an abdominal organ, to enter the pelvis, but was actually responsible for the pelvic distension—that is, of a space limited by bones.

The immediate cause of Dr. Nyulasy's letter was my statement that no one has cured a case of complete prolapse of the uterus by operating on the visceral connective tissue alone." He states that the late Dr. Arthur Nyulasy "rectified a number of such cases by shortening the tissues alone." The abdomen was opened, the "cardinal ligaments" isolated, and "stitched (as loops) to the front of the cervix." In the same way, it may be argued that simple amputation of the cervix, or this combined with anterior colporrhaphy, is at times followed by a visceral retention; and that such result was due either to an inflammatory reaction set up or to a veritable shortening of the visceral connective tissue concerned. To have expressed myself completely, I should have added the words: "unless other factors come into play." Thus, I do not need to be assured that the procedures mentioned may cure prolapse; the state of prolapse, however, has to be defined, and the manner of living subsequently, also. Even keeping patients in bed suffices to cure "pudding hernia" of whatever magnitude; but what we desire is a visceral retention in the presence of general activity. In this respect I have read that Dr. Stacey Wilson cured a case of protrusion by getting the patient constantly to "draw up" the parts—that is, by constantly making the movement which we all make when defaecation appears imminent and yet must be postponed.<sup>2</sup> The spectacle of complete perineal tears—that is, into the rectum—without any prolapse whatever is also before me. Palpation shows how in such cases the levator ani muscles are hypertrophied. All the time—during every minute of the day—such patients are constantly maximally contracting the levator muscles, not to prevent an exit of the uterus or of the anterior vaginal wall, but to prevent the untimely escape of rectal contents. The result is a most efficient sphincter to the pelvic outlet—a most efficient determinant of a visceral (not only of a faecal) retention. Thirdly, I have the results of my levator plastic occasionally appearing. In this, the position of the laterally displaced arm (or arms) of the pelvic floor musculature is fixed more medially—nearer the pubic arch. My cases, naturally, have been few; but the results, in spite of occasional failures, have exceeded my expectations. To cure "prolapse," or, as I call it, "pudding hernia," we must obtain a good closure for the pelvis, either by physiological reaction or by surgical technique.

Dr. Nyulasy, however, does not refer to such a mechanism; he does not state that in the patients, on whom the procedure he refers to was performed, the pelvic outlet (which measures 4 by 5 inches) was not efficiently occluded, or did not become efficiently occluded, as a result of the treatment, of which a most essential part is the rest in bed. If a patient with a genital extrusion is kept in bed the pelvic floor aperture, stretched by the extrusion, has a chance to retract. Similarly, if visceral parts, which previously entered the aperture and caused and maintained its dilatation, are removed, and if the general health of the patient is caused to improve, the levator muscles naturally retract, the loop they form takes up a more advantageous position, and, without anything else, an improved physiological response comes into play.

<sup>2</sup> Tweedy: *The Lower Uterine Segment and Uterine Tendons*, Lancet, i, 1919.

<sup>3</sup> British Medical Journal, 1926, i, 502.

<sup>4</sup> Stacey Wilson: *Cure of Uterine Prolapse by Re-education of the Muscles Constricting the Vagina*, British Medical Journal, 1924, ii, 1041.

I submit that if Dr. Nyulasy studies the subject closely he will find some forces at work which, judging from his letter, he has not sufficiently regarded, and perhaps not at all. The whole individual must be considered. I have laboured at this subject since 1907, and I trust not in vain. Both volumes of my *Statics* were sent to the *Medical Journal of Australia* for review. The review of the first appeared on March 22nd, 1919, and that of the second on February 13th, 1926. A perusal of these may entice Dr. Nyulasy to read these books, and if he does he will obtain more fully my point of view. If subsequently he can show I am in error I shall be grateful.—I am, etc.,

Rugby, Aug. 7th.

R. H. PANAMONE, F.R.C.S. Eng.

Sir,—I read the letter of Dr. Frank A. Nyulasy in your issue of August 7th (p. 274) with particular interest, for I had the good fortune to be the assistant of Professor W. E. Fothergill at the time he brought his operation for the cure of prolapse to its present state of perfection.

His letter calls attention to the publication about 1914 of some anatomical and other facts, which appear to call for comment.

First, from the anatomical standpoint dealing with the special supports of the uterus, we have the earlier work of Cameron, Derry, and other anatomists stating the fact that the special supports of the uterus are lateral structures in the subperitoneal tissue, and especially in connexion with the blood vessels. This work was quoted by Fothergill before the Royal Society of Medicine in December, 1907. Elliot Smith described the same structures in the *Journal of Anatomy and Physiology* (April and June, 1908). Again, in the *Journal of Obstetrics and Gynaecology* (March, 1913) Moritz published sections showing the extension of smooth muscle of the viscera into the parametrium and paracolpos.

Secondly, as to operation, the wide dissection into the lateral fornices exposing the parametrium has been carried out in Manchester since 1910. In 1913 Fothergill published in the *BRITISH MEDICAL JOURNAL* his technique in utilizing these structures in the cure of genital prolapse.

Lastly, with regard to nomenclature, let us stick to anatomical facts, and deal with parametrium and paracolpos. There is no "ligament" in question. A good deal of the work done in Manchester in this connexion appears to have escaped the notice of your correspondent.—I am, etc.,

Manchester, Aug. 14th.

JOHN WEBSTER BRIDE.

#### MINER'S NYSTAGMUS.

Sir,—In the issue of July 17th a note was published (p. 128) commenting on the unanimous conclusion of the Miners' Nystagmus Committee that the essential factor in the production of miner's nystagmus is deficient illumination. My letter of July 31st was written in support of Dr. Freeland Fergus's contention that brighter illumination was no remedy for the disease; in it I gave a very brief summary of the work I had previously done on this subject (published May 8th, 1923). I dealt with over 36,000 underground workers in the counties of Northumberland and Durham, and found that 0.90 per cent. of the coal hewers developed nystagmus during the year 1922, whereas only 0.24 per cent. of the non-hewers acquired the disease during that year. All who understand statistical methods will admit that my results definitely confute the Miners' Nystagmus Committee's conclusion as far as Northumberland and Durham are concerned, for they show that coal hewing, or something connected with coal hewing, is a far more important factor than deficiency of light in the production of the disease.

Dr. Vernon's reasoning (August 14th, p. 323) is hard to follow; he disputes my conclusion, although he admits apparently that coal hewers are more subject to nystagmus than other underground workers; I would incidentally point out that, at any rate in our pits, where the airways are not "stone-dusted," it is the non-hewers who attend to "the props which keep the roof from falling." Had Dr. Vernon read my original paper he would have found that I had dealt with the subject of eye-strain as well as with the vision required for hewing (and, I might add, for accurately placed hammer blows), which calls for

an accurate sense of projection far more than a high macular visual acuity, as Dr. Freeland Fergus has pointed out in his instructive account of what he terms "alignment."—I am, etc.,

Newcastle-upon-Tyne, Aug. 15th.

A. S. PERCIVAL.

#### PROPHYLACTIC VACCINATION OF THE NEWLY BORN AGAINST TUBERCULOSIS.

Sir,—The editorial article in the *JOURNAL* of March 27th (p. 581), on prophylactic vaccination against tuberculosis (B.C.G.), was a guarded comment, as the results were considered incomplete.

In analysing the figures of Calmette I am struck by the very high mortality from infantile tuberculosis in France as compared with that of the cities in England; also the deaths of infants of tuberculous parents under 1 year are higher than those observed or generally notified in this country. The difficulty of diagnosis of tuberculosis in infants and the varied causes of infantile mortality render deductions from Calmette's statistics very perplexing.

When the total deaths in infants treated by Calmette's method during a definite period of a particular year are examined no appreciable difference from those treated by isolation in Paris by Professor Couvelaire is to be noted. The figures quoted in the article in the *BRITISH MEDICAL JOURNAL* are that 586 infants were vaccinated by Calmette from July, 1924, and observed by him for eighteen months; of these 96 (16 per cent.) died of various causes, and 11 (1.8 per cent.) died presumably of tuberculosis. About the same time for a similar period Couvelaire had 26 deaths (17 per cent.) out of 151 isolated babies. Thus Calmette's 17.8 per cent. total mortality was higher than Couvelaire's; 11 deaths from tuberculosis out of 167 from all causes of vaccinated infants gave 10 per cent., which is higher than that known in England for the age period. The advantage of Calmette's method was that the infant lived with the parents under probably worse conditions as a result of vaccination.

In the absence of the after-history of all the 5,182 infants vaccinated by Calmette conclusive deductions are also not possible. From the results quoted in the *Lancet* of May 29th, 1926, it is noted that the deaths from tuberculosis were smaller in the first group, which included known tuberculous contacts, than in the second group of a more recent and shorter period of observation. Thus there were 2 deaths from tuberculosis in the first group of 564 infants, of whom 231 were tuberculous contacts; the deaths from other causes were 43, and time of observation one year to eighteen months. On the other hand, in the second group of 753 infants there were 9 deaths from tuberculosis; the deaths from other causes were 53, and observation lasted six months to one year.

The following figures are typical of infantile tuberculosis deaths in our industrial areas. In Leeds, in 1924, the deaths from pulmonary tuberculosis numbered 525; the percentage of deaths at ages 1 to 5 was 2.8, and at ages 5 to 15, 4.4. The figures for Sheffield for the same year were: 447 deaths; 1.1 per cent. at ages 1 to 5, and 3 per cent. at ages 5 to 15. Taking all deaths of infants under 1 year (1924) there were 34 (1.6 per cent.) tuberculosis deaths out of 2,113 in Liverpool. The average deaths of such infants a year for six years in Leeds was 960; of these, 34 (3.5 per cent.) died of tuberculosis and meningitis. Our experience in Leeds is that the fatal type of tuberculous meningitis accounts for a high incidence of tuberculosis deaths under 1 year, generally from sources where the existence of tuberculosis is not known to the health authorities. In 1924 there were 61 deaths from tuberculous meningitis in Leeds, of which 11 were under 1 year. In 1925 the 32 deaths from tuberculous meningitis in children under 15 were traced by our nurse visitors; 7 occurred in infants under 1 year, and of these 2 only were known to have tuberculosis in the family.

Out of 464 children under 15 found tuberculous as a result of contact examination or reference by school medical officers in Leeds in 1925, only 6 died during that year; there was no death under age 5. Death notification, however, revealed over 80 deaths from tuberculosis in children under 15.

These figures seem to show that tuberculous infantile mortality is a negligible factor in our large cities for infants under 1 year. Secondly, the fatal type so prevalent is the meningeal or acute form from sources not generally known to the health authorities, rather than from tuberculous homes. Granting the effectiveness of Calmette's vaccine, unless all the babies born are vaccinated infantile deaths from tuberculosis can hardly be reduced in England. It will mean that in a city like Leeds about 8,000 babies born every year should be vaccinated to reduce the 34 deaths from tuberculosis among the 960 that die at 1 year. To vaccinate only the tuberculous contacts in English cities, who seem to acquire a better natural immunity, can hardly diminish the mortality from tuberculosis under 1 year. Nor is there any proof that as a result of vaccination incidence of or mortality from tuberculosis can be prevented in later years in those vaccinated.—I am, etc.,

Leeds.

Z. P. FERNANDEZ, M.D., D.P.H.

## OBSTETRICS IN GENERAL PRACTICE.

SIR,—It might be of interest to practitioners to see the classified statistics for puerperal sepsis in Glasgow for 1925, which were as follows:—Cases of sepsis per 1,000 confinements: midwives 7.5; maternity institutions—outdoor 11.2, indoor 16.9; doctors 12.1.

I am sure that even Dr. Munro Kerr cannot find here grounds for removing midwifery from the field of the general practitioner to the safer (!) hands of institutions and midwives.—I am, etc.,

Dennistoun, Glasgow, Aug. 11th.

JAMES COOK, M.B.

## DEFENCE OF ASSISTANTS AND LOCUMTENENTS.

SIR,—The letter in your issue of July 31st from the secretaries of the Medical Defence Union and the London and Counties Medical Protection Society, followed by the letter in your issue of August 7th from the secretary of the Medical and Dental Defence Union of Scotland, is apt to convey the impression that members of any of these bodies are completely or almost completely covered in the matter of risk arising out of the actions of their assistants or locumtenents, and Dr. Farquhar Murray has performed a valuable service in drawing attention in your issue of August 14th (p. 324) to certain weak spots in our armour in this respect.

The main lesson to be learnt is the old one that, as far as possible, every qualified medical man should be a member of one or other of these defence societies. This is especially necessary in these days when the public are much more critical than was formerly the case regarding the quality of the medical service which they receive.

But the second and almost equally important point is, as Dr. Murray emphasizes, that there should be a comprehensive reciprocal agreement between all three medical defence societies so that a principal in practice or a member of a visiting staff of a hospital should be completely covered regarding the acts of his assistants, locumtenent, or house-surgeon.

If this could be done, I am sure that it would react, not only to the benefit of the profession, but also to the benefit of the defence societies.—I am, etc.,

GILBERT I. STRACHAN, M.D., F.R.C.S.,

Honorary Secretary, Cardiff Division,  
British Medical Association

Cardiff, Aug. 8th.

## The Services.

## ARMY MEDICAL SERVICE.

## Honorary Surgeons to the King.

HIS MAJESTY has approved of the appointment of the following Major-Generals to be Honorary Surgeons to the King:

Major-General H. P. W. Barrow, C.M.G., D.S.O., O.B.E., late Royal Army Medical Corps, with effect from June 1st, 1926, in succession to Major-General C. B. Pollock, C.B., C.B.E., D.S.O., late Royal Army Medical Corps, who has retired.

Major-General D. Harvey, C.M.G., C.B.E., M.D., late Royal Army Medical Corps, with effect from July 10th, 1926, in succession to Major-General J. R. McMunn, C.B., C.M.G., late Royal Army Medical Corps, who has retired.

Major-General Barrow is Director of Hygiene at the War Office, before that he was Director of Hygiene and Pathology in India. Major-General Harvey is Director of Pathology at the War Office. When Assistant Professor in Pathology at the Royal Army Medical College in 1906 he was sent to India as a member of a commission to investigate enteric fever, and after his return was appointed a member of the Royal Society commission on sleeping sickness, and spent two years in Nyasaland.

## Obituary.

JOHN RUSSELL, O.B.E., M.B., C.M.ABERD.

Honorary Consulting Physician, North Staffordshire Infirmary.

We regret to announce the death, on August 10th, of Dr. John Russell, formerly of Burslem, at the age of 64. Dr. Russell was born at Ince, Aberdeenshire, in 1862, and was educated at the Universities of Aberdeen and Dublin. He graduated M.A. in 1883, and M.B., C.M.Aberd. in 1886. Forty years ago he commenced general practice as assistant to Dr. Samuel Oldham at Burslem, and succeeded to the practice on Dr. Oldham's death. He was appointed assistant honorary physician to the North Staffordshire Infirmary in 1898, and later became honorary consulting physician to that institution, as well as to the Haywood Hospital, Burslem. He also held the posts of public vaccinator and police surgeon for Burslem, and medical officer to the North-East Burslem District Union. He took a keen interest in industrial disease, and was regarded as an authority on the subject of lead poisoning in particular, of which he saw many cases among the workers in the Potteries. He was the author of an important paper entitled "Basophilia in lead poisoning," which was published in the *Journal of State Medicine* in 1915. He was frequently consulted in cases of industrial disease, and his services were in constant demand by various important commercial enterprises in Staffordshire. He was an ex-president of the North Staffordshire Medical Society and of the Staffordshire Branch of the British Medical Association, as well as ex-chairman of the North Staffordshire Division.

In his younger days he was a keen member of the old Volunteers, and held a commission as captain in the Burslem Company of the 5th Volunteer Battalion of the North Staffordshire Regiment. He was prominent in Red Cross work, and for a number of years was assistant county director of the British Red Cross Society. During the war he rendered valuable service in organizing the Red Cross work in connexion with convoys to the local war hospitals, and for this and other services he was created an O.B.E. He was a prominent member of various art societies, and one of the best known public men in the Potteries. Dr. Russell is believed to have provided the original for Mr. Arnold Bennett's character of Dr. Stirling of Bleakridge, who appears from time to time in the novels of the five towns.

Owing to ill health Dr. Russell retired from practice early this year, and went to reside at Grantown-on-Spey. Before his departure from Burslem, he was the recipient of presentations from the Caledonian Society, the Ceramic Art Society, the North Staffordshire Art Society, the British Red Cross Society, the Stoke-on-Trent Insurance Committee, the Burslem Golf Club, and numerous friends and patients.

## THE MEDICAL SECRETARY WRITES:

Dr. Russell will be a great loss to the British Medical Association, for he was for many years one of its outstanding and most stalwart supporters in Staffordshire. He represented North Staffordshire in the Representative Body from 1905 to 1923 and again in 1925. He was at the time of his death chairman of the Stoke-on-Trent Local Medical and Panel Committee, and, with the exception of 1916, had represented Stoke at the Annual Conference of Local Medical and Panel Committees since its formation. He was one of those men who rarely spoke at a conference, but those of us who knew him well realized that his influence in his own area was very great, and was always used with great effect as well as good judgement. His kindness and hospitality were unbounded, and I have more than once

pent a very happy evening with him at gatherings of the profession in Stoke and afterwards in his own house, where a "booky" man his library was irresistible. He collected books with great discrimination and had many rarities, particularly in the way of first editions of modern authors. His taste in prints and pictures also was remarkable, and it was with great pride that he took his guests into his drawing room, where he had some fine specimens of modern painters, particularly of Munnings. The news that he has left some of his money to build and endow an institute in his native village and part of his books as the basis of a library will not be surprising to those who know of his intense local patriotism, which was shared equally between the place of his birth and the town of his adoption, for the Art Gallery at Stoke is to receive a number of his valuable pictures. The sympathy of his friends will go out to his devoted niece, Miss Elsie Bissett, who took charge of his house after the death of Mrs. Russell, and to his brother, Dr. A. W. Russell of Glasgow.

J. F. HALL-EDWARDS, L.R.C.P. Ed., D.M.R.E.,  
Surgeon Radiographer, General Hospital, Birmingham.

On August 15th Dr. J. F. Hall-Edwards, one of the earliest x-ray workers in this country, died at Edgbaston.

Dr. Hall-Edwards was the son of Dr. John Edwards, who practised at Sparkbrook. He was born on December 19th, 1858, and was educated at King Edward's School and at Queen's University, Birmingham, where he was assistant demonstrator of physiology from 1880 to 1882. He settled in practice at Moseley, where he devoted his spare time to photography and photo-micrography. Fascinated by Röntgen's discovery of x rays in 1895, Dr. Hall-Edwards in 1896 took up radiography, and in 1899 was appointed radiographer to the General and the Royal Orthopaedic Hospitals in Birmingham. He was also radiographer to the Birmingham Dental Hospital and to the Birmingham and Midland Eye Hospital, and consulting radiographer to the Guest Hospital, Dudley. When the South African war broke out Dr. Hall-Edwards volunteered, and was appointed x-ray expert to the Imperial Yeomanry Hospitals at Deelfontein and Pretoria, and received the Queen's medal with four clasps. It was on his return from South Africa that Dr. Hall-Edwards began to suffer from x-ray dermatitis. He lived in constant pain for five years, and at length had his left forearm amputated. Later on similar trouble led to the amputation of the four fingers of the right hand. A Civil List pension was granted him in 1908. In spite of his disabilities he obtained a temporary commission as major in the R.A.M.C. on the outbreak of war in 1914, and acted as consulting radiographer to the First Southern and other military hospitals in the neighbourhood of Birmingham. He was also a medical examiner at the Birmingham recruiting station, addressed recruiting meetings, and organized charity performances in aid of war funds.

After the war he not only continued to practise as a radiologist; he turned his attention to municipal interests, was elected to the Birmingham City Council in 1920, and became a member of the Public Health, the Public Libraries and Museum, and the Art Gallery Committees. He was elected an honorary member of the British Medical Association at the Annual Meeting last month at Nottingham for his work and sufferings in connexion with x rays. Mr. Alfred Lucas, who expressed the thanks of the Birmingham Central Division, said that Dr. Hall-Edwards was a very loyal member of the Association, and had read many papers before his Branch and before various sections at the Annual Meetings. In 1922 Dr. Hall-Edwards was awarded the Carnegie Hero Trust medallion, together with an annuity of £100. He was ex-president of the British Electro-Therapeutic Society, vice-president of the Röntgen Society, and an honorary member of the American Röntgen Ray Society. Amongst other applications of x rays to which he gave attention was the detection of flaws in metals. As a recreation he adopted painting, using his brush by means of the thumb which remained on his right hand and an artificial finger.

ROBERT HENRY COLE, M.D., F.R.C.P.,  
Physician and Lecturer in Mental Diseases, St. Mary's Hospital, Paddington.

It is with great regret that we have to record the death of Dr. R. H. Cole, which occurred on August 10th at his residence in London. He was born in 1866, and was the son of the late Mr. R. C. Cole of Ealing. Before taking up medicine he was in the civil service. He received his medical education at St. Mary's Hospital, Paddington, and took the diplomas of M.R.C.S., L.R.C.P. in 1889. In 1892 he graduated M.B. at the London University, and proceeded to the M.D. in 1895. He took the M.R.C.P. in 1896, and was elected to the Fellowship in 1917. In 1891 he became resident physician at Moorcroft Mental Hospital, and retained this position until 1907, when he started consulting practice. He threw himself with energy into his new sphere of work, and rapidly gained a reputation as a sound and reliable psychiatrist. He was appointed to the position of lecturer on mental diseases at St. Mary's Hospital, and also lectured at the Post-Graduate College, West London Hospital, and at Bethlem Royal Hospital. His other appointments included those of physician in mental diseases, St. Mary's Hospital, visitor for the Middlesex institutions for mental defectives, Home Office visitor to the State Inebriate Reformatory, and physician to the special hospital for officers, Palace Green. For several years he was examiner in psychological medicine at the University of London.

Cole was particularly interested in the administrative and legal aspects of psychiatry, and as secretary of the Parliamentary Committee of the Royal Medico-Psychological Association from 1912 to 1921, and subsequently as chairman of this committee up to the time of his death, he was responsible for much valuable work. During his period of office as chairman he rendered invaluable service in connexion with the amending bill of the Asylum Officers' Superannuation Act and the Mental Treatment Bill, and he took a prominent part in the preparation of the evidence for the Royal Commission on Lunacy and Mental Disorder. He did much good work also in connexion with the registration of mental nurses under the Nurses' Registration Act. The problem of crime in relation to insanity was one in which he was specially interested, and his views on this subject were both sound and practical.

In 1925 Cole was made president of the Psychiatric Section of the Royal Society of Medicine. For his presidential address, in which he showed a characteristic breadth of view, he chose "Progress of psychiatry" as his subject, and gave an excellent summary of the directions in which his specialty had advanced during the past few years. He was not a voluminous writer, but contributed a number of papers to the various medical journals. He was the author of a *Textbook of Psychiatry* which is now in the third edition. He was a member of the British Medical Association, and was secretary and vice-president respectively of the Section of Psychological Medicine at the Annual Meetings in 1903 at Swansea and 1909 at Belfast.

Cole will be greatly missed by a large circle of friends, and it will be difficult to fill his place in the Royal Medico-Psychological Association, for which he worked so untiringly. He was a kind, unassuming man, and extremely conscientious, thorough, and painstaking. Where patients and their relatives were concerned nothing was too much trouble, and he devoted himself unsparingly to their interests.

In 1907 he married the widow of Dr. Arthur T. White, who survives him, and to her and his son and daughter we extend our sincere sympathy.

The death occurred suddenly at Gullane on August 10th of Dr. R. J. JOHNSTON of Edinburgh; he had been ailing for a considerable time and had gone to Gullane for a rest, but his death was quite unexpected. Dr. Johnston graduated at Edinburgh University with honours in 1892, and in the course of his professional career had been connected with numerous medical institutions in the city. He was anaesthetist to the Edinburgh Dental Hospital and medical superintendent of St. Raphael's Home for

permanently disabled sailors and soldiers, an institution which was established during the later stages of the war in the Grange district of Edinburgh, and did valued and successful work for seriously injured ex-service men. As honorary physician to the Actors' and Music-Hall Artists' Association, Dr. Johnston was brought into contact with a large number of entertainers, and he was himself an agreeable raconteur and possessed a repertoire of songs which made him much sought after at social gatherings of the medical profession. Dr. Johnston is survived by a wife and four children. The interment took place at Newington Cemetery on August 13th, and was attended by a large number of friends, members of the medical profession, and a detachment of the City Police, to which Dr. Johnston had acted as a divisional surgeon.

Dr. WILLIAM ALFRED MACMAHON GARRY, who died on August 7th, in his 62nd year, at his residence in Liverpool, was educated at Queen's College, Galway, and the Catholic University of Dublin, where he obtained the diplomas L.R.C.P.I., L.R.C.S.I. and L.M. in 1889. After holding appointments in Dublin and Salford, he practised in Liverpool for forty years, and was honorary physician to the Hospital of Providence of Aigburth and visiting physician to the Priory, Allertou, for mentally deficient children, and to St. Gabriel's, Woolton. He contributed two gynaecological articles to the *BRITISH MEDICAL JOURNAL* in 1890. Dr. Garry, who had devoted himself particularly to the service of the poor in Liverpool, among whom he was very popular, had been in bad health for some time before his death.

The death is announced of Dr. MAXIME MÉNARD, who was one of the first to devote himself, some thirty years ago, to the therapeutic use of the x rays. He suffered severely from the special skin affections the rays produce, and his condition was much aggravated by his indefatigable exertions during the war. Only a few months ago we recorded the fact that he had been awarded the Legion of Honour, and had received a prize from the Académie des Sciences.

## Medical News.

THE committee of the Research Defence Society has decided to found a "Stephen Paget Memorial Lectureship," the lecturer and his subject to be connected directly or indirectly with research in order that a better appreciation of the value of medical and surgical studies may result. Each lecture, which will be given annually or biennially, at a university or other centre, will carry with it an honorarium of £20, and the expenses of the lecturer will be met by the society. Though no special appeal for funds is being made, the committee will, if desired, allocate for this purpose any donations received.

DURING next week at the Post-Graduate Hostel (Imperial Hotel, Russell Square, W.C.1) Mr. W. McAdam Eccles will open a discussion on when not to operate for hernia (Tuesday, August 24th, at 9 p.m.), and Mr. R. J. McNeill Love will open another discussion (Thursday, August 26th, at 9 p.m.) on the treatment of acute appendicitis. All medical practitioners are cordially invited. Last week Mr. A. P. Bertwistle described how the silhouette radiogram could be used in the interpretation of clinical signs. It is prepared by scratching the outline of the soft parts, which are always visible on the flu of the negative, with a mounted needle before printing. This does not interfere with the bone definition, while it serves to give the less experienced observer his bearings. A radiogram so prepared demonstrates congenital deformities, such as Sprengel's shoulder, absence of the radius, spina bifida, thyro-glossal cysts; fractures such as Colles's fracture, greenstick fracture of the radius, and that of the patella due to muscular action; it shows the cause of the bulbous finger-tip and spicule-finger of periosteal whitlow and tuberculous dactylitis, and, moreover, demonstrates the presence, of wasting. It indicates the depth of foreign bodies and sinuses, and for publication enhances bony definition.

THE Fellowship of Medicine announces that at Queen Mary's Hospital, Stratford, a two weeks' intensive course in medicine, surgery, and the specialties, with operations, lectures, and demonstrations in all departments of the hospital, will begin

on August 23rd. The City of London Maternity Hospital holds a special course in obstetrics each week, instruction being given during the whole day. An intensive course at the Westminster Hospital, covering all branches of medicine, surgery, and the specialties, and occupying the whole of each day, will extend from September 20th to October 2nd. On September 13th the Infants Hospital will commence a fortnight's course in the diseases of infants; lectures and demonstrations will be given each afternoon, and a visit will be paid to Thavies Inn Veneral Diseases Centre on the Sunday. At the Royal Free Hospital Dr. C. B. Heald will give four lecture demonstrations on treatment by electrotherapy on September 22nd, and the three succeeding Wednesdays, at 5.15 p.m. An ophthalmological course will be held at the Central London Ophthalmic Hospital from September 6th to October 2nd, and at the Bethlem Royal Hospital a series of lecture demonstrations will be given on Tuesdays and Saturdays at 11 a.m. from September 7th to October 2nd. An all-day course in orthopaedics will be held at the Royal National Orthopaedic Hospital from September 20th to October 2nd. Copies of all syllabuses, the general course programme, and the Fellowship journal may be obtained from the Secretary, 1, Wimpole Street, W.1.

THE Ministry of Health has issued a circular (No. 724) to local supervising authorities, which contains an explanation of the Midwives and Maternity Homes Act, 1926, Part I of which comes into force at once, and Part II, which deals with the registration of maternity homes, on January 1st next. A note on the scope of the new Act appeared in last week's issue (p. 319). The circular, which includes a form of application for the registration of a maternity home as required under the new Act, may be obtained from H.M. Stationery Office, Adastral House, Kingsway, W.C.2, price 3d. net, or through any bookseller.

THE Middlesex County Council in 1911 decided that whenever a vacancy took place the areas of the coroners for Central and East Middlesex should be combined. By the death of Mr. A. M. M. Forbes, Dr. George Alexander Cohen is now coroner for the whole division. He has also been appointed by the Crown coroner for the Duchy of Lancaster, which comprises Enfield, Southgate, and Tottonham.

THE Home Secretary gives notice that he has withdrawn from Dr. Frederick George Lewtas, M.R.C.S., L.R.C.P., the authorizations granted by the Regulations made under the Dangerous Drugs Act, 1920, to duly qualified medical practitioners to be in possession of and supply raw opium and the drugs to which Part III of the Dangerous Drugs Act, 1920, applies. Any person supplying Dr. Lewtas with raw opium or any of the drugs to which Part III of the Dangerous Drugs Act, 1920, applies will be committing an offence against the Acts.

IN a recent number of the *JOURNAL* (July 31st, p. 213) the report of the Rockefeller Foundation for 1925 was noticed, and now in rapid sequence comes the review of the work of the Rockefeller Foundation for 1925 by the president, Dr. G. E. Vincent, who gives in simple, popular language and under headings sometimes intriguing, such as "A world memory for biology," "International trade in men and ideas," and "By-products of team work," a summary of the Foundation's manifold benefactions and achievements during last year. In 1925 there were only three cases of yellow fever in all the Americas, but new cases have since been reported from North Brazil. There is good evidence that yellow fever originated in Africa and was conveyed in slave ships from the West Coast to America, where it was formerly believed to be indigenous. In July, 1925, the International Health Board established yellow fever headquarters at Lagos in Nigeria. Dr. Vincent pays a tribute to the memory of two workers for the Rockefeller Foundation—Henry R. Carter, a pioneer in yellow fever control, and Samuel T. Darling, an expert in malaria, who was killed in a motor accident in Syria. Attention is again drawn to the use of Paris green, "so fatal to the potato bug," in killing the larvae of the malaria mosquito. The campaign against hookworm disease, which is so insidious and thus contrasts with the dramatic incidence of yellow fever, was vigorously waged during 1925 in eighteen countries, where nearly a million and a half people were treated. The Foundation has to exercise discretion, and as many as 631 formal applications for help were not granted.

THE fifty-first annual report of the Mission to Lepers states that during 1925 a considerable improvement was effected in the medical equipment of the existing institutions for the treatment of lepers. In India the leper home at Purulia in Bihar is being enlarged, and new buildings were opened at Valathorasalur in Madras. A new leper hospital has been erected at Tsinan-fu in China. During the year the total number of patients under treatment in the forty-eight institutions controlled by the Mission was 7,467, while grants in aid were given to twenty-six other institutions which



necommunicated 9,484 patients. The report, which is freely illustrated, is published at 6d., and together with the quarterly magazine of the Mission, *Without the Camp*, for which the subscription is 1s. a year, post free, may be obtained from the Secretary of the Mission, 33, Henrietta Street, W.C.2.

THE new regulations amending the Dangerous Drugs Regulations, the draft of which was issued in the *London Gazette* of June 4th and noted in our columns of June 12th (pp. 998 and 1001), have now been confirmed by the Home Secretary. Copies are shortly to be made available by H.M. Stationery Office.

MR. BASIL GRAVES will be the guest of honour at the thirty-first annual congress of the American Academy of Ophthalmology and Otolaryngology, to be held at Colorado Springs on September 13th. He will give an address on the surgery of senile cataract.

THE first impression of the *Theory and Practice of Radiology* by Dr. Bernard Leggett has been destroyed by fire, and the publishers, Messrs. Chapman and Hall, fear that it may be some months before the volume can be issued.

THE late Dr. William J. Miskelly of Everton, Liverpool, who died on May 13th last, left estate of the value of £10,079, with net personally £9,323. Subject to two life interests he leaves the whole of his property to the Royal Medical Benevolent Fund.

THE British Guiana Society for the Prevention and Treatment of Tuberculosis came into existence in 1907, and in its annual report for 1925 it is stated that five dispensaries and one hospital are now in active work. There is great need for a whole-time salaried medical officer for tuberculosis; at present the work of the society is being carried on voluntarily. It is hoped that an additional hospital for tuberculosis will be available very shortly. The work is maintained by grants received from the Government of British Guiana, the Georgetown Town Council, and to a smaller extent from private sources. It is added that each year between 250 and 300 people die of tuberculosis in the colony, and that more energetic preventive work is necessary.

PROFESSOR BRUMPT, member of the Académie de Médecine, has been awarded the Herbert-Fourquet prize of 6,000 francs by the Société de Géographie.

THE annual meeting of the German Paediatric Society will be held at Düsseldorf from September 16th to 19th, when the following subjects will be discussed: injury to the skull at birth; the child and sport. Further information can be obtained from the secretary, Professor Goebel, Universitäts-kinderklinik, Franzosenweg, Halle.

PROFESSOR OTTO LANZ, director of the surgical clinic of the University of Amsterdam, has been made honorary doctor of medicine of Cologne University.

IT is proposed to elect seven honorary freemen of the City of Leeds; among them is Sir Berkeley Moynihan.

## REGULATIONS UNDER THE THERAPEUTIC SUBSTANCES ACT.

### ADVISORY COMMITTEE.

THE Therapeutic Substances Act, 1925, provides that the Regulations to be made under the Act should be framed by a Joint Committee consisting of the Minister of Health, the Secretary for Scotland, and the Minister of Home Affairs for Northern Ireland, and that they should have the assistance of an Advisory Committee. This has now been constituted as follows:

Sir George Newman, K.C.B., M.D., Chairman (appointed by the Minister of Health).  
Mr. John Jeffrey (Scottish Board of Health).  
Dr. Thomas Houston (Ministry of Home Affairs for Northern Ireland).  
Dr. H. H. Dale, C.B.E., F.R.S. (Medical Research Council).  
Sir Nestor Tirard, M.D. (General Medical Council).  
Dr. C. O. Hawthorne, F.R.C.P. (British Medical Association).  
Dr. J. H. Burn (Pharmaceutical Society of Great Britain).  
Dr. J. F. Tocher (Institute of Chemistry of Great Britain and Ireland).

Dr. Houston is joint lecturer in medical jurisprudence at Queen's College, Belfast. Dr. J. H. Burn is the director of the laboratories recently established by the Pharmaceutical Society to carry out some of the tests contemplated under the Act. Dr. J. F. Tocher, F.I.C., is lecturer in statistics in the University of Aberdeen, and analyst and agricultural analyst for Aberdeen and other northern Scottish counties.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *JOURNAL*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBERS of the British Medical Association and the *British Medical Journal* are *MUSEUM 9561, 9562, 9563, and 9564* (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

EDITOR of the *British Medical Journal*, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediscera Westcent, London.*

The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Baillins, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshough Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

## QUERIES AND ANSWERS.

### ASTHMA AND BRONCHITIS.

"P." asks for suggestions in the treatment of a youth, aged 21, with chronic asthma and bronchitis; for the past four years he has tried various remedies, including a course of vaccine treatment, but the attacks tend to grow in intensity and duration.

### TREATMENT OF DYSCHEZIA.

"H. M." asks whether treatment by drugs, massage, or electricity would be helpful in a case of dyschezia in a woman. The patient alternates between constipation, which makes her very uncomfortable, and diarrhoea, if purgatives are used. Glycerin and water enemata have been employed; the latter seemed to suit her best and are at present the sole form of treatment, except dieting and exercise. There seems little sign of the sigmoid colon and rectum recovering their normal tone by these measures. The patient is highly egocentric.

### URINARY STAINS.

DR. A. H. SKINNER (Hankow) asks which green or blue dye is the safest to use as a test for renal effluvia. He finds phenol red urine is tinged with blood, and small doses, is destroyed by the violet dyes that are safe and easy to detect?

### PRESERVATION OF RUBBER INSTRUMENTS.

WE have again received a question as to the best way to preserve rubber gloves and tubing. The replies to previous inquiries may be summarized as follows: Lieut.-Colonel J. A. NUNN, Army Veterinary Department, stated that he had kept rubber instruments in the plains of India throughout the hot weather in an airtight tin box with a small quantity of kerosene oil in a gallipot; the oil evaporates and must be renewed from time to time. Dr. M. ASTON KEY, Southsea, recommended swabbing five or six times a year with a saturated solution of turpentine dissolved in methylated spirit. The spirit evaporates, leaving a very fine coat of turpentine, which is quickly absorbed by the rubber; he added that when the turpentine was applied the instruments ought to be hung up and not coiled. Various chemical plans were suggested, but the most effective was to keep the instruments in cotton-wool. If old they should be plunged occasionally into hot water, well dried, wrapped again in the wool, and placed in airtight cases. Oily lubricants should not, he thought, be used for rubber catheters; he recommended a modification of Gonley's mucilaginous lubricant.

### LONGEVITY IN A FAMILY.

DR. ANDREW S. BARR (Glasgow) writes: On July 31st (p. 236) Dr. A. E. Rochs gave the ages of his father's family, brothers and sisters, nine in all, with combined age of 633 years (average age over 70), and he asks "Can any reader beat this?" The answer is "Yes." My mother, aged 63 years, is the youngest of a family of nine, all of whom are alive and active. Their ages are as follows: 83, 81, 78, 76, 74, 72, 69, 67, 63. Total, 663 years. Average, 73.7.

## INCOME TAX.

## Motor Car Transaction.

"J. R. T." replaced his car in 1925 and asks whether he should have claimed any allowance as for 1925-26.

The "depreciation" or percentage allowance is a deduction from the average, and should be claimed when the return is made or at least before the assessment is confirmed, and it was to that allowance that we referred in our reply to "F. T. B." But the claim for cost of replacement or "obsolescence" is a matter to deal with when the accounts for the year in which the transaction occurred are taken into the average. Consequently, although "J. R. T." cannot now claim "depreciation" as for 1925-26, he can claim his renewal expenditure (maximum £520-£57=£483) when dealing with the results of the year 1926. On the other point mentioned, if "J. R. T." succeeded to the practice his liability for 1925-26 would strictly be on the three years' average profits of the practice which he took over, subject to a right of revision to the profits of the year; but in computing the profits of the new year the cash basis is inappropriate, and he would have to value his outstanding book debts to bring into the statement the full value of the first year's earnings.

## LETTERS, NOTES, ETC.

## THE D.P.H.

DR. HAIG (Crieff) writes: In the obituary notice of Dr. John C. McVail in your issue of August 14th, 1926, it was stated that "In 1885 McVail took the D.P.H. It was no easy thing for a busy man to do, and he gave up his time and attention to find the leisure to prepare for such an examination." As McVail was born on October 22nd, 1849, he must have been 36 at that time and 42 when in 1891 he was appointed as the first medical officer of health for the counties of Stirling and Dumfriesshire. The M.O.H. for the burgh of Crieff has had a somewhat similar experience. Dr. Gairdner, nearly four years Dr. McVail's senior, took the D.P.H. of St. Andrews University in 1912 when entering his 66th year; he had been appointed the first M.O.H. for Crieff in 1880. At the time Dr. Gairdner studied the standard of education and examination for D.P.H. had been considerably raised owing to the action of the General Medical Council. It is to the credit of both McVail and Gairdner that neither of them was under any obligation to take this diploma, which is now necessary in the case of officers holding similar appointments to theirs.

## THE MANUFACTURE OF DEGREES AND DIPLOMAS.

FROM time to time we have noted the existence in America of establishments for the sale of bogus degrees. Apparently this trade is not yet extinct, for a recent issue of the *Journal of the American Medical Association* contains an interesting account, with reproductions of the diplomas, of three institutions, entitled the Lincoln-Jefferson University, the University of Trinity College, and the American University (Los Angeles). The Council on Medical Education of the American Medical Association took the trouble of investigating these universities, stimulated thereto by receiving from the *Japan Medical World* photostat copies of diplomas issued to some students in Japan. These diplomas, complete with seals, crests, and signatures, would be an ornament to any consulting room. The Universitas Collegii Trinitatis prefers Latin to convey to all whom it may concern its *salutem in Domino*. The Lincoln-Jefferson University is content with English. But the investigators discovered some interesting facts. Neither university has any buildings, laboratories, libraries, equipment, or even ground. Two of these institutions are housed in two small adjoining rooms in an office building in Chicago; while the third, the American University (Los Angeles), boasts of one small upper room, where the "Dean" sleeps on a dilapidated bed, when he is not carrying on the work of the university, with the help of an aged desk and a couple of chairs. The Lincoln-Jefferson University announces that, in little more than two years, degrees of thirty-eight varieties have been issued to 536 persons. In the thirty-eight varieties there have been degrees in "divinity," "theology," and "sacred theology"; in "law," "inns," "juris," "civil law," and "commercial law." In several cases the title "professor" has been granted. It is evident that our universities are behind the times in the scope they provide for the choice of a degree. This is shown, also, by the titles possessed by the two reverend heads of these universities—namely, M.A., D.D., LL.D., Ph.D., F.R.G.S., and A.K.C.I. This sort of enterprise, it would seem, is not confined to America, for there is, we gather, in Palermo an Italian Physico-Chemical Academy. Apparently the academy has been impressed by the financial possibilities of the degree-mongering methods which still exist in America. A member of the British Medical Association has received a printed letter from Professor A. Bandiera, secretary of the Academy, announcing that the council, in consideration of our member's many dignities and great learning, has resolved to nominate him an honorary member of the Academy, and to bestow on him a first-class silver-gilt medal for technical and scientific merit—price £2. The committee of the Academy contains the names of Senators, Members of Parlia-

ment, and an ex-Minister of Public Instruction. The field of activity is large, covering medicine, engineering, and the invention of chemical products and pharmaceutical preparations. The methods to be adopted are also a little mixed; they include the promotion of gymnastic and athletic clubs, the examination of food and drinking water, exhibitions of hygiene, special prizes for photography, and philanthropic work in medicine and engineering. The president of the Academy is one Professor Giuseppe Marletta, who appears to be a veritable Pook-Bah of authority. He controls the conduct of affairs, proposes new members, enforces the constitution and regulations, presides at meetings, and elects the technical committee. The technical committee is concerned with many subjects, including "medical chemistry, bromatological chemistry, clinical and biological chemistry, and domestic chemistry." The members of the Academy are divided into six categories; every member sends a sample of his scientific, artistic, chemical, agricultural, industrial, or pharmaceutical products to the Academy's museum, and includes with these his photograph for the Academy's album. All members, honorary or otherwise, appear to pay an entrance fee of £2, in addition, presumably, to the £2 for the medal. In return they receive a diploma, bearing the seal of the Academy. For an additional two dollars a bulletin is thrown in; this subscription is obligatory, "such publication," as the prospectus says, "being greatly to the interest" of members. Recently we learnt that the American bogus-diploma merchant found a field for his efforts in Italy. Apparently the Italian is taking his revenge; but why vent it on the Britisher?

## "JOHNNIAN HOGS": AN EXPLANATION.

A JOHNNIAN writes: The review of Dr. Teichman's book, *The Cambridge Undergraduate 100 Years Ago* (August 14th, p. 309), contains the statement that "for some unaccountable reason Johnnians were always called Johnnian hogs." The nickname had died out in my time at John's (alas! nearly thirty years ago); but I have been informed that its origin was as follows: The gown of the Johnnian undergraduates is made with horizontal bars of black velvet across the sleeves—whether three or four in number, I forget. The fancied resemblance of these bars to pigs' ribs earned for Johnnians their uncomplimentary nickname. No doubt resentment of it gave rise to the custom of slitting the sleeves above the elbows, and the arms through the slits. In this way the arms of the wearer. This custom drew attention to this history of St. John's College because it is not the characters of Johnnians were the fons et origo of the nickname.

DR. M. ASTON KEY (Southsea) offers an alternative: Two theories were, he says, current in my day, the first being that the famous St. John's Bridge of Sighs was nicknamed the isthmus of Suez, and this being transliterated into Greek produced *ovs*—that is, pigs. The second derived the name from the velvet strips on the Johnnian gowns, which were known as "crackling." Apparently there is no evidence indicating which explanation is the older, but it is at least conceivable that the former grew out of the latter.

## MANIC-DEPRESSIVE PSYCHOSIS: CORRECTION.

DR. R. D. GILLESPIE (London) writes to correct a sentence in the preliminary note on the discussion of manic-depressive psychosis in the Section of Neurology and Psychology published on August 7th (p. 252). He is reported to have said that the number of cases (of manic-depressive psychosis) terminating in dementia was very small indeed. He desires it to be noted that what he said was: "The number of cases beginning as symptomatically pure manic-depressives and ending as schizophrenic dementia must be extremely small." This, he adds, is "a very different statement, and one more relevant to the discussion."

## PICTORIAL ROAD PLANS.

VOLUME VII of the Dunlop pictorial road plans, *On the Road*, describes the three main routes through East Anglia, from London through Cambridge to King's Lynn and Hunstanton, through Bishop's Stortford and Thelford to Norwich, Cromer, and Yarmouth, and through Colchester and Ipswich to Lowestoft. After a short account of places of interest in East Anglia, the routes are indicated by a thick red line running up each page, on either side of which are pictures of some of the towns or villages passed through. These neat little guides are published by E. J. Burrow and Co., Cheltenham and London, price 6d. each.

MESSRS. HAWKESLEY AND SONS, LIMITED (83, Wigmore Street, W.1), ask us to state that they are not the makers of the portable mercury sphygmomanometer noticed last week. It is made by the W. A. Baum Company of New York, and Messrs. Hawksley are agents for its sale.

## VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 36, 37, 38, 39, 42, and 43 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 40 and 41. A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 135.

## British Medical Association.

PROCEEDINGS OF SECTIONS AT THE ANNUAL  
MEETING, NOTTINGHAM, 1926.

## SECTION OF DISEASES OF CHILDREN.

HUGH THURSFIELD, M.D., F.R.C.P., President.

DISCUSSION ON  
ACUTE NEPHRITIS IN CHILDHOOD.

## OPENING PAPER

BY

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DURING the last few years there has been a great deal of clinical and pathological research on nephritis, but the investigations have largely dealt with the manifestations of this disease in adults. The manifestations in childhood have received relatively little attention, although the problems are perhaps not so complicated as in the adult. In the adult the picture is often complicated by previous attacks, and it is difficult to estimate the etiological factor; whereas in the child the evaluation of the etiological factor is simpler, as is the problem of correlating symptoms with the structural changes, and of assessing what has been called the functional pathology of the kidney.

Whilst it is true that the problems to be faced are relatively simpler in the child than in the adult, "simple" is really the last word that can be applied to them, for they are many and varied, and many seem at the moment almost insoluble. In this discussion it will be impossible to treat the subject at all exhaustively, but a few of the problems which require solution may perhaps be indicated. What are the etiological factors of nephritis? How can the cases be classified? What is the cause of the oliguria; why does it not occur in all cases? What is the cause of the oedema? What is the cause of the critical diuresis? How many glomeruli and tubules are involved? What are the criteria of cure? Perhaps most important of all, what is the prognosis, and on what grounds can it be based? These, and very many other problems, will at once present themselves to our minds.

## CLINICAL TYPES AND CLASSIFICATION.

A survey of a series of cases of acute nephritis admitted to the Children's Hospital, Birmingham, shows that advice was sought, in by far the largest number of instances, for one of two manifestations: either the child was passing a bloody urine, or he was puffy and swollen. Occasionally the symptom for which advice was sought was vomiting, or even diarrhoea and vomiting; the latter symptoms may have preceded the occurrence of haematuria, but more frequently of oedema. These two types of onset are associated with a series of symptoms and a clinical course which serve to differentiate the cases into two groups. In the haemorrhagic and larger group the cases showed but little oedema, rarely more than some puffiness of the face, and in some cases oedema was unnoticed. Frequently the haematuria occurred after a tonsillitis. The urine showed, in addition to the naked-eye blood, albumin and casts, but neither to the degree seen in the other group of cases; the amount of urine passed was variable, but frequently was practically normal in amount, at other times there was a degree of oliguria. If oliguria occurred, a subsequent polyuria was often a marked feature, and denoted that the case was improving. The haematuria was present for a variable period, but the tendency of most of the cases was towards recovery, sometimes complete recovery.

In the oedematous group there was in many cases no previous history of disease, and oedema was the characteristic feature. This varied in amount, but was sometimes very marked, and often the only symptom of which complaint was made. The urine was usually diminished in amount, and rarely showed naked-eye blood, but frequently under the microscope showed red cells.

Casts were much more numerous than in the haemorrhagic type, pus cells were frequently a feature of the deposit, and albumin was also present in much greater amounts than in the preceding type. I have referred to the presence of vomiting, and at times of diarrhoea. The courses of these cases was longer, the tendency to recover less marked, but the tendency to become chronic more marked than in the haemorrhagic type. Other cases showed symptoms and signs which were a combination of the two types I have outlined.

Finally, there was another group of cases, which in the course of an illness such as diphtheria, scarlet fever, pneumonia, or rheumatism, either the above symptoms occurred, or routine examination of the urine showed a definite albuminuria with or without casts. It is clear, therefore, that cases of acute nephritis in children can be grouped symptomatically as either: (1) haemorrhagic; (2) oedematous or hydraemic; or (3) febrile albuminuria.

According to the modern or Cushman theory of renal secretion, when blood passes through the capillaries of the renal glomeruli an exudate consisting of water and all the crystalloid bodies of the plasma, in their respective proportions, is passed out into Bowman's capsule, by a process of physical filtration, which is modified normally by such factors as blood pressure and flow, the osmotic tension of the colloids of the blood, and the permeability of the membrane covering the capillary tuft. This glomerular filtrate, which is "practically deproteinized plasma," is modified in the tubules by the absorption of some of its contents, a function depending upon the vital activity of the tubular epithelium. The tubular epithelium takes up and returns to the blood an alkaline fluid containing in approximately the proportions in which they are present in normal plasma the threshold bodies—that is, substances, such as glucose, which do not appear in the urine unless they exceed a certain percentage or threshold value in the blood—whilst no threshold bodies such as urea are rejected and pass out into the ureter.

This theory is generally accepted as a working hypothesis except that some authorities still hold that the tubule cells secrete and do not absorb the threshold bodies; but according to some critics it does not provide a completely satisfactory explanation of certain phenomena in disease, and, as stated by Thomson, it may well be that the modern theory tells a part rather than the whole of the story of renal secretion.

Now it is universally admitted that there is a defective excretion of the threshold bodies in the oedematous or hydraemic form of nephritis; and whether we take the view that the tubules absorb or secrete these bodies it seems impossible to subscribe to the view that this defect cannot be correlated with structural damage to any particular portion of the kidney. It does appear to be a justifiable assumption that the defect in the cases which show oedema is a tubular one; and, on the other hand, its absence suggests that any damage to the tubules is slight in degree and that the origin of the blood is from some part of the kidney, in effect the glomerulus, and pathological evidence in favour of such a view is not lacking. It is, however, only fair to state that a criticism of this view has been made in a recent paper on the functional pathology of nephritis by Mayr. He states that chloride retention is not necessarily due to disease of the tubules, or may only indicate comparatively slight damage, and that therefore the conception of functional changes in the kidney must depend chiefly on the route by which protein reaches the urine. The protein is derived from blood plasma, and most or all of it passes through the glomerulus, and hence in his opinion hydraemic nephritis may be regarded as a disease mainly involving filtration. Mayr freely admits that such a view appears inconsistent with the microscopic changes found in the kidney; but as a set-off to the lack of pathological support he points out that, whatever view of the function (secretion or absorption) of the tubule cells be held, these are the cells which do the chief work of the kidney, and since urea concentration is normal in hydraemic nephritis these cells must be functioning well and able to do their work. Whilst I am ready to admit that in exudative nephritis the permeability of the capsule is altered so as to allow albumin to pass without any patho-

logical change being demonstrated in the capsule—or in other words that some functional glomerular change occurs—yet from the standpoint of the child's future surely the more important change is the structural change in the tubule. The clinician may perhaps be forgiven if he adopts the view that the change that can be seen has at least as much claim to be regarded as important as the change that cannot be seen, and that therefore he prefers to accept exudative nephritis as a tubular change, and not as a disease mainly involving filtration. According to Mayr the oedema is largely due to failure of the plasma protein to retain water in the circulation—that is, to diminution of the protein osmotic pressure, which normally tends to prevent fluid being forced into the tissues by the capillary blood pressure. He also thinks that the usual form of acute nephritis is of the hydraemic type. This is certainly not true of acute nephritis in childhood, for published statistics, and my own cases, show that by far the more frequent type is that characterized by the presence of blood and absence of any but slight oedema.

Acute nephritis in children, then, may be classified under two headings: (1) Acute haemorrhagic, or glomerular nephritis. (2) Acute exudative, hydraemic, tubular, or parenchymatous nephritis. The place of febrile albuminuria in such a classification will be considered later.

The unsatisfactory and confusing state of the classification of acute nephritis becomes obvious when an attempt is made to find out what clinical picture is described by different writers under these headings.

I will take the latest paper which has appeared on this subject, that of Paterson and Wylie. Under the title of "acute haemorrhagic nephritis" these writers give a description essentially similar to the one I have given of my own cases; they point out that these cases show no oliguria, and that the blood pressure and blood urea are not usually raised, and urea concentration is normal. The condition is regarded as probably of embolic origin, affecting a portion of glomeruli in a scattered manner. In their group of acute exudative or parenchymatous nephritis are included all cases of tubular and glomerular nephritis, post-scarlatinal nephritis being given as the best known example of the latter. Both tubular and glomerular nephritis are said to show the same symptoms, and during life it is usually conjectural whether the glomeruli or the tubules are chiefly affected. The symptoms described are the same as in my group of hydraemic cases. They found in this group that usually either the blood pressure or the blood urea is raised, and that urea concentration is impaired, and they think that the presence of toxins in the circulation is probably the cause of the kidney disorder.

From the foregoing it will be seen that although these writers state that in the haemorrhagic form the glomerulus only is affected, yet they classify glomerular nephritis with acute exudative nephritis. It is clear, however, that they realize that each of the two groups shows one distinctive feature—in the one case oedema, and in the other haematuria.

Hill gives a description of these two groups practically identical with that given by Paterson and Wylie.

Blackfan and Hamilton mean by acute glomerular nephritis a condition frequently preceded by some acute disease, in which haematuria is the striking symptom, and oedema is slight, serum protein is normal, blood urea and non-protein nitrogen tend to rise, arterial tension is raised, uraemia is not uncommon, and recurrence is rare. The characteristics of acute tubular nephritis are the absence of any history of acute infection and the presence of generalized oedema. In these cases albuminuria is marked, serum protein is low, blood urea and non-protein nitrogen are not increased, the blood pressure is not raised, uraemia is rare, and recurrence is common.

Clausen agrees with Blackfan and Hamilton, but for him, as for many of our transatlantic colleagues, parenchymatous or tubular nephritis becomes nephrosis.

The clinical pictures described by these two groups of writers are clearly fundamentally the same, and agree with my earlier statements, but they differ in relation to urea retention and increased blood pressure—for one group these are characteristics of the hydraemic, for the other of the haemorrhagic, type, and the pathology is also some-

what different. It seems possible, however, that there is an adequate explanation of the differences as regards urea retention, etc., to which reference will be made later.

Let us now, for a moment, consider the view of the pathologist as regards classification. The following classification and description of acute nephritis is that given by Shaw Dunn.

### 1. Diffuse Glomerulo-Tubular Nephritis.

**A. Glomeruli.**—A diffuse lesion of the glomeruli is the most important form of acute nephritis and is almost invariably found in cases which die of renal insufficiency, in the acute stage of the disease, but it is also often present where the nephritis appears as a complication of some septic or other infection, and is not directly the cause of death. This presumably is the type of lesion which exists during the acute stages of a large number of cases of acute nephritis, which ultimately recover. The lesion in the glomerulus may be:

(a) An intracapillary glomerulitis, showing all grades of severity, but affecting usually in similar degree every glomerulus of both kidneys. In extreme cases, especially those dying of extreme suppression of uraemia, the capillaries are so blocked that their circulation seems almost entirely checked, and in some of the severest cases the glomerular changes are entirely intrinsic.

(b) Capsulitis. In these cases, which may not differ in any clinical aspect from the foregoing, there is the appearance in the capsular space of exudates of blood fibrin and leucocytes, followed by catarrh and proliferation of glomerular and capsular epithelium, which accumulates in masses round about the tuft, often compressing it. The incidence of capsulitis varies greatly, from a few to nearly all the glomeruli.

**B. Tubules.**—The condition of tubules shows great variation. Often in cases dying of suppression they show no alteration, but lesions of all degrees may occur. The changes are more severe if there be capsulitis of the glomeruli.

### 2. Focal Glomerular Nephritis.

This is of fairly common occurrence, and may be found in forms of septic infection (so-called focal embolic type); it is best known as a complication of infective endocarditis. The essential lesion is the appearance of minute plugs of thrombin in glomerular capillaries, giving rise to necrosis, complete or partial, of the tuft, and which may be associated with more or less capsulitis, often localized over the infarcted area. These lesions are erratic in distribution and many tufts escape, while others apparently survive with partial damage. This form seldom, if ever, causes symptoms of renal insufficiency, although it may produce albuminuria and haematuria.

### 3. Acute Interstitial Nephritis.

This condition is possibly not very far removed from that of multiple pyaemic abscesses, and may occur as an early complication of scarlet fever and other streptococcal infections. As a rule the amount of undamaged renal tissue is so large that definite renal symptoms are absent, and therefore, from our point of view, this form can be disregarded.

An acute tubular nephritis without any lesion of the glomeruli can occur from chemical poisoning—for example, corrosive sublimate—but Shaw Dunn thinks that its occurrence, apart from poisoning, is rare. He does, however, state that in those cases of acute nephritis which have passed into the "nephrosis" type of subacute nephritis the tubules show marked changes and the glomeruli only slight ones, and indeed by some authorities are classified as normal, and that it is just in those cases in which the glomeruli are least certainly damaged that the symptoms are most purely hydraemic, and the tendency to uraemia and high blood pressure most in abeyance.

Muir adopts essentially the same classification, with the exception that he does admit the existence of—

### 4. Acute Catarrhal Desquamative or Tubular Nephritis.

This is a condition occurring in varying degree, as the result of acute infections, such as septicaemia and pneumonia, and is due to their toxins. It may occur in chemical poisoning. A degree of oliguria may be present.

from obstruction of the tubules by desquamated cells and extravasated red blood cells. This condition may largely be recovered from when the cause is removed.

I believe that such a classification is the best pathological one available, that it will fit most of the clinical cases, and that it can be made the basis of a clinical classification.

There is no lack of clinical evidence of the existence in childhood of a pure diffuse glomerulitis, fulminating in type, and showing the characteristic histological changes described by Shaw Dunn. Dyke has recently reported such a case in a girl aged 12 years, who during a period of five days before her death passed only five ounces of urine, which contained much blood but did not show any casts. The blood urea was 648 mg. per 100 c.cm., there was marked vomiting, a general morbilliform rash, and bleeding from the mouth and gums. The changes present in the kidneys were chiefly a diffuse intracapillary glomerulitis, but there was also some evidence of capsulitis.

In my opinion the following classification includes the various types of acute nephritis seen in childhood, and, whilst emphasizing certain clinical characters, has also pathological evidence in its favour. The retention of the terms "haemorrhagic" and "exudative" emphasizes the fact that haematuria is the characteristic symptom of the first group, oedema of the second group of cases.

1. Acute haemorrhagic or glomerular nephritis.
  - (a) Mild type (focal glomerulitis).
  - (b) Severe type (diffuse glomerulitis).
2. Acute exudative or tubular nephritis.
  - (a) Mild type.
  - (b) Severe type. This form in many cases passes on into a subacute form, and then constitutes nephrosis (Volhard and Fahr).
3. Mixed forms. A diffuse glomerulo-tubular nephritis, which in many cases goes on into a subacute or chronic form (chronic parenchymatous nephritis), and in adult life may develop into the secondary contracted kidney.

Febrile albuminuria I believe constitutes the mildest form of acute nephritis. In many febrile conditions, such as pneumonia and rheumatism, it is possible in a series of cases to find some showing albuminuria, with or without casts, others showing a transient haematuria, and again others showing an obvious acute nephritis. The transient haematuria is typically seen in acute rheumatism, the patient does not appear to be any the worse for the occurrence, and the course of the disease is not modified. The true significance of these cases does not seem to have been recognized by many writers, some of whom speak of the condition as "renal irritation." There can be no doubt, I think, that these are actually a very benign type of nephritis, and that a febrile albuminuria may represent the mildest type of haemorrhagic or glomerular nephritis.

There is good evidence for believing that a febrile albuminuria may also represent the mildest type of tubular nephritis—that is, a form in which there is no oedema, but which if the case comes to autopsy shows changes in the tubule cells. In diphtheria, albuminuria without oedema and associated with tubular changes may occur. The occurrence of these tubular changes in febrile states and diphtheria without oedema has been used by Clausen as an argument in favour of his views that the "toxin" of nephrosis affects not merely the kidney, but also the tissues in general.

To make our suggested classification, therefore, more complete a subheading "transient types" might be added to the group of acute glomerular and tubular nephritis. The recognition of the existence of this group of cases is important, for many of them pass unnoticed, or are regarded as trivial, and it is not improbable that they form the explanation of those cases of chronic nephritis which appear to arise insidiously, and also of the failure to clear up what is apparently a first attack of a frank acute tubular nephritis. In this connexion it is of interest to note that Wilcox and Lytle found, in about one-half of a series of 217 cases of acute infections, definite chemical evidence of impairment of kidney function, although many of these cases showed no clinical evidence of kidney involvement.

### *Nitrogen Retention, Blood Pressure, Uræmia.*

Reference has previously been made to the fact that nitrogen retention and raised blood pressure are stated by some writers to be characteristic of the haemorrhagic, by others of the tubular, variety of acute nephritis. It would appear that both observations are correct and that the presence of these symptoms depends entirely on the severity of the case, although the explanation of their occurrence differs in the two groups of cases. In the glomerular type they are associated with a degree of oliguria. If there be no oliguria, blood urea and non-protein nitrogen are not increased nor is the blood pressure raised. On the other hand, if there be some oliguria, the blood urea, non-protein nitrogen, and blood pressure may be raised, and uræmic convulsions may occur. Some cases of haemorrhagic nephritis, during the first few days of their illness, show a considerable diminution in the amount of urine excreted, but subsequently commence, quite abruptly, to pass large quantities of urine up to 70 ounces or more in the twenty-four hours. This "critical diuresis" is of the most favourable prognostic import, and is probably due to urea retention. I believe that the swelling of the glomerular tuft mechanically produces a retention of water, and therefore of urea, and that when the swelling becomes slightly less, so that it is possible for more water to pass from the blood into the tubule, the "head" of urea in the blood causes a diuresis.

The prognostic importance of this critical diuresis was first impressed upon me when treating cases of blackwater fever, during the late war. I noticed that cases occurred in which oliguria was pronounced, and that although the blackwater disappeared in a day or two the urine did not increase in quantity. Such cases invariably died; whereas in other cases, after a short oliguria, marked diuresis occurred, and these cases practically always recovered, even although the blackwater remained after the onset of the diuresis.

In severe cases of the tubular form of acute nephritis blood urea and non-protein nitrogen may also be increased in the early days of the attack. The probable explanation of this increase is that advanced by Shaw Dunn and Jones, who produced, by the injection of sodium oxalate intravenously into rabbits, a tubular nephritis, showing urea retention, and an initial oliguria. They point out that whether the function of the epithelium of the first convoluted tubules be regarded as absorption or secretion, the fluid in the distal portion of the first convoluted tubules contain a higher percentage of urea than the filtrate leaving the tuft—that is, the cells normally have to prevent the high percentage of urea from finding its way back into the connective tissues and vessels—and that, in view of the destructive effect of the urine on most other living tissues with which it may be brought in contact, this property of the tubule must be recognized as a very highly specialized protective quality. Now if any of the cells are killed, as happens in oxalate nephritis, the dead cells cannot prevent the filtrate, which may have been already more or less concentrated, coming into contact with the exposed connective tissue surfaces, and consequently some part of the filtrate, or even all of it, may diffuse back into the more dilute and changing tissue fluids in the supporting structures. If the cells are damaged only and not necrosed, it is probable that in so far as they are damaged they lose a proportion of their protective power. From clinical considerations it would, however, appear that these cells, except when necrosed or very severely damaged, are active enough to resist absorption of urea (cf. Mayr), although possibly unable to resist the indiscriminate absorption of threshold bodies.

On this view the occurrence of raised nitrogen in the blood in severe cases can readily be understood. The oliguria of acute tubular nephritis may also be explained in part by the same thesis. It is clear that the oliguria of acute oxalate nephritis in rabbits is not due to tension inside the capsules of the swollen kidneys, for Shaw Dunn and his co-workers have also shown that the mean circulation rate through such kidneys is greater than in normal animals. Clinical experience also suggests that oliguria in the two groups of nephritis does not admit of the same



explanation, for whereas the critical diuresis is a common mode of cure in haemorrhagic nephritis, in tubular nephritis the increase in the amount of urine passed—which, it is true, may at some time amount to a polyuria—is gradual and often unnoticed.

The occurrence of raised blood pressure in severe cases of haemorrhagic nephritis has been mentioned. According to Volhard and Fahr a rising blood pressure precedes or is closely associated with the development of cerebral symptoms; but they cannot say whether these symptoms are secondary to the raised blood pressure or whether the cerebral symptoms and the increased blood pressure are due to circulatory disturbances in the brain. Blackfan and Hamilton have, however, clearly demonstrated that a steady rise in blood pressure is the most reliable sign of approaching uraemia. They found that patients with acute glomerular nephritis who developed uraemia showed an increase in oedema. There was a parallelism between (1) the cerebral manifestations, (2) the blood pressure, and (3) the oedema. When the blood pressure rose the patient vomited, became irritable, and complained of headache; at the same time oedema was indicated, either by an increase in the visible oedema or a gain in weight. The visible oedema was not necessarily a marked oedema. With increasing oedema and continued rise in blood pressure, visual disturbances, coma, and convulsions almost invariably followed. Decrease in oedema and fall in blood pressure were always coincident with the disappearance of cerebral symptoms. In their opinion raised intracranial tension, resulting from oedema of the brain, is the causative factor in the uraemic symptoms, and the raised intracranial pressure is the cause of the raised blood pressure. In favour of their hypothesis they quote (1) Cushing's experiments, which showed that when compression of the brain was produced in dogs the arterial pressure rose as the intracranial pressure was increased; (2) the favourable results of their treatment of uraemia by intravenous injections of magnesium sulphate; and (3) the finding in an autopsy of a case of uraemia a brain which was so oedematous and tense that when the dura mater was opened the brain literally bulged through the small incision.

In passing it may be remarked that uraemia occurring with acute nephritis is always of the type thus described, and has been labelled *clamptic pseudo-uraemia*, to distinguish it from true uraemia, which is the terminal stage of chronic interstitial nephritis.

#### ETIOLOGY.

The etiology of acute nephritis presents some points of considerable interest. Marriott maintains that the symptoms of acute nephritis (glomerular and parenchymatous) are not due to renal insufficiency, but that the renal involvement is only part of a general disease, and that both forms are due to toxins, each elaborated by a more or less specific micro-organism. In glomerular nephritis the toxin, which is derived from a streptococcal infection, usually of the tonsils, acts as a capillary poison and increases the permeability of the capillary wall. In parenchymatous nephritis the toxin, which is due to a staphylococcal infection, usually of the nasal sinuses, acts by disturbing the normal physico-chemical equilibrium between the body tissue and fluids. Clausen also holds the same views; but the evidence that they produce to show that nephritis is only part of a general disease is not very convincing, especially as Marriott says that he does not include cases of nephritis in which there are bacterial embolic foci in the kidneys.

Whether the cause of acute nephritis be due to actual infection of the kidney with bacteria, or to toxin only, it is quite obvious, from a consideration of a series of cases, that the exudative type appears to arise in many instances without any obvious cause; whereas the haemorrhagic type in a very large number of cases is associated with acute infections, particularly streptococcal infections, and especially with a tonsillitis, or some infection in that area—for example, otitis media. Haemorrhagic nephritis also occurs in the course of other pyococcal infections, and I would mention in this connexion its occurrence in impetigo.

The results of bacteriological examination of the urine are variable; some authorities appear to have great difficulty in isolating organisms, others have found streptococci

and pneumococci. On the whole, my experience has been that the findings are usually negative, but in rare cases streptococci and pneumococci have been found in haemorrhagic nephritis.

Although, as I have stated, many cases of exudative nephritis do not appear to have any obvious cause, yet Clausen would have us believe that even in these a nasal sinusitis is present, for in a series comprising all the cases (11) of parenchymatous nephritis seen at the St. Louis Children's Hospital in a period of three years he found that nasal sinusitis was invariably present.

In the remarks on pathology it will have been noted that Muir regards acute tubular nephritis as due to the action of toxins. The fact that in a diffuse glomerulitis all the glomeruli are affected is easier to explain on the ground of a toxic than a bacterial cause, whereas the focal glomerular infection may conceivably be bacterial in origin. The relatively common occurrence of recovery in cases of haemorrhagic nephritis is evidence in favour of a focal and not a diffuse glomerulitis as the cause of the group of mild cases, and therefore, if the foregoing argument be correct, of their bacterial origin. It will be remembered that such an embolic origin was suggested by Paterson and Wylie.

#### PROGNOSIS.

This particular aspect of the discussion is to be considered by my colleague Dr. Smellie, and therefore I do not propose to deal with it at any great length. Complete recovery from an acute attack of nephritis is a possibility, although the tendency for the lesion to become a chronic and progressive one is well recognized. On the whole, the tendency of the mild haemorrhagic cases is towards recovery; mild exudative cases may also recover completely, but, except in the very mildest forms in this group, the tendency is towards developing into the sub-acute and chronic types. Indeed, as I have previously stated, it is quite possible that in many instances what is apparently a first attack of exudative nephritis is really a recrudescence of a previous mild, perhaps unnoticed, attack of nephritis. Recovery from a severe haemorrhagic or exudative attack is rare. In the former the fatal issue is more likely to occur in the acute attack, whereas in the latter the child becomes a chronic nephritic. Functional recovery, however, does appear to occur in some cases of sub-acute or chronic hydræmic nephritis (nephrosis) after many weeks or months, and when all hope of a favourable termination has been abandoned.

One of the most difficult problems in acute nephritis is to say whether a particular case has recovered or not. The disappearance of all symptoms and signs, and a urine free from albumin after return to full diet, and after assuming the upright position, can, of course, be taken as evidence of complete recovery. So many cases, however, show a faint haze of albumin after the disappearance of all symptoms, but in quite a fair proportion of these the urine eventually becomes albumin-free. The prognosis must be based on, amongst other things, the type and severity of the attack, persistence of red blood cells and casts, persistence and amount of albumin, the occurrence or not of a critical diuresis. The ordinary kidney function tests are, in my opinion, quite useless as a help in the prognosis of acute nephritis. In the acute stage they are valueless, and some indeed are harmful. The tests may show a deviation from the normal in cases which are passing into a sub-acute or chronic stage, but in these the prognosis is only too obvious. In the type of case in which help is most needed—that is, one in which recovery appears to be almost or quite complete—kidney function tests are quite useless as an index of the completeness or otherwise of the recovery, because the lesion in these circumstances is not sufficient in degree to produce anything but normal results.

Mayr has recently devised a relatively simple method of estimating the osmotic pressure of the plasma which can be used in clinical work. A determination of the osmotic pressure of the plasma may help in the prognosis of a case of acute nephritis, particularly in the early stages, and the method seems well worth investigating. The colloid osmotic pressure of the plasma appears to be exerted chiefly by the serum albumin; any form of albuminuria involves a loss of plasma protein and therefore a reduction in the

colloid pressure of the plasma. Severe cases of hydraemic nephritis are characterized by a particularly low osmotic pressure of the plasma, and if a case of acute nephritis shows a low osmotic pressure, such a case is likely to pass on into a chronic hydraemic nephritis, even if the oedema at the time of the acute attack be not very marked in degree.

In my opinion the best guide to the completeness of recovery of the kidney is by the estimation of the amount of albumin in the urine, when the latter is free from blood cells and casts. I am referring to the presence of such amounts of albumin as are too small to be estimated by an Esbach's albuminometer. The method of estimation is that introduced by my former colleague, the late Dr. J. W. Russell, and consists in comparing the albumin with a very delicate standard haze. The standard haze is practically the smallest haze recognizable in a good light against a dark background. A case can be regarded as cured when the urine is free from albumin, or when the amount of albumin is only a few units, and if this be uninfluenced by a full dietary and posture, and if the urine be free from red blood cells and casts.

In considering the question of prognosis the observations of Richards should not be forgotten. He has shown that in the frog normally only a number of glomeruli are working, but that under certain conditions fresh glomeruli become opened up—in other words, that the kidney has considerable reserve power. It is therefore possible for a functional recovery to occur in acute nephritis even although a certain number of glomeruli and tubules are permanently thrown out of action.

#### TREATMENT.

In discussing the treatment of nephritis I would lay stress on three things: (a) the necessity for rest; (b) the importance of a suitable dietary; (c) the removal of any focus of septic infection. By rest I do not mean so much any rest produced by limitation of the dietary, to which I refer later, but rest of the body as a whole, which is as essential in the treatment of acute nephritis as it is in the treatment of rheumatic heart disease. With the possible exception of the very mildest cases, the patient should be confined to bed for at least three months, and if at the end of that time the kidney responds by a noticeable increase in albumin when the patient assumes the upright position, or is given an increased dietary, the period of time in bed should be increased.

Although the present-day tendency is against a rigid milk diet in acute nephritis, I am old-fashioned enough to believe that such a diet is the most suitable. Although the excretion of protein end-products entails so little effort on the part of the kidney, and it is well known that complete "renal rest" in this sense cannot be produced even by starvation, I cannot accept the view that limitation of protein in the diet is unnecessary. For six to eight weeks the diet should consist of milk, which may be given as undiluted milk, or milk and barley water, or junket. Sugar may also be allowed as a sweetening agent, or the child may be given barley sugar. Fruit juice is also allowed as a flavouring agent, and at the end of six weeks a small amount of chocolate may be added. The first increase in food is the addition of breadcrumbs to the milk; later bread-and-butter; during the third month milk pudding, banana and cream, potato and green vegetables, and at the end of this month a small quantity of fat bacon, which should be well soaked overnight to remove as much salt as possible. During the fourth month, if the child has apparently recovered, a gradual return to the full diet is permitted. In the absence of symptoms the amount of albumin is carefully watched after each increase in diet.

The report of the Medical Research Council for the year 1924-25 contains the results of some experiments by Maclean on rabbits, which may have an important bearing on the treatment of nephritis. He found that the albuminuria, and other evidence of renal damage produced by high protein feeding, was apparently dependent on the lack of vitamins, or some other essential constituent of fresh food. When a small amount of cabbage was given no renal changes were produced, even when the animals were kept on an otherwise exclusively protein diet for

long periods. The extreme sensitiveness of the renal system to lack of vitamins was very striking, and he concludes that excessive protein feeding as such is not harmful to the kidneys. These results are of extreme interest, but they do not, of course, prove that a high protein diet can have no harmful effect on an acute nephritis. The dietary I have suggested contains a fair supply of vitamins, but in view of this investigation, green vegetable in small amounts might be introduced into the dietary at an earlier stage.

The third essential in treatment is the removal of any focus of septic infection—a point which has already been stressed. Particular attention should be paid to the condition of the tonsils, nasopharynx, ears, teeth, and to the presence of any infective skin lesion, such as impetigo. The removal of tonsils and adenoids is best deferred until the third month of the illness, because occasionally the kidney condition is for a time somewhat aggravated by the operation, but in the majority of cases no such reaction occurs.

With regard to other points in treatment, I would say that in my view attempts to relieve the kidney by increasing elimination of fluids by the skin and by the bowel are of little value; that diuretics are probably harmful and should never be used; and that in the treatment of acute nephritis drugs have no place. The only exceptions to the latter statement are the following:

1. In cases which show a considerable amount of pus in the urine alkalis—for example, sodium bicarbonate or potassium citrate—may be used in an attempt to alkalinize the urine; but the results are not very satisfactory, and I think it is probably wiser not to give them for this purpose.

2. Occasionally in the earlier stages of the disease a ketosis occurs which can be treated by glucose and sodium bicarbonate.

3. In uraemia the value of intravenous injection of magnesium sulphate is undoubted.

#### GENERAL DISCUSSION.

Dr. J. M. SMELLIE (Birmingham) said that many classifications of nephritis had been suggested, but it was unusual for any two observers to hold similar views. Until much closer correlation of the clinical picture with the true histology of the morbid process or processes was possible no classification could be considered final. Surely all forms of acute nephritis were of secondary origin. In the minority the primary focus of disease was evident, but in the majority it was concealed. From a clinical aspect a large number of the cases of acute nephritis in childhood could be sharply divided into two groups: (a) the hydraemic, oedematous, or "exudative"; and (b) the haemorrhagic; though in a review of clinical histories many mixed forms were encountered. This purely clinical classification did not enter the precincts of pathology. Many observers had called the first group alternatively "acute parenchymatous nephritis," but Dr. Smellie objected to the term "parenchymatous" in this connexion, as it suggested that the parenchymatous changes were of negligible extent or not at all present in the haemorrhagic form. The classification given by Dr. Parsons rendered this view untenable. In the prognosis of acute nephritis in children, as in classification, an appreciable divergence of opinion existed. Fowler held that in children over the age of 3 years, if there were no specially bad symptoms, recovery would almost certainly occur. Holt, on the other hand, asserted that chronic nephritis was not a very uncommon sequel of the acute form. There was further difference of opinion on the help given to prognosis by the various renal function tests. The cases that Dr. Smellie had personally investigated from the prognostic point of view fell naturally into three distinct groups—namely, early, intermediate, and late. In order to ascertain the early prognosis eleven cases treated in the General Hospital, Birmingham, during the three-year period 1922-24 and discharged as relieved were taken. One child died shortly after leaving hospital, presumably from an acute exacerbation of the disease; two were known to be quite well; two could not be traced; and the remaining six had recently been seen and examined;

the blood urea was estimated and the urea concentration test performed. Of five cases of the hydraemic type, in four the blood urea was under 35 mg. per 100 c.cm.; a boy with cardiac enlargement and raised blood pressure had a blood urea of 98 mg. Urinary examinations showed no blood or casts in any case. The urea concentration test demonstrated a defective renal function in three cases, but in two of these the urea concentration factor was up to standard. The only child who had suffered from the haemorrhagic type had, on admission, only very slight facial oedema, and, though the urine was deeply blood-stained, symptoms of threatened uraemia developed in hospital. When examined, two years after the acute disease, the systolic and diastolic blood pressures were slightly raised; there were no abnormal urinary constituents, and the blood urea and urea concentration tests were within the limits of health.

As regards intermediate prognosis Dr. Smellie quoted the case of a boy whom he had watched for six and a half years. In November, 1920, he was in a comatose condition and having frequent fits. In March, 1925, he had chorea for six weeks. During this period the blood urea was within normal limits, and there was never any evidence of cardiac affection of either a rheumatic or renal origin. The blood pressure was normal. In April, 1926, the boy, aged 13 years, looked perfectly well and fit, with a healthy cardio-vascular system. The blood urea was a little raised—namely, 57 mg.—but the urea concentration factor was only 29. The urea concentration test did not give any evidence of impaired renal function. At present the clinical condition was one of health, but the biochemical findings were at variance.

For late prognosis, unless a minimum period of ten years had elapsed since the date of the primary acute infection, no really indicative results would be forthcoming. Therefore, notes of cases of acute nephritis during the ten-year period 1906-15 inclusive were collected. Of these, 64 were of the hydraemic type and 37 of the haemorrhagic. Forty-seven of the patients were traced—32 hydraemic and 15 haemorrhagic. Twenty-three of these were known to be alive, but could not be got to come for examination, as they could see no reason for it.

Clinical examination and renal function tests—blood urea and urea concentration—were performed in sixteen cases. An average period of sixteen years had expired after their discharge from hospital. None of these patients complained of any symptoms (oedema, polyuria, headache, etc.) referable to disturbed renal function, though in all direct information on these points was invited. Only five patients had completely normal hearts, blood pressure, blood urea, urea concentration test, and urea concentration factor. The other eleven gave such diversity of clinical and laboratory findings that the results could not be correlated in any way. Clinically, judged on life insurance standards, ten of these adults were fit and well. The remaining six had slight cardiac enlargement and a raised blood pressure, notably the diastolic, but no abnormal urinary constituents. An opinion based entirely on the tests for renal function—namely, either a raised blood urea, or a low urea concentration test, or both—would have indicated six with disturbed function. Four of these, judged clinically, would have been considered normal and healthy, but the remaining two did have a raised blood pressure.

From these findings Dr. Smellie concluded that the early prognosis, judged on six cases examined eighteen months to four years after an acute nephritis, revealed only one case of clinical and biochemical findings indicative of renal damage; that in one case observed for six and a half years the boy passed through an acute pyrexial illness without any recurrence of kidney mischief; that remote prognosis is based on review of thirty-nine cases, at an average period of sixteen years after an acute nephritis. All these were to-day symptomatically well. Four had passed through pregnancy, one of whom suffered from convulsions at the time of labour. Of sixteen submitted to clinical examination and to tests for renal efficiency none had any of the urinary changes associated with a chronic nephritis. Six revealed evidence of disturbance of the cardio-vascular system, but it might not be correct to

assume that this disturbance was consequent upon the previous renal inflammation.

Dr. Smellie thought that positive biochemical results, in the absence of symptoms or physical signs, called for a further careful scrutiny of the patient and a certain guard in the prognosis until he had been observed for a longer period, but could not be taken as conclusive evidence of renal damage. He thought also that chronic nephritis was much more likely to develop from a succession of mild acute attacks—so often inadequately or totally untreated—than from one severe attack with adequate treatment. This opinion would satisfactorily account for the absence from his cases of the chronic forms of the disease, as only severe cases were admitted to hospital, and any case not definitely a primary acute attack had been excluded from consideration. His investigations had led him to the opinion that the ultimate prognosis of acute nephritis in childhood hinged entirely on the treatment that had been given. If the original acute disease received efficient treatment complete recovery would ensue in a very high proportion of cases. Conversely, the subacute and chronic varieties of nephritis encountered in early adult life were largely, if not entirely, due to inadequate treatment of the initial acute infection.

Dr. HUGH BARBER (Derby) said that twenty years ago acute nephritis in a child was regarded either as due to scarlet fever or else as idiopathic in origin. More recent investigation had demonstrated the importance of focal sepsis in the throat, nose and ears, or teeth. The cases put down as idiopathic in origin became fewer, but with their present want of knowledge they still had such a group. There did not appear to be any evidence of epidemic nephritis in children.

Acute nephritis was not very common. Dr. Parsons made an apt comparison between acute nephritis and acute rheumatism with regard to the length of rest required. It was possible to make a comparison between the two conditions so far as diagnosis was concerned. In both early diagnosis was of the utmost importance in treatment. Of the numerous complications two appeared worthy of emphasis: Pericarditis, which was fairly common, was an insidious condition giving rise to little if any pain; persistent vomiting might be the only symptom of uraemia. Persistent vomiting in a case not yet diagnosed should always suggest the necessity for examining the urine. The diagnosis of acute nephritis was made from the characteristic findings in the urine and necessitated a microscopical examination, but did not require a centrifuge or full laboratory report. Renal efficiency tests were more interesting in prognosis during convalescence, but were not sufficiently delicate to help very much. The urea concentration test did not require a clinical laboratory. It was of some value towards the later stages of convalescence. Its chief value was in helping to detect chronic interstitial nephritis, which in children might be very insidious. The estimation of urea in the blood was a useful guide to diet in all cases of nephritis, but it was only towards convalescence that any such guide was required in acute nephritis. In those cases which had progressed to an extreme degree of oedema with much albumin in the urine the blood urea was nearly always within the normal and a diet rich in protein gave the best results. Thus an estimation gave confidence in prescribing a diet which might perhaps seem rather unexpected to the parents. The prognosis, judged clinically, was serious in proportion to the length of time for which symptoms of acute trouble were present. The first sign of improvement was when diuresis took place. To obtain this improvement it was not necessary to give large quantities of fluid.

The chief essential in treatment was absolute rest in bed, warm between blankets, continued certainly until there was no longer blood in the urine, and if possible until albuminuria had cleared up; failing that, for about three months. For diet, water, fruit juice and sugar, and then diluted milk. Meat extracts should, of course, be avoided. Aperients should be mild; and for threatening uraemia, hot packs or hot-air baths were better than diaphoretic drugs. Convalescence should proceed very

gradually. Rest, iron, and suitable clothing were the indications, but the little abdominal belts worn next the skin were not healthy. It was the thighs and legs that tended to be neglected without medical advice.

Dr. HUGH T. ASHBY (Manchester) drew attention to decapsulation of the kidneys for chronic nephritis. In the type of nephritis characterized by extensive oedema, large albuminuria with casts in the urine, toxic symptoms of the uraemic type, such as vomiting, drowsiness, etc., decapsulation became a definite indication, and might promise satisfactory results when the usual line of treatment failed. Subsequent to decapsulation of the kidney a marked diuresis took place, and this diuresis might bring about much improvement in the patient's condition, and allow him to pass a crisis. Dr. Ashby mentioned the case of a child who had been under observation for a year suffering from nephritis with marked oedema. It was decided as a last resort to decapsulate one kidney, after which the patient lived for eighteen months. Previous to operation she had passed 6 to 8 ounces of urine a day. After the operation the urine increased, so that at the end of a week she was passing 30 ounces in the twenty-four hours. It was found at the necropsy that the progress of the nephritis had not been arrested. Both kidneys were finely granular and well on the way to contraction. The changes in the decapsulated kidney were, if anything, more advanced than in the other. Decapsulation was not followed by the formation of a new fibrous capsule of any considerable thickness or vascularity.

Three views had been advanced to explain the results of decapsulation: First, that by depriving the kidney of its capsule and then bringing the cortex into contact with the perinephritic tissues new vessels were formed, which anastomosed with those of the kidney itself, thus providing for the removal of inflammatory exudate and assisting in re-establishing the renal function. This view was not substantiated by the case recorded; moreover, diuresis after decapsulation was generally set up a few days after operation, long before new vessels could be formed. Secondly, it had been suggested that the rapid effects after operation were due to relief of tension. But little actual tension could be seen at the operation. The kidney did not expand and the capsule did not appear capable of resisting tension. The rapidity of expansion in cases of pyelonephrosis proved that the capsule could have little resistance to pressure from within. Thirdly, it was much more likely, as Horder suggested, that the mechanism of the production of the diuresis and disappearance of oedema was the same as in the process of the inefficient wet cupping of the past. A very effective and direct wet cupping was done to the kidney itself by decapsulating it. If this was the true explanation it was possible that simple incision of the kidney would be as effective as decapsulation.

Dr. J. C. SPENCE (Newcastle-on-Tyne) did not regard classification in acute nephritis as of much value. In infants there were two varieties—a febrile nephritis with respiratory symptoms such as bronchopneumonia, much albumin, and little oedema, and a syphilitic nephritis with oedema of the feet and anaemia, but with an absence of preceding signs of syphilis. The patient in the second case always died. In other types of nephritis classification was of no value clinically. Often haemorrhagic cases after a few weeks became hydraemic. Prognosis could only be based on clinical observation; but biochemical tests were of some value. If the blood urea began to rise it was of some importance. The methods, however, were still largely experimental. The original focus causing a nephritis was often small and easily overlooked. Dr. Spence did not agree with Dr. Parsons about protein diet, since the protein in a pint of milk was about equal to the protein in half a pound of steak; but he admitted that meat might contain other deleterious substances. In many cases of chronic interstitial nephritis there was no history of an acute attack. It almost seemed as if the condition started as a congenital abnormality.

Dr. HUGH THURSFIELD (London) said that venesection, which was formerly an almost universal treatment of acute disease of all kinds, had now all but gone out of favour.

Yet there could be no doubt of the service of timely venesection in acute oliguria in adults, and it seemed well worthy of consideration in some of the acute cases in children. Decapsulation of the kidney in acute cases possibly owed its somewhat rare successes to the principle of blood-letting; and the old practice of cupping had the same effect. Renal efficiency tests appeared to be out of favour, whether for diagnosis of types of the disease or for assisting prognosis. Dr. Thursfield thought that the standard of these tests had been insufficiently established in children, either in normal health or when the child was suffering from disease other than that of the kidney.

Dr. WILKIE SCOTT (Nottingham) thought that decapsulation was indicated (a) in hydraemic cases of prolonged duration—that is, in the large white kidney; (b) in acute nephritis with suppression, especially if there was a pre-existent chronic nephritis.

Dr. N. C. CAPON (Liverpool) discussed the classification of cases of nephritis, and emphasized the desirability of restricting the term "nephrosis" to the rare cases in which kidney degeneration (epithelial) existed without inflammatory changes. In treatment, he held that it was important to remove any septic focus without delay, even during the acute stage of nephritis; and he believed it to be probable that in the future renal decapsulation would be employed at an earlier stage in nephritis, and would not be used solely as a last resort.

Dr. J. D'EWARD (Manchester) regretted that Dr. Parsons had not condemned beef-tea more thoroughly. Women seemed to be brought up to believe that beef-tea was necessary for all sick persons. He thought that a fairly rich protein diet led to improvement in cases of nephritis; and the addition of green vegetables was probably helpful. It was difficult to get parents to understand the necessity for rest for patients who appeared otherwise healthy.

Dr. HAZEL C. GREGORY (London) had found the constipation associated with prolonged rest so troublesome that she was in the habit of getting children up sooner than had been suggested. She thought that in infancy the etiology of the skin was associated with septic patches on the skin.

Dr. Parsons, in reply, said that renal efficiency tests were of no use in the acute stage. They were simply tests of reserve function in the kidney. In acute cases where there was no reserve, the tests were useless and possibly dangerous. He thought that not so many patients as Dr. Spence thought went on to the chronic stage. The chronic patient turned up again and again, and so produced an impression of the frequency of chronic cases. Decapsulation was somewhat outside the scope of the discussion. In the only case in which he had seen it done the kidneys were under tension, but there was less urine after the operation than before. He thought nephrosis a horrible word, and everyone differed as to its meaning. Probably it was the same thing as chronic parenchymatous nephritis. A high protein diet was suitable in chronic cases, but not in acute. Dr. Parsons agreed that tonsils and other septic foci should be removed as early as convenient; but it must be remembered that occasionally nephritis flared up afterwards.

## GOITRE IN CHILDHOOD.

BY

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BEFORE dealing with the question of goitre in children I would just like to say briefly, as a whole-time medical officer of health, that I recognize the need for co-operation between the health services and the general practice of medicine, and it was for this among other reasons I was present this morning. Even regarding the subject which has been under discussion, nephritis in children, which might appear purely a question for a private doctor, I found in my own district things which might be of interest

—namely, (1) a lead-soluble water supply to be one of the causes of nephritis in childhood; (2) that in my own district, which in addition to having a lead-soluble water supply has a very damp climate, the death rate of this disease was about twice that in England and Wales. Coming to the question of goitre, I consider it under various headings: its incidence as regards age, sex, and locality; conditions associated with goitre; the types of goitre; then causes, prevention, and treatment. I have only time, however, to deal very briefly with the subject.

#### Incidence.

I append details of result of the routine examination of 1,870 children in Glossop.

#### Incidence of Goitre among Glossop Children examined at Routine Inspection, 1924 and 1925.

	No. Examined.	Had Goitre.
Total boys and girls	1870	96 = 5.1%
Total girls	937	75 = 8.0%
Total boys	933	21 = 2.2%
Girls aged 12 years	205	36 = 17.5%
Boys aged 12 years	187	8 = 4.2%
Girls aged 13 and over	104	27 = 25.9%
Boys aged 13 and over	108	10 = 8.4%
Boys and girls under 9	1143	9 = 0.9%

The percentages are for the respective groups examined.

From this table, as regards age of incidence it will be seen that under 9 years of age only 0.9 per cent. of children had goitre, whereas 8.4 per cent. of boys of 13 and 25.9 per cent. of girls of 13 had goitre, showing clearly the greater prevalence of goitre during adolescence and the greater prevalence in girls. At Bath out of 7,025 children examined a similar result was obtained. No boys under 9 years of age have been found there to have had goitre of 2,020 examined; 20 girls out of 1,904 examined had goitre; of these 20 girls, 9 were between the years of 8 and 9, at which age 748 girls were examined. Now as regards the meaning of goitre: in the above examinations at Glossop, children with visible thyroid enlargement were counted as having goitre. At the examinations at Bath only children with visible thyroid enlargement *plus* alteration of the contour of the neck or with symptoms were counted as having goitre; I found by a control examination at Bath that to compare the Glossop and Bath results it would be necessary to multiply the Bath figures by four.

#### Sex.

The table given shows also the prevalence of goitre as regards sex. The percentage of boys of 13 affected was 8.4, as compared with 25.9 of girls of the same age—that is, roughly about three times as many girls as boys were affected at Glossop. At Bath the incidence among 7,025 children examined was the same—that is, 1.5 per cent. of girls to 0.5 per cent. of boys, or 3 girls to 1 boy.

#### Locality.

I now come to locality, and give you herewith details of the prevalence of visible thyroid enlargement at 12 years of age in various districts in England and Wales. These figures are by no means complete, and I do not wish to labour the point, as Sir George Newman, chief medical officer of the Ministry of Health, will shortly be reporting fully on the matter.

#### Percentages of Visible Enlargement of Thyroid Gland at 12 Years of Age in Various Districts, 1924.

	Girls.	Boys.		Girls.	Boys.
Glossop	17.5	4.2	Ripley (urban)	23.1	30.3
Bath	7.3	2.2	Heanor (urban)	15.4	9.3
Lancashire	12.5	6.3	Clay Cross (urban)	3.4	4.5
Glossop-ter-hire	5.7	1.3	Blackwell (rural)	2.7	0.7
Nottinghamshire	13.3	4.7	Bakewell (rural)	7.2	2.3
Derbyshire	11.87	5.15	Shardlow (rural)	12.1	4.1
Wirksworth (one school)	57.0	0.0	Essex	0.61	0.04
Ditto	35.0	0.2	Batley	5.1	3.9

At Margate goitre was almost unknown.

The table shows, however, that while at Margate and in Essex goitre is almost unknown, in Derbyshire there is an incidence of 11.8 per cent. girls and 5 per cent. boys; Nottinghamshire 13.3 per cent. girls and 4.7 per cent. boys; in Glossop 17.5 per cent. girls and 4.2 per cent. boys; in Wirksworth 57 per cent. girls and 50 per cent. boys (in one school); in Ripley 23.1 per cent. girls and 30.3 per cent. boys.

Taking the criterion of goitre as visible enlargement of the thyroid gland at 12 years of age, it can be seen that there is considerable variation in England. Goitre shows a varied prevalence in different parts of the world. Areas of great prevalence are the hilly countries, like the Alps, Pyrenees, Himalayas, and Carpathians, also the great lake region of North America. Areas of freedom from goitre are Japan and Malaya, which, it will be noted, have a marine climate.

#### Associated Conditions.

Certain conditions appear to be associated with goitre. At Glossop among 1,870 children examined I found a considerable incidence of rheumatism and diseases of the ears, nose, and throat. The following table shows this.

#### Percentage of Certain Defects in Goitrous School Children, Compared with Percentage in all Children (Goitrous and Non-goitrous), examined in 1925 and in 1924 and 1925.

Disease or Defect.	Goitrous Children (120) Percentage.	All Children in 1925 (920).	Percentage in 1924 and 1925.*
Nose and throat	32.2	15.0	14.0
Otorrhoea	1.6	0.3	0.4
Rheumatism (includes "growing pains")	25.0	5.5	
Chorea	0.8	0.1	0.3
Mentally defective	5.8	0.7 (among 2765)	
Heart disease (functional and organic)	15.8	16.1	13.3
Definite and suspect phthisis	1.6	1.1	1.7
Definite and suspect tuberculosis of glands	1.6	0.5	0.5
Dental decay (2 had teeth and over)	28.3	31.3	

\* Total examined 1924-25, 1,870.

This table shows that diseases of the nose, throat, and ear have a much greater incidence in goitrous children than in all children (goitrous and non-goitrous), 32.2 per cent., as compared with 14. Rheumatism is also much more prevalent in goitrous children, 25 per cent. having rheumatism.

The incidence of rheumatism in the above table (25 per cent.) is startling. It must be noted, however, that rheumatism in this examination included "growing pains" as rheumatism. Of all children examined in 1925, 5.5 per cent. had rheumatism; this figure is perhaps higher than one might expect. Diseases of the ear, nose, and throat were present in 32.2 per cent. of goitrous children and 15 per cent. of all children. Mental defects were found in 5.8 per cent. of goitrous children and 0.7 per cent. of all children. In the beginning of this year I made an independent inquiry regarding rheumatism. In this inquiry I included children who had small fibrous nodules (as described by Dr. Carey Coombs of Bristol and Drs. Thomas and Coates of Bath) as rheumatic. Among 264 girls (of all ages) examined I found 19 had goitre, and among 273 boys examined 9 had goitre. Of all the children (goitrous and non-goitrous) 37 girls, or 13.9 per cent., had rheumatism, and 36 boys, or 13.1 per cent., had rheumatism. Among the goitrous children, of the 19 girls 5, or 26.3 per cent., had rheumatism, and of the 9 boys 33.3 per cent. had rheumatism.

#### Types of Goitre.

The chief types of goitre seen in childhood are simple parenchymatous and puberty hyperplasia. These two types have a negative and a positive phase—that is, there are hypothyroid symptoms associated with the goitre on the one hand, and hyperthyroid ones on the other. The hypothyroid conditions are mental dullness, dry skin and hair, chilblains, bed-wetting, and other well known conditions associated with hypothyroidism. Hyperthyroidism included conditions



such as rapid pulse, tremor, mental brightness, and a tendency to perspire. One thing I particularly want to lay stress on is that thyroid enlargement in children is a preliminary to two conditions—endemic or colloid goitre on the one hand, and toxic adenoma and Graves's disease on the other.

Regarding the association of thyroid enlargement in children with Graves's disease I would refer to the work done by Dr. Brewer of Swindon, who has carried out a large number of examinations to find the relationship between the conditions; his findings suggest that slight hyperthyroidism in childhood is a very much commoner condition than has been hitherto supposed. In my own district in Glosop I carried out an investigation of a similar kind, but I did not find hyperthyroidism present to any extent among the children. There appeared to be, on the other hand, a trend towards hypothyroid conditions. It is quite possible, however, that the tendency to hyperthyroidism varies according to locality, and that in districts where colloid goitre is prevalent the thyroid enlargement among children will be more of the hypothyroid type, whereas in areas where exophthalmic goitre is prevalent there may be hypothyroidism among children—that is, it will be the precursor of endemic goitre on the one hand, or of Graves's disease on the other. Other types of goitre in addition to those given are toxic adenoma, exophthalmic goitre, malignant goitre, and thyroiditis. Goitre may also be classified according to the pathology of the thyroid—for example, parenchymatous, colloid, adenomatous, cystic, fibrous, inflammatory, parasitic, and malignant, and goitres of the exophthalmic type. There are a number of signs and symptoms for distinguishing between all these types. Two tests are known which help to clinch the diagnosis in cases where one is doubtful of Graves's disease. The two tests are the adrenalin test and the quinine test of Bram. The former test is well known. The principle of Bram's test is that cinchonism is not caused in cases of Graves's disease by the exhibition of quinine.

#### *Causes of Goitre.*

The chief causes appear to be: (1) infective; (2) physiological, associated with an upset of glandular balance; (3) heredity; (4) strain and anxiety in the case of Graves's disease; (5) lack or excess of certain constituents in water and food or even the air, such as iodine.

I have not time to go fully into this question, but I will refer to the work of McCarrison, Lenhart, Otto Stiner, McClendon and Williams, Marine and Kimball, Cantaro, and other workers. At the recent meeting of the Royal Sanitary Institute at Derby Dr. Turton mentioned the association of goitre with water supply of a chalky nature. The balance of evidence appears to be that water pollution is associated with colloid goitre; the lack of iodine as a cause is debatable. In the investigation I made in Bath regarding goitre, pollution of water supply and verminous conditions appeared to be the chief factors at work in an outbreak in one school. Those interested in the question should read McCarrison's account of the outbreak at Sanawar, Northern India, and other details of his work; also Crotti's account of the causation of goitre and Sir James Berry's article in the *BRITISH MEDICAL JOURNAL*, December 5th, 1925.

Regarding heredity I submit details of a family in which goitre occurred for several generations.

Mrs. W., aged 59, had a large goitre, unilateral and vesicular in type. She has two children, a son with no goitre, and a daughter who is goitrous.

Mrs. W.'s mother had goitre and Mrs. W.'s mother's six sisters all had goitre. Mrs. W.'s mother had five brothers, none of whom had goitre.

Mrs. W.'s father had not got goitre. Mrs. W.'s mother had goitre, but her mother's father did not have goitre. Mrs. W.'s mother had five sons and five daughters. All the daughters had goitre but none of the sons. Among the sons' children five had goitre—all the girls; three had not goitre—the three sons. The daughters had eight children (seven girls and one boy) all of whom had goitre.

It would appear that goitre is the opposite to haemophilia, the disease occurring chiefly in females, although males may transmit it.

#### *Prevention.*

Regarding prevention, the chief means I desire to emphasize are—that infection, particularly alimentary infection, must be prevented by such means as seeing that there is a clean and satisfactory water, milk, and food supply, and that the population has a diet which contains the minimum of iodine necessary for the thyroid gland's needs (cruciferous vegetables of various kinds in particular); that there must be prevention or remedy of ear, nose, and throat diseases in children, and the prevention of overstrain, physical and mental, particularly the latter, and care after debilitating diseases. Attention must be given also to any upset of glandular balance, especially at adolescence and before and after childbirth.

Additional preventive treatment would include the recommending of a special diet containing vitamins and cod-liver oil (which contains iodine in minute quantities); cleanliness of habits; fresh air and sunshine; and removal of focal infections.

#### *Treatment.*

Iodine in some form is very beneficial; among 65 cases treated in Glosop I found 16 were cured, 36 greatly improved, and 13 unchanged. Of the unchanged cases some had been only a short time under treatment. Very careful examination had been made of all the children treated, and no symptoms of Graves's disease had been found to follow the exhibition of iodine. The removal of septic conditions was also found very helpful. A great many other medical men in America and on the Continent, as well as in England, have found iodine to be very curative. It is necessary, however, to keep the children treated under close observation, as in some instances exophthalmic symptoms have been noted to follow it. At Glosop the children are examined once a week; the following procedure is adopted. In the first instance a complete medical examination is made, and matters such as length of residence in the district, sanitary conditions and water supply, diet, etc., inquired into. After this the child is weighed weekly, and the circumference of the neck over the thyroid taken. Each child is then examined carefully for signs of incipient Graves's disease as follows; tremor is looked for by making the child stand on tip-toe with extended arms and the fingers separate one from the other; the pulse is taken, and then the child takes twelve jumps and the pulse is recorded again and counted each quarter-minute for at least forty-five seconds after; von Graefe's and Möbius's signs are also looked for. In hyperthyroidism the pulse is rapid and is not accelerated by exertion. The fine intention tremor and the other signs might also be found. Dr. Brewer, school medical officer for Swindon, gives in his annual report minute details of examination on these lines, and his results should be read by everyone interested in goitre in childhood. Treatment must also include the removal of any cause. There are, of course, other methods of treatment, such as x rays and the giving of thyroid gland.

#### *Summary.*

Goitre is not nearly so prevalent in Derbyshire now as in former years.

The beginnings of exophthalmic goitre should always be looked for in the case of the enlarged thyroids of childhood.

In Glosop in a population of 20,000 there were in round figures 12 cases of severe exophthalmic goitre and 24 of a mild type, and the deaths per year average about 0.6. These figures relate to all ages and sexes. This death rate is slightly higher than that for England and Wales.

I would like to point out also that it is highly desirable that the gap in the Insurance Act left between the ages of 14 and 16 ought to be removed, so that boys and girls will have more medical care on leaving school. The age of adolescence is a critical age for goitre as well as other diseases. In Glosop we tried to emphasize to parents the need for treatment of thyroid enlargement after leaving school.

In conclusion, owing to the association I had found of rheumatism with goitre, I would like to suggest to the British Medical Association committee investigating rheumatism that this point might be worth inquiring into.

## DISCUSSION.

Dr. L. A. PARRY (Hove) thought that the enormous variation in the figures given by Dr. Milligan as to the incidence of goitre in children—varying from practically nil in Essex and Kent to over 50 per cent. in Derbyshire—must be due to something more than mere locality, although this undoubtedly was one of the factors. In this, as in so many other investigations, the personal factor, the mentality of the investigator, must be largely concerned. Inquiries on other clinical matters had revealed the same discrepancies in figures by different observers. He agreed that the iodine treatment was the best, and had been very successful.

Dr. M. E. POPE (New South Wales) gave the results of some investigations in New South Wales. It had been found that goitre occurred in the hilly districts, while hot, dry plains and seaports were free from the disease.

Dr. H. BARBER (Derby) doubted if rheumatism was associated with goitre. Mitral stenosis or evidence of chronic valvular disease was not found in later years. Goitre was still very prevalent in Derbyshire, and he was not sure that it was decreasing at all. The public health authorities should work at the water supply rather than at giving iodine, if, as seemed probable, the water supply was at fault. There was no doubt whatever that locality was very important in relation to goitre. It was prevalent in hilly districts far from the sea.

Dr. H. W. POOLER (Stonebroom, Derbyshire) thought there was still a very great deal of goitre in Derbyshire, far more than he had observed during a long professional career in Birmingham; and he was not sure that the disease was decreasing. Fewer large unsightly wens were seen. He believed that there were many cases showing signs of derangement of function without obvious thyroid disease; this applied to hyper- as well as hypo-thyroid symptoms. Evidences of hypothyroidism could be seen in many children in the villages, ranging from mild forms with thinned coarse hair, thickened lips or alae nasi, or flattened noses or lessened mental alertness, to imbecility and full cretinism. In adults such conditions as nervous excitement, tremor, palpitation, etc., were frequent, without obvious thyroid enlargement. He could not recall seeing any case of hyperthyroidism in a child under 14 years. He believed the conditions to be due to iodine deficiency, caused by remoteness from the sea. Preventive measures suggested were the administration of iodized table salt, chocolates, or water. Iodized chocolate was much too expensive; iodizing the water supply, in view of the fact that so small a proportion of the water was used for drinking purposes, was wasteful; the best method seemed to be the use of iodized table salt.

Dr. MILLIGAN, in reply, referred to the doubts as to the decreasing incidence of goitre in Derbyshire; he had it from Dr. Nelson of Glossop, who had practised there over thirty years ago, that there had been a great decrease in the number of cases seen and the severity of the disease; Dr. Turton, speaking at the Royal Sanitary Institute meeting in Derby this year, had also expressed a similar opinion; he believed credit must be given to the late Dr. Barwise for improving the quality of water supplies in helping to effect this diminution. Regarding rheumatism and goitre, he had counted as rheumatic children who had growing pains, and in the second investigation children also who had fibrous nodules. One speaker had expressed doubts as to the reliability of percentages of goitre; Dr. Milligan said the examination was made on an agreed basis and by skilled observers: he himself had also carried out investigations in the south as well as the north. In reply to the President, Dr. Thursfield, he entirely agreed that exophthalmic goitre was rare under 14 years of age; the figures he gave (36 mild and severe cases among 20,000 persons in Glossop) referred to all ages and sexes. The point he wished to make was that thyroid enlargement might lead to exophthalmic goitre later in life as well as to endemic goitre, and the premonitory signs of both should be carefully looked for.

## SECTION OF PUBLIC HEALTH.

WILLIAM J. HOWARTH, C.B.E., M.D., D.P.H., President.

DISCUSSION ON  
POOR LAW REFORM AND PUBLIC HEALTH.

## OPENING PAPERS.

I.—J. MIDDLETON MARTIN, M.D.CAMB., D.P.H.,  
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*Introduction.*

THE problem of the so-called Poor Law is the care of a section of the community which, for one reason or another, is unable to provide independently for its maintenance or, in times of illness, for the special circumstances arising therefrom, including medical care. It is a problem that has existed from the earliest times, but the nature of the problem has varied in changing social conditions. Broadly speaking, there have been four marked stages: (1) Pre-Reformation. (2) Early Reformation. (3) Industrial revolution. (4) Period of social development.

In pre-Reformation times the community as such took little, if any, heed of the needs of the necessitous, and what was provided was given by the monasteries and clergy. As Sir Francis Hyett observes in his *Gloucester in National History*:

"Work which is now done by universities and education committees, by boards of guardians, by philanthropic associations, or by individual effort, was then done exclusively by the monastic orders. For three centuries the pursuit and diffusion of knowledge was the prerogative of the Church. Statesmen and lawyers, architects and artists, schoolmasters and agriculturalists, and craftsmen, were trained in the cloister. It was monks who collected, preserved, and multiplied books, who built churches, who made roads, cut down forests, drained fens, and tilled the lands which they reclaimed. It was they who, by a systematic distribution of charity, saved the poor from starvation without the intervention of the State, and who maintained hospitals and dispensaries without subscription lists, and while they aided the onward march of contemporary civilization they have left us some priceless legacies."

In addition, the stationary poor seem to have had some sort of a legal claim on lords of manors.

*Evolution of Present-day Poor Law Services.*

In the middle of the sixteenth century there was a great upheaval of the whole social system occasioned by the Reformation, and immediately the problem of the care of the necessitous was forced on the Government of the day by their very existence and the loss of the assistance previously given by the monasteries. As a result the first Elizabethan Poor Law Act of 1553 was passed requiring "that contribution towards the relief of the impotent poor should be leviable on every competent person"—the beginning of the now well known system of rates. It was not long before amending legislation proved to be necessary, and in 1601 was passed the great charter of this branch of English law—the Poor Relief Act of 1601, which formed the basis of all Poor Law legislation for two and a quarter centuries, and a good deal of which is even now actively in force. The unit of administration was the parish.

Up to this period legislation had been very severe and repressive in character, and had failed in its purpose of reducing destitution. The new legislation was based on more humanitarian principles, though more or less deterrent treatment still obtained for the able-bodied. From time to time the problem was forced on the attention of the Government from another aspect by the epidemics of infectious disease occurring at different periods of history, and as a special example may be mentioned the Great Plague of the middle of the seventeenth century, so graphically described by Mr. Walter G. Bell. A particularly interesting side of the subject for present purposes is the evidence of activity while danger was existing, the waste of effort in the way remedy was applied, and the fading away of the lessons as soon as the immediate danger was over—but one example of many in the history of our country. Mr. Bell's account of the Plague in London is also specially interesting from the picture which he draws

of the conditions of medical practice and nursing in these days. Many other examples might be quoted, but it is sufficient evidence of the haphazard character of the relief of the necessitous and the state of curative and preventive services in those times.

Little, if any, improvement is to be noted as time went on until early in the nineteenth century, when, after industrial conditions in various directions had gradually become more and more difficult, the attention of the Government was forcibly directed to the necessity of action in regard to the poor. Meanwhile, too, extreme abuses had crept into the administration of the Elizabethan Poor Law in various directions, including the provision for the sick poor in workhouses. A Royal Commission was appointed and reported in 1832, and as an example of the condition of affairs may be mentioned their description of the state of the workhouses in the small pauperized parishes as deplorable, and of the condition of the sick poor therein as leaving much to be desired. They say, "the sick were housed with prostitutes, ex-gnolbirds, tramps, and other characters of the worst description, and their sufferings were not infrequently aggravated by the incessant ravings of some neglected lunatic." For such attention as they received they were apparently indebted to the care of less disabled paupers.

The Poor Law Amendment Act of 1834 was the outcome, and under it the care of the poor was spread over a wider area, the union of parishes with a workhouse in common, while each parish was still responsible for the expense of its own poor up to 1865.

Such is, very briefly, the history of the care of the poor up to the middle of the nineteenth century—up to the time of the Reformation a voluntary charge of the Church, then deterrent legislation, next still harsh parochial relief, and finally systematized charge spread over a group of parishes. Now the problem gradually assumed a different character from the gradual change in the social outlook, progressing with extraordinary rapidity towards the end of the nineteenth century, and especially in the past twenty-five years. As a result public opinion has led to consideration of the matter from various points of view, and amongst the more important of the bodies issuing reports on Poor Law reform may be mentioned:

- 1905. Royal Commission on the Poor Laws and Relief of Distress (reporting in 1903).
- 1908. Royal Commission on the Feeble-minded.
- 1909. Report of the Local Government Board on social conditions.
- 1911. Committee of the County Councils Association.
- 1918. Committee of the Ministry of Reconstruction.
- 1926. Memorandum of the Ministry of Health on proposals for Poor Law Reform.
- Royal Commission on National Health Insurance.
- County Councils Association.
- Association of Poor Law Unions.

Still sitting—Royal Commission on Local Government.

There is general agreement amongst all of them that responsibility for the care of the poor should now be spread over a much wider area, and that the direction in which the change should be made is that the charge should be laid on the authorities—county and county borough councils administering the invading social services which embrace already so much of the work of the present relief authorities.

#### Dimensions of the Problem.

The social changes and the advance of knowledge in this time have led to two important changes in the nature of the problem, especially of the care of the sick poor. The first is the dimensions of the problem, which, as will be seen from the following table, is steadily diminishing.

		England and Wales.	
		Population.	Paupers.
1851	...	17,927,609	941,515 = 5.3 per cent.
1861	...	20,966,224	883,921 = 4.4 "
1871	...	22,712,266	1,037,360 = 4.6 "
1881	...	25,974,439	790,937 = 3.1 "
1891	...	29,002,525	759,750 = 2.6 "
1901	...	32,527,843	777,097 = 2.4 "
1911	...	36,070,492	886,177 = 2.5 "
1921	...	37,895,242	665,667 = 1.75 "

In 1922 there was a sudden increase in the proportion of persons in receipt of Poor Law relief to 3.8 per cent., and in the four past years it has averaged 3.7 per cent.

It would, however, be unduly pessimistic to regard the present unfavourable conditions as other than temporary in character.

The second change is the development of social legislation and services which have invaded the province of the Poor Law and have helped to some extent in the general decrease shown above; they also provide services for persons who are above the border-line of poverty. Among these developments may be mentioned:

- 1897. Workmen's Compensation Act and subsequent Acts.
- 1902. Provision for midwifery services under Midwives Act.
- Early in twentieth century—Maternity and child welfare schemes.
- 1906. Meals for necessitous school children.
- 1908. Medical inspection of elementary school children.
- 1908. Old age pensions at 70 years of age.
- 1911. National Insurance Act.
- 1911. Unemployment Act.
- 1912. Schemes for the treatment of tuberculosis.
- 1913. Mental Deficiency Act.
- 1914. Pensions for disabilities of the great war.
- 1918. Treatment of venereal disease.
- 1918. Payment of medical fees for assistance to midwives.
- 1920. Blind Persons Act.
- 1926. Widows', Orphans', and Old Age Contributory Pensions Act.

All of these are of importance and some of them have not yet reached their full development; the most far-reaching is National Health Insurance, of which fuller mention is made later.

#### Medical Relief.

The general lines of the development to the present stage of the relief of the necessitous have been set out to show the character of the problem and the natural lines of progress, which have changed from time to time but always in the same direction from the time at which the State first assumed responsibility in the matter—a wider basis, the present stage reached being that of the union area. But, in the course of this progress, "medical relief" is a very late development, and as the Royal Commission of 1905 reported—

"the absence of reference to Poor Law medical relief in the early statutes is due in great measure to the reliance placed on voluntary association for medical relief. The hospitals received patients from the parish at fixed charges and patients generally were charged for indoor treatment. There was also a number of dispensaries in the metropolis and elsewhere."

It must also be remembered that even so late as 1858 medical practice itself was by no means clearly defined and only assumed a recognized status after the passing of the Medical Act of that year. Thus, the Royal Commission of 1905 reported to the following effect. There was no provision for a system of medical relief under the Act of Elizabeth, and even the Reform Act of 1834 did not specifically provide for a system. The Act of 1848, however, required provision to be made for medical or other assistance on account of accident, bodily casualty, or sudden illness, but it was not until 1863 that the Local Government Board had specific powers to order a board of guardians to provide surgical and medical appliances in a workhouse. Up to that time it was left to boards to make such provision as they saw fit, and from the agitation in the middle of the nineteenth century it would appear that there is grave reason for thinking that the medical care was far from satisfactory. The term "medical relief" first appears in an Order of 1842, and seems at first to have been limited to medical attendance and the usual bottle of medicine which accompanied a doctor's visit at that time. This attendance also varied according as the medical officer possessed a degree in medicine or surgery or both. They go on to say that indoor medical relief, administered under the purely deterrent principle of the workhouse system, ended in failure and was abandoned in 1867 in favour of a system in which curative treatment became the dominant principle. From that time, largely as a result of outside pressure, the standard of the care of the sick poor rose, and by the end of the nineteenth century there was little cause for serious complaint from the humanitarian standpoint, though much more was possible had full advantage been taken of medical progress.

A very interesting reference is made later by the Royal Commission of 1905 to a circular of the Poor Law Commissioners issued in 1836 and brought up to date in their

own Report. "Medical relief was to be given only in cases of actual destitution, and every endeavour was to be made to induce the labouring classes to join sick clubs or friendly societies." The numbers given for three years are:

	Societies.	Members.	Paupers.
1803 ...	9,672	704,350	1,039,716
1815 ...	?	925,439	895,993
1904 ...	?	5,700,000	932,000

Two further observations of the Commissioners may be quoted—one as a sign of the conditions of the past and the other as to their views for the future. The first is that "originally the remuneration of the medical officer was fixed by open tender," which was abolished by the General Medical Order of 1842. The second is: "We hope that, ultimately, it may be possible to dispense altogether with the service of the district medical officer and that his duties will be shared among medical men practising in the district."

Meanwhile, there had been steadily growing appreciation of two very important principles: (1) that illness and disease were important causes of pauperism, and (2) that much illness was preventable by improvement in social conditions. Many individuals might be named as pioneers in this development of knowledge, and the British Medical Association took an important share in bringing the matter before the public and the Government. A joint committee of that Association and the Social Science Association memorialized the Government in May, 1868, and as a result Mr. Disraeli appointed a Royal Commission under a Royal Warrant issued on November 24th, 1868. That Commission reported in 1871, and from the time of their report began the long series of public health legislation leading to the very wide developments of the present day. Of these health developments the most far-reaching in many respects was the National Insurance Act of 1911, the full possibilities of which have not even yet been realized.

The history of the care of the poor has been outlined—very sketchily it is true, but as fully as a paper of this character will allow—to indicate the lines on which it has developed, to show the fact that the apparent state of stability it has reached is but a stage in that development, and lastly, because its history tends to show the natural lines for further development at the present time.

#### The Problem in a County Area.

Before setting out suggestions in detail it is now desirable to consider the dimensions of the problem, and as an example the circumstances of a county area such as Gloucestershire, with a population of about 380,676, will be considered. The existing social services in addition to the "Poor Law" have been set out above and give some indication of the extent to which the province of the Poor Law has been gradually invaded.

#### Domiciliary Service.

In the county are fifteen boards of guardians with fourteen workhouses responsible for the poor amongst a population of 315,234, of which 3,959 are resident in adjoining counties; the Poor Law authorities for the remaining population of 71,401 are eight boards of guardians in adjoining counties.

The medical services and agencies available for the population of 380,676 are:

Groups:	Population.	Services.
Insured persons ...	140,000	General domiciliary medical attendance; about half of number see doctor during any year.
Dependants .. ..	133,000	
Others .. ..	52,500	
Local medical clubs (no detailed information).		
Poor Law .. ..	8,500	Domiciliary medical attendance (about one-third under treatment at any one time) and infirmaries.
Asylum patients ...	1,276	In-patient treatment.
School children ...	59,000	Treatment of a few conditions, more particularly defects of sense organs and air passages, and skin diseases and teeth.
Tuberculosis .. ..	Whole population.	Dispensary and sanatorium.
Veneral diseases ..	"	Out-patient and in-patient at hospitals.
Maternity and child ..	"	Very limited treatment.
War disabled .. ..	"	
War disabilities (numbers unknown).		A few cases only.

Agencies:	No.	Feds.
Hospitals—		
General ... ..	3	303
Special ... ..	3	69
Cottage ... ..	13	172
	19	549
Poor Law ... ..	14	700 (about)
Infectious diseases ...	17	459 (about)
Tuberculosis:		
Sanatorium ... ..		175
Advanced beds ... ..		35
Nursing homes ... ..	10	50
Medical practitioners (practising) ...	212	
Dentists ... ..	40 (about)	
Nurses—district ... ..	150 (about)	
Ambulances ... ..	?	
Bacteriological and pathological laboratory: Very limited and incomplete.		

It will thus be seen that for the 8,500 Poor Law persons there is available, in addition to the services of the Poor Law medical officers, treatment arrangements for many under one or other of the agencies set out in the above table. On January 1st, 1925, the distribution of the 8,500 persons in receipt of Poor Law relief was:

Number suffering mentally:	
In institutions ... ..	1,300
At home ... ..	87
	1,387
Number suffering from sickness, infirmity, etc.:	
In institutions ... ..	603
At home ... ..	2,065
	2,668
Number not so suffering:	
In institutions ... ..	188*
Other persons ... ..	785
	973
Number not so suffering at home:	
Widows and wives apart ... ..	403
Children ... ..	1,140
Others ... ..	1,278
	2,821
Relief on account of unemployment:	
Men ... ..	134
Women ... ..	115
Children ... ..	237
	486
Casuals ... ..	145
	8,500

\* Children in specialized institutions.

For the purpose of estimating the medical assistance required, this table may be concisely summarized as follows:

	No.	Per cent.
Mentally ill ... ..	1,387	16.3
Physically ill:		
In institutions ... ..	603	7.1
At home ... ..	2,065	24.5
	2,668	31.6
Not ill ... ..	4,425	52.1
	8,500	

With a view to obtaining exact information as to the numbers of sick persons undergoing treatment at any one time an inquiry was made of Poor Law medical officers in the county as to the cases in the infirmary and under treatment in their homes on January 24th, 1926, but not necessarily visited on that day, and as to the accommodation available for in-patients. The summary of the replies is:

Population ... ..	309,275
Workhouses ... ..	14
Total beds ... ..	2,145
Infirmary beds ... ..	715
Infirmary patients ... ..	561
Patients under attendance at home ... ..	750*

\* About 11.5 per cent. of total Poor Law persons.

As regards the nature of the illness, information was given with respect to 413 in-patients and 565 patients in their homes. It is unnecessary to set out the results in detail, but it may be briefly stated that medical attendance was required mostly on account of senility (about one-fourth of the whole), respiratory disease, largely of a chronic character (one-sixth), and diseases of the nervous system—paralysis and mental defect (about one-seventh); a total of over one-half of the cases. It is somewhat surprising to note that of 578 patients only 57 were having attention for heart disease and only 24 for malignant disease.

Of the 252 medical practitioners in the county 212 are in practice; of these, 174 are insurance practitioners and 75 are Poor Law medical officers—that is, of all the practising doctors 82 per cent. attend insured persons and 35 per

cent. attend Poor Law persons. These proportions are particularly mentioned to show that it would not entail very great changes if some arrangement were made whereby domiciliary medical attendance on Poor Law persons were distributed among all doctors willing to accept them as they do insured persons. Indeed, it would appear that the time has arrived when the anticipation of the Royal Commissioners of 1905 (made three years before the National Insurance Act) may well be realized—namely, "we hope that, ultimately, it may be possible to dispense altogether with the service of the district medical officer, and that his duties will be shared among medical men practising in the district."

This course would have great advantages over the present arrangement and would put the 8,500 so-called Poor Law persons on the same footing as the 140,000 insured persons, and would remove once for all the distinction or stigma of "Poor Law" so far as medical assistance is concerned.

In putting such a proposal into operation there are two practical difficulties. The first is the varying periods for which persons on the border-line of necessitous would require medical care, and the second is the distribution of the funds available for such care. Both these difficulties are, however, of a diminishing quantity, as the probability is that, with the full development of health insurance, the number requiring what is at present called Poor Law medical assistance will decrease; as an example it may be mentioned that an insured person is entitled to medical benefit on the insurance basis when he ceases to be an insured person and becomes an old age pensioner, in future at 65 instead of 70 years of age, and the remuneration for such medical attendance is provided from insurance funds, presumably including the share of the State contributions. Also it is to be noted that the "lives" in question are less satisfactory than the normal, and, if the remuneration is to be adequate, the capitation rate must necessarily be at a higher rate than that for insured persons. A possible manner of meeting all these difficulties would be somewhat as follows:

1. The total sum set aside for domiciliary treatment for these persons would be pooled—say, A pounds.
2. "Orders" for attendance on individuals issued by officers of the Public Assistance Authority (whatever the new authority may be) would be given to the individuals, who would choose their own doctor, the "Orders" totalling for the year, say, B.
3. The numbers of persons attended by the respective doctors will be a, b, c, d, etc.
4. At the end of a quarter or year the capitation fee available will be A pounds divided by B persons—say, C shillings.
5. The payment to each doctor will be this figure (C) multiplied by a, b, c, d.

In this way the whole amount available for medical attendance will be distributed among the doctors giving the services.

An effort has been made to calculate what the capitation rate would be at the present cost of Poor Law medical services, based on information kindly supplied by Poor Law medical officers in the county. From the return of August 4th, 1925, to the House of Commons the persons in receipt of relief on January 1st, 1925, were distributed as follows:

In institutions:			
Mentally ill	...	...	1,300
Physically ill	...	...	603
			1,903
Others	...	...	1,118
Total in institutions	...	...	3,021
At home:			
Mentally ill	...	...	87
Physically ill	...	...	2,085
			2,172
Not ill—general	...	...	2,821
Unemployment	...	...	486
			3,307
Total at home	...	...	5,479
Grand total	...	...	8,500

The total amount of the present salaries of medical officers is £5,200, and this sum distributed over 5,479 persons gives an average of approximately nineteen shillings per head, or about double the present capitation rate. From the further information supplied by the medical officers about one-ninth of the persons are under medical attendance at

any one time; though certain information is not available, it would appear that the attendance required by this group of persons is not so greatly in excess of that given to insured persons as is generally estimated. It would, therefore, appear to be practicable to arrange a system of domiciliary medical attendance on a plan which would avoid any distinction from the ordinary population, and to give the individuals the choice of doctor.

#### In-patient Treatment.

There are in the workhouses in the county about 550 beds for sick persons, and there is also a number of beds (on the same proportion, about 120) for Gloucestershire persons in workhouses outside the county—a total of about 680. Nearly double this number of beds is available in—

Three general hospitals	...	...	308
Three special hospitals	...	...	69
Thirteen cottage hospitals	...	...	172
			549
Infectious disease hospitals	...	...	450
Tuberculosis:			
Sanatorium	...	...	175
Advanced beds	...	...	36
			211
			1,210

Presumably the present accommodation in the workhouses is sufficient in quantity, and in three of them at least, with 309 beds, is excellent in quality. Probably the remainder of the accommodation cannot be regarded as satisfactory in view of modern requirements and may need replacement. To particularize one special class of case for which beds are necessary, additional accommodation for maternity cases is required, especially in view of the housing conditions of both town and country. Some accommodation for them is already provided in the maternity wards of district nursing homes and in certain cottage hospitals, and the care of all these cases requiring special provision should be arranged in extended accommodation at the homes and hospitals.

The replacement of other Poor Law infirmary accommodation which is unsatisfactory should be undertaken gradually, and it would appear that the most satisfactory alternative provision should also be found in extensions of existing cottage hospitals and in the establishment of new ones in other parts, in many of which they are desirable for other purposes. This course would have the two great advantages of relieving the beds in general hospitals of prolonged cases and enabling more patients to have the special services available in the general hospitals, and, secondly, of removing entirely the distinction or stigma of the Poor Law from patients so treated.

#### Consultant Service.

The next requirement—a new service—is to ensure arrangements whereby consultant advice may be available as required and whereby patients in need of special treatment may proceed to the appropriate place without delay. As examples of the former may be mentioned examination by an ophthalmic surgeon and the provision of glasses, so necessary for the comfort of old persons as presbyopia comes on with age, and, of the latter, admission to hospitals for operation. The scheme for the extension of medical services in Gloucestershire makes it readily possible to put such a proposal into operation immediately, and may be given as an example of a method in which the necessary arrangements can be made at a reasonable cost.

#### Drugs.

The supply of drugs by chemists or, in distant parts, by doctors, on the lines of the insurance service, could readily be arranged.

#### Nursing.

A very important further domiciliary assistance is nursing care. Gloucestershire is very fairly covered by district nursing associations and already they provide services for the county council. It would involve a comparatively slight extension of the present arrangements of the council to include general provision of this valuable assistance to Poor Law persons, similarly in a manner which would involve no distinction of class.



*Dental.*

The provision of dental treatment cannot be arranged so easily, largely owing to the fact that dentists are not so generally distributed as are doctors—for example, there are only 40 dentists in the same area as the 212 doctors and 140 district nurses—and, further, the dentists are to be found only in the large centres of population. It is important, however, that requisite dental treatment should be provided, and possibly the solution may be found temporarily in the appointment of peripatetic dentists who will see patients in the out-stations of the Scheme for the Extension of Medical Services.

*Summary.*

Shortly, the services for the "sick poor" above outlined include:

1. Domiciliary attendance by medical practitioners, as far as possible on the lines of the present insurance medical practice, which tends towards a preventive health service.
2. In-patient treatment in hospitals (at present Poor Law infirmaries), and in additional accommodation (to replace unsatisfactory infirmaries) at existing or new cottage hospitals.
3. Consultant services—for example, ophthalmic treatment.
4. Nursing assistance.
5. Dental treatment as fully as practicable.
6. Complete arrangements under the Scheme for the Extension of Medical Services, whereby the sick poor may have immediate access to the particular form or place of treatment most appropriate to his case.

*Conclusion.*

The gradual evolution of the problem of the care of the necessitous section of the population has been briefly outlined, and it has been shown that in the course of evolution the next stage would naturally be to provide care and treatment of the sick amongst them on the lines recently developed for another large section of the community, thus avoiding the class distinction which is rightly regarded as very unfortunate.

## II.—JAMES FENTON, M.D., D.P.H.,

Medical Officer of Health, Royal Borough of Kensington.

POOR LAW REFORM AND PUBLIC HEALTH IN RELATION  
TO LONDON.

THERE are wide differences in methods of local government existing in London from those in the rest of the country, and in order to understand the problem of health administration in relation to Poor Law reform in the metropolis it will be necessary to review briefly the London system of local government.

The administrative county of London had a population at the last census of 4,484,523. It has a county council which is the local education authority controlling the school medical service. This body also supervises midwives, provides residential treatment for persons suffering from tuberculosis, has charge of the main sewers, and, although not a sanitary authority, it enforces the law in regard to offensive trades, common lodging-houses, and several other matters. The county council possesses powers somewhat similar to those of a borough council under the Housing Acts in regard to slum clearance schemes and the provision of new housing accommodation. The combination of certain of the duties usually undertaken by administrative county councils, with other duties commonly performed by local sanitary authorities, makes the administrative problems of the London County Council different from those of any other county in the country.

The Metropolitan Asylums Board provides fever hospital accommodation for the whole of the administrative county. It is an independent body, the members of which are nominated by the Ministry of Health and the Poor Law authorities of London.

The Metropolitan Water Board is a somewhat similar body to the Asylums Board, except that its members are appointed by the borough councils.

In addition to the City, which has a peculiar and distinctive position, with many powers and privileges which are not possessed by other authorities, there are twenty-eight metropolitan borough councils. The borough councils are the sanitary authorities in London and exercise the powers and duties as such under the Public Health (London) Act, 1891, and allied measures. They are also

the maternity and child welfare authorities and are responsible for the provision of the tuberculosis dispensary service.

There is a Poor Law authority in each borough, and the area in which it carries out its duties is generally co-terminous with that of the borough. Commonly the borough council and the Poor Law authority bear the same name. There are, however, a few cases where the areas of two boroughs are combined to form one Poor Law union. The London Poor Law guardians have powers almost identical with those of similar authorities in the rest of the country. One Insurance Committee serves for the entire administrative county.

It will be seen that, apart from the Water Board, there are at work in each borough five independent executive authorities (county council, borough council, Poor Law authority, Metropolitan Asylums Board, and the Insurance Committee) whose activities include health problems, and the existing more or less haphazard distribution of functions amongst them inevitably leads to loss of efficiency in administration and impedes the advance of public health. Not one of the five authorities has a complete knowledge of the whole field of work, with a consequential danger of competition and overlapping. The borough medical officer of health is not in a position to envisage as a whole the factors affecting public health in his area, nor to develop his work on the most efficient lines. The county medical officer of health and officers of the other authorities are even less able to do so, and satisfactory progress cannot, therefore, be achieved.

The present unsatisfactory position of public health administration in the metropolis is mainly due to the abandonment of the principle underlying the Public Health (London) Act, 1891—namely, that the functions of the borough councils should be executive and those of the county council almost exclusively supervisory. That policy was departed from when the school medical service, set up under the Education (Administrative Provisions) Act, 1907, was placed entirely under the direct control of the county council, to the exclusion of the borough councils.

The following examples are submitted to throw light upon what has been written:

(a) *School Medical Service.*—The school medical officers of the London County Council are out of touch with the borough medical officer of health. The majority of them are unknown to him. He has no intimate and personal knowledge of their work, he does not control their activities, and has no opportunity of co-ordinating the service with local health administration. The borough medical officer of health is deprived of the possibilities of studying and investigating health conditions amongst school children in relation to home environment by the dissociation from his department of the school medical staff, and the latter loses the stimulus derivable from maternity and child welfare work. The borough medical officer of health does not enter the schools, which are centres from which there may be a spread of infectious disease, for the prevention of which he is primarily responsible. Were the two services (local health administration and school medical service) combined, the individual's health, until the end of school life at least, would be in the charge of one set of officials, medical and other, instead of two independent authorities, with the resultant duplication of home visiting, etc.

(b) *Maternity and Child Welfare.*—While the whole service arising out of the Notification of Births Act and the Maternity and Child Welfare Act is entirely in the hands of borough councils, those authorities have no part in such ancillary work as the inspection of boarded-out children and lying-in homes, or the supervision of midwives—all of which is in the hands of the county council, to the detriment of maternity and child welfare work, and from that division of duties duplication of home visiting results.

(c) *Tuberculosis.*—Originally the whole of the administrative measures required for dealing with tuberculosis were in the hands of the borough councils and their medical officers of health. Now that the county council arranges for the admission of patients to sanatoriums and other institutions provided by other authorities, the officers of the county council decide which cases are to be admitted, and to a considerable extent investigate their after-histories. The system involves a mass of correspondence as to claims for admission, home conditions, after-care, etc., between the borough medical officer of health, and the officials of the London County Council. There is real need for simplification, and if health work were reorganized on the lines to be suggested, the two bodies—the London County

Council as supervisory and the Metropolitan Borough Council as executive—might between them evolve a scheme much less complicated.

(d) *Veneral Diseases*.—Though these diseases constitute, as a group, a factor of first-class importance to the public health, the borough authorities have no part in the scheme for their treatment, etc.

(e) *Vaccination*.—Whilst vaccination is closely associated with the prevention of infectious disease, for which borough councils are primarily responsible by statute, Poor Law guardians are responsible for operating this measure of prevention. Experience has shown that the authority responsible for the prevention of the spread of infection of small-pox should be the body responsible for operating such an important preventive measure as vaccination. The Public Health (Smallpox Prevention) Regulations of 1917 do enable the borough medical officer of health to vaccinate persons who have been in contact with small-pox patients, but vaccination is a service which should be entirely transferred to the metropolitan borough councils.

(f) *General Sanitation*.—Without going into details, mention may be made of the overlapping of jurisdiction of the county and borough councils in connexion with the Housing Acts, common lodging-houses, slaughterhouses, and cowhouses. The same remark applies to matters affecting public health connected with theatres, cinemas, and other places where the public congregate.

(g) *Registration of Births, Deaths, and Marriages*.—It is an anomaly that Poor Law guardians, whose primary duty is to relieve distress, should be responsible for the registration of births, deaths, and marriages amongst all members of the community. This duty should be transferred to metropolitan borough councils and controlled from the local town halls.

(h) *Outdoor Medical Relief*.—This service, now under the control of the Poor Law authority, is very closely wrapped up with the maternity and child welfare work of borough councils and the medical work of national health Insurance Committees. The duty of giving outdoor medical aid to those in distress would be simplified if the responsibility were transferred direct to the borough councils. The relieving officers should be placed under the control of the borough councils; they could secure the admission of persons to residential institutions for the poor in the manner now followed when officers of borough councils arrange for admission of patients to hospitals of the Metropolitan Asylums Board.

(i) *General Medicine*.—In the administration of medical treatment, maternity benefit, etc., provided under the Insurance Acts, and medical relief, care of children, etc., provided by the Poor Law, the borough councils have no part, nor are they in a position to obtain any information as to lunatics, mental defectives, and inebriates, though these and other subjects are usually regarded as parts of the general medical services, and are of high importance *qua* public health.

It will be obvious that the time has arrived when an amendment of the somewhat complicated system of local government administration in London is desirable.

The Minister of Health has recently issued provisional proposals for Poor Law reform for circulation to the various bodies concerned as a basis for consideration and discussion. The proposals for the country and for London are in the main almost identical, but in view of the widely different administration a separate set has been issued for London. Although the Minister's proposals are intended primarily to indicate a suggested method of reform of the Poor Law, they aim at securing simplification of the whole of the health administration work carried out by the various local authorities operating in London. The proposals contemplate that the London County Council will undertake for the whole administrative county—

(a) The general oversight of the administration of all health services, and the duty of acting in place of a metropolitan borough council declared to be in default of any of these services.

(b) The complete responsibility for outdoor relief, including domiciliary medical relief.

(c) The control of all residential institutions transferred under the reform scheme from the Poor Law authorities to the county council.

(d) The services at present maintained by the Metropolitan Asylums Board.

(e) The duties in connexion with vaccination now undertaken by the Poor Law authorities.

It is also proposed that certain anomalies of historic origin, such as the association of registration of births, deaths, and marriages with the provision for the relief of the poor, should be corrected, and it is intended that there

shall be an improved correlation between Poor Law relief and unemployment benefit.

It is a principle which will generally be accepted by those intimately concerned in public health work that so far as the health of the individual is concerned the best results are only to be obtained if he remain under the supervision of one single authority throughout the course of his life. The transfer of supervision, as at the present time, from the "maternity and child welfare" authority to the "education" authority, later to the "insurance" authority, and in times of distress or when suffering from infectious illness to the "Poor Law" or "fever" authority, affects adversely the individual, leads to wasteful expenditure and confused administration, and interferes with the progress of each of the authorities, none of which derives the full amount of experience that might be obtained.

There is no doubt that it would be to the general benefit that public health administration should aim definitely at the establishment of a single authority in each area charged with all executive health functions; but in London, with a population of four and a half millions, this would prove a task insuperable for one body. There is, however, much to be said in favour of securing simplicity and efficiency in administration by transferring the duties of the London Insurance Committee, the Metropolitan Asylums Board, and the Poor Law authorities within the county of London to the County Council and the metropolitan borough councils. The Metropolitan Asylums Board organization and the Poor Law residential institutions should be transferred to the County Council, thus allowing one body to control the residential institutional treatment for the whole of London. The services now being carried out by the London Insurance Committee and those of a non-residential institutional character now being administered by the Poor Law authorities should be transferred to the metropolitan borough councils.

In London Poor Law institutions there are approximately 46,800 beds, and in the Metropolitan Asylums Board institutions approximately 23,000 beds. Some idea of the task which would fall on the County Council if it were called upon to control this large number of beds, in addition to continuing its present duties, can be gathered when it is remembered that the total number of beds in the voluntary hospitals in London is only 13,000.

If the London County Council were made the authority for residential institutional treatment for London it would probably be impossible for that authority to carry out satisfactorily local health executive duties of a non-residential character, and, further, it is in the interests of the health of the individual that these duties should be in the hands of the local sanitary authorities. It would appear, therefore, necessary and desirable to add to the present powers of the metropolitan borough councils by charging them definitely with the duty of carrying out all local health services of a non-residential character.

This proposal would involve the transfer to the borough councils of all non-residential executive health functions now in the hands of the London County Council, such as the school medical service, the inspection of common lodging-houses, and the supervision of midwives. Each borough council would be entrusted, in addition, with the work of the medical and other staffs (except the residential institutional staffs) of the Poor Law guardians; the registration of births, deaths, and marriages; vaccination; and the work of the London Insurance Committee within its area.

Thus in London we should have the metropolitan borough councils acting as the local health executive authorities and the London County Council as the institutional authority for Poor Law, infectious disease, and tuberculosis. The County Council would also remain the supervisory and co-ordinating authority with regard to health services generally; but it is essential that the county authority should be entirely supervisory in regard to local health matters rather than partially executive and partially supervisory. The London County Council could, in fact, act as a Provincial Board of Health for London, thus relieving the Minister of Health of much of the detailed work now falling upon him. Under these proposals the two authorities, working closely together, would operate in each area, instead of five as at present.

It is only by such distribution of functions as that outlined that metropolitan public health administration can become efficient, elastic, and capable of fullest development. In this way only can administration be really democratic, enabling the citizens of each borough to have easy access to local representatives and responsible officers in their own areas, for central executive administration over an area so vast as the metropolis must, of necessity, be bureaucratic.

### III.—R. P. GARROW, M.D. ABERD., D.P.H.,

Medical Officer of Health, Municipal Borough of Chesterfield.

#### FROM THE POINT OF VIEW OF THE NON-COUNTY BOROUGH OR URBAN DISTRICT.

The provisional proposals for Poor Law reform prepared in the Ministry of Health for circulation to the London County Council, associations of local authorities, and others concerned, as a basis for consideration and discussion, have fallen like a bombshell upon non-county boroughs and urban districts throughout England and Wales.

The principal proposal affecting non-county boroughs and urban districts—namely, that the county council is to be the supervising and controlling authority for all health purposes throughout the administrative county—is the cause of profound consternation to members and officials of municipal boroughs and urban districts. Commenting on this, the council of the Association of Municipal Corporations, in its annual report, says:

"It will be apparent to members of the association that these are proposals to which the association could not possibly assent. Some non-county boroughs have been in existence for centuries, and most of them have been exercising health functions for many years before county councils were created. In the opinion of the Council, the borough councils are well able to discharge their duties in this respect, and it would be entirely contrary to their interests and to the public interest that they should be placed under the control of the county councils. Moreover, dual responsibility, which is involved in the proposal of the Ministry, is open to grave objection."

Having regard to the objects sought to be attained by the reforms—namely, unification and co-ordination and the prevention of overlapping—the proposal to put all borough and urban and rural district councils under the county councils is difficult to understand. The Ministry's memorandum says:

"As regards the counties, the problem of administration is complicated (a) by the size of the areas involved; and (b) by the present existence in every part of the administrative counties of two authorities (the county council and a borough or district council), each of which has functions in regard to health to perform."

But neither the unwieldy size of the counties nor the divided authority throughout their areas is in any way mitigated by the proposal that—

"the county council shall in all cases definitely undertake for the whole administrative county—

(a) A general oversight of the administration of all health services, whether existing or transferred, and a duty of acting in the place of a borough or district council declared to be in default in any of those services, and

(b) a complete responsibility for (1) the consideration of applications for relief and the grant of outdoor relief (or home assistance) (including domiciliary medical relief), and (2) all institutions transferred under the reform scheme and the uses to which these institutions are put."

Both difficulties would be accentuated by the proposed reforms. If the administrative counties are generally too large for the efficient discharge of the present health functions of the county councils, they will be still more unwieldy if the county councils attempt general supervision and control of all health services throughout their entire areas. The complications arising from the present existence in every part of the administrative counties of two authorities responsible for different health services are generally trifling compared with the possibilities of friction under a system in which every health function became subject to dual control.

Counties and county boroughs have come to be regarded as the most suitable areas of local administration, and all the more important developments in public health in recent years are administered by the county councils and county borough councils. Everybody is agreed that the county

borough presents the closest approach to the ideal unit for health administration in this country, but we are very far from a similar unanimity in regard to the counties.

The non-county boroughs and urban districts, of which there are twenty-two amongst the "great towns" of England and Wales with populations of over 50,000, resent exclusion from participation in modern health developments.

Their natural aspirations towards the complete autonomy in local affairs by acquiring county borough powers have had a serious set-back by the recommendation of the present Royal Commission on Local Government that the minimum population entitling a borough to apply for county borough status should be raised from 50,000 to 75,000. But the proposals for Poor Law reform are a still more serious menace to the prestige of these towns, and have stimulated the council of the Non-County Borough Association to pass the following resolution unanimously:

"That this Association will resist to the uttermost any further encroachments upon the rights, liberties, and privileges of municipal corporations granted to them by charter."

From the point of view of medical administration, the proposals are fraught with great possibilities if not probabilities of friction and trouble. Administration is a thing difficult to define, but at least it can be said that it has two aspects—one is administering, the other is being administered. The subject is almost invariably discussed from the point of view of the minority who administer, and seldom from the point of view of the majority who are being administered; but the latter is a most important point of view, especially in purely medical matters. It must be remembered in this connexion that public health no longer concerns itself purely with the environment of communities, but has in recent years invaded the realms of personal hygiene in many directions—tuberculosis, venereal diseases, school medical service, and maternity and child welfare. In these departments the medical officers of local authorities are carrying out medical work in many respects indistinguishable from the work of the general practitioner of medicine. It is true that personal advice given by the former is called "preventive medicine," and precisely the same advice by the family doctor "curative medicine," but there is no difference—the public health official in these matters stands in the same close personal relationship to the person advised that the family doctor does. In this relationship his most important asset is his personality; and personality is a thing which cannot be administered. The public medical officer should be as free as possible to give the advice he thinks best without regard to the medical opinions of other medical officials. Further, it is notorious that "doctors differ," and it is a common belief amongst members of local authorities and others that many, if not all, medical officers are "faddists." This belief is supported by high official authority, which says that many medical officers "muddle on from hand to mouth, the victims of every passing whim or popular stunt."

It is probably given to few medical officers of health to distinguish with certainty between ephemeral fads and eternal truths, so that under any arrangements such as those suggested, in which the work of medical officers of health of boroughs and urban districts became subject to the supervision of county medical officers, there would be endless opportunities for difference of opinion leading to friction.

The principle involved is one which seems to me to be of fundamental importance to the British Medical Association, which stands for the honour and interests of the profession. Neither the honour nor the interests of the profession are served by any arrangements which detract from the freedom and independence of large numbers of its members.

From the non-county borough and urban district point of view, then, the proposed reforms are thoroughly objectionable. What are the alternatives?

The first alternative, and the one which seems to provide the most complete solution to the medical difficulties of local administration, is that put forward in the Memorandum of Evidence to be given on behalf of the British Medical Association before the Royal Commission on Local Government. This solution involves a radical revision of

the areas of local government, each of which should have as a centre a considerable town, associated with which would be such surrounding urban or rural areas as would most naturally or conveniently look to such town for its main hospital provision or as a focus of health administration. In each such area the local authority would administer all health services, including those now administered by the guardians and the Insurance Committees.

It is improbable that any such radical revision of areas would be undertaken even by the boldest reformer, so that something short of this ideal must satisfy us.

The council of the Association of Municipal Corporations puts forward for consideration—

"the suggestion that these transferred functions of the guardians should be performed by the council of a non-county borough in cases where that council are the local education authority for the purposes of elementary education and are also an authority under the Maternity and Child Welfare Act, 1918."

This suggestion implies that these councils retain their present health functions and status without the supervision of the county council. Anything less than this would be a calamity to municipal health administration in this country, which in many respects represents the most progressive and advanced health services to be seen anywhere.

I am aware that in the above short consideration of the subject I have not added anything new to views already expressed, nor have I gone into details. Consideration of details might only tend to obscure the main principle for which the boroughs and urban districts are fighting—namely, that they be allowed to carry on their good work with such additional powers and duties as Poor Law reform may impose upon them, but without supervision from the county councils, which is entirely unnecessary and undesirable.

#### IV.—ARTHUR L. BALY, M.A.CAMB., M.R.C.S., L.R.C.P., Chief Medical Officer, Lambeth Board of Guardians.

##### FROM THE POOR LAW MEDICAL OFFICER'S VIEWPOINT.

THERE is a great deal of confusion of thought in regard to Poor Law matters, and it is to be feared that as a consequence ill considered schemes may be passed through Parliament, which will make confusion worse confounded and lead to gross extravagance.

Sixteen years' experience as medical superintendent of a Poor Law hospital controlled by a board of guardians enables me to judge what can be done under the existing Poor Law, and as my work has brought me into contact with numerous other authorities at the present time engaged in doing small portions of medical relief, such as tuberculosis, mental deficiency, lunacy, war pensions, etc., I am in a position to express an opinion as to what is likely to happen if the work at present performed by boards of guardians is handed over to any one authority; or, still worse, divided between two or more authorities, none of whom is at present capable of dealing with the work which it is supposed to do completely and efficiently without the assistance of the existing boards of guardians. There is no doubt that if any of the proposals so far put forward are introduced without retaining the present Poor Law system controlled by a local authority in each area of a reasonable size, the result will be waste of public funds and, as far as medical relief is concerned, an even more chaotic state of affairs than at present exists.

It might be worth while, even at this late hour, to ask the question, What is it that the public desire? This question is best answered by quoting from the annual report of the United Hospital Fund for New York, 1924-25, wherein is described a scheme which is being introduced into that city which "will give the patient what he had in the days of the old family practitioner—a single source on which he can depend for his health."

This is undoubtedly an ideal to be aimed at, but in existing circumstances is impossible, and in any circumstances would take a prolonged period, possibly a quarter of a century, to develop. Such a scheme, as far as London

is concerned, would require a single authority in each area to deal with all forms of medical relief, and, for efficiency's sake, that area should be large enough to justify the necessary expenditure in order to provide all forms of medical relief in each area, but not so large as to cause the evils always associated with large central (especially medical) authorities. Such a scheme would require that in each area there should be a controlling or parent institution into which patients of all classes, including fever, mental, and all the other specialized branches of medicine, could be admitted, so as to abolish, as far as possible, the separate specialized institutions; and, to complete the scheme, all other institutions in that area, and all domiciliary treatment, should be subordinated to the staff of the parent institution.

How can this ideal be obtained? There is no doubt that the simplest method of attaining such an ideal is by modifying the existing Poor Laws in order to ensure that they will be properly administered.

The Poor Laws sanction the provision of every possible form of medical relief; in fact they not only sanction but require the guardians to provide whatever may be necessary to maintain all persons (who are destitute on account of sickness or insufficient means) in health. The standard of work performed by the guardians depends upon the character of the guardians and their officers. Is it past the wit of man to alter the electoral law and constitution of boards of guardians so as to ensure that they will carry out the real wishes of the people? I would suggest that the guardians should be in part elected and in part nominated; and further, that those unable to pay in full for the relief they receive should be disfranchised as far as their local vote is concerned.

Having established efficient boards of guardians it would then be possible to undo the harm caused in recent years by the creation of new and superfluous authorities for dealing with small portions of medical relief and to revert to a single authority in each area, so that the ideal which is being aimed at in New York—of abolishing specialized institutions and placing all classes of patients in charge of a single general staff, assisted by specialists—might be obtained, to the infinite advantage of all concerned, including the ratepayer.

Incidentally this will aid in the solution of the most serious problem connected with lunacy reform, which arises from the fact that certified mental cases have to be segregated in separate institutions known to the public as asylums. Under the scheme outlined it would not be necessary to transfer recoverable mental cases to asylums, but they would be treated in a general institution, or a block of a general institution set aside for the purpose, so that the stigma of certification in such cases would very soon die out, and ultimately the existing asylums would be handed over to the various local authorities and utilized as general institutions for all varieties of cases.

The Medical Centre which is being created in New York by the United Hospital Fund for that city has in fact been started by the amalgamation of a general hospital with several special hospitals, and, although all branches of medicine have not yet been included, it is important to note that a mental hospital has been included.

It must be admitted that an atmosphere has been created, as a result of which the public demand the abolition of the Poor Law; but there is no doubt whatever that, in making what might appear to be a drastic change, a prudent law-maker would abolish the boards of guardians and retain practically the whole of the Poor Law intact, and at the same time create a new and more satisfactory local body to administer that law; avoiding on the one hand the evils always associated with a large central medical authority, and, on the other, the transference of the guardians' duties to any existing local authority which has not in any way demonstrated its superiority to the existing guardians; and, ultimately, having set up a satisfactory local authority, take steps to hand over all questions of medical relief to the single local assistance authority.

The principles suggested in the Maclean report have been put into practice in regard to tuberculosis, the

domiciliary treatment being placed under the charge of the borough councils and the sanatorium treatment under the county councils. The guardians have ample evidence of the unsatisfactory results obtained, and it may be on this account that the proposals suggested in the recently issued White Paper have avoided the obvious pitfall of dividing the work between two authorities, and suggest the centralization of all Poor Law matters under the London County Council, to be assisted by local committees appointed for the purpose; but, there is nothing in the White Paper to suggest that these local committees are to have any more power than is possessed at the present time, in regard to education, by school managers, which power is so limited that the Government proposals amount to the creation of a large central authority. It may be possible to have an efficient central educational authority, but it is very doubtful if, in the opinion of the medical profession, an efficient central medical authority on such a large scale can be devised.

On the other hand, if it is intended to centralize all the work in London on the County Council solely for the purpose of abolishing the existing boundaries, and, without attempting to administer the whole of London from one centre, immediately to redivide the county into suitable areas and place them under the control of local committees with full powers to carry out their work in their own way, the County Council only retaining the supervisory powers at present exercised by the Ministry of Health, it is possible that a satisfactory solution may be evolved.

In view, however, of the cost of centralization, which some authorities seem to consider would be enormous, it might be more economical to reconstitute some of the existing boards of guardians controlling the larger areas and transfer to them all the various forms of medical relief at present under the control of other authorities, and in the meantime the smaller areas could either be absorbed or amalgamated. If the local committees or reconstituted boards of guardians are to be given effective power, there is little doubt that, for the sake of economy, they should be in part directly elected, as it is well known that bodies created by indirect election tend to become extravagant.

It must not be overlooked that not only do the Poor Laws sanction every form of medical relief, but they also require the guardians to demand payment for the relief given from those who receive it and from the liable relatives (adults being responsible for their parents and grandparents, and parents for their children and grandchildren), in accordance with their means after due inquiry. The Lambeth Guardians collect over £20,000 per annum by this means. Is it possible to imagine a local committee, subordinate to a central London authority, lacking any real power (like existing school managers) and not directly responsible to the electors, having sufficient interest to carry out the work of assessing these charges in a satisfactory manner? At present the cost per head per week in the Lambeth Hospital for everything, including interest on loans, is 35s. 4d. for a daily average of 1,360 inmates. Provision is made for the acutely sick of all classes, there being 1,000 beds staffed by trained nurses and probationers, and 600 for infirm and cripples, although a further 400 infirm cases are boarded out elsewhere, which makes the cost even more satisfactory. I venture to predict that the same work will certainly not cost less if administered by a central authority.

The public appear to be demanding two things: first, an alteration in the present system, and, secondly, an increase in the amount of medical work to be carried out by public assistance; and they should realize that both will lead to increased expenditure.

Lastly, there is a most undesirable tendency to amalgamate medical insurance and public assistance. The former should be on an economic basis, possibly assisted by the funds of voluntary charities, and if it is found necessary that any work should be performed by the public assistance authority on behalf of an insured person such work should be paid for out of the insurance funds. On the other hand, any public assistance not paid for in full should entail local disfranchisement.

## GENERAL DISCUSSION.

Dr. EUSTACE HILL (Durham) said the Memorandum of the British Medical Association and the readers of some of the opening papers had overlooked the necessity for unifying the public health services, which was the essence of the proposals of the Ministry of Health. The Memorandum, he considered, must have been drafted without full knowledge of public health administration in all its aspects. It was also inconsistent, inasmuch as it stated that county councils were totally lacking in the machinery for sanitary administration, yet in another paragraph it suggested that the health administration of the smaller rural areas should be handed over to them. It was interesting to note that while the Association of Municipal Corporations and other bodies were opposing the suggestion of the Minister of Health to give supervisory powers to county councils, this principle had been adopted in much recent legislation relating to public health. An instance of this was to be found in the law relating to control of the milk supply, whereby it is enacted that if in the opinion of the Minister of Health a local authority is in default in exercising its duties its powers may be transferred to the county council. This was the very type of legislation to which Dr. Garrow now took exception, yet so far as he was aware no serious objection had been offered by the local authorities concerned while the bill was under discussion. It appeared to be the opinion of some of the speakers that county councils would be found to be lacking in administrative capacity, but if they examined the personnel of such councils they would find that a large proportion of the members were also members of urban or rural councils. At present he considered that sanitary administration in this country was often most ineffective. There were many urban districts with populations of 1,000 or less, and on the other hand there were rural districts with large populations—in some cases exceeding 70,000—which were urban in character and rural only in name. Some system of unification was essential, and he would like to see the counties divided, for purposes of public health administration, into districts with a population of from 80,000 to 100,000, to each of which should be appointed a properly qualified and experienced whole-time medical officer of health, subject to the necessary supervision of the Ministry of Health and the county council. If that were done he would be quite prepared to recommend that much of the health administration of the county council, such as that which concerned tuberculosis, maternity and child welfare, etc., should be delegated to such district officers, who in respect of these delegated services would become assistant county medical officers.

Dr. D. C. KIRKHOPE (Tottenham) believed that public health administration should follow the lines indicated by evolution, which were in the direction of concentration on the individual. The medical officer of a small area, he thought, had the more intimate acquaintance with the population of his area and the circumstances in which they lived, so that their environmental and personal disabilities were generally known to him and as speedily as possible relieved. It was, in his opinion, the intimate relation with the individual family, rendered possible by the maternity and child welfare and school medical services, that had contributed most largely to the reduction in mortality and morbidity which was general throughout the country. The county area would be too large for the administration of such public health services, although the county might be the authority for the administration of large institutions, which could not be economically established by smaller authorities.

Dr. STELLA CHURCHILL (London County Council) said the existing scheme of public health administration in London was responsible for a great deal of overlapping. There was, for instance, the Children's Act of 1908, administered by the County Council with fourteen whole-time inspectors at a cost of approximately £5,000 a year, and the same children were also visited by the health visitors employed and paid by the various metropolitan boroughs. Contacts of infectious diseases in schools were dealt with at once by the local



medical officer of health, but the school medical officer only visited after a given number of cases had occurred in the same class. The actual work of inquiry into cases of surgical tuberculosis was done by the borough care committee, but clothes and other necessities were often provided by the board of guardians. The Metropolitan Asylums Board, which was really a Poor Law authority, provided nearly all the beds for tuberculous cases in London and all the accommodation for infectious diseases. County Council by-laws, she said, were not generally acceptable to the boroughs, but many of them were important from the public health point of view. She asked why each borough infirmary should not become the municipal hospital, with local control independent of the Metropolitan Asylums Board, which now attempted the colossal task of administering some 71,000 beds. She could not follow Dr. Baly in his suggestion of disfranchisement for everyone who accepted any service paid for by the Poor Law, and asked if he would demand the same penalty from a mother who availed herself of the maternity and child welfare service provided by the municipality, or from anyone who had to be isolated in a municipal isolation hospital.

Dr. G. H. PEARCE (Batley) agreed with Dr. Garrow's contention, and gave examples of the difficulties which would arise if non-county boroughs and the larger urban districts were placed under the administration of the county councils in respect of health services. He supported the Memorandum of the Association, and expressed the view that county councils could not carry on the work as well as it was being done at present by the larger non-county authorities.

Dr. H. SCURFIELD (Folkestone) quoted the cases of Essex and Hampshire as two instances in which counties were securing unification of public health services, and pointed out the differences in the methods adopted. Any satisfactory scheme must, in his opinion, include the formation of areas of sufficient size to justify the appointment of whole-time medical officers with local control by elected representatives. It had been stated that democracy was a failure. It might have failed in certain instances, but it was impossible now to contemplate the abandonment of its principles.

Professor F. E. WYNN (Sheffield) said he thought the differences of opinion which had been revealed within the ranks of the Association were more apparent than real. He did not think anyone seriously wanted to deprive large and highly organized urban districts of public health functions which they were performing satisfactorily. But there were rural areas in which neither the local authority nor the county council seemed to be equipped for dealing with practical sanitation, and it was essential that any reform should include provision for bringing the sanitation of such districts into line with that of the larger urban districts and county boroughs.

Dr. BRACKENBURY (Hornsey) said the Memorandum of the Association had been referred to as his Memorandum. It was true that he had been responsible for the drafting, but that had consisted merely of putting in consecutive order resolutions adopted by the Representative Body and the Council of the Association. There was nothing in that Memorandum that did not represent the considered policy of the Association, and he repudiated the suggestion that had been made that the Memorandum had been drafted without adequate knowledge of municipal administration. Both the Representative Body and the Council of the Association contained members thoroughly experienced in public health administration, and he himself had been for many years a member both of a county and of a borough authority. Dr. Brackenbury then explained in further detail the nature of the delegation of duties involved in the Memorandum, and stated that the Association was not opposed to the assumption of the public health functions of a local authority by the county council where it could be shown to the satisfaction of the Ministry of Health that the local authority was in default.

Dr. B. HILL (Selby) spoke from the point of view of the medical officer of health of a large combined urban and rural area. The whole question was, What was to be the health authority of the future? He was convinced that in the case of combined areas it was essential that all health duties should be retained by them, as otherwise it would be impossible to preserve the individual aspect of public health work, or to increase the interest taken in public health work by the local representatives. Neither of these objects would be attained by making the local medical officer of health merely an assistant to the county medical officer.

Dr. MIDDLETON MARTIN, replying on the discussion, said he had not questioned the administrative competence of boards of guardians or their officials. Unification of the public health services was essential, and there was no doubt that the Government intended to achieve it. He did not suggest that the county council should necessarily be the sole sanitary authority in the future, but they were bound to use their experience of the past to guide them in getting the best authority for the future, and he thought it would be found that in many cases the county would be the best unit of administration.

## LEGAL DEFINITION OF LIVE BIRTH.

BY

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THE subject of puerperal morbidity has of late been receiving some of the increased attention to which it is justly entitled. It is one having interests in varied directions, and is destined, without doubt, to conserve a considerable amount of infant life; but there is one matter coming clearly within its purview which seems to have almost escaped attention, yet its importance justifies serious consideration. I refer to the large number of babies who are criminally interfered with during or immediately after birth because their advent is not desired, and because, also, it has become known that detection and punishment rarely follow—I was going to say, "follow this crime of infanticide"; but in English law, as it stands to-day, it is no crime, nor even a misdemeanour, to kill a child during the act of being born. This is a fact which, although plainly stated in all our works on forensic medicine, seems to have escaped the attention of the medical profession as a whole, and failed to be seriously noted by medical jurists. The consequence is that throughout the country, and certainly in our cities, an appreciable number of full-term healthy infants lose their lives.

I have been asked, What is the legal definition of live birth? The answer gives rise to surprise: that there is no statutory definition of live birth in English law, only a formula accepted by what is known as "common law."

The rulings laid down by judges in the past, and now by general consent accepted in the courts, are to this effect: That in order to be born alive a child must show some signs of independent existence *after every portion of its body is free from the mother's parts*. As Dixon Mann says in his work: "In order that murder can be perpetrated, the victim must have had a separate existence. The killing of a child in the act of birth, and before it is fully born, is not an offence by the present law."

In the legal sense a partially born infant has not a separate existence, although it may breathe and has consequently acquired the power of maintaining life as a distinct individual. It must be "under the King's peace."

Since infanticide is usually committed with the object of concealing the occurrence of birth, the deed is done in secret, and in most instances without the connivance of a second person. The burden of proof of live birth therefore falls on the medical witness. How is he to swear that when certain injuries found upon the body, and which put an end to physiological life, were inflicted, every part of the child's body was free from the mother's parts? He cannot; only an eye-witness could so testify. The bed-rock fallacy of

the legal definition lies in the fatal inaccuracy in that the law assumes all children to be born dead unless satisfactory evidence is produced to the contrary. Could anything be further removed from the truth, or act as a greater deterrent to the course of justice? What is the rate of infant morbidity from all causes, and taken in the mass of attended and unattended births? Little more than one in a thousand. Evidence required of an independent existence after the complete extrusion of the child is a fallacy, and probably had its inception in past ignorance, when it was believed that a foetus drew its blood direct from the mother's circulation. We know that the foetus has its own independent circulation, anatomically separate from the mother's, from the time of the establishment of foetal heart beats. Therefore the child has an independent existence when in the mother's womb, drawing its oxygen through a limiting membrane, as later in the lungs.

The living child recovered from the body of the dead mother by Caesarean section is carrying on with the reserve oxygen contained in its own blood. To rule that a full-term well formed child, showing no signs of disease, and obviously having been physiologically alive at or about the time of birth, was born dead, because no witness is produced who will testify to some obvious sign of life, after full delivery, and before certain injuries were inflicted, or criminal interference had taken place, is travesty, and an encouragement to the wrongdoer.

Not all the judges, be it said, have held to the present accepted definition.

Lord Young, at the High Court of Perth in 1892, in charging the jury in a case of alleged infanticide, said:

"If the child was killed and the prisoner was to blame for its death she is guilty of culpable homicide. If she went on from the conception to the birth of the child, desiring to hide her shame, and refrained from calling assistance when assistance was at hand and took upon herself to assist herself, and in the agony of childbirth grasped the throat of the child, with the result of causing its death, I cannot say that she is not blameworthy, or that her blameworthiness does not amount to culpable homicide. If you think that blame does attach to her, then culpable homicide is the name for that blame, resulting as it did in the death of a child which had both cried and breathed. It does not matter in the least, so far as the criminality of the accused is concerned, if the injuries were inflicted when the child was partly in its mother's body."

Again, Mr. Justice Wright, in the case of *Rex v. Pritchard*, for alleged infanticide, tried at the Shrewsbury Assizes in 1901, said regarding live birth:

"That the true test of separate existence in the theory of the law (whatever it might be in medical science) is the answer to the question whether the child is carrying on its being without the help of the mother's circulation."

Commenting upon this Glaister says in his work on forensic medicine:

"This last legal pronouncement levels up the difference in definition between the law and medicine, inasmuch as it is well known that a child may not only breathe before complete birth, but cry audibly before its body is completely born from the mother's parts, and that it can only do this by virtue of the independent exercise of its own organs, and quite apart from the aid of the circulation of the mother."

"If this decision could be accepted as the uniform expression of the law by judges, the medical profession would be called to accept it as being not only in accordance with physiological fact, but as tending to repress the crime of child murder, which has in many cases gone unpunished because of other interpretations of the law by other judges."

I have been deeply impressed with a certain fact in my own mortuary experience, and it is this: that in nearly every *post-mortem* examination I have made upon the bodies of well formed mature newly born children recovered from cellars, closets, middens, linen baskets, and servants' boxes, or found on canal or river banks, there was evidence of full respiration, often associated with air drawn into the stomach, also signs of asphyxia, and in some cases ligatures were present round the neck. Obviously they had had an independent existence when their lives were deliberately extinguished, for complete aeration and expansion of the lungs does not take place prior to complete extrusion of the body from the mother. Compression of the chest during birth prevents it. But few, if any, convictions were obtained.

In the preliminary inquiries the question is asked, "Was the child legally born alive?" The law assumes

that if not proved to have been born alive, the child never lived, and if it never lived it could not be killed. So matters stand at the present time, and I feel that there is urgent need of a change, and that legal statutes should be instituted which would conform to physiological truth, as well as to common-sense appreciation of facts as proved by medical findings.

In the absence of wedlock the infant mortality at birth is considerably above the average. This is a significant fact; and also that such births frequently take place in secrecy, and the bodies of the children are secretly disposed of, their survival not being desired.

Even amongst the very poor, in wedded life, and where skilled attention is not always forthcoming, deaths from asphyxia are rare.

Nature favours the child at the expense of the mother in order to carry on the race, and if it is desired that children should survive their birth they usually do survive. I will now refer to another aspect of this subject. Although the facts point to the contrary, in some cases where a child was unmistakably born alive, and where the cause of death has been asphyxia, "inattention at birth" is the finding. This "inattention" is in most cases, I am satisfied, criminal. A gross act is usually required to produce death, either deliberate prevention of breathing or abandonment and exposure. Glaister says:

"The inference is, that where a woman conceals her condition during the whole course of her pregnancy, makes no preparation for and calls for no assistance at the time of her delivery, she is conniving at the death of her child, by omitting to do those things which a woman in ordinary circumstances would not fail to do. But at the same time the law does not place upon the woman the burden of proving that her child was stillborn. It puts upon the prosecutor the burden of proving that the child was born alive, and demands of him a proof of the most difficult kind to establish, because of the secret character of the circumstances in which the birth takes place. To our mind this is quite illogical. The older law placed this duty of proving that the child was stillborn upon the mother."

The subject has been considered by two Parliamentary Commissions. The first, the Capital Punishment Commission of 1865, arrived at the opinion that

"an Act should be passed making it an offence punishable with penal servitude or imprisonment unlawfully and maliciously to inflict grievous bodily harm or serious injury upon a child during its birth or within seven days afterwards. No proof that the child was completely born alive should be required."

The second Commission in the Draft Code proposed that

"every woman shall be guilty of an indictable offence who, being with child, and being about to be delivered, with intent that the child shall not live, neglects to provide reasonable assistance in her delivery, if the child dies either just before, or during, or shortly after birth, unless she proves that such death was not caused either by such neglect or by any wrongful act to which she was party."

As Professor Glaister adds: "It is highly desirable that such should become law as soon as possible if the crime of child murder is to be successfully repressed."

To put my views in concrete form I would urge—

(1) That any child born at a viable period of development should be deemed to have been born alive unless satisfactory proof be forthcoming to the contrary.

(2) The adoption of the recommendations of the two Parliamentary Commissions as just stated.

It would be my earnest desire that these provisions should be incorporated in a new Act of Parliament and become law. There is nothing in them which could inflict injustice or hardship upon any innocent or well-meaning person. It would also give statutory law in place of loose custom. Its influence would do much to prevent those actions and lines of conduct which at present cause the sacrifice of many newly born children, and in its operation it would do another thing—it would force the accused person to give evidence in the witness-box, and state how it came about that the child did not survive. The witness would then be liable to be cross-examined by the prosecution, and the truth or otherwise of the evidence considered. If she did not volunteer to speak on oath in her defence this circumstance would tell heavily against her, as it does in all criminal charges.

I do not think anyone can be satisfied with the present state of the law concerning the definition of what constitutes live birth. But the matter seems to have failed

to arouse the interest it deserves, and I hope it is only necessary to call fresh attention to the facts to ensure that a proper remedy will be forthcoming.

#### LEGAL DEFINITION OF LIVE BIRTH.

Following Dr. Godfrey Carter's paper, the CHAIRMAN proposed, and Dr. LEWIS-LLOYD seconded, the following resolution, which was carried unanimously:

That the Council of the Association be requested to approach the Government with a view to securing legislation to protect the unborn child against intentional violence until all parts of it are completely born—that is, during its passage from the mother's body.

### COMMENTS AND PRACTICAL SUGGESTIONS ON CIRCULAR 426 (CANCER).

BY

JOHN BROWN, M.D., D.P.H.,

Blackpool.

My study of cancer began when I was a student in Cornwall in 1868. The first case was a married woman without children who had chronic cancer of the breast. Two years afterwards I left the town and lost sight of her, but on returning to the town in 1924 I found from her tombstone that she had died in 1876, aged 76 years. This woman had lived eight years without operation; the exact cause of death I could not ascertain, but it was probably "natural decay." My second case was one of successful operation, without recurrence, for cancer of the tongue in a woman, and I recently heard from a relative that the cancer was removed in 1875 or 1876 by Sir T. H. Butlin. The patient returned to Australia and made an excellent recovery. She died only two years ago at the advanced age of 87, from senile decay.

These two cases are very suggestive of the value of following up patients. I cannot too strongly urge the adoption of this procedure in all cases, with a special inquiry in regard to such matters as etiology, treatment by operation, dietary, x rays, and medicines, on the lines of the questionnaire which I submitted to the Ministry of Health about three years ago or on the lines suggested by Dr. Hoffman. In all certified deaths of cancer in this and in all civilized countries which have State medical service, each death should be followed up by the "short questionnaire"; any special feature can be studied later. The importance of this has never been fully realized, and therefore I make this a strong plea.

One of the most important fields for the incidence of cancer mortality is the study of the Registrar-General's report for England and Wales for the years 1918, 1919, and 1920, and the 1919 reports for Scotland and Ireland. I spent a vast amount of time in going through the cancer statistics from the standpoints of the counties, boroughs, county boroughs, metropolitan boroughs, Greater London, cities, universities, industrial towns, and health resorts. I also paid attention to the sites of cancer in the body, the occupational and age groups, and social classes.

The statistics indicate that there are many fields for practical study of many etiological factors of cancer. The cancer death rate in all great centres of the coal industry suggests that the low figure for colliers and their wives is largely due to their active and strenuous life and their plain but efficient dietary. In 1918 I investigated specially the cancer mortality of colliers in the chief centres. The death rate for colliers in Rhondda was 1 in 26.8; in Wigan 1 in 23; and in Northumberland 1 in 22.5. Contrast with this the residential, seaside, and agricultural districts. In Kensington the rate was 1 in 11.8; in Hampstead, Blackpool, Southport, Bath, Hastings, and Oxford 1 in 10; and in Cambridge 1 in 11.

My views on the biological range were those set forth in textbooks and the *Encyclopaedia Britannica*—that all vertebrates, including fish, had cancer, and also that this condition occurred in trees and plants. The evidence in regard to cancer in fish and trees is not, however, conclusive.

Circular 426 was issued in August, 1925. At the end of three years cancer has greatly increased; various circulars and leaflets have been issued, but we have not yet provided efficient free clinics for the early diagnosis of cancer.

In the House of Commons, on July 13th last, Mr. Neville

Chamberlain said that there were 50,000 cancer deaths in 1925. This meant that out of every seven persons who have reached the age of 30 years one will die of cancer. He was sure of nothing more certain than that a cure was coming. In the meantime, the most important thing of all was to get early diagnosis, by which life could be substantially prolonged. Similarly the Duke of York and Sir Berkeley Moynihan had spoken in optimistic terms of an early cure. Such statements ought to arouse interest and cause practical steps to be taken to teach the laity the early history of all growths. The preliminaries of cancer in the breast, skin, and mouth can be easily detected before they have become definitely cancerous, and the disease be thus prevented. In the early stages many patients would be cured without operation. We have much to learn from America in this respect; and we ought to adopt any and every successful method employed in America. I have followed what is being done in other countries. As the result of extensive study of the question in this country, and of the early diagnosis and treatment, I believe that there is no specific germ, there is no specific treatment, and in the early stages there is rarely need for operation, because Nature is always on the side of the host. What is wanted is the most careful study of each case, and of all the excretions and secretions; attempts must then be made to restore these to the normal by dietary, maintaining a hopeful outlook, physical exercise, and securing healthy oxygenation. Many patients will get well. Free consultation clinics should be provided for all persons not under medical treatment. I have information from Detroit and Harvard which proves that one of the most practical methods of treatment is to educate the people. Dr. Fraser and others believe that cancerphobia will not follow. We can depend on general practitioners to support the State in this and every other method to prevent cancer, while the lay press will also help. Circular 426 embodies some of the suggestions from my paper on cancer, "Suggestions and conclusions relative to the prevention of cancer," which was read at the Scarborough Congress of the Royal Institute of Public Health in 1923. On page 10 of Circular 426 there is one practical suggestion—namely, that local facilities for clinical and pathological examinations should be established; after three years I fail to find that free clinics have been started. The annual report 1921-22 of Harvard University states that 1,062 cases of cancer were treated; of these cases 668 were growths that can and ought to be diagnosed in the precancerous and early stages of cancer—namely, breast 83, buccal cavity 231, skin 354. The report further states that "since the adoption of the out-patient clinics early diagnosis is made of the suspicious growths and fewer cases in the incurable form are now seen."

We must teach persons, especially those over 35, that cancer in the three sites named ought to be diagnosed when the growths are simple overgrowths of the epithelial tissues, and that the three precancerous stages are curable.

The success that has attended the institution of free clinics for tuberculosis and venereal diseases is strong evidence that similar success will result in the case of the greatest scourge of the whole race. Free clinics should be under the Ministry of Health, and the health authorities should make the arrangements, preferably co-operating with the hospitals, universities, and colleges, so that free examination and advice be open to all. All women over 30 and men over 35 who have suspicious growths or other symptoms indicative of cancer should most certainly avail themselves of these free consultations.

It has been urged that suspicious growths and cancers should be made notifiable; the public is not ready for this, but I suggest that voluntary notification of such cases should be encouraged, when the patient's consent can be obtained. In this way early diagnosis would be obtained, many cures result, and much valuable information be obtained.

A few days ago one of my supporters, in reply to my appeal for assistance from his special branch, replied that he was in sympathy with my views, and that what was needed in the cancer problem was an "ultra Pasteur." The future success will result from the work of laymen of the Pasteur type rather than from medical practitioners. Our knowledge of the new sciences is as yet far too meagre for such a problem as this.

## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## TRANSVERSE PRESENTATION WITH NORMAL PELVIS AND NORMAL CHILD.

As transverso presentations are fairly rare the following case may prove of interest:

I was called to see an Assamese tea-picker, said to have been in difficult labour for the previous twelve hours; it is rare to be asked to attend these women because they resent, for caste reasons, a man's presence, and are also very mistrustful of the methods of Western medicine. I found the patient anxious, with a clammy skin, a temperature of 98.2°, pulse 120 and thready, and rapid respiration. Further examination showed an abnormally shaped abdomen, a distended bladder, the uterus hard and slightly tender, and the foetal head in the right iliac fossa. Other foetal parts were not well felt as the uterus was strongly contracted. The child was dead and its right hand was prolapsed outside the vulva.

**Previous History.**—The patient had had ten previous normal deliveries, seven of the children being still alive, while the other three lived for a few years each. There was no previous history of abnormality.

**Present History.**—Labour had commenced at 1 a.m.; one hour later the membranes ruptured and a hand prolapsed. Labour pains had been frequent and strong but ineffective in expelling the foetus. The patient had had retention of urine for five days. During pregnancy native midwives had several times attempted to procure an abortion as the child was not wanted; this had never been done in any of her previous pregnancies.

**Treatment.**—The patient was removed to the Estate Hospital. The bladder was catheterized and emptied of 18 oz. of high-coloured acid urine. The os was three-quarters dilated. Attempts to replace the hand and to perform external version failed as the uterus was tightly contracted round the child and all the liquor amnii had drained away several hours before. Uterine contractions were not frequent, but lasted long and were very strong when they did occur. The pulse rate was now increasing. The patient was anaesthetized lightly and I attempted to decapitate the dead child, but failed as the os was tightly contracted round the shoulder girdle, thus preventing the introduction of an instrument. I amputated the prolapsed right arm at the shoulder and was then able to push up the child and get my hand into the uterus, when I seized the child's right foot, performed internal version, and delivered the child as a breech. The os quickly closed round the child's neck, preventing birth of the head. After several methods of extraction had been tried without result I decapitated the child with scissors and proceeded to deliver the retained head. Owing to the small size of the os forceps could not be used, and an attempt at perforation or cephalotripsy would have been dangerous. The patient was deeply anaesthetized, and by prolonged and forcible manual pressure I managed to dilate the os a little more and so was able to place my finger in the child's mouth and pull; unfortunately the mental symphysis gave way. I then put my finger well down the child's throat and, with suprapubic pressure as an adjunct to strong steady traction, I was successful in withdrawing the head. The placenta and membranes followed completely one and a half hours later. A hypodermic injection of pituitrin was given and the pulse soon improved. There was no alarming after-symptom, and the temperature was 99.2° after delivery of the placenta. The manipulations lasted three and a half hours. The next day there was a slight rise of temperature (100.4°), which soon subsided after a hot douche. The puerperium was normal, and the patient is now quite well and working.

Interesting features of the case are that the patient had had ten previous normal deliveries and that the child was normal in size and not deformed in any way; the pelvic measurements of the mother were normal, and no tumours, placenta praevia, uterine obliquity, or hydramnios were present to account for the malposition. Doubtless the manipulations of the native abortionists were responsible for the transverso presentation.

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## ADRENALINE IN CARDIAC ARREST.

A male infant, aged 6 months, was being anaesthetized for an operation for inguinal hernia when respiration suddenly ceased. He became pale and flaccid, and the heart stopped; he was apparently dead. I injected 5 minims of 1 in 1,000 adrenaline solution into the heart, and in less than a minute the heart began again and the baby was carried out of the theatre crying loudly, much to the relief of all present.

This happened over a year ago, but it is interesting in connexion with the discussion on heart massage.

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## Reviews.

## CAMERON'S "DISEASES OF CHILDREN."

*Diseases of Children*,<sup>1</sup> by Dr. H. C. CAMERON, forms one of the series of Oxford Medical Handbooks, and follows the plan of this series in giving a general survey of the subject, with emphasis on certain aspects. Dr. Cameron defines the object of his book in a neat sentence, as not "a set performance, but only to sound a few chords here and there sufficient to illustrate the astonishing range and tone of the instrument." The topics he has selected for discussion deal mainly with the period of infancy, and in an introductory chapter he shows their interrelation. They are nearly all included in the four great factors of inheritance, environment, food, and infection. The working of these factors is followed out in such problems as difficult cases of breast-feeding, the influence of the infant mind upon general health and digestion, the frequency and significance of catarrhal processes in infancy, certain types of inherited diathesis and their manifestations in childhood, the reaction of infants and children to the mental tone of mothers and nurses, and the interaction of digestion, infection, and purely mental influences in the nutritive disorders of infants. These problems are important, indeed fundamental, and have given rise to much discussion and not a little confusion; they are handled in this little book in an admirably clear and sensible way. These qualities are well seen in the final and longest chapter, which is on diet. The difficult subject of artificial feeding is of set purpose kept to the last, and after the other factors of inherited constitution, of personal management, and of trivial or obscure infection have been discussed. This unusual but really rational order of treatment undoubtedly facilitates the understanding of the problems of dieting in the dyspepsias of infancy; and the British reader is almost unawares persuaded into the German classification of nutritional disorders, *ex constitutione*, *ex infectione*, *et ex alimentatione*, though little or nothing is heard of the horrid German vocabulary of special terms. The clinical features, even in dyspeptic infants, are admirably described, and the brief accounts of treatment are most helpful.

Dr. Cameron has some friendly criticisms to make on the methods and policy of child welfare centres, but pays a high tribute to the results already accomplished by them. He also makes an earnest appeal for more consideration and more teaching of the subject of diseases of children in the medical curriculum.

As a well informed, wise, and very pleasantly written discussion of the subject in some of its general and important aspects, Dr. Cameron's little book can be warmly recommended to those engaged in general practice or in special work among children. The matter of the book is so good that the publishers might have allowed a larger page and an ampler margin, but both in what is said and in the manner of saying it the book is *multum in parvo*.

## PARASITIC PROTOZOA.

*The Manual of the Parasitic Protozoa of Man*,<sup>2</sup> published recently by Colonel CRAIG, M.D., of the Medical Corps of the United States Army, covers a field considerably wider than is indicated in the title, in that some free-living species and also closely related forms in the lower animals are dealt with. The author's experience enables him to speak authoritatively upon the subject, and his work, the embodied results of that experience, will doubtless be extensively read and appreciated, as it certainly deserves to be.

After an introductory chapter on the classification, structure, physiology, and reproduction of protozoa and

<sup>1</sup> *Diseases of Children*. By Hector Charles Cameron, M.A., M.D. Cantab., F.R.C.P.Lond. Oxford Medical Publications. Oxford Medical Handbook. London: H. Milford, Oxford University Press, 1926. (Fcap. 8vo, pp. ix+192. 5s. net.)

<sup>2</sup> *A Manual of the Parasitic Protozoa of Man*. By Charles T. Craig, M.D., M.A.(Hon.), Lieutenant-Colonel, Medical Corps, U.S. Army. D.S.M. London: J. P. Lippincott Company, 1926. (Med. 8vo. pp. viii+593 25 figures. 35s. net.)

the meaning of the terms "parasite" and "parasitism," there follow four chapters on the amoebae, of which, naturally, *Entamoeba histolytica* takes the foremost place. The parasitic amoebae are fully described, but British workers will probably think that undue prominence has been given to species doubtfully amoebic, and more doubtfully parasitic. It is only fair, however, to say that the author is most careful to give the arguments for and against, and, where he has not actually himself worked at the organism, prefers to leave the evidence to individual judgement rather than to express his own opinion as to validity. Among these we may mention, as an example, *Councilmanella lajeuni*, Kofoid and Swezy, 1921. Another, by name *Karyamoeba falcata*, is "characterized by one, or rarely more, blunt pseudopodia, hyaline in appearance." Protozoologists will be the first to own that it is not very satisfactory to diagnose an amoeba and create a new genus on such a characteristic. Mere mention of the names would suffice for most of the doubtful parasites.

Flagellata infecting man occupy six chapters, two being devoted to the intestinal species and four to blood and tissue flagellates. Malarial parasites have three chapters, the coccidia, sarcosporidia, and ciliata one each. In each case the synonyms are given, with their dates of bestowal, their morphology, geographical distribution, life-histories, including, of course, some account of their vectors and modes of transmission, their pathology, diagnosis, and prevention—in fact, all that any student of the subject is likely to need, and, but for the fact that treatment of the diseases set up is not included, any medical practitioner. The subject of treatment, other than prophylactic, was not included in the author's aim. Another intentional omission is the spirochaetes, and, *a fortiori*, leptospirae, as these are now considered by the best authorities to be rather bacterial than protozoal.

Colonel Craig discusses in clear language points which are doubtful, states the evidence fairly and holds the balance even, and, when he expresses an opinion, this is always based on actual examination and experience, and not on personal predilection from a mere reading of the literature. The chapters on malaria are interesting. The author makes a distinction between *Plasmodium falciparum* and *P. falciparum quotidianum* (the *P. immaculatum* of Schaudinn) on the grounds that these are distinguishable morphologically, that they differ in the times of their human life-cycle, and produce characteristic febrile paroxysms. His discussion of the question is good, and will command respect in that he gives due weight to the views of those who maintain that there is but one species of aestival-autumnal parasite. An account is also given of a subspecies of *P. vivax*—namely, *P. vivax minutum*—which, first described by the author in 1900, was rediscovered and named by Emin fourteen years later. It is regarded as the same as *P. ovale* described by Stephens in 1922.

The work is well produced, easy and pleasant to read (although "autopsy" is used as a verb, and ipsecuanha is curtailed of its last three syllables), the illustrations are ample and clear, misprints are almost absent, and the author is to be congratulated on the excellent manner in which he has performed his self-allotted task.

#### ULTRA-VIOLET THERAPY.

THE little book by Messrs. T. CLYDE MCKENZIE and A. A. KING is rightly called *Practical Ultra-Violet Light Therapy*,<sup>2</sup> for with the exception of the preliminary chapters on electricity and generalities (which might almost be omitted) it deals entirely with the authors' own work. They appear to have used almost exclusively mercury vapour lamps of atmospheric type, for which they claim many advantages over the vacuum lamps which are in more general use. The atmospheric type of lamp is more robust, has a longer life, and is much safer to use, as it can be swung and moved about without danger of fracture by

the mercury "hammer." It is, however, somewhat more expensive than the vacuum lamp. The lamps used by the authors are fully described, and detailed directions are given for their employment; no others are mentioned, and consequently the book avoids giving the impression produced by certain other works on the same subject that it is compiled from a number of trade catalogues.

A strong point in favour of the volume is that in it a real attempt is made to place ultra-violet therapy on a less empirical footing than it hitherto occupied. Good methods, both of measuring the intensity of ultra-violet radiation yielded by a lamp and also of testing the sensitiveness of a patient before treatment, are given. The power of the lamp is tested by its ability to decompose carbon tetrachloride, a test which is justified by the fact that the rays most active in this respect are also most active physiologically. The decomposition of carbon tetrachloride liberates chlorine, which can be either titrated accurately by determining the amount of iodine liberated from a standard solution of potassium iodide, or more roughly by comparison of the tint of solution produced when a drop of 10 per cent. solution of potassium iodide is added to the irradiated carbon tetrachloride with a standard tint of known value, previously prepared. In either case it should not be beyond the capacity of any medical man to carry out the test. The sensitiveness of the patient is tested by exposing spots on the forearm to the rays at varying distances from the lamp and observing the reaction produced. A large portion of the book consists of a description of the methods of using ultra-violet light for different clinical conditions. We are glad to notice that full directions are given for its application in each. Here again there is an improvement on other works on the same subject; often the directions have been extremely vague.

We need hardly say that the authors are enthusiasts, and apparently there is hardly any condition for which they fail to recommend ultra-violet light. No doubt the field of application is very wide, but scientifically we think that the clinical section would be more valuable if fewer different conditions had been treated but larger numbers of cases in each category had been collected. On the other hand, the authors cannot be blamed for taking on such cases as presented themselves, and we must thank them for giving a clear account of their work. They have produced the most helpful book on their subject we have yet seen in English, and all who are interested in light treatment (an increasingly large number) should read it with care. They are sure to learn something from it.

#### DISEASES OF THE SKIN.

DR. RICHARD SUTTON in the sixth edition<sup>4</sup> of his well known textbook on *Diseases of the Skin* has included a large part of the matter of the previous edition with much that is new and valuable. Those who are familiar with this work, both in this country and in America, must admire among other things the clearness and excellence of the illustrations. It is no easy matter to reproduce with anything approaching accuracy the changes, often minute, in the skin when altered by disease. The chapter on general etiology and pathology seems to us to be especially valuable, for it contains in clear summary form the more important of the modern theories, and the application of those theories to dermatology, especially the effects of allergy and anaphylaxis. The author comments in the preface on the voluminous literature on syphilis in its various phases. This statement applies with special force to the use of bismuth compounds, which are, however, only shortly referred to under the treatment of syphilis, although fuller consideration is given to them in the early chapter on internal treatment.

The merits of Dr. Sutton's book have been adverted to in reviews of the previous editions. The fact that a sixth has been called for is in itself evidence of the continued popularity and usefulness of this standard work.

<sup>2</sup> *Practical Ultra-Violet Light Therapy*. By T. Clyde McKenzie, M.B., Ch.B., and A. A. King. With an Introduction by Sir John Robertson, O.B.E., C.M.G. London: Ernest Benn, Ltd. 1925. (Demy 8vo, pp. 103; 19 figures. 6s. net.)

<sup>4</sup> *Diseases of the Skin*. By Richard L. Sutton, M.D., LL.D., F.R.S. Edin. Sixth edition, revised and enlarged. London: H. Kimpton. 1925. (Double roy. 16mo, pp. 1305; 147 figures, 11 plates. 52s. 6d. net.)



## THE JOURNAL OF PHYSIOLOGY.

The *Journal of Physiology*<sup>1</sup> is now appearing with so much regularity that the fourth number of the new volume has been published before we have had an opportunity of referring to some of the papers in earlier numbers. Two of these—one by Anrep and Segall, and the other by Daly and Verney—deal with the heart rate and the circulation (Vol. lxi, No. 2, pp. 215 and 268). These observers have been able so to arrange their experimental conditions that they have had a circulation passing through the heart independent of a second circulation passing through the head and brain. Thus they have been able to show that the Marey reflex, by which a slowing of the heart is brought about, can be aroused by an increase of the aortic pressure and by an increase of the pressure of the blood flowing through the head. This reflex, therefore, depends on the conditions in the brain centres as well as on the stimulation of the peripheral ends of the afferent fibres in the heart. These afferent fibres, they were able to show, run almost entirely in the vagus. Anrep and Segall determined further that the central regulation implied, not only activity of the vagal centres, but also inhibition of the sympathetic centres. Thus there is a reciprocal relation between the inhibitor and accelerator mechanism of the heart. When the heart is released from the control of the nervous system it responds to an increased output by altering the length of its muscle fibres and thus increasing its contractile power, the rate remaining constant. If the nervous mechanism is in control it then responds to an increased output by increasing its rate. This, which is known as the "Bainbridge reflex," is now shown to be beyond all doubt a true reflex depending, like the Marey reflex, on the afferent fibres in the vagus.

Three other papers deal with the response of the cardiac muscle to changes in the fluid medium bathing the muscle tissues. When the concentration of the salts in this medium altered certain differences in the response occurred. For instance, when the medium was made more acid or alkaline the rate of conduction was diminished. When the potassium in the fluid medium was increased the conduction was impaired; when the calcium was diminished the conduction was unaltered, but the mechanical response was affected. An investigation by Gremels and Starling (ibid., p. 297) showed that an increase in the carbon dioxide breathed brought about an increase in the size of the heart, and that this increase affected both the diastolic and the systolic volume of the heart. Acids had the same effect, but produced the increase in volume more slowly. This is probably due to the greater and more rapid diffusibility of the gas. The converse of the increase of carbon dioxide was interesting, for the effect of diminution of the oxygen content of the blood did not manifest itself until the saturation fell to less than 40 per cent. of normal.

Another paper published in an earlier number may here be noticed; it is by J. Mellanby and A. St. G. Huggett, who claim to have shown that secretin exists in considerable quantity in the upper two-thirds of the small intestine in a preformed state, and that there is no evidence for the existence of a prosecretin. The process of the formation of secretin goes on independently of the acid chyme, and perfect pancreatic digestion may exist in the presence of achlorhydria.

In another paper, published in a subsequent number. Professor J. Mellanby states that the introduction of bile of an adequate reaction into the duodenum of a cat causes a copious secretion of pancreatic juice. The active substance was cholic acid, but its effect was profoundly modified by its association with the bile salts, and the presence of mucin. The optimum reaction of bile varied with the state of digestion. The duration of pancreatic secretion after the injection of bile into the duodenum is determined mainly by the distribution of secretin in the intestinal mucosa, which is the immediate stimulus for the secretion of pancreatic juice. The facts are held to afford a basis for the appreciation of the severe digestive disturbances which occur in catarrhal jaundice.

<sup>1</sup> *Journal of Physiology*, Cambridge University Press. Price 12s. 6d. per vol. The *Journal* is the organ of the Physiological Society, and is supplied free to members of that Society.

## NOTES ON BOOKS.

The surgical examinee essaying the pass examinations will find his subject well abstracted in Mr. C. P. G. WAKELEY'S *Aids to Surgical Diagnosis*.<sup>6</sup> So long as there are students and examinations the demand for these digests to bolster up the frailties of students will continue. The intense desire for knowledge in the few weeks before the examination, which should have been acquired during those pleasant months which have been allowed to pass, renders the call for "aids" perennial. In many cases it is the "refugium peccatorum," and a few will emerge triumphant, with an eternal blessing on "aids," and a shining example to a host of less fortunate brethren. Analysed critically they are a snare and delusion. Their instruction is superficial and fleeting. Abstracts, to be of any permanent value to the student, should be made from his own clinical and pathological observations with the help of the larger textbooks. He makes these in a manner best suited to his own way of remembering, which is not always the same as the digest of another mind. Mr. Wakeley's little book will be found to give short and concise information on the subjects he has undertaken, and any criticism would be directed to the form in which he has presented it.

A manual of practical work in bacteriology and serology for students has been prepared by Drs. J. F. NORRIS and I. S. FALK, assistant professors of bacteriology in the University of Chicago, under the title of *Laboratory Outlines in Bacteriology and Immunology*.<sup>7</sup> The time required to complete the series of experiments detailed is estimated at one year, and it is presumed that the book will be used only under the direction of a competent instructor. The manual includes exercises in the preparation of media, the microscopical examination of various organisms, the Wassermann, flocculation, and colloidal gold tests, the examination of water and milk, vaccine preparation, and the production of diphtheria and other toxins and antitoxins, together with experiments on animals.

The second edition of *Systematic Case-Taking*, by Dr. H. L. McKISACK of Belfast, appears under the title of *Aids to Case-Taking*,<sup>8</sup> and is included by the publishers in their "Students' Aids" series. The present edition has been revised, and although some of the sections appear to be hardly adequate, yet the book can fairly claim to be a comprehensive collection of methods of examination suitable for the hospital ward or the consulting room of the general practitioner.

*Goldfish Culture for Amateurs*,<sup>9</sup> by A. E. HODGE and ARTHUR DERHAM, is a simple and comprehensive book dealing with the breeding and rearing of goldfish in aquariums and ponds. The book is well illustrated with numerous photographs and drawings, and the information is thoroughly practical.

<sup>6</sup> *Aids to Surgical Diagnosis*. By Cecil P. G. Wakeley, F.R.C.S. London: Baillière, Tindall and Cox. 1925. (Fcap. 8vo, pp. vi + 170; 15 figures. 3s. 6d. net.)

<sup>7</sup> *Laboratory Outlines in Bacteriology and Immunology*. By John F. Norris, Ph.D., and I. S. Falk, Ph.D. Chicago Press: London: Tl. 8vo, pp. viii + 114. 10s. net.)

<sup>8</sup> *Aids to Case-Taking*. By Henry Lawrence McKisack, M.D., F.R.C.P. Lond. Second edition. London: Baillière, Tindall and Cox. 1926. (Fcap. 8vo, pp. vii + 168. 4s. 6d. net.)

<sup>9</sup> *Goldfish Culture for Amateurs*. By A. E. Hodge, F.Z.S., and Arthur Derham. With numerous photographs and drawings by A. E. Hodge. London: H. F. and G. Witherby. 1926. (Cr. 8vo, pp. 103; illustrated. 5s. net.)

## PREPARATIONS AND APPLIANCES.

## "Porcupine" Bottle Corks.

ATTEMPTS have been made to eliminate the accidental poisoning of patients by liniments and the like by constructing receptacles that appeal to one or other of the senses. Thus blue bottles for poisons appeal to the sense of vision, ribbing or corrugation in the glass to the sense of touch. The Waverley Comb Company (374-8, Old Street, E.C.2) proposes to make safety certain by appealing to the sense of pain. Hence the "porcupine" poison bottle stopper. This is an ordinary cork, attached to a disc of wood, which is covered with a tin cap. At four points in the circumference of this cap the tin is turned up into neat little pointed projections, which effectually prevent anyone from hastily withdrawing the cork without a warning of the possible consequences. Of the simplicity and efficiency of this little invention we have no doubt. We wish we could say the same of the intelligence of the patient who drinks from bottles in the dark.

## Cholecystography.

Burroughs Wellcome and Co. ask us to state that they can supply sodium salts of tetrabrom-phenolphthalein and tetrachlor-phenolphthalein for use in cholecystography. These salts may be obtained in gelatin capsules for oral administration, or in glass containers if intended for intravenous injection. Medical men should state the strength required when ordering.

# British Medical Journal.

SATURDAY, AUGUST 28TH, 1926.

## POOR LAW REFORM AND PUBLIC HEALTH ADMINISTRATION.

DURING the Annual Meeting of the Association in Nottingham there were two discussions relating to the Government's tentative proposals for Poor Law reform and to the opportunity which these proposals afford for far-reaching changes in health administration. One of these discussions was in the Representative Meeting in connexion with the approval given to the Association's Memorandum of Evidence for the Royal Commission on Local Government; the other was in the Section of Public Health. The former was fully reported in the SUPPLEMENT of July 31st (pp. 75 to 79), and the latter is reported on pages 376 to 385 of our present issue. The Memorandum of Evidence referred to was printed in the SUPPLEMENT of May 1st last (p. 172), and the subject has now become of such importance that we may with advantage refer to previous comments in our editorial articles of March 20th (p. 535), April 17th (p. 709), June 19th (p. 1048), and, with regard to its maternity service aspects, June 12th (p. 999). The Minister of Health is now engaged in considering the comments on his proposals which have been made by the British Medical Association, by associations of local government authorities, and by others; and he has himself carried the matter a little further by his recent announcement that his bill, when introduced, will be found to contain important proposals for the wider utilization of Poor Law hospitals. It is now possibly too late to exert any further influence on the form of the proposals in the forthcoming bill, but Mr. Chamberlain has stated that the first introduction of the bill will be for purposes of information and comment with a view to some possible modifications on its reintroduction next year. No doubt this undertaking will be carried out, as has been the similar undertaking by the Home Secretary with regard to the Factories Bill.

It is recognized that the most favourable opportunity for procuring modifications of Governmental proposals is by approaching the department of State concerned before its proposals take shape in a public bill. On the other hand, until the proposals are so formulated there is a real chance of any general memorandum being misunderstood and of tentative suggestions being misinterpreted. Such differences of opinion as were manifested during the two discussions at the Annual Meeting above referred to seem to have been largely due to this cause. It is important just now to emphasize the remarkable unanimity of opinion within the profession on this matter rather than to exaggerate any difference of view with regard to some particular detailed proposal which, however important, can probably be suitably adjusted. The attitude of the profession towards the proposals of the Government in general is one of warm welcome. This is natural enough, since the Association was a pioneer in the movement for Poor Law reform, and has been persistent and consistent in its advocacy for many years. There is a keen desire that the health services at present controlled

by the boards of guardians shall be separated from other services which have no essential connexion with them, shall be dissociated from any taint of pauperism in the minds of those they serve, and shall be united as closely as possible with other health services which are publicly provided or controlled. The anxiety of the profession is lest, in spite of the intentions of the Ministry of Health, some, perhaps many, local authorities under the new conditions should be allowed, on the plea of complete freedom of method, to effect these objects less fully or less perfectly than they might. There is real danger of this under the Government's proposals, and every endeavour should be made to strengthen in this direction the requirements of the proposed bill; or subsequently, if unfortunately too wide an option remains, to press the local health authorities to adopt such administrative methods as will effectively unify local health administration, and to establish machinery through which those who have experience of the various services and those through whom any advice and medical treatment must be given may exercise a due influence. The surest and simplest method of effecting this would be a statutory requirement for the establishment of a local health committee to which all health matters would stand referred for consideration, and on which there would be some assured representation of institutions and bodies of persons experienced in the work, together with a representative local medical committee to be consulted on appropriate occasions. The analogy of the education committee is obvious, and might well be followed. It is to be hoped that the bill will at least definitely permit the establishment of committees on these lines if it does not go so far as to require it.

The one proposal of the Ministry to which the Association is decidedly opposed is that by which "the county council shall in all cases definitely undertake for the whole administrative county a general oversight of the administration of all health services, whether existing or transferred," and shall be "the supervising and controlling authority for all health purposes." The arguments against any such provision for dual control and overlapping authority, at any rate in the case of the larger non-county boroughs and urban districts, appear to be overwhelming, and it is probable that some modification of this novel, sweeping, and reactionary proposal will be made before the bill is introduced. It is a matter of minor importance whether this be done positively by giving these large urban sanitary authorities full health powers, perhaps by delegation to them of such as they do not already possess, or negatively by making them exceptions from the general rule as applied to the more rural parts of counties. It is clear that there is, and may well be, some legitimate difference of opinion as to which of these methods is the better in the circumstances; but it is unlikely that the more pronounced divergence of opinion voiced by one or two of the county medical officers of health at Nottingham, that they ought to be placed in a position of authority superior to that of other medical officers, and that no one but themselves, or otherwise than through them, ought to be allowed to advise the county council on health matters, will receive any support whatever either from their colleagues in the public health service or from private practitioners throughout the country. It is to be hoped that the bill will be entirely free from any provisions under which such a dangerous and disadvantageous situation could be established.

Throughout these discussions it is of the first importance to bear in mind the two principles which the Association emphasizes in its Memorandum of Evidence. They are: "(1) the utilizing of the family doctor or private medical practitioner in domiciliary treatment of every kind and in the various clinics or treatment centres as far as possible; (2) the voluntary system of hospital support and management wherever possible." If these two principles are recognized and applied the duties and relative responsibilities of the various local government authorities will be much simplified. These are, the profession is convinced, essential conditions for success in any health services transferred to or established by local authorities. Without them the willing co-operation of the medical profession can scarcely be secured or expected. It is believed that they are recognized by the Ministry of Health and are being increasingly appreciated by local health authorities themselves. As we have previously said, "On the one hand, the oncoming of an autocratic municipal or county medical service is to be avoided, and, on the other, private practitioners of all kinds must be brought into responsible relationship with local health administration" if any real interest in preventive medicine is to be cultivated. Twenty years ago the late Dr. John McVail emphasized these conclusions after a very careful study of the Poor Law medical service and administration, and his wise and wide outlook may well influence the social reformer to-day:

#### CRIMINAL RESPONSIBILITY.

ANY opinion on criminal responsibility in relation to insanity expressed by a criminal lawyer of so much experience and eminence as Sir Edward Marshall-Hall, K.C., is worthy of careful consideration. No apology, therefore, need be made for referring to an article by him published a short time ago in a Sunday newspaper (*Sunday Express*, July 25th, 1926). The importance of the article is increased by the fact that its author was a member of the committee appointed by the then Lord Chancellor in 1922 to consider what changes, if any, were desirable in the existing law, practice, and procedure relating to criminal trials in which the plea of insanity, as a defence, was raised. The committee, which sat under the chairmanship of Lord Justice Atkin, reported in November, 1923. In support of the contention that the law as it at present stands and is interpreted sometimes leads to unsatisfactory results, Sir E. Marshall-Hall adduces three recent cases in which he was himself engaged. Lord Justice Atkin's committee recommended "that it should be recognized that a person charged criminally with an offence is irresponsible for his act when the act is committed under an impulse which the prisoner was by mental disease in substance deprived of any power to resist." The recommendation endorsed in substance the principal change in the existing rules suggested by the Council of the British Medical Association and its witnesses in the evidence submitted to the committee. The committee in its report expressed the opinion "that such cases as would be covered by the formula in this recommendation would, in fact, fall within the existing law, as suggested by Mr. Justice Stephen; and no doubt some judges have charged juries to that effect. On the other hand, there seem to be definite decisions of the Court of Criminal Appeal the other way. It seems to us that if this legal doubt should continue it would be advisable to make the law clear by an express statutory

provision. We have no doubt that if this matter were settled most of the criticisms from the medical point of view would disappear."

After the issue of the report a bill to establish this point by statutory provision was introduced into the House of Lords, but rejected. In the article before us we have criticism—not, be it noted, medical criticism, but criticism from an eminent criminal lawyer—alleging that, in fact, under the interpretation of the law as it now stands justice may not be done to the insane person. Assuming, then, as in view of this statement we fairly may without question of medical bias, that verdicts may be, and occasionally are, given under the direction of the judges which offend the sense of justice of the ordinary citizen, what remedy can be suggested? Sir Edward urges a modification of the law in accordance with the recommendation of the committee; but Parliament has already considered such a proposal and rejected it, and the committee itself held the view that such cases as are contemplated in its recommendation are or may be protected by the rules of law even as they stand to-day.

If this be so it would seem that more searching attention should be directed to the actual terms of the M'Naghten rules which embody the law on this matter, with a view to discover why they are differently interpreted by different judges, and whether it might not be possible by a clearer and broader interpretation to secure such a uniform application of them that injustice should be avoided. It is rather curious that Sir Edward does not direct his criticism to this aspect of the matter; indeed, he accepts without question the view that in all the cases which he relates the judge directed the jury quite properly that there was no evidence of insanity within the rules laid down in the M'Naghten case, although he holds that the accused should have been found irresponsible on the ground of mental disease. It is to be observed that in the discussion of his three cases, and when dealing in particular with one of them, he says: "The jury were properly directed that the only defence was insanity at the time the act was committed, the same test being applied: Did he know what he was doing and that what he was doing was wrong?" In regard to another case he states: "The jury were directed within the rule in M'Naghten's case, that if they found that the prisoner knew what he was doing and that he was doing wrong when he did it they must find him guilty."

Now each of these statements is a paraphrase of the words in the M'Naghten rule and not the exact words of the rule; yet it may be taken for certain that every word was carefully considered by the judges in framing these rules, and that they deserve, therefore, the utmost care and accuracy in quoting and applying them. The words of the rule are that "to establish a defence on the ground of insanity it must be clearly proved that at the time of committing the act the accused was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know he was doing what was wrong."

There is one phrase in this rule which is habitually omitted as if it meant nothing, and it is, in fact, omitted by Sir Edward from the quotations in his article. It is fair to insist that it is not only the nature of the act which the accused did not know, but the nature and quality of the act. These words "and quality" deserve more consideration than they generally receive; they are a little unusual in everyday speech, and yet the word "quality" is not a technical

word any more than any of the others used in the rule. Indeed, it may well be supposed that the judges, in drawing up rules which were to be used in directing ordinary men of the jury, deliberately selected non-technical words and expected them to be used, as far as possible in such a difficult and abstruse question, in their non-technical ordinary sense. In particular may this be true of the word "know" also, which in its ordinary sense in such a context hardly means more than "be aware of," and it seems to be an unfortunate misconception for scientific people to seek to bound it and tie it down to some such technical connotation as pure "cognition." What, then, is meant by knowing, or being aware of, the quality of an act?

Elaborate interpretations of a far-fetched nature have been suggested by writers on this question, but in its simplest sense surely a "quality" is that which produces a feeling or sensation about the object possessing the quality. To know the quality of an act must therefore be to have such a sensation or feeling about the act as ordinary normal people would have—that is to say, to have normal feeling about the act.

Now sane behaviour, or sanity, depends on the coexistence in reason of these two elements—sane feeling and sane knowledge—as the springs and guardians of action. It is possible that the judges, in framing these rules, wrote more wisely than has been admitted by some of their critics, and that if we read them more attentively we may find in the true meaning of the terms they used a safe and natural escape from what would otherwise appear to be a hopeless impasse. Let us, therefore, consider the cases referred to by Sir Edward Marshall-Hall in the light of this suggestion.

In the first case an engineer, aged 28, shot his father-in-law, to whom he was greatly attached; after so doing he handed the gun to a person standing by, and said, "I've killed my best friend; send for the police." He had been greatly distressed by the attitude of his mother-in-law, who had practically insisted on a separation between him and his wife. In the second case a man in the middle of the night, without rhyme or reason, loaded a gun and shot his wife and one daughter, and when his other daughter, who was his favourite, questioned him he shot her also. Then he walked calmly to his office, lit a cigarette, and telephoned to the police, asking for an officer to be sent as he had shot his wife and child. In the third case a man, aged 24, who all his life had been regarded as weak in the head and abnormal, suddenly without any warning killed his step-brother, aged 14, with a chopper. The only motive suggested was that he was jealous because the boy had been given lessons at the art school. In the first and third cases the sentence was commuted, in the second it was carried out. In Sir Edward's opinion (and he must have been familiar with all the circumstances) it should have been possible for the jury to find in each case that the prisoner was "guilty but insane"—that is, irresponsible in the eye of the law—without doing violence to their oath or their duty.

If, as seems reasonable, we accept this as a correct view of the matter, might it not properly have been held in each case that the accused was labouring under such a defect of reason, from disease of the mind, as not to have the normal feeling about the act he was committing, not to perceive its horror or enormity, even though he had a normal knowledge of what he was doing, and so, in the terms of the rule, he did not know the nature and quality of the act? That is

surely what was implied by the prosecuting counsel in one of these cases when he said, "the real defence was the crime itself."

Hitherto the stress has usually been laid entirely on whether there was knowledge of the nature of the act, or, as the common paraphrase has it, on whether the accused knew what he was doing; and this usage is illustrated in Sir Edward's account, as has been already pointed out. The effect is to divert attention from the actual expression used in the rule, and, indeed, to alter its meaning. For in the rule it is clearly contemplated that if the accused does not also know the quality of the act he may be held to be irresponsible in law. It is difficult to see how this can mean anything but a sense or appreciation of values, which is something different from and in addition to mere recognition of facts. Is it not possible that this view of the matter may supply the solution of the difficulty that Sir Edward points out, and do this without undue straining of the existing law or the need for remodelling it, and may show the way to prevent in similar cases in future such a miscarriage of justice as he now deplures? If so, the question how this interpretation may best be brought before the courts and pressed upon their consideration is one with which Sir Edward would be most eminently qualified to deal.

One further remark may be made. There is a natural reluctance on the part of the Legislature to modify the law in any way which might make it difficult to maintain the proper degree of responsibility in connexion with minor offences. It does not appear that any such danger would arise from the wider interpretation of the M'Naghten rule here suggested.

#### THE SCIENCE OF SEA BATHING.

Bathing in the sea has long been regarded partly as a cult and partly as a pleasant pastime, but it has been left for a more modern age to emphasize more particularly its importance as a therapeutic measure and to assign to it a scientific basis. Since 1791 the Royal Sea-Bathing Hospital at Margate has stood as a witness of the value of sea water in treating surgical tuberculosis, and sea-bathing infirmaries were established at Southport in 1806, at Scarborough in 1812, and at Felixstowe in 1868. We have, therefore, not lagged behind in this country in appreciating the possibilities of sea bathing in medical treatment as well as in the holiday programme, and the tonic effects of sea breezes are a matter of general knowledge, but comparatively little attention has been paid to the way in which the beneficial results are produced. In the *Revue Scientifique* for July 10th Dr. G. Baudouin examines sea bathing, viewed as a curative procedure, with particular reference to the physical and physiological questions concerned. Importance is attached to the chemical and physical properties of sea water, especially the proportion of salts, which vary in different places; the temperature factor has never been underestimated, even by the unscientific. The question is complicated by the fact that the influence of the marine air and of sunshine cannot be ignored when estimating the nature of the action of sea bathing. Heliotherapy of an empiric kind in combination with sea bathing was a recognized practice in early times on the sea coasts of Syria, Greece, and Italy, though it is only in later days that the importance in this connexion of the relative scarcity of solid particles in the sea air has been appreciated. Yet another factor in therapeutics, to which attention has been drawn by Professor Pech, is the degree of ionization of the air, which depends largely upon local geological and meteorological conditions. The action of

the sea and sea air in increasing human vitality in impaired nutrition is believed to be due to a stimulation of metabolism, which may, however, be injurious to patients with heightened irritability of the nervous system, or of such organs as the heart, stomach, and liver. When these conditions are present, even in minor degrees, such stimulation causes a holiday by the seaside to be productive of bad rather than of good results. Patients with impaired powers of assimilating phosphorus, or with such increased activity of the oxidative processes as is found in pulmonary tuberculosis or febrile disorders, must therefore avoid the seaside, since in them katabolism is already excessive. In his further inference that such clinical points might be carefully considered before recommending a seaside holiday, Dr. Baudouin would seem to approve the underlying principle of a certain current advertisement illustrating the type of man who needs a holiday on the coast, as contrasted with the older style of poster, which rather implied that any seaside resort would suit anybody. He mentions a number of French seaside towns, and indicates whether they may be considered stimulating or sedative. He clearly disapproves the common practice of recommending the proverbial holiday by the sea for all and sundry, without a rather elaborate consideration of the circumstances. Dr. Baudouin also gives a somewhat alarming description of the physical effects of a sudden unconsidered dash into the sea, mentioning peripheral and central vascular changes, together with cardiac and respiratory disturbances; the gravity of his warning is only slightly qualified by the assurance that such phenomena are usually transient. He speaks more approvingly of the familiar slow and hesitating entry, with repeated halts and occasional retreats, and it would appear that science must now be called upon to regulate yet another of the activities of life. The careful man who contemplates taking a seaside holiday will presumably first submit to an elaborate examination of his physical condition by biochemists and physicians, after which the geographical, geological, hydrological, and meteorological characteristics of possible resorts will be studied in detail before a decision is reached. That there is something to be gained by making a more scientific investigation of the value of sea bathing is undeniable, but it is curious to find a Frenchman suggesting that we ought to take our pleasures more seriously, if not more sadly. We expect, however, that the public as a whole, both in France and England, will continue to be guided by the recommendation of friends and the posters of the railway companies, and will trust individual metabolic capacities to rise to the occasion.

#### DISPENSING OPTICIANS.

AN Association of Dispensing Opticians has recently been formed as the result of the very general opinion of dispensing opticians throughout the country that the time has arrived for the formation of an organization devoted to the interests of the dispensing section of the optical trade. Membership of the association is confined strictly to those engaged solely in optical dispensing work and their employees, and in no circumstances is an optician who professes or practises sight-testing admitted to membership in any grade. There are four grades of membership, for which certificates are issued: employers, managers, assistants, and craftsmen. The main object is to secure a high standard in the work of dispensing; every effort will be made to ensure that only dispensing opticians of proved ability and experience shall be admitted to the Grade A membership. Medical practitioners and the public may be assured that the holder of this certificate is a fully trained and experienced dispensing optician, who possesses the necessary plant, facilities, and skilled staff satisfactorily

to dispense optical prescriptions and to manufacture spectacles. Lectures and classes are held for the instruction of members, and examinations take place periodically in order that members may pass from one grade to another. The syllabus of instruction is printed in the pamphlet setting out the scheme of the association. It differs materially from those of other optical courses of instruction, and should prove of great value to the trade, dealing as it does with the work and problems peculiar to those engaged in optical dispensing. The association is governed by an executive committee of seven, elected by the members, each of whom, irrespective of grade, is entitled to one vote. The association is precluded from engaging in any wage questions or trade disputes. A candidate for membership is required to have at least three years' experience before taking the preliminary examination, and a further twelve months' experience before the final examination is taken. We are informed that it is proposed to circularize all the ophthalmic surgeons of the country setting out the principles of the new association. We feel sure that this move will receive a warm and generous appreciation from members of the medical profession, and ultimately from the public. Ophthalmic surgeons cannot do their work without the fullest co-operation of the members of the optical craft, and there has never been wanting a whole-hearted appreciation of the value of the work done by this great craft in the beneficent cause of medicine. Nothing will better serve to enlighten public opinion as to the separate although related fields of work of the doctor and the optical craftsman than the work of this association; for the public will learn (some for the first time) that there are opticians so proud of their craft, and so completely engaged in the improvement of manufacture and dispensing, that they decline to trench on the sphere of the doctor or seek a fictitious importance by pretensions that mystify the public. It is to be hoped that membership of the Association of Dispensing Opticians, which has its offices at 439-441, Oxford Street, London, W.1, will be wide, and that the activities of the association will be supported by individual members of our profession.

#### NEW ZEALAND HOSPITALS.

It is always of interest to see how others do the thing we have to do, especially when the doing of the thing involves difficult problems. Information of the working of hospitals in the Dominions is therefore of peculiar interest. Dr. Clennell Fenwick has done good service in this connexion by writing an account of *The Christchurch Hospital*.<sup>1</sup> It was started some sixty years ago, and is now the base hospital of a large number of linked hospitals and sanatoriums throughout the province. It began as a small local hospital to meet the needs of the pioneer settlers; the site was given by the provincial Government, and it was proposed that lands should be sold to defray the cost of the building, but this was negatived; eventually the hospital was built, but by whom and at what cost cannot be traced, though there is evidence that an appeal for funds was made to the settlers. It would appear, therefore, to have begun somewhat in the fashion of a "voluntary" hospital, albeit with some State help. The management was in the hands of a board of governors, who attained their position by reason of subscriptions, or, as the *Lyttelton Times* wrote at the time, "on a footing similar to that of other institutions of the kind in England." But funds were not contributed in sufficient amount, and the fees received from patients did not

<sup>1</sup> *The Christchurch Hospital: Historical and Descriptive Sketch.* By P. Clennell Fenwick, C.M.G., M.D., J.P., etc. Christchurch, New Zealand: Andrews, Baty and Co., Ltd. 1926. (Demy 8to, pp. 58; illustrated.)



meet running costs. From the outset patients paid according to their means, and the medical staff was paid. Two years after the start finances were so strained that the governors, in the words of the local press, "trembling and terror-stricken, dropped their burden at the feet of the Government." The Government refused to make the hospital a State charge, but passed a bill putting both hospital and charitable relief upon a system of local rating. There was strenuous opposition to this "as the first step towards the inauguration of the British work-house system." The rating system was carried into effect, but troubles did not end. Ten years later the local press has: "The charitable aid question is at present between the devil and the deep blue sea. On the one hand the Government . . . has cast them off; and on the other, the local bodies, while paying for the cost of maintenance of the various institutions (this they cannot avoid) are not in a fit frame of mind to consider any scheme of benevolence. . . . The blighting shade of centralism has crept over our local institutions." A new board was formed, and the Government met half the cost of the hospital by subsidy, the remainder being obtained from rating. Hospitals and charitable aid were put under separate boards for some dozen years, but in 1909 a new Act brought charitable aid under the control of the hospital board. The action of a magistrate in remanding a prisoner suffering from delirium tremens to the hospital charge brought about something like an association of hospital boards through the islands for common action. This story suggests that the hospitals were becoming more and more State supported and controlled institutions, but there is evidence that the managements retained a considerable degree of independence, and that hospitals made a strong appeal to local patriotism which was reflected in many and generous private benefactions: One of the largest wards was built and endowed to the cost of £20,000, in 1895, by a Polish Jew, who averred that there was no flag fit to live under but the British, and in proof he left all his possessions to the land of his adoption. Now the hospital is complete with every type of special and general department, with a great block for chronic cases, built at the cost of a lady benefactor. Recently a radium and deep therapy department has been added, the cost of which has been defrayed by an anonymous donor. We have before us the first report of the department, written by the officer in charge, Dr. Clennell Fenwick, who is also consulting surgeon to the hospital and a member of the board of governors. The hospital already possesses over £8,000 worth of radium, while the Victor deep x-ray machine was installed at a cost of £4,000. A careful "follow-up" system is enabling the after-history of the majority of patients to be ascertained. Already over 500 cases have been treated since the department was opened in November, 1924. The hospital has a share also in prevention, for it controls a large department for venereal diseases, and organizes and maintains "The Social Hygiene Society," which carries on health propaganda through the province. The hospital board is also responsible for "charitable aid," a heavy business. It was hoped that the Old Age Pensions Act of 1898 would decrease the cost of charitable aid. It did not. Children deserted their parents so soon as they obtained a pension. Ultimately the pensions of aged persons in institutions were paid to the board in reduction of cost of maintenance. There is caustic comment on the inhumanity of some classes and the modern scorn of the fifth commandment. In a section dealing with future development a strong plea is made for a widening of the hospital idea; it should be "The Best Community Hospital." It should cater for the private or paying patient, "the private patient who might be described as one who financially is prepared and required to pay for private services . . . and the privilege

of choosing any reputable qualified physician or surgeon who may be practising in the hospital area, and who is responsible for his own professional fees." Semi-private wards, it is urged, would reduce the costs of the public wards, and help "the poorest section of the community, the middle class." Dr. Clennell Fenwick is to be congratulated on the result of his labours, for he has shown how, in one place, the apparent antagonism of State and private enterprise can be reconciled for the common good.

#### AMAZONIA AND ITS DISEASES.

IN 1924 Dr. and Mrs. Hamilton Rice, who have for long actively encouraged scientific exploration in South America, sent out a seventh expedition, organized in conjunction with the Department of Tropical Medicine of Harvard University, which spent a considerable time on a river steamer on the Amazon and two of its chief tributaries. The purpose of the expedition was geographical exploration and medical investigation. A report<sup>1</sup> has now been issued in a well illustrated quarto volume. It is a record of excellent work, carried out with the care and accuracy of detail which we expect from a body of men led by Dr. R. P. Strong, professor of tropical medicine at Harvard. The other members were Dr. George C. Shattuck, assistant professor of tropical medicine in the same school, Dr. J. C. Bequaert, assistant professor of entomology, and Mr. Ralph E. Wheeler, a graduate of Harvard. The report is divided into three parts, each containing several sections: the first part is of the greatest interest to the tropical practitioner, the second to the specialist in entomology; the third part, written chiefly by Dr. Shattuck, relates observations made on some of the tributary rivers. The members of the expedition were clearly not enamoured of the reputed fascinations of the forest of the Amazon. They state that Rangel appropriately named it the *inferno verde*, "where one soon dies of hunger, and, during the dry season, suffers from thirst, when almost all the streams which traverse it are reduced to some few puddles of stagnant or brackish water. It is too thickly and too regularly grown to be grand or picturesque, and too silent to be cheerful. It breeds too much vermin to be agreeable, and produces at length upon the traveller vague sensations of sadness, oppression, and uneasiness." The climate must be trying indeed, for at Manaus, where, and at Para, the expedition spent much of its time, the average temperature is 28.2° C., and the humidity varies between the extremes of 54 and 99 degrees. In the lower Amazon the seasonal variation in temperature is small. Many excellent reproductions of photographs show the general character of the scenery and vegetation, and there are others of the inhabitants and their dwellings. Next, the various prevalent diseases are dealt with. Of the spirochaetoses, syphilis is very rife. Amongst a population of 50,000 in Manaus and its environments there were recorded 13,858 male and 8,475 female cases in the years 1922 and 1923. Yaws is not very frequent. It is stated that some confusion may arise because the term "boubu" is applied, not only to this disease, but to various other forms of ulceration, such as those due to leishmania and blastomycetes. Yellow fever, of which many disastrous epidemics occurred in Amazonia during the last century, took a toll from 1903 to 1912 of about 100 cases a year in Manaus alone: it was dealt with seriously from 1911 onwards with marked success. Weil's disease and rat-bite fever (included here among spirochaetal diseases, though the causative organism is probably a spirillum) are met with, but not commonly, and relapsing

<sup>1</sup> Cambridge, Mass.: Harvard University Press; London: H. Milford, Oxford University Press. 1926. (Imp. 8vo, pp. xv + 313; illustrated.)

fever is rare. In the pages on the chronic inflammatory and ulcerative dermatoses an excellent account is presented of *ulcus tropicum*, its history, pathology, possible mode of transmission, and treatment; the description of granulomatous dermal spirochaetosis and "mossy-foot" is illustrated by good photographs of the lesions and coloured plates of the histological appearances. Leprosy is said to be spreading in Amazonia; little appears to be done by way of prevention. The usual mode of treatment is by chaulmoogra oil or its derivatives, but many patients fail to improve even after prolonged courses. Promising results have been obtained by the intravenous injection of 1 per cent. solution of mercurochrome in doses of 2.5 mg. per kilo of body weight. In the section dealing with trypanosomiasis, *mal de Caderas*, Chagas's disease, and infection of tamandua (anteater) with *Trypanosoma legeri* are described, and there is a coloured plate demonstrating the main characteristics of the last named. Good work has been done on some of the parasitic infections of animals, such as balantidiasis, myiasis, nematode infestations, haemogregarines, and so on. The second part, which is concerned with medical and economic entomology, contains descriptions of the various genera and species encountered, and will be of interest to the entomological enthusiast. A point worthy of special note is the fact that there seems to be a great dissimilarity in the fauna of the regions of Southern Brazil and the Amazon basin. In the third part Dr. Shattuck relates his observations on the Branco, the Uraricuera, and the Parima rivers; he describes these districts and their crops and animals, makes remarks upon the diseases prevailing amongst the natives, and gives a list of the birds, beasts, and reptiles met with.

#### ILLUMINATION AND VISUAL CAPACITIES.

In 1924 the Council of the British Medical Association referred a resolution, unanimously adopted by the Ophthalmological Section of the Annual Meeting, to certain Government departments and to the Medical Research Council. In the terms of the resolution the Association was recommended "to press strongly upon the Government the great need for research upon many problems of vision in relation to the requirements of the combatant services." The stimulus afforded by that resolution was fruitful, for the Medical Research Council, after consultation with the Admiralty, the War Office, and the Air Ministry, appointed a committee to initiate and supervise research work in the physiology of vision, and in so doing to promote as far as possible the attention paid to the subject generally at the universities and other centres. At present very little work, so far as we are aware, is being done on the subject at the universities, and the need is urgent, both for the advancement of primary knowledge and for practical requirements, particularly in medical work. The firstfruits of the establishment of the committee (of which Sir John H. Parsons is chairman) appears in the publication<sup>1</sup> of a critical survey of the work already done in this and other countries in some parts of the applied physiology of vision. The Council made arrangements with Mr. R. J. Lythgoe to prepare the analysis, and he has done his work admirably. In a pamphlet of eighty pages he has given a summary of all the observations published in recent years, and has included references to critical earlier work. Among the matters dealt with are definitions; the influence of different intensities of illumination and the character of illumina-

tion on visual acuity; the discrimination of shapes and differences of brightness, and the effects of adaptation; the influence of glare on visual judgement; the speed of retinal impressions in relation to telegraphic signalling; colour vision; and visual fatigue. An extensive bibliography is also provided. No more serviceable work could be put into the hands of the research student who desires to follow up references to work in hand; and the school doctor and ophthalmic surgeon will find points of interest in these summaries which will stimulate them to reading and experimentation.

#### GUIDE TO OFFICIAL STATISTICS.

THERE is a Permanent Consultative Committee on Official Statistics, on which the majority of Government departments are represented. This body has now issued fourth *Guide to Current Official Statistics*, an ingenious compilation by means of which the inquirer is directed to the particular current official publications which contain statistics bearing on his subject, and is informed of nature of the statistics he will find in the volumes which he is referred. The secretary to the committee Mr. F. A. A. Menzler, gives a very clear statement of way in which the guide should be used. The system cross-reference has been so skilfully applied that a reference in a subject index of 187 papers can be found by starting from only twenty-six headings. Consequently, if there is any difficulty in tracing a subject is only necessary to select that heading of the twenty which seems most appropriate to the matter of the inquiry and the subject is sure to be found in the cross-referencer under that heading. If it is desired to know what material are exhibited statistically in a particular publication key which has been added to the guide will refer searcher to pages in the subject index. The guide is 1s., and is obtainable at the sale offices of His Majesty's Stationery Office, Adastral House, Kingsway, W.C.2, or at the branch offices in Manchester, Edinburgh, Cardiff and Belfast, or through any bookseller.

#### THE EDUCATIONAL NUMBER, 1926.

Our next issue, dated September 4th, 1926, will be the annual Educational Number of the BRITISH MEDICAL JOURNAL. The customary sections, giving a summary of the requirements of the universities and other licensing bodies in Great Britain and Ireland, have been brought up to date, and the information showing the opportunities offered by the various medical schools and other teaching institutions has been corrected by the authorities concerned. These sections, whose purpose is to give some guidance to intending students of medicine and non-qualified practitioners, will be supplemented, as usual by articles on such matters as post-graduation study, public health services, the medical education of women, tropical medicine, and psychological medicine. The introductory article on the profession of medicine has been amplified and revised throughout. In the section on public services will be found full particulars of the new and improved terms and conditions of service in the R.N.M.S., the R.A.M.C., and the R.A.F.M.S., which Representative Body of the British Medical Association has decided are satisfactory and such as can be recommended to the notice of the younger members of the profession. The opening article for this year's Educational Number has been written at our request by Arthur Keith, who discusses with characteristic clarity and wisdom the place of anatomy in medicine.

<sup>1</sup>Priley Council, Medical Research Council, Reports of the Committee upon the Physiology of Vision. 1: Illumination and Visual Capacities. A Review of Recent Literature. By R. J. Lythgoe, M.A., B.Ch. London: H.M. Stationery Office, or through any bookseller. 1925. (Pp. 82. Price 2s. 6d. net.)

## SANATORIUM TREATMENT.

WITHIN recent years several investigations have been carried out with the view of determining the value of sanatorium treatment for tuberculosis. The method adopted has been to trace the after-histories of cases of tuberculosis treated in these institutions and to compare the mortality according to the condition on admission or discharge with that experienced by the general population at corresponding ages as shown by a life table. An inquiry of this nature was carried out by Elderton and Perry in the Galton Laboratory in 1910 on data derived from the Adirondack Sanatorium in America. More recently somewhat similar inquiries have been made from data from Midhurst Sanatorium by Bardswell and Thompson, from Frimley Sanatorium by Hartley, Wingfield, and Thompson, and from Bradford Sanatorium by Vallow. The results of these investigations have been published in reports of the Medical Research Council. Though a considerable amount of valuable information was obtained from these investigations, they all suffered from the defect that they measured progress only by survival, and that no comparison could be established between the after-histories of the tuberculous cases treated in sanatoriums with the after-histories of other contemporary series of cases from the same districts treated by other methods. Such a comparison, not only as regards mortality experienced but as regards progress towards recovery measured in other ways, has now been made in the Galton Laboratory by Dr. Percy Stocks, assisted by M. Noel Karn, and the results are contained in a memoir on the influence of sanatorium and dispensary treatment and housing conditions on pulmonary tuberculosis which has been recently published in the *Annals of Eugenics*.<sup>1</sup> The results obtained from this investigation are of interest and importance in view of the fact that they deal with the treatment of pulmonary tuberculosis in sanatoriums. Though there has been doubt in the minds of some people as to the permanent improvement in the disease to be obtained from sanatorium treatment, the results of previous investigations seemed to suggest that the educational value of such treatment was considerable, in that the patients were taught the principles of a more correct mode of life which had a good influence on their subsequent progress, and, if effectively carried out, might be expected to lessen the spread of infection. The results of this investigation suggest that this view has been too optimistic.

The memoir is based on an exhaustive study of the first 2,794 consecutive cases of undoubted pulmonary tuberculosis brought under the survey of the Belfast Tuberculosis Dispensaries from 1914 onwards. All the cases were examined in the first instance at the dispensaries and a certain proportion of them were recommended for treatment in sanatoriums. Those who remained at least fourteen days in these institutions, in addition to being under observation and receiving dispensary treatment before and afterwards, are defined as "sanatorium treated"; the patients who only received dispensary or domiciliary treatment are described as "otherwise treated." In assessing the stage attained by the disease when the patient first came under observation, the cases were classified separately on an anatomical basis into the three grades, incipient, moderately advanced, and far advanced, and according to the amount of systemic disturbance into slight, intermediate, and severe. Progress was estimated at the end of every three-monthly period from the date of the first visit until the patient was dead or lost sight of, or until six years had elapsed. The patients were at these intervals assigned to one of the following categories: dead, progressive or stationary, improved, arrested, and apparently cured. For the purpose of establishing a legitimate comparison between the progress of the "sanatorium treated" and the "otherwise treated," it was essential to determine and to make allowance for whatever kind of selection had been exercised in recommending cases of phthisis for sanatorium treatment. It was believed

that any factors likely to have an important influence on subsequent progress would come under a selection based on the grounds of sex and age; the stage which the disease had reached in the lungs; the severity of constitutional symptoms; the nutrition of the patient; the amount of deterioration since coming under observation; his financial resources, the quality of his dwelling, the amount of overcrowding in his home, or his family ties.

The progress of the "sanatorium treated" and the "otherwise treated" was first compared by a method described as an "exposed to risk" basis. For this purpose the patients were divided (1) into sexes; (2) into two age groups—under 20 and over 20; (3) into groups of those in the three initial stages of disease; (4) into different subgroups of treatment. Then in each subgroup the number of patients surmounting each step of progress at the end of 1, 2, 3, 4, 5, and 6 years, and the total number at these periods whose fate or condition was known at the time was determined, and the progress of various subgroups at the yearly intervals was compared by means of ratios to those at risk or to expected mortality. In the second part of the memoir the method of correlation by alternative categories was used to determine the relation between treatment—both as regards form and amount—on the one hand, and progress and some factors that influence it on the other. By partial correlation it was possible to correct for the principal factors considered likely to influence progress. The authors state that as impartial workers they entered on the research in the belief that proof of the ultimate benefits of sanatorium treatment would emerge from it. To what extent this expectation was realized may be ascertained from their principal conclusions, which may be given more or less in the terms used in the memoir.

1. The average ultimate progress was undoubtedly worse in the "sanatorium treated" than in the case of the "otherwise treated" for patients first seen in the incipient stage, but was not significantly different for patients first seen in the two advanced stages. This relation held in both sexes and for young people and adults alike, whether progress was estimated on a survival basis by the ratio of actual to expected mortality, by the proportion improving to any degree, or by the proportion in whom the disease became arrested or apparently cured. This conclusion was reached after as full consideration as possible of the effect of selection of cases in biasing the prospects of the sanatorium cases. Adequate correction was made for selection on account of age, sex, stage of the disease, and severity of symptoms; selection on account of poverty, overcrowding, and bad home conditions was shown to be negligible in its effect on progress.

2. These results obtained by the preliminary method of analysis were confirmed by those of the correlation method by alternative categories. Having made every possible correction for factors likely to influence progress, sanatorium treatment as contrasted with the other forms of treatment was associated to a significant degree with inferior progress. The correlation method also proved the absence of any relation between length of stay at the sanatorium and ultimate progress, but on the other hand indicated an appreciable relation between regularity of dispensary treatment and progress.

3. The initial stage of nutrition had no appreciable relation to ultimate progress in adult males and only a slight relation in adult females.

4. There was no consistent evidence that bad housing conditions, as judged by rent, class of house, state of cleanliness of rooms, or overcrowding, had any influence on the patient's ultimate progress or rate of recovery.

These are the principal results of the investigation, and the only explanation of this unexpected state of affairs that suggests itself to the authors is that the depressing psychological effects of a long period of enforced idleness in the company of patients similarly affected may in the bulk of cases counteract or even outweigh such benefit as may arise from other factors, and that the continued effort to "carry on" at home may help in itself towards a mastery of the disease.

The authors complete their memoir by stating that if their conclusions are sound it would be well to consider (1) whether the great inconvenience to themselves and their families inflicted upon many cases of phthisis by sending them as a routine procedure for long periods to sanatoriums is justified by the results, and (2) whether the sanatorium treatment should not be reserved for those in whom an unusual form of onset (for example, haemoptysis) has made a very early diagnosis possible, those who are so ill as to require hospital treatment, or those whose circumstances demand their removal from home.

As the results of this very exhaustive and important

<sup>1</sup>The Influence of Sanatorium and Dispensary Treatment and Housing Conditions on Pulmonary Tuberculosis. By P. Stocks, M.D., D.P.H., assisted by M. Noel Karn. *Annals of Eugenics*, vol. 1, Parts III and IV, April, 1926, pp. 407-454. Cambridge: The University Press. (Med. 4to, illustrated. Annual subscription, 50s. net; double parts, 35s. net.)

investigation seem to be at variance with more or less generally accepted beliefs regarding the advantages that accrue to tuberculous patients from treatment in sanatoriums, it would appear to be desirable to attempt to obtain without delay confirmatory evidence for some districts in this country where the prevailing type of pulmonary tuberculosis may be different from that in Belfast.

## THE METROPOLITAN ASYLUMS BOARD.

### REPORT FOR 1925-26.

THE annual report of the Metropolitan Asylums Board for 1925-26, which is a large volume of 366 pages, takes the form of a general review of administration and a special survey of each of the four main departments of the Board's medical work—namely, infectious diseases, mental diseases, tuberculosis, and sickness in children—supplemented by contributions from medical superintendents and others on interesting cases or particular phases of the work. The Board serves an area of 121 square miles, with an estimated population of 4,600,000. It has fifteen hospitals for infectious diseases, six mental hospitals or colonies for the feeble-minded, ten institutions for tuberculosis, and five for sick or convalescent children. It has also an ambulance service which during the year transported 80,000 patients. The statistics given relate generally to the year 1925, but some account of the work of the Board is given up to May, 1926, which is the end of the Board's administrative year. The provisional proposals of the Ministry of Health to transfer to the London County Council the oversight of all health services, including those for which the Board is responsible, are regarded with disfavour by the Board, which is convinced that the Council would find it impracticable to undertake this substantial addition to its present duties and at the same time to maintain a close contact between the elected representatives of the public and the work so transferred. The Board urges the desirability of its continued existence as a separate body.

### Infectious Diseases.

For fever cases the Board has 8,620 beds; the largest number of cases under treatment at any one time in 1925 was 5,495 (in November). The total number of cases of infectious disease, exclusive of chicken-pox, tuberculosis, whooping-cough, and zymotic enteritis, notified during 1925 was 44,504, or 10,861 more than the previous year, but 13,481 fewer than in the epidemic year (1921). The case mortality rates for all diseases, with the exception of whooping-cough, were low. The diphtheria rate (4.57 per cent.) was the lowest yet recorded, that for scarlet fever (1.07 per cent.) was the lowest except in 1921, and the rate for enteric fever (8.44 per cent.) has only twice been lower; whooping-cough (13.37 per cent.) showed almost the highest case mortality recorded. During the year eleven patients suffering from small-pox were admitted to hospital; ten recovered and one died. The only serious outbreak was at Bethnal Green, where a man was stated to have acquired the infection through handling foreign rags; this man infected his wife and two children, and within three months four additional cases were admitted from the same locality. Of the eleven patients eight had been vaccinated in infancy only (that is, from twenty-seven to sixty-six years before); in the other three there was no evidence of vaccination.

The incidence of diphtheria was unusually high. The admissions for diphtheria and membranous croup numbered 10,251, out of 12,595 notifications. The Board has arranged for certain researches to be made into the microbe flora of the throat and nose in diphtheria carriers, with a view to ascertaining, among other things, at what points the bacilli appear to be specially liable to persist and the anatomical conditions associated with such persistence. The figures for scarlet fever are curiously close to those for diphtheria—10,568 admissions out of 12,298 cases notified; and the same approximation shows itself in the average period of residence of recovered patients at the "acute" hospital—fifty-nine days for diphtheria patients, fifty-seven for scarlet fever. The largest number of attacks of scarlet fever occurred in the second quinquennium of life, whereas

in diphtheria it is in the first quinquennium that the attacks were most frequent. Dr. Foord Caiger, chief medical officer of the infectious hospitals service, raises the question whether the policy hitherto pursued by the Board of according priority of claim for hospital isolation to scarlet fever as against measles is justified in view of the very low mortality of scarlet fever. Of the 10,568 scarlet fever patients admitted to the Board's hospitals only 111 died, whereas of the 1,802 cases of measles the deaths numbered 121. He thinks that, having regard to the failure of hospital isolation to limit the spread of scarlet fever, to the much higher mortality of measles, and to the beneficial effect of hospital treatment on the course of the disease when occurring in children from poor homes, the policy should be reversed and the preference given to measles. Of the infectious cases received at hospital during the year the diagnosis of the certifying practitioner was not confirmed by the medical officer of the hospital in 15.2 per cent. Among the common diseases mistakes were most frequent in respect of enteric fever; 31.2 per cent. of the cases so certified were found to be suffering from some other disease. In cerebro-spinal fever, for which there were only 17 admissions, and encephalitis lethargica (32 admissions), the proportion of mistaken diagnoses rose to 56.4 and 56.8 per cent. respectively, though it is admitted that with regard to the latter disease, by reason of the frequently anomalous character of the symptoms, the original diagnosis might not have been incorrect in some instances.

The Board has adopted certain suggestions put forward by the Ministry of Health to concentrate puerperal fever patients in two or three hospitals, so that such patients may receive more skilled medical and nursing attention and greater opportunities for research may be afforded. Such cases, therefore, have been concentrated in the Eastern, North-Western, and South-Western Hospitals, and a visiting obstetric consultant has been appointed. The number of cases of puerperal fever admitted to hospital in 1925 was 87, only slightly in excess of the number admitted during the previous year, and the case mortality was 23 per cent. It is hoped that with another year's work in the clinical unit much information with regard to the infecting organisms and other matters will be elicited and the prevention and treatment of the disease advanced.

### Mental Cases.

The cases remaining in the Board's mental institutions on December 31st numbered 9,352. These included cases certified under the Lunacy Acts, but chronic and harmless, and under the Mental Deficiency Act, as well as sane epileptics, uncertified feeble-minded, and poor aged persons who by reason of mental infirmity required institutional treatment. The average annual number of admissions during the past three years has been 1,424. Pathological laboratories are now provided at three of the mental hospitals, and another is to be established at a fourth. Many cases of abnormal mentality following upon encephalitis lethargica have been received into institutions controlled by the Board, and arrangements have been made for a special group of them to be dealt with separately, and 100 beds have accordingly been set apart at the Northern Convalescent Hospital. The admission of these patients did not begin until November last, and it is premature to speak of results, but the comment is made by Dr. Kinnier Wilson, consulting neurologist to the Board, that much less difficulty has been encountered than was expected in regard to cases of inversion of sleep rhythm, and that the atmosphere of the unit with its system and discipline has proved favourable in cases of behaviouristic impairment. Stress is laid upon the particularly heterogeneous character of the clinical material.

### Pulmonary Tuberculosis.

The admissions to institutions for pulmonary tuberculosis numbered 3,953, and the discharges 3,601. The average duration of stay at the three sanatoriums (for men, for women, and for children) was 133 days. At Colindale Hospital, which is for advanced male cases, the average stay for discharged patients was 142 days, as compared with 117 days in 1924. In the two sanatoriums for adult cases—King George V Sanatorium at Godalming,

and Pinewood Sanatorium at Wokingham—out of 1,095 cases discharged (in 863 of which tubercle bacilli had been demonstrated in the sputum at one time or other) the disease was declared to be quiescent, with no signs or symptoms other than those compatible with a completely healed lesion, in 33 per cent.; 39 per cent. were much improved, implying that the general health was good, the working capacity more or less restored, and the signs and symptoms materially diminished. The percentage of recoveries shows improvement on the average of the three preceding years, and in the opinion of Dr. James Watt, chief medical officer of the medical tuberculosis service, the figures indicate again how the prospect of recovery depends more on the degree of constitutional disturbance than on the extent of the damage done to the lungs. Dr. W. C. Fowler describes some difficulties in the search for early cases of pulmonary tuberculosis, one of which is lack of moral courage on the part of the patients to face a situation they suspect to be serious; other cases may be misleading when the neurasthenic symptoms are the first to prevail, or when the early manifestations are those of anaemia or amenorrhoea. The only way of avoiding some at least of the delays in diagnosis is to suspect the lungs as guilty in all cases of ill health until they have been proved innocent by the most careful and repeated clinical examinations. Dr. J. G. Cummins describes a typical case of pulmonary tuberculosis treated by artificial pneumothorax. The treatment has extended over almost two years, and the disease appears to be completely quiescent.

#### *Surgical Tuberculosis and Children's Diseases.*

To the section dealing with non-pulmonary tuberculosis Dr. W. T. Gordon Pugh contributes the paper on the relative value of open air, sunlight, and artificial light in treatment, which he read before the Harveian Society in March, and which was reported in our columns (April 10th, p. 657). In that article he described the work done at St. Mary's Hospital for Children, at Carshalton. Dr. N. Gray Hill, of the same institution, contributes an article on ultra-violet radiation from artificial sources, in which his conclusions are that patients with superficial tuberculous ulcers, rickets, and debility do well, but that such cases are easily treated without the use of light; that the local application of the rays is of value in the treatment of lupus, but the general light bath has little effect; that the course of tuberculosis of the spine, hip, or knee, with or without sinuses, is not apparently influenced in any way by the action of light; that the treatment gives no protection against the spread of infection; that pigmentation has little or no clinical significance, and that light treatment has no definite influence on the physical or mental development of the normal or subnormal child.

In January last the Board approved the provision of accommodation at St. Mary's Hospital for Children for 36 girls and 24 boys suffering from rheumatic fever, acute endocarditis, and chorea, and, following a suggestion by Dr. Gordon Pugh, the Board decided later that these beds should be utilized for research, particularly of a bacteriological nature. Dr. Pugh contributes an interesting article on the general subject, but, of course, this experiment is too recent to admit of any report as yet.

#### A VISIT TO THE ISLAND OF TRISTAN DA CUNHA.

We are indebted to the Medical Research Council for a copy of a communication based on a report made by Dr. E. H. Marshall, surgeon to the *Discovery*, of a visit to Tristan da Cunha during the recent voyage of that ship. The visit was made on January 30th, 1926, and lasted two days.

Dr. Marshall recalls first the history of the peopling of Tristan da Cunha. The islanders are descended from seven British men who married coloured women from St. Helena and the Cape a century ago. On only a few occasions has other blood been introduced—once when Peter William Green, a Dutchman, was shipwrecked in 1846; once in 1856 when Hagan and Rogers came to the island from America; and again when Repetto and Lavarello, Italian sailors, were shipwrecked in 1882. In recent times Robert F. Glass, head-

man of the present colony, who is a grandson of Corporal Glass, returned from the Cape with a Cape woman as his wife. The population of the island on February 1st, 1926, numbered 141 (75 males and 66 females), sixty-nine were adults, twenty-one were between the years of 14 and 21, and fifty-one under 14 years of age. Of the children under 14, twenty-three were under 4 years and four births were expected before May. There were only three persons over 80, all women, the oldest being aged 89, a remarkably well preserved woman. The oldest male on the island was aged 68. Two deaths had taken place since the island was last visited—one of a woman in December, 1925, aged 73, and one of a premature female child who lived for six days. The education of the islanders has been dependent on the efforts of clergymen, who at intervals of twenty years or so have lived on the island for periods of two to three years. It is not surprising, therefore, to find very few who can read and still fewer who can write. It has been stated that the islanders appear stupid. This has arisen through not realizing that they have a dialect of their own with a very limited vocabulary. They are extremely sensitive about their lack of education and little knowledge of English, and this constitutes an obstacle to any scheme of emigration or even temporary employment outside the island.

For trade the islanders have always depended on supplying ships with fresh meat and potatoes, in return for flour and other articles they are unable to produce themselves. Since the advent of steam and the discovery of fresh whaling and sealing grounds further south, this trade has disappeared and only an occasional sailing ship or whaler now ever calls at the island. Mr. Robert Glass stated that the domestic stock on the island consisted of cattle and sheep, some donkeys, a few pigs, and some hundreds of fowls and geese. There were 245 plots of land, varying in size from 20 to 40 yards square, planted with potatoes. The appearance of the islanders did not suggest that they were suffering from the effects of shortage of food. The men are of good physique and above the average height. The women, who work in the fields, appeared superior to the men and have a deportment reminiscent of a bygone age. Their clothes are tidy and they are cleanly in their persons. The children were quiet, well behaved, and appeared well cared for. Very few of them, and only a small percentage of the young adults, show traces of their coloured ancestry, whereas among the older inhabitants this is marked. During the visit six cases of asthma and chronic bronchitis, all of long standing, were treated. Several of the islanders complained that after ships call an epidemic of "colds" runs through the island, lasting for about three weeks. Two cases of chronic rheumatism and a few minor medical and surgical cases were seen. Robert Glass has charge of a well equipped ship's medicine chest. During the last twenty years at least the island has gained a certain notoriety by pleading for support from the outside world because of failure of the potato crop and destruction of stock during severe winters. Though hardships may have followed these calamities, it is extremely improbable that the islanders have been near starvation. It appears that fish are plentiful and easily caught, but are not popular. Hens' eggs are scarce and are consumed mostly by the wealthier families. Mollymawk eggs are taken in large quantities, and 30,000 penguin eggs are collected annually. Young mollymawks are eaten in large quantities. According to Mr. Glass 7,000 were taken during January. The islanders also go to Inaccessible Island to collect and salt these birds. It was said that cattle and sheep were mostly kept for trading purposes. As trading has practically ceased, it might be supposed that they are now more frequently consumed by the islanders. Milk is nearly always plentiful, but for long periods the islanders are without tea, coffee, and sugar. Butter, jam, and marmalade are only very occasionally available, and the inhabitants are dependent on trading for bread, as no wheat is grown. Their main source of carbohydrates is potatoes. Onions, pumpkins, turnips, carrots, beetroot, and leeks are grown, but in comparatively small quantities. It will be seen that the outstanding shortages are flour, sugar, jam, and tea. In sailing ship days there were frequent opportunities for



bartering for these commodities. Though the islanders have now almost to do without these articles, there seems no reason to think that their health has suffered. Out of 50 persons examined, only 6 admitted that they suffered from indigestion or flatulence, and these cases were of some years' standing. The Dental Committee of the Medical Research Council had suggested that if the opportunity arose the condition of the teeth of the islanders should be investigated, and just over one-third of the islanders were examined for dental caries, and the results were tabulated as follows:

*Analysis of Cases Examined.*

Age Period:	3-14.	15-20.	21-44.	45-90.
Number examined ... ..	13	8	21	12
Number of teeth ... ..	290	235	662	337
Number of carious teeth ... ..	2	0	11	21
Number of carious mouths ... ..	1	0	5	8
Number of teeth missing ... ..	0	0	6	45
Percentage of carious teeth ... ..	0.68	0	1.6	6.2
Percentage of carious mouths ... ..	7.6	0	23.8	66.6
Chronic general periodontitis ... ..	0	3	14	7

Thus the incidence of dental caries is remarkably low, and would probably appear still lower if opportunity had presented itself to examine all the community. The teeth examined were almost without exception regular and well shaped. Although in no case did anyone admit to cleaning his or her teeth more often than once a week, and then only with finger and soap, the teeth were clean and remarkably free from salivary calculus. It is probably correct to say that the islanders, as a whole, never clean their teeth. Chronic general periodontitis was present in various stages in no less than 58.5 per cent. of those examined between the ages of 15 and 90. This is probably not a disease of recent origin in the island, since histories, dating in some cases more than twenty years back, were given of teeth becoming loose and falling out without showing signs of caries. How far a shortage of sugar and jam has prevented the spread of caries, and what influence the large consumption of potatoes, on which the islanders rely almost exclusively for their carbohydrates, has had on the incidence of chronic general periodontitis are matters for discussion.

It is evident that the population of the island is increasing. The health of the community is good and there are no signs of mental or physical degeneration due to intermarriage. There are signs that, in spite of there being no currency, property is passing into the hands of a few. For one reason or another the older islanders will never leave the island of their own free will, and the younger ones have little or no opportunity of leaving, however much they may desire to do so.

## England and Wales.

### REPORTS OF SCHOOL MEDICAL OFFICERS: LIVERPOOL AND MANCHESTER.

The annual report of the school medical officer for Liverpool illustrates the growth and success of the work of school medical inspection and the treatment of defective children. Some difficulty is experienced in getting children to attend the clinics owing to the loss of school attendance marks, and it is stated that "the present regulations of the Board of Education dealing with this point not only hamper the work of medical treatment, but also involve the education committee in unreasonable loss of grant, and it is greatly to be hoped that this important matter will receive the very careful consideration of the Board." A great improvement in cleanliness is reported, not only in the diminution of the number infected, but also in the degree or extent of infection in those children who are not

perfectly clean. The teachers co-operate wholeheartedly in this work, and some have rendered valuable help by interviewing difficult parents. There has been a diminution in the incidence of malnutrition, but there are still far too many children undernourished or debilitated. "It must not be assumed that this is necessarily due to poverty, for many cases come from homes where this factor can be ruled out, whilst well nourished children are met with in poor homes." Of the many contributory causes improper feeding is held to be the chief. There is too much starchy food in the form of bread and potatoes, and too little fat and animal food. Fresh milk has been largely displaced by the use of tinned milk. Education is needed, and much can be done by teaching the senior boys and girls the elements of hygiene. An inquiry into vaccination showed a satisfactory percentage of vaccinated children; the unvaccinated totalled 16.3 per cent., as against about 56 per cent. for the whole of England and Wales. Among minor ailments septic sores and impetigo head the list. Ringworm has declined, and cases are readily cured by the use of x rays; only 179 are now out of school from this cause, as against 288 in the same period five years ago. Scabies continues to decline owing to the work of the cleaning stations. Tonsils and adenoids show a slight increase, as does middle-ear disease. For the treatment of the latter zinc ionization bids fair to be a real success. The amount of dental treatment given continues to increase, owing to propaganda work amongst the children and parents; there is an increased acceptance of the treatment, but there is the handicap of the loss of school marks during attendance. The incidence of stammering has been investigated; as many as 600 cases were noted, boys preponderating in the proportion of 5 to 1. So far no special classes have been formed for these children in Liverpool. One of the rare disadvantages of school treatment is shown in the record of squinting children; it is found that parents deliberately postpone treatment, knowing that this will be forthcoming when the child goes to school! It is urged that the early provision of glasses in pre-school life, with the increased chance of cure of the squint and the retention of vision, is of greater importance than operations later in school life. A special investigation of the hygienic condition of the school buildings was undertaken during the year. On the whole the report is fairly satisfactory. The worst feature is the position of the desks in the classrooms. Only 40 per cent. of the total were entirely satisfactory from the point of lighting. The older schools were the worst, and in these the desks could not be rearranged. Dealing with special schools, note is made of the success of the defective vision classes (myope classes). There is evidence of a personal contact between teacher and child, and the atmosphere of a happy family. The children are interested in their work, and the change in demeanour is marked. Antipathy to these classes is now rarely met, and parents are increasingly anxious to avail themselves of the advantages they offer. Advice is given on after-employment, and parents often regret when the period of ocular supervision is ended. "Experience confirms the view that the care and discipline learned in the classes is continued in after years, and thus materially reduced the risks of serious eye complications to which so many of these children are prone."

The annual report of the school medical officer of the sister city of Manchester gives a most dramatic chart of the progress of the work during the past ten years. The contrast with 1915 is remarkable. There has been a steady increase in the discovery of defects and in securing treatment for them. Note is made of the work of the school medical officers. The number of cases to be examined each hour has been reduced from ten to eight, as the larger number did not secure the best results. Uncleanliness has declined, so also have tuberculosis, skin diseases, and external eye diseases. The number of cases of enlarged tonsils and adenoids treated has increased, and the results have been satisfactory; the same is true of ear disease; here the detection of early cases has added to the total. Deafness was found to be cured or improved in 99 per cent. of cases. Zymotic diseases are held to be the outstanding cause of these defects. "The 'dummy' is," it is said,

"too often blamed for the condition. When a child is sucking at its 'dummy' it is obliged to breathe through the nose—and the mouth of the young is intended for suction, since all its food is taken that way." Ionization for otorrhoea has given variable results, and there has been a tendency to relapses; better results are obtained by following on at once with aural lavage, etc. Approval has been obtained for the formation of a day open-air school. There are many mentally defective children not in special schools, either because they live too far away or there is no place for them. These are examined periodically. It is very noticeable that the older these children get the less they are able to keep pace with the normal children; moreover, their instability of character and general lack of common sense render them a source of trouble and irritation in a class. There is a record of a special investigation into the "fitness of schoolboys," which is excellently worked out and of much value. Random samples of boys in a higher-grade school and an elementary school were compared. Boys in the higher-grade school showed a percentage "above normal" of 64, as against 30 in the elementary school. It is added that "the contrast possibly shows the effects of the operation of favourable and unfavourable environment, but the inherited characters of the boys also operate." The report of this investigation is worth study.

#### CITY OF CARDIFF MENTAL HOSPITAL.

In his eighteenth annual medical report, Dr. Edwin Goodall, medical superintendent of the City of Cardiff Mental Hospital, discusses the difficulties of assessing the value of inherited factors in the causation of mental disorder, excluding those in which no history was given. Heredity of some kind was elicited in 41.9 per cent. of the direct admissions during 1925, but Dr. Goodall points out that no reliable conclusions can be come to until comparative statistics are available, showing to what extent a given number of persons who have not shown mental disorder have inheritance of mental and allied disorders, in comparison with a like number who have become insane with like inheritance; obviously, a very difficult line of inquiry. Dementia paralytica accounted for 13.58 per cent. of the admissions. The number of patients discharged recovered was 74, giving a recovery rate of 40.2 per cent. Research has been carried out on the estimation of phosphorus and calcium in the blood plasma and cerebro-spinal fluid, and on the presence of porphyrin in faeces. The visiting Commissioners have expressed their satisfaction at seeing so steady an output of research and therapeutic work, affiliated in increasing extent to that of the Royal Infirmary and the University, and at observing the team work of which every new admission has the full benefit.

#### CENTENARY OF NORTH DEVON INFIRMARY, BARNSTAPLE.

On August 15th, 1826, the North Devon Infirmary opened its doors for the first time to patients, and at Barnstaple and elsewhere in North Devon 100 years later the centenary was observed as a day of rejoicing and of renewed effort. Special thanksgiving services were held in several churches in the morning, and in the evening at the War Memorial in Rock Park. Under the presidency of the first Earl Fortescue the inaugural meeting of the founders of the institution was held in March, 1824. The foundation stone of a building to contain twenty-two beds was laid in the following January, and four years after the infirmary began work a wing was added for infectious cases. The chief difficulties of the earlier years appear to have been financial or due to undisciplined patients. The importance of good ventilation and sanitation was recognized practically as early as 1841. In 1857 the drainage system was thoroughly overhauled and a good water supply obtained; from that time it is noted that baths ceased to be regarded as mere luxuries. On the death of Earl Fortescue, the first patron, in 1861, a new wing containing two wards was erected to his memory, and in 1880 Dr. Richard Budd, who had been physician to the infirmary for nearly forty years, devoted the financial testimonial presented to him on his retirement to the erection of an out-patient department, which was

opened in 1882. In the next year another wing was added and beds were endowed, while in 1889 the operating theatre was reconstructed and refurnished. The formation of the Ladies' Association in 1894 was followed by a long series of numerous valuable additions to the infirmary, including the provision of an electric lift in 1921, an x-ray installation in 1924, and a new operating table. In 1906, as part of an extensive scheme of structural alteration, sanitary towers were built, a new isolation ward was added, and the out-patient department was enlarged and improved. In 1922 the system of contributions by patients was begun, and in 1925 the lady almoner collected £555 from this source alone. In celebration of the centenary, in connexion with which a souvenir pamphlet has been issued, an appeal is being made for £10,000 to constitute a re-endowment and building fund; a sum of £7,000 has already been received. The opening of a maternity ward is proposed, and provision is to be made for the outdoor treatment of cases of surgical tuberculosis. The expenditure for 1914 was half that of 1924, but the annual income has risen from £2,838 in the first year to £5,059 in 1924. It is hoped that the present appeal will enable an additional annual income of £500 to be provided.

#### LIVERPOOL STANLEY HOSPITAL.

It was stated at the fifty-ninth annual meeting of the Liverpool Stanley Hospital that for the first time in the history of the institution the annual income had exceeded the expenditure. The Lord Mayor, who presided over the meeting, while praising the enthusiastic work of the hospital committee and the supporters of the hospital in general, said that there was still a large debit balance; during the past year, however, it had been reduced, and it was hoped that before very long it would be extinguished. In the course of the previous year the entire cost of new x-ray apparatus had been defrayed by an anonymous donor, and the London, Midland and Scottish Railway Company had given £600, a sum which it was hoped might be increased during the current year. Treatment had been given during 1925 to 1,718 in-patients and 19,757 out-patients, and there had been 67,822 out-patient attendances. Sir Benjamin Johnson referred to the steady gain in popularity which had now resulted in the Stanley Hospital being regarded as one of the leading hospitals in Liverpool.

## Scotland.

#### AFTER-EFFECTS OF ENCEPHALITIS LETHARGICA.

THE Scottish Board of Health has issued a circular dealing with the hospital treatment of persons suffering from the after-effects of encephalitis lethargica. It deals particularly with the Glasgow area, but has general reference to the whole of Scotland. The disease was made notifiable in Scotland in December, 1925, but it is noted that, while it must be regarded as infectious, the infectivity is certainly low and little is known of the way in which it is disseminated. The handling of cases in the acute stage is, on account of their relatively small numbers, well within the scope of existing infectious diseases hospitals, but a difficult problem is offered by the patients who, on account of the prolonged or permanent nature of the after-effects, tend to accumulate as subjects requiring hospital treatment. Neither hospitals for incurables nor those for infectious diseases are in a position to provide the special treatment and nursing required. A conference was held last March between representatives of local authorities and of the parish council of Glasgow to consider what action should be taken in regard to late stages of this disease. The general feeling of the meeting was that the local authorities should accept responsibility for their treatment, except in cases where the patients, on account of their mental condition, required treatment in a mental hospital. It was agreed that individual local authorities could not by themselves deal with the problem, but that if they could send their cases to a central institution they would fall in with the proposal. The parish council of Glasgow subsequently offered to make

beds in Stobhill Hospital, Glasgow, available for this purpose. About forty or fifty cases could be accommodated in a separate block at Stobhill Hospital, and the provisional terms proposed are 7s. a day, although it is pointed out that owing to the exacting demands such cases make on the time and care of nurses it may be necessary to revise this offer. All applications for the admission of cases to the hospital must be made to the Board of Health, who will decide whether the symptoms and circumstances of the patient justify his admission. All applications, therefore, must be made by or on behalf of local authorities, on a special form (to be obtained from the Board of Health), signed by the medical officer of health of the local authority concerned. The selection of cases for admission will be made primarily on the ground of domestic difficulty, and patients suffering from symptoms of the chronic Parkinsonian type—that is, who are bedridden and in need of constant attention—will receive special consideration. Any patient who, subsequent to admission to Stobhill Hospital, may be certified as insane will be removed to an asylum under arrangements to be made by the local authority by whom the case was sent to Stobhill.

#### BENEFITS OF VOLUNTARY HOSPITALS.

St. Margaret's Hospital, Auchterarder, which has been built, equipped, and endowed by Mr. A. T. Reid of Auchterarder House as a memorial to his parents, was opened on August 14th by the Duchess of Atholl, M.P. The hospital has been erected at a cost of about £10,000 and endowed with an income of approximately £1,000 a year. It stands in three acres of ground and has accommodation for fourteen beds, with operating theatre, dispensary, and other necessary adjuncts. The Duchess of Atholl, in declaring the hospital open, said that even before the war many persons had considered the days of voluntary hospitals to be numbered, and with the development of school medical services and other State responsibilities, some persons had wished the State control to be increased until no field was left for voluntary effort. These fears had increased since the war, and about the year 1920 many hospitals, especially in the south, had been in a perilous condition, from which they were saved only by a timely grant of about half a million pounds by the Government of the day. A wider recognition of the benefits that voluntary hospitals brought to the community had, however, arisen, and voluntary hospitals were now largely financed by the people for whom they were directly intended. It was a satisfaction for those who planned and gave generously to inaugurate such institutions that they are appreciated by those they were intended to benefit, and that these persons gave readily for their support. Voluntaryism to-day was stronger than many would have thought possible ten or fifteen years ago. While the recognition of responsibility by the State and by local authorities in the matter of health was welcomed, the community felt that any deterioration in the strong element of voluntaryism, which had been a part of Anglo-Saxon society, would be an impoverishment of national character. One great need that would be met by the founding of the new hospital was prompt surgical aid in cases of accident, which were nowadays more numerous than formerly. In other ways it would prove an inestimable boon to people in the surrounding parishes who needed institutional treatment, and who preferred to have that treatment under their own medical practitioner. Lord Haldane proposed a vote of thanks to the Duchess of Atholl.

#### TEACHING THE DEAF.

At the 116th annual meeting of the Edinburgh Royal Institution for the Education of Deaf and Dumb Children, a demonstration of teaching methods was given in the gymnasium of the institution, and Mr. Barker, the headmaster, explained that there were two methods of teaching the deaf, both of which were employed in this school. These were the speech method and the method in which the language of finger signs was used. In dancing even the youngest pupils developed the sense of rhythm which hearing children acquired by the ear. The chairman, in moving the adoption of the report, said that recent inven-

tions like the telephono, the gramophone, and wireless telegraphy seemed to widen the gulf between normal persons and those whose organs of speech and hearing were impaired. It was interesting to recall that Graham Bell, famous as the inventor of the first telephone, was also famous for the improvement he introduced into the teaching of the deaf and dumb. This teaching was now producing remarkable results. He referred to the great praise which had been pronounced by the Scottish Education Department upon the admirable way in which this teaching was conducted, and he warmly congratulated the headmaster and staff. He referred also to the fact that a very large percentage of old pupils of the institution were now wage-earners. It was well that great attention was paid to the physical development of the pupils, and an interscholastic blue ribbon, the Lindsay swimming cup, had this year been carried off by this institution. It had not yet been sufficiently recognized by parents and education authorities that it was extremely important that the education of the deaf child should be begun at a very early age—if possible, during infancy. In conclusion, he appealed to the public for increased financial support.

#### EDINBURGH CLINIC FOR SURGICAL TUBERCULOSIS.

In connexion with the Municipal Tuberculosis Scheme, Dr. William Robertson, M.O.H. for Edinburgh, has issued a circular stating that an additional clinic for cases of surgical tuberculosis has been instituted at the Royal Victoria Dispensary. This clinic will be held on Wednesday afternoons at 3 o'clock, and medical practitioners are invited to avail themselves of the opportunity to send any cases in which advice and suitable treatment are required. It is intended shortly to install ultra-violet ray lamps at this centre for the purpose of making this form of treatment available to out-patients for whom it may seem desirable.

## Ireland.

#### THE FREE STATE CENSUS OF 1926.

THE Free State census of 1926 records a decrease of 166,886 (5.3 per cent.) in the population of the twenty-six counties during the fifteen years beginning April 2nd, 1911, and ending April 18th, 1926. The salient points of the report issued by the Director of Statistics show that since April 2nd, 1911, the population of all Ireland decreased from 4,390,219 to 4,229,124—161,095, or 3.7 per cent.; Free State decreased from 3,139,688 to 2,972,802—166,886, or 5.3 per cent.; Northern Ireland increased from 1,250,351 to 1,256,322—5,791, or 0.5 per cent. There were 1,506,916 males and 1,465,886 females in the Free State as compared with 1,589,509 males and 1,550,179 females in 1911. There are 973 females to every 1,000 males in the Saorstát to-day, whereas in Northern Ireland there are 1,065 females to every 1,000 males. In Ireland as a whole there are 999 women to every 1,000 men. The political changes in the last intercensal period (resulting in particular in the withdrawal of British military forces), and the deaths of Irish soldiers in the European war, tended to retard the decline of the female-male ratio. In Dublin, as in other cities, the female population exceeds the male, while in the country districts and small towns there is a male excess. A disturbing, but hardly unexpected, feature of the census is the consistent movement of population to the towns. In 1841 the town population of the Free State was 1,266,324. In 1861 a decline set in, and continued until 1891, when the movement towards the towns began anew. In 1891 the town population was 1,053,757; to-day it is 1,095,188, while the country population during that period has fallen from 2,154,848 to 1,877,614. One of the most remarkable decreases has been in what the returns describe as the country population of the Free State. The total number of this class of resident in the year 1841 was 5,281,328; since then it has steadily decreased, and has now been reduced to 1,877,614. The town population in the same period has decreased by only 171,136 persons, but as compared with the 1911 figures shows an increase of 28,213, the total in 1926 being 1,095,188. The figures for

Dublin city and the four adjoining urban districts are 419,156, which, compared with 1911, is an increase of 21,559, and with 1901 an increase of 44,021. The most recent censuses (all in 1920 or 1921) of the countries to which the people of Ireland emigrate in the largest numbers throw a valuable light on Irish emigration. To illustrate the large number of Irish-born persons living in other countries it may be mentioned that there were 1,037,234 such persons living in the United States, and 367,747 in England and Wales; altogether the number of Irish-born persons living in other countries is no less than 43 per cent. of the population of Ireland in 1926, a proportion which makes Ireland unique amongst the countries of the world. This exiled population must in itself attract a large number of emigrants, relatives and friends of the exiles, every year, no matter how prosperous conditions are in Ireland.

## Correspondence.

### MINER'S NYSTAGMUS.

SIR,—The letters on the subject of miner's nystagmus which have appeared in your issues of August 14th (p. 323) and August 21st (p. 361), from the pens of Dr. Vernon and Mr. A. S. Percival respectively have been of special interest to me. I venture to think that the defective illumination theory of the causation of miner's nystagmus has entirely broken down; as a corollary of that opinion, I think that the whole subject must be reinvestigated. My reasons for that view are given in various publications, particularly in the *Lancet*, May 23rd, 1925, the *Glasgow Medical Journal*, March, 1926, and in the *Transactions of the Institution of Mining Engineers*, vol. lxxi. The last mentioned contains, not only my paper, but also a very full discussion of the subject. To these publications I would respectfully call the attention of Dr. Vernon.

My reason for intruding at the present moment is once more to point out that coal-mining does not require macular vision at all, nor, in my opinion, does almost any other form of manual work. So far back as the meeting of the British Medical Association in Toronto (1906) I called attention to the fact that miners who have high degrees of myopia, say between ten and twenty diopters, are in no way inconvenienced thereby in their work. With ten diopters the remote point of macular vision is approximately at four inches, and with twenty diopters it is approximately at two. Now miners with such high errors of refraction can mine coal quite easily and that without bringing their faces to four or to two inches from the coal surface.

The important visual factors in coal-mining are (a) field vision, (b) alignment, (c) actual distance. There is this peculiarity about field vision, that its usefulness does not, to any extent, depend on the correction of errors of refraction. A man with a high myopia is quite capable of seeing a tramcar at a very considerable distance. If a would-be traveller, with four diopters of myopia, had to bring his face to within ten inches of the car before he saw it, then, for him, travelling would be an impossibility. The same remark holds true in navigational matters, as I showed many years ago in the *Liverpool Journal of Commerce*. A man on the look-out with three or four diopters of myopia—an amount which would, even in health, reduce his vision to about 6/60—is as competent as an emmetrope to pick up objects at sea, always provided that, apart from the myopia, the visual apparatus is perfectly healthy.

The question of alignment is very important; a simple experiment will illustrate its function. I take two small coins (shillings or halfpennies) and place one of them to be used as a fixation object on a table. The other is placed on the same table at a considerable distance from the first. I now find that while I look steadily and constantly at the first I can, at any time, without any difficulty strike the other with my outstretched hand or with a stick if the distance be too great. That roughly illustrates what I mean by alignment, and further proves that macular vision is not required to strike an object eccentrically placed in the field of vision.

Another illustration of the same thing is seen in the use of a sledge-hammer. The hammerman cannot with his

macular vision fix the object which he is going to strike for the violent movements of his body prevent him doing so.

I have elsewhere discussed the estimation of distance ("Psychology of vision," *Glasgow Medical Journal*, 1921), and therefore will not prolong this letter: I only wish to repeat that manual work, including coal-mining, does not involve visual acuteness in the ordinary acceptance of that term, but it does involve field vision, proper alignment, and the estimation of distance.—I am, etc.,

Glasgow, Aug. 25rd.

FREELAND FERGUS.

SIR,—With reference to the discussion now taking place in your columns on the subject of the etiology of miner's nystagmus, may I point out that the late Dr. W. H. R. Rivors in 1920 was firmly of the opinion that the disorder was psychogenetically determined, that it was, in fact, an occupation psychoneurosis?

At his instance I was appointed to investigate the psychological aspects of the disorder under the direction of the Medical Research Council. My findings were summarized in a short paper, "The psychoneurotic aspects of miner's nystagmus" in the *Journal of Medical Psychology* (1923), and, in greater detail, in "The mental factor in miner's nystagmus" in the *Journal of Mental Science* (April, 1926).—I am, etc.,

H. WILFRED EDDISON, M.B., D.P.M.

Epsom, Aug. 23rd.

### OBSTRUCTION AT THE VESICAL OUTLET AFTER PROSTATECTOMY.

SIR,—In reply to Mr. Irwin's letter (August 14th, p. 324) he and I must agree to differ on the subject of perurethral diathermy in the treatment of certain fibrous types of prostatic enlargement.

I make it a practice to follow up all cases of prostatectomy, using the cystoscope to anticipate any possibility of post-operative obstruction. Where this is not done, but the patient is still able to micturate naturally, it is sometimes difficult, but not impossible, to find an opening, providing an operating urethroscope is used. The early stages of dilatation can then be effected either by the passage of a small expanding dilator (see Canny Ryall, *Operative Cystoscopy*, p. 43 et seq.) or of a guide, to which successive sizes of followers can be screwed after withdrawal of the urethroscope. The passage of the Kollmann's dilator should then present no difficulties, and both this and the treatment mentioned above can be painlessly employed providing efficient local anaesthesia is secured. I have at the moment two patients under my care in whom the curved Kollmann's dilator is being used at weekly intervals and who both continue to attend regularly.

Routine packing of the prostatic cavity is too widely employed to warrant discussion, and serves the double purpose of controlling post-operative haemorrhage and minimizing the possibility of obstruction. These, in my opinion, outweigh other less possible dangers to the patient, the attendant discomfort yielding readily to suitable drugs.—I am, etc.,

J. C. AINSWORTH-DAVIS, M.B., F.R.C.S.E.

London, W.I., Aug. 20th.

SIR,—In Mr. Irwin's reply to Mr. Ainsworth-Davis on urethral obstruction following suprapubic prostatectomy, he states that "in these cases it is sometimes impossible to find an opening at all, and frequently difficult to get a fine bougie through." With this I entirely disagree, for with a suitable urethroscope the opening into the bladder can always be seen, and can be enlarged by operating through the urethroscope. The instruments available for perurethrosopic operations are many and varied, and include bougies, knife, scissors, expanding dilators, and the diathermy electrode. Local anaesthesia suffices in these cases for painless operation. Subsequent treatment consists in the weekly passing of graduated steel bougies, or the efficient use of a Kollmann's dilator. In these days it should seldom be necessary to reopen a bladder in order to treat a stricture which is a direct consequence of prostatectomy. Mr. Irwin also refers in disparaging

terms to the routine use of packing the prostatic cavity. Personally my routine is to pack for twenty-four hours, after which the bladder is irrigated daily by the Janet method, and steel bougies are passed once or twice in the third week. Most patients on whom I have operated for enlargement of the prostate attend my clinic for urethroscopy at intervals of three months, and I find that instances of post-operative stricture are so rare and so easily treated that I seldom feel that it would have been to the patient's advantage to have been subjected to the Thompson-Walker modification of Freyer's suprapubic prostatectomy.—I am, etc.,

London, W.1, Aug. 21st.

F. McG. LOUGHNANE.

## RECOVERY AFTER MASSAGE OF THE HEART.

SIR,—In the JOURNAL of August 21st (p. 342) Mr. R. M. Glover makes reference to a letter of mine (BRITISH MEDICAL JOURNAL, May 22nd, 1926) commenting on a contribution of Mr. Girling Ball's under the above heading: may I be allowed a few words in reply?

Everyone interested in the problem of resuscitation will welcome Mr. Glover's letter. It supplies just the information needed, in this case the proof, that massage of the heart *alone* may suffice to restart the heart, after the failure of other physical means (change of posture, tongue-traction, hot applications, artificial respiration), applied for several minutes. His letter therefore reinforces the evidence in favour of the value of heart massage, but it does not invalidate my criticism that in Mr. Girling Ball's case another agency which had been introduced, adrenaline, might have been itself the *causa causans*, or, failing that, a *causa contribucens*. For exactly the same kind of evidence which Mr. Glover brings forward is advanced by Dr. Carl Bodon (Lancet, March 24th, 1923) to prove that adrenaline *alone*, injected directly into the heart, may suffice to restore the heart's action. His case went on to complete recovery.

In respect, then, of these two remedies, honours seem to be easy, with perhaps a slight advantage in favour of the chemical stimulant, as yielding a quicker cardiac response (half a minute as against two minutes), and as being more rapidly applicable.

The conclusion to be drawn, in my opinion, is that adrenaline in 1 c.cm. ampoules should always be in readiness in the operating theatre and the ward, and should be injected at once, as a first act, in such cases; and that failing response within, say, two minutes the surgeon should have recourse to heart massage.—I am, etc.,

London, W.1, Aug. 21st.

HARRINGTON SAINSBURY.

## MILK AS A GROWTH STIMULANT.

SIR,—Referring to the mention in your issue of August 14th (pp. 312 and 317) of the increase of weight in school-boys of 7 to 12 years of age by a daily pint of milk, it is interesting to speculate whether any advantage ultimately accrued to them from the increased rate of development during these ages. Certainly the increase would be artificial, as our remote ancestors would not have had these opportunities in the early times when the genus was developing, and the question arises as to whether the human or other mammal can be ultimately increased in size by better feeding than the average.

Horsekeepers believe that a well fed colt will eventually be bigger because he grows faster than a badly fed colt, but I do not think there is any real evidence to this effect. The object in the case of thoroughbreds is to race them when they are mere babies of 2 years old, but it is doubtful when they are mature if they are any the better for it.

Again, there is the question when and how the hypophysis and the other glands regulating growth cease their action, whether time is the essence of the effect produced, whether their action is for a definite time or a definite amount of growth, and whether better or worse nutrition eventually makes any difference in the size of the mature animal.

It would be interesting to have any evidence on this score, as it has an important bearing on the general desire to force on the growth of the young animal.—I am, etc.,

Ingleton, Aug. 26th.

SHEFFIELD NEAVE.

## THE LIVERPOOL CANCER RESEARCH ORGANIZATION.

SIR,—We propose to hold in Liverpool clinics and demonstrations of the methods employed by us in the treatment of malignant disease for clinical pathologists attached to clinics and hospitals of standing, in order that they may have the opportunity of studying at first hand the details of this work.

Subsequently "choriotrope" will be obtainable for use in the treatment of the patients of those who are attached to the clinics concerned. It is suggested that the clinical pathologists who attend the demonstrations make themselves responsible for the full and proper conduct of the examinations required in every case subsequently treated under their guidance, and that no publication regarding results be published for, say, three years.

It must be understood that the entire clinical staff of the Liverpool Cancer Research Organization is on a part-time basis, and, therefore, that members cannot place themselves entirely at the disposal of those attending, nor can these demonstrations be repeated except at long intervals, and then only to limited numbers. Consequently it may be necessary for a selection to be made from those applying if there be too many at one time. A certain number of invitations have been issued to those who have already expressed a desire to attend; but a few further applications are now invited.

The demonstrations will be chiefly conducted by Dr. Leslie Cunningham, assistant director of the Organization, and will commence at 10 a.m. on Monday, September 6th, and continue until Wednesday, September 15th.—I am, etc.,

Liverpool, Aug. 20th.

W. BLAIR BELL.

## THE FUNCTION OF THE SPLEEN.

SIR,—In the interesting annotation on the function of the spleen in your issue of August 21st (p. 352) it seems to me that the terms *hypotonic* and *hypertonic* are rather loosely used, as illustrated in the following sentences:

"It is therefore concluded that the blood of the spleen is a selected blood, and that it is less resistant to hypotonic solutions. When haemolysed by saponins the blood of the spleen is more resistant than the cells of the general circulation. From other observations it is inferred that the lessened resistance to *hypertonicity* and the greater resistance to saponins are due to a smaller content of phosphoric acid."

In hypotonic and hypertonic solutions, so far as the red cells are concerned, the osmotic current is reversed, and when they were haemolysed, by whatever agent, I should have thought that their resistance would have disappeared.

It is, or should be, well known that concussion of the sixth and seventh cervical spines dilates the spleen, and concussion of the second lumbar vertebra contracts it. The late Albert Abrams used these manipulations in the treatment of many infectious diseases by what he termed "splenic sterilization."—I am, etc.,

JAMES BARR.

Liverpool, Aug. 21st.

## MEDICAL DEFENCE.

SIR,—This matter cannot be left in the position in which it emerged from the Annual Representative Meeting.

The result of the discussion is a little baffling. A resolution was tabled from the North of England Branch urging a complete and comprehensive cover of the legal liabilities of a doctor arising from the practice of his profession. A speaker on behalf of the English defence societies declared that the societies would not give such a cover, whereupon the mover of the resolution "expressed himself quite satisfied, and leave was given to withdraw the motion."

This result will not be satisfactory to the North of England Branch and those of us who have been urging the matter on the societies for the last twelve months. Little more than a year ago we thought that all our burdens would be borne by the society to which we belonged. This fond hope was shattered by the report of the solicitor to the Medical Defence Union, Limited, in its last published annual report.



It will be well to emphasize again the limits of the protection afforded by the English societies.

1. A member of either society may be covered for his own acts or omissions.
2. A member of either society may be covered for the acts or omissions of his assistant, locumtenent, house-surgeon, or other subordinate medical officer who is also a member of either society.
3. A member of the Medical Defence Union, Limited, may be covered for the acts or omissions of his locumtenent who is not a member of either society.
4. A member of the London and Counties Medical Protection Society, Limited, will not be covered for the acts or omissions of his locumtenent who is not a member of either society.
5. A member of either society will not be covered for the act or omission of an assistant, house-surgeon, or other subordinate medical officer who is not a member of either society.
6. A member of either society will not be covered for the acts or omissions of a nurse or other lay person acting on his instructions.

The word "may" has been used in tabulating the cases where a cover is afforded to emphasize a further point. Even when a case comes within this classification, after it has been qualified as a case which may be considered, there is no compulsion on the society to take up the case and defend it. The council reserves the right to take up or refuse to take up any case. Whether a member is protected or not depends on the vagaries of a committee meeting.

We are told that all the societies undertook was to defend members who are unjustly attacked, and that this was interpreted in a liberal and sympathetic manner.

Let us see how this works out in practice, remembering that the basis for action is the "unjust attack." Suppose that a certain member is threatened with an action at law because of the act of an assistant. We will further suppose that the threatened action is the most unjust that the malignity of a cantankerous patient can devise. It is quite obvious that the injustice of the action has no relation whatever to the fact of the membership or otherwise of the assistant of a defence society. Yet that is the determining factor in the case. If the assistant is also a member the society will defend the unjust action; if the assistant is not a member the society will not defend the member against the unjust attack. Judged by their own standards the societies fail in their objects and pretensions. Further, we are not asking for "liberal and sympathetic treatment." We ask for a complete protection for our legal liabilities; we are willing to pay for it, and we require that it will be a "right" and not a "privilege," free from disabling provisions and exceptions.

I have heard that the English societies say they do not intend to do this, that it is impossible, and that it will mean a prohibitive subscription. Yet the letter from the Scottish society in your issue of August 7th says they have always given this cover for assistants, etc., for the ordinary subscription. Are we to assume that what is possible in Scotland is impossible in England?

I have before me now the cover note of an insurance society promising cover

"Against all third party risks incurred in the practice of the insured's profession, including prescribing, dispensing, advice to patients, and including law costs"

for the modest sum of twenty shillings for one year.

If the English societies have spoken their last word they have clearly outlived their usefulness, and have failed to march with the necessities of the times. This matter cannot be dropped. There is too much involved in it for every practitioner. The general public is becoming more and more used to reports of doctors being sued for various alleged offences. They are becoming aware of the harm they can do a doctor even by an abortive action. The disciplinary procedure of the National Health Insurance Acts is training the public in the art of discovering the weak places in our armour and in the art of framing and sustaining complaints. We ourselves stress the point of the patient's rights in these matters in all our discussions with the Ministry of Health on the question of discipline. This matter has reached such dimensions, and the risks run by all of us are so great, that a complete protection must

be found. If the old defence societies fail us we can only look to the British Medical Association.—I am, etc.,

R. H. DIN,

Honorary Secretary, Sunderland Division,  
British Medical Association.

August 22nd.

#### DEFENCE OF ASSISTANTS AND LOCUMTENENTS.

SIR,—Dr. E. Farquhar Murray, in his letter in your issue of August 14th, complains that no reciprocal arrangement was made between the two other societies and the Medical and Dental Defence Union of Scotland. This was simply due to the fact that no new arrangement was required as far as the Scottish society was concerned. In stating that the London and Counties Medical Protection Society makes no statement on the protection of members in respect of locumtenents, Dr. Murray has evidently not seen my letter which appeared in your issue of April 17th, in which it is explained that this society has for many years protected, and still does protect, its members in respect of locumtenents.

The essential difference between a locumtenent and an assistant is that the locumtenent acts in *loco principalis*, and cannot possibly be controlled or guided by the principal, whereas the assistant is often acting under the instructions of his principal, and to some extent under his control and guidance.

The various circumstances in which qualified practitioners undertake locumtenency does not much affect the legal position as regards their principals. Dr. Murray can rest assured that it is in the interests of the above societies to give the fullest protection they can to their members, as they have really no interest apart from their members.—I am, etc.,

HUGH WOODS,

General Secretary, London and Counties  
Medical Protection Society, Ltd.  
Victory House, Leicester Square,  
London, W.C.2, Aug. 20th.

#### WEEDS, CANCER, AND ACIDITY.

SIR,—In connexion with my golf course construction work, I pointed out many years ago that weeds such as plantains, daisies, etc., will not germinate in acid soil, and quite recently the Scientific Advisory Committee of the United States Golf Association have gone into the subject very much more thoroughly and have made many experiments regarding the exact degree of acidity of soils which prevents the growth of these weeds. There is quite a simple test which estimates the exact degree of alkalinity or acidity of soil.

Since reading an account of the interesting investigations of an Indian professor (whose name I have forgotten) on the similarity between plant and animal life, described by him to the British Association, I thought it possible that cancerous growths might flourish under similar conditions to weeds in soil. There must be some determining factor that causes cancer development in one individual and not in others who live under apparently similar conditions and have been in similar contact with the cancerous germ, if there is one.

In regard to plants, roses flourish in alkaline soil, rhododendrons, gorse, heather, and fir trees in acid. Rye grasses, cocksfoot, plantains, daisies, etc., flourish in sweet or slightly acid soil, whereas the finer bent and fescue grasses require very acid conditions, and if you obtain a certain degree of acidity you get a complete freedom from plantains, daisies, clover, and so on.

Might not the degree of acidity or alkalinity of the blood and tissues be also the determining factor in the growth of cancer? If this is so, there should be no great difficulty in altering the acidity or alkalinity of the human tissues and preventing the growth of the disease.

During the last hundred years much thought has been spent and thousands of experiments made regarding the growth of weeds, and investigations have been made into the minutest details of the chemical composition and physical characteristics of soil, and finally it turns out that the solution is an extremely simple one; may not the cause and treatment of cancer be equally simple?—I am, etc.,

Moort Alerton Lodge, Leeds, Aug. 23rd.

A. MACKENZIE.

## Obituary.

### D. EDGAR FLINN, F.R.C.S.I.,

Late Medical Member, General Prisons Board, Ireland.

COLONEL D. EDGAR FLINN, F.R.C.S.I., M.R.C.P.I., died on August 18th at Dun Loughaire, co. Dublin, aged 76. He was a son of Mr. D. E. Flinn of Buenos Aires. He received his early education at the Jesuits' School at Clongowes, and his medical courses were attended at the Royal College of Surgeons, Ireland. Colonel Flinn served for twenty years in the Territorial Forces, retiring with the rank of colonel. From 1875 to 1882 he was medical officer of health in East Staffordshire. From 1895 to 1910 he was a medical inspector of the Local Government Board in Ireland, and he was then appointed medical member of the Irish Prisons Board and chief inspector of reformatories and industrial schools; he retired in 1917, and was succeeded by Dr. C. J. MacCormack. He was a member of the Viceregal Commission to inquire into the high death rate in Belfast in 1907, and of the Dublin Typhoid Fever Committee of Inquiry; he edited the *Health Record* (1890-94), and was for ten years examiner for the D.P.H. of the Royal Colleges of Physicians and Surgeons, Ireland. He was a member of the council of the Royal College of Surgeons in Ireland, Fellow of the Royal Sanitary Institute, and was president of the State Medicine Section of the Academy of Medicine in Ireland, 1894-95. He was well known in the west of Ireland, where he served through two periods for the relief of distress under the Poor Law Relief Acts in 1895-96, following a failure of the potato crop. He was the author of *Wintering Stations in Ireland*, *Rural Water Supplies in Ireland*, *The Public Cleansing of Towns*, *Irish Health Resorts*, *The Administration of the Public Health Act in Ireland*, and many contributions to medical journals.

Dr. FRANCIS JAMES McARDLE, who died recently at Durham, aged 65, was educated at University College, Liverpool, and at Newcastle-upon-Tyne, where he obtained the diploma L.R.C.P.I. in 1887. After serving as an assistant to the late Dr. Slater of Newcastle he removed to Durham in 1888, when he succeeded the late Dr. Wild of Gillesgato, and built up a very large practice. Dr. McArdle took great interest in municipal affairs, and was for some years a member of the Durham City Council; he later became a school medical officer. He was a member of the Durham Division of the British Medical Association. Some four years ago his health became seriously impaired, and since last September he had been almost bedridden.

The death occurred on August 16th, at his residence at Burntisland, of Dr. GEORGE WIGHT; he had been in bad health for some months. Dr. Wight graduated at Edinburgh University in 1903, and took the diploma in public health in 1905. He was for over twenty years in general practice in Burntisland, and had been medical officer of health for the burgh since 1910. During the war Dr. Wight served as a captain in the R.A.M.C., and saw a considerable amount of service on the eastern front. He was 45 years of age, and is survived by a wife and two sons.

The following well known foreign medical men have recently died: Dr. C. ODDO, professor of clinical medicine at the medical school of Marseilles; Dr. A. COL, professor of materia medica at the medical school of Nantes; Dr. HENSEVAL, professor of hygiene and bacteriology at Ghent University; Dr. GEORGES POJER of Paris, one of the pioneers of French laryngology and a founder of the *Bulletin Médical*; Dr. NICAY of Vichy, director of the *Journal de médecine de Paris*; and Dr. WILHELM AUTENRIETH, inventor of a colorimeter and professor of medical and pharmaceutical chemistry at Freiburg University.

## The Services.

### DEATHS IN THE SERVICES.

WITH regret we record the death, suddenly, on July 26th, of Lieut.-Colonel Rochford Noel Hunt, D.S.O., R.A.M.C., of the age of 53. He was born on December 7th, 1872, and was educated at the University of Dublin, where he took the degrees of M.B. and B.Ch. in 1900. He was commissioned lieutenant in November, 1900, became captain in 1903, major in 1912, and lieutenant-colonel in 1923. During the war he commanded the hospital ship *Acrassa*, No. 135 Field Ambulance, No. 7 and No. 42 Casualty Clearing Stations, and No. 35 General Hospital, the latter for over four years. He saw service in Egypt and France. He was twice mentioned in dispatches in 1917, was awarded the D.S.O. in 1918, and in 1919 was the recipient of the Médaille des épidémies (Vermeil), France. Heart trouble caused him to be placed on the half-pay list and ultimately to retire on retired pay on November 23rd, 1925.

Fleet Surgeon John Black Nicoll, R.N.(ret.), died in Edinburgh on July 11th, aged 87. He was educated at the University in that city, where he graduated M.D. as long ago as 1860; he took the L.R.C.S.Ed. in the same year. He entered the navy soon after, and attained the rank of fleet surgeon in July, 1882.

## Universities and Colleges.

### SOCIETY OF APOTHECARIES OF LONDON.

The following candidates have passed in the subjects indicated:

**SURGERY**.—A. K. A. Carter, M. E. M. Carter, C. E. Nicholas, J. Pattis, A. Purvis, M. Stinnesbeck, N. W. Wood.  
**MEDICINE**.—J. Dywien, R. C. Glover, K. G. B. McMahon, T. C. Palo, P. H. Row, L. Schapera, R. S. S. Smith, J. A. H. Sykes, L. D. Williams.  
**FORENSIC MEDICINE**.—N. H. Alleo, F. W. Barton, S. B. Browning, M. E. M. Carter, F. G. Hardaker, C. E. Nicholas, K. Roberts, L. D. Williams, N. W. Wood.  
**MIDWIFERY**.—C. B. Ball, A. Heukamp, W. Hinds, S. Jenkinson, H. S. Littlepage, J. B. Lurie, A. Purvis, R. I. Richards, T. W. Risleoy, J. M. F. Whitby.

The diploma of the Society has been granted to Messrs. N. H. Allen, C. B. Ball, A. K. A. Carter, W. Hinds, J. B. Lurie, K. G. B. McMahon, T. C. Palo, A. Purvis, P. H. Row, L. Schapera, M. Stinnesbeck, J. A. H. Sykes, and J. M. F. Whitby.

## Medical News.

DR. L. R. YEALLAND will open a discussion on seizures, on Wednesday, September 1st, at 9 p.m., at the Post-Graduate Hostel (Imperial Hotel, Russell Square, W.C.1), and on Friday, September 3rd, at the same hour, Dr. A. L. Gregg will deal with the sigmoidoscope in diagnosis; medical practitioners are cordially invited. On August 17th, with Dr. Long of Oklahoma in the chair, Dr. Donald Armour, introducing a discussion on head injuries, recommended an ipsilateral decompression in all cases of compression due to injuries; even the symptoms following contrecoup often yielded to it. Lumbar puncture was valuable in treating traumatic neuroses, but was dangerous in the presence of high intracranial pressure due to the possible formation of a "pressure cone." Trephining for decompression should be large. On August 19th Dr. Harold Scott, pathologist to the London Zoological Society, opened a discussion on tuberculosis among wild animals in captivity, with Dr. Simpson Wells of Cape-town in the chair. The symptoms of the disease varied in animals, birds, and reptiles, but was nevertheless intercommunicable.

THE Fellowship of Medicine announces that each week at the City of London Maternity Hospital there will be a course in obstetrics, including ante- and post-natal clinics and children's welfare clinics; application to attend should be addressed to the Fellowship. During September courses will be arranged as follows: a daily afternoon course at the Central London Ophthalmic Hospital from September 6th to October 2nd; lecture demonstrations at the Bothlem Royal Hospital on Tuesdays and Saturdays, at 11 a.m., from September 7th to October 2nd; an afternoon course at the Infants Hospital, from September 13th to 25th; four lecture demonstrations by Dr. Heald at the Royal Free Hospital, on treatment by electrotherapy, on successive Wednesdays, at 5.15 p.m., beginning on September 22nd; a comprehensive course in orthopaedics at the Royal National Orthopaedic Hospital, from September 20th to October 2nd; and an all-day intensive course in medicine, surgery, and the specialties at the Westminster Hospital, from September 20th to October 2nd. Copies of all syllabuses, the general course programme, and the Fellowship journal may be obtained from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

THE annual dinner of the past and present students of the Westminster Hospital Medical School will take place at Gatti's Restaurant, Strand, W.C., on Friday, October 1st; the chair will be taken by Mr. William Turner, M.S., F.R.C.S., at 7 p.m.

UNDER the auspices of the Smoke Abatement League of Great Britain an exhibition will be held at Bingley Hall, Birmingham, from September 6th to 18th, to demonstrate recent scientific advances towards the elimination of the polluting substances emitted from the chimneys of factories and houses. The Public Health (Smoke Abatement) Bill introduced by the Ministry of Health has already passed through the House of Lords, and has been read a second time in the House of Commons. The exhibits will include a large industrial holler-house believed to be almost perfect from the point of view of efficiency, fuel economy, labour-saving, and the elimination of smoke; an electric furnace for hardening and annealing pen nibs; a domestic section, with demonstrations of coal grates which consume their own smoke; smokeless fuel; central heating; panel heating; and the latest improvements in the application of gas, electricity, and oil for producing power.

THE President of the Board of Trade has appointed a standing committee to consider questions connected with the economic use of fuels and their conversion into various forms of energy. It seems reasonable to hope that the inquiries of this committee, of which Sir Alfred Mond, M.P., is chairman, may eventually result in recommendations which will diminish the smoke nuisance.

THE KING has granted authority to Dr. Clermout Grantham-Hill, Medical Inspector to the Sudan Government, to wear the decoration of the insignia of the Fourth Class of the Order of the Nile conferred upon him by the King of Egypt in recognition of valuable services rendered.

THE second general report of the People's League of Health covers the years 1922 to 1925. The object of the league is stated to be "the raising of the standard of health of the British Empire," and in its pursuit the league is involved in many activities. It endeavours to create an enlightened public opinion to support legislation which medical and other scientific men regard as necessary to the national health. It publishes statistics relating to the low standard of health in this country. It sends deputations to the Minister of Health to urge the adoption of health measures. In May, 1924, it held a conference at the British Empire Exhibition on "the latest knowledge regarding the causes, treatment, and prevention of disease." Lectures have been given at various centres and in prisons and Borstal institutions. The league has also awarded six travelling scholarships to enable the winners to visit for a short period foreign countries and to observe the health work done in those countries. The outstanding feature of the People's League of Health is the large and comprehensive Medical Council which supports and advises on its objects.

THE American Medical Association has issued the thirty-seventh edition of its abstract of laws and rulings regulating the practice of medicine in the several States and territories of the United States. The new edition had become necessary owing to the many changes made recently in the medical practice Acts, and the information now given is correct, so far as can be learned, down to June, 1926. In the latter half of the volume information is given about foreign medical schools, and about medical registration and practice in foreign countries. To judge from the two pages devoted to medical education in Great Britain, the information collected by the Council on Medical Education and Hospitals of the Association is reliable and correct.

DR. WALDO, coroner for the City of London and Southwark, in his report for 1925 states that 512 inquiries were held and that post-mortem examinations were ordered and carried out in all inquests of death with the exception of 18. Among the cases were 27 of suicide, 158 due to accident, and 94 to natural causes. Of the deaths due to accident 63 were caused by road vehicles—namely, 23 by motor vans, 14 by motor omnibuses, 3 by trams, 3 by charabancs, 3 by taxicabs, and 6 by motor cars and horsed vehicles; 11 pedal cyclists were killed by collisions with vehicles of various kinds. Dr. Waldo considers it a defect in the Coroners (Amendment) Bill that it does not contain a provision for the appointment of deputy coroners in districts where this cannot now be done. The worst blot in the bill, however, he thinks is that Clause 21 gives power to a coroner to order a medical practitioner to make a post-mortem examination and to dispense with a public inquest in certain cases. He considers that if a post-mortem examination is necessary an inquest also is necessary.

AT an inquest held at Nunceaton last week with regard to the death of a man, aged 52, after taking a dose of "Indian brandy," the druggist's wife informed the coroner that this was a well known preparation consisting of one part tincture

of capsicum, three parts tincture of rhubarb, and four parts spirits of nitre, and that there was no recognized dose. A post-mortem examination was performed and medical evidence was to the effect that death was due to perforation of a gastric ulcer after swallowing a mixture containing capsicum. A verdict of death from misadventure was returned.

MESSRS. LIPPINCOTT have in the press a new edition of the *United States Dispensatory*, edited by Dr. H. C. Wood, professor of pharmacology and therapeutics in the University of Pennsylvania, Dr. C. H. Lewall, dean of the Philadelphia College of Pharmacy, and Dr. H. H. Younken, professor of botany in the Massachusetts College of Pharmacy. This is the twenty-first edition and will contain about 2,000 pages. It purports to deal with all drugs and preparations of the latest United States and British *Pharmacopoeias*, and contains particulars about a large number of unofficial drugs.

THE late Dr. Ernest Septimus Reynolds, Emeritus Professor of Clinical Medicine in the University of Manchester, has left estate of the gross value of £30,183 with net personality £28,180. He has bequeathed £1,000 to the Manchester Royal Infirmary to endow a bed in memory of his work in that institution.

THE seventh annual report of the Ministry of Health (1925-26) has been published by H.M. Stationery Office, and can be obtained from it, or through any of its branches, or from any bookseller (price 3s. 6d.). The subjects dealt with in it fall under the main heads of public health, local government and local finance, poor law, national health insurance, and contributory pensions. There is a separate section on the work of the Welsh Board of Health. Most of the matters treated in it have been dealt with in official publications noticed by us on various occasions during the year.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBERS of the British Medical Association and the *British Medical Journal* are *MUSEUM 9561, 9562, 9563, and 9564* (internal exchange, four lines).

THE TELEGRAPHIC ADDRESSES are:

EDITOR of the *British Medical Journal*, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Jacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshough Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

## QUERIES AND ANSWERS.

### CHRONIC ULCERS OF MUCOUS MEMBRANES.

"A. F." writes: A female patient, debilitated by frequent pregnancies, suffers from ulcers in the mouth and (she states) similar ulcers on the vulval labia. Extraction of teeth, the substitution of artificial teeth, tonics, and mouth-washes of potassium permanganate have failed to cure the patient. "A. F." thinks the condition must be systemic, and would be glad to hear of some effective treatment.

### ASTHMA AND BRONCHITIS.

DR. WILLIAM CORRIE (London, E.C.) suggests that "P." would be well advised to give his patient the benefit of inhalation therapy. This treatment has been in practice at the big Continental spas for many years, and has given splendid results in my own and others' hands in this country in many stubborn cases of bronchial asthma. The treatment consists in giving daily inhalations by means of a special apparatus of suitable inhalants reduced to gases do very well on an aqueous solution of menthol, followed or combined with eucalyptol, menthol, and phenol. Severely treated, and the attacks tend to diminish, and finally cease altogether. The apparatus can be hired or bought in London.

## URINARY STAINS.

DR. WILLIAM CORBET (London, E.C.) writes: If Dr. A. H. Skinner of Hankow is a cystoscopist he will find that phenol red works quite well if the bladder is distended with a sterile solution of sodium bicarbonate, a drachm to the pint. The most satisfactory dye, however, is indigo carmine 0.4 per cent., 10 c.cm. being injected intravenously. This is obtainable in sterile ampoules.

## TREATMENT OF DYSCHIEZIA.

DR. R. MACDONALD LADELL (Birmingham) writes in reply to "H. M.": It seems possible that the case might be treated successfully by means of psychotherapy. The desire for local treatment may be a substitution, a gratification which analysis would make clear and remove. If psycho-analysis is not considered desirable, it is likely that hypnotic suggestion alone would relieve the symptoms.

## INCOME TAX.

## Replacement of Car.

"A. H. L. T." bought a 10/15 "P" car in 1922 for £575 and sold it in 1925 for £220, buying a similar saloon car for £378; the latter car was not a success and in 1926 he sold it for £325, buying a 14/40 "S" saloon for £805. To what allowances is he entitled?

\* As a professional expense of the year 1925 on the grounds of obsolescence, the out-of-pocket costs—namely, £378—£220=£158; also, as an expense of the year 1926, the cost of replacing the unsuccessful car with one of similar make and power—that is, £378—£325=£53—the balance of expense represents additional capital outlay. As against the income tax assessment for 1926-27 he should also claim the percentage "depreciation" allowance at 15 or 20 per cent. on (£805—£53=) £752. These observations assume that the cars were used for professional purposes only; to the extent that they were otherwise employed the allowances should be restricted.

## LETTERS, NOTES, ETC.

## DRUG ADDICTS.

DR. E. E. DUFFY (Maltby) writes: I agree with Dr. Winter (August 14th, p. 328). Forty-six years ago I was apprenticed to a chemist and during six years we had three customers who took tincture of opium. I have had forty years in the medical profession and have never seen a drug addict. To me it seems legislation gone mad—something like the prohibition laws in America: faddists and cranks passing vexatious laws because a few degenerates have tried to get a new sensation out of a useless life by taking drugs.

## DRY CUPPING IN AUTO-HAEMOTHERAPEUTICS.

WET and dry cupping have, from time immemorial, been popular methods of treatment, and their popularity is not limited to any one country or indeed to any one civilization, for in one form or another cupping is practised in lands as far apart as France and China, Russia and Arabia. One of the commonest spectacles when travelling in some parts of the Near East is a man with shaven poll sitting patiently in the open air with half a dozen cupping glasses adhering to his scalp. The curious blub is that it should have almost dropped out of practice in Great Britain. Virtues it must have or it would not have maintained its reputation. But how does it act? Putting aside wet cupping, which, after all, is merely blood-letting on a small scale, the action of dry cupping is not easy to define and explain. It is always assumed to exert a local decongestive action, hence the caps are

cupping and recently seen in India. It is curious to be thrust in or beneath the skin is much the same thing as withdrawing blood and re-injecting it, on which the mode of treatment known as auto-haemotherapy is based. Exactly what auto-haemotherapy does is still a matter of doubt, but whatever it can be proved to achieve that can fairly be claimed for dry cupping. A plausible scientific explanation of its action and effects might rehabilitate cupping in daily practice.

## TREATMENT OF TIC-DOULOUREUX.

DR. FLORENCE THEOBALDS (Buxton) writes: It is known that calcareous deposits are common in the brains of old people, and such a deposit, even if minute, might easily be the cause of neuralgia, by direct pressure or by diminishing the blood supply. A year ago a woman, aged about 70, and with some signs of mental deterioration, had a typical attack of tic-douloureux. It was most distressing to see her. As her general condition suggested arterial degeneration, I prescribed dilute phosphoric acid, the juice of a lemon daily, and warm applications to the face. She had slow but steady relief. Each time the medicine has been stopped for a week or two she has relapsed, and it may have to be continued indefinitely. But it has been most successful so far, and she has responded well in other ways to the treatment. Whether the result in these cases is due to an increased calcium excretion I do not know, but the calcareous degeneration of the cerebral arteries seen *post mortem* in cases of senile dementia suggests that early treatment on these lines should be helpful and preventive.

EFFECT OF LIGHT ON THE VITAMIN A CONTENT OF  
COD-LIVER OIL.

As the result of experiments in which cod-liver oil stored in air-tight bottles made of "Philadelphia oval" flint glass were exposed to diffused light, and in other cases to direct sunlight passing through windows, A. D. Holmes and Madoligno G. Pigott report in the *Boston Medical and Surgical Journal* for August 5th that there is evidence that the portion of the sun's spectrum which destroys the vitamin A content of cod-liver oil is not cut out by the type of glass employed in the manufacture of windows and flint bottles. Young albino rats, with vitamin A malnutrition, were used in the investigations were controlled. During the storage and distribution contained in amber bottles which are light-proof, or the bottles kept in cartons or paper wrappers.

## POTASSIUM CHLORATE IN CANCEROUS ULCERATION.

DR. VALLABHDAS N. MEHTA (Viramgam, Bombay Presidency) writes: With reference to Dr. T. M. Allison's note (*BRITISH MEDICAL JOURNAL*, February 6th, p. 268) regarding the use of potassium chlorate internally in cancerous ulcerations, I have had the occasion to try it in a case of cancer of the tongue where there was extensive ulceration in the floor of the mouth, with severe pain and foul smell from the mouth. The patient, a female aged about 60, had suffered from this for about eight months, and the disease having reached an inoperable stage something that could relieve the intense suffering was greatly desired by the patient. Potassium chlorate, 10 grains in sweetened milk three times a day, and lead acetate, half a grain three times a day, greatly relieved the patient's suffering, and now she has practically no pain and no foul smell, and she can take the liquid and semi-solid food with great ease. In this disease, when it has reached an incurable stage, this treatment acts like magic, and is a great boon to patients suffering from such cancerous ulcerations. It is well worth a trial, as there is no other known treatment as yet which can do any good in advanced cases.

## NITROUS OXIDE ANAESTHESIA: STATUS LYMPHATICUS.

DR. O. LANGTON HEWER (London, N.W.) writes with reference to the note by Dr. Henley published on August 21st (p. 343): Babies are so intolerant of oxygen deficiency that it is a matter of considerable difficulty to anaesthetize them satisfactorily with nitrous oxide and oxygen. If we substitute air for oxygen, the difficult task becomes an impossible one. Might I suggest that the "status epilepticus" was in reality asphyxial excitation? With regard to Dr. Henley's remark that "anaesthetics in very young children are best avoided, if possible," I am in entire agreement if, by "anaesthetics," he refers to pure nitrous oxide.

## LONG UMBILICAL CORD.

DR. N. MOXON (Gainsborough) recently attended a woman, aged 40, in her fifth confinement, which was normal. The umbilical cord measured 53½ in. This is undoubtedly an unusual length, but whether a "record," as Dr. Moxon supposes, we cannot say.

## HOLIDAYS FOR FACTORY GIRLS.

WE have received the following letter signed on behalf of the Factory Girls' Country Holiday Fund by the Countess of Sandwich, the Bishop of Kensington, Sir Thomas Barlow, Dr. Mary Scharlieb, Miss Lilian Braithwaite, Dr. Frank Lloyd, and the Rev. Dr. R. F. Norton:

"We venture to ask you to allow us to make an urgent appeal for the Factory Girls' Country Holiday Fund. Our funds are low, and we fear that many who are hoping to go away during the next few weeks will be disappointed of their little holiday this summer unless we have a generous response to this appeal. Several of those who are hoping to go have never slept out of London before. The need for a brief rest and change is possibly greater this year than it has been for some time. Trade depression has resulted in many girls becoming the main support of their families. The health of the community in the crowded and airless districts of London has deteriorated considerably, and this is specially apparent in the women and girls. Nor has it been possible, although many of them have been saving up since the early spring, for them to contribute as much as usual this year towards their holiday. Good food and fresh air for a week or two work a marvellous change, and will make it possible for many to continue their work during the coming winter, and the short holiday gives fresh hope and courage. Subscriptions and donations will be thankfully received and acknowledged by the chairman, Mr. J. F. Green, or by Miss Canney, 75, Lamb's Conduit Street, W.C.1."

## ERRATUM.

In the note on the treatment of tuberculosis in Lancashire on page 357 of the *JOURNAL* for August 21st, it should have been stated that twenty-four, and not fourteen, dispensaries are now in operation.

## VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 32, 33, 37, 38, and 39 of our advertisement columns, and advertisements as to partnerships, assistantships, and fellowships at pages 34 and 35.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 140.

THE  
**British Medical Journal.**

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION.

LONDON: SATURDAY, SEPTEMBER 4TH, 1926.

EDUCATIONAL NUMBER. SESSION 1926-27.

THE PLACE OF ANATOMY IN MEDICINE.

BY

SIR ARTHUR KEITH, M.D., LL.D., D.Sc., F.R.S., F.R.C.S.,

CONSERVATOR OF THE MUSEUM, AND HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE life of a medical student, especially in its earlier years, is full of novel experiences and strange adventures. There is, for example, the October morning when he shyly pushes open the dissecting room door and, putting on an outward air of bravado to cover his inward trepidation, advances in search of the subject which is to afford him his first practical experience of human anatomy. As he discovers the object of his search we see him don immaculate apron and sleeves, undo the lid of a brand new case of knives, and seating himself by the subject, open his dissecting manual at the section devoted to the arm, impatient to commence operations. As he makes these preparations a sense of deep satisfaction takes possession of him, for he feels that at last he is to begin the real study of his profession. He had listened, but with only a half-hearted acquiescence, when his lecturers on chemistry, physics, and biology had claimed that theirs were the basal subjects of scientific medicine. But now all doubts had vanished; the stark subject which lies stretched on the table beside him measures the limits of his life's work; it is the field of all medical and surgical endeavour. No wonder, then, that the young student, as he makes his first incision and meets with those mysteries spoken of as superficial and deep fascias, feels that at last he has entered his profession. It was thus, in October days long gone by, that young medical students named William Harvey, Thomas Sydenham, John Hunter, Edward Jenner, Charles Bell, Marshall Hall, James Paget, and Joseph Lister entered the profession of medicine. Their first incision was also their blood-baptism to the profession of medicine. And so it will be in the future. Scalpel and forceps can never become antiquated, for as long as medicine endures, its practitioners must learn, by their use, the structure and working of the machine they would mend.

It is difficult for us who have grown grey in the service of medicine to recapture the enthusiasm, resolution, and outlook with which we first entered the dissecting room. The task ahead seemed so simple; the kingdom we had to conquer, the human body, had but a few parts—a head and neck, thorax, abdomen and pelvis, upper and lower extremities, and some special organs of sense. Its bones and muscles had been duly numbered and named; the shape and surfaces of its organs fully described; all its vessels and nerves had been charted. With

the optimism of youth we felt certain that before another October came round we should be masters of anatomy; by that time we hoped to have built up in our minds a picture or lay figure of the human body. This lay figure, reared in the dissecting room, we proposed to carry with us to the physiological theatre and laboratory, and there, as it were, have its machinery set in motion. It was to be for us what Maconochie became for Sir James Barrie—an *alter ego* which was to keep us company every day and everywhere. This anatomical Maconochie was, in due season, to go with us to the pathological department, and there his inward parts were to suffer all the diseases to which human flesh is liable; when the time came all the remedies of the pharmacopoeia should be tested on him and all his systems marked with therapeutic tags. He was to accompany us to the wards—if we ever got so far—there to serve as a lay figure on which we should graft experience gleaned from surgical and medical cases. Nay, in the distant future, when we had become practitioners, we conceived this lay figure, first built up by scalpel and forceps in the dissecting room, as the companion of our rounds—an epitomized embodiment of our medical knowledge—a representation of our whole stock-in-trade.

Why is it that in so many of us the zeal and enthusiasm with which we entered the dissecting room fade so soon and the anatomical "Maconochie" of our dreams is dead before the morning dawns? The art of dissection is laborious; the accounts given in textbooks are accurate, detailed, and prolix, but as dead as the parts described. Very soon, unless a teacher is at hand, the youthful student of anatomy becomes submerged in a chaos of fact. Some of the best minds which enter the profession of medicine turn from anatomy with contempt; for them it is but a catalogue of names. Besides, the student who would realize his early ideal and the teacher who would willingly help him, have to keep an eye on examination papers. In every question the candidate is desired to "describe" or "enumerate" or "give an account of" shapes, relationships, and attachments of certain structures. All references to the purposes these structures serve in the living body are excluded. The student, in such circumstances, abandons his earlier and truer ideal and accepts the conditions which tradition has made for him.

British teachers of human anatomy have realized more fully than those of any other country what is



wrong with their subject. Their subject has been killed by tradition, and if it is to take its place as the fundamental subject of medicine, they have to make it alive again. They are now revivifying it in many ways—by using living models as the subjects of their demonstrations and lectures, and by applying the discovery of Röntgen to the study of the living body. They desire that their students should carry from the dissecting room, not a memory of dead subjects, but of live men and women. No matter how high the ideals of the professor may be or how actively the demonstrator may supervise dissections, if this aim is to be attained—if the dead subject is to be made alive—each student has to do it for himself or herself. No one can perform this miracle for them. It is an easy matter to reflect skin, separate parts, and give a neat and clean demonstration of structures; to memorize descriptions is, at most, only a mechanical art, but to build up a living picture of each part as it is dissected, to ask and answer the questions "What is the use of this structure? Why is it shaped so?" entails real mental labour. Without this travail of the mind the labours of the dissector are thrown away and his time is largely wasted. It is this latter aspect of his work in the dissecting room which the modern student of anatomy fails to appreciate, and towards which his best books give him so little guidance. He clings to the hope that there is some easier way—some short cut—some system of mnemonics which will resolve his difficulties and assist him to satisfy the demands of his examiners. Sooner or later he will discover that in anatomy, as in all other branches of knowledge, there is for him but one royal road to learning—a diligent and intelligent application of all his mental powers.

It does not seem natural that the study of function should be separated from structure in the dissecting room, and it may happen that some student who reads this article will care to find out how anatomy became divorced from physiology. If he turns to the writings of John Hunter, which cover the latter half of the eighteenth century, he will find that anatomy, physiology, and surgery were taught by one man. John Hunter was a splendid anatomist, but when he dissected, his aim was to find out, not what an organ looked like, but what it did. He studied anatomy and physiology to get help in diagnosing and treating his patients. He studied dead things to understand the living, and observed living things to understand the dead. Then if the inquirer wishes to know how anatomy and physiology were taught early in the nineteenth century he should consult a textbook which was bought and read by medical students one hundred years ago. On its title-page this textbook is described as: *The Anatomy and Physiology of the Human Body*, by John and Charles Bell (sixth edition, in three volumes, 1826). These two brilliant brothers, like Hunter, taught anatomy and physiology and practised surgery. In their great textbook anatomy and physiology are blended to their mutual advantage. When the textbooks which were used by students of the following decade—the "thirties" of last century—are consulted it will be seen that a "judicial separation" by mutual agreement had been effected between anatomy and physiology. Not a teacher of the time, so far as one can find, entered any form of protest. Indeed, we have only to turn to a book which every student of medicine should read—*Memoirs and Letters of Sir James Paget*—to see that the change received an enthusiastic welcome. The passage which I quote relates to 1842, when Paget was 28 years of age, and

just beginning to get a foot on the first rung of the professional ladder:

"The time had come, in fact it had long ago come, when it was necessary to separate the teaching of physiology from that of anatomy. The separation had been made some years before at University College, and at the Aldersgate School, the rival neighbours of St. Bartholomew's, and in some other schools. It was now resolved to make it at ours; and my election to the physiological lectureship was sure. The plan was to have a lectureship on descriptive anatomy and another equal in rank and pay on general anatomy and physiology."

In this way anatomy became divided into two branches—descriptive anatomy and general anatomy—physiology being appended to the latter. Very soon descriptive anatomists were named *anatomists* without any qualifying adjective, and general anatomists became known as *physiologists*. No doubt the separation of anatomy into two branches had become inevitable, but the student of to-day may wonder why cleavage took the line it did. He may wonder still more how it was that the anatomists of that time were content to hold the husk of the human body when other anatomists ran away with the kernel and called it physiology.

A search for an explanation will carry the inquirer into one of the most interesting episodes in the history of medicine. A reference to the writings of Dr. Robert Knox—a brilliant if somewhat unbalanced exponent of the anatomy of his time—throws much light on the matter. Knox was never tired of extolling the marvels of the new science invented in the schools of France—the "science of descriptive anatomy." The anatomist's sole business, he held, was to give an accurate description of structure. There was also a science of form—"morphology"—but that, he held, had nothing to do with so mean an aspect of matter as function. Probably British anatomists would not have been content to remain mere "describers" had not Sir Richard Owen, during the "forties" of last century, leavened their subject by infusing into it his archetypal speculations. Owen's speculations were dying when, in 1859, Darwin led anatomists away on a new and very interesting chase—the search for the origin of man's body. Then, later in the nineteenth century, came the study of the human embryo, and the light that it threw on man's evolution. More and more the anatomist became the historian of the human body and concerned himself less and less with the action of its parts.

Without doubt anatomy as a subject has prospered and attained enormous proportions since the disruption effected almost a century ago. Its sister subject, physiology, has thriven out of knowledge. But the student of to-day, when he becomes the medical man of to-morrow, and has to relieve the ever-growing congestion in medical education, will doubt if anatomy and physiology have developed along the lines which are most profitable for medicine. For if he surveys the real additions which have been made to human anatomy in recent years he will see that they have been made, not by anatomists, but by physiologists. Gaskell, Langley, Ferrier, Sharpey-Schafer, Sherrington, and Head have been the best British anatomists of my time. Indirectly Joseph Lister has done more than all of them for the progress of practical anatomy, for he it was who gave the surgeon access to all parts of the body, and with every departure in surgery there opens up a new field in practical anatomy.

A renaissance is on foot in human anatomy. For

the good of medicine and the right progress of their own subject teachers of anatomy are no longer content to confine their efforts to mere description. They feel that the man who describes the anatomy of the brain and central nervous system must also, if labour is to be saved and time economized, deal with the mode in which its several parts perform their functions. Who could describe the human heart intelligently unless he explains its uses as a pump? Any account of the lungs, thorax, and respiratory passages is useless if the mechanism of the act of breathing is omitted. Sooner or later—and the sooner the better if the student is to be served—a new dividing line has to be drawn between the departments of anatomy and physiology, and that dividing line should not separate structure from function.

I seem to have struck a note of discontent with the present state of anatomy. An impression of this kind is not the one which I wish to convey to young men and women who are now beginning the study of the human body. A knowledge of how this body is made and how it works must provide the basis for all the more practical subjects of medicine. The beginner has to face the fact that to attain such a knowledge requires regular and unrelenting application. Application, however, is not enough to attain success; toil soon degenerates into sheer drudgery unless interest is stimulated and maintained. How is this interest to be maintained?

There are many ways. One of the best is to acquire the habit of reading medical journals; never a week passes but there are reported clinical and other cases which have a bearing on anatomy, and in this way students come in touch with the latest applications of their subject to medicine. Besides, this habit of keeping in touch with medical literature is one worth acquiring for its own sake; it will stand students in good stead when they have become busy practitioners or have joined the ranks of consultants

or of specialists. Another way of maintaining interest in anatomy is to make occasional visits to the operating theatre, to out-patients, or to the x-ray department. A visit to the *post-mortem* room will often give a practical bearing to what the student may have observed in the dissecting room. A glimpse now and then at the pages of *Proceedings* and other publications issued by anatomists and physiologists will place him in touch with subjects which are interesting his teachers and reveal the lines along which new fields of research are being opened up. At least a pastime of this kind will remove from the student's mind a delusion widely held by the public at large—that all worth knowing about the human body has been discovered long ago.

I would not take away a single moment of the leisure which the student proposes to give to general literature—nor to amusement or sport—but there are many books on medical biography which will well repay study and help to maintain interest in anatomy and physiology. Especially would I commend the lives of Harvey, Hunter, and Marshall Hall. Every student should get to know John Hilton's book on *Rest and Pain*, not only for what he has to say, but also for the way he says it. Then there are a number of excellent modern books which deal with the evolution of the human body, and explain the history of its many curious structures. For my part I still find great profit in reading Archdeacon Paley's *Natural Theology* and Sir Charles Bell's *Bridgewater treatise*. The explanations they give may have become antiquated, but the facts and contrivances they describe are still before our eyes, and the manner in which these authors place their facts before the reader has a charm and clarity which are still unexcelled. By such diversions the student will relieve the monotony of the more routine studies required of him by teachers and examiners, and qualify himself, not only for the work of life, but to take a wide and permanent interest in the welfare of his profession.

## The Profession of Medicine.

### INTRODUCTORY.

OUR present issue, in accordance with long-standing custom, is the annual Educational Number of the *BRITISH MEDICAL JOURNAL*, and the remarks that follow, on the profession of medicine, are addressed more particularly to intending students and their parents. In an article of this kind it would be out of place to discuss medical politics, but the occasion may be taken again, as in past years, to touch on a few current matters affecting professional study and practice. Our object in doing so is to put certain considerations before those who think of devoting themselves to medicine, and thus help them to judge of their fitness for the profession and of the prospects it holds out. It seems appropriate, therefore, to quote here from the opening words of a valuable paper on "common sense" by Dr. L. G. J. Mackey, which appeared in our columns early this year.<sup>1</sup>

"From the very outset of the student's life common sense is necessary; in fact it is needed before a parent can come to a decision as to the suitability of his son or daughter for a medical career. It would be an act of common sense for a boy or girl who wishes to become a doctor to ascertain the conditions of medical practice, its labours and rewards, its openings and its opportunities; yet in far too many instances the student toils through years of arduous work to find himself at last a member of a profession for which

he has neither the taste, temperament, nor physique. Common sense will tell the medical student whether he has embarked on the right career; when to work and when to play; how to choose his teachers and his books; how best to gain the necessary knowledge; how to distinguish essentials from trivialities; it will prevent him being led away by new and unproven things from simple, sound, established principles and facts; and will finally be of great help to him in passing his qualifying examinations."

### THE GROUNDWORK OF MEDICAL STUDY.

The Educational Number is largely a guide to the steps that must be taken and the studies that must be pursued in order to become a legally qualified practitioner. With the passage of years the form and contents of this issue have undergone changes, but its primary object remains unaltered. It contains also certain sections intended for younger members of the profession who may be in doubt as to the path in medicine they should choose as a career, and a section on the existing opportunities for post-graduate medical study in Great Britain. The particulars given are founded for the most part on official information, and are arranged along the customary lines. Apart from these and other special articles, the prospective student will find in subsequent pages an account of the course of training required of him, the places where it can be obtained, and the universities and other licensing bodies which test the knowledge gained and issue degrees or

<sup>1</sup> *BRITISH MEDICAL JOURNAL*, January 30th, 1926, p. 211.

diplomas entitling successful candidates to become registered medical practitioners.

Here we may emphasize once more the need, which increases with the advance of scientific medicine, for a thorough grounding in the fundamentals of science. One of the best pieces of advice that can be given a student, especially in the early years of the curriculum, is not to work at any branch of study as though his only object were to pass the examination. He should work to obtain knowledge for its own sake. The student of good intelligence who makes it his aim to grasp the principles of each of the basic sciences need have little dread of examiners. In mastering the principles he will find that the larger details take on new meanings and a new interest, and are thereby fixed in his memory. The proverb about the pence and the pounds is wholly inapplicable here: in medical study one must take care of the principles and the details will take care of themselves. Moreover, the Institutes of Medicine—as the preliminary sciences used to be called—provide a drilling in exact methods, in precise manipulations, and in vigorous reasoning; which will bear immediate fruit in the later clinical part of the curriculum, and prove of lasting benefit throughout professional life.

The purpose of medical education is to build up on scientific principles a solid structure of practical knowledge. Students who keep this in mind will look upon "cram work" as a weakness in the foundations and therefore as a hidden danger to the superstructure. They will gain an understanding of the true meaning and purpose of their anatomical and physiological studies if they will read and re-read the article on "The Place of Anatomy in Medicine" which Sir ARTHUR KEITH has written at our request as an introduction to this Educational Number. No pen is better able to inspire the true "student habit," or to indicate in telling phrase the connexion between the basic sciences and the art of medicine.

#### PORTALS OF THE PROFESSION.

Those who are not familiar with the conditions of medical teaching and examination in these islands, and with the history of our professional institutions, are apt to be confused at first sight by the number and variety of portals through which admission may be obtained to the *Medical Register*.<sup>1</sup> The table of contents to this Educational Number shows that there are no fewer than twenty-seven bodies—eighteen universities and nine corporations—which either separately or jointly issue registrable qualifications, and that the choice of teaching institutions is even wider. Nevertheless, although there is no single State examination in medicine in this country, the medical courses of the various universities and schools in Great Britain and Ireland run on parallel lines, and the obligatory curriculum is much the same for all students. Within these broad lines there are, however, many differences between the requirements of the individual teaching and examining bodies. The choice should therefore be made early, so that a definite plan may be followed throughout the years of study. To prevent a false step at the outset the student and his advisers should try to obtain a clear idea of the object to be aimed at, of the relative advantages of taking one or other of the degrees or diplomas open to him, and of the comparative difficulties they present.

All who wish to enter the medical profession must comply with certain conditions. These are regulated by the General Medical Council, which is a statutory body established under the Medical Acts; a statement of its requirements is given at page 417. Many changes have lately been made in the medical and pre-medical curriculum,

and this section, as well as the article on Professional Study and Examination, should be studied with care. Every medical student, after passing examinations in the subjects of general education and in the preliminary sciences, must take a course of training at a recognized medical school, covering at least a period of five years, but usually extended to six years or more. The examination of candidates as to their fitness to practise medicine, surgery, and obstetrics is left to the licensing bodies, which are of two kinds—the universities, and certain medical corporations in England, Scotland, and Ireland. An account of the requirements of the several licensing bodies will be found elsewhere under separate headings. One of the functions of the General Medical Council is to make sure that the tests at each stage do not fall below a certain standard, and that the students examined have undergone prescribed courses of instruction at recognized institutions. Successful candidates at such examinations eventually receive from the body holding them either degrees, in the case of a university, or diplomas or licences, in the case of a corporation; these qualifications entitle them to claim insertion of their names in the *Medical Register* kept by the General Medical Council. Holders of diplomas and licences once made up the great majority of all medical men, especially in England and Wales. But universities have greatly multiplied, and so many practitioners are now graduates that in almost all cases the wisest plan for a student at the threshold of his career is to aim at a medical degree, though it may be desirable to take also a diploma or licence.

#### COST OF MEDICAL EDUCATION.

It is ordinary prudence to count the cost before embarking upon a career, and some guidance on this matter will be expected. The first thing to be said is that the cost of a medical training varies within wide limits. Besides differences in the charges made by medical schools for instruction there are differences in examination fees as well as in the fees for certificates of qualification, and those who aspire to the higher degrees and diplomas must expect to pay more for the additional courses and tests and certificates. Again, not all students, however industrious, pass examinations with equal facility, and every setback due to failure in the examination room or to illness means added expense. School and examination fees, together with the cost of board, lodging, clothes, and recreation, form the largest items of expenditure, and to these must be added the money spent on books, microscope, osteology set, instruments, and so forth. Since professional education must in any case continue for five years at least (a period exceeded by the vast majority), and since the cost of living in different parts of the country varies much, while personal expenditure varies still more, it can only be said in a general way that anyone who thinks of entering the profession should reckon on an outlay—first and last—of at least £1,500. On the other hand, the number of scholarships and money prizes now offered is larger than in the past; in the Scottish universities bursaries are numerous, and the Carnegie Trust (whose regulations are summarized at page 428) gives financial assistance to many Scottish students. The main thing to bear in mind is that, as compared with other professions, the period of training in medicine is long, and for most students costly. There is also to be remembered the time of waiting after qualification, when income is apt to lag behind expenditure.

#### THE NUMBERS OF MEDICAL STUDENTS.

Medical students are not commonly the sons or daughters of wealthy parents; very often their education puts a heavy strain on a slender family purse. Hence, before setting out upon this long and exacting course of study, it is usual

<sup>1</sup> The *Medical Register* is the official statutory list of qualified medical practitioners kept by the General Medical Council.

to weigh, not only the cost, but also the prospects. An overcrowded curriculum is hard to face if all that can be discerned at the end of it is an overcrowded profession. Without forgetting the adage that "there is always room at the top" the youth and the girl of to-day, when reckoning up their chances in any calling, will seek some information about the probable numbers of their competitors for the work that is waiting to be done.

One effect of the war and of after-war circumstances was a great increase in the number of medical students, both men and women, but especially women. The climax was reached during the twelve months after the armistice. The following brief survey of the position should be read in conjunction with the note on page 415 on the numbers of registered practitioners.

In the thirteen years before the war the annual entry of medical students in Great Britain and Ireland averaged about 1,400; during the war period, although many students left to serve with the forces, the whole number actually studying in the schools grew steadily larger. In 1914 the entries rose to 1,600, and in 1915 to 1,918; in 1916 they were 1,875; in 1917 they rose again to 2,150, and in 1918 to 2,253; and in the following year, when demobilization was in active progress, as many as 3,420 new students were registered. After 1919 the number of entries rapidly fell. In 1920 they were 2,531, in 1921 they were 1,808, and in 1922 they were 1,833.

In 1923 the number of newly registered students dropped to 545, and the reasons for the fall have been discussed by Sir Donald MacAlister in his presidential addresses to the General Medical Council. Speaking in 1924, he suggested that the sudden decline was more apparent than real, and attributed it to the recent introduction of a pre-registration test in elementary physics and chemistry. This explanation has been borne out by the figures for the two following years, for in 1924 the registrations of students were nearly doubled, reaching 1,043 by the end of the year, and in 1925 they numbered 1,570.

The recent decline in the numbers of new students is to be welcomed for several reasons. In the first place it has eased the very heavy burden thrown upon the teaching resources of the medical schools. From another point of view it is an advantage because excessive entries of students lead to overstocking of the profession. In the past four years the numbers of new practitioners registered have greatly exceeded the usual pre-war figure of eleven hundred or thereabouts. The registrations in 1922 numbered 1,983, they rose to 2,482 in 1923, they rose still further to 2,796 in 1924, and last year they were 2,570. The large additions to the profession in recent years brought the total number of names in the *Medical Register* up to 51,738 at the end of 1925. This is nearly ten thousand more than the corresponding figure for 1913, and the ratio of qualified medical practitioners to population is now much greater than at any previous time. It is no doubt true that, with the progress of medical science and its growing appreciation by the public, the scope of medical practice has widened and new openings for professional work have appeared; but there must be limits to the demand for qualified medical practitioners, and the supply of new practitioners ought not to outstrip the medical needs of the community. The new regulations, which came into force at the beginning of 1923, should do something to keep the entries of students—and, as a consequence, the numbers of the profession—within manageable bounds.

#### CHOICE OF A CAREER IN MEDICINE.

The student, having passed all his tests and placed his name on the *Medical Register*, becomes a member of the profession and assumes the privileges and responsibilities that go with legal qualification. But the final examina-

tion, though a great event, is only the opening of a door into a wider field of training and experience. Education must continue throughout his career: a good doctor remains always a student. As an introduction to practice of whatever kind nothing is so useful as a year or more spent in junior hospital appointments; and all who can afford the time should look upon the holding of such posts as a most valuable investment. Next comes the choice of a career in the larger world of medicine. Many paths are now open—for example, general practice, Government service at home or abroad, and special work in public health and mental disorder, in scientific research, or in one of the many modern subdivisions of medicine and surgery. Most of these careers are discussed in some detail in the later sections of this number, but a few words may be said here about general practice and the work of a consultant or specialist.

A good deal of information on these and other cognate matters will be found in the *Handbook for Recently Qualified Medical Practitioners*, of which a revised and enlarged edition has lately been published by the British Medical Association.<sup>1</sup> The new edition should be found of assistance by all members of the profession, although it is issued primarily to meet the needs of newly qualified members by giving useful information and advice on matters which are often a source of doubt or difficulty to those planning their future career. The *Handbook* includes sections on the main openings for members of the profession; on some practical aspects of medical work, especially the legal and ethical aspects; on registration and the privileges of practitioners; on medical work under the National Health Insurance Acts; on post-graduation study and special diplomas; on specialization; on the fellowships, scholarships, studentships, prizes, and research grants open to students and practitioners; and on individual medical defence. The new section on practical aspects of medical work, specially prepared for this edition, will be found of much value; it embodies a great deal of advice on professional conduct and the relations between members of the profession. The section on specialization and consulting practice is also new, and will repay study.

#### GENERAL PRACTICE.

In the nature of things, general practice has always been, and is likely to remain for some time, the goal of the great majority of medical students. The life is onerous and exacting and the remuneration too often inadequate; but there are compensations, and for one reason or another many of the very best students—men of high intellectual capacity—become general practitioners. The work of these men is of the utmost value to the public and the profession, because it sets a standard for the branch of medicine in which the great bulk of students sooner or later become absorbed.

This career is usually entered upon in one of three ways. The newcomer may take a house and wait for patients to seek his services; he may purchase the goodwill of a practice rendered vacant by retirement or death; or—perhaps best of all—he may become a partner in an established practice. A well managed multiple partnership has obvious advantages over single-handed practice; for instance, it allows each partner leisure for recreation and for keeping up with the progress of medical art and science. Success in the work of a private practitioner demands a great deal of knowledge other than that gained at the medical schools, and consequently a man is more likely to be accepted as a partner, or to do well on his own account, if he has already some experience of family practice as an assistant or deputy. A considerable

<sup>1</sup> *Handbook for Recently Qualified Medical Practitioners*, 1925. British Medical Association, Tavistock Square, W.C.1. (5s. 6d. net; post free 6s. 6d.)

proportion of general practitioners, therefore, begin their work as assistants, and of these there are few who afterwards find reason to regret the time spent in learning the ropes under the eye of an experienced senior. As the conditions of general practice vary much in different parts of the country and even in the same district, it is usually best to undergo this "post-graduate apprenticeship" in circumstances and surroundings resembling those to be encountered later.

An all-round knowledge of practical medicine, surgery, and obstetrics should, if possible, be supplemented by skill in some particular branch of practice. Moreover (as already indicated) the value to a general practitioner of having held one or more resident hospital posts is incalculable. Those who have been thus trained acquire a confidence and reliance and experience which they cannot easily obtain elsewhere. With this opinion Dr. Mackey, whom we have quoted at the beginning of this article, is in agreement, though he makes one proviso. Speaking of the need for common sense in deciding what branch of medicine a newly qualified man should take up he says:

"If he has decided to go into general practice he will take some appointment where he can make his early mistakes without disaster to the patient or himself, and at the same time gain the very necessary practical experience which can only come from daily contact with the sick. A resident post in a good hospital is invaluable at this stage, provided a man has the common sense to realize that the proportion of rare and serious cases is far higher than he is ever likely to encounter in private practice, that the surgeons and physicians are not as a rule intimately acquainted with the conditions of general practice, and that a successful autopsy, however educative to oneself, cuts very little ice with the general public."

Before leaving this subject it ought perhaps to be added that the strain of busy general practice is so heavy and often so continuous that only those of sound physique can hope to last the course. Night work, irregular meals, and long winter drives during epidemics will tax the strength of a strong man. It is one of the drawbacks of a single-handed practitioner's life that, unless he has made some arrangement with a neighbouring colleague, he must be ready to answer a call at whatever hour it comes and however unfit for a fresh task he may happen to feel.

#### CONSULTANTS AND SPECIALISTS.

Specialization has gone so far in recent times that only a few observations of the most general kind can be made here. Exactly where specialism begins and consulting practice ends would be hard to define; but the latter term may be said to cover in ordinary usage the work of the general medical consultant (once spoken of in this country as a "pure physician," and known nowadays in America as an "internist") and that of the general surgical consultant or operating surgeon. Most general consultants, whether medical or surgical, are specialists in some branch of their work, and most, if not all, specialists are consultants in the sense that their work largely comes to them through the recommendation of other practitioners with whom they act (or should act) in a consultative capacity. In any case, whoever holds himself out as one or the other or both must be assumed to have special knowledge and skill. Intensive study and practice after qualification are therefore obligatory, and the experience of hospital appointments invaluable. Nevertheless, for those who aim at becoming consultants or specialists, success will depend in the long run, not only upon mental gifts, special experience, and capacity for hard work, but (as is true of practitioners of all branches) on the possession of those qualities which inspire confidence both in patients and in colleagues. In the practice of medicine, personal tact and character are as important as scientific equipment. Moreover, since the consultant or the specialist can scarcely hope at first to pay his way by consulting work or by the

exercise of his specialty, he must either have the means to support himself for an uncertain period or be prepared by teaching or in other ways to defray expenses. A successful physician, surgeon, or specialist is made, not born, and the process of making himself is not remunerative. If while preparing himself for his life work he can manage to undertake some piece of research bearing upon his clinical studies, this is strongly to be recommended.

The question of additional degrees and diplomas is of special moment to those whose ideas turn in this direction, if only because these are important factors in securing election to the visiting staff of a hospital. Beyond the qualifications, such as Bachelor or Licentiate, which admit to the *Medical Register*, most of the licensing bodies bestow higher titles, such as Doctor, Master, or Fellow, after further tests. For the career of a consulting physician the M.D. degree of a university is usually necessary, and also the Membership of one of the three Royal Colleges of Physicians, according to the part of the British Isles in which practice is contemplated. In the same way, the Fellowship of one of the three Royal Colleges of Surgeons should be sought by those proposing to devote themselves to surgery. There are also diplomas in a growing number of special branches of work, such as public health, tropical medicine, ophthalmology, radiology, and psychological medicine, which are superfluous for most practitioners, but useful or even indispensable for the medical man or woman who wishes to specialize in one or other of these subjects. Information about the several diplomas will be found elsewhere in this issue.

For all consultants and specialists ample occasions for exchanging ideas and information with their fellow workers are most necessary. Such opportunities are provided by the meetings of the various medical societies, metropolitan and local; by the discussions in the scientific Sections of the British Medical Association's Annual Meetings; and by the medical journals, both general and special.

#### FINANCIAL AND SOCIAL CONSIDERATIONS.

It has never been easy to assess the attractions of medicine as a means of livelihood, and at the present moment this would perhaps be more difficult than ever. On the financial aspect of our profession two or three remarks only need be made, and those of the nature of truisms. Medicine is not to be regarded as a path to fortune, and anyone who enters it with the sole idea of making money has mistaken his calling. The competent practitioner can always make a living; but the main reward of the medical life is the knowledge of good work well done. Whatever the branch of medical work chosen, there are few doctors who become what a business man would consider even moderately rich by the practice of their profession.

But if medical practice, from the financial point of view, offers to the majority little more than a means of livelihood, in its social and intellectual aspects the prospect is far brighter. The culture which once belonged to the physician alone, entitling him to his place among members of the learned professions, has spread, and is spreading further, into all ranks of the practitioners of medicine. The great improvement in the education, general as well as technical, of the practitioner has added much to his influence with the public, and has been a large factor in raising his social status during the sixty-eight years that have passed since the General Medical Council was constituted under the Medical Act of 1858. A family doctor of the kind that is well styled "the backbone of the profession" occupies an excellent position among his neighbours, and is the friend and confidant as well as the medical adviser of many of his patients. Many such men go further and take a leading part in the public life of their district.



## PRIVATE PRACTICE: THE OUTLOOK.

The prospects held out by the various public medical services are indicated in later sections of this Educational Number. Here may be noted very briefly some circumstances of to-day that have a bearing on private practice. In the first place, it is now more and more recognized that one of the chief duties of the State is to concern itself intimately with the health of the people. Side by side with this, efforts are being made to bring professional training more into line with the growth and differentiation of medical science, and so to raise the level of medical practice; it was with that end in view that the student's curriculum was lately recast. Next, the fundamental importance of the work done by the general practitioner is better understood, and it is more fully acknowledged that an efficient medical service for the community must be based upon the skill and devotion of the family medical attendant, working in close touch with the aims and methods of preventive medicine. Just as the State now looks on its family doctors as its first line of attack upon disease and disability, so the private practitioners of to-day take a wider view of their duty towards the environment and the habits of their patients.

Changes are thus gradually coming over the practice of medicine. As Lord Dawson has said in a recent speech to medical students, the centre of gravity is drifting away from disease and towards health. The doctor of the future will come more and more to study early disturbances of function—the threshold of disease—and the maintenance of bodily and mental health.

While this is all to the good, it cannot be denied that increasing contact with public authorities brings with it new and often irksome demands, and the multiplication of official requirements and administrative checks has a tendency to cramp the doctor's independence of action. The national insurance system, now more than fourteen years old, has already had a profound influence upon the private practitioner and his work; so much so that it needs some little effort to recall clearly the conditions of industrial medical practice before the year 1913, both as affecting the medical profession and the very large section of the community which became insured under the Act of 1911. The Insurance Medical Service now comprises nearly 14,000 practitioners, some doing much work among insured persons, others little. If the freedom of family practice and the robust individualism of the private practitioner have been restricted by the Insurance Acts and Regulations, there is a general belief (borne out by the findings of the recent Royal Commission) that the panel system has provided a better service than existed under the old "club" arrangements, though it is by no means as complete or as effective as it might be made. "The reform that is most required in connexion with the insurance service is one which shall link up the insurance practitioner with the consultant physician and the consultant surgeon, and give the insured patient the benefit of the profession's specialized as well as of its general knowledge."<sup>1</sup> Whether the payment is adequate to the services required is open to doubt, but it is easier now for a doctor to make an assured income out of attendance on working-class patients. The full effect of the insurance scheme upon the medical profession as a whole, and upon the private practitioner as an individual, is as difficult to gauge as its effect upon the public health. Some of its most objectionable features have been removed through the efforts of the Insurance Acts Committee of the British Medical Association, which represents the interests of insurance practitioners in all negotiations with the Government. A factor that has contributed perhaps more than

anything else to the smooth working of the national insurance scheme is the patient's right to choose his own medical adviser—a right insisted upon from the beginning by the Association and maintained throughout.

## PROFESSIONAL ORGANIZATION.

The spirit of comradeship, which adds so much to the value and happiness of undergraduate medical study, is at least as great a boon to the qualified practitioner. This *esprit de corps*, arising out of common ideals and associations, should be preserved for its own sake. But there is a sound material reason, too, for all holding together.

In the times in which we live no doctor, whatever his position or the nature of his work, can safely stand aside from his fellows. Medical men and women must therefore band themselves together for their common protection. Experience shows that individuals and isolated bodies of practitioners are always handicapped when they attempt to defend their own interests unsupported by their fellows against organized bodies. This applies, whether the organized bodies are Government departments, local authorities, or bodies of workmen. While in ordinary circumstances the individual doctor is quite able to deal with the individual patient and the patient's friends, he cannot hope to engage successfully in single combat with outside organizations.

For these reasons the first step after registration should be to become an active member of the British Medical Association. Besides the advantage of having behind him the machinery and the influence of a world-wide professional body, a young practitioner will find in the meetings of his local Division, and in the Annual Meetings of the Association, held in large medical centres, many opportunities, both of keeping abreast with the progress of medicine, and of friendly intercourse with colleagues. One other thing that no new graduate should fail to do is to join one of the professional societies which for a small yearly sum undertake individual legal defence of their members.

The British Medical Association, whose membership is now more than 31,000, was founded in 1832 to promote the medical sciences and to maintain the honour and interests of the profession. It is the great general forum of the profession throughout the empire, and the one body which acts for the profession as a whole in times of stress. A brief note on the objects and constitution of the Association, and what it does for its members, will be found at page 467. The record of ninety-four years' work shows that professional organization, directed with wisdom and imagination, can combine service for its members with service for the public. Greater work remains to be done in each direction, and we look to the rising generation of doctors, not merely to consolidate the ground won, but to press forward.

## PROFESSIONAL STUDY AND EXAMINATION.

## A NOTE ON THE REVISED SCHEME.

In the article appearing at page 417, on the functions and requirements of the General Medical Council, there will be found an account of the resolutions and recommendations of the Council which have applied since the beginning of 1923. It will be convenient if we summarize here the leading features of the revised scheme of professional study and examination, and indicate the importance attached by the General Medical Council to the preventive aspects of medicine.

*The Revised Curriculum.*

The minimum age for registration as a medical student has been increased from 16 years to 17 years. Formally, the length of the medical curriculum is not added to; practically it is, by transferring to preliminary study

<sup>1</sup> R. G. Hogarth: Presidential Address on "The Medical Practitioner and the Public," delivered to the British Medical Association at Nottingham. *British Medical Journal*, July 24th, 1925.

and examination the subjects of elementary physics and chemistry in their purely scientific aspects. In the applications to the professional courses—as in biophysics, biochemistry, and pharmacological chemistry—appropriate instruction is to continue throughout the curriculum, and is to be tested by examination, so that the student shall no longer be able to put behind him as passed and done with the knowledge which he acquired as a preliminary. If he has had no facilities at a secondary school or otherwise for obtaining what is necessary for the preliminary examination in these subjects, then he can come for it to the university or college, but study there will not count for the medical curriculum. In biology comparatively few secondary schools are equipped for elementary tuition, but the Council has suggested an arrangement for utilizing the work of such schools as are qualified for the purpose. The examination will not be "pre-curriculum," but the instruction may be so, and a licensing body can allow students who so desire to sit for the examination immediately after matriculation. Here again, however, the applications of biology to medicine, surgery, and midwifery will continue to receive attention throughout the courses.

Besides the resolutions of the General Medical Council in regard to professional education and examination printed elsewhere, a series of additional resolutions was adopted in 1922, as follows:

(a) That throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of Medicine;

(b) That each Licensing Body should make adequate arrangements for the effective correlation of the several subjects of study throughout its curriculum;

(c) That the teaching of Anatomy and Physiology should include as a regular part of the courses the demonstration on the living human body of structure and function;

(d) That the curriculum should be so arranged that a minimum period of three years shall in every case be available for study after the completion by the student of the Professional Examinations in Anatomy and Physiology held at the close of the second year;

(e) That the curriculum should be so framed as to afford sufficient opportunities for the study, during the last three years of the course, of Physics, Chemistry, Biology, Anatomy, and Physiology in their practical application to Medicine, Surgery, and Midwifery, and that the student's knowledge of these applications should be subject to test in the Final Examination;

(f) That before the student is admitted to his clinical appointments he should have received practical instruction in clinical methods and in the recognition and interpretation of physical signs;

(g) That instruction should be given, in the courses of Forensic Medicine and Public Health or otherwise, on the duties which devolve upon practitioners in their relation to the State, and on the generally recognized rules of medical ethics. Attention should be called to all Notices on these subjects issued by the General Medical Council.

The Council, it will be noted, attaches great importance to the reservation of sufficient time for the later subjects of study, free from all worries about passing the examinations of the earlier parts. To that end it recommends what is practically a block system. A minimum of three years should be available, not merely after the courses of anatomy and physiology have been taken, but after the examinations in these subjects have been passed.

#### Examination Reform.

Another notable feature is that in assessing marks in the several examinations account may be taken of "duly attested records of the work done by the candidate throughout his course of study" in the subject. This is an effort to meet the long felt difficulty that a man's mental agility, or the want of it, counts far too much in the examination room. The difficulty is real, but the remedy is not easy, and the Council has been wise in the cautious approach it makes towards a solution. Where, as in the examinations for the various conjoint diplomas, a student will only by chance come before his own teacher as an examiner, absolute impartiality in the attested records

will be necessary. On the other hand, at the universities, where the teacher is almost always one of the examiners, no personal like or dislike of a student must influence the report of the internal to the external examiner. The class records should, of course, be available, but the scheme will put a serious ethical obligation on all concerned, and the Council will doubtless watch its operation with keen and critical interest.

#### Training in Preventive Medicine.

The first of the resolutions quoted above should be borne in mind by every teacher throughout the whole curriculum, and not merely in the clinical subjects. All the earlier subjects—physics, chemistry, biology, physiology, anatomy, and, of course, pathology, bacteriology, and therapeutics also—afford opportunities from the very beginning for instilling into the mind of the student the necessity for his keeping constantly in view, in all the advice and treatment he may give throughout his professional life, the primary importance of promoting the general health of those who entrust themselves to his care, and of preventing trivial ailments from developing into definite disease. The era of that training began formally in 1923. Though no details are given in resolution (a), and though it may require some change of orientation by teachers who have hitherto given no special heed to the bearings of their subject on the maintenance of health and the prevention of disease, yet they will doubtless join heartily in what will indeed be an epoch-making advance in medical education in this country. Its reflex and reward will surely be found as time passes in a diminution of sickness and prolongation of life, in the raising of the present standards of physical health and national welfare.

## THE NUMBERS OF THE MEDICAL PROFESSION.

### A REVIEW OF FIFTY YEARS.

SINCE the year 1876 the General Medical Council has kept an analytical record of the number of names entered in, added to, or removed from the *Medical Register* in each twelve months. The *Medical Register* has been published annually since the Council was constituted under the first Medical Act of 1858; but before 1876 no such data as these were ascertained or preserved.

In order to gain a general view of the numerical strength of the medical profession during the past fifty years we have extracted from the tables and set down below in parallel columns the total number of names in the *Medical Register* on December 31st of each year, and the numbers added annually by registration between 1876 and 1925.

#### Numerical State of the "Medical Register."

Year.	Names added in Year.	Total No. on Dec. 31.	Year.	Names added in Year.	Total No. on Dec. 31.
1876	1,009	22,713	1901	1,318	36,912
1877	940	22,841	1902	1,275	37,232
1878	996	22,600	1903	1,233	37,878
1879	996	22,516	1904	1,168	38,492
1880	1,123	22,936	1905	1,240	39,060
1881	1,053	23,275	1906	1,197	39,529
1882	1,171	23,801	1907	1,221	39,827
1883	1,304	24,517	1908	1,137	40,257
1884	1,388	25,321	1909	1,143	39,818
1885	1,377	25,998	1910	1,062	40,483
1886	1,431	26,452	1911	1,042	40,913
1887	1,531	27,246	1912	1,157	41,439
1888	1,184	27,939	1913	1,168	41,940
1889	1,305	28,348	1914	1,433	42,378
1890	1,266	29,163	1915	1,526	43,225
1891	1,345	29,555	1916	1,202	43,481
1892	1,513	30,590	1917	1,134	43,819
1893	1,579	31,644	1918	1,077	43,926
1894	1,426	32,637	1919	1,322	44,510
1895	1,446	33,601	1920	1,457	44,761
1896	1,385	34,478	1921	1,760	45,408
1897	1,230	34,642	1922	1,983	46,476
1898	1,210	35,057	1923	2,482	48,140
1899	1,351	35,836	1924	2,796	50,035
1900	1,345	36,355	1925	2,570	51,738

The following table indicates the varying proportion of registered medical practitioners to population during the period under review. It gives the population of the British Isles at each decennial census since 1881, and the number of names on the *Medical Register* in the same year;

also the corresponding totals for the year 1925, that for the general population being an estimate.

*Proportion of Practitioners to Population.*

Year.	Registered Practitioners.	Population, British Isles.
1881 .....	23,275 .....	35,241,482
1891 .....	29,555 .....	38,104,975
1901 .....	36,912 .....	41,976,827
1911 .....	40,913 .....	45,370,530
1921 .....	45,408 .....	47,263,196
1925 .....	51,738 .....	48,225,000

These figures show a general tendency (much more marked in recent years) towards an increase in the ratio of doctors to population. The number of registered practitioners at the end of 1921 was almost exactly double the number at the end of 1876, but the population of Great Britain and Ireland within that period only increased by about 50 per cent. During the year 1925 the new medical registrations numbered 2,570, and there was a net increase of 1,703 names. Owing to the large increases during the past five years, reflecting the excessive entries of students immediately after the war, there is now more than one name in the *Medical Register* to every thousand of population. In the United States of America, according to an estimate by the *Journal of the American Medical Association*, there is at the present time one medical practitioner to every 753 people. Next to the United States the British Isles appear to have the highest proportion of practitioners to population.

## THE GENERAL MEDICAL COUNCIL.

THE General Medical Council was established by the Medical Act, 1858, in order "that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners." It consists of eighteen members appointed by the Universities in the United Kingdom having medical faculties; of nine members appointed by the Medical Corporations, such as the Royal Colleges of Physicians and Surgeons; of five members appointed by His Majesty in Council; and of six members directly elected by members of the profession as a whole—a total of thirty-eight. To these are added three dentists who are members of the Dental Board, and are appointed for dental business. Although the eighteen members appointed by the Universities and the five members appointed by His Majesty in Council may all be laymen, only one layman has so far been appointed and that was by the Privy Council in 1926.

The Council's offices are at 44, Hallam Street, Portland Place, London, W.1, and it has Branch Offices at 20, Queen Street, Edinburgh, and 35, Dawson Street, Dublin.

The Council exists for the protection of the public and not of the profession. Its principal duties are, first, to see that no person obtains a qualification without a proper course of study and examination; secondly, to keep the *Medical Register*; and thirdly, to publish the *British Pharmacopoeia*. It is the appearance of a name upon the *Medical Register*, and not the possession of a degree or diploma, that constitutes a person "a legally qualified practitioner."

The Council has no power to make rules in regard to the medical curriculum or examination, but it can pass resolutions and make recommendations relating thereto, and if any of these were ignored by the licensing bodies, it would be open to the Council to make representations to the Privy Council, which if it thought fit might order that the qualifications obtained from such Bodies should not be registrable.

The name of any medical practitioner who has been convicted of felony or misdemeanour, or who is proved before the Council itself to have been guilty of "infamous conduct in a professional respect," may be erased from the *Medical Register*.

The Medical Acts prohibit attempts being made to impose restriction as to any theory of medicine or surgery, and, once a practitioner has been trained and tested in the knowledge essential for public safety, he may adopt any "theory" of medicine or surgery in which he honestly

believes. The Medical Acts do not prohibit the practice of medicine by unregistered persons, but if they "wilfully and falsely" assume any title implying registration they are liable to prosecution. In this respect the Medical Acts differ from the Midwives' and the Dentists' Acts, which entirely preclude the practice of midwifery or dentistry by unregistered persons. Unregistered medical practitioners, however, are under certain disabilities, for they cannot recover charges for medical or surgical attendance, etc., in a court of law; they cannot hold an appointment as a medical officer in the Military or Naval Services, or on ships; they cannot give any valid certificate which is required by any Act from a medical practitioner—for example, certificate of death; and they cannot obtain dangerous drugs.

An account of the recommendations that the Council has drawn up in respect of the education of medical students here follows.

### REGISTRATION OF MEDICAL STUDENTS.

The Council recommends that every intending student of medicine should be registered as such at one of its three offices, whose addresses are given below.

Candidates must produce evidence (a) that they have attained the age of 17 years; (b) that they have passed an examination in general education which is accepted for matriculation or entrance to the Faculties of Arts or Pure Science in a university in the United Kingdom; (c) and in addition thereto that they have passed an examination in elementary chemistry and elementary physics conducted or recognized by one of the licensing bodies.

Application for registration should be addressed to the Registrar for the division of the United Kingdom in which the applicant is residing—England and Wales, or Scotland, or Ireland. It must be made on a special form, which can be obtained from one of the offices of the General Medical Council itself or from one of the various licensing bodies and medical schools.

The regulations with regard to registration apply equally to medical and dental students, with the exception that in the case of the latter pupillage with a registered dental practitioner may be regarded as a commencement of professional study, and that applications for registration should be addressed to the London office only.

### PROFESSIONAL EDUCATION.

The rule is that it is only from the date which appears against his name in the *Students Register* that the medical student's career officially begins; thereafter five years at least must pass before he can present himself for the final examination for any diploma which entitles its lawful possessor to registration as a qualified medical practitioner under the Medical Acts; but to meet the circumstances brought about by the dates at which sessions of the medical schools begin and end, the close of the fifth year may be reckoned as occurring at the expiration of fifty-seven months from the date of registration. In any case, the period of five years must be one of bona-fide study; and in every course the following subjects should be included:

- (i) Elements of General Biology, including an introduction to Embryology. This course, if the Licensing Bodies permit, may be taken before registration, and the examination may be passed immediately after registration.
- (ii) Chemistry, Physics, and Biology in their application to Medicine.
- (iii) Human Anatomy and Physiology, including Histology, Elements of Embryology, Biochemistry, and Biophysics.
- (iv) Elementary Bacteriology, prior to regular clinical appointments.
- (v) Pathology, general, special, and clinical, and Morbid Anatomy.
- (vi) Pharmacology and Materia Medica, to be taken concurrently with clinical instruction.
- (vii) Forensic Medicine, Hygiene, and Public Health.
- (viii) Medicine, including Applied Anatomy and Physiology, Clinical Pathology and Therapeutics, Children's Diseases, Acute Infectious Diseases, Tuberculosis, Mental Diseases, Skin Diseases, and Vaccination.
- (ix) Surgery, including Applied Anatomy and Physiology and Clinical Pathology, Anaesthetics, Diseases of the Eye, Ear, Throat, and Nose, Radiology, Venereal Diseases, and Orthopaedics.
- (x) Midwifery and Diseases of Women, including ante-natal conditions and infant hygiene.

The Council recommends that during the last three of the five academic years clinical subjects shall be studied.

The first two years must be passed at a school of medicine recognized by any of the licensing bodies enumerated in the schedule to the Medical Act of 1858, and the remainder must be devoted to clinical work at any public hospital or dispensary at home or abroad which is recognized by a licensing body.

#### SPECIAL CONSIDERATIONS.

The requirements of the General Medical Council in respect of the education of those who desire to enter the medical profession have now been given in outline, but before leaving this part of the subject the steps which the aspirant should take may be rehearsed in their due order:

- (1) Pass an examination in arts;
- (2) Pass an examination conducted or recognized by a licensing body in elementary physics and elementary chemistry;
- (3) Enter himself at a medical school recognized by one of the licensing bodies;
- (4) Obtain registration as a medical student;
- (5) Study for a minimum of five years certain prescribed subjects;
- (6) Meanwhile pass sundry intermediate examinations; and at the end of the fifth year pass a "qualifying examination" which will entitle him to receive from a licensing body a legal authority to practise.

*The Minimum Period.*—It must be remembered that the period of five years is a minimum; more is often required even by the man of good abilities and reasonable industry, and some of the universities prescribe a longer period. Besides these qualities a student, to obtain a registrable qualification in the minimum period of five years, or fifty-seven months, must have a considerable amount of good luck; in other words, he must keep in good health through every term, and never fail at a single examination. Thus, for instance, before presenting himself for any examination he must be "signed up" for the subjects covered by that examination; this means that his teachers have to certify that he has diligently attended the required number of lectures or classes in the subjects in question. If, however, the student happens to be ill during the term when such lectures or classes are taking place he may miss enough of them to make it impossible for him to be signed up. Then, again, should he fail to satisfy the examiners at some examination, he cannot present himself for re-examination for at least three months. This generally entails further consequences, because, apart from the student's success at the next stage in his career being imperilled by the need for restudying the subjects in which he has failed, the Examining Boards usually insist upon a definite interval elapsing between one examination and the next. Further, many Boards have refused to recognize lectures and classes which have been attended before the student has passed the requisite examination in earlier subjects, and the Council now recommends that the professional examinations in anatomy and physiology be passed before the minimum period of three years' subsequent study be entered on; in other words, no clinical study should count as such until these examinations have been successfully completed. Failure at an examination may thus not only mean deferment of the date of examinations, but deferment of the beginning of the student's study of certain subjects. It is thus exceedingly easy for a student to fail to qualify in five years, and, as a fact, the majority of students take longer.

In speaking of the minimum period, it is to be remembered also that that time is only sufficient to gain a registrable qualification, such as a Bachelorship of Medicine or Surgery or the diplomas of the Royal Colleges. Those who wish to take a higher qualification—for instance, the F.R.C.S. Eng.—must prolong their work for another year or more. So, too, must in some cases those who desire to convert their Bachelorship into a Doctorate. This may entail further formal examination, but at some universities the M.D. is obtainable on presentation of a thesis when the Bachelor has attained a certain age and has practised for a certain number of years. However, a student's career proper may be considered, perhaps, to have ended when he obtains his first registrable qualifica-

tion, for while preparing himself for any further tests he can, and usually does, hold some junior appointment which more or less covers his expenses.

#### MEMORANDUM ON STUDENTS' REGISTRATION.

The following memorandum has been drawn up by the Registrar of the General Medical Council as to the procedure for those who desire to be registered as medical or dental students.

The requirements for the registration of medical and dental students are the same, and every intending student should, in his own interest, register as soon as he commences his professional curriculum.

A recognized examination in general education must first be passed. If the student intends to obtain a university degree, he should apply to the university he selects for information as to its matriculation requirements in arts or pure science, or as to any examinations which may be accepted in lieu of its matriculation examination. If the student intends to obtain a qualification from one of the licensing corporations (these are the Conjoint Boards in England, Scotland and Ireland, the Society of Apothecaries of London, and the Apothecaries' Hall of Dublin), any of the examinations indicated below will be accepted. The subjects required are: (1) English, (2) Mathematics (elementary), (3) a language other than English, and (4) an additional subject or subjects, as required by the regulations of the particular examination, to be chosen from the following—namely, History, Geography, Physical Science, Natural Science, Latin, Greek, Hebrew, French, German, or other language accepted by the university for matriculation.

The requirements of the preliminary examination in general education being satisfied, it is then necessary to pass an examination in Elementary Chemistry and Elementary Physics, which is conducted or recognized by one of the licensing bodies—that is, university or corporation. The student should write to the body whose qualification he desires to obtain (a list will be found below) for information in regard to its requirements for this examination.

These two examinations having been passed and the student having attained the age of 17 years, he should apply to one of the universities or one of the medical schools for admission in order to commence therein his professional curriculum. Immediately his course of medical study has begun, he should apply to the Dean of the school, or to the Registrar of one of the branches of the General Medical Council, for a form of application for registration as a student, and should have it completed and sent in to one of the Branch Councils as soon as possible. There is no fee for this registration. The medical curriculum will extend for at least five years, and the dental curriculum for at least four years, from the date of registration as a student.

A student who has studied the subject of elementary biology at an institution recognized by one of the licensing bodies may, if the body sees fit, be admitted to the professional examination in this subject immediately after his registration as a student. For information in regard to this, he should apply to the body whose medical qualification he seeks.

A dental student may commence his curriculum, if he so desires, as a pupil with a registered dental practitioner; but it is desirable, if possible, that he should commence professional study at a dental school. If, however, he is apprenticed to a dental practitioner, he will have to devote twice as much time to the study of dental mechanics as he would if he had taken this subject in a school. This will have the effect of lengthening the duration of his curriculum to five or six years instead of four.

The addresses of the Branch Registrars are:

General Medical Council, 44, Hallam Street, Portland Place, London, W.1.

Scottish Branch Council, 20, Queen Street, Edinburgh.

Irish Branch Council, 35, Dawson Street, Dublin.

#### Examining Bodies in Preliminary Education.

The following is a list of the officials of the examining bodies in preliminary education, with the names of the examinations in parentheses.

- Registrar, Queen's University of Belfast, Belfast. (Matriculation.)
- Registrar, The University, Bristol. (Matriculation, School Certificate, or Higher School Certificate.)
- Assistant Registrar, The University, Cambridge. (Previous.)
- Secretary, Cambridge Local Examinations, Syndicate Buildings, Cambridge. (School or Higher School Certificate.)
- Director, Central Welsh Examination Board, Cardiff (Senior Certificate.)
- Registrar, University of Dublin School of Physic, Dublin. (Junior Freshman, Special Preliminary, Junior Exhibition, or Examination for first, second, third, or fourth year in Arts.)
- Dean, University of Durham School of Medicine, Newcastle-on-Tyne. (First School Certificate or Matriculation.)
- Registrar, Irish Conjoint Board, Royal College of Surgeons, Dublin. (Preliminary Examination.)
- Registrar, National University of Ireland, Dublin. (Matriculation.)
- Joint Commissioners, Intermediate Education Board of Ireland, 1, Hume Street, Dublin. (Middle and Senior Grade Examinations.)
- Assistant Secretary, Ministry of Education, Belfast. (Senior Grade Intermediate Examination.)
- Academic Registrar, The University of London, South Kensington, London, S.W.7. (Matriculation or General School Certificate.)
- Secretary, Northern Universities Joint Matriculation Board, 215, Oxford Road, Manchester. (Matriculation or Senior School Certificate.)
- Registrar, The University, Oxford. (Responsions or Moderations.)
- Secretary, Oxford and Cambridge Schools' Examination Board, Schools' Examination Office, Balliol College, Oxford. (School or Higher School Certificate.)

Secretary, Oxford Local Examinations, University Press, Oxford. (School or Higher School Certificate.)  
 Secretary, College of Preceptors, Bloomsbury Square, London, W.C.2. (Senior Certificate.)  
 Secretary, Educational Institute of Scotland, 47, Moray Place, Edinburgh. (Preliminary Medical Certificate.)  
 Secretary, Scottish Education Department, 14, Queen Street, Edinburgh (Leaving Certificate.)  
 Secretary, Scottish Universities Entrance Board, 81, North Street, St. Andrews. (Scottish Universities Preliminary Examination.)

#### Licensing Bodies.

The following is a list of the officials of licensing bodies and their addresses:

Secretary, English Conjoint Board, 8, Queen Square, Bloomsbury, W.C.1.  
 Clerk, Society of Apothecaries, Blackfriars, E.C.4.  
 Registrar, The University, Oxford.  
 Registrar, The University, Cambridge.  
 Secretary, University of Durham School of Medicine, Newcastle-on-Tyne.  
 Principal, University of London, South Kensington, S.W.7.  
 Registrar, Victoria University, Manchester.  
 Registrar, The University, Birmingham.  
 Registrar, The University, Liverpool.  
 Registrar, The University, Leeds.  
 Registrar, The University, Sheffield.  
 Registrar, The University, Bristol.  
 Registrar, University of Wales, Cathays Park, Cardiff.  
 Secretary, Scottish Conjoint Board, 49, Lauriston Place, Edinburgh.  
 Dean of the Faculty of Medicine, The University, Edinburgh.  
 Registrar, The University, Glasgow.  
 Registrar, Royal Faculty of Physicians and Surgeons, Glasgow (Dental).  
 Secretary of the Medical Faculty, The University, Aberdeen.  
 Secretary, The University, St. Andrews.  
 Secretary, Irish Conjoint Board, Royal College of Surgeons, Dublin.  
 Registrar, Apothecaries' Hall of Ireland, 55, Merrion Square, Dublin.  
 Medical Registrar, The University, Dublin.  
 Registrar, National University of Ireland, Dublin.  
 Registrar, Queen's University of Belfast, Belfast.

#### Medical Schools.

The following is a list of medical schools and their officials:

Secretary, University of Durham College of Medicine, Newcastle-on-Tyne.  
 Dean of the Medical School, St. Bartholomew's Hospital, London, E.C.1.  
 Dean of the Medical School, Charing Cross Hospital, S.W.1.  
 Dean of the Medical School, St. George's Hospital, S.W.1.  
 Dean of the Medical School, Guy's Hospital, S.E.1.  
 Dean of the Medical School, King's College, Strand, W.C.1.  
 Dean of the Medical School, King's College Hospital, S.E.5.  
 Dean of the Medical School, London Hospital, E.1.  
 Dean of the Medical School, St. Mary's Hospital, W.2.  
 Dean of the Medical School, Middlesex Hospital, W.1.  
 Dean of the Medical School, St. Thomas's Hospital, S.E.1.  
 Dean of the Medical School, University College Hospital, W.C.1.  
 Dean of the Medical School, Westminster Hospital, S.W.1.  
 Registrar, School of Medicine for Women, 7, Hunter Street, W.C.1.  
 Secretary, Bedford College for Women, N.W.1.  
 Secretary, Royal Holloway College, Virginia Water.  
 Dean of the Medical School, University College, Aberystwyth.  
 Dean of the Medical School, University College, Bangor.  
 Dean, University College of South Wales, Cardiff.  
 Dean of the Medical School, Welsh National School of Medicine, Cardiff.  
 Dean of the Medical School, University College, Swansea.  
 Dean of the Medical School, University College, Dundee.  
 Dean, School of Medicine of the Royal Colleges, Edinburgh.  
 Dean, St. Mungo's College, Glasgow.  
 Dean, Anderson's College Medical School, Glasgow.  
 Mistress, Queen Margaret College, Glasgow.  
 Registrar, School of Physick, Trinity College, Dublin.  
 Registrar, University College, Cork.  
 Registrar, University College, Dublin.  
 Registrar, University College, Galway.

#### Dental Schools.

The following is a list of dental schools and their officials:

Dean of the Dental School, Dental Hospital, Birmingham.  
 Dean, Royal Infirmary, Bristol.  
 Dean, General Hospital, Bristol.  
 Dean, Dental Hospital of Ireland, Dublin.  
 Dean, Dental Hospital, Dundee.  
 Dean, Edinburgh Dental Hospital, Edinburgh.  
 Dean, Glasgow Dental Hospital, Glasgow.  
 Dean, Dental Hospital, Leeds.  
 Director of Dental Education, Dental Hospital, Liverpool.  
 Secretary of the Dental School, Guy's Hospital, London, S.E.1.  
 Dean of the Dental School, London Hospital, E.1.  
 Dean, National Dental Hospital, Great Portland Street, W.1.  
 Dean, Royal Dental Hospital, Leicester Square, W.C.2.  
 Dean, Manchester Dental Hospital, 192, Oxford Road, Manchester.  
 Dean, Dental Hospital, Newcastle-on-Tyne.  
 Dean of the Dental School, Royal Hospital, Sheffield.  
 Registrar, Royal College of Surgeons in Ireland, Dublin.  
 Dean of the Dental Department of any University of the United Kingdom.

#### PROFESSIONAL EXAMINATION.

##### The Council's Recommendations.

The following recommendations of the General Medical Council in regard to professional examinations for medical and surgical qualifications were adopted in May, 1922:

1. In order to secure due continuity and sequence in medical study, two or more Professional Examinations in the earlier subjects should be held antecedently to the Final Examination in Medicine, Surgery, and Midwifery.
2. Three years at least should intervene between the date of passing the Professional Examination in Anatomy and Physiology and that of admission to the Final Examination in Medicine, Surgery, and Midwifery.
3. A candidate remitted in any subject of a Professional Examination should, before he is readmitted to examination therein, be required to produce satisfactory evidence that he has, during the interval of remission, pursued the study of the

subject in which he was rejected. Candidates who obtain less than 50 per cent. of the marks in any subject should be remitted for a longer period than three months.

4. In all the Professional Examinations sufficient time should be assigned to practical work, in order to test the thoroughness of the candidate's knowledge and to encourage practical methods of study.

5. Candidates in all their examination work should be carefully supervised.

6. Two examiners should always participate in the oral examination of a candidate, except in subordinate parts of practical examinations.

7. In all written examinations the questions in each subject should be submitted for the approval of all the examiners in that subject.

8. In all written examinations an average of at least half an hour should be allowed for a candidate to answer each question.

9. It is desirable that examiners, and in particular those for the Final Examination in Medicine, Surgery, and Midwifery, should be appointed or re-elected for at least three consecutive years.

10. Whatever may be the system of marking, the percentage for a pass in each subject should not be less than 50.

11. In the regulations for the several examinations it should be provided that examiners, in assessing marks, be empowered to take into account the duly attested records of the work done by the candidate throughout his course of study in the subject of the examination.

12. The Final Examination in Medicine, Surgery, and Midwifery, with the exception of the Clinical and Practical Examination in Midwifery and Gynaecology, must not be passed before the close of the fifth academic year of medical study.

13. The three portions of the Final Examination in Medicine, Surgery, and Midwifery should not be further subdivided into sections which may be entered for or passed separately.

14. Compensation in respect of marks as between the three different portions of the Final or Qualifying Examination—namely, Medicine, Surgery, and Midwifery—is contrary to the intention of the Medical Act (1836).

15. The Final Examination should include clinical and practical examinations in Midwifery and Gynaecology.

16. The clinical examination in Medicine, Surgery, and Midwifery should be held in properly equipped hospitals or examination halls well provided with suitable patients.

17. In the examinations in clinical medicine at least one hour, and in clinical surgery at least half an hour, should be allowed to the candidate for the examination of, and report on, his principal case.

18. In Medicine, in Surgery, and in Midwifery, no candidate should be allowed to pass who fails to obtain 50 per cent. of the aggregate marks assigned to the whole examination; or who fails to obtain 50 per cent. of the marks assigned to the clinical examination; or who fails to obtain 40 per cent. of the aggregate of the marks assigned to the written and oral examination. In Midwifery, where a clinical examination is not held, the duly attested records of the work done by the candidate in clinical midwifery must be presented to the examiners for assessment in the Final Examination; and no candidate should be allowed to pass who fails to obtain 50 per cent. of the aggregate marks assigned to Clinical and Practical Midwifery and Gynaecology.

19. The Final Examination should include the examination of secretions, the testing of urine, clinical microscopy, and prescription writing, and there should always be an oral examination in Medicine, Surgery, and Midwifery, which should include an examination on pathological specimens.

20. At the Final Examination each candidate should be submitted to a practical and oral examination in Pathology (macroscopic and microscopic), unless this has been included in a Professional Examination preceding the Final Examination.

21. Whatever be the method of entry for the Final Examination all candidates should be required to complete the three portions of the Final Examination within a period of nineteen months.

## The English Universities.

THERE are eleven universities in England and Wales, and some account of each of them follows. They all have now fully developed medical faculties. Until recently the only exception was the University of Wales, whose constituent colleges are those of Aberystwyth, Bangor, Cardiff, and Swansea. This university grants degrees, and has laid down a six years' curriculum for candidates for the M.B. and B.Ch. degrees, and it now provides, at the Welsh National School of Medicine at Cardiff (see page 426), instruction in all the subjects of the medical curriculum.



## UNIVERSITY OF OXFORD.

THE professional degrees conferred by this university are those of Bachelor of Medicine (B.M.), Bachelor of Surgery (B.Ch.), Doctor of Medicine (D.M.), and Master of Surgery (M.Ch.). It also grants a Diploma in Public Health and a Diploma in Ophthalmology. On receiving the B.M. the candidate is entitled to registration by the General Medical Council. In favourable circumstances this degree and the B.Ch. may be obtained in six or seven years from matriculation. Before receiving either, the candidate must have taken a degree in arts (B.A.), for which three years' residence within the university is necessary. This, however, does not necessarily mean deferment of professional study for that period, for the subjects chosen for the arts course may be the same as those in which examinations would in any case have to be passed for the medical degree.

In accordance with a statute which came into force on October 7th, 1920, women may be matriculated and admitted to degrees in the university. The statute is retrospective under certain conditions. Before matriculation a woman must have been admitted as a member of one of the five societies of women students (Lady Margaret Hall, Somerville College, St. Hugh's College, St. Hilda's Hall, or the Society of Oxford Home Students). Women members of the university are admitted to all degrees, except those in divinity, under the same conditions as those laid down for men in regard to examinations, courses of study, and fees, and under corresponding conditions as to residence at the university. Among the university diplomas open to women are those in anthropology, ophthalmology, and public health.

A candidate may obtain the B.A. degree in either of the following ways, of which the former constitutes the normal course for medical students:

(a) By passing Responsions (or one of the examinations which are accepted as equivalent), the Scripture examination, some of the preliminary examinations in the Natural Science School,<sup>1</sup> or the Honour School of Mathematics in the first public examination; and one of the final honour examinations—the Final Honour School of Natural Science (Physiology) is that usually taken.

(b) By passing Responsions (or one of the examinations which are accepted as equivalent), Moderations, a Scripture examination, or, in the event of a candidate objecting, an examination on some substituted book; and the Final Pass School in three subjects, two of which may be the same as two of the preliminary examinations in natural science.<sup>2</sup>

Responsions and the preliminary examinations in Natural Science may be passed before a candidate is a member of the university<sup>3</sup>; Moderations and Scripture can be passed in or after the second term; the final pass school may be taken any time after Moderations; a final honour school may be taken at the end of the third or fourth academical year—that is, within nine or twelve terms respectively; the preliminary examinations of the Natural Science School may be taken as soon as Responsions has been passed or exemption obtained.

## PROFESSIONAL DEGREES.

To obtain the B.M., B.Ch. degrees the candidate must first pass in four of the subjects of the Preliminary Examination of the Natural Science School—namely, physics, chemistry, zoology, and botany.

He then has two further examinations to pass—the First B.M. and the Second B.M. These take place twice a year, the first on the Thursday, the second on the Wednesday, of the eighth week of Michaelmas and Trinity terms. Every candidate at the First M.B. is examined in human anatomy, in physiology, and in organic chemistry, but is excused from physiology if he has obtained a first or second class in the Honour School of Physiology, and from organic chemistry if he has satisfied the examiners in Part I of the Honour School of Chemistry. Once he has passed this examination he can, on production of certain certificates, be examined as soon as he pleases in pathology, forensic medicine and hygiene, materia medica, and pharmacology (subjects of the second examination), but cannot present himself for the remaining subjects—medi-

cine, surgery, and midwifery—until the eighteenth term from the day of his matriculation unless he be already a registered medical practitioner, and not until a period of at least thirty-three months has elapsed from the date of his passing the first examination, and he must pass in all the three subjects at one and the same time.

Before admission to the second B.M. examination the student must produce certificates of instruction from a medical school recognized by the university, of having acted as clinical clerk and dresser, each for six months, and as post-mortem clerk for three months, of attendance on labours, of instruction in infectious and mental diseases and ophthalmology, and of proficiency in vaccination and the administration of anaesthetics.<sup>4</sup> He must also produce certificates of attendance in laboratory courses in pathology, bacteriology, and pharmacology, either in Oxford or in a recognized medical school.

## D.M. AND M.Ch. DEGREES.

A Bachelor of Medicine who wishes to proceed to the D.M. must have entered his thirtieth term and must present a dissertation for approval by the appointed examiners on a subject previously approved by the Regius Professor of Medicine. If a candidate for the M.Ch. he must have entered his twenty-first term and must pass an examination, which is held in June.

Examinations for the Diploma in Public Health are held in Trinity and Michaelmas<sup>4</sup> terms; that for the Diploma in Ophthalmology is held annually in March. For the Diploma in Ophthalmology attendance on a twelve months' course of clinical ophthalmology in hospitals or institutions recognized for the purpose by the Board of the Faculty of Medicine, and on a course of instruction in Oxford lasting two months, is obligatory. Candidates must have their names on the *Medical Register* of the United Kingdom, unless, being Bachelors or Doctors of Medicine of universities outside the United Kingdom, they have obtained special permission from the Board of the Faculty of Medicine.

## TEACHING.

The several colleges provide their undergraduate members with tutors for all examinations up to the B.A. degree. In addition, the university provides certain courses of instruction, including lectures, demonstrations, and practical work, which cover all the subjects of the Preliminary Examination and First B.M., and those of the Final Examination.

## SCHOLARSHIPS.

Most colleges grant scholarships open to intending medical students of £20 a year, tenable for four years, in natural science, chemistry, physics and biology. Exhibitions of varying value are also awarded in these subjects. At two colleges (University and Pembroke) there are medical entrance scholarships of £100 a year. Particulars can be obtained on application to the college tutors. Scholarships for women are also offered by the various women's colleges, from the principals of whom details of the examinations may be obtained. A Radcliffe Travelling Fellowship of £300 a year, tenable for two years, is conferred annually; candidates must have taken the B.M. degree. A Philip Walker Studentship in Pathology of £200 a year, tenable for two years, is awarded biennially for the encouragement of research. The prizes of £100 each are the Rolleston Memorial Prize and the Philip Walker Prize for research in natural science (including physiology). The Theodore Williams Scholarships in Anatomy, Physiology, and Pathology, of the value of £50 each, tenable for two years. A Radcliffe Scholarship in Pharmacology of £50 for one year, open to the University, is awarded annually by the Master and Fellows of University College. A Burney Yeo King's College Hospital Scholarship of £20 is awarded annually.

## FEES.

An annual fee of £4 10s. is paid to the university for the first four years, being reduced to £1 when the B.A. has been taken. For the degree the fees are: the B.A., £7 10s.; the B.M. and B.Ch., £14; the D.M., £25; the M.Ch., £12. College fees, varying in amount, are paid for the first four years of membership and in taking degrees. Tuition fees vary from £21 to £30. The minimum annual cost of living during the three university terms may be regarded as not less than £180, or for women not less than £140.

For further information application may be made to Dr. E. W. Ainsley Walker, Dean of the School of Medicine, University of Oxford.

<sup>1</sup> The four subjects of the medical preliminary examinations are four of the subjects in the natural science preliminary, and can be commenced directly after passing Responsions.

<sup>2</sup> Membership is constituted by matriculation and by becoming either a member of a College or a Hall, or a non-collegiate student.

<sup>3</sup> For the certificates that will be required from candidates amenable to the new Regulations of the General Medical Council, see *Examination Statutes*, Clarendon Press, Oxford, 1925 edition.

<sup>4</sup> The examination in Michaelmas Term is at present suspended.

## UNIVERSITY OF CAMBRIDGE.

The professional degrees given by this university are those of Bachelor of Medicine (M.B.) and Bachelor of Surgery (B.Chir.), each of which entitles the possessor to admission to the Register by the General Medical Council, and the higher degrees of Doctor of Medicine and Master of Surgery. It also grants Diplomas in Tropical Medicine, in Public Health, in Hygiene, in Psychological Medicine, and in Medical Radiology and Electrology to medical practitioners; not necessarily graduates of the university. Information regarding these diplomas will be found in later sections under the headings Tropical Medicine, Psychological Medicine, Public Health, and Radiology. A candidate for the M.B., B.Chir. degrees need not possess a degree in arts; it is sufficient if he has passed the Previous examination or some other examination accepted by the university as its equivalent. Most students, however, are advised to take the B.A. degree, preferably by obtaining honours in the Natural Science Tripos at the end of their third year. Under the new regulations the attainment of a sufficient standard in chemistry or in physiology in this Tripos will secure exemption from the corresponding tests in the First and Second M.B. examinations. Women students, members of Girton or Newnham College, are now admitted to the M.B. examinations.

## PROFESSIONAL EXAMINATIONS

To obtain the M.B. degree the candidate must pass three examinations; those who are finally successful may receive the B.Chir. degree (which is a complete registrable qualification) without further examination.

**First M.B.**—This comprises (1) general and inorganic chemistry, (2) mechanics, (3) physics, (4) elementary biology. The parts may be taken together or separately. In either case the candidate before admission to examination must have satisfied the requirements in respect of the Previous examination and paid the registration fee. Certain exemptions from the First M.B. examination are allowed; the regulations may be obtained from the Registry. The complete examination is held twice a year—in October and June; an additional examination, in Parts 2 and 4, is held in December.

**Second M.B.**—This examination comprises: Part I, organic chemistry; Part II, human anatomy and physiology; Part III, elementary pharmacology, including pharmaceutical chemistry and the elements of general pathology. No student is admitted to the first part of the second examination until he has passed the first part of the first examination. No student is admitted to the second part of the second examination until he has passed all parts of the first examination. No student shall be admitted to the third part of the second examination until he has passed the first and second parts of the second examination. The candidate must be signed up in all three subjects and have dissected for one academic year. The examinations for Part I and II are held in December and June; that for Part III in October and April.

**Third M.B.**—This is divided into two parts, to neither of which is the candidate admitted until he has passed the examinations previously mentioned. A candidate for the first part, which deals with the principles and practice of surgery (including special pathology) and midwifery and diseases peculiar to women, must have completed five years of medical study and be signed up in these subjects and have completed two years and a half of hospital practice. Before admission to the second part the candidate must have completed five years of medical study, and be duly signed up in all subjects and have completed three years of hospital practice. He must also possess certificates showing that he has fulfilled all the recommendations as well as the requirements of the General Medical Council. The examination is in the principles and practice of physic (including diseases of children, mental diseases, and medical jurisprudence), pathology (including hygiene and preventive medicine), and pharmacology (including therapeutics and toxicology). The Third M.B. examinations are held twice a year—in June and December.

**Act for the M.B.**—Before receiving his M.B. degree a candidate who has been successful at the final M.B. exam-

inations has to write a thesis. This he reads in public on an assigned day, and is then questioned concerning it and other subjects of medicine by the Regius Professor of Physic. If approved at this test he is then certified as having "kept the Act" satisfactorily, and in due course receives his degree. Medical degrees may be taken in absence by those living abroad, the candidate sending to the Regius Professor of Physic a dissertation, which is laid before the Degree Committee.

## THE HIGHER DEGREES.

The M.D. degree may be taken by a Bachelor of Medicine of three years' standing (and a Master of Arts of four years' standing who has completed the course required for M.B.) after writing a thesis approved by the M.D. Degree Committee, and keeping a further Act, at which he reads his thesis and is examined thereon. Previously to the Act being kept a topic taken from the general subject of his thesis (whether it be physiology, pathology, pharmacology, practice of medicine, State medicine, or the history of medicine) is submitted to the candidate, on which he is required to write an extempore essay.

The M.Chir. degree may be granted to a candidate who has qualified for the B.Chir. at least two years previously; he is then examined in pathology, surgery, surgical anatomy, and surgical operations. The tests are partly in writing, partly oral, and partly practical: they include the writing of an extempore essay.

## FEES.

In addition to college fees, tutorial fees, and the expense of living, the following examination fees are payable: First M.B., £5 5s.; Second M.B., £6 6s.; Third M.B., £10 10s. For schedules referring to the examinations, lists of schools recognized by the university, and other information, application should be made to the University Registry, Cambridge.

## UNIVERSITY OF LONDON.

Under the regulations of the University of London the degrees obtainable in the Faculty of Medicine are those of Bachelor of Medicine and Surgery, Master of Surgery in two branches, and Doctor of Medicine in six different branches. The university has its own matriculation examination, and this is of so peculiar a kind that candidates should obtain and carefully study the booklets relating to it. The matriculation examination is open to any person, of either sex, who has attained the age of 16. It is held in January, June, and September, and lasts four days; the first two take place both in London and in certain provincial centres; the September examination is held in London only.

In no circumstances is a degree granted to anyone in less than three years after the date at which he passed the Matriculation Examination or obtained registration in some other way; and, unless they are already registered medical practitioners of a certain age and standing, all medical students must pass not less than five and a half years in professional study subsequent to matriculation, of which the last three years must be spent at a school of advanced medical studies.

## PROFESSIONAL EXAMINATIONS.

**M.B., B.S.**—There are three examinations, the last two being subdivided. They are held twice a year.

The First Examination (held in July and December) covers inorganic chemistry, general biology, and physics, there being two papers, a practical test, and a possible oral test in each subject. The names of successful candidates are placed in alphabetical order, with a note as to any subject in which a candidate has distinguished himself or herself.

The Second Examination is held in March and July. Part I cannot be passed within six months of the passing of the First Examination. It covers organic and applied chemistry, the candidate's knowledge being tested as in the earlier examination. It is a pass examination, but a mark of distinction may be won. Candidates for Part II must have passed the First Examination at least eighteen months previously, besides having completed Part I of the Second Examination. The subjects are anatomy, physiology, and pharmacology, the tests being written, oral, and practical. Candidates who fail in one subject may sit for re-examination in that subject alone if the examiners think fit.

No candidate is admitted to the Third M.B., B.S. Examination within three academic years from the date of Second Examination: The subjects are therapeutics and mental diseases), pathology, forensic medicine and hygiene, surgery, and midwifery and diseases of women. They may be divided into two groups, one comprising medicine, pathology, forensic medicine, and hygiene, and the other surgery and midwifery and diseases of women. Either group may be taken first at the option of the candidate, or the groups may be taken together. Only candidates who show a competent knowledge of all the subjects comprising a group are passed. There is no separate examination held for honours, but the names of successful candidates are divided into an honours list and a pass list, and a university medal may be awarded the candidate who has most distinguished himself in the whole examination.

#### THE HIGHER DEGREES.

**M.D.**—An examination for the M.D. is held twice yearly—in December and July. Every candidate must have passed the examination for the M.B., B.S., unless he became M.B. before May, 1934. He may present himself for examination in any one of the following branches: (1) medicine, (2) pathology, (3) mental diseases and psychology, (4) midwifery and diseases of women, (5) State medicine, (6) tropical medicine, and, if he wishes, may pass also in another branch at a subsequent examination.

The period that must elapse between acquiring the M.B. and sitting for the M.D. in any branch varies between one and two years, according to the nature of the candidate's previous work, and in all cases evidence must be afforded of special study of the subject chosen; both written and practical examinations must be passed, though exemptions can be obtained from the former in exceptional circumstances. In each branch the scheme of examination is the same: two papers on its special subject, a paper on an allied subject—for example, medicine in the case of branch (4), pathology in branch (1)—an essay on one of two suggested topics connected with the special subject, and a clinical or other practical test. In any branch of the M.D. Examination a gold medal of the value of £20 may be awarded.

**M.S.**—The regulations with regard to the Mastership in Surgery are of a corresponding kind, but there are only two branches in which it may be obtained—General Surgery and Dental Surgery.

#### FEES.

The examination fees have been raised from pounds to guineas for all examinations held after September 1st, 1918. For Matriculation, 2 guineas for each entry. First Examination: 5 guineas for each entry to the whole examination. For re-examination in one subject the fee is 2 guineas. Second Examination, Part I: 2 guineas for the first and each subsequent entry. Second Examination, Part II: 8 guineas for each entry to the whole examination. For re-examination in one subject the fee is 4 guineas. M.B., B.S. Examination: 10 guineas for each entry to the whole examination, and 5 guineas for examination or re-examination in either group. M.D. and M.S. Examinations. 20 guineas, and 10 guineas on re-examination.

Inquiries should be addressed to the Registrar, the University of London, South Kensington, S.W.7.

#### UNIVERSITY OF BIRMINGHAM.

This university confers medical and surgical degrees—namely, M.B., Ch.B., M.D., and Ch.M.—and also diplomas and degrees in State medicine and dentistry. It has a plan, too, by which, extending his study to six instead of five years, the M.B., Ch.B. candidate may become a Bachelor in Science as well. Of the five years' curriculum, the first four must be spent, as a rule, at the university itself, the fifth being passed at any approved school or schools. Occasionally, however, the Senate will reduce the period of enforced residence to three years and exempt from the First M.B. (Part I) those who have passed elsewhere an examination considered to be its equivalent. A degree of Ph.D. is also conferred for research study in medicine under special regulations. Candidates must be graduates in medicine of a recognized university.

Students entering the Medical Faculty for the M.B., Ch.B. degrees must have passed—

(1) Either (a) the matriculation examination of the Joint Board of the Universities of Manchester, Liverpool, Leeds,

Sheffield, and Birmingham; or (b) some other examination recognized as equivalent to the matriculation. Candidates for medical degrees are recommended to take Latin and a science subject—chemistry or physics—at the matriculation examination, although these subjects are no longer compulsory. The matriculation examination of the Joint Board is held in July and September. The regulations and the list of examinations accepted in lieu thereof will be sent on application to the Secretary to the Board, Joint Matriculation Board, 315, Oxford Road, Manchester.

(2) A recognized pre-medical examination in the subjects of chemistry and physics—for example, the Higher School Certificate of the Joint Matriculation Board; or a candidate may attend courses for pre-medical year in the university, October to June, taking chemistry and physics; and biology (optional).

#### PROFESSIONAL EXAMINATIONS.

The candidate for the M.B., Ch.B. degrees has five examinations to pass. In the second and final examinations the candidate must pass in all the prescribed subjects or undergo the whole examination again.

The First M.B. (Part I) deals with elementary biology, and physical and organic chemistry. The First M.B. (Part II) deals with anatomy and physiology, and the student must pass in both simultaneously. The Second M.B. deals with pathology and bacteriology, materia medica, and pharmacy. The Third M.B. takes place at the end of the fourth year, the subjects being forensic medicine, toxicology, public health, and pharmacology and therapeutics.

**Final M.B.**—This comprises medicine, surgery, midwifery and diseases of women, ophthalmology, and mental diseases. The candidate, in addition to more ordinary certificates, must be prepared with a certificate of having acted as a *post-mortem* clerk for three months, and received special instruction in anaesthetics and clinical instruction in diseases peculiar to women, asylum ward work, ophthalmology, children's diseases, venereal diseases, ear and throat and skin diseases, etc. In respect to ophthalmology he must show that he has learnt refraction work. He also has to present to the examiners at the time of his examination a short written commentary on a gynaecological subject or case investigated during the period of gynaecological clerking, and certificates drawn up by himself regarding four actual cases of lunacy and notes on two others.

**M.D.**—An ordinary candidate for this degree must be a M.B., Ch.B. of not less than one year's standing. He presents an original thesis for approval, and then passes a general examination in the principles and practice of medicine. From the latter the Board of Examiners may exempt a candidate whose thesis is of exceptional merit. The regulations respecting the Ch.M. are of the same general character. Subject to certain requirements as to special research or other post-graduate study, graduates of other universities may obtain the M.D. and Ch.M. in the same way as holders of the Birmingham M.B., Ch.B.

#### FEES.

The fee for matriculation is £2 (payable to Joint Matriculation Board): £2 10s. for pre-medical examination (if taken in university), and £2 10s. for each of the first four professional examinations: M.B., Ch.B. degree fee, £10; M.D. and Ch.M. examinations, £12 10s. each. For further particulars application should be made to the Dean of the Medical Faculty, University of Birmingham.

#### UNIVERSITY OF BRISTOL.

In the Faculty of Medicine the following degrees are conferred: Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Dental Surgery (B.D.S.), and Master of Dental Surgery (M.D.S.). There are also the following diplomas: diploma in public health (D.P.H.), diploma in dental surgery (L.D.S.), and diploma in veterinary State medicine. All candidates for degrees in medicine, surgery, and dentistry are required to pass an examination called the School Certificate Examination, or to pass such examination as may be regarded as equivalent by the Senate. All courses, degrees, and diplomas are open to men and women alike.

**Conjoined Degrees of Bachelor of Medicine and Bachelor of Surgery.**—Candidates must be not less than 21 years of age and have pursued the courses prescribed by univer-

sity regulations during not less than five years after passing the first examination in chemistry and physics, of which three shall have been passed in the university, and two of these three subsequent to passing the second examination. All candidates for the degrees of M.B., Ch.B. are required to satisfy the examiners in the several subjects of three examinations.

*The First Examination.*—The subjects of examination are: chemistry (inorganic), physics, and biology, the courses pursued being those for the time being approved for the intermediate part of the B.Sc. curriculum. This part of the curriculum shall extend over one year. (Candidates who have passed the Higher School Certificate approved by the Board of Education in these subjects will not be required to sit for the First Examination and will be regarded as having completed one year of study.)

*The Second Examination.*—The subjects of examination are: organic chemistry and elementary anatomy (Part I) and advanced anatomy and physiology (Part II). Parts I and II may be passed separately or together.

*The Final Examination.*—The subjects of examination are: materia medica and pharmacy, pharmacology and therapeutics, general pathology, morbid anatomy, and bacteriology (Part I); special pathology, forensic medicine, toxicology, and public health, obstetrics (including diseases of women), surgery (systematic, clinical, practical, and operative), medicine (systematic, clinical, and practical, including mental diseases) (Part II). The subjects included in Part II may be taken in two groups—namely, Group I: surgery and obstetrics; Group II: medicine, public health, special pathology, forensic medicine, and toxicology. Candidates may pass Parts I and II together or separately, and the two groups of Part II may likewise be taken together or separately. Forensic medicine and toxicology may be taken either with Part I or with Group II of Part II.

*Degree of Doctor of Medicine.*—Candidates must be Bachelors of the university of not less than two years' standing as such, and may elect either (1) to pass an examination in general medicine, or (2) to pass an examination in State medicine, or (3) to present a dissertation. The candidate who elects to pass the examination in State medicine must hold a Diploma in Public Health of some university or college, and the candidate who elects to present a dissertation may be examined in the subject thereof.

*Degree of Master of Surgery.*—Candidates shall be Bachelors of not less than two years' standing as such, during which period they shall have attended the surgical practice of an institution approved for the purpose. They shall pass an examination in surgical anatomy, pathology, and bacteriology, and operative, clinical, and general surgery, and present to the university a dissertation on some subject of surgery. The degree may be taken also in general surgery, and a special subject—for example, oto-rhino-laryngology, ophthalmology, and gynaecology.

*Diploma in Public Health.*—Candidates must be at least 23 years of age, be fully registered medical practitioners of not less than two years' standing as such, and have passed the examination prescribed by regulation. The examination is divided into two parts.

## UNIVERSITY OF DURHAM.

To its own undergraduates, who may be of either sex, this university grants the degrees of Bachelor of Medicine and Bachelor of Surgery (M.B., B.S.), and Doctor of Medicine (M.D.), Master of Surgery and Doctor of Surgery (M.S. and D.Ch.), Bachelor of Hygiene, Doctor of Hygiene, and Bachelor of Dental Surgery and Master of Dental Surgery (B.D.S. and M.D.S.); it also grants diplomas in public health, psychiatry, and dental surgery. The university accepts the Durham University School Certificate Examination (if the required subjects are passed with credit) for matriculation purposes, but also accepts the tests of a considerable number of other educational bodies as a full or partial equivalent. A list may be obtained on application. In addition to satisfying the matriculation requirements of the university,

every student must (1) pass a pre-registration examination in physics and inorganic chemistry conducted or recognized by the university, and (2) be registered on the books of the General Medical Council. To become a graduate, however, at the university it is not necessary to pass the major portion of the five years' curriculum within its precincts. It is sufficient if, before he presents himself for his final examination, the candidate has passed at least one year in study at the University of Durham College of Medicine, Newcastle-upon-Tyne, including the practice of the Royal Victoria Infirmary in the same city. The earlier examinations may be passed while the student works elsewhere.

## PROFESSIONAL EXAMINATIONS.

There are four professional examinations for the M.B., B.S. degrees. The First, Second, and Third Examinations are held in March, June, and December, and the Final Examination in June and December. The first deals with biology and organic chemistry; the second with anatomy and physiology; the third with pathology, bacteriology, materia medica, pharmacology, therapeutics, and pharmacy, medical jurisprudence, and public health. At the final M.B., B.S. the candidate is examined in medicine, clinical medicine and therapeutics; surgery and clinical surgery; midwifery and diseases of women and children; clinical and practical midwifery and gynaecology; and clinically in psychological medicine, diseases of the throat, nose, and ear, diseases of the skin, diseases of the eye, and diseases of children.

*M.D.*—A Bachelor of Medicine who wishes to proceed to this higher degree must be of at least two years' standing, and must comply with the regulations printed in the Calendar of the College of Medicine. If the candidate is not a M.B. of the university, he must be a practitioner of fifteen years' standing, 40 years of age, and submit to special tests. (See under Degrees for Practitioners, p. 447).

*M.S.*—Candidates for this degree must have been engaged in practice for at least two years subsequent to becoming M.B., B.S. Durham. They are submitted to an examination which covers the whole range of surgical knowledge.

*D.Ch.*—The university grants also the degree of Doctor of Surgery. Candidates for this degree must be registered medical practitioners, not less than 24 years of age. They must devote three years, subsequent to obtaining a registrable qualification, to the study of surgery and ancillary subjects: one at least of the three years must be spent in the university. The candidate must submit to the professor of surgery the course of study he proposes to follow, and this course must be approved by the Board of the Faculty of Medicine.

One year must be devoted mainly to work in the departments of anatomy, physiology, pathology, and bacteriology, and the candidate must submit evidence of having so worked. Not less than six months of another year must be spent as resident surgeon in a recognized teaching hospital, and the rest of the year in the study of surgery in a recognized medical centre. Not less than six months of one of the three years must be spent in surgical study abroad.

## Degree of Bachelor of Hygiene and the D.P.H.

No candidate is admitted to the final examination for the degree of B.Hy. unless he is a Bachelor of Medicine and Surgery, of not less than two years' standing, of a recognized university.

No candidate is admitted to the final examination for the D.P.H. unless he is a registered medical practitioner of not less than two years' standing.

The course of study for the B.Hy. and D.P.H. extends over a period of not less than twelve calendar months subsequent to the attainment of a registrable qualification. Candidates for the B.Hy. must attend this course at the University of Durham; candidates for the D.P.H. may attend it at the University of Durham or at any medical school or institution which is recognized by the university.

The examination for the diploma or degree consists of Part I and Part II, each of which extends over not less than two days, and is conducted by examiners specially qualified. A candidate must pass in all the subjects of Part I before being admitted to examination for Part II. In Part I, and also in Part II, a candidate must pass in all the specified subjects at one time.

The examination for Part I is practical, written, and oral, and includes the following subjects: bacteriology and parasitology (including medical entomology); chemistry and physics; and

meteorology and climatology, in relation to public health. Candidates are not admitted to examination for Part I until after they have completed the prescribed courses of instruction in the subjects thereof.

The examination for Part II includes the following subjects: hygiene and sanitation (including sanitary construction); epidemiology and infectious diseases; sanitary law and vital statistics; public health administration. The examination is written and oral, and includes practical examinations in infectious diseases; food inspection, inspection of premises—dwellings, factories, workshops, schools, etc. Candidates are not admitted to examination for Part II until after they have completed the prescribed courses of instruction in the subjects thereof.

#### Doctor of Hygiene.

Candidates for the degree of Doctor of Hygiene must be Bachelors of Hygiene of two years' standing, and are required to satisfy the examiners that they have conducted original research in the subject of public health.

#### Diploma in Psychiatry.

Candidates must be registered medical practitioners, and, unless qualified before January 1st, 1911, must have attended, subsequently to passing their qualifying examinations, courses of instruction in: (a) anatomy; (b) physiology; (c) pathology; (d) bacteriology; (e) psychology and experimental psychology; (f) clinical neurology; (g) psychiatry; (h) clinical psychiatry. The examination consists of two parts, namely: (1) anatomy, physiology, pathology, and bacteriology; (2) psychology and experimental psychology, neurology, and psychiatry (systematic and clinical); and candidates may present themselves for the whole examination or for either part separately.

#### Licence and Degrees in Dental Surgery.

**L.D.S.**—Every dental student must, at the commencement of his studentship, be registered in the manner and under the conditions prescribed for medical students.

The First Examination consists of three parts, which may be passed separately: Part 1, organic chemistry; Part 2, biology; Part 3, theoretical dental mechanics, dental metallurgy (theoretical and practical). Second Examination: Anatomy, physiology (including biochemistry and biophysics), dental anatomy, and dental histology. Third Examination: Pathology and bacteriology, practical dental mechanics, dental materia medica and therapeutics. Final Examination: Medicine, surgery, dental surgery and pathology, orthodontics, operative dental surgery and dental prosthetics, and anaesthetics.

A candidate before presenting himself for examination is required to furnish certificates of instruction in the required subjects, attended after registration as a dental student at recognized colleges or medical schools.

**Degree of Bachelor of Dental Surgery.**—1.—Students taking their complete course of instruction in the university must pass the same matriculation tests as medical students, and the same pre-registration examination in inorganic chemistry and physics. After registration students must spend five years in the university. They must attend the practice of the Newcastle-upon-Tyne Dental Hospital for not less than two and a half years; six months of this time must be devoted to the study of the higher branches of dental science. There are four examinations. The subjects of the examinations are as follows: *First:* Biology, organic chemistry, and dental mechanics and metallurgy. *Second:* Anatomy, physiology, dental anatomy, and histology. *Third:* Pathology and bacteriology, dental materia medica and therapeutics, and practical and dental mechanics. *Final:* Medicine, surgery, dental surgery and pathology, orthodontics and operative dental surgery. In this subject knowledge of a much higher standard, and more advanced practical work, are required than for the Licence in Dental Surgery.

2.—Candidates possessing a Licence in Dental Surgery of a British university must study for at least one year in the university. During such year they must (a) attend a course of instruction in pathology and bacteriology, and (b) spend at least six months in the Newcastle-upon-Tyne Dental Hospital in the study and practice of the higher branches of dental science. They must also pass the third and final examinations for the degree of Bachelor of Dental Surgery.

**Degree of Master of Dental Surgery.**—Every candidate for this degree must be a Bachelor of Dental Surgery of the university of not less than two years' standing, and present an essay embodying original work and research in some subject connected with dentistry. He must also perform to the satisfaction of the examiners a piece of special dental work demanding a high degree of skill and experience.

The examinations are held concurrently with the medical examinations.

The practical examinations in dentistry are conducted at the Newcastle-upon-Tyne Dental Hospital.

#### FEES.

The following fees are payable: Matriculation, £2; Examinations, First, Second, and Third M.B., B.S., each £5; Final M.B., B.S., £15; M.D. and M.S., each £5; B.H., D.P.H., and D.Ps., each £10 10s., and D.Hy. and D.Ch. each £20; First, Second, and Third L.D.S., each £3 10s., and Final L.D.S. £5; First, Second, and Third B.D.S., each £5, Final B.D.S. £8; and M.D.S. £5. For degrees and diplomas: M.B., B.S., B.H., and B.D.S., each £6 6s., plus the sum of 10s. if it is the initial degree taken in the university; M.S. and M.D.S., each £6 6s.; M.D., D.Ch., and D.Hy., each £10; D.P.H., D.Ps., and L.D.S., each £5.

Further information may be obtained from Professor Howden, Registrar, University of Durham College of Medicine, Newcastle-on-Tyne.

## UNIVERSITY OF LEEDS.

The degrees granted in the Medical Faculty of this university are Bachelor of Medicine, Bachelor of Surgery (M.B. and Ch.B.), and Bachelor of Dental Surgery (B.Ch.D.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), and Master of Dental Surgery (M.Ch.D.). It also gives diplomas in public health, in psychology, in dental surgery and in nursing.

Candidates for the M.B. must have attended courses of instruction approved by the university for not less than five years, two at least of such years having been passed in the university, at least one year being subsequent to the date of passing the first examination. They must also have matriculated by satisfying the examiners in:

I. *Either* English Composition and English Literature, *or* English Composition and History.

II. *Either* Mathematics *or* Latin.

III. } Three other subjects not already taken under I and II above,  
IV. } chosen from the following list:  
V. }

- |   |                                   |
|---|-----------------------------------|
| 1. English Literature.                            | 9. Mathematics.                   |
| 2. History.                                       | 10. Mechanics.                    |
| 3. Geography.                                     | 11. Physics.                      |
|   | 12. Chemistry.                    |
| 4. Greek.   | 13. General Experimental Science. |
| 5. Latin.   | 14. Natural History.              |
| 6. French.  | 15. Botany.                       |
| 7. German.  |                                   |
| 8. Some one other language approved by the Board. |                                   |

*Provided that* (a) candidates who take Mathematics under II above must include one of the subjects 4–8; (b) candidates who take Latin under II above must include one of the subjects 9–15.

Exemption from the examination may be granted to applicants holding certificates of having passed examinations of a standard deemed by the Matriculation Board to be at least equal to the Board's examination.

#### PROFESSIONAL EXAMINATIONS.

The examinations for the M.B.; Ch.B. number three. The first deals with (1) physics and chemistry, (2) biology. In each subject laboratory work is included, but the two parts can be taken separately. For neither can the candidate present himself until after matriculation and a period of approved work in the respective subjects.

**The Second Examination.**—The Second Examination consists of: Part I, Organic Chemistry; Part II, Materia Medica, Practical Pharmacy, and Pharmacology; Part III, Anatomy and Physiology. Candidates will be allowed to pass any parts separately, but Part I must be passed before Parts II or III.

**The Final Examination.**—The Final Examination consists of: Part I, Pathology and Bacteriology; Part II, Medicine, Surgery, Obstetrics, Gynaecology, and Clinical Pathology; Part III, Forensic Medicine, Public Health, and Therapeutics. Part I may be taken at the end of the second clinical year, and Parts II and III may be taken at the end of the third clinical year but not before the completion of the fifth year of medical study. If taken separately Part II must be passed before Part III.

**M.D.**—A candidate for this degree must be a M.B., Ch.B. of the university of at least one year's standing. He presents a dissertation embodying the results of personal observation or original research, and, if this is approved, he may be required to write a short extempore essay on some topic connected with medicine, and may be examined orally on the dissertation or other work submitted.

**Ch.M.**—The candidate for this degree must have been admitted to the M.B., Ch.B. of the university not less than a year previously, and during that time must have held for at least six months a surgical appointment in a public institution affording full opportunity for the study of practical surgery. He must also have attended certain courses, including one on ophthalmology and one on bacteriology; he is then examined on the subject of surgery in all its branches.

#### FEES.

The matriculation fee is £2, and on readmission £1 10s. For each of the other examinations £6 (£7 for Ch.M.); and £3 on readmission. On conferment of the degree of Ch.M. £7 is payable, and £6 for the M.D. degree.



## UNIVERSITY OF LIVERPOOL.

This university, besides granting degrees in medicine (M.B. and M.D.) and in surgery (Ch.B., M.Ch.Orth., and Ch.M.), gives degrees in dental surgery (B.D.S. and M.D.S.), a degree in hygiene (M.H.), and degrees in veterinary science (B.V.Sc., M.V.Sc., and D.V.Sc.). Diplomas are awarded in dental surgery (L.D.S.), tropical medicine (D.T.M.), tropical hygiene (D.T.H.), public health (D.P.H.), veterinary hygiene (D.V.H.), and medical radiology and electrology (D.M.R.E.). The degree of Doctor of Philosophy (Ph.D.) may also be taken in the Faculty of Medicine.

## MATRICULATION.

The Matriculation Examination is governed by the Joint Matriculation Board, 315, Oxford Road, Manchester, which accepts, under certain conditions, the tests of several other bodies as its equivalent. Chemistry and physics are essential pre-registration subjects.

## PROFESSIONAL EXAMINATIONS.

Candidates for the M.B., Ch.B. degrees have three examinations to pass, the first including (1) chemistry, (2) physics, (3) biology (zoology and botany).

*Second M.B.*—This test covers (a) (1) anatomy, (2) physiology, including physiological chemistry and histology; and (b) (3) elementary bacteriology, (4) clinical chemistry, (5) general pathology. Candidates may present themselves in (a) and (b) separately.

*Final M.B.*—The subjects of the Final Examination are: (a) (1) special pathology and morbid anatomy, (2) forensic medicine and toxicology, (3) public health, (4) pharmacology and general therapeutics; (b) (5) obstetrics and diseases of women, (6) surgery—systematic, clinical, operative, and practical—including ophthalmology, (7) medicine—systematic and clinical—including therapeutics, mental diseases, and diseases of children. Candidates may take Parts (a) and (b) separately, but Part (b) may not be taken until five years of study have been completed.

*M.D. and Ch.M.*—Candidates for these degrees must have received the M.B. and Ch.B. at least two years previously. Students holding equivalent degrees of other approved universities may become candidates for the M.D. degree after two years' study in the university or clinical school of the university. The M.D. candidate submits for approval a thesis covering original work in some branch of medicine or some science directly relative to medicine, together with, if desired, copies of published work. The M.Ch. candidate undergoes an examination. Other information concerning the diplomas of this university and its medical school will be found on page 440.

## FELLOWSHIPS, SCHOLARSHIPS, AND EXHIBITIONS.

The university awards Fellowships annually to students of distinguished merit, as follows:

(1) John Rankin Fellowships in Anatomy; two, each of the value of £120, tenable for two years. (2) Ethel Boyce Fellowship in Gynaecology, value £100 and tenable for one year, open to fully qualified medical students of either sex. (3) John W. Garrett International Fellowship in Bacteriology, value £100 and tenable for one year. (4) Robert Gee Fellowship in Human Anatomy, value £100 and tenable for one year. (5) Holt Fellowships in Physiology and Pathology, two in number, value £150 each and tenable for one year. (6) Johnston Colonial Fellowship in Biochemistry, value £100 and tenable for one year. (7) Thelwall Thomas Fellowship in Surgical Pathology, value £150 and tenable for one year. (8) Lady Jones Fellowship in Orthopaedic Surgery, one, value £200, offered every two years.

There are, in addition, scholarships and exhibitions open to medical students.

## VICTORIA UNIVERSITY OF MANCHESTER.

This university grants the four ordinary degrees in medicine and surgery—M.B. and Ch.B. and M.D. and Ch.M.; a degree and diploma in dental surgery; a diploma in public health; a certificate in factory and in school hygiene; a diploma in psychological medicine; and a diploma in bacteriology. Candidates for degrees must pass the special Matriculation Examination prescribed by the Faculty of Medicine (or some equivalent examination accepted in lieu thereof; see the prospectus of the Joint Matriculation Board), and study at the university itself

for at least two years of the six years' curriculum, subsequent to the passing of the First M.B. Examination. The Matriculation Examination comprises (1) Latin, (2) mathematics, (3) the English language, its literature and history, (4) mechanics, (5) one subject at choice as approved by the Joint Board. It is held in July and September.

## PROFESSIONAL EXAMINATIONS.

*M.B., Ch.B.*—There are four examinations for this degree. They must be passed in proper order, and before admission to them the candidate must be duly certified as having attended in the subjects involved. The first M.B. is divided into Part 1, chemistry and physics; Part 2, biology—(a) botany, (b) zoology. The parts may be taken separately or together. At the second M.B. the candidate is examined in anatomy (including histology) and physiology; at the third, in pathology and pharmacology (including materia medica and practical pharmacy). The Final Examination is divided into two parts, which may be taken separately, and includes medicine (systematic and clinical), mental diseases, and diseases of children, surgery (systematic, clinical, and practical), obstetrics and gynaecology, preventive medicine, forensic medicine, and toxicology.

*M.D.*—A candidate for this degree must be a bachelor of medicine of at least one year's standing. He has a choice between presenting an original dissertation or undergoing a written (as well as practical and clinical) examination in medicine, and a written and practical examination in pathology, and one other subject selected by himself.

*Ch.M.*—A candidate must have held, since becoming Ch.B., and for not less than twelve months, a post in a public institution affording opportunity for the study of the branch of surgery in which examination is desired. The examination in Branch I comprises the general field of surgery; Branch II, obstetrics and gynaecology; Branch III, ophthalmology; Branch IV, otology, laryngology, and rhinology.

*B.Sc. and M.Sc.*—The ordinary degree of B.Sc. in the Schools of Anatomy and Physiology may be obtained by students in medicine who in their third year of study for the degree of M.B., Ch.B. complete the additional courses in these subjects prescribed for this degree. Candidates for the Honours degree of B.Sc. in Anatomy or Physiology who are students in medicine are required to attend courses in advanced anatomy and physiology for four terms after passing the Second Examination for the degrees of M.B., Ch.B. Graduates in science of this university, of not less than one year's standing from the date of their graduation as Bachelors, may proceed to the degree of M.Sc. by the presentation of an approved thesis on some subject coming within the scope of the Faculty of Science.

## FEES.

The following examination fees are payable: Matriculation, £2; on readmission, £1 10s. Each M.B. examination, £8 8s.; on readmission, £3 3s. M.D., including the conferring of the degree, £15 15s. Ch.M., £10 for the examination and £10 10s. for conferment of degree. Application for further information should be addressed to the Dean of the Medical School.

## UNIVERSITY OF SHEFFIELD.

The degrees of this university (M.B., Ch.B., M.D. and Ch.M., B.D.S., and M.D.S.), the diploma in public health, and the diploma of licentiate in dental surgery, are open to candidates of either sex. Candidates for a degree must have matriculated in the university or have passed such other examination as may be recognized for this purpose, and have passed the further examination in chemistry and physics.

## PROFESSIONAL EXAMINATIONS.

A candidate for the degrees of M.B., Ch.B. must produce certificates that he will have attained the age of 22 years by the day of graduation; that he has pursued the courses of study required by the university regulations during not less than five years subsequent to the date of his matriculation or exemption from matriculation, and the passing of the further examination in chemistry and physics, three of such years at least having been passed in

the university, one at least being subsequent to the passing of the First Examination. The following examinations must be passed in due order.

**First Examination.**—The subjects are chemistry, physics, and biology. Candidates who have passed the Intermediate Examination of the Faculty of Pure Science in any or all of the subjects of the First M.B. Examination will, on payment of the fee for the latter examination, be deemed to have passed it when they have passed in such subjects as they did not take for the Intermediate B.Sc. Examination. Candidates on presenting themselves for this examination are required to furnish certificates of having attended for not less than one year approved courses of instruction, after matriculation, and the passing of the further examination in physics and chemistry, in (i) chemistry, inorganic and organic; (ii) physics; (iii) biology.

**Second Examination.**—The subjects are anatomy and physiology. The candidate must have completed the second year of professional study, must have passed the first Examination, and must have attended (1) courses on anatomy, including lectures and practical anatomy, during one year; (2) courses on physiology, including lectures and practical histology, during one year.

**Third Examination.**—The subjects are pathology and pharmacology, anatomy, and physiology. Candidates must have completed the fourth winter of medical study and the requisite courses in these subjects, including *post-mortem* clerkship for three months.

**Final Examination.**—The subjects are—Part I, forensic medicine and public health; Part II, medicine (including mental diseases and diseases of children), surgery, obstetrics (including gynaecology). Candidates for Part I must have completed Michaelmas term of the fifth year of study; candidates for Part II must have completed the fifth year of study.

**M.D.**—Candidates for the degree of Doctor of Medicine must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, must present a thesis embodying observations in some subject approved by the Professor of Medicine, and must pass an examination in the principles and practice of medicine.

**Ch.M.**—Candidates for the degree of Master of Surgery must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, and must, since taking the degrees of M.B., Ch.B., have held for not less than six months a surgical appointment in a public hospital or other public institution affording full opportunity for the study of practical surgery. The subjects of examination are systematic, clinical, and operative surgery, surgical anatomy, surgical pathology, and bacteriology.

Other information concerning this university will be found in the section devoted to Provincial Medical Schools.

#### UNIVERSITY OF WALES.

The Charter and statutes of the University of Wales provide *inter alia* for a Faculty of Medicine and for the granting of the following degrees: Bachelor in Medicine (M.B.), Bachelor in Surgery (B.Ch.), Master in Surgery (M.Ch.), and Doctor in Medicine (M.D.).

A candidate for the M.B., B.Ch. is required to pursue a course of study of not less than six academic years subsequent to matriculation in the university, and of these years at least three must have been passed in one of the constituent colleges of the university. These are the University College of Wales, Aberystwyth; University College of North Wales, Bangor; University College of South Wales and Monmouthshire, Cardiff; and University College, Swansea. He must also hold an arts or science degree of the University of Wales, or of some other university approved for this purpose. Certain of the courses of study pursued for a B.Sc. or B.A. degree may be counted as courses required for the degrees in the Medical Faculty.

The courses for the M.B., B.Ch. are divided into two sections, of which the first includes the preliminary subjects—physics, chemistry, botany, zoology; and the ancillary subjects—organic chemistry, human anatomy, and physiology. Study of the preliminary subjects and of organic chemistry must extend over at least one academic year; study of physiology and anatomy must extend over at least

two academic years; the first section of the course must occupy not less than three years. The second section includes courses in pathology, bacteriology, pharmacology, hygiene and forensic medicine, medicine, surgery, and obstetrics and gynaecology, and cannot be commenced, except in the case of pharmacology, until the examinations relating to the preliminary and ancillary courses have been passed. Examinations in all the subjects are held in June of each year.

The university also offers courses of study in public health and in tuberculosis. Candidates for the Diploma in Public Health (D.P.H.) and for the Tuberculous Diseases Diploma (T.D.D.) must possess a medical qualification registrable for practice in Great Britain and Ireland, and must have completed courses of study as prescribed by the regulations either at the Welsh National School of Medicine, Cardiff, or at another institution approved by the university.

#### WELSH NATIONAL SCHOOL OF MEDICINE.

Students can complete the whole of their curriculum in the Welsh National School of Medicine, which is an integral part of the University College of South Wales and Monmouthshire, and qualify for the degrees of M.B., Ch.B. in the university.

Further information may be obtained from the Registrar, the University Registry, Cathays Park, Cardiff.

## English Medical Corporations.

THERE are in England three medical corporations which grant licences to practise—the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Society of Apothecaries of London. The first two combine for certain purposes to form what is known as the Conjoint Board in England. Details concerning this body, its component Colleges, and the third licensing body here follow.

#### THE CONJOINT BOARD.

THIS body—the Examining Board in England—deals with the qualifications of all candidates for the Licence of the Royal College of Physicians of London and for the Membership of the Royal College of Surgeons of England. It prescribes for them certain periods of study, and recommends those who pass the required examinations for the Licence and for the diploma of Member respectively. The successful candidate is then entitled to register as L.R.C.P.Lond., M.R.C.S.Eng. It performs the same task in connexion with diplomas in public health, tropical diseases, ophthalmic medicine, medicine, and laryngology and by the two Colleges in question. Under the new regulations, which apply to all students who have not passed the required preliminary tests of general education before January 1st, 1923, every candidate for the M.R.C.S. and L.R.C.P. must (1) complete five years of professional study after passing a recognized preliminary examination and a recognized pre-medical examination in chemistry and physics; (2) comply with the regulations, which may be had from the Secretary, Examination Hall, Queen Square, Bloomsbury, London, W.C.1; and (3) pass the two professional examinations of which particulars appear below. The old regulations for the Conjoint diploma, of which an account was given in the Educational Number for 1922, still apply to students who passed their preliminary examination in general education before January 1st, 1923.

#### NEW REGULATIONS FOR THE CONJOINT DIPLOMA.

The following is an outline of the regulations applicable to candidates for the L.R.C.P.Lond. and M.R.C.S.Eng. who passed the required Preliminary Examination in general education on or after January 1st, 1923. The full regulations and synopses and forms of certificate may be obtained from the Secretary.

#### PRE-MEDICAL EXAMINATION.

Students are required to pass a pre-Medical Examination in Chemistry and Physics conducted by the Conjoint Examining Board before commencing the five years' curriculum of professional study.

or some other examination recognized by the Board—namely, the examination in Chemistry and Physics for the degree in Medicine of any university; Board, the Higher School Certificates of Universities and the Oxford and Cambridge Board, the Higher Certificates of London, Bristol, Durham Universities, the Joint Matriculation Board of the Northern Universities, and the Central Welsh Board Higher Certificate.

A candidate must enter for Chemistry and Physics together and he will not be allowed to pass in one without obtaining at the same time at least half the number of marks required to pass in the other subject. He will be admitted to the examination on producing evidence of having passed the required Preliminary Examination in General Education and of having received instruction during 180 hours in Chemistry and 120 hours in Physics to the satisfaction of his teachers. These courses may be commenced or attended before the required Preliminary Examination in General Education is passed.

The examination is partly written, partly oral, and partly practical. A candidate rejected in one or both subjects of the examination will not be admitted to re-examination until after the lapse of a period of not less than three months, and he must produce evidence of further instruction in the subject or subjects of failure.

#### PROFESSIONAL EXAMINATIONS.

There are two Professional Examinations, called the First and Final Examinations. The courses of study for the First Examination may be commenced before the Pre-Medical Examination in Chemistry and Physics or some equivalent examination has been passed provided three terms of study of anatomy and physiology are completed after passing such examination.

**First Professional Examination.**—The subjects of this are: Section I, (a) Anatomy, including Histology and Embryology; (b) Physiology, including Biochemistry. Section II, Pharmacology, Practical Pharmacy, and Materia Medica. A candidate must have attended at a recognized Medical School courses of instruction in Anatomy, including Embryology, during five terms, during which he must have dissected the whole body, courses of instruction in Physiology, including General Biology, Biochemistry, and Biophysics during five terms, courses of instruction in Pharmacology, Practical Pharmacy, and Materia Medica. A candidate may present himself for the two sections together or separately, but he must take parts (a) and (b) of Section I together until he has passed in one or both parts, but a candidate will not be allowed to pass in one part unless he obtains at the same time at least half the number of marks required to pass in the other part. Section II of the examination may be passed at any time before the candidate enters for the Final Professional Examination. A candidate who produces satisfactory evidence of having passed an examination in the subjects of Section I or of either part of Section I and of Section II in the examination for the degree in Medicine conducted at a university recognized by the Board will be exempted from further examination in such subject or subjects.

**Final Professional Examination.**—The subjects of this are: Section I, (a) Pathology, including Morbid Anatomy, Morbid Histology, and Clinical Pathology; (b) Bacteriology. Section II, Part I, Medicine, including Medical Anatomy, Forensic Medicine, and Public Health; Part II, Surgery, including Surgical Anatomy and the use of Surgical Appliances; Part III, Midwifery and Gynaecology. The examination is partly written, partly practical, partly clinical, and partly oral. A candidate may take Sections I and II and the three parts of Section II of the Final Examination separately or may take the whole examination together. He will be required to produce the certificates required by the regulations before being admitted to the respective parts of the examination. A candidate who produces evidence of having passed an examination for a degree in Medicine in the subjects of Pathology and Bacteriology at a university recognized by the Board is exempted from Section I.

#### FEES.

The fee for the *Pre-Medical Examination* is three guineas, for re-examination in Chemistry two guineas, and for re-examination in Physics one guinea. The fee for the *First Professional Examination* is ten guineas, for re-examination after rejection in Section I six guineas, for re-examination after rejection in either part of Section I three guineas, for re-examination after rejection in Section II three guineas. The fee for admission to Section I of the *Final Professional Examination* is four guineas, for admission to Section II, Part I, ten guineas, Part II ten guineas, Part III six guineas; and the re-examination fees are respectively three guineas, six guineas, and four guineas.

#### ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THIS College has three grades—its Licentiate, its Members, and its Fellows. The Licence is now only issued through the Conjoint Board. The Membership is only granted to those who have passed the final examinations for the Licence, or those who are registered practitioners and graduates of a recognized university; in any case they must be persons over 23 years of age. Candidates are examined in pathology and the practice of physic, partly in writing and partly viva voce; they are also examined in Latin, Greek, French, and German. The languages are not compulsory, but credit is given to those who show a knowledge of them. The fee for the Membership is £42, or in the case of a Licentiate £21. There is a fee of £6 6s., payable

before entrance to the examination, which in the case of successful candidates is reckoned as part of the Membership fee. The body of Fellows is maintained by election from among the Members.

#### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THIS College has two grades—Members and Fellows. The Members are admitted as stated in the section dealing with the Conjoint Board. The Fellowship is granted after examination to persons at least 25 years of age who have been engaged in professional studies for six years. There are two examinations for the Fellowship—the first in anatomy and physiology, which may be passed after the third winter session; the second, chiefly directed to surgery, which may be passed after six years of professional study. Candidates must pass the Final Examination of the Examining Board in England and be admitted Members of the College before admission to the Second Examination for the Fellowship, except in the case of graduates in medicine and surgery of not less than four years' standing of universities recognized by the College for the purpose, who are required to attend for one year the surgical practice of a general hospital recognized by the College after obtaining their degrees.

**Fees.**—At first examination, £8 8s.; for re-examination, £5 5s. At second examination, £12 12s. Diploma fee for non-members, £10 10s.

#### SOCIETY OF APOTHECARIES OF LONDON.

THIS body confers a registrable diploma in medicine, surgery, and midwifery, now known as the L.M.S.S.A. (Licentiate in Medicine and Surgery of the Society of Apothecaries), on those successful at the following examinations:

**Primary Examination.**—This is divided into two parts, of which Part I includes chemistry, chemical physics, practical chemistry, biology, and pharmacy. Part II includes anatomy, physiology, and histology, and cannot be passed before the completion of twelve months' practical anatomy with demonstrations. Candidates will be excused any or all the subjects of the primary examination on producing evidence that they have passed equivalent examinations before an examining body recognized by the Society. Candidates referred in anatomy will be required to produce evidence of further work in the dissecting room before being admitted to re-examination.

**Final Examination.**—This is divided into three parts. Part I includes clinical surgery, the principles and practice of surgery, surgical pathology, operative manipulation, surgical anatomy, instruments and appliances. Part II includes clinical medicine: (a) the principles and practice of medicine (including therapeutics, pharmacology, and prescriptions), pathology, and morbid histology; (b) forensic medicine, hygiene, theory and practice of vaccination, and mental diseases. Part III includes midwifery, gynaecology, and diseases of newborn children, obstetric instruments and appliances.

The fee for the primary examination is £5 5s.; for the final, £15 15s. The regulations and synopses relating to the several examinations, and other information, may be obtained from the Secretary, Court of Examiners, Apothecaries' Hall, Blackfriars, E.C.4.

## The Scottish Universities.

THERE are in Scotland four universities, each possessing a faculty of medicine, and having the right to confer degrees which admit the holder to the *Medical Register*. In essential points the regulations in their medical faculties for undergraduates are much alike, so that a general account can be given of all of them together.

The universities are those of Edinburgh, Glasgow, Aberdeen, and St. Andrews. The provision each of the cities in which these universities are situated makes for the education of medical students will be found in the section on Medical Schools in Scotland: here it need merely be said that degrees in medicine from Scotland as a whole have always enjoyed a high repute.

The degrees granted in medicine and surgery to candidates of either sex are four in number—Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.). The two former are not obtainable one apart from the other. Besides these degrees a diploma in tropical medicine and hygiene is obtainable from the University of Edinburgh, as also diplomas in psychiatry, public health, and radiology. As for public health, registrable degrees in this subject are granted by the universities of Edinburgh and Glasgow, while diplomas in public health may be obtained from the universities of St. Andrews and Aberdeen.

The conditions for admission of graduating students of medicine are the same as those in the Faculties of Arts or Science (for degrees in pure science).

As from January 1st, 1923, prospective medical students are also required to pass a pre-registration examination in chemistry and physics.

#### PROFESSIONAL EDUCATION.

The regulations comply in all respects with the requirements and recommendations of the General Medical Council, and, in addition, necessitate definite study for stated periods of diseases of children, of the larynx, ear, and nose, of the skin, of ophthalmology, and of mental diseases. In respect of the various courses certificates must be obtained showing that the student has not only attended regularly, but has duly performed the work of the class. Out of the necessary five years of medical study, not less than two must be spent at the university whose degrees the student hopes to obtain, and the balance at any place officially recognized for such purpose. In each academic year there are two sessions—one lasting from the beginning of October to the middle of March, and the other from the middle of April to the beginning of July.

#### PROFESSIONAL EXAMINATIONS.

The distinctive feature of the Scottish curriculum is that, though nominally there are only four examinations, each of these may be, and habitually is, split up by the student into sections. Hence, a student may complete some stage of his career during the course of nearly every session. Thus, by the end of the first winter session the student may pass in zoology and chemistry. At the end of the first summer session he can finish with botany and physics, and with anatomy and physiology at the end of the second. Pathology and materia medica he will pass at the end of the third year, and so on, until the final examination in midwifery, surgery, and medicine, and the corresponding clinical subjects, at the end of the fifth year of study. At each examination the candidate may pass "with distinction," and a record is kept of the merit displayed, so that, when the time comes for the candidate to graduate, one who has done well throughout can be declared as graduating with first or second class honours. A further point in the system is that the student's own teachers commonly take some part in his examination.

Of the four examinations, the first deals with physics, botany, zoology, and chemistry; the second with anatomy and physiology; the third with materia medica and pathology; the fourth with medicine and surgery (clinical and systematic), midwifery, clinical midwifery, and clinical gynaecology, and forensic medicine and public health. The first three examinations are held three times a year; the final twice a year.

Exemption from the first professional examination can be obtained by candidates who have passed an arts or science degree examination in its subjects at any recognized university. When a candidate presents himself for an examination in several of its parts, but is not successful in all of them, he is credited at the next examination with those subjects in which he has already been approved.

#### THE HIGHER DEGREES.

It is open to those who are already M.B., Ch.B. to proceed either to the M.D. or the Ch.M. A candidate for the former must have been engaged for not less than one year in work in the medical wards of a hospital, or in scientific research in a recognized laboratory, or in the

Naval or Military Medical Services, or have been at least two years in general practice, and he must be 24 years of age. He has to write a thesis on any subject not exclusively surgical, and is examined in clinical medicine and in some one or other of its special departments. The regulations for candidates for the Ch.M. are of a corresponding character, a period of surgical work in a hospital or elsewhere being substituted for medical work, and the thesis being on a surgical rather than a medical subject. He is examined in surgical anatomy, clinical surgery, operative surgery, and in some of the special departments of surgery.

#### FEES.

It is estimated that the class, examination, and other fees for the M.B., Ch.B. come altogether to about £247, the separate examination fees included in this calculation being as follows:

First Professional .. .. .	£	s.	d.
Second Professional .. .. .	9	9	0
Third Professional .. .. .	7	7	0
Final .. .. .	6	6	0
	11	11	0

Re-entry in any subject in which the candidate has failed entails a fresh payment of £1 ls. Candidates for the M.D. and Ch.M. pay £21, and on re-entry £5 5s.

More detailed information with regard to the University of Edinburgh can be obtained from the *Medical Programme*, price 6d., which is published by Mr. Thin, 55, South Bridge, Edinburgh, or on application to the Dean of the Faculty of Medicine. Similar information about Glasgow should be sought from the Assistant Clerk, Matriculation Office, Glasgow. With regard to Aberdeen, application may be made to the Secretary of the Medical Faculty, Marischal College. In respect of St. Andrews information can be obtained either from the Secretary of the University, or, alternatively, the Secretary of the United College, St. Andrews, or the Secretary of University College, Dundee, these being the two constituent colleges of the University of St. Andrews.

Finally, it should be mentioned that in connexion with all the Scottish universities there are valuable bursaries and scholarships, some information as to which will be found in the article on Medical Schools.

#### THE CARNEGIE TRUST.

The following is a summary of the regulations made by the Carnegie Trust for the universities of Scotland for assistance in the payment of class fees in the universities and extra-mural colleges of Scotland.

Applicants must be over 16 years of age; they must be of Scottish birth or extraction, or have attended for two years, after the age of 14, at a school or institution under inspection of the Scottish Education Department. Applicants so qualified who have been pupils of schools under the Scottish Education Department will be eligible for assistance in the payment of class fees if they have obtained the leaving certificate of the Department, provided that it bears evidence of such preliminary education as is required by the universities for their graduating curricula, or that it has been supplemented by such passes either in the Scottish Universities Preliminary or other examination as will satisfy the above requirement of the universities. Where applicants have not been pupils of schools under the Scottish Education Department, or where other good ground for not having obtained the leaving certificate can be shown, the Executive Committee has power to accept instead what it deems equivalent evidence of attainments.

Applicants in the Faculties of Arts and Science must have had their course of study for each academic year approved by the University Adviser of Studies, and they must have passed the graduation examinations belonging to the previous stage of their curriculum before becoming eligible for assistance in the payment of fees of classes belonging to a further stage. Beneficiaries must submit to the Executive Committee at the end of each session particulars as to their attendance and work, any distinctions gained, and any graduation examinations passed.

The annual allowance towards payment of class fees offered to beneficiaries by the Trust in the Faculty of Medicine is £19 for four years, in all £76. Any unexpended part of a grant will be carried forward to the succeeding year. In combinations of Faculties the allowances available for beneficiaries are: Arts and Medicine—two Arts grants of £8 and four Medicine grants of £19, in all £92; Science and Medicine—two Science grants of £17 and four Medicine grants of £19, in all £110.

Applicants, in writing for application forms, must name the university and faculty in which they intend to study, and state whether they have previously obtained the benefits of the Trust. Applications must be lodged not later than October 25th for the winter session, or May 10th for the summer session. Payments are made by means of fee coupons, and fees already paid are not refunded.

## The Scottish Corporations.

THERE are three medical corporations in Scotland—the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow. Their licences can be separately obtained only by persons who are already in possession of a recognized qualification—in surgery in the case of the College of Physicians, and in medicine in the case of the College of Surgeons and the Faculty of Physicians and Surgeons of Glasgow. All others must submit to the examinations held by the Conjoint Board which the three corporations have combined to form. Details concerning this Board and its component colleges follow. The conditions on which their higher qualifications are granted will be found set forth separately in connexion with each corporation.

### THE CONJOINT BOARD IN SCOTLAND.

THIS body has charge of all questions connected with candidates for the Conjoint Licences of the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow. Those finally approved by it are entitled to registration and to the initials denoting the Licences of the three bodies concerned—namely, L.R.C.P. Edin., L.R.C.S. Edin., and L.R.F.P.S. Glas. The Board requires all candidates to comply with the regulations of the General Medical Council. It has an arts examination of its own, but is prepared to accept in its place any of the other educational tests approved by the General Medical Council. All candidates must obtain registration with the General Medical Council.

#### *Professional Curriculum for Candidates registered as Medical Students prior to January 1st, 1923.*

Subsequent to registration as a medical student the candidate must pass not less than five years in medical study, each comprising a winter and a summer session. The Board does not insist that candidates shall pursue their study at any particular place, and is prepared to accept certificates of having attended the necessary courses from any recognized medical school.

Its examinations are four in number, each of them being held four times every year, and these will fall to be held twice in Edinburgh and twice in Glasgow during the next period; it is open to candidates to present themselves for examination at either place. The first examination deals with physics, chemistry, and elementary biology; the second with anatomy and physiology, including histology; the third with pathology and materia medica, including pharmacy; and the final with (1) medicine, including therapeutics, medical anatomy, and clinical medicine; (2) surgery, including surgical anatomy, clinical surgery, and diseases and injuries of the eyes; (3) midwifery and diseases of women and of newborn children, including clinical gynaecology and practical midwifery; and, if it has not been passed previously, (4) medical jurisprudence and hygiene. Candidates will also be examined on diseases of children, diseases of the ear and throat, insanity, vaccination, etc.

These examinations must be passed in due order, and before admission to any of them the candidate must supply certificates showing that he has completed the due periods of study of their subjects. He can present himself in any single subject of the first three examinations. As regards the final examination, a candidate can present himself in medical jurisprudence and hygiene at any time after completion of the third examination and of his study of these subjects; but in medicine, surgery, and midwifery he cannot present himself until the completion of five years' study, and he must take them all simultaneously. A candidate who takes up several subjects of an examination or the whole of the subjects at one time, but fails in some of them, is credited at the next examination with those subjects in which he has been approved.

All candidates for the Final Examination must complete

the pass in the three portions (medicine, surgery, and midwifery) within a period of nineteen months.

Part or entire exemption from the first three examinations may be granted to those who have already passed before other bodies examinations deemed by the Board equivalent to its own, but all candidates for the Conjoint licence must sit for the Final Examination, and at no examination can a candidate present himself within three months of his rejection by some other licensing body.

#### *Professional Curriculum for Candidates registered as Medical Students after January 1st, 1923.*

The curriculum has been extended to meet the recommendations of the General Medical Council. Candidates, when applying for copies of regulations, should state date of medical registration.

#### FEES.

It is estimated that the total cost of lectures and fees for the Conjoint licence is about £152. The separate examination fees are as follows: First, Second, and Third Professional, £5 each; Final £15. On re-entry for any of the first three examinations £3, and on re-entry for the Final, £5. If the re-entry is only in one or two subjects of the First, Second, or Third Examinations the fees are smaller.

Information concerning this Board should be sought either from Mr. D. L. Eadie, 49, Lauriston Place, Edinburgh, or from Mr. Walter Hurst, Faculty Hall, 242, St. Vincent Street, Glasgow.

### ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

THIS College has three grades—Licentiatehip, Membership, and Fellowship—all of which are open to men and women. The regulations applying to candidates for the Licentiatehip have already been generally indicated. If desirous of receiving it apart from those of the other two corporations they must be holders of a surgical qualification recognized by the College, and must pass an examination corresponding to the medical part of the Final Examination of the Conjoint Board, and conditioned in the same way, and also an examination in materia medica. The fee for examination is 15 guineas, a special examination being obtainable on due cause being shown, and on payment of 5 guineas extra. Ordinary examinations take place monthly on the first Wednesday and Thursday, except in September and October. Candidates for the Membership must be either Licentiates of a British or Irish College of Physicians, or alternatively graduates of medicine of a university, approved by the Council, and in either case not less than 24 years of age. Candidates are examined in medicine and therapeutics, also on one or more departments of medicine specially professed, and approved by the Council, in which a high standard of proficiency will be expected. The fee to be paid by a candidate for the Membership is £36 15s. The examination is held quarterly, and application for admission to it must be made a month previous to its date. For the Fellowship the candidate must have been a Member of the College for at least three years, and, if accepted, pays fees, including £25 stamp duty, amounting altogether to £64 18s. Further details can be obtained on application to the Secretary of the College.

### ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

THIS College has two grades—its Licence and its Fellowship. Licentiates may be of either sex, and for the Fellowship women are eligible also.

#### *Licence.*

As an original qualification the Licence is only granted after fulfilment of the regulations of the Conjoint Board, but as an additional qualification it can be obtained by those already possessed of a registrable or equivalent qualification in medicine. In this case the candidate has to pass a written, oral, and clinical examination in surgery and surgical anatomy, and may be asked to operate on the dead body.

The fee is £15 15s., of which £10 10s. is returned to unsuccessful candidates. On due cause being shown, a special examination may be granted, the fee being £20, of which £10 is returned to a candidate if he is not approved.



*Fellowship.*

Candidates for the Fellowship must be not less than 25 years of age, and have been in the practice or study of their profession subsequent to registration for at least two years, and must hold either a surgical degree from a university recognized for that purpose by the College, or a registrable diploma obtained as the result of an examination which includes surgery as well as medicine and midwifery. Candidates are examined in (a) the principles and practice of surgery, including surgical anatomy, (b) clinical surgery, and (c) one optional subject, which they may choose from among the following: surgical pathology and operative surgery, ophthalmology, laryngology, otology and rhinology, gynaecology, obstetric surgery, anatomy, and dental surgery and pathology. The examination is written, oral, and clinical or practical. A candidate who desires to be examined must give one month's notice, his application for admission being supported by two Fellows of the College, one of whom must be resident in Edinburgh, or, in default, by testimonials specially obtained for the purpose. *Candidates are not allowed to appear more than three times at the examinations.*

Licentiatees of the College pay £35, and others £45. For further information application should be made to the Clerk of the College, Mr. D. L. Eadie, 49, Lauriston Place, Edinburgh.

### ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THIS body possesses two classes—Licentiatees and Fellows. The regulations applying to the former correspond with those respecting candidates for the Licence of the Royal College of Surgeons of Edinburgh. Candidates for the single Licence are examined in surgery (including clinical surgery and surgical anatomy). The fee is £15 15s. and examinations are held quarterly. Candidates for the Fellowship must be qualified medical men of not less than two years' standing and 24 years of age. Candidates approved at this examination are then eligible for election as Fellows. The Faculty can also elect four Fellows annually without previously submitting them to examination, provided they "have highly distinguished themselves in medical science or practice." They must be of not less than ten years' standing and 40 years of age.

The fee for the Fellowship is £50. Further information can be obtained from Mr. Walter Hurst, Faculty Hall, 242, St. Vincent Street, Glasgow.

## Irish Universities and Corporations.

### MEDICAL REGISTRATION IN THE IRISH FREE STATE.

A YEAR ago the Government of the Irish Free State announced that it had decided to establish a separate *Medical Register*. In February, 1926, an Act was passed by the Free State empowering the Executive Council of the State to continue existing arrangements, and they are now being continued from month to month. The President of the General Medical Council stated at its last meeting (June 1st, 1926) that communications had been received by the Secretary of State for Dominion Affairs from the Governor-General of the Free State intimating that the question of a permanent arrangement of the matter is engaging the attention of the Free State Government, and that it is hoped shortly to have a conference with the British Government for discussing a draft bill. It seems fairly certain that some arrangement will be reached under which students of medicine in the Free State and future graduates and diplomats of its universities and corporations will be able to register on the *British Medical Register*, and that therefore their choice of a place in which to practise will not be limited.

### THE IRISH UNIVERSITIES.

THERE are three universities in Ireland, each with a medical faculty. These are, in the Irish Free State, the University of Dublin (usually known as Trinity College, Dublin), and the National University of Ireland; and, in Northern Ireland, the Queen's University of Belfast.

### UNIVERSITY OF DUBLIN: TRINITY COLLEGE.

THIS university grants two degrees in medicine (M.B. and M.D.); two in surgery (B.Ch. and M.Ch.), two in midwifery (B.A.O. and M.A.O.), and a post-graduate diploma in public health. It also grants post-graduate diplomas in gynaecology and obstetrics, for which nine months' study is required, and in psychological medicine, for which twelve months' study is required. The degrees are granted to those who, having passed the Professional Examination, have also graduated in arts.

#### PROFESSIONAL EXAMINATIONS.

A candidate for the Final Examination for the M.B., B.Ch., and B.A.O. degrees must be a matriculated student of at least five years' standing. The examinations which students must pass are the Preliminary Scientific, the Intermediate Medical, and the Final. Before admission to any of these examinations students must have completed the courses of study in the subjects involved.

*Preliminary Scientific.*—This covers (a) chemistry, (b) physics, (c) botany and zoology; the three divisions may be taken together or at different times.

*Intermediate Medical.*—This is divided into two parts: (a) anatomy, physiology, organic chemistry, and histology; (b) applied anatomy and applied physiology. The two parts may be taken separately or together.

*Final Examination.*—Part I: Hygiene and medical jurisprudence, pathology and bacteriology, materia medica, and therapeutics. Part II: (a) Midwifery and gynaecology; (b) medicine and mental diseases; (c) surgery in all branches, including clinical ophthalmology. The three sections of Part II may be taken separately or together. In either case the full curriculum must have been completed, and the Final Examination cannot be completed before the end of the fifth year.

*M.D.*—The candidate must have passed all the qualifying examinations in medicine, surgery, and midwifery, and have taken, or have been qualified to take, the degree of B.A. three years previously. He must send in a thesis for approval. Subsequently the Regius Professor of Physic and an assessor will discuss with him questions connected with the thesis, and may also examine him viva voce on other medical subjects of a more general nature.

*M.Ch.*—The candidate must be a B.Ch. of not less than three years' standing, and have been engaged in practice for two years.

*M.A.O.*—The candidate must be a B.A.O. of not less than two years' standing and must produce satisfactory evidence of having been engaged for two years in obstetric science. The examination is specially directed to obstetrics and practical gynaecology.

Further information regarding courses of instruction, etc., may be obtained from the Registrar of the School of Physic, Trinity College, Dublin.

### QUEEN'S UNIVERSITY, BELFAST.

THE degrees granted by the Medical Faculty of this university are as follows: Bachelor of Medicine (M.B.), Bachelor of Surgery (B.Ch.), Bachelor of Obstetrics (B.A.O.), Doctor of Medicine (M.D.), Master of Surgery (M.Ch.), Master of Obstetrics (M.A.O.). The university also confers a Diploma in Public Health. The first three degrees mentioned serve as a qualification for admission to the *Medical Register*, and are not granted separately. In addition to matriculating and passing his professional examinations, a candidate for these degrees must have passed three of the regulation five years as a student at the Belfast School of Medicine. Degrees in dental surgery (B.D.S. and M.D.S.) are conferred by the university, and also a diploma in dental surgery (L.D.S.).

#### PROFESSIONAL EXAMINATIONS.

The examinations for the M.B., B.Ch., B.A.O. are four in number. The first deals with: (1) inorganic, organic, and practical chemistry, (2) experimental and practical physics, (3) botany and practical botany, (4) zoology and practical zoology. It is divided into two parts, of which botany and zoology form one. The Second Examination covers anatomy and physiology, and may be taken at the

# IRISH UNIVERSITIES AND CORPORATIONS.

end of the second year of the student's career. The Third Examination includes: (1) pathology, (2) materia medica, pharmacology, and therapeutics, (3) medical jurisprudence, and (4) hygiene. To be valid a certificate in regard to the study of the subjects of this examination must show that the work has been done after the Second Examination has been passed.

The Final Examination includes: (1) medicine, (2) surgery, (3) midwifery, (4) ophthalmology and otology. The student may pass in all subjects at once at the end of his fifth year, or he may divide the examination into two parts—namely, (1) systematic, (2) clinical, practical, and oral. The first part may be taken at the end of the fourth year, but for the second part the candidate may not present himself until the end of his fifth year, but students invariably take both parts at the end of their course. No certificate in regard to the study of the subjects of this examination will be valid unless the work was done subsequent to passing in all the subjects of the Second Examination.

## THE HIGHER DEGREES.

Candidates for the degree of Doctor of Medicine must be graduates in medicine of at least three years' standing, unless they hold also a degree of the university in arts or science, in which case a standing of two academic years will suffice. Moreover, candidates must be able to show that the interval has been passed in the pursuit of such courses of study or practical work as may be prescribed. The degree may be conferred either (a) after a formal examination, or (b) in recognition of the merits of a thesis or of some piece of original study or research carried out by the candidate, followed by an oral or other examination in its subject. When an ordinary examination is imposed it will include (1) two written papers on a selected clinical practice of medicine, (2) a commentary on a selected case, (3) a clinical and viva voce examination, and (4) a written paper and clinical or practical and viva voce examination on a subject chosen from the following list: (a) human anatomy, including embryology; (b) physiology, (c) pathology, (d) pharmacology and therapeutics, (e) sanitary science and public health, (f) forensic medicine and toxicology, (g) mental diseases. The regulations for the degrees of M.Ch. and M.A.O. are of the same general nature.

## NATIONAL UNIVERSITY OF IRELAND.

The National University of Ireland carries on most of its educational work through three constituent colleges—one in Dublin, one in Cork, and one in Galway. Each of these provides a full medical curriculum, and all candidates for the medical degrees of the university must pass three of their five years of study at one or other of them. These years do not count except after matriculation or recognition as a student of the Medical Faculty obtained in some other fashion. The candidates at each constituent college are examined by the university, and a common standard of education is secured by all courses of instruction and the regulations concerning report thereon approved by the Senate of the university. In addition from the Board of Studies of the university, the university grants those of Bachelor and Master of Public Health, and Bachelor and Master in Dental Surgery, as well as Diplomas in Public Health, in Mental Diseases, and in Tropical Medicine.

Application for other information may be made to the Registrar, National University of Ireland, Dublin.

## THE IRISH CORPORATIONS.

There are, in the Irish Free State, three licensing bodies other than the Medical Faculties of the universities; and in Dublin, just as in London, there is a Royal College of Physicians of Ireland, a Royal College of Surgeons in Ireland, and an Apothecaries' Hall. In Dublin, as in London and in Edinburgh, the two Colleges have formed an examining Conjoint Board, which is responsible for the recommendation of candidates to the two bodies for their

respective licences. The Apothecaries' Hall of Ireland, like the Apothecaries' Society of London, gives its licence separately.

## THE CONJOINT BOARD IN IRELAND.

This body requires of candidates the passage either of its own preliminary examination in the subjects of general education or proof that the candidate has passed one of the tests accepted by the General Medical Council as well as passing in the Pre-Registration Examinations in Chemistry and Physics and Biology.

### PROFESSIONAL EXAMINATIONS.

There are three professional examinations, the first of which cannot be passed earlier than the end of the second winter session, nor the final before the conclusion of full five years of medical study. Before being admitted to any of them the candidate must show that he has studied the different subjects in practice and theory for the requisite periods, certificates to this effect being accepted from the authorities of most of the recognized medical schools at home and abroad. The first examination deals with (a) anatomy, and (b) physiology and histology. The second examination deals with (a) pathology, (b) materia medica, pharmacy, and therapeutics and ophthalmology, and may be taken separately.

**Final Examination.**—This is divided into three divisions, which cannot be completed until at least five years have passed in medical studies other than those for the Pre-Registration Examinations, and five years at least since the beginning of the curriculum. The divisions are: (a) medicine, including fevers, mental diseases, and diseases of children; (b) surgery, including operative surgery; (c) midwifery, including diseases of women and newborn children, and the theory and practice of vaccination.

**Fees.**—Preliminary Examination, £2 2s. Re-examination, £2 2s. Pre-Registration Examination, £3 3s. Re-examination in Chemistry, £2 2s.; in Physics, £1 1s. First Professional Examination, £25 5s.; Second, £15 15s.; Final, £6 6s. Re-examination fee is £2 2s. for each division.

### Diploma in Psychological Medicine.

There are two examinations in connexion with this diploma: Part I consists of (a) anatomy and physiology of the nervous system, (b) psychology. Part II—(a) neurology, including clinical and pathological neurology; (b) psychological medicine, including its legal relationships.

**Fees.**—£3 3s. for each part. Further information can be obtained from Mr. Alfred Miller, Secretary of the Committee of Management, Royal College of Surgeons, St. Stephen's Green, Dublin.

## ROYAL COLLEGE OF PHYSICIANS OF IRELAND AND ROYAL COLLEGE OF SURGEONS IN IRELAND.

### The Diploma in Public Health.

Every candidate for the Diploma in Public Health must observe the following rules:

**Rule 1.** A period of not less than two years shall elapse between the attainment by a candidate of a registrable qualification in Medicine, Surgery, and Midwifery and his admission to the Final Examination for a Diploma in Public Health.

**Rule 2.** The curriculum for the Diploma in Public Health shall extend over a period of not less than twelve calendar months subsequent to the attainment of a registrable qualification.

**Rule 3.** Every candidate shall produce evidence of having attended, during a period of not less than five months, at an institution approved by the Licensing Body granting the Diploma, practical instruction in: (a) Bacteriology and Parasitology (including Medical Entomology), especially in their relation to diseases of man, and to those of the lower animals which are transmissible to man; (b) Chemistry and Climatology in relation to Public Health; (c) Meteorology and Climatology in relation to Public Health.

At least 180 hours must be devoted to Course (a), of which not less than 90 hours shall be occupied in practical laboratory work. At least 90 hours shall be devoted to Course (b), of which not less than 70 hours must be devoted to Course (c).

**Rule 4.** Every candidate shall produce evidence of having received, during not less than 80 hours, at an institution approved by the Licensing Body granting the Diploma, instruction in the following subjects: (a) The Principles of Public Health and Sanitation (20); (b) Epidemiology and Vital Statistics (20); (c) Sanitary Law and Administration (including Public Medical Services) (20); (d) Sanitary Construction and Planning (10).

(e) Sanitary Construction and Planning (10). (The numbers indicate the normal proportion of time to be given to each subject.)

**Rule 5.** Every candidate shall produce evidence that he has attended for three months on the clinical practice of a recognized Hospital for Infectious Diseases, and has received therein instruction in the methods of administration. At least thirty daily attendances of not less than two hours in each week shall be required.

**Rule 6.** Every candidate shall produce evidence that he has, during a period of not less than six months, been engaged in acquiring a practical knowledge of the duties, routine and special, of Public Health Administration under the supervision of a Medical Officer of Health, who shall certify that the candidate has received, from this Officer or other competent Medical Officer, during not less than three hours on each of sixty working days, practical instruction in these duties, and also those relating to:

- (a) Maternity and Child-Welfare Service;
- (b) Health Services for Children of School Age;
- (c) Venereal Diseases Service;
- (d) Tuberculosis Service;
- (e) Industrial Hygiene;
- (f) Inspection and Control of Food, including meat and milk.

Candidates of having received the prescribed instruction in Public Health Administration must be given by a Medical Officer of Health who devotes his whole time to Public Health work; or by the Medical Officer of Health of a Sanitary Area having a population of not less than 50,000, or in Ireland the Medical Superintendent Officer of Health of a County or County Borough having a population of not less than 50,000.

**Rule 7.** The examination for the Diploma shall be divided into two parts, Parts I and Part II.

**Rule 8.** The examination for Part I shall include the following subjects:

- Bacteriology and Parasitology (including Medical Entomology);
- Chemistry and Physics, and Meteorology and Climatology; in relation to Public Health.

**Rule 9.** The examination for Part II shall include the following subjects:

- Hygiene and Sanitation (including Sanitary Construction);
- Epidemiology and Infectious Diseases;
- Sanitary Law and Vital Statistics;
- Public Health Administration.

The examination shall be written and oral, and shall include practical examinations in Infectious Diseases; Food inspection; Inspection of premises—dwellings, factories, workshops, schools, etc.

### ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

Those whose names already appear on the *Medical Register* can obtain the separate Licence in Medicine of this College, and its Licence in Midwifery. In either case an examination has to be passed in the subjects indicated, questions on midwifery, hygiene, and jurisprudence being included in the examination for the Licence in Medicine. For the Licence in Midwifery practitioners of over five years' standing are exempted from examination by printed questions. The other grades of the College are Members and Fellows. The former are admitted after an examination which is open to all university graduates in medicine and Licentiates in medicine of Royal Colleges of Physicians, and deals with the general subjects of medicine. Fellows are selected, by vote, from among the Members of the College, irrespective of sex.

**Fees.**—For the Licence in Medicine, 15 guineas; Special Examination, £21. For the Licence in Midwifery, 8 guineas; Special Examination 16 guineas. For the Membership, 20 guineas to a Licentiate of the College, 35 guineas to others; a special examination costs 10 guineas extra. The Fellowship, £35, in addition to stamp duty, £25.

Information as to special examinations and other matters can be obtained from the Registrar, the Royal College of Physicians, Kildare Street, Dublin.

### ROYAL COLLEGE OF SURGEONS IN IRELAND.

This body, besides granting a Licence in Surgery, admits those possessed of registrable surgical qualifications to its Fellowship under certain conditions. Its Licence is usually granted conjointly with that of the College of Physicians, but it is given separately to holders of a registrable qualification in medicine, provided the College is satisfied that adequate courses of study have been pursued, and provided its own provisional examination is passed. This examination is held on its behalf by the Conjoint Board, and is identical with the ordinary surgical portion of the examinations imposed by that body.

**The Fellowship.**—Candidates for the Fellowship must pass two examinations, of which the first is in anatomy (including dissections), physiology, and histology; and the second in surgery (including surgical anatomy) and pathology. Both examinations are partly written, partly practical, and partly *viva voce*; while the final examination includes the performance of operations. All subjects of either examination must be passed at one time, and in neither can a candidate be admitted who has been rejected in any of its subjects by any other licensing body within three months. Candidates are not admitted to the Primary Examination except on evidence that they have already passed an examination in anatomy, physiology, and histology, held by some university or other body whose degrees or licences entitle the holder to admission to the *Medical Register*; if, how-

ever, the candidate's name is on the Colonial or Foreign List in the *Medical Register*, at the discretion of the Council. Candidates for the final examination must be over 25 years of age, produce a certificate of general good conduct signed by two or more Fellows of the College, and, if successful, must make a declaration before admission to the effect that they do not conduct dispensing practices, and will not do so as long as they are Fellows.

**Fees.**—Candidates for the Licence pay 5 guineas for examination, which sum, if they pass, is counted as part of the fee payable on admission to the Licence, this being 25 guineas. Candidates for the Fellowship pay 5 guineas for each examination, the total of 10 guineas being reckoned as part of the fee payable on admission to the Fellowship. That fee is 25 guineas in the case of those who are already Licentiates, and 40 guineas in the case of others.

### APOTHECARIES' HALL OF IRELAND.

A DIPLOMA is granted by this Hall which entitles the holder to be registered as a practitioner of medicine, surgery, and midwifery, and confers also the privileges of an apothecary. Women candidates are eligible. We have received no response to our inquiries either last year or this year, but the fees in 1924 were as follows:

**Fees.**—Primary Examination, £10 10s.; Intermediate Examination, £10 10s.; Final Examination, £21; Final alone, when the others have been passed elsewhere, £26 5s.

Application for other information should be made to the Registrar, 95, Merrion Square, Dublin.

## MEDICAL SCHOOLS AND COLLEGES.

### LONDON.

INFORMATION as to the fees at each of the various metropolitan medical schools, and the scholarships, prizes, and junior appointments which they offer, will be found in the following pages. The courses they provide are fundamentally the same, and in all of them the arrangements made are such as to meet the requirements of students of every class—of those who are aiming at the diplomas of the English Conjoint Board or the Apothecaries' Society, not less than of those who have London or other university degrees in view. At all, too, special facilities are offered to students who have commenced their professional education at Oxford or Cambridge, and are seeking the medical degrees of those universities.

### CHARING CROSS HOSPITAL.

This school, with its hospital, is situated in the centre of London, and is easily accessible. Primary and intermediate students attend lectures and practical work at King's College. The final studies are taken in the school and hospital, where systematic lectures, demonstrations, and tutorial classes are arranged to cover all the subjects necessary for the qualifying examinations. Departments are also available for the other final subjects of bacteriology, clinical pathology, biochemistry, materia medica, public health, operative surgery, and for research work. An Institute of Pathology, with a whole-time staff of scientific workers and fully equipped laboratories, has been established in the school. Students receive their training in preventive medicine, pathology, and bacteriology here, and are encouraged to undertake research.

Women students are admitted to the school and hospital upon the same terms and conditions as men, and after qualification are eligible for resident hospital appointments.

**Fees.**—The fees are as follows:—Entrance: Primary and Intermediate, 10 guineas; Final, 8 guineas. Annual, £42. Further information may be obtained on application to the Dean of the Medical School, Charing Cross Hospital, London, W.C.2.

### GU'S HOSPITAL.

THE hospital contains 616 beds in constant occupation. Twenty-six beds are set apart for diseases of the eye, and 40 for the most urgent and interesting medical cases, which form the subjects of the weekly clinical lectures. There is a special ward of 32 beds for the reception of cases of

All the departments are modern and adapted for the teaching of all subjects in the various curricula. Special courses of instruction are held in preparation for the examinations of the University of London, for the Fellowship of the Royal College of Surgeons, and for the Membership of the Royal College of Physicians. Special

entries can be made for the medical and surgical practice of the hospital. A residential hostel on hospital ground is provided for the convenience of students who wish to live near the wards and casualty departments. The athletic ground, of over thirteen acres, is at Higham's Park, and is open to all members of the Clubs Union.

**Appointments.**—The salaried appointments open to past students of the hospital are those of assistants to the medical unit; first assistants to the medical and surgical firms; obstetric registrar; medical, surgical, and obstetric tutors; clinical assistants in the medical, surgical, ophthalmic, aural, light and skin, orthopaedic, and electrical departments, and in the Pathological Institute. There are appointed annually 4 resident accoucheurs, 14 resident house-physicians and 22 resident house-surgeons; 14 resident receiving-room officers, 8 resident emergency officers, 8 clinical assistants to the medical out-patient department, and 16 clinical assistants to the surgical out-patient department, also paid and unpaid clinical assistants in the various special departments. In addition, there are numerous assistantships, clerkships, and dresserships in the departments of medicine, surgery, gynaecology, and obstetrics.

**Scholarships and Prizes.**—The following is a list of scholarships and prizes:—At Entrance: Price Scholarship in Science, £100; Price Scholarship in Anatomy and Physiology, open to students of Oxford and Cambridge Universities, £75; Entrance Scholarship in Science, £50; Epsom Scholarship, "Free Medical Education." After Entrance: Buxton Prize in Anatomy and Physiology, £40; Letheby Prizes in Organic Chemistry and Chemical Pathology, £25; Prizes in Clinical Medicine, Surgery, and Obstetrics and Gynaecology, £20 each; Duckworth Nelson Prize in Practical Medicine and Surgery, £10; Hutcheson Prize in Clinical Surgery, £60; Treves Prize in Clinical Surgery, £15; Sutton Prize in Pathology, £20; K. E. D. Payne Prize in Pathology, £20; Sir Andrew Clark Prize in Clinical Medicine and Pathology, £26; Anderson Prizes in Elementary Clinical Medicine, £20; Dressers' Prizes, £40; Practical Anatomy Prizes, £10; Arnold-Thompson Prize in Medical and Surgical Diseases of Children, £15; Liddle Prize, £120; Francis Farmer Scholarship in Dental Surgery, £25; Harold Fink Prize in Dental Surgery, £8 8s. The "London" prizes in Dental Surgery and Pathology, £5 5s., and in Dental Prosthesis, £5 5s. Seven class examination prizes, each of the value of £3 3s., are offered for competition at the end of the courses of lectures in the dental curricula. Funds to the value of over £90,000 permit of financial assistance being given to students and graduates engaged in medical research.

**Fees.**—Entrance fee, 20 or 15 guineas, according to examinations passed; annual fee, 40 guineas.

Full information may be obtained from the Dean at the London Hospital Medical College, Mile End, E.1.

#### THE MIDDLESEX HOSPITAL.

The school and hospital are in Mortimer Street, W.1, close to Oxford Circus, Goadge Street, and Great Portland Street stations. There are a gymnasium, common rooms, and restaurant within the hospital precincts, and an athletic ground within easy reach. The hospital contains over 450 beds, including a wing containing 92 beds for patients suffering from cancer. There are special wards for maternity and gynaecological cases, for mental cases, for cases of venereal disease, and for diseases of children and of the skin and eye.

The medical school, which includes the Bland-Sutton Institute of Pathology and the cancer research laboratories, is completely equipped for teaching the entire medical curriculum, including the pre-medical subjects, chemistry, physics, and biology. The Bland-Sutton Institute, under the charge of the Professor of Pathology, contains large pathological and public health laboratories, a separate department of biochemistry, and smaller rooms for original investigation as well as a pathological and anatomical museum. Bacteriological, chemical, and microscopical examinations of material from the wards, operating theatres, and out-patient departments are carried out in the laboratories, and senior students are eligible for clerkships in connexion with this work. Junior assistants in the pathological and bacteriological laboratories are elected annually from recently qualified students. Every facility is given for original research. The cancer research laboratories offer unrivalled opportunities for the study of this disease, in both its clinical and pathological aspects.

**Appointments.**—Twenty-two resident appointments are open annually for competition among students of the hospital. The officers reside and board in the residential

collegio free of expense. Two casualty medical and two casualty surgical officers, and two resident officers to the special departments, are appointed annually. Eight house-surgeons are appointed every year at intervals of two months, after examination; six house-physicians are also appointed annually at similar intervals. An obstetric and gynaecological house-surgeon is appointed every six months. Nine registrars are appointed annually. In the out-patient departments the appointments are: clerk and dresser to the physicians and surgeons to out-patients; clerk in the departments for diseases of the skin and nervous diseases; dressers to the department for diseases of women, to the ophthalmic surgeon, to the throat and ear department, and to the dental surgeon. Extern midwifery clerks and *post-mortem* clerks are also appointed. The appointments are so arranged that every student may, during his course, hold all the out-patient and in-patient clerkships and dresserships. Students must have held an out-patient clerkship and dressership before holding in-patient clerkships or dresserships. Non-resident qualified clinical assistants are appointed in the medical, surgical, skin, neurological, ophthalmic, throat and ear, odontological, children's, and electrotherapeutic out-patient departments.

**Scholarships.**—There are two Entrance Scholarships, value £100 each. Two annual Entrance Scholarships, of the value of £90 and £60 respectively, are open to students of the universities of Oxford and Cambridge who have completed the curriculum for, or passed the examinations in, anatomy and physiology. Students joining the school in the previous April are eligible. The Freer Lucas Scholarship is annually awarded on the nomination of the headmaster to a pupil of Epsom College who has passed the first examination for medical degrees (Preliminary Scientific Examination). There is also a scholarship, value £50, awarded annually to students from New Zealand. In addition to the Entrance Scholarships, there are numerous other valuable scholarships, prizes, and exhibitions open to students of the hospital, including the Brodrip Scholarships, value £60 and £40; Lyell Gold Medal and Scholarship, value £55 5s.; Freeman Scholarship, value £30; John Murray Gold Medal and Scholarship, value £25; Hetley Clinical Prize, value £25; Leopold Hudson Prize, value 11 guineas; and the Second Year's Exhibition, value 10 guineas.

**Fees.**—(a) Pre-medical students: For one year or less, £21. (b) Students who have completed the Preliminary Science course: Entrance fee, 25 guineas; five annual fees of £45. The annual fee for further attendance at the medical school, if a registrable qualification has not been obtained, is £23. Three-quarters, one-half, or one-quarter of the last annual fee may, at the discretion of the School Council, be returned if the student obtains a registrable qualification within three, six, or nine months of the annual payment becoming due. (c) Oxford and Cambridge and other students who have completed the Intermediate course: Entrance fee, 15 guineas; two annual fees of £45; further annual fees as above. These fees are inclusive and cover the cost of instruction in vaccination, fevers, etc., and also the subscription to the amalgamated clubs and hospital Journal.

Further information may be obtained from the Dean or the School Secretary.

#### ST. BARTHOLOMEW'S HOSPITAL.

This institution fills one side of Smithfield and Giltspur Street, covering the greater part of a large island of ground separated practically from all other buildings; it is on the edge of the City, and easily reached from all parts of London. The hospital contains 757 beds. Extensive buildings, opened in July, 1907, occupy part of the ground acquired from the old Bluecoat School, and these materially enhance the attractions of the hospital as a place of medical study. The medical school buildings, including the library, the museum, and the chemical, biological, and anatomical departments, have now at their side a very large building, which includes club rooms for the Students' Union, a writing room, luncheon and dining halls, new quarters for the resident staff, and an out-patient department and accommodation for special departments of such large size as to be unsurpassed by any hospital in the kingdom. During the year 1909 a second block of new buildings was completed. These form the pathological department, and include, in addition to an extensive *post-mortem* room, large and well equipped laboratories for clinical pathology, pathological histology, bacteriology, and chemical pathology, altogether forming the most complete pathological department in the country. A further large block in Giltspur Street was acquired in 1923, and has been equipped by the construction of new lecture theatres and extensive laboratories for physics, chemical physiology, experimental physiology, histology, and pharmacology.



Within the precincts of the hospital there is also a residential college for a large number of students. The Students' Union owns grounds of some ten acres in extent for recreative purposes at Winchmore Hill, which is easily accessible from the hospital.

Special classes are held for students preparing for the Preliminary Scientific and other examinations, for the M.B., M.D. of the Universities of Oxford, Cambridge, and London, and for the higher surgical degrees at the same universities, including the M.Ch.Oxon., M.Ch.Cantab., M.S.Lond., and F.R.C.S.Eng.

**Clinical Units.**—Special clinical units have been established in medicine and surgery, each under the charge of a professor and director who devotes the whole of his time to the purpose of hospital practice, teaching, and research. In each unit there are an assistant director and four assistants, for whom special laboratory accommodation has been provided by a gift from the Sir William Dunn Trustees. The appointments of clerks and dressers are open to all students in these departments, and arrangements are made for all students to study in these units during a part of their clinical course.

**Appointments.**—Clinical clerks to the physicians and to the physician-accoucher, and dressers to the surgeons and in the casualty department, are chosen from the students; clerks and dressers are also selected from the students to attend in the out-patient rooms, in the special departments (ophthalmic, orthopaedic, gynaecological, children's, laryngological, aural, dermatological, venereal, electrical and dental), and in the post-mortem room. Chief assistants and clinical assistants are selected from qualified men appointed yearly to help in the general medical, surgical, and in the special departments. Ten house-physicians and ten house-surgeons are appointed annually. During their first six months of office they act as "junior" house-physicians and house-surgeons, and receive a salary of £80 a year. During their second six months they become "senior" house-physicians and house-surgeons, and are provided with rooms by the hospital authorities, and receive a salary of £80 a year. A resident midwifery assistant, an ophthalmic house-surgeon, a house-surgeon to the skin and venereal department, and a house-surgeon for diseases of the throat, nose, and ear are appointed every six months, and are provided with rooms and receive a salary of £80 a year. Three resident administrators of anaesthetics are appointed—the senior for one year at a salary of £150, and two juniors for six months with a salary at the rate of £80 per annum—and all are provided with board and rooms. An extern midwifery assistant is appointed every three months, and receives a salary of £80 a year.

**Scholarships.**—Four entrance Scholarships are annually awarded after examinations held in September. The subjects of examination and conditions of eligibility for these scholarships are: (1) One scholarship, value £75, in not fewer than two and not more than three of the following subjects: chemistry, physics, botany, zoology, physiology, pathology, and anatomy, limited to students under 25 years of age who have not entered on the medical or surgical practice of any London medical school. (2) One scholarship, value £100, in not fewer than three of the following subjects: chemistry, physics, botany, zoology, and physiology, limited to students under 21 years of age who have not entered on the medical or surgical practice of any London medical school. (3) An entrance scholarship in arts, of the value of £100, in Mathematics; Latin or Greek, or French or German; a second language or Chemistry or Physics. (4) The Jefferison Exhibition in the same subjects as No. 3—of the value of £50. Candidates for Nos. 3 and 4 must be under 19 years of age. The total value of the scholarships and prizes is over £1,200 annually.

Further information and a handbook can be obtained on application to the Dean of the Medical College, St. Bartholomew's Hospital, E.C.1.

#### ST. GEORGE'S HOSPITAL.

This school is at Hyde Park Corner, and is carried on in connexion with St. George's Hospital, an institution having a service of 436 beds, of which 100 are at the convalescent hospital at Wimbledon. It provides for the instruction of its students in the preliminary and intermediate subjects of the curriculum at the teaching centre of London University established at King's College. The school at Hyde Park Corner is devoted entirely to the teaching of clinical subjects, great attention being paid by the members of the staff to individual teaching. A number of special

courses are given, in which the requirements of university and all other examinations receive careful attention.

The St. George's Hospital Club consists of an amalgamation club, with smoking and luncheon rooms on the hospital premises, and other students' clubs, with an athletic ground at Wimbledon. Students have the advantage of a well filled library of medical and scientific books. A register of accredited apartments and a list of medical men and others willing to receive St. George's men as boarders may be seen on application to the Dean.

**Appointments.**—Two house-physicians, two house-surgeons, and two casualty officers are appointed every two months. The house officers reside and board in the hospital free of expense. The casualty officers are non-resident, and receive salaries at the rate of £100 per annum. After the student has held a house appointment, the following are, among others, open to him: assistant resident physician at £350 per annum; assistant resident surgeon at £350 per annum; medical officer to the Atkinson Morley Convalescent Hospital at £300 per annum; medical registrarship at £200 per annum; surgical registrarship at £200 per annum; medical officer to the biochemical department at £100 per annum; assistant curatorship of the museum, £100 per annum; obstetric assistantship, resident, at £50 per annum; the post of resident anaesthetist at £100 per annum; the posts (two) of junior anaesthetist, each at £30 per annum.

**Scholarships.**—The following Entrance Scholarships and Exhibitions in anatomy and physiology and in general pathology are awarded in July to candidates who have passed the second M.B.London or corresponding examination: Senior William Brown Exhibition of the value of £150; Senior Scholarship of the value of 80 guineas; Junior William Brown Exhibition of the value of £80; Junior Scholarship of the value of £70; Devitt-Pendlebury Scholarship of the value of £50; and Exhibitions, each of the value of £40 and up to six in number. Other prizes to the value of £200 are awarded annually to the students of the hospital.

**Fees.**—First year (First M.B. or pre-medical course), £36 15s.; second and third years, £42 each. For the course of clinical study, in the fourth and subsequent years, entrance fee, £10 10s.; annual composition fee, £12. No entrance fee is payable by St. George's students who have studied at King's College.

Further information may be obtained from the Dean of the Medical School.

#### ST. MARY'S HOSPITAL.

This hospital and medical school are situated close to Paddington Station (G.W.R.), having on one side a poor district of 500,000 persons, and on the other side the residential district of Kensington and Bayswater. The hospital contains 288 beds, and, by a scheme of affiliation, for teaching purposes, of several neighbouring hospitals, the teaching facilities extend over 1,000 beds. By arrangement with the Lock Hospital, students take the courses of instruction in venereal diseases there. The athletic ground (ten acres) is situated at Wembley, and can be reached in twenty minutes by a constant service of trains; a large pavilion has recently been erected.

**Clinical Facilities.**—Clinical units in medicine and surgery were established in 1920, and have now been formally recognized by the University Grants Committee, St. Mary's being one of the six medical schools in London which enjoy this privilege. In addition to the lying-in beds at St. Mary's, every student attends a short course at Queen Charlotte's Maternity Hospital (which is situated near to St. Mary's) before holding a post on the maternity district of the hospital.

**Institute of Pathology and Research.**—Students specially interested in pathology and bacteriology have singular advantages at St. Mary's. The Institute comprises seven special departments, the whole being under the personal direction of Sir Almoth Wright, F.R.S. Research scholarships of £200 each are awarded annually to students working in the departments of the Institute; and research beds are provided. Clerkships in pathology and bacteriology and chemical pathology, lasting for a period of three months, are open to students of the fifth year, and enable them to carry out the pathological and bacteriological investigations of the wards, and learn the necessary technique under supervision. Seventy-two of these posts are available annually.

**Complete Curriculum.**—The medical school provides complete courses of instruction, and students can join at any

on passing a Preliminary Examination in Arts. Terms begin in October, January, and April.

**Entrance Scholarships.**—Two entrance scholarships of £210 each and one of £26 5s. are awarded annually in July by nomination on the lines of the Rhodes Scholarships. One or more University Scholarships of £200 are awarded annually in July.

**Fees.**—Composition fees for entire curriculum (5½ years), £200 in one sum, or £210 by five annual instalments. Composition fee for clinical curriculum (2½ years), 90 guineas in one sum, or 95 guineas by two annual instalments. As an alternative, students may pay an annual fee of 40 guineas, with an entrance fee of 10 guineas.

#### ST. THOMAS'S HOSPITAL.

THIS school and hospital are situated in Lambeth, on the south bank of the Thames, facing the Houses of Parliament, and form one of the well known architectural features of London.

The school buildings, which are separated from the hospital by a quadrangle, comprise lecturo theatres, laboratories, and classrooms well adapted for the modern teaching of large bodies of students in the subjects of the medical curriculum. A splendid library and reading room and a complete museum are open to all students from 9 a.m. to 5 p.m., on Saturdays to 1 p.m. The Students' Club premises contain a dining room and smoking and reading room supplied with daily and illustrated weekly papers, and a gymnasium. Good meals are obtainable at a moderate tariff. A new Residential Club for students, now being erected, will be opened early in 1927, and will provide resident quarters for some sixty students. The terrace affords facilities for exercise and recreation. The sports ground, of more than nine acres in extent, is at Chiswick. It can be reached in forty minutes from the hospital; it is admirably adapted for football, cricket, lawn tennis, and athletic sports.

The hospital proper contains 644 beds. In addition to the ordinary provisions of a great hospital there are connected with the out-patient department physicians' and surgeons' rooms provided with ample sitting accommodation, so that students are enabled to follow closely the practice and teaching of the out-patient staff. There is a full complement of special departments, and connected with the hospital a special tuberculosis department gives opportunity for instruction of students. There is a clinical theatre, centrally situated, so as to facilitate the illustration of lectures by patients from the wards and out-patient room; it is arranged also for lantern demonstrations. The maternity ward, containing 21 beds, gives students full facilities for maternity training, under supervision, within the precincts of the hospital. This obviates any necessity for supplementary instruction elsewhere, and fully prepares the student for the extern maternity practice of the hospital district. The revised regulations of the examining bodies can thus be fully complied with.

**Appointments.**—All hospital appointments are open to students without charge. A resident assistant physician, a resident assistant surgeon, and a resident anaesthetist are appointed annually at a salary of £200 each per annum. Two hospital registrars, medical and surgical, at an annual salary of £250 each, are appointed yearly. The tenure of these offices may be renewed for a term not exceeding two years. A pathological registrar to the department of obstetrics and gynaecology (at an annual salary of £250), an ophthalmic registrar (at an annual salary of £50), and an orthopaedic registrar (unpaid) are appointed yearly. Ten resident casualty officers and anaesthetists (including two senior) are appointed every six months. Seven house-physicians (including two obstetric house-physicians and one house-physician to the department of diseases of children) and nine house-surgeons (including two ophthalmic house-surgeons, one orthopaedic house-surgeon, and two house-surgeons to the ear, nose, and throat department) are appointed every six months. Thirty-six or more clinical assistants in the special departments are appointed every three months, and hold office for six months if recommended for re-election. Clinical clerkships and dresserships to the in-patient and out-patient departments are available to the number of 400 each year.

**Scholarships.**—There are five entrance Scholarships: Two in arts, giving one year's free tuition; one of £150 and one of £60, in chemistry, physics, and biology, for students who have not received instruction in anatomy or physiology; one of £100 in any

two of the following subjects: anatomy, physiology, chemistry, or pathology, for students who have completed their examinations in anatomy and physiology, for a medical degree in any of the universities of the United Kingdom or the Colonies, and have not entered as clinical students in any London medical school. The money value and subjects of examination of the remainder are as follows: (a) William Tite Scholarship for second-year students, £25; (b) and (c) Musgrove Scholarship or (alternately) Peacock Scholarship, each for third-year students and tenable for two years, £35 each; (d) Mead Medal, Medicine, Pathology, and Hygiene; (e) Wainwright Prize, Medicine; (f) Toller Prize, Medicine; (g) Cheselden Medal, Surgery and Anatomy; (h) Clutton Memorial Medal in Clinical Surgery, biennial; (i) Beane Scholar-ship, £50 biennially, Surgery and Surgical Pathology; (j) Solly Medal and Prize, biennially, Reports of Cases; (k) Sutton Sams Prize, biennially, Reports of Cases; (l) Bristowe Medal, Pathology and Morbid Anatomy; (m) Hadden Prize, Pathology and Morbid Anatomy; (n) Grainger Testimonial Prize, £31 10s., Anatomy and Physiology; (o) Louis Jenner Research Scholarship, tenable for two years, £60 annually, Pathology; (p) School Council Research Scholarship, £250 per annum; (q) John and Temple Research Scholarship, value £450 per annum (children).

**Fees.**—The annual fees are: For each year of study, £50. These fees cover all tutorial classes, but do not include instruction in infectious fevers, pharmacy, and vaccination. Qualified practitioners are permitted to attend the hospital practice on terms which may be ascertained from the Medical Secretary.

Special courses of instruction are given for various examinations, and a register of lodgings is kept at the school. Further information may be obtained from the Medical Secretary of the School, St. Thomas's Hospital, Albert Embankment, S.E.1.

#### UNIVERSITY COLLEGE HOSPITAL.

THE school, which forms part of the corporation of University College Hospital, is in immediate proximity to the hospital in University Street, and opposite University College. It comprises departments of medicine and clinical medicine, surgery and clinical surgery, midwifery and gynaecology, pathology including morbid anatomy, chemical pathology, biochemistry and bacteriology, cardiology, forensic medicine, mental physiology and mental diseases, dental surgery, practical pharmacy, and other departments for the study of special diseases, such as those of the eye, skin, ear and throat, venereal diseases, and for instruction in anaesthetics, electrotherapeutics, and skiagraphy. The Hospital and School have acquired the National Dental Hospital and College as their dental departments, thus providing every facility for the study of dental subjects. The Royal Ear Hospital, Dean Street, Soho, has also been amalgamated as the Ear, Nose, and Throat Department, and a new hospital for in- and out-patients, close to University College Hospital, is nearly completed.

The school thus provides the final course of study for the degrees of the Universities of Oxford, Cambridge, London, Durham, and other British universities, and for the diplomas of the Royal Colleges of Physicians and Surgeons in Medicine and Dental Surgery, and the Licence of the Society of Apothecaries. Special bacteriological classes are also held in preparation for the various diplomas in public health. Each department is also equipped for more advanced work, and provides facilities for research.

Clinical units in medicine and surgery are now in operation. The whole-time directors of the units are concerned with the organization of the teaching generally, but the honorary staff is responsible for the largest share of the teaching in the wards and out-patient department of the hospital. A unit in obstetric medicine has been established now that the new obstetric hospital is finished.

The new buildings of the obstetric hospital of 60 beds (rendered possible by the Rockefeller benefaction), the new Residents' House (with accommodation for 30 residents and students), the extension of the Nurses' Home, and the new research laboratories for the Medical School, are now finished and in full occupation.

**Appointments.**—The qualified appointments, in addition to a number of posts as house-physicians and house-surgeons and obstetric assistants, include the appointments of resident medical officer, medical registrar, surgical registrar, obstetric registrar, Harker Smith radium registrar, ophthalmic registrar, casualty medical officers, casualty surgical officers, assistants in ear, nose and throat, skin and venereal diseases departments, and house anaesthetists.

**Scholarships.**—The following scholarships and prizes are open to competition: Two Entrance Exhibitions of 112 guineas each, awarded after a competitive examination in anatomy or physiology, or General Pathology, Radcliffe Crocker Travelling Scholarship in dermatology for one year, value about £280; the Graham

scholarship in pathology of a sum not exceeding £300 per annum; Leslie Pearce Gould Research Scholarship in surgery for one year, value about £200; the Atkinson Morley Scholarship of £45 a year for three years, awarded after examination in the theory and practice of surgery; the Atclison Scholarship of £55 a year for two years for general proficiency in medical studies; the Magrath Clinical Scholarship, value about £150; the Filfliter Exhibition in pathology of £50; the Percival Allyn Prize for the advancement of surgery by research, value about £75; the Graham Gold Medal for research work; four Fellows Medals in clinical medicine; Liston Medals in clinical surgery; the Bruce Medal in pathology and surgery; two Tuke Medals in pathology; and the Erichsen Prize for practical surgery.

**Fees.**—The fee for the full course of final studies at the school is 112 guineas if paid in one sum, or 115 guineas if paid in two instalments. Fees for vaccination, fevers, and pharmacy not included.

Particulars of general and special courses can be obtained on application to the Dean of the Medical School, University College Hospital, University Street, W.C.1.

#### WESTMINSTER HOSPITAL.

This school, with its hospital, situate in Broad Sanctuary, opposite Westminster Abbey, provides for the education of its students in the preliminary and intermediate subjects of the University of London at King's College. The rest of the work is done in the school buildings near the hospital. The number of in-patients averages 3,500 and out-patients upwards of 30,000 annually, and the hospital and school afford ample facilities for instruction in all branches of medicine and surgery.

**Appointments.**—A medical and surgical registrar are appointed annually, each with a salary of £150, and obstetric registrar with a salary of £50. A senior resident and casualty officer, salary £104 per annum and board, appointed for six months, may be extended for a further period of six months. Three house-physicians, three house-surgeons, three assistant house-physicians, three assistant house-surgeons, and a resident obstetric assistant are appointed after examination, and are provided with rooms, commons, and salary of £52 per annum, except the assistant house-physicians and the assistant house-surgeons, who are provided with commons only. The assistant house-physicians, after three months' service, become house-physicians for a further period of six months, and the assistant house-surgeons, after three months' service, become house-surgeons for a further period of six months. Two house-anaesthetists are appointed for three months, non-resident, salary £50 per annum. Clinical assistants to the assistant physicians and assistant surgeons, and to the officers in charge of special departments, are appointed from among the qualified students. Every student must perform the duties of out-patient dresser for three months, and afterwards hold the office of in-patient dresser for three months. He is also required to serve two terms of three months each as medical clinical clerk to the in-patient physician and one term as gynaecological clinical clerk. Two pathological clerks are appointed every three months to assist in the post-mortem room. No student is eligible as an in-patient dresser or clinical clerk until he has passed the Second Examination of the Conjoint Board, or an equivalent examination. Clerks and dressers in the special departments of hospital practice are periodically appointed. So far as vacancies permit, students of other hospitals are admitted to in-patients' dresserships or clerkships.

The governors of the hospital have now completed the extensive improvements and alterations to the hospital, which render it a still more efficient teaching institution, with an increased number of beds.

**Scholarships.**—The following open scholarships are offered for competition during the year 1926-27: In the winter session two scholarships in anatomy and physiology, £70 each. In the spring two scholarships in anatomy and physiology, £70 each. A certain number of scholarships have been allotted to universities of England, Wales, and the Colonies, and to public schools. These scholarships are awarded entirely on the nomination of the Principal of the university or school.

**Fees.**—The annual composition fee is £40. An entrance fee of 10 guineas is payable by all students—namely, primary and intermediate students, £10 10s.; students entering for the final subjects, £8 8s. These fees include subscriptions for membership of the Club Union.

Further information and a prospectus can be obtained on application to the Dean at the Westminster Hospital, Westminster, S.W.1.

#### LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.

The school is situated at 8, Hunter Street, Brunswick Square, W.C.1, close to the Royal Free Hospital. It is, like all the other London schools which have so far been mentioned, one of the constituent schools of London University. The school buildings have recently been enlarged. The laboratories are extensive and well lighted, and are fully equipped for the examination courses of the University of London and the Royal Colleges of Physicians and Surgeons. Research laboratories are attached to all departments. A large, well equipped library, common room, Union room, and refectory are provided for the use of students. Resident accommodation for 60 students is provided in students' chambers attached to the school.

The Royal Free Hospital, Gray's Inn Road, W.C.1, has 240 beds, all of which are available for clinical instruction. A new block contains the obstetrical and gynaecological unit, which controls 68 beds. A large maternity district is served from the unit with a separate maternity hostel in the Essex Road, Islington. There are separate departments for diseases of the eye, ear, and skin, infant welfare, venereal diseases, massage, electrical and x-ray work, dentistry, and casualty. The instruction given covers the full curriculum for the M.B., B.S. degrees of the University of London, including first medical courses. Students attend the practice of one of the fever hospitals of the Metropolitan Asylums Board and receive special instruction in lunacy at Bethlem Hospital; they are also admitted to the practice of a number of special hospitals, and hold clerkships and dresserships at the Elizabeth Garrett Anderson Hospital, the Cancer Hospital, Hospital for Sick Children, the National Hospital for Nervous Diseases, the South London Hospital, and the Royal Ophthalmic Hospital. The work of the school includes preparation for the Primary Fellowship examination, and also for the Medical School and general hospital course for dental students.

**Appointments.**—Qualified students of the school can obtain appointments as house-physicians and house-surgeons, obstetric assistants, surgical, gynaecological, and medical registrars, assistant pathologists, assistant anaesthetists, medical electrician, skingrapher, and clinical assistants and demonstrators in various subjects.

**Scholarships.**—The Isabel Thorne Entrance Scholarship, value £30, the St. Dunstan's Medical Exhibition, value £60 a year for three years, which may be extended to five years, the Alfred Langton Scholarship of £50 a year for two years, the Flora Murray Bursary of £50, and the Mabel Sharnan-Crawford Scholarship value £20 a year for four years, are offered for competition in each year. The Sir Owen Roberts Memorial Scholarship of the value of £75 a year for four years, the Mrs. George M. Smith Scholarship of the value of £50 a year for three years, which may be extended to five years, the Dr. Margaret Todd Scholarship of the value of £37 10s. a year for four years, and the Sarah Holborn Scholarship of the value of £20 a year for three years, which may be extended to five years, are awarded in alternate years. The School Jubilee Bursary of £50 a year for three years is offered every third year. The Dostock Scholarship, value £30 a year for two or four years, is awarded by the Reid Trustees on the result of an examination held in May by the University of London every fourth year. The holder of the scholarship must enter the London School of Medicine for Women. The Lieutenant Edmund Lewis and Lieutenant Alan Lewis Memorial Scholarship, of the value of £25 a year for four years, is awarded every fourth year. The John Byron Bursary of £20 a year for two years, the Julia Anne Hornblower Cock Prize of £60, the Helen Pridcaux Prize of £60, the Mabel Webb Research Scholarship of £30 for two years, the Fanny Butler Scholarship of £16 a year for four years, together with many other scholarships and prizes, are offered on sundry conditions. The Dr. Edith Peachey-Plumson Post-Graduate Scholarship of £100 is awarded annually. Altogether the School offers annually £1,350 in scholarships. Various missionary societies also offer scholarships on certain conditions, and assist ladies who wish to go to India and other countries as medical missionaries.

**Fees.**—Courses for the University of London degrees and the diplomas of the Conjoint Board in England, and other qualifications: £240, payable in five instalments. These sums include library and laboratory fees.

The Students' Union exists to promote corporate action of the students on matters of common interest, to promote and maintain athletic and other clubs, and to issue a school magazine. All students are required to become members of the Union. The students' sports ground, which consists of a freehold property of six and a half acres, is situated at Sudbury.

Further information can be obtained from the Warden and Secretary.

## KING'S COLLEGE.

In the Faculty of Medical Science instruction is given in the preliminary and intermediate subjects of the first and second examinations leading to the degree of M.B., B.S. of the University of London, of the corresponding examinations of other universities, and of the Conjoint Examining Board of the Royal Colleges of Physicians and Surgeons, including the primary examination for the F.R.C.S. Eng. The courses are open to women students on the same terms as to men.

Regular students who have completed their preliminary and intermediate examinations proceed to a hospital to pursue their studies for the final examinations. The hospitals associated with King's College are: King's College Hospital, Denmark Hill, S.E.5; Westminster Hospital, S.W.1; St. George's Hospital, Hyde Park Corner, S.W.1; and Charing Cross Hospital, Strand, W.C.2.

A course for the degree of the University of London and for the diploma of the Royal College of Surgeons in dental surgery in conjunction with King's College Hospital Medical School has been arranged.

*Scholarships.*—The entrance Scholarships are: (1) Two Warneford Scholarships, each £30 for four years; subjects—selected from mathematics, classics, divinity, and science. (2) One Sambrook Scholarship of £30 for three years; subjects of examination selected from mathematics, classics, and science. The holders of the preceding awards must proceed to King's College Hospital. (3) Worsley, £100, paid in five annual instalments. (4) Rabbeth Scholarships, value £30 and £15, in July, for the best student of the first year. (5) Second year's scholarship, value £20, for the best student of the second year. (6) Daniell Scholarship £40, awarded on the results of the University Honours Examination.

Full information as to admission, fees, and scholarships can be obtained from the Dean of the Faculty of Medical Science (Professor E. Barclay-Smith), King's College, Strand, W.C.2.

## UNIVERSITY COLLEGE.

This institution, one of the principal component parts of the University of London, possesses a Faculty of Medical Sciences whose work covers all the subjects included in the group commonly known as the preliminary medical sciences—namely, physics, chemistry, botany, and zoology; and also the intermediate medical sciences—namely, anatomy, physiology, and pharmacology. The new anatomy building, provided by the munificent gift of the Rockefeller Foundation of New York, was opened on May 31st, 1923, by His Majesty the King. This building forms part of the block which includes physiology and pharmacology. The department of hygiene and public health prepares for the diplomas in public health of the Royal Colleges and of the various universities. Research work is undertaken in all the above-named departments. The College undertakes the education of students in all the subjects mentioned, leaving them free to complete their education in the strictly professional subjects—medicine, surgery, and the like—at any one of the recognized schools of advanced medical studies. The work is somewhat differently arranged, according to whether the student has in view the degrees of the University of London or the diplomas of the Royal Colleges. In either case the whole work to be done is divided into courses devised to meet the requirements of different examinations, and students can join the College for any of them. Women students are admitted to all courses on the same terms as men. The general arrangements for the benefit of students include membership of the Union Society or the Women's Union Society with the College gymnasium and the athletic grounds. There is also a collegiate residence for about fifty-five men students at Ealing, and for about seventy women students at Byng Place, Gordon Square.

*Scholarships.*—The scholarships and exhibitions obtainable include the Bucknill Scholarship, value 135 guineas, in chemistry, physics, botany, and zoology (the successful student must complete his work at University College Hospital Medical School), and two entrance exhibitions in the same subjects, each of the value of 55 guineas.

*Fees.*—The fees for the courses covering the work of the First Examination for medical degrees of the University of London, and in both parts of the Second Examination, amount to 115 guineas. The fees for the courses covering the corresponding examinations held by the Conjoint Board in England also amount to 115 guineas. These fees may be divided into payments for the different courses

which it may be desired to take out, but do not cover tuition for more than a stated period.

A handbook specially relating to this faculty may be obtained on application to the Secretary of University College, Gower Street, London, W.C.1.

## THE PROVINCES.

THERE are in England and Wales, not counting London, ten medical schools, each supplying instruction in the full medical curriculum. Accounts of them here follow. In several cases there is appended information about hospitals other than those directly connected with the school in question; such hospitals, officially and unofficially, play a part in the education which the students of the school receive, and in any case serve as places of additional or post-graduate study.

## OXFORD AND CAMBRIDGE.

At both Oxford and Cambridge there are medical schools which furnish unsurpassed opportunities for obtaining a good knowledge of the preliminary sciences and of anatomy, physiology, and pathology. The laboratories are excellently furnished, and the teaching staffs most distinguished. Both schools provide a full medical curriculum, and there is no essential reason why the student should not complete his career at either of them; but this is not commonly done, and is never in the ordinary way advised by the university medical authorities. The local hospitals, though well equipped, are comparatively small. Students are therefore encouraged, as soon as they have completed the earlier examinations and taken a degree in arts, to join some London school, and thus spend the time of their preparation for the final examinations in a city where the opportunities for gaining clinical knowledge are greater and more varied. A considerable proportion of Oxford and Cambridge medical students take the London Conjoint diplomas before graduating in medicine and surgery at their own university. The experience gained by holding resident hospital appointments is naturally of much advantage when sitting for the Final M.B. examination and when engaged in composing a thesis.

## BIRMINGHAM.

THE school in this city is carried on by the Medical Faculty of the University of Birmingham, its students having an adequate number of good laboratories, classrooms, and other necessities devoted to their use by the university. The clinical work is done at the General and Queen's Hospitals, which are amalgamated for this purpose. Together they have upwards of 600 beds for medical, surgical, and special cases, and with an array of special departments of all kinds, including one for lying-in women. Clinical instruction is given in the wards and out-patient and special departments daily, and formal clinical lectures delivered weekly throughout the winter and summer sessions. Special tutorial classes are also held alike for the degrees of Birmingham and some other universities and for the diplomas of corporations.

*Appointments.*—The large number of appointments open to past or other students includes the following:—At the General Hospital: surgical registrar, £200 a year; one resident medical officer, salary £155 a year; one resident surgical officer, salary £180 a year; one assistant resident surgical officer, salary £100 a year; one resident pathologist, salary £70 a year; two visiting anaesthetists, salary £50 a year; one resident anaesthetist, salary £70 a year; four house-surgeons, office tenable for nine months, £70 a year; one house-surgeon to the gynaecological and one to the special departments, each tenable for six months, £70 a year; four house-physicians, post tenable for six months, £70 a year. At the Queen's Hospital: one medical registrar and one surgical registrar, non-resident, tenable for three years, renewable, salary £100 per annum; three house-physicians, three house-surgeons, and one obstetric and ophthalmic house-surgeon, tenable for six months, salary £70 per annum, with board, lodging, and washing; one casualty house-surgeon, tenable for three months, salary £70 per annum, with board, lodging, and

washing. At the Maternity Hospital: three house-surgeons, salary £50 a year. At the City Workhouse and Workhouse Infirmary: five resident medical officers. At the Birmingham General and Branch Dispensaries: twelve resident surgeons. At the Birmingham Mental Hospitals: five assistant medical officers. At the City Fever Hospitals: three assistant medical officers. At the Children's Hospital: one resident surgical officer, one resident medical officer. At the Birmingham and Midland Eye Hospital: four resident surgeons. At the Orthopaedic and Spinal Hospital: two clinical assistants (non-resident). At the Ear and Throat Hospital: one house-surgeon, £70 a year; four clinical assistants (non-resident). Four non-resident Poor Law appointments are in the gift of the Board of Guardians.

**Scholarships.**—There are numerous money and other awards for students of sufficient merit, among them being the following: The Waller Myers Travelling Studentship of £300, offered each alternate year and tenable abroad (offered next in 1927); the Sands-Cox Scholarship of £42 (an entrance scholarship in the Faculty of Medicine, awarded on Higher School Certificate Examination of the Joint Matriculation Board (July)); four Queen's Scholarships of £10 10s. each, awarded annually at the first (Part II), second, third, and final university examinations respectively; one or more Sydenham Scholarships, allotted on entrance to students who are the sons of deceased medical men; the Ingleby Scholarships (two) of £10 for proficiency in midwifery and diseases of women; the Arthur Foxwell Memorial Gold Medal (Clinical Medicine); the Sampson Gamgee Memorial Medal for Surgery (Final M.B.); and the Peter Thompson Prize in Anatomy (value about £6) for students in their second university year. There is also a scholarship of £37 10s. for students proceeding to a degree in dental surgery. University Clinical Board Prizes are awarded annually as follows: Senior Medical Prize, Gold Medal; Senior Surgical Prize, Gold Medal; Midwifery Prize, Gold Medal; Junior Medical Prize, Silver Medal; Junior Surgical Prize, Silver Medal.

**Fees.**—The composition fee for university classes is £106 5s. This covers all the work required for the degrees of Birmingham and some other universities, and for the ordinary qualifications of licensing corporations, but not the additional courses required for the Fellowship of the Royal College of Surgeons of England, the diploma and degrees of the university in State medicine, and some other special work. The total cost for the five years' curriculum, including hospital and examination fees, is estimated at £201 4s. 6d.

Other information should be sought from the Dean of the Medical Faculty, University, Edmund Street, Birmingham.

#### BRISTOL.

The school is carried on by the Faculty of Medicine of the university, and provides full instruction for all its degrees and diplomas.

**Clinical Instruction.**—The allied hospitals (Bristol Royal Infirmary and Bristol General Hospital) have between them about 600 beds and extensive out-patient departments, special clinics for diseases of women and children, and those of the eye, throat, and ear, in addition to large and well equipped departments for dental work and large outdoor maternity departments. At each of these institutions there are well arranged pathological museums, *post-mortem* rooms, and laboratories for morbid anatomy. There are also laboratories for work in clinical pathology, bacteriology, and cytology, in which special instruction is given in these subjects. Departments are provided and well equipped for x-ray work, both for diagnosis and treatment, the various forms of electrical treatment, including high-frequency currents, electric baths, Finsen light treatment, and massage. The students of the school also attend the practice of the Royal Hospital for Sick Children and Women, containing 108 beds, and that of the Bristol Eye Hospital, with 40 beds. The total number of beds available for clinical instruction is therefore about 750.

**Appointments.**—(1) Undergraduate: Clinical clerkships, dresserships, also ophthalmic, obstetric, pathological, ear, nose, and throat clerkships, are tenable at the Bristol Royal Infirmary and the Bristol General Hospital. In these institutions the dressers reside in rotation free of charge. (2) Post-graduate: At the Bristol Royal Infirmary: four house-surgeons, £80 each per annum; two house-physicians, £80; two resident obstetric officers, one of whom is also ophthalmic house-surgeon, £100 and £80; ear, nose, and throat house-surgeon, £80; dental house-surgeon, £80. All these appointments are made for twelve months. From the resident officers a senior resident officer is appointed at a salary of £200. At the Bristol General Hospital: senior resident medical officer, £250 per annum; casualty house-surgeon, £80 per annum; two house-physicians, £80 per

annum; house-surgeon, £80 per annum; special obstetric physician, £80 per annum; house-surgeon to special departments, £80 per annum; dental house-surgeon, £300 per annum. All these appointments are for six months, except that of senior resident medical officer, which is for two years.

**Scholarships.**—The following are among the scholarships and other awards open to students of the school: The Ashworth Hallett Scholarship, value £45, open to women only; two Martyn Memorial Pathological Scholarships of £10 each; the Tibbitts Memorial Prize, value 9 guineas, for proficiency in practical surgery; the Committee's Gold and Silver Medals for fifth-year students for general proficiency; the Angustin Prichard Prize, value about 6 guineas, for proficiency in anatomy; the Henry Clark Prize, value 11 guineas, for proficiency in gynaecology; the Crosby Leonard Prize, value 7 guineas, for proficiency in surgery; the Suple Surgical Prize, a gold medal and 7 guineas; the Suple Medical Prize, a gold medal and 7 guineas; the Henry Marshall Prize, value £12, for dressers; the H. M. Clarke Scholarship, value £15, for proficiency in surgery; the Sanders Scholarship, value £22 10s., for general proficiency; the Barrett-Roué Scholarship for proficiency in diseases of the eye, ear, nose, and throat, value £14; Lady Haberfield Scholarship, value about 25 guineas; Phyllis Siepmann Prize for proficiency in diseases of children, value £50. Bristol City Senior Scholarships and the Senior Scholarships offered by the counties of Gloucestershire, Somerset, Wilts, Devon, etc., are tenable in the university.

Some of the Fellowships awarded by the Colston Research Society for research in the university are allotted to the Faculty of Medicine.

**Fees.**—The fee for all the courses required for the medical curriculum, including hospital practice, is 205 guineas, paid by annual instalments.

#### UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

This, the Medical School of the Faculty of Medicine of the University of Durham, is in the neighbouring city, Newcastle-on-Tyne. Its classes and lectures are arranged to meet the requirements of the university in all the degrees which the latter grants, and also those of the other examining bodies. The students do their work in the preliminary sciences at Armstrong College, also part of the university, and their clinical work in the Royal Victoria Infirmary, an institution with about 550 beds and special accommodation for the benefit of students. Students do their practical midwifery at the Princess Mary Maternity Hospital, which contains 90 beds, is thoroughly up to date, and there is an annual indoor and outdoor attendance on 3,000 cases. In a Health wing of the school itself there is the department of physiology. There are also in this wing a gymnasium and a set of rooms for the use of the Students' Union. A new bacteriological department has recently been erected adjacent to Armstrong College.

**Post-Graduate Instruction.**—A comprehensive series of post-graduate courses has been arranged to enable practitioners to take advantage of the facilities for laboratory work and clinical study which are afforded by the College, the Royal Victoria Infirmary, and other associated hospitals, and in order to meet the varied requirements of practitioners there are general and special courses in the winter and summer session as well as an intensive course in the summer vacation.

**Students' Union.**—Students' Union Buildings have been erected and furnished at a cost of over £40,000, and are now in daily use. Separate accommodation (non-residential) is provided for men and women students.

**Appointments.**—Pathological assistants, and assistants in the eye department, throat and ear department, and department for skin diseases, are elected periodically. Clinical clerks and dressers are appointed every three months.

**Scholarships.**—University of Durham Entrance Scholarship, £25 a year for four years; Pears Entrance Scholarship, £30 a year for three years (awarded every third year); Province of Durham Masonic (Entrance) Scholarship, £60; Heath Scholarship for surgery, £200, available every second year.

The following scholarships are tenable for one year—namely, Tulloch Scholarship for elementary biology and organic chemistry, £20; Dickinson Scholarship for medicine, surgery, midwifery, and pathology, Gold Medal and £20; Charlton Scholarship for medicine, £25; Gibb Scholarship for pathology, £25; Luke Armstrong Scholarship for comparative pathology, £25; Stephen Scott Scholarship for surgery, £40; Philipson Scholarships for highest marks in Final M.B., B.S. Examination, two of £48 each; Goyder Memorial Scholarship for clinical medicine and clinical surgery, interest on £325; Gibson Prize for midwifery and diseases of women and children, £10; Turnbull Prize and Silver Medal for surface anatomy; Outtersen Wood Prize for psychological medicine, £10; and Sewell Memorial Prize and Silver Medal for clinical pathology.



At the end of each session a prize of books is awarded in each of the regular classes.

**Fees.**—The composition fee for lectures at the college is £122. Composition fee for hospital practice, £46, plus £2 2s. yearly for three years, payable to the Committee of the Royal Victoria Infirmary. Other information should be sought from the Registrar of the College of Medicine at Newcastle.

#### LEEDS.

THE School of Medicine—which is open to both male and female students—in this city forms the teaching centre of the Medical Faculty of the University of Leeds, and is situated in immediate proximity to the General Infirmary, where students sufficiently advanced receive their clinical instruction. The buildings were opened in 1894, and contain excellent dissecting rooms, several well arranged laboratories for physiology, pathology, and bacteriology, three lecture theatres, and several similar classrooms. In addition, there are a library and reading room and two museums, one being devoted to pathology and the other to anatomy. The comfort of the students is secured by common rooms and a refectory in which they can take meals. The General Infirmary has 632 beds, and includes gynaecological and ophthalmic wards, a special children's ward, and a large out-patient department. The Ida and Robert Arthington Semi-convalescent Hospitals, Cookridge, attached to the infirmary, have 88 beds. The West Riding Mental Hospital at Wakefield is open for the study of mental diseases. Students can, in addition, attend the practice of the Leeds Public Dispensary, the Hospital for Women and Children, and the Leeds Maternity Hospital, where the obstetric work is done.

**Appointments.**—Surgical dressers are appointed every six months; physicians' clerks, ophthalmic and aural dressers, gynaecological ward clerks, gynaecological out-patient clerks, maternity clerks, assistant physicians' clerk, dermatological clerks and assistant surgeons' dressers, dressers in the casualty room, *post-mortem* clerks, and laboratory assistants every three months, and dressers in the venereal clinic every month. After graduation there are a considerable number of residential and other appointments available in the Leeds General Infirmary, Leeds Public Dispensary, Hospital for Women and Children, West Riding Mental Hospital, etc., occupying periods of from six to twelve months at rates varying from £20 to £150 per annum.

**Scholarships.**—The university awards annually a scholarship in the form of a free admission to the lectures and classes given in the university, which are covered by the composition fee. The university also awards a scholarship on the results of the first examination, of the value of £68, in the form of a free admission to the clinical teaching of the infirmary.

**Fees.**—It is estimated by the authorities that the approximate cost of medical education to a student in this university is £300, plus, of course, the expenses of living during the five years covered by the curriculum. The fee for a complete course for the First M.B. is £41; the composition fee for the course for the second and third examinations, and for the clinical work at the infirmary, is £174. The composition and clinical fee for those who have passed the second examination is £138.

Further information can be obtained from the Academic Subdean or Clinical Subdean, School of Medicine, Leeds.

#### LIVERPOOL.

THE Medical School of this city is part of the university, and, owing to the enlightened liberality of several men of wealth, is exceptionally well provided with special laboratories, as well as with ordinary spacious and well equipped classrooms and laboratories for the instruction of students proceeding to medical degrees and diplomas in special and ordinary subjects. All the laboratory and other rooms are situated close to one another and intercommunicate, together forming large blocks of buildings. The work of students throughout all stages of their career is arranged upon very satisfactory lines, and the teaching hospitals, of which an account is given below, have amalgamated to form the clinical school of the university.

**Appointments.**—The nature of the appointments open to past and other students at this school will be gathered from the account which follows of the hospitals forming its clinical department.

**Scholarships.**—The awards made each year to successful students total over £1,500. They include the following: Two Holt Fellowships, one in Pathology, the other in Physiology; a Robert Gee Fellowship in Anatomy; two John Rankin Fellowships in Anatomy; a John W. Garrett International Fellowship in Bacteriology; a Johnston Colonial Fellowship in Biochemistry; an Ethel Boyce Fellowship in Gynaecology; and a Thelwall Thomas Fellowship in Surgical Pathology; one Lady Jones Fellowship in Orthopaedic Surgery (value of Fellowships: one at £200, three at £150, two at £120, four at £100); a University Scholarship of £50, awarded on the results of the Final M.B. (Part A) Examinations; a Scholarship in Mechanical Dentistry of £20; two Lyon Jones Scholarships, of the annual value of £21 each for two years, one for the junior and the other for the senior students; the Derby Exhibition of £15; the Clinical School Exhibition of £15; the Owen T. Williams Prize; the Torr Gold Medal in Anatomy; John Rankin Exhibition in Practical Anatomy, £25; the George Holt Medal in Physiology; the Kantsack Medal in Pathology; Mitchell Banks Medal in Anatomy; the Robert Gee Prize of £5 5s. in Children's Diseases; Mary Birrell Davies Memorial Scholarship (women), £60 per annum for four years; Robert Gee Entrance Scholarship (men), value of £40 per annum for four years; Dental Operating Prizes (four); Orthodontia Prizes (two); Samuels Memorial Scholarships, three at £20 each; one Thomas H. Bickerton Prize in Anatomy; Dr. N. E. Robert Prize in Zymotic Diseases; Ash's Prize in Dental Surgery, value £2 2s.; Gilmour Medal; and other entrance scholarships.

**Fees.**—Information as to the fees for the courses of instruction provided by the schools should be sought from the Dean of the Medical Faculty.

#### The Clinical School.

As many as ten hospitals have combined to form the clinical school of the university, these being: The Royal Infirmary, the David Lewis Northern Hospital, the Royal Southern Hospital, the Stanley Hospital, the Royal Liverpool Children's Hospital, the Hospital for Women (with the Samaritan Hospital), the Liverpool Maternity Hospital, the Eyo and Ear Infirmary, St. Paul's Eye Hospital, and St. George's Hospital for Diseases of the Skin. Between them they provide about 1,445 beds.

#### MANCHESTER.

THE staff of the Medical School in this city constitutes the Medical Faculty of the Victoria University, all the arrangements for the instruction of students, both in their earlier and their later studies, being of an elaborate nature. The clinical work of the undergraduates is done chiefly in connexion with the Royal Infirmary, an institution which itself contains about 668 beds, and has associated with it a large convalescent home (132 beds), and the Mental Hospital at Prestwich. Instruction in practical gynaecology and midwifery is given at the Royal Infirmary and the St. Mary's Hospitals.

**Appointments.**—The following are among the appointments open to past and present students of this school in connexion with its arrangements for clinical tuition: One surgical registrar, at £150 per annum; two pathological registrars, at £100 and £50 per annum; one medical registrar, at £150 per annum; a cardiologist registrar, at £150 per annum; a surgical tutor, at £30 per annum; a director of the clinical laboratory, at £400 per annum, and two assistants, at £350; three assistant medical officers and three assistant surgical officers, each at £35 per annum; assistant surgical officer, aural department, at £35 per annum; seven anaesthetists, from £75 to £100 per annum each; one radiological registrar, at £250 per annum; one resident medical officer, one year, £200 per annum; ditto at Royal Lunatic Asylum, Cheadle, one year, £300 per annum; one resident surgical officer, one year, £200 per annum; two resident medical officers for Central Branch, £200 and £100 per annum; one assistant resident surgical officer, £150 per annum; one assistant medical officer at the Convalescent Hospital at Cheadle, appointed every six months, at a salary of £80 per annum; ten senior and ten junior house-surgeons and ten house-physicians, appointed during the year for a term of six months, at a salary of £50 for the first six months, and £100 for the second six months. Resident officers are appointed to the gynaecological, the eye, and the ear and throat departments every three months. Clinical clerks and surgical dressers are appointed to the various departments of the hospital every three months. Non-resident clinical assistantships for qualified medical women; tonable for six months, at an honorarium of £35.

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Entrance and other Scholarships.—The following are among the scholarships obtainable by students of the school: Rogers and Seaton Scholarships in Arts (in alternate years), £40 per annum, tenable for two years. Derby Entrance Scholarship in Mathematics, tenable for one year, value £25, one being awarded annually, except in such years as £35 per annum, tenable for three years. Cartwright Scholarship, tenable for three years, awarded annually. Three Hulme Scholarships, tenable for three years. Two James being awarded annually for proficiency in subjects of £35, one being awarded annually for proficiency in chemistry. A £35, tenable for two years, one being awarded annually for proficiency in the branches of mechanics and chemistry. Dora Muir Scholarship, £30 per annum, tenable for three years, and open to the competition of women students only. This awarded triennially. Sir J. P. Kay-Shuttleworth Scholarship, £50 per annum, tenable for three years, awarded triennially, open to the competition of scholars from Sedburgh School, Giggleswick School, and Burnley Grammar School; subjects—mathematics, chemistry, and mechanics. Dreschfeld Memorial Scholarship, value £20, tenable for two years and awarded triennially on the result of the Entrance Examination. John Russell Medical Entrance Scholarship, awarded annually, value £45. A Theodores Modern Languages Exhibition, £20, awarded annually. Two Dauntseyes Medical Scholarships, value £45 and £35, tenable for one year, for candidates who have not commenced the second year of study leading to a medical qualification; subjects—zoology, botany, and chemistry. Two Entrance Scholarships in Public Health of £100, awarded annually for proficiency in arts or science respectively. One Research Scholarship in Anatomy, £25, offered annually. Tom Jones Exhibition in Physiology of £90, original value £15, awarded annually at graduation. The Tom Jones Memorial Surgical Scholarship, value £60, tenable for one year, usually awarded annually. The Turner Medical Prize, value £20, awarded annually for proficiency in certain subjects of the Final M.B., Ch.B. Examination. The John Henry Agnew Scholarship of £30, awarded annually for proficiency in the Diseases of Children. The Ashby Memorial Scholarship, tenable for one year (£100), for research in the Diseases of Children; offered triennially. Sidney Renshaw regulations of the Dickinson Scholarships.—(1) for Anatomy, (2) for Pathology, (3) Research in Medicine, (4) for Surgery, and (5) Travelling Scholarship in Medicine. The Secretary to the Trustees. The First M.B. Examination; the conditions can be obtained from the Registrar. The Knight Prize of £50 for original research in psychological factors in the causation of mental disorder—open to holders of the Diploma in Psychological Medicine or medical practitioners who have been registered in the university as candidates for that diploma.

For the composition fee for the university course in medicine for four instalments of 27½ guineas, but this work required for the sum £10; in one sum £10.

**Fees.**—The composition fee for the university course in medicine is 14 110 guineas, payable in four instalments of 27½ guineas, but this sum does not include the fee to cover the work required for the First M.B. Examination. This is £42, payable in one sum. Hospital fees are additional, and usually amount to about 77 guineas. For details and further information about the school and the fees to be paid, obtain from the Registrar.

A prospectus and further information about the school and scholarships may be obtained from the Registrar.

*Clinical Work.*—The Royal Eye Hospital, the Hospital for Diseases of the Skin, the Manchester Northern Hospital for Women and Children, the well known Hospitals for Children at Pendlebury, and St. Mary's Hospitals for Women and Children, all make arrangements for the instruction of students.

SHEFFIELD.

**SHEFFIELD.**

In this city the medical school is one of the departments of the university, being conducted and controlled by its Medical Faculty, and occupying practically the entire north wing of the quadrangle of the university buildings overlooking Weston Park. The laboratories and lecture rooms connected with the subjects of the first and second examinations—namely, chemistry, physics, biology, anatomy, and physiology—are, both as regards structural arrangement and scientific equipment, on the most modern and complete lines.

For students of pathology and bacteriology there are laboratories replete with everything necessary for the most advanced work, and a large pathological museum which is open daily. In addition, there is a museum devoted to materia medica specimens, and a large library and reading room. There are a number of recreation, athletic, and

other societies, all under the management of an annually elected students' representative council, and large and comfortable common rooms both for men and women students. There are also two student unions—one for men and one for women students. In the university buildings there is a refectory open to all students of the school, and a university journal is published each term. The ordinary clinical work of the school is done at the Royal Infirmary and Royal Hospital, which have amalgamated for the purpose of clinical instruction, and provide over 800 beds for medical, surgical, and special cases, including diseases of the eye.

In addition, the Royal Infirmary has special departments for the treatment of diseases of the skin and ear, with beds assigned to them; whilst at the Royal Hospital there are special out-patient departments for diseases of the throat, ear, skin, orthopaedics, and mental diseases. The medical and surgical staffs attend daily, and give clinical instruction in the wards and out-patient rooms. Clinical lectures in medicine and surgery are given weekly. Instruction in the practical administration of anaesthetics is given at either institution by the anaesthetists, and the post-mortem examinations at both institutions are in charge of the Professor of Pathology, and afford ample material for study of this subject. Students are able to attend the practice of the Jessop Hospital for Diseases of Women and the Hospital for Sick Children, while special courses on fever are given at the City Fever Hospital, and on mental diseases at the South Yorkshire Mental Hospital.

Appointments.—The following appointments are open to students:—(1) the following appointments in anatomy, physiology, and surgery, (2) surgical dressings, (3) surgical anatomy, (4) clinical medicine, (5) clinical surgery, (6) clinical ophthalmology, (7) clinical otology, (8) clinical dermatology, (9) clinical orthopaedics, (10) clinical mental diseases, (11) clinical pathology, (12) clinical bacteriology, (13) clinical chemistry, (14) clinical physics, (15) clinical radiology, (16) clinical pharmacology, (17) clinical toxicology, (18) clinical forensic medicine, (19) clinical legal medicine, (20) clinical social medicine, (21) clinical public health, (22) clinical epidemiology, (23) clinical statistics, (24) clinical hygiene, (25) clinical sanitation, (26) clinical nutrition, (27) clinical metabolism, (28) clinical endocrinology, (29) clinical immunology, (30) clinical microbiology, (31) clinical virology, (32) clinical parasitology, (33) clinical entomology, (34) clinical zoology, 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**Appointments.**—The following appointments in anatomy and physiology; (1) Casnalty dresserships, (2) surgical dresserships, (3) medical clerkships, (4) pathological clerkships, (4) ophthalmic clerkships, (6) clerk to the skin department, etc. These appointments are made for three months, commencing on the first day of October, January, April, and July.

*Scholarships.*—Entrance Medical Scholarship, value about £190. open to both sexes. Six Edgar Allen Scholarships of £125 a year for three years may be held by students taking the degree course in medicine. Two Town Trustees' Scholarships, each of the value of £50, tenable for three years, for boys or girls under the age of 19 years who have been educated in a Sheffield secondary school for a period not less than two years immediately preceding the examination. Four Town Trustees' Scholarships, value £50, for boys or girls under 19 years of age, educated in any school in Sheffield, secondary or otherwise. Town Trustees' Fellowship value £75, tenable for one year. Mechanics' Institute Fellowship, value £50 (with remission of fees), tenable for one year. The Frederick Clifford Scholarship, value £50 (with remission of fees), tenable for one year. Kaye Scholarship, value about £50, tenable for two years. Kaye Scholarship, for proficiency in anatomy and physiology, value £22 10s. Gold and bronze medals are also awarded for proficiency in various subjects.

**Fees.**—Students in the Faculty taking their complete medical course in the university pay an inclusive composition fee of £38 for each of the five years. The composition fees for the dental courses are as follows: for B.D.S., first and third years, £75; second, fourth, and fifth years, £26; for L.D.S., first and second years, £75; third and fourth years £25. The fees for special courses taken separately can be ascertained by inquiry of the Dean.

WELSH NATIONAL SCHOOL OF MEDICINE,  
CARDIFF.  
October 5th. The course

**WELSH NATIONAL SCHOOL OF MEDICINE AND SURGERY, CARDIFF.**

The next session opens on October 5th. The courses of instruction are open to both men and women students, and qualify for the degrees in medicine and surgery of the University of Wales, and for the degrees and diplomas of other examining bodies. Hospital instruction is given at the Cardiff Royal Infirmary, at the City Lodge Hospital, and at other recognized institutions. The Cardiff Royal Infirmary, together with its auxiliaries and special departments, is well equipped in all general and special departments, giving facilities for every branch of study. Medical practitioners wishing to prepare for the Diploma in Public Health or for the Tuberculous Diseases Diploma of the University of Wales can attend complete courses of instruction in the School. Prospectuses can be obtained on application to the Dean of the Faculty of Medicine, or to the Secretary, Welsh National School of Medicine, Newport Road, Cardiff.

## SCOTLAND.

As will be gathered from the following paragraphs, the facilities for acquiring a medical education in Scotland are very ample, whether the student be proceeding to a university degree or to a diploma. To the descriptions of the different Scottish medical centres is in some cases added an account of hospitals which either play an official part in the education given to students as yet unqualified, or offer valuable opportunities for post-graduation work.

## ABERDEEN.

THE school is conducted by the Faculty of Medicine. This comprises thirteen chairs, from which instruction is given in all the main branches of medical science—namely, botany, zoology, physics (ordinary and pre-registration), chemistry (ordinary and pre-registration), anatomy, physiology, materia medica, pathology, bacteriology, forensic medicine, surgery, medicine, and midwifery. Courses of instruction in public health and infectious diseases, tropical medicine, medical ethics, and sanatorium treatment of tuberculosis are conducted by lecturers appointed by the University Court. Special opportunities for practical instruction are afforded in the laboratories and museums attached to the departments.

Clinical instruction is obtained in the Royal Infirmary (accommodating 270 patients), the Royal Mental Hospital (900 patients), the Sick Children's Hospital (85 patients), the City Fever Hospital (250 patients), the General Dispensary, Maternity, and Vaccine Institution (10,000 out-patients annually), and the Ophthalmic Institution (3,000 patients annually). Courses of practical instruction are given in diseases of children at the Sick Children's Hospital; in fevers at the City Fever Hospital; in mental diseases at the Royal Mental Hospital; in diseases of the ear, nose, and throat at the Infirmary and Dispensary; in diseases of the eye at the Infirmary and Eye Institution; in venereal diseases and diseases of the skin at the Royal Infirmary.

The degrees granted in medicine are: Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Surgery and Bachelor of Medicine (M.B., Ch.B.). A Diploma in Public Health is conferred after examination on graduates in medicine of any university of the United Kingdom.

The degree of Ph.D. is also granted in this faculty.

Bursaries, scholarships, and fellowships, to the number of fifty and of the annual value of £1,180, may be held by students of medicine in this university. They range from £8 to £100 per annum, and are tenable in most cases for two or three years. The winter session begins on October 5th, 1926; the summer session on April 19th, 1927.

**Fees.**—An inclusive fee of 126 guineas is payable for instruction within the university, and the fee for the degrees of M.B., Ch.B. is 33 guineas. The total cost, including hospital fees, class and matriculation fees, and degree fees, is about £236.

## EDINBURGH.

THERE are two Schools of Medicine: the School of the University, and the School of Medicine of the Royal Colleges of Physicians and Surgeons of Edinburgh.

**THE UNIVERSITY SCHOOL.**—This school, in addition to other resources of the university, has the following means of affording practical instruction: Royal Botanic Garden, Herbarium, and Museum; Zoological Laboratory and Museum of Science and Art; Physical Laboratory; Chemical Laboratories; Dissecting Room, Bone Room, and Anatomical Museum; Physiological Laboratory; Medical Jurisprudence Laboratories; John Usher Institute of Public Health; Materia Medica Museum and Laboratory; *Post-Mortem* Department of the Royal Infirmary and University Pathological and Bacteriological Laboratory; Tutorial Classes of Practice of Physic, of Clinical Medicine, and Clinical Surgery, Surgery and Midwifery; and the practice of certain other hospitals.

**Fees.**—The seasonal fee for chemistry, anatomy lectures, physiology, pathology, materia medica, surgery, medicine, and midwifery is £5 5s. each. Physics, botany, zoology, forensic medicine, and

public health, £5 5s. Practical zoology, practical anatomy (summer), morbid anatomy, practical materia medica, mental diseases, practical pathology, clinical midwifery, and medical entomology and parasitology, £4 4s. Experimental physiology, diseases of tropical climates, practical botany, histology, operative surgery, clinical surgery (per term), clinical medicine (per term), and experimental pharmacology, £3 3s. Practical anatomy (winter), £6 16s. 6d. Practical chemistry, £4 14s. 6d. Regional anatomy, chemical infectious diseases of the skin, applied anatomy, and ophthalmology, £2 2s. 6d. Advanced bacteriology, £7 1

**Scholars.**—for the assistance of students by means of bursaries, scholarships, exhibitions, and money awards from the beginning to the end of their undergraduate career. In addition, there are funds which help those who have taken a first degree in medicine and surgery to continue at work as research students. The value of these awards, and the conditions attaching to them, are so varied that those interested should consult the prospectus of the school itself. No other university is in a better, even if as good a position to smooth the financial path of earnest students.

**THE SCHOOL OF MEDICINE OF THE ROYAL COLLEGES.**—This school is composed of lecturers licensed by the Royal College of Physicians and the Royal College of Surgeons, and also recognized by the university through their *licentia docendi*; for the sake of convenience they lecture in separate buildings near to the Royal Infirmary, but form a single corporate body governed by a board consisting of five members elected by the Royal College of Physicians, five members elected by the Royal College of Surgeons, and five members elected by the lecturers in the school. This board, with the assistance of the standing committees of the school, supervises the whole management and especially the maintenance of the efficiency and discipline of the school. The different buildings at present utilized for the purposes of lecturing are the following: (1) Surgeons' Hall, Nicolson Street; (2) New School, Bristo Street; (3) Nicolson Square; (4) Marshall Street; and other places. The teaching is similar to that of the Scottish universities, and the students receive similar certificates at the close of each session. The courses on the special subjects not included in the curriculum of the Examining Boards are also conducted by teachers specially qualified in each branch, and have for the last quarter of a century formed a special feature of the school. The fees payable for class and other instruction, and including the sums payable on admission to the examination of the Conjoint Board for the triple qualification, amount to about £180. The Calendar, giving full information regarding classes and fees, can be obtained (price 6d.) on application to the Dean of the School, 11, Bristo Place, Edinburgh.

**WOMEN STUDENTS IN EDINBURGH.**—Until the close of the summer session of 1916 women students intending to proceed to graduation in the University of Edinburgh, as well as those entering for the triple qualification of the Royal Colleges of Edinburgh and Glasgow, received their training in the Edinburgh School of Medicine for Women. Now women students study under the same conditions as men, and may obtain either the university degree or the diploma of the Royal Colleges. In the university systematic lectures are given to them by the professors in the ordinary classes, which are therefore mixed. In clinical medicine and clinical surgery, however, while the lectures are attended by mixed classes, the women students are restricted to the wards of one charge. The particular wards are changed every term, each of the physicians and surgeons to the infirmary taking the women students in rotation. With few exceptions, prizes, scholarships, bursaries, and similar distinctions are open to women under the same conditions as for men. The women students also have the same privileges as in the past have been given to the men of attending a certain proportion of the extra-mural classes taught by the lecturers of the School of Medicine of the Royal Colleges. Most of the Students' Societies are open to women, with the exception of the University Union and the Royal Medical Society. Their place is taken by the Women Students' Union and the Women's Medical Society. There is also a Women's Athletic Club, with playing fields gifted to it by the university. Information on matters connected with women's studies may be obtained from the Lady Warden, University New Buildings, Edinburgh.

## MEDICAL SCHOOLS IN SCOTLAND.

**GLASGOW.**—The whole course of study required for graduation (M.B., Ch.B.) at the University of Glasgow can be taken here. Besides ample provision for lectures there is practical and clinical work at the hospitals, and practical courses are conducted in the Pathology, Public Health, Pharmacology, Physiology, laboratories of the following departments: Surgery; Anatomy, Chemistry, Zoology, Physics, and Botany; the Botanic Garden and the Hunterian Museum (Pathology) are also open to students. New buildings and equipments have been provided for botany, zoology, for practical anatomy, for operative surgery, as well as for pathology; the very large additions made a number of years ago to the chemical laboratory rendered it one of the most extensive in Scotland. The classrooms and laboratories for the departments of Physics, Physiology, Pharmacology, Materia Medica, Medical Jurisprudence, and Public Health are also of recent erection, and are elaborately equipped. Four additional chairs of Medicine, Surgery, Obstetrics, and Pathology have been recently established, the professors being specially attached to the Royal Infirmary; and a number of university lectureships in Clinical Medicine, Clinical Surgery, Venereal Diseases, Laryngology, Dermatology, Otolaryngology, Psychological Medicine, Tuberculosis, and Electrical Diagnosis and Treatment have been founded there. Five other chairs have been founded at the university, in Bacteriology, Organic Chemistry, Physiological Chemistry, Applied Physics, Public Health, and another in Pediatrics. There are also lectureships on the Surgical and Medical Diseases of Children and on Electrical Diagnosis and Therapeutics. The university, in short, has made great and successful efforts to extend and improve the accommodation of the medical departments, to strengthen the teaching staff, and to encourage post-graduation and research work. A Diploma in Public Health is now also granted. Three very extensive general hospitals in the city afford exceptional opportunities for clinical instruction—namely, the Western Infirmary (600 beds), near the university, in which the Regius Professors are attached; the Royal Infirmary (688 beds); and the Victoria Infirmary (260 beds); while the Royal Hospital for Hospital, Gartnavel (460 beds), the Royal Maternity and Sick Children (108 beds), the Glasgow Eye Infirmary (100 beds), the Ophthalmic Institution (55 beds), the Fever hospitals at Belvidere (680 beds) and Ruchill (540 beds), and other institutions afford facilities for the practical study of special branches. The large general hospitals and the parish council are now also available for clinical instruction in medicine and surgery. Information regarding post-graduate study will be found at page 449.

**Bursaries.**—Bursaries confined to the Medical Faculty amount in annual value to about £1,000, while bursaries in any faculty amounting to about the same annual sum, may be held by students of medicine, a number of both sets being open to women. Several valuable scholarships may be held by medical students who have graduated in arts.

The following bursaries are open to undergraduates of both sexes. The Gibson Bursary, annual value £36, tenable for four years. This is open to medical students who are preparing for service as medical missionaries in connexion with the Church of Scotland, and will be awarded to the eligible candidate who has gained the highest number of marks in the First Professional Examination. The Arbroath Bursary, annual value £40, tenable for three years, is awarded by the Senate, on the recommendation of the Faculty of Medicine, to the student who is of the highest merit among the candidates, as shown by their class records and their performances in the First and Second Professional Examinations. One Logan Bursary, annual value £16, tenable for four years; appointment by the Senate. Six Lorimer Bursaries (each £20 and tenable for one year) are awarded to the best students in each of the following classes: botany, zoology, physics, chemistry, anatomy, physiology. The Macintosh Mental Science Bursary in medicine, of the value of £31, is awarded annually to the student (of either sex) attending the class of insanity who stands first in an examination in that subject, the bursar to continue the practical study of the subject to the satisfaction of the Faculty of Medicine. The Gardiner Bursary, annual value £14, tenable for two years, will be awarded after the autumn professional examination to the candidate who has passed in physiology at the Second Professional Examination, and whose aggregate of marks in that subject and in chemistry and physics of the First Professional Examination is the highest. Of the eight James A. Paterson Bursaries two are awarded each year; they are of the value of £30 and £20 respectively, and are tenable for four years;

examination in mathematics and natural philosophy in June for students entering the first and second years of medical study. The following are tenable in any faculty: Four Nivison Bursaries (each £20 and tenable for four years), two Pratt Bursaries (each £20 and tenable for four years), and two Taylor and Bethia Stewart Bursaries (£50 each, tenable for three years); candidates must have taken the M.A. degree of Glasgow. There is a special examination. Nine Glasgow Highland Society's Bursaries, for students of Highland descent, of the annual value of £25, and tenable for five years; two vacant each year.

The Carnegie Trust for the Universities of Scotland is empowered to pay the whole or part of the university ordinary class fees of students of Scottish birth or extraction, under conditions given in the *University Calendar*, and summarized at page 428 of this issue. The Dobbie Smith Gold Medal is awarded for the best essay on a prescribed subject within the science of botany. The Brunton Memorial Prize of £20 is awarded annually to the most distinguished graduate in medicine of the year, and the West of Scotland R.A.M.C. Memorial Prize to the highest aggregate marks of Scotland M.B., Ch.B., who obtains the highest aggregate marks in medicine, surgery, and midwifery in the Final Examinations. The University Commissioners have issued an ordinance to make regulations for the admission of women to certain bursaries, scholarships, and fellowships. Scholarships and fellowships are offered by the Carnegie Trust in science and medicine for post-graduation study. There are also four McCum Medicine Research Scholarships (two of £200 and two of £400) for graduates in medicine of the Scottish universities; one Faulds Fellowship for Research in Medical Science of approximately £200 for one year; and one Strang Steel Scholarship value £160 for one year. There is, in addition, "The Captain H. S. Rankin, V.C., Memorial Prize" in Pathology.

**Fees.**—The matriculation fee for each year is £2 2s. In most cases the fee for each university class is £5 5s., but in some cases it is £4 4s. For hospital attendance at the Western Infirmary students pay £12 12s. for a perpetual ticket, or £1 11s. 6d. for a single term ticket, with an additional fee of £5 5s. for each winter and £2 12s. 6d. for each summer clinical course. The fees for the four same at the Royal Infirmary. The university fees for the four professional examinations total £34 13s. For the whole curriculum the fees for matriculation, class attendance, hospital attendance, and professional examinations amount to about £250. For further information apply to the Registrar, Glasgow University.

**QUEEN MARGARET COLLEGE.**—In this, the Women's Medical School of the University of Glasgow, the courses of study, degrees, regulations, fees, etc., are the same as for men. Women students have their own buildings, with classrooms, reading rooms, library, etc. They are taught in some classes apart from male students, in others together with them, but in either case have all the rights and privileges of university students. Their clinical studies are taken in the Royal Infirmary, where wards containing 520 beds are available for their use, and in its dispensary; and similarly in the Western Infirmary and in the Victoria Infirmary; also in the Royal Hospital for Sick Children, the Glasgow Ear Hospital, the Royal Asylum, Gartnavel, Hawkshead Asylum, the Ophthalmic Institution, the City of Glasgow Fever Hospitals, Belvidere and Ruchill, and the Glasgow Royal Maternity and Women's Hospital.

**Scholarships.**—The Arthur Scholarship, annual value £20, tenable for three years. Open to competition by medical students of first year at the First Professional Examination in October, 1928. This scholarship is restricted to women medical students. Full information can be obtained from the Mistress, Queen Margaret College, Glasgow.

**Board for Students.**—University houses of residence for women students, Queen Margaret Hall and Robertson Hall, are situated near the College. The cost of board and residence is from 32s. 6d. to 42s. a week, according to accommodation. Applications to be made to the Wardens. Another hostel near the College is South Park House, Ann Street, belonging to the Student Christian Movement, and open to women students of all colleges in Glasgow. Cost of board is from 28s. to 30s. weekly. Applications to be made to the Warden.

**ST. MUNGO'S COLLEGE.**—This is the Medical School of the Royal Infirmary, which is the largest general hospital in Glasgow. The infirmary is situated in Cathedral Square, Castle Street, and has car communication with every part of the city. St. Mungo's College is in the infirmary grounds, and affords full courses in all the subjects of the medical curriculum, and in all the medical subjects of the dental curriculum.

The infirmary has (including the ophthalmic department) over 700 beds, the average number occupied in 1924 being over 725. There are special beds and wards for diseases of

women, of the throat, nose, and ear, venereal diseases, burns, and septic cases. In the out-patient department in 1925 over 51,000 patients were treated. In addition to the large medical and surgical departments, there are departments for special diseases—namely, diseases of women, of the throat and nose, of the ear, of the eye, of the skin, and of the teeth. There is also a fully equipped electrical pavilion, with the latest and most improved apparatus for diagnosis and treatment.

**Appointments.**—Five house-physicians and eleven house-surgeons, who must be fully qualified, are appointed every six months, and board in the hospital free of charge. Clerks and dressers are appointed by the physicians and surgeons. As many cases of acute diseases and accidents of a varied character are received, these appointments are very valuable.

**Fees.**—The average class fee is £3 3s. for summer classes and £4 4s. for winter classes. The fees for all the lectures, practical classes, and hospital attendance necessary for candidates for the diplomas of the English or Scottish Colleges of Physicians and Surgeons amount to about £120. The classes are open to male and female students.

A syllabus of classes can be obtained on application to the Secretary to the Medical Faculty, St. Mungo's College, 86, Castle Street.

**THE ANDERSON COLLEGE OF MEDICINE.**—This school provides education in all subjects of the curriculum for both medical and dental students. The school buildings are situated in Dumbarton Road, immediately to the west of the University and Western Infirmary. The hospital practice and clinical lectures are provided in the Western or Royal Infirmary; pathology in the Western or Royal Infirmary; vaccination and dispensary practice in the Western or Royal Infirmary Dispensary. These classes are recognized by all the licensing corporations in the United Kingdom, also by the Universities of London, Durham, Glasgow, and Edinburgh (the latter two under certain conditions stated in the school Calendar). The courses (lectures and laboratory) in public health are recognized by the Scottish Licensing Board, the Universities of Oxford, Cambridge, and London, and the London and Irish Colleges.

**Fees.**—The fees for the lectures and practical work required by ordinary students range between 2 and 5 guineas a session. In the Public Health Department the fee for a six months' course is £14 14s. The Carnegie Trust pays the fees of students at Anderson College on conditions regarding which particulars may be obtained from the Secretary, Carnegie Trust Offices, Edinburgh. A Calendar will be sent on receipt of a postcard by the Secretary to the Medical Faculty, the Anderson College of Medicine, Glasgow, W., who will forward any further information which may be desired.

The Royal Samaritan Hospital for Women, Glasgow, with over 90 beds, offers facilities for clinical instruction in the diseases peculiar to women.<sup>1</sup> Particulars may be obtained from Mr. T. Mason Macquaker, M.A., secretary, 149, St. Vincent Street, Glasgow.

#### ST. ANDREWS AND DUNDEE.

THE medical departments in these two teaching centres cater specially for students proceeding to the degrees of the University of St. Andrews, but admit other students as well. In the former city the United College provides education in all subjects for the first two years. In Dundee, University College provides for the needs of students from the beginning to the end of the five years' curriculum. Its buildings are modern, and contain fully equipped laboratories. The clinical work of the school is facilitated by various institutions. The class fees are from £6 6s. to £5 12s. 6d. for systematic classes, and from £4 14s. 6d. to £4 4s. for practical classes. The hospital ticket is £1 8s. for three months, £4 4s. a year, or perpetual, £13 6s. 8d. in one sum. The inclusive or composition fee for the curriculum is £182. In connexion with both institutions there are bursaries and scholarships of considerable value, which are awarded after competitive examination. Information as to these can be obtained from the Secretary of the University of St. Andrews. Information regarding the clinical facilities may be obtained from the Dean of the Medical Faculty, Medical School, Dundee.

<sup>1</sup> University Lectureship associated with the Hospital, the Royal Samaritan Lectureship in Gynaecology. Lecturer: David Shannon, M.B., Ch.B., L.M., T.D.

#### Clinical Work.

Good opportunities for clinical work are afforded by the Dundee Royal Infirmary, the instruction given thereat being recognized for purpose of the Scottish universities, the University of London, the University of Edinburgh, and by the Royal Colleges of England and Scotland.

#### IRELAND.

THERE is a choice of six schools for those pursuing their medical studies in Ireland. For clinical instruction the choice is equally satisfactory and varied, though the hospitals themselves are comparatively small. Some account of the schools follows.

#### DUBLIN.

##### School of Physic.

THIS school is in Trinity College, Dublin, and is carried on under the joint auspices of the University of Dublin and of the Royal College of Physicians of Ireland, the King's professors of institutes of medicine (physiology), practice of medicine, materia medica, and midwifery being appointed by the latter. Clinical instruction is given at Sir Patrick Dun's Hospital, and some twelve other metropolitan hospitals and asylums are recognized by the Board of Trinity College. The courses of instruction are open to all medical students, whether they belong to the university or not.

##### The Schools of Surgery.

These are schools carried on in Dublin under the supervision and control of the Council of the Royal College of Surgeons. They are formed of the College's own school, combined with two famous old medical schools—Carmichael and Ledwich; they are attached to the College by charter. The buildings contain spacious dissecting rooms, special pathological, bacteriological, public health, chemical, and pharmaceutical laboratories. Advantage can be taken of the lectures and instruction afforded by students otherwise unconnected with the College.

**Prizes.**—Among the prizes annually awarded are: The Birket Anatomical Prize (£26 5s.); the Carmichael Scholarship (£15); the Mayne Scholarship (£8); the Gold Medal in Surgery, the Stoney Memorial Gold Medal in Anatomy, the H. Macnaughton Jones Gold Medal for Midwifery and Gynaecology; class prizes, accompanied by silver medals, will also be given in each subject. A prospectus can be obtained post free on application to the Registrar, Royal College of Surgeons, Dublin.

##### University College, Dublin.

This is one of the constituent colleges of the National University of Ireland. The arrangements for the teaching of medical students from beginning to end of the curriculum are adequate. Applications for other information may be addressed to the Secretary and Bursar, University College, Dublin.

##### Clinical Work.

There are numerous well arranged hospitals in and around the city, and almost all of these are recognized for teaching purposes by the Conjoint Board of Ireland, the University of Dublin, the National University of Ireland, and by like bodies elsewhere in the British Isles. Among them are the Mater Misericordiae Hospital, with 345 beds; Dr. Steevens's Hospital at Kingsbridge, with 150; Meath Hospital and County Dublin Infirmary, with 160; Mercer's Hospital, close to Trinity College, with 120; the Royal City of Dublin Hospital, with 124; the Adelaide Hospital, with 140; the Royal Victoria Eye and Ear Hospital, with 100 beds; Sir Patrick Dun's, which has a direct connexion with the School of Physic, and the combined institutions formed by the Hardwicke Fever Hospital, the Richmond Surgical Hospital, and the Whitworth Medical Hospital, with an aggregate of 230 beds.

As for the famous Dublin medical institution known as the Rotunda Hospital, this practically consists of two distinct hospitals, and is believed to be the largest combined maternity and gynaecological hospital in the British Isles. It receives nearly 3,000 patients every year, and,



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## CLINICAL HOSPITALS IN ENGLAND.

apart from ordinary out-patient work of a gynaecological order, annually attends some 2,000 women at their own homes during their confinement. It possesses residential quarters for students, and, taken as a whole, offers exceptional opportunities for study both to ordinary students and to medical graduates of any nationality.

## BELFAST.

The Medical School is part of the Faculty of Medicine of Queen's University, Belfast, and provides a complete medical curriculum for all purposes. The laboratories in connexion with the departments of biology, chemistry, physiology, pathology, anatomy, physics, and materia medica are all excellent, and there is a Students' Union which gives students the advantages of dining rooms, reading rooms, a library, and various recreation rooms. Women are eligible as students. Clinical instruction is given at the Royal Victoria Hospital, which was rebuilt a few years ago and has 300 beds, and the Mater Infirmorum Hospital, which has 150 beds. Other hospitals open to the students of the university are: the Maternity Hospital, the Ulster Hospital for Women and Children, the Benn Ulster Eye, Children, the Ophthalmic Hospital; the Benn Ulster Eye, Ear and Throat Hospital; the Union Infirmary and Fever Hospital; the Fever Hospital, Purdyburn; the District Lunatic Asylum, the Samaritan Hospital, Forster Green Hospital for Diseases of the Chest, and the Belfast Hospital for Skin Diseases.

**Scholarships.**—(1) Twelve, of the value of £40 each, are assigned as Entrance Scholarships in the Faculties of Arts, Science, and Medicine, tenable for one year; (2) sixteen Professional Scholarships, value from £15 to £40 each; (3) one Hutchinson Stewart Scholarship, £12, in mental diseases; (4) one Mackay Wilson Travelling Scholarship, £100, awarded triennially; (5) Isabella Tod Memorial Scholarship, tenable for three years, awarded triennially to a woman student; (6) Magrath Clinical Scholarship, awarded annually, value about £112; (7) two Musgrave Studentships of £200 in Physiology and Pathology. There is also a post-graduate research fund, open to all graduates of not more than three years' standing. Gold medals are awarded at the M.D. examination.

**Fees.**—The cost of the curriculum intended for students proceeding to the degrees of the Queen's University of Belfast is, approximately, £200. This includes examination fees and a perpetual ticket for attendance at the Royal Victoria Hospital or the Mater Infirmorum Hospital, and fees for the special hospitals. The course for the Conjoint Board costs about the same amount.

The Regulations of the Medical Faculty, containing full information, can be obtained on application to the Secretary, Queen's University, Belfast, price 4d.

## UNIVERSITY COLLEGE, CORK.

THIS institution, formerly known as Queen's College, Cork, is one of the constituent colleges of the National University. It holds examinations for all the faculties of that university. In addition to continuing the work which it has hitherto performed—namely, that of providing education adapted to the needs of medical students at all stages of their career—its first aim is to fit students for the degrees of the National University, but students proceeding for the examinations of the Conjoint Board of England, Scotland, or Ireland, the Society of Apothecaries of London, or the Apothecaries' Hall of Ireland, or London University, can arrange the courses of lectures which they attend, and the order in which they attend them, to meet the requirements of those bodies. Certificates of attendance at the college courses are also accepted by the University of South Infirmary. Clinical instruction is given at the North and South Infirmarys (each 100 beds) and at the Cork Union Hospital (1,200 beds). Students can also attend the Mercy Hospital (130 beds), the County and City of Cork Lying-in Hospital, the Maternity, the Hospital for Diseases of Women and Children, the Fever Hospital, the Ophthalmic and Aural Hospital, and the Eglinton Lunatic Asylum. The session extends from October to June.

There is a Dental School in which the degree of Bachelor of Dental Surgery of the National University of Ireland can be obtained. There is a large well equipped dental hospital in connexion with the school.

**Scholarships.**—Over £4,000 is available annually for scholarships in the College. Particulars as to each of them can be obtained on application to the Registrar.

**Fees.**—The fees for the lectures and hospital attendances required by the National University of Ireland course, including examination fees, come to about £150. Further information can be found in the Calendar or obtained on application to the Registrar.

## UNIVERSITY COLLEGE, GALWAY.

THIS institution is one of the constituent colleges of the National University of Ireland, and includes Faculties of Art, Science, Law, Celtic, Engineering, Commerce, and Medicine. The college buildings are well lighted and well ventilated, and contain dissecting rooms, an anatomical theatre, and laboratories for the study of physiology, chemistry, physics, and other departments of medical science. For pathology and chemistry new laboratories are now provided. It has good grounds surrounding it, and there are many arrangements, such as a library, a college union, and an athletic union, for the benefit of students in other departments of the college. The clinical teaching, which is recognized as qualifying not only for the degrees of the National University, but for those of London University and the diplomas of the various colleges in the three kingdoms, is carried on at the Galway Central Hospital and the Galway Tuberculosis Hospital. The Galway Central Hospital is a general hospital, and at the two hospitals students have ample opportunities of studying zymotic and chronic diseases. The Central Hospital has a special ward for diseases of children. Each year the governing body offers about £1,500, and the County Councils of Connaught offer about £3,500, in scholarships. These scholarships are tenable in any faculty. Additional information regarding these scholarships can be obtained on application to the Registrar, and to the Secretaries of the Connaught County Councils.

## CLINICAL HOSPITALS IN ENGLAND.

MANY hospitals in Great Britain and Ireland, though not connected with any medical school, open their doors either to those who have yet to be qualified, to those who are doing post-graduation work, or to both. The facilities they offer for gaining practical clinical experience are very great, and should not be overlooked. Their honorary staffs commonly make a point of giving such instruction as opportunity offers, and at those situated in the larger towns there are often appointments as clinical assistants to be obtained. In addition, they all have to offer, at shorter or longer intervals, appointments for resident medical officers, house-physicians, and house-surgeons. These are usually paid offices, which may be held for periods varying from six months to a year. Some of these situated in the great medical centres in the provinces, and in Scotland and Ireland, have already been mentioned in speaking of the medical schools in these localities; but it should be added that there are many other provincial hospitals where admirable work is done, and at which much valuable experience can be gained by both senior and junior students, and by those already qualified. Cases in point are the Royal Infirmary, Bradford; the Royal Sussex County Hospital, Brighton; the Royal United Hospital, Bath; the Kent and Canterbury Hospital; the Derbyshire Royal Infirmary; the South Devon and East Cornwall Hospital, Devonport; the Royal Albert Hospital and Eye Infirmary, Devonport; the Royal Devon and Exeter Hospital; the West of England Eye Infirmary, Exeter; the Gloucestershire Royal Infirmary and Infirmary, Exeter; the Royal Infirmary, Leicester; the County Eye Institution; the General Hospital, Northampton; the Hospital, Lincoln; the General Hospital; the Royal Norfolk and Norwich Hospital; the General Hospital, Nottingham; the Royal Port-mouth Hospital; the Royal Berks Hospital, Reading; the Royal South Hants and Southampton Hospital; the Staffordshire General Infirmary; the North Staffordshire Infirmary at Hartshill; the Royal Hants County Hospital, Winchester; the County Hospital, York; and the Coventry and Warwickshire Hospital.

*London Clinical Hospitals.*

'As for the hospitals in the metropolis, so many of these take a share in the giving of clinical instruction that it is worth while to classify them.

*Children's Hospitals.*—There are at least seven of these, the leader among them being the Hospital for Sick Children, Great Ormond Street, which has 240 beds. There are also the East London Hospital for Children, Shadwell, with 124 cots; the Queen's Hospital for Children, Bethnal Green, with 134; the Victoria Hospital for Children, Chelsea, with 104; the Belgrave Hospital for Children, which has a considerable out-patient department, but in-patient accommodation for only 40 children; the Paddington Green Children's Hospital, an institution of about the same size; and the Evelina Hospital for Sick Children, Southwark Bridge Road, with 76 beds. The largest and the oldest of the hospitals for both women and children is the Royal Waterloo Hospital for Children and Women, Waterloo Road, S.E.1.

*Hospitals for Women.*—Queen Charlotte's Maternity Hospital, Marylebone Road, with 70 beds and a residential college for and practitioners, specializes in the teaching of midwife. Samaritan Hospital for Women, Marylebone Road, admits qualified practitioners as clinical assistants to both the in-patient and out-patient departments; demonstrations are given daily in both departments, the fees—payable in advance—being £3 3s. for three months; full particulars may be obtained from the secretary. In addition may be mentioned the Hospital for Women, Soho Square, whose teaching is confined to post-graduates in limited numbers; the Chelsea Hospital for Women, Arthur Street, Chelsea; and the Elizabeth Garrett Anderson Hospital for Women in Euston Road, the latter being in the nature of a general hospital so far as concerns the class of case treated.

*Eye Hospitals.*—The largest of these is the Royal London Ophthalmic Hospital (Moorfields), City Road. At this hospital two complete courses of instruction are given during the year—October to February and March to July—comprising the following subjects: anatomy, physiology, and optics; ophthalmic medicine and surgery—(1) external diseases, (2) motor anomalies and squint, (3) ophthalmoscopic conditions (weekly classes), (4) pathology; practical refraction classes; methods of examination (practical); operative surgery; practical pathology; practical bacteriology; x-ray and radiotherapy; clinical lectures; discussion classes. A fee of 24 guineas entitles the holder to one full five months' course (with the exception of practical pathology and practical bacteriology), together with a permanent ticket for the practice of the hospital. Fee for the practice of the hospital (permanent), £5 5s.; for three or six months, £3 3s.; for two months, £2 2s.; for one month, £1 1s. Gentlemen are eligible, under certain conditions, for the posts of chief clinical assistant, clinical assistant, and junior assistant. Clinical work takes place every morning at 9 o'clock, and operations at 10. An additional special course in the preliminary subjects (namely, anatomy, physiology, and optics) for the D.O.M.S. and other examinations in ophthalmology will be held immediately preceding the date of the examination. The fees for this course will be 12 guineas, or £5 5s. for any subject separately. Further particulars may be obtained from the Dean of the Medical School. Other eye hospitals are the Royal Westminster Ophthalmic Hospital near Charing Cross, the Royal Eye Hospital, Southwark, and the Central London Ophthalmic Hospital, Judd Street, W.C.1, each with about 40 beds.

*Fever Hospitals.*—The Metropolitan Asylums Board has under its control a good many institutions in and around London for the treatment of the more serious zymotic disorders; it makes special arrangements for the instruction of students in this subject, and grants certificates at the end of the courses. Detailed information should be sought from the Clerk to the Board, Victoria Embankment, E.C.4.

*Chest Hospitals.*—The largest of these is the Brompton Hospital for Consumption, which has 333 beds and a large sanatorium at Primley with 150 beds. There is also the City of London Hospital for Diseases of the Chest, Victoria Park, with 175 beds, and the Royal Hospital for Diseases of the Chest, City Road, now amalgamated with the Royal Northern Hospital, Holloway Road.

*Nose, Throat, and Ear Hospitals.*—The institutions which confine their work to disorders of the throat, nose, and ear all make special arrangements for the benefit of senior and post-graduate students. They are the Metropolitan Ear, Nose, and Throat Hospital, Fitzroy Square; the Royal Ear Hospital, Dean Street; the Central London Throat, Nose, and Ear Hospital, Gray's Inn Road; and the Hospital for Diseases of the Throat, Golden Square—the last, which possesses 75 beds, being the largest of the four institutions.

*Miscellaneous Special Hospitals.*—Among these are the Bethlem Royal Hospital, St. George's Fields, S.E.1, which (like the Maudsley Hospital) confines its work to the treatment of mental diseases, and includes a department for nervous and early mental disorders. West End Hospital for Nervous Diseases, 73, Welbeck Street, W.1. St. Peter's Hospital for Stone and Urinary Diseases, 11, Hurst Street, Covent Garden. St. Mark's Hospital, City Road, which devotes itself to the treatment of diseases of the rectum, including cancer and stricture. The National Hospital for Diseases of the Heart in Westminster Street, W.1. St. John's Hospital for Diseases of the Skin in Leicester Square; the Hospital for Diseases

of the Skin, Stamford Street, Blackfriars; and the National Hospital, Queen Square, W.C.1, an institution possessing 200 beds and a world-wide reputation.

Detailed information as to the teaching arrangements of all these institutions may be obtained on application to their secretaries.

**WOMEN IN MEDICINE.**

THE regulations of the General Medical Council and of the various universities and colleges set out in previous sections apply to women as to men:

*Examinations.*

Women are admitted to all the medical examinations of the following qualifying bodies: the Royal College of Physicians; the Royal College of Surgeons of England; the College of Apothecaries of London; the Conjoint Board in Scotland and in Ireland; and all the universities of Great Britain and Ireland. The Royal College of Physicians now allows women to be eligible for election as Fellows.

*Medical Education.*

The London (Royal Free Hospital) School of Medicine for Women, which is one of the constituent schools of the Medical Faculty of the University of London, is the sole school for medical education which admits women only. All the resident appointments at the Royal Free Hospital, of which there are nineteen yearly, are held by women. Arrangements are made for students of the school to obtain clinical instruction at the Hospital for Sick Children, Great Ormond Street; the National Hospital for Nervous Diseases; the Royal London Ophthalmic Hospital (Moorfields); the Elizabeth Garrett Anderson Hospital; the South London Hospital for Women; and the Cancer Hospital. Further particulars with regard to the London School of Medicine for Women will be found on page 437.

Women are also admitted to the following men's schools in London: University College Hospital (a limited number only); King's College Hospital; Charing Cross Hospital; and the Westminster Hospital. Further particulars about these schools will be found in the article on London Medical Schools at page 432 et seq. The medical schools of Birmingham, Bristol, Cardiff, Leeds, Liverpool, Manchester, Newcastle, and Sheffield admit women. In Scotland, the medical schools of Aberdeen, St. Andrews, Edinburgh, and Glasgow admit women, although they do not in every case afford them equal facilities with men. The Irish universities and colleges are open to women.

*Openings for Medical Women.*

The London School of Medicine for Women celebrated its jubilee in October, 1924. During the fifty years of its existence over 1,000 women have graduated from this school. At the present time most of them are engaged in active medical work. Unemployment is apparent in all professions, and applies to both sexes; it is asserted that medical women are rather more fortunate in this respect than women in other professions. In private practice they do increasingly well, and are reported to be in great demand as locumtenents for medical men and women.

The Public Health Service, and especially its department of Maternity and Child Welfare, provides openings for women. In addition nearly all the voluntary welfare centres in the country are officered by medical women. The rapid growth in recent years of maternity and child welfare centres has given women, to whom such work is peculiarly suited, an opportunity of participating in this important branch of preventive medicine. Under the Board of Education there are appointments for women as medical advisers and school medical inspectors. The London County Council has medical women as lecturers and examiners on the care of children, home nursing, health, and first aid. Many of the venereal disease clinics have at least one medical woman on the staff. A certain number of appointments as tuberculosis officer are held by women. Appointments are held by women as residents in general hospitals, hospitals for women and children, sanatoriums, infirmaries, fever hospitals, and asylums.

Particulars of the Colonial appointments which may be held by women in British West Africa and the Malay States can be obtained from the Medical Branch of the Colonial Office. Information regarding the women's medical service for India may be obtained from the honorary secretary, United Kingdom Branch of the Countess of Dufferin's Fund, c/o General J. B. Smith, India Office, Whitehall, S.W.1. Missionary societies also offer employment to medical women. Further particulars can, we understand, be obtained from Dr. Webb Anderson, Medical Missionary Association, 49, Highbury Park, London, N.5.

#### *Equal Pay for Equal Work.*

The British Medical Association was the first of all professional organizations to lay down the principle that no distinction should be made on the ground of sex as regards the emoluments to women members of the profession. Attempts are continually being made by public authorities to obtain the services of women doctors at lower salaries than those paid to men, and the Association looks to all medical women to help it in resisting such attacks upon the solidarity of the profession. In its constant efforts to maintain this principle the Association works in close co-operation with the Medical Women's Federation (9, Clifford Street, New Bond Street, W.1). In defence of the principle the British Medical Association has at various times fought—usually with success—Government departments and local authorities of all kinds. Where the authorities concerned have declined to recognize the justice of the claim that equal pay should be given for equal work the machinery, local and central, of the Association has been put into operation, and as a result the authority has generally seen fit to drop the proposed distinction between men and women practitioners or given up the attempt to fill the post. It is hardly necessary to add that the British Medical Association can only be successful in carrying out this policy if it receives the loyal support of all medical women.

### DEGREES FOR PRACTITIONERS.

At one time it was almost the universal custom for medical students educated in London and aiming at general practice not to seek a university degree, and as that custom still prevails to a considerable extent a large proportion of medical men in England possess diplomas or licences to practise but not degrees in medicine. This is a fact which they sometimes find reason to regret, and to such practitioners the following paragraphs may be of interest. It should be noted, however, that the M.D.Brux. diploma, if obtained subsequently to June, 1886, is not registrable, and that the University of Brussels no longer holds special examinations for foreign medical practitioners.

#### UNIVERSITY OF DURHAM.

The degree of M.D. is granted by the University of Durham to registered practitioners of not less than fifteen years' standing, who have been qualified and in practice for that period, upon the following conditions, without residence: The candidate must be 40 years of age, and must produce a certificate of moral character from three registered medical practitioners. Should he not have passed an examination in arts previous to the professional examination in virtue of which his name was placed on the Register, he is examined in classics and mathematics; if otherwise, he is required to translate into English passages from any one of the following Latin authors: Caesar, *De Bello Gallico* (first three books), Virgil *Aeneid* (first three books), or Celsus (first three books). Natives of India or the British Colonies are placed on the same footing as natives of Great Britain. Natives of India must produce evidence from an Indian university that they have passed within one year an examination in Latin.

*Professional Examination.*—The candidate must pass an examination in the following subjects: (i) Principles and practice of medicine, including psychological medicine, hygiene, and therapeutics; (ii) principles and practice of surgery; (iii) midwifery and diseases of women and children; (iv) pathology, medical and surgical; (v) anatomy, medical and surgical; (vi) medical jurisprudence and

toxicology. Candidates are examined by means of written papers, clinically, and viva voce, at the College of Medicine, Northumberland Road, Newcastle, and in the Royal Victoria Infirmary. The classical part of the examination may be taken separately from the professional on payment of a portion (£10 10s.) of the full fee.

The examinations are held twice a year, towards the end of June and of December. Notice, accompanied by the fee and certificates, must be sent to Professor Howden, Registrar of the University of Durham College of Medicine, Newcastle-on-Tyne, at least twenty-eight days before the commencement of the examination.

*Fees.*—The fee is 50 guineas, which includes the degree fee; if a candidate fail to pass, 20 guineas are retained, but if he present himself again 40 guineas only are required.

#### UNIVERSITY OF BRUSSELS.

Although the University of Brussels has discontinued the holding of special examinations for foreign medical practitioners desirous of obtaining the M.D.Brux. diploma, it is possible for a foreigner who is willing to undergo the prescribed courses and tests to obtain in Brussels a diploma of "Docteur en médecine, chirurgie et accouchements," which, though it does not entitle to practise in Belgium, is of the same standard as the Belgian legal diploma. All candidates are required to submit their degrees or diplomas for consideration to the secretary of the university, and must be prepared to spend a period at the university attending the lectures, clinics, and practical work, before being allowed to enter for the examinations, which are conducted in French, viva voce. Ophthalmology is now a compulsory subject. The period of residence required will vary according to the standard of the degree or diploma submitted by the candidate for the consideration of the university authorities, and may be one, two, or three years. October is the best month for commencing. The fees for each year are: Courses, 525 francs; laboratory work, 250 francs; examinations, 110 francs. We understand that Dr. A. D. Woolf, of 13, The Avenue, Higham's Park, E.4, Honorary Secretary of the Brussels University Medical Graduate's Association, will, on application, give further particulars with regard to the preparation for the degree.

### POST-GRADUATION STUDY.

THE chief step forward in the development of a scheme for post-graduate medical study in London during the past year was the inauguration of a social centre or hostel for post-graduates at the Imperial Hotel, Russell Square. We commented on this in the BRITISH MEDICAL JOURNAL of July 10th (p. 82). The hostel should be of great value in helping to form a body of post-graduate opinion. The committee appointed last year by the Minister of Health to draw up "a practical scheme of post-graduate medical education centred in London" has not yet reported, so that it is still impossible to say whether Great Britain is likely to take her place with Vienna and Berlin in offering international post-graduate courses to students from all parts of the world. There is no doubt that the aim should be to establish in London a real organization, possibly linked up with schools in the provinces, capable of offering provision for study which will attract men of capacity from the Dominions, America, and foreign countries, and at the same time offering courses which will benefit practitioners in this country. For the latter part of this programme facilities already exist, both in London and the provinces; and in many cases progress can be reported. The Fellowship of Medicine, founded in 1918, and amalgamated with the Post-Graduate Medical Association in 1919, continues to function from the office generously placed at its disposal by the Royal Society of Medicine (1, Wimpole Street, W.1). Courses of instruction at various hospitals scattered through London are organized, and a list of hospitals which welcome post-graduates, together with the names of the teachers, is kept. Permanent schools for those who desire to revise or increase their medical knowledge exist in the West London Post-Graduate College and the North-East London Post-Graduate

College. Some of the large undergradate teaching hospitals provide short post-graduate courses, and at St. Bartholomew's Hospital a special vacation course for a fortnight in September is now a regular institution. In the provinces the Universities of Oxford, Birmingham, Bristol, Manchester, and, this year, Sheffield, have organized courses. At Manchester it is hoped to start a central scheme of training, taking the form, perhaps, of a definite post-graduate school. In Scotland considerable progress has been made. Edinburgh receives graduates from many schools in the Dominions, as well as in this country. At Glasgow teaching is provided under three schemes: a general course of four weeks in August and September; special courses; and clinical assistantships for periods of three months. In the University of Aberdeen the Faculty of Medicine has approved a three months' course from April to June; and at St. Andrews a course was given in June by the staff of the James Mackenzie Institute for Clinical Research. Courses in special diseases can be obtained in London at a large number of special hospitals. Special note may be made of the London School of Tropical Medicine, which has now been incorporated in the new London School of Hygiene and Tropical Medicine; of the Liverpool School of Tropical Medicine; and of the Maudsley Hospital, Denmark Hill, S.E.5. In addition to these post-graduate courses at hospitals and schools, the Joint Tuberculosis Council organized this year a series of courses at various tuberculosis institutions, with a study tour in Norway last July.

It will be seen, therefore, that while a wide range of facilities exists for post-graduate study, there is no really large and prominent post-graduate school situated in the centre of London. There is no systematic linking up of the numerous facilities for study for the purpose of attracting students from all English-speaking countries. For this purpose an institution would seem to be required with a central office to which inquiries may be addressed, and from which advice and information may be given. If possible this office should belong to a school with teachers and regular teaching by lectures and clinical work, and with laboratories attached; the school should preferably be attached to a post-graduate hospital for all ordinary clinical and pathological work; arrangements should be made with special institutions for courses in advanced work; there should be a linking up with provincial centres for those who wish to study under a special teacher; and a centre for social intercourse should be part of the organization. The British Medical Association has helped in providing the last of these objects by encouraging the hostel at the Imperial Hotel. It remains to be seen how many of the other portions of the scheme will be embodied in the report of the committee of the Ministry of Health.

#### FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

The Fellowship of Medicine has arranged regular courses in general medicine and surgery, including special departments, each lasting two weeks; they are held at intervals of six weeks, and the fee for each course is 3 to 5 guineas. Courses in diseases of chest, children, heart, nervous system, throat, nose and ear; dermatology; electrotherapy; gynaecology; proctology; psychological medicine; tropical medicine; urology and venereal diseases are given from time to time at the special hospitals in association with the Fellowship of Medicine. The Fellowship Programme contains a diary of the arrangements available for post-graduates in various general and special hospitals in London. Practical courses in obstetrics and child welfare are arranged throughout the year; the duration of each course is one week. Also, practical courses in anaesthetics can be arranged at any time. The programme for the immediate future includes a two weeks' course in general medicine and surgery, from September 20th to October 2nd, at the Westminster Hospital. There will also be special courses in infants' diseases at the Infants Hospital from September 13th to 25th; in ophthalmology at the Central London Ophthalmic Hospital from September 6th to October 2nd; in psychological medicine at the Bethlem Royal

Hospital from September 6th to October 2nd; and a course in electrotherapy at the Royal Free Hospital from September 22nd to October 13th. The offices of the Fellowship are, by kind permission of the Royal Society of Medicine, at No. 1, Wimpole Street, W.1 (telephone, Mayfair 2263). The secretary is in attendance daily from 10 a.m. to 5 p.m., excepting Saturday. The annual subscription for membership of the Fellowship of Medicine and Post-Graduate Medical Association has been fixed at a minimum of 10s.

#### WEST LONDON POST-GRADUATE COLLEGE.

The work of this institution is carried on at the West London Hospital, the first in London to devote its clinical material solely to the instruction of qualified medical men. The college started in 1895; it is provided with lecture, reading, writing, and class rooms, and accommodation of all sorts for the convenience of post-graduate students. The work of the college is eminently suitable for men in general practice and officers in the services who wish to revive their general clinical knowledge.

As for ward work, the students accompany the senior staff on their visits to the wards at 2.30 p.m. daily, and also go round with the resident medical officers in the morning. Out-patient work begins at 2 p.m. This department is large, and affords ample facilities for post-graduates to see and examine patients. There are the usual special departments. Post-graduates are appointed to act as clinical assistants for three or six months, no charge being made. Special practical classes are held in medicine, general practical surgery, gastro-intestinal surgery, medical and surgical diseases of children, analysis of blood and urine, cystoscopy, venereal diseases, tropical diseases, retinoscopy, ophthalmic operative surgery, and, when material is available, in operative surgery. The size of the classes is limited. A special clinic for the treatment of venereal diseases (male and female) is held every evening (Saturdays included) at 5.30. Graduates are admitted to the work of the clinic free, and certificates of satisfactory attendance and work are given.

Operations take place at 2 p.m. daily, the surgeons often availing themselves of the assistance of the graduates, and in any case making arrangements so that they can readily see what is going on. The anaesthetists give instruction in the administration of anaesthetics, including spinal analgesia, on the operating days, students being allowed to administer them under supervision, while special classes are held in each session. The pathological laboratory is in charge of a pathologist who attends every day.

Demonstrations are ordinarily given in the morning by the assistant physicians and surgeons, and by the medical and surgical registrars.

**Fees.**—Hospital practice, including all ordinary demonstrations and lectures, £1 11s. 6d. for one week, £4 4s. for one month, £7 7s. for two months, £9 9s. for three months, £15 15s. for six months, £25 12s. 6d. for one year, and £45 for a life ticket. Instruction in the administration of anaesthetics is given at the rate of £3 3s. a month.

The certificates of the school are recognized by the Admiralty, the War Office, the Colonial Office, the India Office, and the University of London (for higher degrees). A prospectus can be obtained on application to the Dean.

#### NORTH-EAST LONDON POST-GRADUATE COLLEGE.

The headquarters of this post-graduate school are situated at the Prince of Wales's General Hospital, Tottenham, N.15, in the midst of this densely populated North London district. It contains 200 beds, and is within a few minutes' walk of South Tottenham station, on the London, Midland, and Scottish Railway, and Seven Sisters and Tottenham Hale stations, on the London and North-Eastern Railway. It is readily accessible by electric tram from Finsbury Park and Hackney, and from Dalston, Edmonton, and other parts of North London.

The college is in association with the Fellowship of Medicine and Post-Graduate Medical Association, and is recognized by the Admiralty and India Office for the purpose of study leave, and by the University of London as a place for advanced study for the M.D. and M.S. degrees; the course of practical teaching of bacteriology is approved by the University of Cambridge for its Diploma in Public Health,

and there are ample arrangements for the convenience of men who are thus working, or who, being in active practice, are desirous of getting themselves into touch with modern methods. The hospital as a whole affords excellent facilities for qualified medical practitioners who wish to take part for a time in the work of an active general hospital, or to obtain special instruction in the several branches of medicine and surgery, since it is open to them to study diseases of the eye, ear, throat, nose, skin, fevers, children's diseases, psychological medicine, dental surgery, radiography, the application of electricity in disease, and the administration of anaesthetics. Throughout the sessions into which the year's work is divided, clinics, lectures, and demonstrations are given by members of the teaching staff. Operations are performed every afternoon of the week except Saturday. Special vacation or intensive courses are held at intervals throughout the year, each lasting two weeks, clinical instruction being arranged for each hour of each day.

*Fees.*—Two guineas for a three months' course of study in any one department, which may be begun at any time; a fee of 5 guineas admits to the whole practice of the hospital for a similar term (one month 2 guineas, and one year 10 guineas), and a perpetual ticket for the practice of the hospital may be obtained for 15 guineas.

The winter session will be opened about the middle of October as regards clinical lectures, but the clinical work of the hospital is carried on continuously.

Additional information can be obtained from the Dean of the Post-Graduate College, at the hospital, or at 19A, Cavendish Square, London, W.1.

#### NEWCASTLE-ON-TYNE.

For the year 1926-27 the following post-graduate courses have been arranged by the College of Medicine, Newcastle-on-Tyne (University of Durham):

1. General courses in clinical medicine, surgery, and pathology at the Royal Victoria Infirmary, meeting once weekly for ten weeks. One course will be held from October to December, and one from April to June.

2. Special courses of clinical instruction meeting once weekly for ten weeks in the following subjects: Gynaecology, diseases of the eye, diseases of the throat, nose, and ear, diseases of the skin, venereal diseases, neurology.

Special courses in midwifery will be held at the Princess Mary Maternity Hospital.

3. An intensive course of fourteen days' duration in the early part of the Summer Vacation, 1927.

4. In addition to the regular post-graduate courses practitioners may attend the ordinary medical and surgical practice of the Royal Victoria Infirmary for specified periods.

#### COURSES FOR MEDICAL GRADUATES AT BRISTOL.

The University of Bristol provides courses of post-graduate study for practitioners. Details of set courses at the Royal Infirmary and General Hospital are announced locally. In addition, practitioners may become clinical assistants in medicine, surgery, or special subjects for periods of a month or more.

The university also holds courses of demonstrations in outlying centres in the West of England. Resident practitioners form themselves into a committee and consider the type and extent of demonstrations required. The university furnishes the lecturers and makes all the necessary arrangements. All inquiries should be addressed to the Director of Post-Graduate Studies, Pathological Department, Bristol University.

*Daily Post-Graduate Study.*—For those who are able to devote several hours each day to hospital practice the university offers special facilities for post-graduate work. Qualified medical practitioners may be appointed as clinical assistants for a period of one or more months. They may act as assistants, if times permit, in more than one department and in any of the hospitals during their period of study. They will be entitled to the use of the clinical laboratories and medical library, and have the right to attend in all departments, including operations, post-graduate and ordinary clinical demonstrations, and *post-mortem* examinations.

*Post-Graduate Clinical Work.*—Demonstration courses with weekly lectures are held during May, June, and July. All inquiries and applications for admission should be addressed to the Director of Post-Graduate Studies (Clinical Section), Pathological Department, University of Bristol,

who can be seen on any day by appointment at the Pathological Department.

Further information as to scholarships, curricula, and fees can be obtained from the Dean of the Faculty of Medicine, or the Registrar of the University, Bristol.

#### EDINBURGH POST-GRADUATE COURSES.

In connexion with the University and Royal Colleges post-graduate courses are arranged every year, from about the middle of July to about the middle of September, comprising: (a) This year a course in obstetrics and gynaecology was held from July 12th to August 6th; (b) a course on diseases of children from August 2nd to 7th. (c) a general medical course; (d) a general surgical course. Courses (c) and (d) extended for four weeks from August 9th to September 4th. Similar courses are held each year.

The course in obstetrics and instruction in clinical midwifery, obstetrics and gynaecological pathology, and ante-natal clinics, etc.

The course on diseases of children comprises clinical demonstrations and systematic lectures dealing with the diagnosis and treatment of the common and important diseases met with in medical practice, and including the dieting of infants and children. The general medical course includes lecture demonstrations, and, where possible, practical instruction on medical anatomy, medical side-room work, examination of the blood, x-ray and electrical therapy, morbid anatomy, and *post-mortem* examinations; clinical instruction in medicine, diseases of children, diseases of the skin, and infectious diseases; and special instruction in the diseases and methods of examination of the nervous, circulatory, respiratory, alimentary, and renal systems, and in diseases of the ductless glands. The general surgical course includes lecture demonstrations on surgical anatomy, surgical pathology, and surgical x-ray diagnosis; clinical instruction in surgery at the Royal Infirmary and Royal Hospital for Sick Children; clinical instruction in venereal diseases; surgical out-patients, surgical and gynaecological operations and special instruction in abdominal and genito-urinary and other branches of surgery.

A series of special lectures, open to all graduates, is delivered thrice weekly, on subjects of general medical and surgical interest, including recent advances in treatment. Among the special courses also arranged are: examination of the blood, vaccine therapy, clinical chemistry, diseases of the ear, nose, and throat, and venereal diseases.

Particulars regarding the courses, dates of commencing, fees, etc., may be had on application to the Honorary Secretary, Post-Graduate Courses in Medicine, University New Buildings, Edinburgh.

#### POST-GRADUATE MEDICAL TEACHING IN GLASGOW.

Organized post-graduate medical teaching is available in Glasgow under the auspices of the Post-Graduate Medical Association. This association is composed of practically all the teaching institutions in Glasgow and the various teachers giving post-graduate instruction, and its business is managed by a board elected periodically by them. The chairman of the board is Principal Sir Donald MacAlister, Bt., and the vice-chairman Sir Hector C. Cameron. During the winter months special courses in various subjects are conducted, and from November till May there is a series of weekly demonstrations specially designed for local practitioners. A comprehensive scheme of clinical courses is carried out during the summer months, from June till October, and arrangements have also been made whereby a limited number of graduates may become attached to wards or out-patient departments nominally as clinical assistants for definite periods throughout the year. As such they work under the direct supervision of the physician or surgeon in charge, and carry out such detailed investigations as directed.

A general medical and surgical course is now held each year during the last two weeks of August and the first two weeks of September, which is arranged to include most of the subjects of interest to the general practitioner.



This year the course is being conducted from August 16th to September 11th. The forenoons are occupied with general medicine and surgical diagnosis and minor surgery, in the Victoria Infirmary and in the Western Infirmary. In the afternoons special subjects are dealt with in the special hospitals and in the special departments of the general hospitals, two subjects being dealt with each afternoon. On the four Saturday forenoons tuberculosis and infectious fevers are demonstrated at Ruchill Fever Hospital.

Further information may be had on application to Dr. James Carslaw, Secretary, Post-Graduate Medical Association, 6, Woodside Crescent, Glasgow, C.3.

#### AUSTRALIAN AND NEW ZEALAND MEDICAL ASSOCIATION.

The Australian and New Zealand Medical Association gives information and advice to medical visitors from the Commonwealth and Dominions with regard especially to attendance at special clinics, post-graduate work, and facilities for preparing for examinations such as the M.R.C.P., F.R.C.S. (England and Edinburgh), and the D.P.H., and also as to house appointments and clinical assistantships in London and the provinces. Information will also be given as to lodgings, sports, and social opportunities. All medical graduates or undergraduates born in Australia or New Zealand and resident in or visiting England are eligible to become members. The fee is one payment of 5s. Further information can be obtained from the joint honorary secretaries, Mr. E. T. C. Milligan, F.R.C.S., and Mr. Bedford Russell, F.R.C.S., 86, Harley Street, London, W.1.

## TROPICAL MEDICINE.

THERE are large and important schools of Tropical Medicine in London and Liverpool, and several universities and other examining bodies have instituted diplomas or degrees in the subject. The Colonial Office now expects all nominees for the Colonial Medical Service to pass through one or other of the two schools mentioned before their appointments are confirmed, and commercial firms engaged in tropical enterprise commonly demand from medical applicants for employment corresponding evidence of special knowledge. Information with regard to these schools and diplomas and degrees follows.

#### DIPLOMAS AND DEGREES.

**LONDON UNIVERSITY.**—Tropical medicine is one of the six branches in which the M.D. degree may be obtained. The regulations relating to the curriculum and examination correspond to those applying to the other branches.

**LONDON JOINT BOARD.**—This body grants a diploma in tropical medicine to candidates after an examination held in the months of February and July. Candidates must present evidence of having attended, subsequently to obtaining a registrable qualification in medicine, surgery, and midwifery, (1) practical instruction in pathology, protozoology, helminthology, entomology, bacteriology, and hygiene in relation to tropical medicine, in an institution recognized for this purpose, during not less than five months; (2) the clinical practice of a hospital recognized for the study of tropical diseases during not less than five months. These conditions may be modified in the case of candidates who have had practical experience in tropical countries. The fee for admission to the examination is £9 2s. The Board also grants diplomas in public health, in psychological medicine, in ophthalmic medicine and surgery, and in laryngology and otology. Candidates must hold a medical qualification registrable in the United Kingdom, or be graduates in medicine of an Indian, Colonial, or foreign university. Particulars and conditions of admission to these examinations, fees, etc., may be obtained from the Secretary of the Examining Board, Examination Hall, Queen Square, Bloomsbury, London, W.C.1.

**UNIVERSITY OF LIVERPOOL.**—A diploma in tropical medicine is given by this university to students who have been through the courses provided by the Liverpool School

of Tropical Medicine and have passed the examination held twice yearly by the university examiners. The subjects of examination are (a) tropical pathology, parasitology, and entomology; (b) tropical and applied bacteriology; (c) tropical hygiene and sanitation; (d) tropical medicine, including etiology, symptoms, diagnosis, and treatment of tropical diseases. Further information can be obtained from the Dean of the Faculty of Medicine, University of Liverpool. A diploma in tropical hygiene (D.T.H.) has recently been established. The subjects of examination are bacteriology, chemistry (including meteorology and climatology), entomology, protozoology and helminthology, tropical sanitation (including sanitary engineering), practical sanitation. Fee for the course, £15.

**UNIVERSITY OF CAMBRIDGE.**—This university grants a diploma in tropical medicine and hygiene to any person whose name has been on the *Medical Register* for not less than a year provided that he passes the examination of the university in this subject. Previous to admission to the examination he must produce approved evidence that he has studied pathology (including parasitology and bacteriology in relation to tropical diseases), clinical medicine, and surgery at a hospital for tropical diseases, and hygiene and methods of sanitation applicable to tropical climates. Examinations are held in January and August each year and last four days. The fee for the examination (which is divided into two parts) is 10 guineas for each part on admission or readmission. Application for further information should be made to Dr. G. S. Graham-Smith, Pathological Laboratory, Cambridge, or Mr. J. E. Purvis, Public Health Chemical Laboratory, Medical School, Cambridge.

#### SCHOOLS.

##### LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

##### *Division of Tropical Medicine and Hygiene (University of London).*

The London School of Tropical Medicine, formerly under the auspices of the Seamen's Hospital Society, was on August 1st, 1924, incorporated by Royal Charter in the London School of Hygiene and Tropical Medicine, and the work of the school continues as the Division of Tropical Medicine and Hygiene of the new institution. By the generosity of the Rockefeller Foundation a large sum has been provided for new buildings in Bloomsbury, but for the present the work of the school is carried on as heretofore in the Seamen's Hospital Society's buildings at the Hospital for Tropical Diseases, Endsleigh Gardens, W.C.1, where the specially equipped laboratories, museum, library, and clinical facilities afford excellent opportunities to the student and others who may be desirous of studying diseases incidental to tropical climates before entering the services or going abroad. In the wards of the Hospital for Tropical Diseases are to be found cases such as may be met with in actual practice in the tropics. There are two courses in the year, each lasting twenty weeks, beginning October 4th, 1926, and March 14th, 1927, respectively. The course is so arranged as to equip men for the D.T.M. and H. of the Conjoint Board. There are also advanced courses and a special course in parasitology for D.P.H. students and for the first part of the D.T.M. and H.Camb. Clinical instruction is also provided for the second part of the D.T.M. and H.Camb. Tropical medicine is a sixth alternative subject for the M.D. of the University of London, and the school curriculum is adapted to afford facilities for candidates desirous of taking the M.D. in this subject. Further information may be obtained from the Secretary, London School of Hygiene and Tropical Medicine, 23, Endsleigh Gardens, London, W.C.1.

##### LIVERPOOL SCHOOL OF TROPICAL MEDICINE.

This school is affiliated with the University of Liverpool. The university now grants diplomas in tropical medicine (D.T.M.) and in tropical hygiene (D.T.H.).

Two full courses of instruction, each lasting about eleven weeks, are given every year for the D.T.M., commencing respectively October 1st (Autumn term), and January 7th (Lent term); and two courses of the same duration for the D.T.H., beginning on January 7th and April 22nd (Summer term). The D.T.H. can only be taken by those

## PSYCHOLOGICAL MEDICINE.

who have obtained the D.T.M. Students who do not desire to take the diploma examinations held by the university at the end of each term are given a certificate if attendance has been satisfactory.

*Fees.*—(1) For the D.T.M. or D.T.H. course, 15 guineas. (2) For the diploma examinations, 5 guineas. An extra charge of one guinea is made for the use of a microscope if required.

The new laboratories of the school adjoin the university and the tropical ward of the Royal Infirmary. The dimensions of the building are 162 feet in maximum length by 84 feet in width. In addition to the basement, in which are accommodated the photographic department and large storage rooms, there are four floors. The ground floor has: (1) lecture theatre, with accommodation for about seventy students; (2) library; (3) a spacious museum with preparation room adjoining. The first floor has twelve rooms, in which are housed the Departments of Tropical Medicine and Entomology. The second floor has the main class laboratory, 69 feet by 58 feet, excellently lighted; and three other rooms, devoted to the Department of Parasitology. The third floor has a large research laboratory and two research rooms. On the roof is an insectarium, a mosquito-proof house, and other accommodation.

Since its foundation the school has dispatched to the tropics thirty-two scientific expeditions, many of the workers having been taken from among its students. The work done by the staff has been published in twenty-one special memoirs—in the *Annals of Tropical Medicine and Parasitology*, issued by the school, and in numerous articles in the scientific press.

The school has also two laboratories in the tropics: The Manóas Research Laboratory in Brazil; and the Sir Alfred Lewis Jones Tropical Laboratory in Sierra Leone, which was opened on January 10th, 1922, and is staffed by the school. Further information may be obtained from the Honorary Dean, School of Tropical Medicine, Pembroke Place, Liverpool.

## PSYCHOLOGICAL MEDICINE.

It cannot be impressed too strongly upon the medical student that a knowledge of mental disorder is just as essential as a knowledge of the other forms of disease which he will be called upon to treat in the routine of general practice. It must be understood that by the term "mental disorder" is not only meant those severe forms which are to be found in asylums, but the term also includes mental defects of all grades, nervous, difficult, and backward children; the mild and often unrecognized psychoses; and also the various types of psychoneurosis. Such disorders provide the general practitioner with a large proportion of his most difficult cases, and he will find a good knowledge of mental disorder invaluable in his work. Apart from general practice, the student who proposes to take up a career in the prison service or, still more importantly, the school medical service, will find a knowledge of psychological medicine an almost essential part of his equipment.

*Instruction.*

Though at the present time the instruction given to the student is far from adequate to supply the knowledge of mental disorder requisite for the needs of the general practitioner, the facilities for the study of psychological medicine in the general hospitals are now much greater than in former years. Thus many of the teaching hospitals have out-patient departments for the treatment of mental cases, and in some of these hospitals special lectures are given on psychopathology. These facilities need not be utilized by the student, however, and the compulsory part of the curriculum is confined to formal lectures and a few attendances at some mental hospital. Here the student is apt to see mainly the terminal states of mental disease, and he is also apt to gain the impression that mental disorder is necessarily related to segregation and custody. We would therefore impress upon him the importance of attending the out-patient department for mental disorders, where he will be able to observe the mild and early cases such as he will hereafter meet with in general practice.

A scheme is now in actual operation at the Middlesex Hospital in which a small number of mental cases are treated in the hospital as in-patients. This is an important move from the teaching point of view, because the student will gain true insight into the relation between mental disorder and medicine as a whole, and he will realize that it is a form of illness to be studied with other diseases and to be treated along similar lines.

In London post-graduate courses of instruction of a comprehensive kind are given at the Maudsley Hospital, and at Bethlem Hospital; and at the National Hospital, Queen Square, courses are arranged to meet the requirements for the diploma in psychological medicine in regard to nervous diseases. Courses in mental deficiency are arranged by the University of London. There are also post-graduate courses at the Universities of Glasgow, Cambridge, Edinburgh, Birmingham, Leeds, Manchester, Durham, and elsewhere.

*Diplomas.*

Those who are taking up psychiatry as a career will find it desirable to obtain a diploma in psychological medicine. Such a diploma is not at present compulsory for a permanent position on the staff of all mental hospitals, but it will probably become so in course of time, just as it is now essential to obtain the D.P.H. if a career in public health is contemplated. Psychiatry is one of the branches of medicine which candidates for the M.D. degree of the Universities of London and Edinburgh can take up, and, in addition, diplomas in psychological medicine, to which reference has been made, can be obtained from the Universities of Cambridge, London, Edinburgh, Durham, Leeds, Manchester, Dublin, and the National University of Ireland, and from the Conjoint Board in England. The Medico-Psychological Association of Great Britain and Ireland also grants certificates of proficiency after examination, and encourages the study of psychiatry by the offer of prizes for original and research work.

The requirements for a diploma differ to some extent in the various universities and colleges, but the following model scheme suggested by the Medico-Psychological Association, and already adopted by the Royal College of Physicians of Ireland, will give an indication of the scope of the examination for a diploma.

*Model Scheme for a Diploma in Psychological Medicine.*

1. The candidate must be already a registered medical practitioner.
2. The candidate may present himself for examination on the subjects detailed under Part I of the curriculum (see para. 4) immediately he has concluded the prescribed courses of instruction, or can produce such other evidence of diligent study of the subjects to be examined upon as may be demanded. Part I must be passed save by special permission at least three months prior to entering for examination on Part II of the curriculum.
3. The candidate may not present himself for examination on the subjects detailed under Part II of the curriculum (see 4) until he has been a registered medical practitioner for not less than two years. He must, subsequently to qualification, have been in the practice of an approved hospital for not less than two years, or have attended for six months at an approved mental or general, for clinical instruction in psychological medicine, and subsequently held a resident appointment at an approved mental institution or mental wards of a general hospital for not less than six months. In both cases he must produce a certificate from a recognized source that he can apply his theoretical knowledge, and has practical acquaintance with, and is well and adequately versed in, the current clinical methods of examination and treatment of nervous and mental disorders. In the case of mental deficiency the certificate should include a practical knowledge of the various intelligence tests and other methods of ascertaining the degree of mental defect. He must also produce evidence of having attended, subsequently to qualification, courses of lectures, demonstrations or other evidence of diligent study of the subjects upon which he presents himself for Part II of the examination, as may be demanded.
4. Curriculum: Part I—(a) Anatomy, histology and physiology of the nervous system, including the autonomic system, anatomy and physiology of the endocrine glands, systematic and experimental, cerebro-spinal fluid. (b) Psychology, systematics and pathology of the nervous system. (c) *post-mortem* anatomy, histology and laboratory technique. (d) Neurology and clinical neurology. (e) Psychiatry (including the psychoneuroses), clinical psychiatry and the medico-legal relationships of mental disorders and mental deficiency. In addition, the candidate for Part II will need to show special knowledge of any one subject, to be selected by him from the subjects comprising Part I or Part II, or may choose to be examined in any one of the following subjects: (d) Mental

deficiency and the mental disorders of childhood and adolescence, and the duties of school medical officers in relation thereto. (c) Bacteriology as applied to mental and nervous disease. (f) Psychopathology and psychotherapy. (g) The principles of diet, vitamins, and basal metabolism, and their application. (h) Eugenics and vital statistics. (i) Criminology and the jurisprudence of criminal responsibility.

5. The diploma, by request, may be endorsed that special knowledge has been shown in the subject selected.

6. It is suggested that any compulsory attendance at lectures or demonstrations and clinical courses should be limited to the subjects detailed for Part II, and that the course for Part I or Part II should not exceed eight weeks.

#### *Mental Hospital Appointments.*

Those who take up psychiatry as a career work as medical officers of public or private mental hospitals or similar institutions. Except in the larger institutions, such as those under the control of the London County Council, where a number of the medical officers are allowed to live out if married, the medical staff are resident officers, having board, lodging, etc., either in the hospital itself or a residence in the grounds. Junior assistant medical officers receive about £300 to £400 per annum, and senior assistant medical officers about £500 to £700, in both cases with board, lodging, laundry, etc., in addition; if married, the board, etc., is commuted for cash. As the mental hospitals are under local control the salaries vary much in different asylums. Medical superintendents, whose pay commonly ranges between £800 and £1,500 per annum, are provided with a house in the grounds of the hospital and draw various allowances.

Since the passing of the Asylum Officers' Superannuation Act of 1909, all officers and others of the established staff of a public (county or borough asylum) mental hospital may retire at the age of 55 on a pension varying from one-half to two-thirds of the value of their pay and emoluments, or one-fiftieth for every year served, paying as contribution 3 per cent. of the value of their appointments annually. This very favourable prospect may not appeal to junior practitioners joining the services, but will eventually prove to be a valuable asset.

#### *Prospects in the Public Service.*

Appointments to the public mental hospitals are made by the visiting committees, and in most cases only the junior posts are open to those who have not had previous experience in psychiatry. Since the public mental hospital service is a local and, except indirectly, not an imperial one, the promotion tends to be slow and uncertain, and the higher positions are not always advertised and thus thrown open to competition. For this and other reasons mental hospital work has undoubtedly not been in favour with newly qualified men in years past, but the general conditions of service have tended to show a progressive improvement and will in all probability continue to do so in the future.

Both the British Medical Association and the Medical Psychological Association are working separately and together to improve present conditions of service, and have, for example, already removed the "celibacy" objection to the service. The salaries have also been considerably increased, especially in the junior ranks, and contrast favourably with those which were paid before the war. During the next few years considerable progress may be anticipated in the conditions under which the insane are treated. The asylums will tend to develop an atmosphere approximating more closely to that of the general hospitals. If these most desirable changes are brought about, the mental hospital service will become more attractive, and will afford greater opportunities for the medical graduate who proposes to specialize in psychiatry.

It may be said that while routine, administrative, and clerical work bulk largely in mental hospital duties, as they do in other public medical services, there is ample material, time, and scope for purely medical work and research—difficult as the subject may be—in psychiatry as one of the branches of medicine open to young graduates. A change in the lunacy law, in which power was given to local authorities to make provision for the treatment of early and acute cases of mental disorder without certification, would do much to make psychiatric work more attractive

to medical men. If this alteration in the law were made, hospitals, either in the precincts or the grounds of the county or borough mental hospitals, or in adjacent towns, would be erected in the course of time, or wards in general hospitals might be utilized for the same purpose. Such clinics would render appointments in mental hospitals more attractive because the work would be entirely free from the custodial aspects of mental disorder, and attention could be given by the physician to purely medical problems without irksome legal restrictions.

#### MAUDSLEY HOSPITAL, DENMARK HILL.

A number of courses of instruction for the Diploma in Psychological Medicine have been given at the Maudsley Hospital, the details of the last course being as follows: The course consisted of two parts, Part I being conducted by the late Sir Frederick Mott, Dr. F. Golla, and Dr. Henry Devine. Sir Frederick Mott gave eight lectures on the anatomy of the nervous system, followed by practical instruction and demonstrations on methods of staining nervous tissue and preparing it for microscopical examination; microscopic sections were distributed, illustrating the principal diseases of the nervous system for mounting as a permanent collection. Dr. Golla gave eight lectures on the physiology of the nervous system, followed by practical instruction and demonstrations on physiological chemistry (including the chemistry of the nervous system, physico-chemical methods, blood, and urine analysis, and gastric contents analysis) and practical physiology (including the recording of reflexes and tremors in man and the action of drugs on the autonomic system). Similarly, Dr. Devine gave eight lectures on psychology, followed by practical instruction and demonstration of psycho-physical methods and memory and intelligence tests. In Part II of the course Sir Frederick Mott gave six lectures on the pathology of mental diseases, including brain syphilis, its symptomatology and treatment. Dr. Bernard Hart gave eight lectures on the psychoneuroses. Sir Frederick Mott and Dr. F. Golla gave twelve clinical demonstrations in neurology; the first six demonstrations were given by Dr. Golla at the Hospital for Paralysis and Epilepsy, Maida Vale. Dr. F. C. Shrubbsall gave eight lectures on the practical aspect of mental deficiency. The late Dr. W. C. Sullivan, medical superintendent of Broadmoor Asylum, gave four lectures on crime and insanity. Dr. E. Mapother gave a course of lectures on the differential diagnosis and treatment of mental disorders. The fee for the whole course (Part I and Part II) was 15 guineas, or for either part separately 10 guineas; for one single series of lectures in Part I the fee was 4 guineas, and in Part II 2 guineas. Inquiries as to lectures, etc., should be addressed to the director of the pathological laboratory, Maudsley Hospital, Denmark Hill, S.E.5.

#### BETHLEM ROYAL HOSPITAL.

A course will be held at Bethlem Royal Hospital, commencing on September 13th, of lectures and practical instruction for the Diploma in Psychological Medicine. It is proposed in future to give two courses each year—an autumn session of intensive character, commencing in September, and completed in early December, and a spring session, commencing in the middle of January and completed in the middle of April. Each course consists of two parts: Part A includes lectures and demonstrations on the anatomy, histology, and physiology of the nervous system, with lectures on psychology and demonstrations in experimental psychology. Part B comprises lectures and clinical demonstrations in psychology, including lectures and demonstrations in the morbid anatomy of the nervous system, a series of lectures, with clinical demonstrations, on different branches of psychological medicine, and lectures, with clinical demonstrations, on mental deficiency. Entrants for the course who pay a composition fee of 15 guineas may, if due notice is given, attend either Part A or Part B of one course and postpone the other part until the next session. An entrant who wishes to attend one part only pays a fee of 10 guineas. An entrant who takes the complete course can attend the general clinical practice of the hospital on payment of 5 guineas for six months, or 10 guineas for one year, but an entrant

who does not take either part of the course and desires to attend the clinical practice of the hospital must pay a fee of 5 guineas for each three months of attendance. To enable post-graduates to obtain special experience in this branch of medicine clinical assistants are appointed from time to time. Further particulars may be obtained from the physician-superintendent, Bethlehem Royal Hospital, S.E.1.

#### NATIONAL HOSPITAL, QUEEN SQUARE.

A post-graduate course, which fulfilled the requirements of the regulations for the Diploma in Psychological Medicine in regard to instruction in nervous diseases, was held at the National Hospital, Queen Square, Bloomsbury, W.C.1, in May and June, and other courses will be duly announced. Lectures on the pathology of the nervous system and various clinical lectures were delivered and demonstrations were given, and out-patient clinics were held at the hospital on the afternoons of Mondays, Tuesdays, Thursdays, and Fridays. An inclusive fee of 9 guineas was charged for the whole course, but any part of the course could be taken separately at a special fee. A special arrangement was made for those unable to attend the whole course, and for details applications should be made to the dean of the medical school. Similar courses are held three times a year—namely, February, May, and October. Special arrangements are made throughout the year for work in the laboratory. Fees are payable to the secretary of the hospital on entering for the course.

#### THE TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES.

Courses in modern psychotherapeutic methods for the treatment of "nervous breakdowns" can be obtained at the Tavistock Clinic, 51, Tavistock Square, W.C.1; and those who want to specialize in this treatment can obtain clinical assistantships. The methods of the clinic comprise a full and sympathetic investigation of the patient's history, sometimes dream analysis, suggestion and mental exercises where necessary, and re-education of the patient to fit him to deal with his difficulties. The director of the clinic is Dr. H. Crichton Miller, the deputy director Dr. J. R. Rees, and there is a children's department under the directorship of Dr. W. A. Potts.

## THE PUBLIC HEALTH MEDICAL SERVICES.

THE central authority to secure the preparation, effective carrying out, and co-ordination of measures conducive to the health of the people, and to promote research work and a proper training of persons for health services, is the Ministry of Health.

For the purpose of local public health administration the whole of England and Wales is divided into counties, county boroughs, boroughs, and urban and rural sanitary districts. The administrative County of London, exclusive of the City of London, is divided into twenty-eight metropolitan boroughs.

The public health medical services for Great Britain embrace between three and four thousand medical men and women who give whole-time services, and in addition a large number who give part-time services. The medical officers appointed for these services may be either medical officers of the Ministry of Health for England or of the corresponding Boards of Health for Scotland and Wales; or—and these form the large majority—they may be medical officers appointed by the many local public health authorities. These latter appointments include: medical officers of health, tuberculosis medical officers, maternity and child welfare medical officers, venereal diseases medical officers, and school medical officers—for the education authorities must now be regarded as health authorities in respect to the health interests of the school child. By the larger public health authorities assistant medical officers are also appointed, and these posts often serve as stepping-stones to the higher offices as vacancies, which are required to be advertised, occur.

#### THE MEDICAL SERVICES OF THE CENTRAL AUTHORITY.

The Medical Department of the Ministry of Health for England has been organized under the control of a chief medical officer. It contains six sections, with a senior medical officer at the head of each, and altogether fifty medical officers. The sections deal with: general health and epidemiology, maternity and child welfare, tuberculosis and venereal diseases, the supervision of food supplies, and sanitary administration in relation to infectious diseases. There is, in addition, a section concerned with insurance practitioners. Appointments to these posts are not as a rule open to public competition; they are made by the Minister of Health. They are civil service appointments, and come under the civil service superannuation scheme. Medical officers are also employed by the corresponding Boards of Health for Scotland and Wales.

#### MEDICAL OFFICERS OF HEALTH.

The duties of the medical officer of health are to inform himself upon all influences affecting, or threatening to affect, injuriously the public health within his district; to advise his sanitary authority upon all matters relating to health; and to perform all the duties imposed upon him by statutes, by-laws, and regulations. He must prepare and submit to his local authority special and annual reports; give immediate information to the Ministry of Health of any serious outbreak of disease; and, subject to the instruction of his sanitary authority, he shall direct or superintend the work of sanitary inspection.

By the Sanitary Officers Order, 1926, no person is qualified to be hereafter appointed or reappointed as a medical officer of health of any district or combination of districts unless, in addition to the qualifications prescribed by any statute, he is also either registered in the *Medical Register* as the holder of a Diploma in Public Health, Sanitary Science, or State Medicine, or has had not less than three years' previous experience of the duties of a medical officer of health.

The Public Health (Officers) Act, 1921, which was promoted by the British Medical Association, provides that a whole-time medical officer of health of a county borough or urban and rural district in England and Wales, a part of whose salary is contributed by the Exchequer, shall not be appointed for a limited period, and shall not be removed from his office except by or with the consent of the Minister of Health. A similar security of tenure also applies to the medical officers of health of county councils and of London boroughs.

Under the Sanitary Officers Order, 1926, a medical officer of health who does not devote his whole time to the duties of his office, but a portion of whose salary is obtained from Exchequer grant, may be appointed without limit of time; in which case he cannot be removed from office without the consent of the Minister. If he is appointed for a specified term, say one year, he continues to hold office from year to year unless the Minister consents to his removal. Where the electing body pays the whole of the salary of a medical officer of health he may be dismissed from office without reference to the Minister of Health.

A considerable number of authorities have now adopted the Local Government and Other Officers Superannuation Act, 1922. Under this Act if an officer is incapacitated by ill health after ten years of service, or if he has reached 65 years of age, he is entitled to superannuation on the following scale: after ten years' service, 10/60 of the average salary which he received during the last five years of employment; after eleven years, 11/60, and so on up to a maximum of 40/60 after forty years or more of service. The Act, however, remains permissive, and it fails to make due allowance, in computing service for purposes of superannuation, for the more advanced age, as compared with other officers, at which the medical officer of health can enter the public service. In these two respects the position reached falls short of that for which the British Medical Association has been working for many years.

In Scotland the position is different in some respects. The central authority is the Board of Health, with a staff of medical officers for insurance work. Under the Public

Health (Scotland) Act, 1897, no one can be appointed as medical officer of health for any area unless he possesses the Diploma in Public Health. No medical officer can be removed from office except with the sanction of the Board of Health. A "proper" salary must be paid, and the local authority may not bring about the resignation of the officer by indirect means, such as reducing the salary or attaching conditions to the appointment. The Act says nothing about superannuation or the age of retirement.

#### SCHOOL MEDICAL OFFICERS.

School medical officers are appointed by local education authorities. Primarily their duty is to detect among the children attending the public elementary schools any physical or mental defect which may retard education, and to inform their parents of its existence. Most approved schemes of medical inspection include systems of work which facilitate the task of parents in obtaining for their children the necessary treatment, check the results of this treatment, and keep each defective child under skilled observation both at home and at school until it has passed altogether out of the education authorities' hands. Indeed, it is now the practice for the education authorities themselves to provide for certain ameliorative work, notably the prescription of glasses where necessary, the removal of adenoids and tonsils, and treatment in connexion with certain diseases of the skin. The general object of all schemes alike is to make the inspection imposed by law of benefit, not merely to the individual child, but to the community at large, by preventing conditions which lead to the existence of a large proportion of inefficient citizens among the adult population. The work is so related to that of medical officers of health that, as a rule, the senior school medical officer fills both appointments, his work, when necessary, being supplemented by that of whole- or part-time assistants. A Diploma in Public Health is almost always required of those entering the school medical service.

In Scotland, while the statutory authority for the work of the school medical service is different, the effect is broadly the same.

#### TUBERCULOSIS MEDICAL OFFICERS.

A tuberculosis medical officer is a whole-time officer with special training and experience in tuberculosis work, and of a suitable age and attainments to command general confidence. In England and Wales such officers are appointed by county councils and county borough councils, and their duties are to carry out the work of diagnosis of tuberculous patients, to advise as to treatment, and to take charge of the work of tuberculosis dispensaries and sanatoriums where these are in operation. The work under tuberculosis schemes is co-ordinated with the general public health work of local authorities, and so the medical officer of health is often appointed as the chief tuberculosis officer when a special tuberculosis officer is on the staff of the local authority. The arrangements in Scotland are very similar.

#### MATERNITY AND CHILD WELFARE MEDICAL OFFICERS.

Any public health local authority, however small, may make arrangements for maternity and child welfare work within its area, although very generally the smaller local authorities are embraced in county council schemes. For the schemes of the smaller local authorities the services of a part-time medical officer are obtained when the medical officer of health does not himself undertake the duties; but for the larger schemes special whole-time appointments are made. The maternity and child welfare medical officer is responsible for the work at the centres provided and for directing the home visitations; and the whole of his work is closely co-ordinated with the other branches of public health work directed by the medical officer of health.

Much of this work was commenced in different parts of the country by voluntary organizations; some of it still remains in their hands, and is only loosely linked up with the public health local authority; but the tendency is for the whole of it to be undertaken by the local authorities. A large number of women medical officers have been appointed to these posts during recent years.

#### VENEREAL DISEASES.

Schemes for the diagnosis and treatment of venereal diseases are provided and administered by county councils and county borough councils. In some cases the officer is on the staff of the medical officer of health, and in others he is an independent official. Special knowledge and practical experience in the treatment of venereal diseases are essential. The officer appointed for either whole-time or part-time services works at one or more clinics, and also gives instructions and assistance in the treatment of venereal diseases to general practitioners, who are allowed to attend the clinics.

#### REMUNERATION FOR SERVICES.

If we are to have skilled and highly trained medical officials of public authorities it is of course essential that they should receive salaries commensurate with their attainments and bearing a reasonable relation to the amount of time and money that have been expended in fitting them for their important and responsible duties. At present, no standard scale of remuneration for whole-time services has been adopted by public health authorities, although the British Medical Association and the Society of Medical Officers of Health—and more recently the Ministry of Health—have endeavoured to bring this about.

The present-day rate of remuneration for the whole-time services of a medical officer of health may be said to vary from £700 to £2,000 per annum, according to the dimensions of the population served and the officer's experience; while the maximum salaries of the principal officers of the allied medical services are somewhat lower. The whole-time medical officer working under a senior medical officer in most cases receives a commencing salary of £600 per annum, with bonus in some cases.

There are good prospects of the general adoption in the near future of a recognized scale of remuneration, which will provide a minimum commencing salary of £800 for a chief medical officer of health, of £750 for a chief medical officer of the allied medical services, and of £600 for all medical officers working under senior medical officers—when the officers are not resident in an institution provided by the local public health authority and when they give their whole-time services.

#### THE REGULATIONS FOR THE DIPLOMA IN PUBLIC HEALTH.

##### *The Examination.*

By the Regulations or Rules of the General Medical Council, which came into force on January 1st, 1924, the examination for the D.P.H. is divided into two parts, and no candidate is allowed to sit for the final part of the examination until two years have elapsed since a registrable qualification was obtained. The object of this two years' interval is "to provide opportunity for candidates for the Diploma or Degree in Sanitary Science, Public Health, or State Medicine, to pass from the state of pupilage to that of responsible practitioners, to give mature consideration to the obligations and duties involved in the work of the Public Health Service, and to acquire direct experience of medical work in a responsible capacity either in practice or in hospital or laboratory appointments."

The examination is both written and oral, and must include practical examination in bacteriology and chemistry (Part I) and in infectious diseases, food inspection, inspection of premises, dwellings, factories, workshops, schools, etc. (Part II).

Any candidate from the Dominions who possesses qualifications registrable in this country is eligible as a candidate for the examination, given that he has received such course of training as that defined by the Regulations, at an institution which is approved by the General Medical Council.

##### *The Curriculum for the Diploma in Public Health.*

The curriculum must extend over a period of twelve months; and a candidate is admitted to either part of the examination after he has completed the prescribed course of instruction in the subjects thereof. At least five months



must be given to practical laboratory instruction in an institution approved by the licensing body, in the subjects:

(1) Bacteriology and parasitology, including entomology, especially in relation to diseases of man and to those diseases transmissible to man from the lower animals (180 hours of such instruction is required).

(2) Chemistry and physics in relation to public health (90 hours of such instruction is required).

(3) Meteorology and climatology (10 hours of such instruction is required).

Therefore at least 280 hours of practical instruction, extending over a period of at least five months, is demanded before a candidate is eligible for Part I of the examination.

For a candidate to become eligible for Part II of the examination he must first receive instruction in:

(1) Principles of public health and sanitation (for approximately 30 hours).

(2) Epidemiology and vital statistics (approximately 20 hours).

(3) Sanitary law and administration, including public medical services (approximately 20 hours).

(4) Sanitary construction and planning (approximately 10 hours).

(5) Every candidate must also have made thirty attendances, of not less than two hours in each week of a three-months period, at the clinical practice of a recognized hospital for infectious diseases; and he must have received instruction in methods of administration.

(6) Every candidate must produce evidence that he has, during a period of not less than six months, been engaged in acquiring a practical knowledge of the duties, routine and special, of public health administration under the supervision of a medical officer of health, who shall certify that the candidate has received, from this officer or other competent medical officer, during not less than three hours on each of sixty working days, practical instruction in these duties, and those relating to:

(a) Maternity and child welfare service;

(b) Health service for children of school age;

(c) Venereal diseases service;

(d) Tuberculosis service;

(e) Industrial hygiene;

(f) Inspection and control of food, including meat and milk.

Certificates of having received the prescribed instruction in public health administration must be given by a medical officer of health who devotes his whole time to public health work; or by the medical officer of health of a sanitary area having a population of not less than 50,000; or in Ireland by the medical superintendent officer of health of a county or county borough having a population of not less than 50,000.

#### *Training Centres for the Diploma in Public Health.*

Most of the universities of Great Britain and Ireland are training centres for the Diploma in Public Health. The University of London provides an M.D. in State Medicine to its own M.B., B.S. graduates.

In London at the present time there are fewer training centres for the D.P.H. than formerly. Candidates who desire to train in London can do so at University College and the Royal Institute of Public Health; and also at the Medical Schools of St. George's and Middlesex Hospitals, when a sufficient number of candidates apply for the training.

## THE PUBLIC SERVICES.

### THE NAVY, ARMY, AIR FORCE, AND INDIAN MEDICAL SERVICES.

THE Medical Departments of the Royal Navy, of the Army, and the Indian Government normally employed between them before the war some 3,000 medical men, and vacancies in the ranks of these services were filled by offering commissions for competition once or more each year. In the abnormal circumstances arising out of the war and the period following it the usual regulations for recruiting the permanent medical staff of these services were, for the most part, in abeyance, and the newly formed Royal Air Force Medical Service also has depended largely upon short-service commissions for the maintenance of its medical personnel.

Meanwhile, recruitment for the Royal Naval Medical Service and for the Royal Army Medical Corps was seriously prejudiced by disadvantageous terms and conditions of service generally, and in particular by hardships inflicted under new regulations upon certain groups of senior officers. Continued representations were made by the

British Medical Association, but without avail, and it is only lately that its efforts on behalf of these services have begun to bear fruit in the manner indicated below. The often repeated refusal to remedy grievances imposed upon the Association the distasteful duty of issuing warnings to newly qualified practitioners; but now that the Government has changed its attitude the Association will use every endeavour to assist the Admiralty and the War Office in obtaining the candidates they need. In securing the improved terms which it has pressed upon the authorities the Association has gained a very notable success.

#### *Improved Terms and Conditions.*

As a result of the recommendations of the Interdepartmental Committee on the Medical Branches of the Fighting Services, before whom the British Medical Association gave evidence early this year, substantial increases in the rates of pay and retiring gratuities, and improved conditions of retirement for officers of the Royal Army Medical Corps, were embodied in a Royal Warrant issued by the War Office on June 29th last.<sup>1</sup> Simultaneously the Air Ministry announced improvements in the conditions of service and emoluments of medical officers of the Royal Air Force. The Admiralty also issued an Admiralty Fleet Order prescribing improved terms and conditions of service for medical officers R.N., and the India Office followed with revised terms of special recruitment for officers of the Indian Medical Service.

The changes, generally, take effect from July 1st, 1926, or (in the case of naval officers) "as soon afterwards as the necessary arrangements can be made." They were foreshadowed by the Prime Minister in his statement in the House of Commons on June 15th that the Government had considered the report of the committee appointed last autumn to consider questions relating to pay and other matters affecting recruitment of medical officers in the medical branches of the fighting services, and had decided to give effect forthwith to the committee's recommendations.

The British Medical Association, after examination of the revised terms, is satisfied with the new rates of pay and conditions of service for the R.N.M.S., the R.A.M.C., and the R.A.F.M.S.;<sup>2</sup> and in fulfilment of its desire to assist in recruiting these services we publish below the full particulars of each which have been supplied at our request by the Admiralty, the War Office, and the Air Ministry.

In regard to R.A.M.C. officers, whose particular difficulties have engaged the special attention of the Association during recent years, the increases in the rates of pay and retiring gratuities are substantial, as will be seen if the new rates are compared with the old rates promulgated by Royal Warrant after the war. But the new rates, like the old, are subject to the 5½ per cent. reduction owing to the decrease in the cost of living. The increases in the pay of R.A.M.C. officers do not begin until after six years' commissioned service, but from that time onwards, especially in the rank of major, very much has been done to make the service more attractive. One of the chief grievances was the fact that a major, after three years in that rank, or fifteen years' commissioned service, got no increase of pay until he was promoted lieutenant-colonel, a promotion which might possibly not take place until he had as much as twenty-four years of service. The new Warrant gives him a steady increase of pay, not only after fifteen years' service, but also after eighteen or twenty years' service. The ranks senior to that of major also participate in very substantial concessions. The retiring gratuities of a major after three and six years' service are now perhaps so great as to induce officers to retire before they become eligible for a pension, but in that case it is hoped that they will only make room for a large influx of junior officers to carry on the duties that are now being performed by those more senior in the service. The British Medical Association held out strongly for the removal of a serious grievance in regard to the retiring pension of an officer after twenty years' service, and it pointed out that it was possible in the future for a major to have to retire on a less pension than £1 a day,

<sup>1</sup> BRITISH MEDICAL JOURNAL, July 3rd, 1926, p. 41.

<sup>2</sup> Report of Annual Representative Meeting, Nottingham, 1926, BRITISH MEDICAL JOURNAL SUPPLEMENT, July 31st, 1926, p. 83.

which had been granted to him from time immemorial. The new Warrant relieves him of anxiety in this respect, and explicitly states that his pension cannot be reduced below that amount. Another important point should be noted—namely, the concession by which a newly qualified medical man can hold a hospital appointment for one year before entering the service, counting it as a year of service towards promotion and retirement. Previously this concession was only given after the officer had entered the service. This was one of the points that were strongly brought forward in the evidence submitted by the Association to the interdepartmental committee, and should give special satisfaction to members of the medical profession. It will be seen that both the Royal Navy and Royal Air Force Medical Services have also benefited considerably by the recommendations of the committee.

### ROYAL NAVAL MEDICAL SERVICE.

AN Admiralty Fleet Order, issued in July, 1926, announced changes in the terms and conditions of service for naval medical officers. The improvements include an increase in the establishment of Surgeon Captains from 16 to 20, and also in the number and remuneration of specialist appointments open to medical officers. These appointments comprise specialist posts in medicine, surgery, radiology, and hygiene, and the allowance payable to holders of them has been raised from 2s. 6d. to 5s. a day. As soon as possible courses of instruction in clinical medicine, surgery, and allied subjects are to be provided once in every four years for all officers below the rank of Surgeon Captain; courses for those selected to hold specialist appointments will be arranged in connexion with civil hospitals in London or other teaching centres. Medical officers entering the Navy on or after July 1st, 1926, will be eligible, at the discretion of the Admiralty, to have their seniority antedated up to a limit of one year if they have held previously a resident appointment in a civil hospital for not less than this period. Such an appointment must be one recognized by the Admiralty for this purpose, and must not have terminated more than six months before entry into the Service.

Examinations for direct entry into the Medical Service are at present in abeyance. Entries are made by means of the short-service scheme, and the regulations provide for the transfer to the permanent service of desirable short-service officers. A short-service surgeon lieutenant, after six months' service, may be considered for transfer to the permanent service, and would be permitted to count his seniority from the date of entry for short service for purposes of promotion, increment of full pay, and for retired pay.

#### General Conditions.

A candidate must be registered, must be under 30 years of age, and must be recommended by the dean of his school. Unmarried candidates will be preferred. A candidate will be interviewed by the Medical Director-General, R.N., and will undergo a physical examination. If considered eligible by the Medical Director-General his name will be submitted to the Board of Admiralty and he may be appointed "surgeon lieutenant for short service." A candidate must engage for three years, with the option of continuing for a further period of twelve months if his services are still required. The rate of pay is 25s. a day, or £456 5s. a year, with the same allowances as are payable to permanent officers of their rank. Lodging money at the rate of £80 a year is usually allowed when employed on shore, without quarters in the United Kingdom, and £56 10s. a year in lieu of rations when not victualled in kind. In cases of temporary employment on shore not exceeding thirty days, the lodging and provision allowances will be at the rate of 8s. and 3s. 6d. a day respectively. On joining an allowance of £53 for uniform will be made. When the previous rates of pay were fixed it was decided that 20 per cent. should be considered as due to the then high cost of living. The rates set out above represent a reduction of approximately 51 per cent. owing to the decrease in the cost of living. The whole 20 per cent. is to be regarded as variable and subject to change on July 1st, 1927, and triennially thereafter either upwards or downwards according as the cost of living rises or falls.

An officer engaged for three years is entitled to receive two months' notice of his services being no longer required. A gratuity of £3 6s. 8d. will be payable to officers for each completed month of service on completion of their period of service, or to any who are invalided for causes not within their own control before the completion of the prescribed period.

Surgeon Lieutenants R.N. for short service intending to apply

for transfer to the permanent list must have been under 28 years of age at the time of their entry into the Royal Naval Medical Service.

Full particulars and a form of declaration can be obtained from the Medical Director-General, Admiralty, 68, Victoria Street, London, S.W.1.

### ARMY MEDICAL SERVICE.

DURING the last two years, and in fact since the war, candidates have practically ceased to apply for commissions in the Royal Army Medical Corps. While the cause of this must to a great extent be attributed to the war, a still more potent cause latterly has been an accumulation of grievances of a character which led the British Medical Association, in last year's Educational Number of the JOURNAL, to refrain from recommending the army as a career for newly qualified medical men. This attitude we are now able to abandon whole-heartedly owing to the issue of a Royal Warrant, on July 29th last, removing practically all the grievances from which the R.A.M.C. officers were suffering.

Competitive examinations for regular commission, which have been in abeyance for some time, will again be held half-yearly, in January and July. These examinations in medicine and surgery are entirely of a clinical and practical character, partly written and partly oral. The regulations for admission, giving full details, can be obtained from the Under Secretary of State (A.M.D.1), War Office, Whitehall, London, S.W.1, and should be carefully studied. A personal interview with a representative of the Director-General, Army Medical Services, is readily obtainable. The rates of pay and allowances are good; the opportunities of post-graduate study are generous; and the work is varied, responsible, and interesting. The gratuities after certain periods of service enable an officer, should he so desire, to leave the service with a capital sum large enough to go a long way towards re-establishing himself in civil life, and, further, the knowledge of the world and the comradeship of his fellow officers that he has gained in the army will be of no small value to him.

New entrants are commissioned in the rank of lieutenant, and the first six months of service are spent on probation, during which time they undergo, in addition to their military training at the Royal Army Medical Corps depot at Aldershot, a probationary course at the Royal Army Medical College in London in hygiene, pathology, tropical medicine, military surgery, recruiting, the prevention and treatment of venereal disease, and the elements of army administration. At the end of this course, and after qualifying at the necessary examinations, their commissions are confirmed and they take their places in seniority according to the total marks obtained at all examinations up to that date. Officers' Training Corps service with possession of certificate "A" or "B" (medical) carry a definite value in marks in this total.

An entrant who is holding or about to hold at the time of the entrance examination a resident house appointment at an approved civil hospital may be seconded while holding such an appointment up to a maximum period of twelve months. A candidate who has held such an appointment within six months of entry may be granted an antedate up to twelve months in respect of the period the appointment was held. This secondment and antedate counts in all respects as commissioned service, except that pay will not be issued for that period.

After a total period of one year's service at home, the young officer goes abroad, probably to India, for his first tour of foreign service. Here he gains his first practical experience of tropical disease and tropical hygiene, and possibly his first experience of active service on the frontiers of India. His tour abroad lasts five years, with probably six months' leave home during that time. On returning home the R.A.M.C. officer has the opportunity to decide whether he will remain in the corps or accept the gratuity of £1,000 after seven years' service and try his fortune in civil life. If he elects to remain, he will, between his eighth and twelfth year of service, undergo a course of post-graduate study at the Royal Army Medical College and the London Hospital; of five months' duration, followed by a course of study of a special subject selected by himself provided he has shown special aptitude in the post-graduate course or during his previous service. During this period of study he remains on full pay and the fees of the courses are paid by the State. When qualified in his special subject the officer becomes entitled to specialist pay at 5s. a day when holding a specialist appointment. After this post-graduate course the officer probably proceeds abroad again and promotion to major rapidly ensues, and from that time onward the officer receives regular successive increases of pay and is eligible for additional and charge pay as well. The directorates of hygiene and pathology and the appointment of two serving officers as consultants in medicine and surgery have been instituted, and have proved a marked success. All these appointments are of the rank of colonel or major-general, and were devised to permit specially

TABLE A.—Pay and Allowances.

Rank.	Pay per Diem.*	Rations.†	Servant.	Married.			Unmarried.			Approximate Daily Total.		Approximate Yearly Total.	
				Lodging.	Fuel and Light (average).	Furniture Allowance.	Lodging.	Fuel and Light (average).		Married.	Unmarried.	Married.	Unmarried.
Lieutenant ... ..	£ s. d. 1 0 10	s. d. 1 7	s. d. 2 0	s. d. 3 6	s. d. 1 7	s. d. 2 0	s. d. 2 3	s. d. 1 3		£ s. d. 1 11 6	£ s. d. 1 8 0	£ 575	£ 511
Captain ... ..	1 5 6	1 7	2 0	4 6	3 3	2 0	3 0	1 9		1 18 10	1 13 10	709	617
Captain after 8 years' commissioned service	1 8 4	1 7	2 0	4 6	3 3	2 0	3 0	1 9		2 1 8	1 16 8	760	669
Captain after 10 years' commissioned service	1 10 8	1 7	2 0	4 6	3 3	2 0	3 0	1 9		2 4 0	1 19 0	835	712
Major ... ..	1 15 6	1 7	2 0	4 6	3 3	2 0	4 0	2 6		2 8 10	2 5 7	891	832
Major after 15 years' commissioned service	2 0 2	1 7	2 0	4 6	3 3	3 0	4 0	2 6		2 13 6	2 10 3	976	917
Major after 18 years' commissioned service	2 2 6	1 7	2 0	4 6	3 3	3 0	4 0	2 6		2 15 10	2 12 7	1019	960
Major after 20 years' commissioned service	2 7 4	1 7	2 0	4 6	3 3	2 0	4 0	2 6		3 0 8	2 17 5	1107	1048
Lieutenant-Colonel ... ..	2 14 4	1 7	2 0	4 6	3 3	2 0	4 6	2 6		3 7 8	3 4 11	1235	1185
Lieutenant-Colonel after 3 years' commissioned service as such	2 19 0	1 7	2 0	4 6	3 3	2 0	4 6	2 6		3 12 4	3 9 7	1320	1270
Colonel ... ..	3 6 2	1 7	2 0	5 6	4 5	2 0	5 6	2 11		4 1 9	3 18 2	1492	1427
Major-General ... ..	4 9 10	1 7	4 0	11 0	5 7	2 0	11 0	4 0		5 10 5	5 10 5	2081	2015

\* Pay Warrant rates as amended by Army Order 195/26, less 5½ per cent. from July 1st, 1924 (vide Army Orders 93 and 204 of 1924). The Pay Warrant rates are subject to revision to an extent not exceeding 20 per cent., according to variation in the cost of living. The next revision takes place from July 1st, 1927.

† Rates of Allowances vary from time to time, and issues are subject to conditions laid down in the Allowance Regulations.

selected officers to rise through all ranks to that of major-general on the strength of their professional or purely scientific work. This side of the work of Royal Army Medical Corps officers is carefully watched by these directors and consultants, and not only ensures the maintenance of a high standard but enables the good professional work of individuals to be brought to notice.

Under these conditions the possibilities for good workers are very great in the Royal Army Medical Corps. There is scope for original research in tropical disease, in preventive medicine, and in bacteriology, as well as in the large clinical field open to the specialist in medicine, surgery, or gynaecology, in venereal disease, and in ophthalmology. Child welfare is also undertaken systematically by officers of the Royal Army Medical Corps. At the same time, instruction in administration is continuous. The Royal Army Medical Corps is essentially organized for war, and one of the lessons of the great war was that trained administrators must exist to enable the fullest benefit to be obtained from professional talent. Many appointments carrying administrative responsibility are open to those officers who display capacity for this duty. All officers must be prepared to undertake command and to have a knowledge of army administration, especially in war. Equally important is the technical training of the non-commissioned officers and men of the corps in such "trades" as trained nurse, nursing orderly, masseur, radiographer, operating room assistant, laboratory assistant, hospital cook, dispenser, etc. This training is carried out by the officers and nursing sisters, and opens a large field for those who have ability in lecturing and teaching as well as the power of influencing men.

#### Promotion.

Promotion takes place automatically to captain after three and a half years' and to major after twelve years' service, provided the officer is qualified and recommended for promotion. Promotion to the higher ranks is by selection from those senior in the rank below, but special promotion by brevet or otherwise is open to officers of the Royal Army Medical Corps.

#### Pay and Allowances.

The rates of pay and allowances are given in the accompanying Table A; they compare favourably with those that obtained before the late war.

#### Additional Pay and Charge Pay for Officers of the R.A.M.C.

An officer not above the rank of lieutenant-colonel while acting as a specialist receives up to 5s. a day according to subject or group of subjects. An officer in charge of a hospital receives charge pay, the daily amounts being: in excess of 50 beds, 2s. 6d.; in excess of 150 beds, 5s.; in excess of 300 beds, 7s. 6d.; in excess

of 500 beds, 10s. An officer in charge of a medical or surgical division of a general hospital with not less than 300 beds receives half these rates. Senior medical officer Royal Arsenal, not exceeding 10s. daily. Officer in command of the depot R.A.M.C., 5s. daily. The senior officer of the Army Medical Services with an army in the field, a rate to be fixed by the Army Council according to the magnitude of the charge. The officer, if under the substantive rank of colonel, holding the appointment of senior medical officer in a command abroad, or of assistant director of medical services, if the number of soldiers is 1,500 or upwards, 5s. daily. Adjutant R.A.M.C. depot, 5s. daily. Adjutant R.A.M.C. (T.A.), 2s. 6d. Further, an officer, graded as a specialist, and appointed to the charge of a medical or surgical division of a general hospital, may be allowed to retain his additional pay and to draw the rate of charge pay laid down for the officer in charge of a medical or surgical division of a general hospital, provided that the total of additional and charge pay so drawn does not exceed the rate of charge pay drawn by the officer in charge of the hospital. With this exception charge pay and additional pay as specialist will not be issuable concurrently.

#### Retirement and Retired Pay.

Retired pay will consist of two parts: (a) a service element based on the officer's total service; (b) a rank element for the rank from which the officer retires. An officer with less than twenty complete years' service will not be eligible for retired pay. The scale, subject to the reduction of 5½ per cent. referred to below, is, for the service element, £15 a year for each completed year of service as a medical officer. For the rank element the scale is as follows:

Rank from which Retired.	After Completing 1 Year's Service in the Rank.	After Completing each Additional Year's Service.	Maximum Rank.
Major ... ..	£ 12	£ 12	£ 1.0
Lieutenant-Colonel ... ..	153	30	240
Colonel ... ..	290	50	390
Major-General ... ..	440	50	540
Lieutenant-General ... ..	590	50	690

The retired pay of an officer retiring with less than one complete year's service in the rank from which he retires will be assessed as though he had retired from the rank below.

The maximum rates of retired pay are as follows:

Captain and Subaltern ... ..	£300
Major ... ..	1,350
Lieutenant-Colonel ... ..	1,650
Colonel ... ..	1,950
Major-General ... ..	11,000
Lieutenant-General ... ..	11,200

The above rates are those laid down in the Pay Warrant. They have been reduced by 5½ per cent. as from July 1st, 1924. Officers with seven and less than twenty years' service as



## Royal Air Force Medical Service: Rates of Pay and Allowances.

Rank.	Pay.*			Cash Allowances in lieu of Quarters, Rations, and Servant, if not available in kind (per annum).†		Pay plus Allowances (per annum).	
	Daily Rates.		Per Annum (Current Rate).	Married.	Unmarried.	Married.	Unmarried.
	Standard.	Current.					
Flying Officer ... ..	£ s. d. 1 4 0	£ s. d. 1 2 8	£ s. d. 413 13 4	£ s. d. 158 3 4	£ s. d. 142 13 2	£ s. d. 571 16 8	£ s. d. 556 12 6
Flight Lieutenant... ..	1 6 0	1 4 6	447 2 6	205 16 8	161 4 2	653 19 2	608 6 8
Ditto, after 2 years as such ... ..	1 8 0	1 6 6	483 12 6	206 16 8	161 4 2	660 9 2	641 15 8
Ditto, after 4 years as such ... ..	1 10 0	1 8 4	517 1 8	206 16 8	161 4 2	723 13 4	673 5 10
Squadron Leader ... ..	1 14 0	1 12 2	587 0 10	205 16 8	173 7 6	793 17 6	762 8 4
Ditto, after 2 years as such ... ..	1 18 0	1 15 10	653 19 2	206 16 8	173 7 6	862 15 10	827 6 8
Ditto, after 4 years as such ... ..	2 0 0	1 17 10	690 9 2	206 16 8	173 7 6	897 5 10	853 15 8
Ditto, after 6 years as such ... ..	2 4 0	2 1 6	757 7 6	206 16 8	173 7 6	964 4 2	930 15 0
Ditto, after 8 years as such ... ..	2 8 0	2 5 4	827 6 8	205 15 8	173 7 6	1034 3 4	1000 14 2
Ditto, after 10 years as such ... ..	2 10 0	2 7 4	863 16 8	205 16 8	173 7 6	1010 13 4	1037 4 2
Wing Commander ... ..	2 15 0	2 12 0	949 0 0	205 16 8	184 0 5	1155 16 8	1133 0 5
Ditto, after 2 years as such ... ..	2 17 0	2 13 10	992 9 2	206 16 8	184 0 5	1189 5 10	1166 9 7
Ditto, after 4 years as such ... ..	3 3 0	2 19 6	1085 17 6	206 15 8	184 0 5	1292 14 2	1259 17 11
Group Captain ... ..	3 10 0	3 6 2	1207 10 10	282 17 6	255 10 0	1490 8 4	1463 0 10
Air Commodore ... ..	4 0 0	3 15 8	1380 18 4	337 12 6	310 5 0	1718 10 10	1691 3 4
Air Vice-Marshal ... ..	5 0 0	4 14 6	1724 12 6	404 10 10	375 12 11	2129 3 4	2100 5 5

\* Except for periods of service under Indian administration. For such periods officers receive pay and allowances at rates and subject to conditions authorized from time to time by the Government of India.

† These allowances are issued provision in kind is available for and light, rations and personal attendance are not available in kind. Normally, allowances are payable only to married officers who have reached the age of 31.

The rates and general scheme of allowances are liable to revision as circumstances may require.

which the appointment is held. If the applicant already holds the appointment when the commission is granted, the commission may be antedated to the date on which the appointment was first held, provided (a) that the appointment is held for not less than one year, (b) that the period of secondment and the period of antedate shall not together exceed one year, and (c) that the antedate shall not be made until the officer has joined for actual R.A.F. duty.

(2) An officer granted a short-service commission on or after July 1st, 1926, who has previously held a resident appointment in a recognized civil hospital for a period not less than one year may, provided the commission is granted not more than six months after the termination of the hospital appointment, be granted an antedate of the commission equal to the period of the appointment up to a maximum of one year.

(3) The term "resident appointment" as used at (1) and (2) may be held to include a period of not more than six months in a non-resident appointment immediately preceding or following a resident appointment.

(4) If necessary, the ordinary maximum age for appointment to a commission may be increased by a period equal to any antedate granted under (1) and (2).

(5) An officer who has been seconded or whose commission has been antedated as above will be required to serve for a minimum period of three years on the active list from the date of joining for actual R.A.F. duty.

(6) Pay and allowances for periods of secondment or antedate will not be allowable, and such periods will not be reckoned in the assessment of gratuities payable to short-service officers. Subject to (5), however, such periods will be reckoned as commissioned service in the Royal Air Force for purposes of seniority and promotion, and, in the case of permanent officers, of retirement, retired pay, and retirement gratuities.

Officers who have been selected for permanent commissions may be permitted to attend for a period not exceeding nine months a post-graduate course in general medicine and surgery, tropical and preventive medicine, and other special subjects. Such permission may be granted at any time when the exigencies of the service permit during the first sixteen years of service, and when attending these courses officers will receive full pay and allowances.

New entrants into the R.A.F.M.S. will be commissioned as Flying Officers (Medical), and will be eligible for promotion to the rank of Flight Lieutenant (Medical) after two years' service. Officers selected for permanent commissions will normally be promoted to the rank of Squadron Leader after ten years' total service. Accelerated promotion may be granted in a limited number of cases to officers who show exceptional ability after the completion of eight years' service. Promotion within establishment to the rank of Wing Commander will be by selection at any period after sixteen years' total service, and to that of Group Captain by selection at any period after twenty-two years' service.

There will be no competitive examination on entry; candidates must be under 28 years of age, be British subjects, the sons of British subjects, and of pure European descent, be nominated by the dean of a recognized medical school or teaching hospital, and will be interviewed personally by the Director of Medical Services, Royal Air Force, before acceptance. Each candidate must produce:

1. Birth certificate.
2. Medical registration certificate.
3. A declaration containing the following information: (a) Age, and place of birth. (b) That he is a British subject, the son of British subjects, and of pure European descent. (c) That he is ready to engage for general service at home or abroad as required. (d) The qualifications he is possessed of and what medical or other appointments he has held (if any). (e) That he is willing to fly as a passenger whenever called upon to do so.

Each candidate will be required, before acceptance, to pass a medical examination to ensure that he labours under no constitutional or mental disease or diseases or weakness, nor any imperfection or disability which may interfere with the efficient discharge of the duties of a medical officer in any climate, in peace or war.

On appointment entrants will undergo an initial course of eight weeks, during which they will be given instruction in the special medical aspects of aviation; the organization and administration of the Royal Air Force; and the general and special duties to be performed by officers in the Medical Branch. In order to avoid the necessity for further examinations the position of entrants in order of seniority in the Air Force List will be determined at the end of the initial course by a system of marking and reports on the actual work done during their instruction.

## Uniform and Equipment.

Medical officers are required to provide themselves with the uniform, service dress, and mess dress of their rank, and with the distinguishing badges of the Royal Air Force Medical Branch. The provision of full dress is entirely optional at present. An allowance of £50 towards the cost of uniform is made on joining to candidates who have not had previous commissioned service in H.M. Forces.

## Pay and Allowances.

The emoluments of medical officers of the Royal Air Force are given in outline below. The standard rates of pay and retired pay were drawn up on the basis of the high cost of living in 1919, and 20 per cent. of each of the standard rates is detachable and subject to alteration, either upwards or downwards, as the cost of living rises or falls. Under this



provision the current rates now in force represent a reduction of approximately 5½ per cent. on the standard rates. The next revision will take effect from July 1st, 1927, and subsequent revisions will be made at intervals of three years.

#### Retired Pay.

The minimum period of service qualifying for retirement on retired pay is twenty years. Standard rates of retired pay are as follows:

*Air Officers.*—Air Vice-Marshal, £790 to £1,010 per annum; Air Commodore, £650 to £950 per annum.

#### Officers Below Air Rank.

Age on Retirement.	Yearly Rate of Retired Pay.	Years of Service.	Addition for each Extra Year of Service.*	Deduction for each Deficient Year of Service.*
	£		£	£
40	300	17	15	15
41	337	17	15	15
42	375	18	15	15
43	412	18	15	15
44	450	19	15	15
45	487	19	15	15
46	525	20	15	15
47	562	20	15	15
48	600	21	15	15
49	637	21	15	15
50	675	22	15	15
51	697	22	22	15
52	720	23	22	15
53	742	23	22	15
54	765	24	22	15
55	790	24	22	15

\* Limited to five years.

The maximum standard rates of retired pay and the compulsory retiring ages for the several ranks are:

Rank.	Yearly Rate of Retired Pay.	Compulsory Retiring Age.
	£	
Air Vice-Marshal ... ..	1,010	60
Air Commodore ... ..	950	57
Group Captain ... ..	900	55
Wing Commander ... ..	600	51
Squadron Leader ... ..	500	48

#### Gratuities.

A permanent officer allowed to retire before having qualified for retired pay may be granted a gratuity provided he has not less than ten years' commissioned service—namely, £1,500 if he has ten but not less than fifteen years' commissioned service; £2,500 after fifteen or more than fifteen years'.

Short-service officers will be eligible on passing to the Reserve for gratuities on the following scale: £100 for each of the first two complete years of service, £150 for each of the third and fourth complete years, and £200 for the fifth complete year; that is, for three years' service on the active list £350; for five years' £700.

These gratuities will not be payable to officers granted permanent commissions, but their service on a short-service commission will count towards retired pay.

#### INDIAN MEDICAL SERVICE.

As is known from the ordinary sources of information, British rule in India is going through a long period of crisis. The future of all the British services in India is uncertain, and that of the Indian Medical Service not least so. Medical and sanitary subjects were among those specifically mentioned as suitable for transfer to provincial Governments in the Montagu-Chelmsford report, which, it may be recalled, was issued over seven years ago. This

transfer was effected by the Government of India Act (1919). The Lee Commission, which visited India to inquire into the prospects and remuneration of the European services, made certain recommendations with regard to the Indian Medical Service in its report issued in May, 1924. They have been considered both by the Government of India and by the Secretary of State for India, but it appears abundantly clear that they will not be accepted by either.

In his speech opening the new session of the Indian Legislature at Simla in August, 1925, the then Viceroy, Lord Reading, said that the Government was now taking steps to give effect to the principle laid down by the Joint Select Committee of Parliament that a Minister should have the fullest opportunity of managing that field of government which was entrusted to his care. After stating that recruitment by the Secretary of State for the Indian Educational, Agricultural, and Veterinary services had already ceased, he said that the problem presented by the Indian Medical Service was more difficult, but there, too, the principle of establishing provincial medical services had been accepted, subject to certain conditions, which were still under consideration. This statement leaves many essential points unexplained, and it is to be presumed that publication of the official proposals in their entirety will not be much longer delayed. When issued they will be examined by the Naval and Military Committee of the British Medical Association, and the decision of the Council of the Association on the advice it gives will be published in due course.

Since the open competitive examination held in July, 1915, for admission to the Indian Medical Service no similar examination has been held, but such appointments as were required to meet the indispensable needs of the Service have been made by nomination by the Secretary of State for India. In view of the present abnormal conditions it is announced that this method of recruitment will continue to be in force until further notice. To assist him in making appointments, the Secretary of State has appointed a Selection Committee, who will summon and interview such applicants as may appear to be *prima facie* suitable, and make recommendations for appointment. A similar Committee has been appointed in India to investigate applications and to forward recommendations to the Secretary of State.

#### Special Recruitment.

In a circular dated July, 1926, the Secretary of State announced his intention of appointing a certain small number of medical men of European descent in the near future to permanent commissions in the Indian Medical Service, on the special terms set out below. Candidates must be well qualified medical practitioners over 21 and under 32 years of age. Appointment will be by nomination on the recommendation of a Selection Committee, before whom candidates will have to appear in person. The special terms are as follows:

(a) On completing either six or twelve years' active service in India, an officer so appointed may claim to retire on a gratuity of £1,000 or £2,500 respectively, provided that he has given notice of his intention twelve months in advance. If he does not do so, he will continue in the service on the ordinary pensionable footing. If an officer applies and is permitted to retire at any time between the completion of his sixth and twelfth years of service, or between the completion of his twelfth and seventeenth years of service, he will be eligible for a gratuity of £1,000 only, or £2,500 only respectively. In addition to actual service only privilege leave (that is, leave on full pay for sixty days in each year) will be allowed to count towards the period of six or twelve years required for the gratuity, and not ordinary furlough or sick leave.

(b) Officers so appointed will be eligible for the passage concessions set forth in the accompanying Provisional Regulations, except that no concession passage will be granted before the completion of five years' service, and then only if the officer has not given notice to retire in accordance with the preceding sub-paragraph. Otherwise he will be provided with a free passage for himself and his family to the United Kingdom or to any port in the British Empire to which he may wish to proceed, on the completion of six years' service. Similarly, on the completion of eleven years' service an officer will become eligible for a second concession passage if he has not given notice as above, or he will receive free passages to the United Kingdom or any port in the British Empire if he retires on completion of twelve years' service. Passages granted on retirement must be claimed within three months of the date of retirement. An officer invalided home on sick

leave during his first twelve years of service will be granted a free passage, but any such passages granted to him will count against any concession passage or passages to which he may be entitled. But if he retires otherwise than on account of ill-health before becoming entitled to benefits under the passage rules, he will be required to refund the cost of the passages granted for sick leave.

In view of the reorganization of the Indian Medical Service which is now under consideration, only military employment can be guaranteed to officers entering the I.M.S. at the present time. They will, however, be eligible for the benefits of any conditions regarding civil employment which may be made applicable to officers in future appointed to the I.M.S. as the result of decisions taken on the Lee Commission Report.

In all other respects the ordinary rules and conditions, as set forth in Regulations for the Appointment of Candidates to Commissions in the I.M.S., will apply. Officers retiring on a gratuity after twelve years' service will be liable, equally with those retiring on pension, to recall to military duty in case of emergency up to 55 years of age. They would only be recalled to duty in the event of an emergency which exhausts the capacity of the reserves permanently maintained in civil employ in India.

The officers appointed will sail for India in the autumn of this year. It is hoped to arrange for them to attend a course of instruction before doing so.

Application forms and any further particulars desired may be obtained from the Secretary, Military Department, India Office, Whitehall, S.W.1. Envelopes should be marked "Medical Recruitment."

### PRISON MEDICAL SERVICE.

CANDIDATES for the medical staff are approved by the Secretary of State for the Home Office on the recommendation of the Prison Commissioners. The Chairman of the Board is Mr. M. L. Waller, C.B. Application for employment may be made to the Board on a special form, which can be obtained from the Secretary, Prison Commission, Home Office, London, S.W.1.

In the smaller prisons the medical officer is usually a local practitioner, but in the larger the members of the medical staff are required to devote their whole time to the service. In the case of those required to give their whole time to the service the appointment in the first instance is to the post of medical officer Class II, and from the seniors of this rank the medical officers Class I are selected as vacancies occur.

In February, 1923, the then Home Secretary appointed a committee to report on what changes, if any, should be made in the remuneration or other conditions of service of officers at the prisons and Borstal institutions in England and Scotland and at Broadmoor Criminal Lunatic Asylum. Evidence was given on behalf of the British Medical Association by the Medical Secretary, who pointed out that the salary offered to Class II medical officers—namely, a basic salary of £300 rising by annual increments—was, even when the allowances and bonus were reckoned in, less than the £500 a year the Association looked upon as the minimum commencing salary which should be given to a whole-time medical man holding such a responsible office. The committee issued its report in November, 1923. It recommended that officers of both classes should receive an additional £50 a year, and from a communication received from the Prison Commission we understand that the pay of the whole-time prison medical staff is: Medical officer Class II, £350, rising by annual increments of £20 to £600; medical officer Class I, £650, rising by annual increments of £25 to £800. Unfurnished quarters are provided, or an allowance in lieu is made. The civil service bonus is paid on the salary. There are 15 medical officers Class II, 12 medical officers Class I, and 23 part-time medical officers.

The number of vacancies is never large, and promotion is slow.

### MEDICAL PRACTICE IN BRITISH DOMINIONS AND FOREIGN COUNTRIES.

MEDICAL Acts have now been passed in almost all places forming part of the British Empire beyond the seas, and registers of duly qualified practitioners are consequently maintained. To these registers medical men educated in

the United Kingdom are always admissible merely on payment of a registration fee, providing they produce evidence that they are of good repute and are either registered or eligible for registration in the United Kingdom, as the local requirement may be. The only exception to this statement that need be made relates to the Dominion of Canada. Each of its provinces acts in medical matters as an independent State. The result has been that reciprocity of practice has in the past been established between this country and all the provinces of Canada except British Columbia, where certain obstacles still remain to be overcome. It has, however, to be recorded that reciprocity with Saskatchewan has recently been brought to an end by that province, and the arrangement with New Brunswick is also likely to be ended shortly owing to their action. We would advise any medical man proposing to practise in Canada first to communicate with the Provincial Registrar, stating what degrees or diplomas he holds, and asking for information as to the precise steps he must take in order to obtain admission to the Provincial Register.

Italy and Japan are the only two foreign States with which complete medical reciprocity has been established, though there are other countries which grant a limited recognition to British qualifications. Generally speaking, in Continental countries (with the exception of the kingdom of Italy) a British medical man desiring to exercise his profession therein must pass practically the same examinations as those imposed on natives of the country. The same observation applies to all foreign States in the South American continent. Each of the United States of North America has its own laws and regulations governing medical practice; and all of them require the holder of a British qualification to submit to an examination. The States of New York and Indiana require an applicant to be naturalized.

A pamphlet showing the conditions under which medical and dental practitioners legally qualified in their own country may practise abroad can be obtained from the office of the General Medical Council, 44, Hallam Street, Portland Place, London, W.1, price 2s. 6d., or 2s. 9d. post free in the United Kingdom. Practitioners who think of going abroad to practise will find therein much useful information, including the name of the official in each country to whom requests for further particulars should be addressed. The last edition was published in January, 1921, and a new one is now in course of preparation.

### MEDICAL APPOINTMENTS IN THE COLONIES AND MANDATED TERRITORIES.

MEDICAL appointments in the self-governing Dominions and the territories under their control, and in Southern Rhodesia, are made by the Governments concerned, and are not in general open to candidates in the United Kingdom. Appointments to the medical services of the colonies and other territories under the administrative direction of the Colonial Office are, apart from those in Ceylon, Mauritius, Jamaica, Barbados, the Bahamas, Bermuda, and Malta, which are filled locally, made by the Secretary of State for the Colonies in this country. Such appointments are to a given colony or colonies, for there is no unified service directly administered from the Colonial Office. It follows that conditions of service and superannuation are in the main determined by the economic resources and general public health policy of the individual colony and its local Government, and vary almost as widely as do conditions of climate. Moreover, the extent of the control exercised by the Colonial Office varies according to the constitutional status of the particular colony, and the detailed information available centrally is not always either up to date or complete. The intending candidate, therefore, should make comprehensive inquiries as to local conditions, and particularly as to facilities for private practice where this is included in the terms of appointment. He will also do well to supplement official information by reference to the central office of the British Medical Association, where reports obtained from time to time from the local Branches are available. This is the more necessary because facilities

for transfer from the Medical Service of one colony to that of another are as yet practically non-existent, except in connexion with a few specialist and senior appointments; this sets strict limits upon the opportunities for promotion.

To those physically and mentally suited for the climatic and social conditions peculiar to the various colonies the Colonial Medical Services should, and in some cases do, offer a field of professional activity rich in interest and in opportunity for pioneer work. The scope for research is wide, and facilities for its prosecution are beginning, however tardily, to be provided. An increasing number of specialist posts is becoming available in the larger services, and the general policy is to fill them by promotion of suitably qualified junior officers. The potentialities of sanitation are beginning to be appreciated by local administrations, however vaguely. But, when all is said, it cannot be contended that conditions in the Colonial Medical Services are generally satisfactory. In some instances, indeed, they can only be characterized as intolerable. Hence the necessity for very full inquiry before accepting appointment. It is true that the post-war economic stringency to which the delay of essential reform was usually attributed is giving place to more favourable conditions. There are also signs of increasing parliamentary and departmental interest in the development of a sound health policy. The long-delayed appointment of a medical adviser to the Secretary of State for the Colonies should do much to promote the creation of conditions which will permit the medical services to give full effect to such a policy. Meanwhile, those services are too often hampered by conditions which make efficiency unattainable. At the worst they are in some colonies starved of material resources in the name of economy, understaffed, and underpaid, with inadequate facilities for study leave, and at the mercy of an administration in which the nominal head of the service has no effective voice. Hence the urgent necessity for making careful and sufficient inquiry as to the position in any given service before appointment is accepted.

The medical services recruited in this country by the Secretary of State for the Colonies include those of West Africa, East Africa, Malaya, Hong-Kong, the West Indies, Fiji and the Western Pacific Colonies, and Palestine, besides a number of small services offering individually one or two appointments at an inadequate remuneration and with no prospects of promotion. The services in the West Indies, and in Fiji and some of the smaller colonies, have not yet conceded the £500 minimum commencing salary recommended as adequate by the British Medical Association, and whilst facilities for remunerative private practice, general conditions of service, and a relatively low cost of living must in some instances be taken into consideration, these compensations are by no means universal. The services in the Leeward and Windward Islands are in a condition which requires special notice by way of warning.

In general, candidates for these services must be between the ages of 23 and 35, although these limits are not for the moment absolute. A candidate over 35 years of age, if accepted for appointment, may be required to serve on a temporary and non-pensionable footing; regular appointments are, subject to a varying period of probation, for the most part classed as permanent and pensionable. There is no entrance examination, but practitioners selected for appointment must obtain a certificate of physical fitness from one of the Medical Advisers of the Colonial Office. Post-graduate experience in hospital appointments is desirable, and in some cases special allowances are conceded to the holders of a D.P.H. or other additional qualifications. Successful candidates for the West African Medical Staff, the East African Medical Service, and the Malayan Services are, in general, required to undergo an approved course of instruction in tropical medicine. The cost of this, subject to a minimum period of service being performed, is met by the Colonial administrations.

The bulk of the appointments made by the Secretary of State in this country are to the West African Medical Staff, the East African Medical Service, and the Medical Services in Malaya. These are the strongest individual services numerically, and therefore offer more frequent

vacancies, better prospects of promotion, and better chances of specialist appointments than the smaller services.

#### WEST AFRICAN MEDICAL STAFF.

This is amongst the best organized and best paid of the Colonial Services, though at present it appears to be understaffed. The territories covered by the service include Nigeria, the Gold Coast, Sierra Leone, and the Gambia. Climatic conditions vary considerably over this area, but they are in general admittedly trying. This fact is at present recognized by the provision of more frequent leave periods than are usual elsewhere. The growing opinion that conditions are less adverse than they have been in the past is marked by the proposal to extend the tours of service. The rate of pay for a medical officer is £660 on appointment, rising by annual increments to £950. There are, in addition, certain seniority and duty allowances, and there are a number of specialist and administrative posts carrying relatively high salaries. The pension after 18 years' service is £570. Gratuities of £1,000 or £1,250 may be drawn on retirement after 9 or 12 years' service. Members of the West African Medical Staff are not permitted to take their wives or young children to the West Coast until they have acquired experience of the conditions of life and have obtained the sanction of the Governor. In the case of young children this is only exceptionally given.

#### EAST AFRICAN MEDICAL SERVICE.

This service includes Kenya, Uganda, Tanganyika Territory, Nyasaland, Zanzibar, and British Somaliland. In East Africa there is very wide scope for clinical work both medical and surgical, as well as for research and for preventive medicine and sanitation. The Service as a whole is fully alive to its responsibilities and opportunities; individual initiative is encouraged, and the career of medical officer depends, not on seniority alone, but to a large extent on his own capability. As a rule it is preferable that medical officers on first appointment should not be married, although in all but a few stations conditions allow a medical officer's wife to accompany him. The Service includes a medical and a sanitary division.

#### Scale of Salaries.

Post.	Old Salary.	Revised Salary
Director of Medical and Sanitary Services (Kenya)	£1200	£1500
Director of Medical and Sanitary Services (Uganda)	£1200	£1500
Director of Medical and Sanitary Services (Tanganyika)	£1200	£1500
Director of Medical and Sanitary Services (Zanzibar)	£1000	£1400
Director of Medical and Sanitary Services (Nyasaland)	£1000	£1200
Deputy Directors (Kenya, Uganda, Tanganyika)	£1000	£1200
Deputy Director of Sanitary Service (Zanzibar) (formerly Senior Sanitation Officer)	£800-£900 + £100	£1200
Directors of Laboratory (Kenya, Uganda, Tanganyika)	£900-£1000	£1200
Resident Surgical Officer (Uganda) ...	£900-£1000	£1150
Sleeping Sickness Officer (Uganda) ...	£900-£1000	£1150
Medical Superintendent (Mulago, Uganda)	£900-£1000	£1150
Principal Medical Officer (Somaliland) ...	£900-£1000	£1000-£950-£1100
Senior Medical Officers ...		
Senior Sanitation Officers ...		
Resident Surgical Officer (Zanzibar) ...		
Senior Bacteriologists (Kenya and Uganda)	£300-£25-£900	£1000-£50-£1100
Medical Entomologist (Nyasaland) ...		
Sleeping Sickness Officer (Tanganyika) ...		
Venerer Diseases Officer (Tanganyika) ...		
Medical Officers ...	£500 by £25 to £900, with efficiency bars at £700 and £800.	£500 by £30 to £840, and by £40 to £920 with efficiency bar at £840.
Sanitation Officers ...		

Note.—Medical officers actually serving in Kenya, Uganda, and Tanganyika at date of introduction of scheme have right to proceed by further increments of £10 to £1000, subject to an efficiency bar at £920.

The former is open to those holding ordinary medical and surgical qualifications, post-graduate experience in a hospital appointment being an advantage; posts in the sanitary division will as far as possible be filled by those holding a Diploma in Public Health. Climatic conditions vary considerably. In the greater part of Kenya they approximate more to the temperate than the tropical zone; but there are some areas in the East African Dependencies where conditions more closely resemble those in West Africa.

Whilst a candidate can only apply for appointment to the East African Medical Service in general and is liable to transfer between the several dependencies, he may express his preference for any particular colony and his wishes will, we are informed, be met as far as possible. As a rule transfer only takes place on promotion or at an officer's own request. The gratuities available on retirement after 9 or 12 years' service are similar to those for the West African Medical Staff. Pensions are calculated at the rate of 1/60th of retiring salary, plus 15 per cent. of the initial salary of the grade, for every year of service.

It will be recalled that the Association has for some time past been urging the Secretary of State to improve the salaries of this and other branches of the Colonial Medical Service. We are now pleased to be able to publish in full the scale of salaries now in force (see page 462), those for Kenya, Uganda, and Zanzibar dating from January 1st, 1926, and those for Nyasaland and Tanganyika from April 1st, 1926. All local allowances have been abolished.

#### MEDICAL SERVICES IN MALAYA.

These services cover the Straits Settlements, the Federated Malay States, and some of the unfederated States. Unfortunately, the information in our possession shows a position so far from satisfactory that it is impossible for the moment to recommend the services to the consideration of the profession. Proposals for drastic reform are, however, under consideration, and further information as to the services will be published if and when the adoption of an adequate scheme can be announced. Meanwhile, it is satisfactory to be able to state that a letter has been received by the Association from the Colonial Office stating that it has been decided to raise the commencing salary of medical officers to 500 dollars a month.

#### SUDAN MEDICAL SERVICE.

This service is a department of the Sudan Government, and includes a number of Syrian medical officers and a number of assistant medical officers who are natives of the Sudan. The British medical inspectors are from the outset senior to all other medical officers. The Sudan is entering on a period of rapid development and expansion, to which the medical services of the country must necessarily make an important contribution. The service offers ample opportunities for specialization and for research, as well as for general medical and surgical work. The ordinary duties of a medical inspector may be summarized as follows:

- (1) To act as a consulting surgeon and obstetrician in all cases submitted to him by his medical staff. This necessitates considerable surgical experience.
- (2) To initiate, organize, and supervise all medical and sanitary work in his province. This includes extensive antimalarial work and often the supervision of large irrigated areas.
- (3) To carry out the medical supervision of schools and the examination of candidates for Government service and pension.
- (4) To train assistant medical officers and native sanitary overseers, and to advise and direct medical officers in the carrying out of their duties.
- (5) Probably, at a later date, to take part in teaching at the School of Medicine at Khartoum.

The climate varies, but is not in general unfavourable, though hot. In the northern desert the nights are cool, even in the summer; in the central there is a rainy season of about four months, during which large areas become malarious. The southern area is more tropical in character, and mosquito-protected houses, nets, and protective quinine are essential during the greater part of the year, though

the winter months are cool and pleasant. It is not considered desirable for medical inspectors to be accompanied by their wives until they have gained some knowledge of the language and the general conditions of life.

The commencing pay of a medical inspector is £E.720.\* On confirmation of appointment and success in the requisite examinations in Arabic the salary is increased by periodic increments to £E.1,200. There are four senior administrative posts carrying higher salaries. There is a compulsory contribution of 5 per cent. of pay towards pension, which, for a medical inspector, amounts, after twenty years' service, to £E.500 a year.

#### PALESTINE.

A few of the senior posts in the Health Department of the Government of Palestine are recruited in this country. The scales of pay vary between £E.550-25-750 for an assistant principal medical officer and £E.1,100-50-1,400 for the director.

#### OFFICIAL SOURCES OF INFORMATION.

All inquiries in connexion with medical appointments in the self-governing Dominions and their dependencies should be addressed to the High Commissioners or Agents-General for the Dominions. Intending applicants are also recommended to consult the Colonial Office List, which may be seen at the Colonial Office Library or at the central office of the British Medical Association if not otherwise available, and the Professional Handbook (price 6d.) issued by the Overseas Settlement Office, 3 and 4, Clement's Inn, Strand, London, W.C.2.

Recent developments seem to suggest the possibility of a few appointments becoming available under the Egyptian Government. Questions about any such appointments should be addressed to the Director-General, Public Health Department, Cairo.

Inquiries as to vacancies and conditions in the Sudan Medical Service should be addressed in the first instance to Dr. T. D. Acland, 19, Bryanston Square, W.1.

All inquiries in connexion with Colonial medical appointments made by the Secretary of State for the Colonies, or such vacancies as may occur in Iraq, Palestine, or Aden, should be addressed to the Assistant Private Secretary (Appointments), Colonial Office, Downing Street, London, S.W.1.

There remain a number of medical appointments made by mining companies and other commercial undertakings in various parts of the tropics. Much caution should be exercised in accepting such posts, and the form of contract should be subjected to very careful scrutiny. Advice in this connexion should always be sought from the Medical Secretary's Department of the British Medical Association, British Medical Association House, Tavistock Square, W.C.1.

## MEDICAL RADIOLOGY AND ELECTROLOGY.

### THE CAMBRIDGE DIPLOMA.

A DIPLOMA in Medical Radiology and Electrology is granted by the University of Cambridge. The primary object is to provide adequate training in a branch of medical work which is becoming increasingly important and difficult, and which is outside the ordinary medical curriculum. The diploma is open only to those who hold a medical qualification, and includes a course of lectures and practical work in Physics (Part I) and in Radiology and Electrology (Part II). Attendance at the necessary courses of lectures in both subjects, and in addition six months' clinical experience in an adequately equipped hospital recognized by the Diploma Committee, is essential. The whole course of study takes six months, the lectures, practical work, and hospital attendance running concurrently.

The courses carried out by the University of Cambridge are at present arranged to begin early in January. Three months are spent at Cambridge doing the lectures and practical work in Part I, and attending the systematic lectures in Part II and the practice of Addenbrooke's Hospital, where there is a fully equipped and up-to-date

\* £E. = £1 0s. 6d. sterling. This figure represents exchange value, not purchasing power.

x-ray and electrological department. The remaining three months can be completed at any hospital recognized by the Diploma Committee for this purpose, a list of which can be obtained, but special arrangements are made for students to continue their studies in London, where demonstrations at various hospitals are arranged, in order to give a wide experience.

In addition, an independent six months' course is arranged by the British Institute of Radiology. This course is held entirely in London, but is recognized by the University as qualifying for the examination; it begins early in October.

Further particulars as to the Cambridge courses can be obtained from F. Shillington Seales, M.A., M.D., Medical Schools, Cambridge, and of the London courses from Stanley Melville, M.D., at the Offices of the British Institute of Radiology, 32, Welbeck Street, London, W.1.

### MEDICAL MISSIONARIES.

MISSIONARY societies are in constant need of qualified men and women to fill vacancies as they occur in their hospitals, and also to enable them to take advantage of fresh openings. To those suitably endowed the mission field offers unique opportunities for interesting work, and the development of native medical schools, as training institutions in connexion with some of the larger mission hospitals, affords excellent scope for valuable work to medical men and women who are qualified to teach. It is not usually expected that medical missionaries should take a position such as would otherwise be occupied by an ordained clergyman or minister, but it is essential that they should be prepared to exert their influence in any hospital to which they may be sent so that a Christian atmosphere may be maintained and the work of evangelization be carried on through the ministry of healing.

As for scientific and other qualifications for the work, medical missionaries, in addition to being physically capable of sustaining a life which makes a great demand upon their strength, should be thoroughly well trained physicians and surgeons. It is very desirable that they should have held a resident appointment at a general hospital, and have a good knowledge of practical surgery, gynaecology, tropical medicine, and the treatment of eye diseases. Useful information can be obtained from the secretaries of the various Missionary Societies, or from Thomas Cochrane, M.B., C.M., Honorary Secretary, British Advisory Board on Medical Missions, 1, Tudor Street, London, E.C.4.

## Dental Surgery.

UNTIL the passing of the Dentists Act, 1921, the profession of dentistry in this country was regulated by enactments very closely similar to those relating to the practice of medicine—that is to say, there was no direct prohibition of the act of practice; and the Dentists Act of 1878 gave the same degree of protection to legally qualified and registered dentists as was accorded to registered medical practitioners—namely, the reservation of the use of certain titles. This Act also provided (1) that no person should take or use the name or title of "dentist" (either alone or in combination with any other word or words) or of "dental practitioner," or any other name, title, or description expressed in words or by letters implying that he was specially qualified to practise dentistry, unless he was registered, under a penalty of £20; and (2) that an unregistered person could not recover any fee or charge in respect of any dental operation, attendance, or advice. But, in the case of the practice of medicine by unqualified and unregistered persons, certain deterrent factors came into play—such as the inability to give a death certificate—and these did not operate to the same extent in the case of dentistry; hence, unqualified practice was far more prevalent in dentistry than in medicine, and increased after a decision of the House of Lords placing a narrow interpretation upon the words "specially qualified to

practise dentistry," by defining the word "qualified" as not referring to competence but to the possession of a recognized diploma.

### THE DENTISTS ACT, 1921.

This unsatisfactory position has now been remedied by the passing into law of the Dentists Act, 1921; its provisions are based largely on the recommendations of a departmental committee appointed in 1917 by the Privy Council "to investigate the extent and gravity of the evils connected with the practice of dentistry and dental surgery by persons not qualified under the Dentists Act." Since November 30th, 1922, no person has been permitted by law to practise or hold himself out, whether directly or by implication, as practising or as being prepared to practise dentistry unless he is on the *Dentists Register* provided for by the Dentists Act, 1878. The practice of dentistry is defined as including "the performance of any such operation and the giving of any such treatment, advice, or attendance, as is usually performed or given by dentists," and the performing of any operation or the giving of any "treatment, advice, or attendance on or to any person as preparatory to or for the purpose of or in connexion with the fitting, insertion, or fixing of artificial teeth." The maximum penalty incurred by an unregistered dentist is £100 for each offence. There are, however, certain important exceptions to the requirement of registration. A registered medical practitioner may practise dentistry without being on the *Dentists Register*, and a registered pharmaceutical chemist or chemist and druggist may extract a tooth where the case is urgent and where no doctor or dentist is available, but the operation must be performed without any kind of anæsthetic; further, any person may carry out minor dental work in a public dental service under the personal supervision of a registered dentist provided it is in accordance with conditions approved by the Minister of Health after consultation with the Dental Board.

Certain persons other than those qualified by examination were entitled to be registered under the new Act. They had to be of good personal character and 23 years of age before July 28th, 1921 (the commencement of the Act), and to have been engaged for five of the seven years preceding that date as their principal means of livelihood in the practice of dentistry in the British Isles, or have been admitted to membership of the Incorporated Dental Society not less than one year before the commencement of the Act. The passing of "the prescribed examination in dentistry" within two years of the commencement of the Act is considered as equivalent to practising for five years, and a registered pharmaceutical chemist or a chemist and druggist who immediately before the commencement of the Act had a substantial practice as a dentist, including all dental operations, was treated as though he had practised for five years. A dental mechanic who for the five years had been carrying on his work as such and has secured the entry of his name on the list of candidates for examination can be registered provided within ten years of the commencement of the Act he passes the prescribed examination.

Dentistry may be carried on by a corporate body provided the majority of the directors and all the operating staff are registered dentists, and that no business other than dentistry or only some business ancillary to dentistry is carried on by the company. Companies carrying on the business of dentistry at the present time are permitted to continue to do so with certain restrictions, provided that the names of the directors have been entered in a list kept by the Registrar for that purpose. Every director or manager of a company convicted of an offence under the Act will be held to be guilty of the offence unless he proves that the offence was committed without his knowledge, and the court may, in addition to a fine, order that the name of any director convicted shall be removed from the list of directors aforesaid.

A subsequent Act passed in 1923 made provision for the registration of persons who were 21 in November, 1921, who had served during the late war in His Majesty's Forces, and were on that date engaged as their principal means of livelihood in the practice of dentistry in the British Isles. The Board, however, has no power now to consider any further applications under this Act.

### THE DENTAL BOARD.

The Dental Board of the United Kingdom was established for the purpose of administering the new Act. The first members of the Board, who held office for three years, were all appointed, but their term has now come to an end. The Board consists of: the chairman, appointed by the Privy Council; three members appointed by the General Medical Council, who must be members of the Branch Councils for England, Ireland, and Scotland respectively; three persons who are neither medical practitioners nor dentists, appointed to represent England, Scotland, and



Ireland; and six elected members, one of whom represents the qualified dentists in England and Wales, one those in Scotland, and one those in Northern Ireland, and two all the dentists registered under the Acts of 1921 and 1923.

On the establishment of the Dental Board in 1921 certain powers and duties of the General Medical Council were transferred to it, including the duty of erasing from the *Dentists Register* any entry which has been incorrectly or fraudulently made. An inquiry into the case of a person alleged to be liable to have his name erased from the *Register* is made by the Board, which reports its findings to the General Medical Council, the order directing the erasure being made, as at present, by the Council. A name erased from the *Register* can only be restored by the Council upon a report made by the Board. An appeal to the High Court may be made by any person aggrieved either by refusal of the Board to register his name or by the removal of his name from the *Register*. The administrative expenses of the Board are defrayed from the registration fees and annual retention fees, but any surplus may be allocated to purposes connected with dental education and research or to any public purpose connected with dentistry. The office of the Dental Board is at 44, Hallam Street, London, W.1.

The *Dentists Register* for 1926 contains the names of 14,199 persons, of whom less than a half are registered with qualifications, 8,095 names having been registered under the *Dentists Acts*, 1921 and 1923, and 6,194 with medical, surgical, or dental qualifications.

#### DENTAL EDUCATION AND EXAMINATION.

The preliminary examination in arts is the same for medical and dental students, and the early stages of their education embrace much the same subjects<sup>1</sup>; and, as the dental student is required to obtain a knowledge of the broad principles of medicine and surgery, it is necessary for him to pursue some portion of his studies at a medical school as well as at a special dental school, the latter not undertaking the teaching of these subjects. Registration as a dental student is not in all cases compulsory, though it is to be advised as convenient as affording proof of the commencement of professional education, and it is required by most of the licensing bodies, all of whom insist upon a curriculum covering four academic years.

Degrees in dentistry are granted by the Universities of Bristol, Durham, Leeds, Liverpool, Sheffield, Queen's University, Belfast, and the National University of Ireland, as will be found stated in the articles on these universities. Licences in dentistry entitling the holder to practise as a dental surgeon are granted by the following bodies: the General Medical Council, the Royal College of Surgeons in England, of Edinb., the Royal College of Surgeons in Ireland, the Royal College of Physicians and Surgeons of Glasgow.

Recognized dental schools are numerous. In London there are those connected with the Royal Dental Hospital, Leicester Square; the National Dental Hospital (now the University College Hospital Dental School), Great Portland Street; Guy's Hospital; King's College Hospital; and the London Hospital. In the provinces there are the Birmingham Dental Hospital; the Royal Infirmary and the General Hospital, Bristol; the Dental Hospital, and the Dental School, Liverpool; the Dental Hospital and School, Newcastle; the Dental Hospital, Sheffield. In Scotland there are the Dental Hospital, Dundee; the Incorporated Dental Hospital and School, Edinburgh; and the Incorporated Dental Hospital, Glasgow; and in Ireland, the Incorporated Dental Hospital of Ireland and the Royal College of Surgeons in Ireland.

There are considerable variations in the order in which the different licensing bodies require the various subjects of the curriculum to be taken up, and every prospective dental student should study, not only the regulations of the General Medical Council, but also those of the body whose licence he hopes to obtain. This is the more important as in the case of some licensing bodies changes in the curriculum have been made or are contemplated.

#### Recommendations of the General Medical Council.

The *Dentists Act* still leaves to the General Medical Council the duty of controlling the course of study and examinations required for dental qualifications.

The following recommendations as to the course of study and examinations to be required of candidates for degrees

or licences in dentistry or dental surgery were adopted by the Council on May 27th, 1922.

#### Preliminary Examination and Registration.

1. That every dental student shall, at the commencement of his studentship, be registered in the manner and under the conditions prescribed for medical students.

2. That before registration in the *Dental Students Register* every applicant shall be required to have passed, in addition to the examination in general education, which shall be the same as that required for medical students, an examination in *Elementary Physics* and *Elementary Chemistry*, conducted or recognized by one of the licensing bodies, which shall also be the same as that required for medical students.

3. That before registration as a dental student every applicant shall produce evidence that he has attained the age of 17 years.

#### Professional Study.

4. That every candidate for a degree or licence in dentistry or dental surgery shall be required before admission to the final or qualifying examination to produce certificates showing:

(i) That he is at least 21 years of age.

(ii) That he has been registered as a dental student.

(iii) That he has, subsequently to the date of registration as a dental student, been engaged in professional study for at least four years, of which three years at least shall be spent at a school or schools recognized for professional study by one of the licensing bodies.

(iv) That, subsequently to the date of registration as a dental student, he has attended at a recognized medical school courses of instruction, which shall be the same as those required for medical students, in the following subjects: (a) Chemistry, and (b) Physics, in their application to Medicine; (c) Elementary Biology. That he has attended at a recognized medical school courses of instruction in the following subjects: (d) Human Anatomy (with dissections and demonstrations) for three academic terms; (e) Physiology (with laboratory instruction, including Practical Histology) for two academic terms; (f) General Pathology (including Bacteriology) for two academic terms; (g) Medicine for two academic terms; (h) Surgery for two academic terms; (i) the practice of a recognized general hospital or hospitals of not less than eighty beds, with certified instruction in Clinical Medicine and Clinical Surgery, for four academic terms.

(v) That he has attended at a recognized dental school courses of instruction in the following special subjects: (a) Dental Anatomy and Physiology, human and comparative. The course should comprise a minimum of twenty meetings of the class. (b) Practical Dental Histology and Morbid Histology. The course should comprise a minimum of sixteen meetings of the class. (c) Dental Pathology and Surgery. The course should comprise a minimum of twenty meetings of the class. (d) Dental Materia Medica and Therapeutics. The course should comprise a minimum of sixteen meetings of the class. (e) Dental Metallurgy (with practical work and demonstrations). The course should comprise a minimum of twenty meetings of the class. (f) Dental Mechanics (with practical work and demonstrations). The course should comprise a minimum of twenty meetings and twenty demonstrations. (g) A course of instruction in the use of Anaesthetics, general and local, employed in dental practice. (h) A course of instruction in Radiology as applied to dentistry.

(vi) That he has for at least twenty-four calendar months attended, during the ordinary academic terms, the practice of a recognized dental hospital or of the recognized dental department of a general hospital.

(vii) That he has received for not less than twenty-four calendar months, or for 2,000 hours, practical instruction in dental mechanics.

#### Professional Examinations.

5. That the examination for a degree or licence in dentistry or dental surgery shall be partly written, partly oral, and partly practical, and shall include the following subjects: (a) Chemistry, Physics, and Biology, in their bearing on Medicine and Dentistry. (b) Human Anatomy and Physiology. (c) General Pathology, including Bacteriology. (d) Medicine and Surgery. (e) Dental Anatomy and Physiology, Dental Pathology, Dental Surgery (including Orthodontics), Dental Materia Medica and Therapeutics, and Dental Mechanics and Dental Metallurgy. (f) Practical Examination in Dental Surgery. (g) Practical Examination in Dental Mechanics and Metallurgy. (h) Anaesthetics, general and local, employed in dental practice.

6. That the prescribed subjects of examination may be combined or distributed at the discretion of the licensing bodies, and may be taken at two or more successive stages during the course of professional study: provided that no candidate shall be admitted to any final examination in dental surgery and dental mechanics until he shall have completed the required four years' course of study.

#### ACKNOWLEDGEMENT.

THE detailed information published in this Educational Number of the *BRITISH MEDICAL JOURNAL* for the benefit of intending students of medicine and newly qualified practitioners has been revised throughout with the co-operation of the deans and secretaries of the medical schools and kindred institutions and of officials in the several public services, to all of whom we wish to acknowledge our indebtedness.

<sup>1</sup> See the Registrar's Memorandum, printed in the article on the General Medical Council at page 418.

## Correspondence.

## MEDICAL ORTHODOXY.

SIR,—Mr. Hampson will, I am sure, not judge me wanting in appreciation of his wise counsels (*BRITISH MEDICAL JOURNAL*, August 21st, p. 329) when I find in his lecture a word that ought not, at least so it seems to me, to pass without open dissent. The word in question is "orthodoxy."

"Observance of the orthodox," he tells us, is of high importance in the medical profession; "unorthodox practices" are full of peril to the status and reputation of the practitioner; and wisdom should turn her eyes from beholding certain "illusive attractions" (some examples are quoted) "which are not to be regarded as orthodox."

The suggestion implied in these warnings plainly is that somewhere within the province of medicine there exists a recognized and authoritative standard of "orthodoxy"—that is, a body of doctrine and practice presented by authority and received and adopted as true and valid on the word of authority, with, as a corollary, and for the contumacious, the penalty of exclusion from the ranks and communion of the faithful. Possibly there are professions to which these propositions apply. But most certainly they do not apply to the profession of medicine.

On the contrary, while in medical life and thought there doubtless exist many opinions and practices more or less generally received and adopted, no one of these but is open to reasoned question and attack; and defence, if it is to be found, must be found in argument and demonstration and experiment, and not in official thunders or in the plea of convention or of constituted authority. Here, as elsewhere, the challenger of the opinion of a majority will need courage and perseverance, but if he is sincere and of good faith and can prove his case he will win through in the end. And even if he be left to plough a lonely furrow, neither anathema nor martyrdom awaits him.

It may be, as Mr. Hampson suggests, that certain "new cults" ought to be avoided. But if so, this is not because they teach "unorthodox" doctrine or practice, but because either they are obvious shams or frauds or the claims made on their behalf are not true or not proven.

Mr. Hampson, of course, speaks with great authority on the legal relations of medical practice, and here I am more than ready to go with him all the way. But when he urges a deferential submission to a medical "orthodoxy" that does not exist I am compelled, reluctantly but firmly, to call a halt.—I am, etc.,

London, W., Aug. 28th.

C. O. HAWTHORNE.

## Medical News.

THE membership of the British Medical Association now exceeds 32,000.

AFTERNOON lecture demonstrations on diseases of the eye begin on September 6th at the Central London Ophthalmic Hospital, and will continue for one month. On Tuesdays and Saturdays, at 11 a.m., from September 7th until October 2nd, the Bethlem Royal Hospital will hold a series of lecture demonstrations in psychological medicine. From September 13th to 25th the Infants Hospital will hold a special course in diseases of infants each afternoon; one visit will be made to the Thavies Inn Venereal Diseases Centre. Dr. Heald will give four demonstrations on treatment by electrotherapy on Wednesdays at the Royal Free Hospital, at 5.15 p.m., beginning on September 22nd. There will be a comprehensive whole-day course in orthopaedics at the Royal National Orthopaedic Hospital, from September 20th to October 2nd, and between the same dates the Westminster Hospital will hold an intensive all-day course in medicine, surgery, and the specialties. Early in October the National Hospital for Diseases of the Heart will give a fortnight's course; entries are limited to sixteen, so early application is advisable. Other courses starting the first week in October include a series of demonstrations on Tuesday and Thursday afternoons at the London School of Tropical Medicine, an all-day course at the Central London Throat, Nose, and Ear Hospital, and a practical operative

surgery class. Copies of all syllabuses, the general course programme, and the Fellowship Journal may be obtained from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

A PAMPHLET containing information about the post-graduate courses arranged by the Medical Faculty of the University of Vienna may be obtained free from the secretary of the Medical Lecture Courses, Sehlösselgasse 32, Vienna VIII. Advice about lodgings is also given by the secretary.

THE annual dinner of past and present students of St. Mary's Hospital will take place at the Counaught Rooms on Monday, October 4th, at 7.30 p.m. Dr. G. W. H. French will be in the chair; the honorary secretary is Dr. A. Hope Gosse.

SIR FREDERICK WALKER MOTT, K.B.E., M.D., F.R.S., left estate of the gross value of £22,241 (net personally £16,862). After providing for certain legacies, including one of £50 to his assistant, Charles Geary, he left the residue upon trust for his wife for life, with remainder upon trust for his four daughters, with remainder to their respective issue, and failing these trusts, with remainder to the University of London for the endowment or partial endowment of a professorship of psychological medicine "at my Alma Mater," the Medical School of University College Hospital, stating that he did not wish the professorship to be founded until there should be sufficient accommodation for the study and treatment of early cases of mental disorder either by wards in University College Hospital or in an affiliated mental hospital.

Dr. Montague H. Way and Dr. A. Bosworth Wright have been added to the Commission of the Peace for the city of Portsmouth by the Lord Chancellor. Dr. Way, who was born at Portsmouth, was educated at Guy's Hospital, and obtained the diplomas of M.R.C.S. and L.R.C.P. in 1897. He has been in practice at Southsea for twenty-six years. He was chairman of the Portsmouth Division of the British Medical Association in 1924, and is a member of the Portsmouth Insurance Committee and chairman of the Panel Committee. In 1921 he was elected a member of the Portsmouth Town Council. Dr. A. Bosworth Wright was a student at the London Hospital, and obtained the diplomas of M.R.C.S., L.R.C.P. in 1896. He is surgeon to the Royal Portsmouth Hospital.

SIR JOHN WILLIAMS, Bt., formerly obstetric physician to University College Hospital, London, who died on May 24th last, aged 85, left estate of the gross value of £123,742, with net personally £121,012. He bequeathed £2,000 to University College Hospital and £1,550, together with any of his books, pictures, manuscripts, etc., his executors may select, to the National Library of Wales. The residue of his property, which it is believed will amount to nearly £100,000, will be divided between the National Library of Wales and the University College of Wales, both at Aberystwyth.

THE seventh Italian Congress of Industrial Medicine, which was to have been held at Genoa from October 11th to 12th, has been postponed until next year.

A POST-GRADUATE course on the diagnosis and treatment of cancer will be held at Strasbourg from October 18th to November 6th. The fee for the course will be 250 francs, and applications should be addressed to Dr. Gunset, Cancer Department, Civil Hospital, Strasbourg.

FOR the convenience of medical men desiring information concerning the spas of France arrangements have been made for an office to be opened adjacent to the British Medical Association House. Mme Juppé-Blaise, who has had charge of this department in the Office Français du Tourisme, will give personal attention to all inquiries, will forward detailed information, and will arrange travelling, hotel, or other accommodation. For the present inquiries should be addressed to Mme Juppé-Blaise, c/o the Financial Secretary, B.M.A. House, Tavistock Square, W.C.1.

PARLIAMENT reassembled on August 30th and approved the continuance of the emergency regulations during the month of September. The House of Lords adjourned at once, but the House of Commons on the following day had a discussion on the stoppage in the coal-fields and then adjourned to November 9th. It may, however, be recalled at the end of September if the coal dispute is not settled. No allegation was made that there was any abnormal sickness in the coal-fields. The Government intends to take up the Births and Deaths Registration Bill during the autumn session, and it is expected that the measure will become law. In reply to a question the Minister of Health gave the information with regard to the treatment of persons suffering from the after-effects of lathargic encephalitis which was published last week (p. 398) in the notice of the Report of the Metropolitan Asylums Board, and recalled that a bill had been introduced to amend the Mental Deficiency Act so as to facilitate the admission into mental deficiency institutions of cases suitable for treatment therein.

SEPT. 4, 1926]

# The British Medical Association: ITS AIMS, WORK, AND CONSTITUTION.

THE British Medical Association, as stated in our introductory article on the Profession of Medicine, was founded in 1832 to promote the medical and allied sciences, to maintain the honour and interests of the profession, and to foster a feeling of friendship among its members. To attain these objects it holds periodical meetings for the discussion both of medical and scientific subjects and of professional affairs; it publishes the *BRITISH MEDICAL JOURNAL*; it maintains a reference and lending library; it has instituted lectures, and scholarships and grants for research. It thus concerns itself with every side of medical work—science, clinical medicine, public health, and the material interests of professional life. The British Medical Association, with a membership now of more than 32,000, is the oldest, largest, and most powerful British organization devoted to the welfare of the medical profession. It has recently acquired a fine building in Tavistock Square, London, for its headquarters, providing ample accommodation for immediate needs and space for future developments. These new premises, designed by Sir Edwin Lutyens, R.A., were formally opened last year by His Majesty the King, accompanied by the Queen; and the beautiful wrought-iron gates erected as a memorial to the 574 members who fell in the war, by which the quadrangle is completed, were dedicated on that occasion by the Archbishop of Canterbury. The need for larger accommodation had become insistent owing to the remarkable growth in the central work of the Association during recent years, which had far outstripped the capacity of the premises at 429, Strand, which have now been acquired by the Government of New Zealand for its London offices.

## Constitution and Administration.

The Association has Branches and Divisions throughout Great Britain and Ireland, and also in the Dominions, Colonies, and Dependencies. The Divisions are arranged territorially, and number, in all, 280. For certain purposes of administration or of scientific and clinical work, the Divisions are combined into 93 Branches. Members of Divisions elect representatives on the Branch Councils and also a member or members of the Representative Body, which is the governing body of the Association and determines its policy.

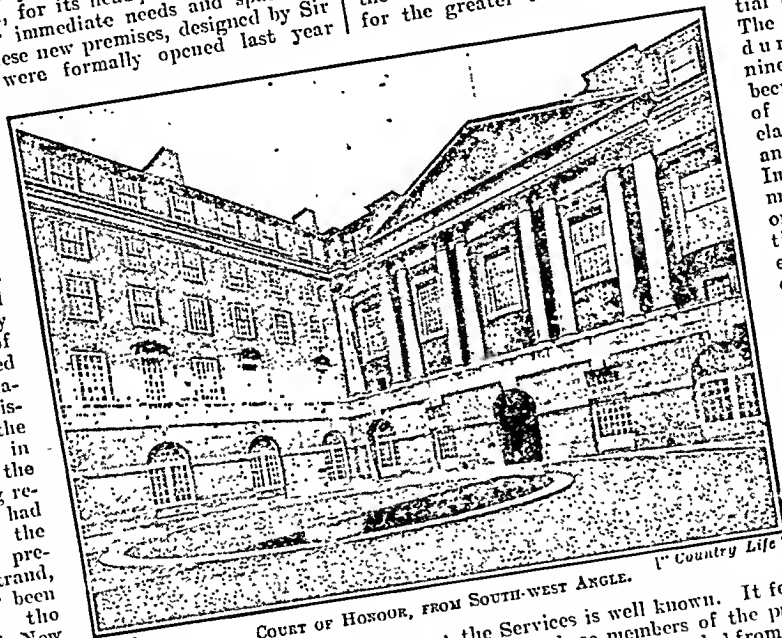
The Council is the executive of the Association. It is elected partly by the Divisions and Branches and partly by the Representative Body, and includes representatives of the Navy, Air Force, Army, and Indian Medical Services elected by the Representative Body. The Representative Body and Council elect standing committees to take charge of different subjects. Among these may be mentioned Science, Medico-Political, Ethical, Hospitals, Public Health, and Naval and Military Committees. There are Committees also for the Dominions, Scotland, Ireland, and Wales; and for the working machinery of the Association, such as the Organization, Finance, and Journal Committees. The Insurance Acts Committee, elected partly by the Association and partly by insurance medical practitioners, is financed by the Association; it is the recognized executive and mouthpiece of the insurance practitioners of Great Britain.

## Privileges of Members.

- A member of the Association has the right—
1. To attend the annual and other general meetings of the Association and the meetings of the Division and Branch to which he or she belongs.
  2. To take part by personal vote (or in some Divisions by voting paper) in the election of the representative of his or her Division in the Representative Body, and also in the election of members of the Council.
  3. To receive by post the *BRITISH MEDICAL JOURNAL*, published weekly, which gives a full record, with commentary, of progress in clinical and scientific medicine and of medico-political affairs throughout the British Empire.
  4. To receive the help and advice of the central office in any professional difficulty.
  5. To use the Library as a reading room, and to borrow current medical or scientific books on payment of postage. Besides modern works and periodical medical literature—foreign as well as English—the library contains many books of historic interest.

The full benefits of the Association can only be secured by the co-operation of large numbers of the medical profession, for the greater the membership and the funds the more efficient the organization.

The Association during the past ninety-four years has been the direct means of benefiting every class of medical men and medical women. In asking for new members it looks not only to the older practitioners but also and especially to those recently qualified. To these a generous concession is made as regards subscription, and there is a special claim to their recognition of the work of the Association in improving the conditions under which they may hold appointments in the public services or in civil life. The Association's work for



COURT OF HONOUR, FROM SOUTH-WEST ANGLE.

the Services is well known. It feels a special responsibility towards those members of the profession who by reason of their position are precluded from taking common action, and the events of this year have proved again its capacity to further their interests.

## Subscriptions and Applications for Membership.

The ordinary subscription to the British Medical Association is 3 guineas a year for members resident in the British Isles, but this is subject to various exceptions. Thus, newly qualified practitioners elected within two years of registration pay half this sum up to the end of the fourth year after registration; medical officers on the active list of the R.N., R.A.F., R.A.M.C. (Regular), and I.M.S. pay 2 guineas; concessions are made also to members (in the British Isles) of forty years' standing, to members of ten years' standing who have retired from practice, to medical married couples residing together, and to whole-time teachers and research workers. The ordinary subscription for members living abroad is 1½ guineas, but some Branches have special local subscriptions. A member elected after June 30th pays half the subscription for that year.

All duly qualified British medical practitioners are eligible for election. Full particulars can be obtained from the Medical Secretary, British Medical Association House, Tavistock Square, London, W.C.1; the Scottish Medical Secretary, 6, Drumshugh Gardens, Edinburgh; or the Irish Medical Secretary, 16, South Frederick Street, Dublin.

## ASSOCIATION NOTICES.

## Association Notices.

## BRANCH AND DIVISION MEETINGS TO BE HELD.

CAPE OF GOOD HOPE (WESTERN) BRANCH.—A case night arranged by Mr. T. Lindsay Sandes and Dr. G. B. Wilkinson will be held at 35, Walc Street, Capetown, on Friday, September 24th, at 8 p.m.

SURREY BRANCH: REIGATE DIVISION.—The following programme has been arranged for the session 1926-27: Wednesday, October 6th, 1926, at 7 p.m., Annual Dinner, White Hart Hotel, Reigate, followed by Mr. Percy Sargent, C.B., on The management of patients with brain tumours. Wednesday, November 10th, at 4.30 p.m., Clinical Meeting at the East Surrey Hospital. Tuesday, December 14th, at 8.45 p.m., Dr. H. W. Barber: The treatment of some common diseases of the skin. Tuesday, January 11th, 1927, at 8.45 p.m., Dr. Stoddart: The certification of mental patients. Tuesday, February 8th, at 8.45 p.m., Sir William Wilcox, C.B., C.M.G.: The etiology and treatment of fibrositis (chronic rheumatism). Tuesday, March 8th, at 8.45 p.m., Dr. Stanley Dodd: Gynaecology. Wednesday, April 13th, at 4 p.m., Clinical Meeting at Caterham Cottage Hospital. May 11th, at 4 p.m., Annual Meeting. All meetings will be held at the East Surrey Hospital unless otherwise stated.

## VACANCIES.

BIRMINGHAM MATERNITY HOSPITAL.—(1) Honorary Assistant Physician, and (2) Honorary Anaesthetist.  
BOOLE BOUGH HOSPITAL.—(1) Senior Medical Officer. Salary for (1) £150, and for (2) £125 per annum each.  
BRIGHTON: ROYAL SUSSEX COUNTY HOSPITAL.—House-Surgeon (male). Salary £150 per annum.  
BURMA RAILWAYS CO., LTD.—District Medical Officer. Salary Rs.1,200 per mensem, rising to Rs.1,600.  
CARDIFF: PRINCE OF WALES'S HOSPITAL.—House-Surgeon for Cripples' Hospital. Salary £100 per annum.  
CHESTERFIELD AND NORTH DERBYSHIRE ROYAL HOSPITAL.—Resident Surgical Officer. Salary £300 per annum.  
DEVONPORT: ROYAL ALBERT HOSPITAL.—House-Surgeon. Salary £150 per annum.  
DOVER: ROYAL VICTORIA HOSPITAL.—House-Surgeon. Salary £180 a year.  
DYER: ROYAL DEVON AND EXETER HOSPITAL.—(1) House-Physician, and for (3) £100.  
HUMPHREY: PARISH OF ST. JOHN.—Junior Resident Assistant Medical Officer at the New End Hospital. Salary £150 per annum.  
LEICESTER ISOLATION HOSPITAL AND SINTONIA.—Resident Medical Officer. Salary £250 per annum.  
LEICESTER ROYAL INFIRMARY.—House-Surgeon. Salary at the rate of £125 per annum.  
MANCHESTER BABIES HOSPITAL, Burnage Lane, Levenshulme.—(1) Resident Medical Officer. (2) Resident Clinical Assistant. Salaries at the rate of £125 and £50 per annum respectively.  
NEWCASTLE-ON-TYNE: HOSPITAL FOR SICK CHILDREN.—Honorary Assistant Surgeon.  
O-WESTRY: SHROPSHIRE ORTHOPAEDIC HOSPITAL.—Two House-Surgeons. Salary £150 per annum.  
OXFORD: RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—Resident Medical Officer to the Osler Pavilion for the Treatment of Tuberculosis. Salary at the rate of £120 per annum.  
ROCHESTER: INFIRMARY AND DISPENSARY.—Junior House-Surgeon. Salary £200 per annum.  
ROCHESTER: ST. BARTHOLOMEW'S HOSPITAL.—Honorary Pathologist. Honorarium £150 per annum.  
ROYAL MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—(1) Resident Medical Officer. (2) Resident Surgical Officer. (3) Assistant Medical Officer for Out-patient Department. Salary at the rate of £120, £80, and £150 per annum respectively.  
ROYAL NATIONAL ORTHOPAEDIC HOSPITAL, Great Portland Street, W.1.—House-Surgeon (male). Salary £150 per annum.  
ST. HELEN'S COUNTY BOROUGH.—Assistant Medical Officer of Health (male). Salary at the rate of £650 per annum, rising to £750.  
ST. HELEN'S HOSPITAL.—Resident Medical Officer. Salary £250 per annum.  
ST. JOHN'S HOSPITAL, Lewisham, S.E.13.—Casualty Officer. Salary £100 per annum.  
ST. MARY'S HOSPITAL, W.2.—Assistant Medical Officer in Charge of X-Ray Department.  
ST. PETER'S HOSPITAL FOR STONE, ETC., Henrietta Street, W.C.2.—House-Surgeon. Salary at the rate of £75 per annum.  
SUMMIT FREE HOSPITAL FOR WOMEN, Marylebone Road, N.W.1.—House-Surgeon. Salary at the rate of £100 per annum.  
SWANSEA'S HOSPITAL SOCIETY, Greenwich.—House-Physician and House-Surgeon at Dreadnought Hospital. Salary £110 per annum with proportion of fees.  
SHEFFIELD ROYAL INFIRMARY.—Assistant Casualty Officer. Salary at the rate of £80 per annum.  
SUSSEX MATERNITY AND WOMEN'S HOSPITAL, Brighton.—House-Surgeon. Salary £125 per annum.  
SUSSEX INFIRMARY, New South Wales.—Professorship of Psychiatry. Salary £350 per annum, plus extras.  
WEST END HOSPITAL FOR NERVOUS DISEASES, Gloucester Gate, Regent's Park, N.W.1.—Junior House-Physician (male). Salary £100 per annum.  
WEST LONDON HOSPITAL, Hammersmith Road, W.6.—(1) House-Physician. (2) Two House-Surgeons (males). Salary at the rate of £100 per annum each.  
WEST NORFOLK AND KING'S LYNN HOSPITAL.—Resident Surgical Officer. Salary £250 per annum.

WESTERN OPHTHALMIC HOSPITAL, Marylebone Road, N.W.1.—(1) Senior and (2) Junior non-resident House-Surgeons. Salaries at the rate of £150 and £100 per annum respectively. (3) Honorary Assistant Surgeon. Honorarium 100 guineas per annum.

CERTIFYING FACTORY SURGEONS.—The following appointments are vacant: Measham (Leicestershire), Thame (Oxfordshire), Newhaven (Sussex). Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1.  
This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

## POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Central London Ophthalmic Hospital, Judd Street, W.C.1: Series of lecture demonstrations every afternoon for one month on all branches of ophthalmology. Bethlem Royal Hospital, St. George's Fields, S.E.1: Course in psychological medicine, beginning September 7th, every Tuesday and Saturday at 11 a.m. Copies of syllabuses of above courses and information on post-graduate work generally is obtainable from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.  
Post-GRADUATE HOSPITAL, Imperial Hotel, Russell Square, W.C.1.—Wed., 9 p.m.; Manipulative Surgery and the Medical Officer of Health.  
GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At Western Infirmary: Daily, 9.30 a.m., Clinical Medicine; 10.45 a.m., Clinical Surgery. Tues. and Thurs., 4 p.m., Radiology; 5.30 p.m., Venereal Diseases. At Royal Infirmary: Mon., Wed., and Fri., 9.15 a.m., Anaesthetics. At Royal General Hospital for Sick Children: Mon., Wed., and Fri., 3.30 p.m., Surgical Diseases of Children. At Eye Infirmary: Mon., Wed., and Fri., 2 p.m., Diseases of the Eye.

## British Medical Association.

OFFICES, BRITISH MEDICAL ASSOCIATION HOUSE, TAVISTOCK SQUARE, W.C.1.

## Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager). Telegrams: Articulate Westcent, London.  
EDITOR, British Medical Journal (Telegrams: Medisecra Westcent, London).  
Telephone numbers of British Medical Association and British Medical Journal, Museum 9861, 9862, 9863, and 9854 (internal exchange, four times).  
SCOTTISH MEDICAL SECRETARY: 6, Drumsheugh Gardens, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)  
IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Baillus, Dublin. Tel.: 4737 Dublin.)

## Diary of the Association.

SEPTEMBER.  
14 Tues. London: Ethical Committee, 2.30 p.m.  
16 Thurs. London: Insurance Acts Committee, 12 noon.  
17 Fri. London: Public Health Committee, 2.30 p.m.  
21 Tues. London: Organization Committee, 2.30 p.m.  
22 Wed. London: Medico-Political Committee, 2.30 p.m.  
23 Thurs. London: Journal Committee, 2.30 p.m.  
28 Tues. London: Naval and Military Committee, 2.30 p.m.  
30 Thurs. London: Finance Committee, 2.30 p.m.  
6 Wed. Edinburgh: Scottish Committee.

## OCTOBER.

Mr. Percy Sargent on the Management of Patients with Brain Tumours, 7 p.m.  
13 Wed. London: Council, 10 a.m.  
21 Thurs. London: Conference of representatives of Local Medical and Dental Committees at B.M.A. House, Tavistock Square, W.C.1.

## BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcement of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

## MARRIAGES.

DYVIDSON-BRASH.—At Maxwelltown D.F. Church, Dumfries, on August 24th, 1925, John Polson Davidson, M.C., M.B., Ch.B., at Home, Deveron House, Clayton-le-Moors, October 29th and 30th, 1925.  
GUTHRIE-HICKSON.—On August 28th, at St. Mary Abbott's, Kensington, Gerrans Laps, to Sylvia Kema Hickson, M.D., M.R.C.P., daughter of Professor and Mrs. Hickson of 26, Barton Road, Canbridge.  
WILSON-JOHNSTON.—On August 26th, at the Parish Church, Aine, York, Charles Haddon Wilson, M.B., Ch.B., son of Mr. and Mrs. G. C. Wilson, "The Hollies," Normanton, to Hope Evelyn Johnson, B.A. Canab., niece of Dr. and Mrs. L. A. Johnson, "The Meads," Tollerion.

## DEATHS.

ARMSTRONG.—On August 21st, 1926, at "The Meads," Yoxall, Burton-on-Trent, Frank Greasley Armstrong, M.R.C.S., L.S.A., aged 63 years.  
FRASER.—At Raipur, India, on August 19th, of cholera, Lieut.-Colonel W. J. Fraser, F.R.C.S.E., I.M.S., third son of the late John Fraser, Abbottsford, Ceylon, and Wolf Crag, Bridge of Allan, aged 45.  
REID.—On August 21st, 1926, Dr. James Reid, late of Banbury, eldest son of A. P. Reid, Belfast, Ireland, aged 43.

[The present issue being the Annual Educational Number, much current material is held over, and neither the "Supplement" nor the "Epitome of Current Medical Literature" is published this week.]

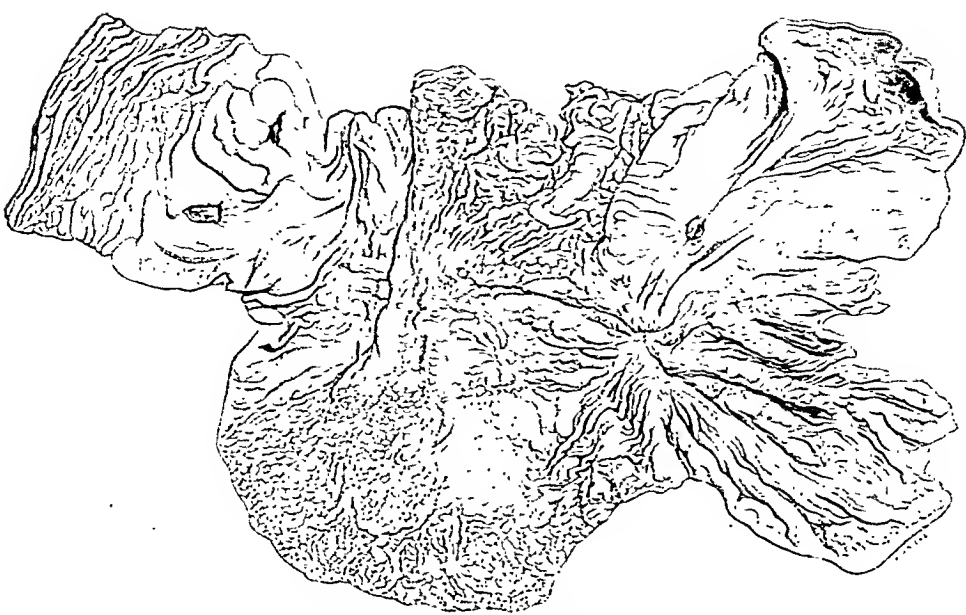


FIG. 1.—"Opposing" duodenal ulcers and gastric ulcer on lesser curvature. (The usual sites of ulceration.)

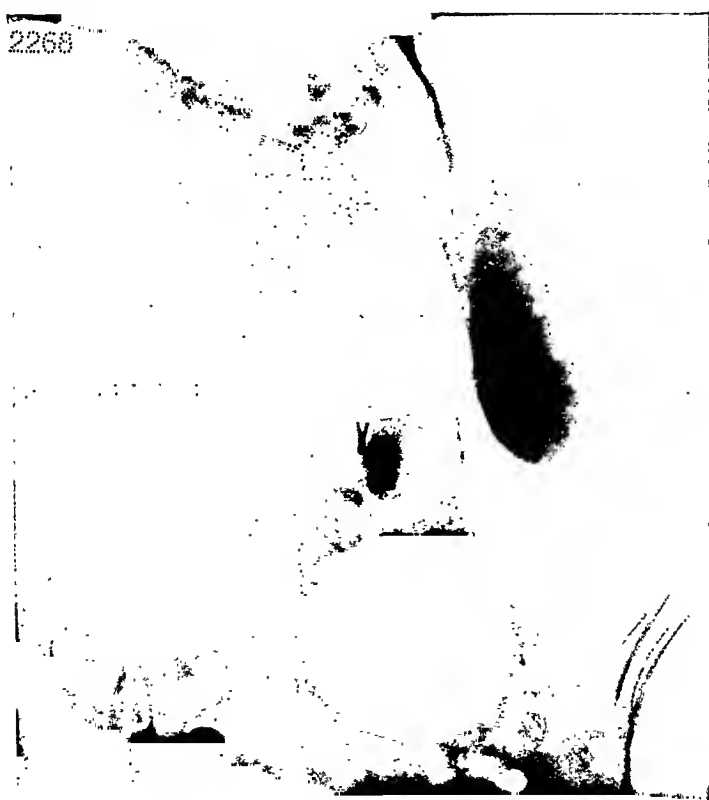


FIG. 2.—Coincident duodenal and gastric ulcers with stenosis, showing hour-glass stomach and duodenum





FIG. 1.—Left knee.



FIG. 2.—Right knee—internal lateral.



FIG. 3.—Right ankle—lateral.



FIG. 4.—Left forearm—posterior.



FIG. 5.—Section under low power. ( $\times 40$ .)



FIG. 6.—Section under high power. ( $\times 370$ .)

COINCIDENT DUODENAL AND GASTRIC  
ULCER.

(With Special Plate.)

BY

D. P. D. WILKIE, M.Ch., F.R.C.S.,

PROFESSOR OF SURGERY, EDINBURGH UNIVERSITY.

The surgical treatment of duodenal and gastric ulcer is still the subject of controversy, and opinion is sharply divided as to the exact place which surgery should hold, and will ultimately maintain, in the treatment of this disorder. There is, however, an imposing accumulation of evidence of the curative action of a gastro-enterostomy in cases of duodenal ulcer. Collective statistics show that complete relief from symptoms follows in 85 per cent. of cases of duodenal ulcer following gastro-enterostomy. For gastric ulcer, on the other hand, this operation is much less successful, and most surgeons are agreed that when the ulcer is situated on the lesser curvature of the stomach a direct attack on it of one kind or another is essential for a lasting cure.

The object of this paper is not to analyse the causes of non-success following gastro-enterostomy for duodenal ulcer further than to point out the frequency with which a coincident ulcer is present in the stomach, an ulcer which is liable to escape observation unless a systematic search is made for it. During the three years prior to the war I examined in the post-mortem room 420 bodies for duodenal ulcer. In 41 bodies one or more duodenal ulcers were found—that is, in 8 per cent. In 5 cases one or more gastric ulcers were present along with the duodenal ulcers—that is, in 12 per cent. of cases of duodenal ulcer a coincident gastric ulcer was found (Fig. 1). Whilst, therefore, fully aware of the frequent association of ulcer in both stomach and duodenum, I confess to have omitted to make a systematic examination for multiple ulcers in all upper abdominal operations until five years ago, when the following case brought home to me the importance of a complete assessment of pathology at operation.

## CASE.

A man, aged 28, had been operated on two years previously for a perforated duodenal ulcer. The perforation had been closed and the pelvis drained. For two months after the operation he had been free from symptoms, and then the typical periodic attacks of indigestion had returned.

At the second operation, performed in July, 1920, a chronic duodenal ulcer on the anterior wall of the duodenum, with considerable stenosis, was found. Posterior gastro-enterostomy was performed, and two months later the patient expressed himself as being relieved but not cured of his dyspeptic symptoms. In 1921 he returned still complaining of intermittent dyspepsia. A jejunal ulcer was suspected, and a third operation was carried out just one year after the second. No jejunal ulcer was found, the duodenal ulcer had healed, but high up on the lesser curvature of the stomach there was a large, chronic, indurated, penetrating ulcer, obviously of long standing. The base of the ulcer was burnt out with the cautery and the edge sutured and invaginated. For the five years since this operation the patient has been free of all symptoms.

It appeared to me to be quite clear that this patient had had all along coincident gastric and duodenal ulcers, and that until the last (third) operation treatment had been directed only to the latter. A direct attack on the gastric ulcer was followed by a symptomatic cure. Since this lesson I have made a systematic examination for gastric ulcer at all operations for duodenal ulceration. During this period I have operated on 300 cases of ulcer, and the results of the five years' experience are as follows:

	Male.	Female.	Total.
Duodenal ulcer alone ...	167	51	221
Gastric ulcer alone ...	17	20	37
Coincident duodenal and gastric ulcer	27	15	42
Totals... ..	211	83	300

Some interesting points emerge in regard to the sex and age incidence of ulcer from this series of 300 cases.

The common occurrence of coincident gastric and duodenal ulcer is clear—namely, that in 16 per cent. of duodenal ulcer cases there was present a gastric ulcer as well; and in 53 per cent. of cases with gastric ulcer one or more duodenal ulcers were found. If the cases of coincident gastric and duodenal ulcer be excluded, we find that duodenal ulcer was exactly six times as frequent as gastric. In the male subject the proportion of duodenal to gastric ulcer was 9 to 1, in the female 2.7 to 1. If all ulcer cases be included, the proportion of duodenal to gastric ulcer is 3.3 to 1. In the male sex it is 4.4 to 1, in the female sex 2 to 1. We may fairly deduce from these figures that, given the factors predisposing to ulceration, the probable site of ulcer will be the first part of the duodenum and after this the lesser curvature of the stomach.

## DIAGNOSIS.

It is often very difficult from the patient's history and ordinary clinical examination to be sure whether he is suffering from a gastric or a duodenal ulcer, or both. When, however, the pain comes on at varying intervals after food, whilst still displaying the periodicity so constantly found with ulcer, one has some grounds for suspecting that ulcers may be present in both stomach and duodenum. The x-ray picture after a barium meal is the real aid to accurate diagnosis. In the early cases the x-ray evidence of the gastric ulcer may be a little uncertain, and be confined to a slight irregularity of outline of the lesser curvature with some degree of spasmodic hour-glass contraction. In the later cases, where stenosis has occurred, the very typical picture of hour-glass stomach and duodenum leaves no doubt as to the diagnosis (Fig. 2).

## TREATMENT.

There can be little doubt that under prolonged and efficient medical treatment many early cases of gastric and duodenal ulcer can be completely cured. More often than not, however, the patient either does not seek, does not get, or will not submit to the prolonged rest and strict dietary until he has had numerous attacks, which have led to definite organic changes in the gastric or duodenal wall. When such changes have occurred the hope of a lasting cure by medical measures alone is distinctly less, and if one course of medical treatment is followed by relapse operative measures should be considered. We are concerned here merely with the surgical treatment of coincident ulcers in the stomach and duodenum. From the experience of the 42 cases dealt with in this paper, in the treatment of which a considerable variety of surgical measures have been employed, I should, in the first place, divide the cases roughly into two classes:

1. Comparatively early cases with active ulceration but little or no stenosis.
2. Old-standing cases with marked stenosis, often in elderly people.

In Class 1 the operation must include the extirpation of the gastric ulcer, either by partial gastrectomy, excision, or cautery, together with some form of gastro-enterostomy. In Class 2 the clinical and the pathological picture are both dominated by the stenoses and their results, and anastomotic operations, without any direct attack on the ulcers, are followed by the most gratifying and lasting success. This latter fact is of importance, as in many cases the patients are old, thin, and feeble, and not well suited for drastic surgical procedures. In 18 of the 42 cases in this series the patients were over 50 years of age, in 3 cases the patients were over 70 years of age, yet all made excellent recoveries after multiple anastomotic operations.

It may be asked what safeguard we have against the malignant degeneration of the ulcer if such conservative measures are adopted. My experience has been that, whilst malignant disease may arise in a gastric ulcer (in one case of this series it was found and proved fatal), it does not arise in the cicatrizing type which leads to hour-glass contraction, and the risk of it may be regarded as a negligible factor in determining the operative procedure in these old-standing stenosing cases.

The correct method of dealing with cases in the first group, where active ulcers are present in both stomach

and duodenum, is not an easy matter to decide. A resection of the whole ulcer-bearing area, whilst a logical procedure, is rendered difficult in many cases by the fixity of the duodenum. It was only carried out in two cases

TABLE I.—Operative Treatment in 42 Cases of Coincident Gastric and Duodenal Ulcer.

Operation.	No. of Cases.	Result.	Present State.
Posterior gastro-enterostomy ...	7	7 R.	3 perfectly well; 4 still complain of gastric symptoms.
Anterior gastro-enterostomy and lateral anastomosis	3	3 R.	2 very well; 1 still complaining.
Gastro-duodenostomy ...	1	1 D.	Death from pulmonary embolism on tenth day.
Excision of ulcer and posterior gastro-enterostomy	2	2 R.	1 very well; 1 late recurrence of symptoms.
Excision and anterior gastro-enterostomy	1*	1 D.	Death few hours after operation.
Excision and gastro-duodenostomy	1	1 R.	Patient very well.
Cautery and posterior gastro-enterostomy	15	15 R.	All very well.
Cautery and gastro-duodenostomy	1	1 R.	Very well.
Pyloroplasty ...	1	1 R.	Very well.
Double gastro-enterostomy and lateral anastomosis	1	1 R.	Very well.
Gastro-gastrostomy and posterior gastro-enterostomy	2	2 R.	Both very well.
Gastro-gastrostomy and gastro-duodenostomy	1	1 R.	Very well.
Gastro-gastrostomy and gastro-duodenostomy and duodeno-jejuno-tomy	1	1 R.	Very well.
Pyloric exclusion and gastro-enterostomy	1	1 R.	Very well.
Posterior gastro-enterostomy and duodeno-jejuno-tomy	1	1 R.	Very well.
Partial gastrectomy ...	2	2 R.	Both very well.
Exploratory operation ...	1†	1 R.	Death some months later.

\* Perforated.

† Malignant.

patients in this group of their freedom from all subsequent digestive trouble. So favourable were the reports in this group that I now regard the Balfour operation as that of choice for the early, active cases of coincident gastric and duodenal ulcer.

There were two deaths in this group of 42 cases. In one case death occurred suddenly on the tenth day, from pulmonary embolism. In the second case, that of an elderly lady, the gastric ulcer had perforated eight hours before operation, and death resulted from general peritonitis. A death rate of 4.8 per cent. cannot be regarded as high when it is considered that in many of these cases one is dealing with old and emaciated subjects.

The great variety of operations which were carried out in this series of cases is illustrated in Table I and Fig. 3.

#### CONCLUSIONS.

1. Coincident ulceration in stomach and duodenum is relatively common.

2. In this series it occurred in 16 per cent. of all duodenal ulcers and in 53 per cent. of all gastric ulcers.

3. Two groups of cases are to be distinguished when considering operative measures: (a) active ulcers without stenosis in relatively young people (below 50); (b) unhealed but cicatrized ulcers with stenosis in elderly subjects.

4. The Balfour operation is recommended for Class (a). Purely anastomotic operations give a lasting symptomatic cure in Class (b).

## MAN AS THE INTERMEDIATE HOST OF THE TAENIA SOLIUM.

(With Special Plate.)

BY

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D.M.R.E. CAMB.,

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HOSPITAL, LONDON; RADIOLOGIST TO THE ESSEX COUNTY  
HOSPITAL, COLCHESTER.

INFECTION by the *Taenia solium* has become extremely rare in this country, and the recognition of the aberrant *Cysticercus cellulosae* stage of this intestinal parasite in man by radiological means is of interest.

The *Taenia solium* used to be commoner, and was described at a period when x radiations were not being employed in medicine, and it has not been found possible to discover a record of appearances which may be seen in radiograms when man becomes the intermediate host. The condition is well recognized, and not of rare occurrence at the present day in many parts of the world, notably in Germany, in some parts of America, and in India, and I hope that the publication of this case will give me access to additional information upon this interesting subject, and that I may receive references to cases which have been seen.

The tapeworm known as the *Taenia solium* is characterized by a scolex bearing four somewhat prominent suckers and hooklets, varying in number from twenty-six to twenty-eight. It is an extremely long parasite, and lies in the intestinal tract of man, who is the host, the intermediate host being the pig. The proglottides contain the ova, and as they ripen are discharged in the faeces, the ova retaining a certain motility, and are swallowed by the pig. The gastric juices of the intermediate host act upon the shell of the ovum and dissolve it, and the oncosphere, which is set free in the stomach, passes into the blood stream, whence it is carried all over the body. It may settle in the brain, either in its substance or in the meninges, in the lungs, in the heart, in the eye, but most commonly in the skeletal muscles. It rarely lodges in the substance of the liver. It soon becomes transformed into a clear elliptical cyst, measuring about a centimetre by half a centimetre, and if lying in muscle substance takes up a position with its long axis parallel to the fibres of the muscle, which it separates. It slowly degenerates and becomes calcified, and may become apparent and give rise to symptoms and signs. Osler reports a case in which hundreds of subcutaneous nodules proved to be calcifications of the *Cysticercus cellulosae*, and many cases in which these bodies

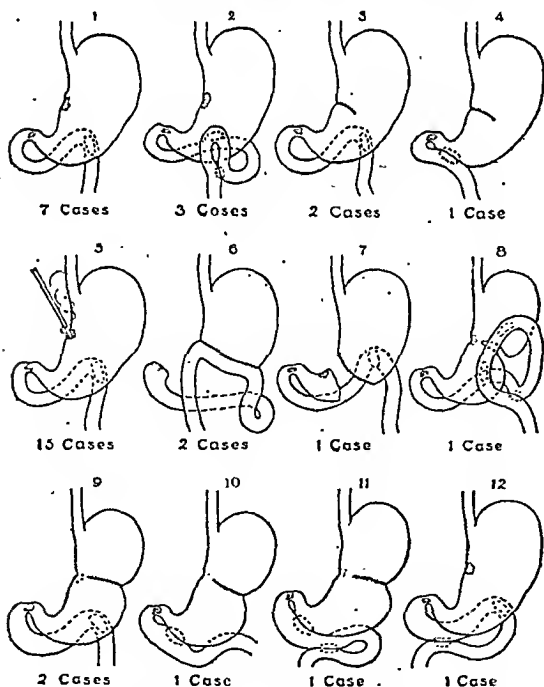


FIG. 3.—Diagrammatic drawings of operations carried out in the 42 cases dealt with. Below each diagram the number of cases so dealt with is stated.

in this series. Simple gastro-enterostomy alone is insufficient, and will be followed by persistent symptoms in 50 per cent. of cases. Burning out the ulcer with the thermo-cautery, followed by invagination and a gastro-enterostomy, was carried out in 15 cases, and with uniform success. I confess to a pleasant surprise on hearing from the

have been seen in the retina have been reported from the German clinics.

It happens, then, that man may become the intermediate host, and because of the consequences the condition is a serious one. There are various theories as to how this may occur. The usual reasoning is that man may eat some vegetables or drink water contaminated with the segments or ova and thus become the intermediate host (or pig), with the same cycle of development of the parasite. It can occur, however, that man is both the host and intermediate at the same period; that is to say, that a man infected with the *Taenia solium* may also be infected with the *Cysticercus cellulosae*. It is thought that this accident may be caused through the regurgitation of the ripe proglottides into the stomach in an act of vomiting, but it is more likely that the irritation of the proglottides passing from the anus, which they may do spontaneously and under their own motility, leads to the soiling of man's fingers and the transference of the ova to the mouth.

A man, aged 44 years, a hairdresser, was sent to me for consultation by his doctor in April, 1926. He complained of pains in the left knee joint of some five years' duration which he described as "rheumatic." A sinus had developed upon the medial surface of the knee some two months before I saw him; it was about a centimetre in diameter and of about the same depth, and there was a purulent discharge from it. For the last ten years the patient had suffered from "fits" of epileptiform type at approximately monthly intervals. He would lose consciousness and fall down in the street. He did not recollect having bitten his tongue during one of the seizures. It was on account of these fits that he was discharged from the army, the condition being thought to be due to neurasthenia following shell-shock. He was in India from 1908 until 1911 in the army, from which he was discharged in 1916 after active service in France. There was no history of infection by intestinal parasites.

The man appeared to be healthy. There was a discharging sinus upon the medial aspect of the left knee. The chest appeared to be normal; special attention was paid to the rhythm of the heart as cases have been reported where it was irregular when the heart muscle contained the *Cysticercus cellulosae*. No abnormality was found in the eyes, and no subcutaneous nodules could be felt.

Radiograms were taken of the left knee-joint and the condition shown in Fig. 1 was discovered. Scattered throughout the muscles around the knee-joint were some eighty opaque, ovoid, disc-like bodies, which were doubtless in the nature of calcifications. They measured about 1 cm. by 5 mm., with regular edges. The centre of each mass was less dense than the peripheral margins, where the shading was "ringed" and concentric.

It was decided to examine every other part of the body, and this was done. Radiograms selected from this examination are reproduced in Figs. 2 to 4; some of the others yielded negative results. It will be seen that a similar condition to the one found in the knee exists in nearly every part, but with the main grouping of the calcifications in the extremities, as far down as the ankles and the wrists. The pectoral group of muscles upon each side contained a large number, and they were also found in the muscles of the neck and in the deep muscles around the vertebral column. The lungs were apparently unaffected and no abnormality could be detected in the heart shadow. None was located in the liver substance. Three, at least, of the bodies were seen to be lying in the pia mater of the brain, one of which was localized in the middle of the motor area upon the left side. These cerebral calcifications were similar to those seen in the other parts, and were not irregular, branched, or of undue size, as they have been described as seen in some anopsies. A calcification was localized as lying at the bottom of the sinus in the left knee-joint, which was thus explained.

It was determined to remove one of the bodies for pathological investigation, and a superficial one in the right forearm was localized and taken out under a local anaesthetic. It was creamy white, uniformly regular in consistency, and of stony hardness. Sections were prepared after decalcification, and the photo-micrographs which were taken of them are reproduced in Figs. 5 and 6.

Under a low objective the majority of the section was seen to consist of degenerated keratinous material, surrounded by a fibrous capsule in intimate association with the muscle substance in which it was embedded. In the portion of the section which is reproduced an area of specialized tissue was seen, which, under a higher power of magnification, was found to consist of what is doubtless a cestode head with its four suckers and its hooklets, representing in every respect the degenerated scolex of the *Taenia solium*. This is well shown in Fig. 6.

It was thus established that the sinus formation in the left knee-joint and the "fits" from which the patient had suffered for so many years were caused by infection by the *Cysticercus cellulosae* stage of the *Taenia solium*, of which he was the intermediate host. It is to be supposed that he became infected whilst in India, and that as the calcification process was completed in the embryonic deposits the manifestations of them began to appear.

The sinus has commenced to heal under appropriate surgical treatment, and between his seizures the patient

is not otherwise inconvenienced by the widespread nature of his lesion.

I should like to acknowledge my indebtedness to Sir Bernard Spilsbury for his kind assistance and advice, and my thanks are also due to Miss Vaughan of the Dunn Laboratories of the Surgical Unit of St. Bartholomew's Hospital for the photo-micrography of the sections.

## A CASE OF EXTENSIVE SOMATIC DISSEMINATION OF CYSTICERCUS CELLULOSAE IN MAN.

BY

MAJOR ROBERT PRIEST, M.B.CANTAB.,  
M.R.C.P.LOND., R.A.M.C.

As the opportunity seldom arises for observing in a living patient such large numbers and such a wide distribution of *Cysticercus cellulosae* throughout the body tissues, this case is, I think, worthy of record.

Pte. L., aged 24 years, had been a tramway worker in Lancashire before enlistment in April, 1920. After enlistment he had been able to carry out his full duties until October, 1925, when he was admitted to hospital for abdominal pain, vomiting, and fever, and it was then noted that his liver was enlarged to the extent of three fingerbreadths below the right costal margin. In November he had a similar attack, from which he recovered and was able to return to duty. So far as he was aware he had never passed any segments of tapeworm. On November 24th, twelve days after discharge from hospital, he had pain in the calf muscles which he noticed to be swollen. He could not walk far because of pain in the legs and shortness of breath. He reported sick again on November 28th, when it was noted that the muscular enlargement was not confined to the calf muscles, but that the muscles on contraction appeared nodular: certain nodules beneath the skin of the forehead and in the gastrocnemii were noted also. There was no oedema and the urine was normal. There was eosinophilia up to 4 per cent. On December 24th he had a "fit" during which the pulse was irregular and the rate rose to 120. When he came under my care on December 28th, 1925, he was pale and the face appeared puffy, but the two outstanding features were the chain of nodules visible on the forehead and the greatly enlarged, apparently well developed and powerful muscles.

The patient says he noticed the nodules first late in October or early in November. They are found in the subcutaneous tissues of the forehead, scalp, beneath the left eye, in the neck, and in the tissues of the cheek. They occur singly or in groups of two or three of varying sizes. When single they are ovoid, flattened ovoid, or spherical according to the amount of pressure exerted by the surrounding tissues. In size they range downwards from half an inch in the longest diameter. They are found in the aponeuroses of the abdomen, elbow-joints, thighs, and legs. In the muscles they can be felt singly, in groups, and in chains. One cyst is present in the left eye. They have not increased in size during observation. They may be described as fibro-cystic and are not and never have been painful. They are movable and not at all adherent to the skin.

Nearly all muscles are enlarged, especially those of the shoulder girdles, and on contraction the affected muscles present a nodular appearance. He gives the impression of being a powerful man of "Sandow" type development, but the muscle power is in fact very feeble. Enlargement is due to the presence of cysticerci and to the concomitant myositis. The muscles are tender. Vision at first was somewhat impaired in the left eye, but during the period of observation it deteriorated considerably. The heart does not appear to be enlarged, but the heart sounds are distant and not quite clear, and it seems probable that the heart also is invaded. In the central nervous system no localized lesion can be elicited, but during observation he has had five fits. They occur at any time, and on one occasion when he was asleep. They are accompanied by muscular twitching and jerkings, sometimes by cyanosis, sometimes pallor, and the pulse becomes irregular and the rate rises to 120. On one occasion the temperature rose to 99.2° F. He remains unconscious for four to five minutes, and this is followed by drowsiness and headache in the frontal region, especially over the left eye. He has no loss of sphincter control. His mental condition is not bright or quickly responsive, but his memory is good. The white cell count shows slight leucopenia, with a relative eosinophilia ranging from 12 to 6.5 per cent.

Vomiting occurred three times during the period of observation; it was not related to food; it occurred after a fit on one occasion, and at other times quite independently. No segments were seen in the vomit. The stools have been carefully searched daily for segments and ova, but without success up to date, even after the administration of anthelmintics. The urine at first contained traces of sugar, but since then has shown no abnormal constituents. The skin has never exhibited any evidence of urticaria.

On January 5th, to confirm my tentative diagnosis of generalized cysticercosis, two cysts were removed—one from the subcutaneous and one from muscle tissue. At the time of removal under local anaesthesia it was observed that the muscle (deltoid) was extensively invaded.

The following report on the removed cysts was received: "After removal of the ectocyst, they are found to be small oval cysts

showing at one point a darker area about the size of a pin's head. They contain a clear fluid and the dark spot proved to be the invaginated single scolex of the intermediate form of *Taenia solium*."

On January 6th the eyes were examined and the following report made: "The pupil reactions and all movements are normal. The left optic disc (D) is woolly at the edges, the blood vessels more engorged than usual. About a disc's diameter from the temporal side in a horizontal direction there is a small area of retinal pigmentation (P), a patch of choroiditis (C), fibrous bands with shallow opaque detachment of the retina leading downwards to a large subretinal cyst over which the vessels are stretched. The cyst shows a clear and well defined edge, is bluish in the outer portion, while the central area is hazy and opaque in which three or four dots can be seen. The cyst extends into the vitreous up to 5 D. The appearance presented is one of chorio-retinitis with a subretinal cyst due to the presence of a cysticercus."

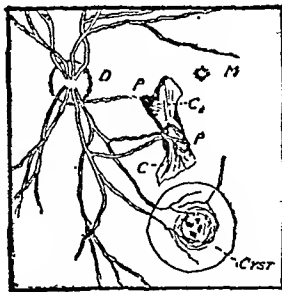


Diagram of left fundus. D=Optic disc, M=Macula, P=Pigmentation, C=Choroiditis, F=Fibrous bands, Cyst=Subretinal cyst.

As there is no evidence of the patient harbouring a *Taenia solium* now, and no history of his ever having acted as host to such, it is presumed that he must have ingested extraneous segments or ova. And as the digestion and dissemination of such is usually accompanied by constitutional disturbance, it is further presumed that the attacks of abdominal pain, vomiting, and fever were resultant to such dissemination, soon to be followed by painful muscles. In substantiation of this presumption is the fact that no nodules made their appearance prior to this illness in October. Up to the time of invaliding from the service he has received treatment by calcium salts and potassium iodide, and later by intravenous injections of novarsenobillon.

I am greatly indebted to Major Hood, R.A.M.C., for the pathological reports, to Captain Bell, R.A.M.C., for removing the cysts, and to Captain Kumar, I.M.S., for the ophthalmic examination

## British Medical Association.

### PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

#### SECTION OF MEDICAL SOCIOLOGY.

C. J. BOND, C.M.G., F.R.C.S., President.

#### PRESIDENT'S OPENING REMARKS.

THE PRESIDENT said he regarded it as a great privilege to preside over the Section of Medical Sociology for two reasons: first, because the subject of discussion—namely, "The effect of fatigue and monotony in industry," was a factor of increasing importance in the health and welfare of the industrial population; and secondly, because it was very desirable to enlist the interest of the medical profession (including medical officers of health and general practitioners) in the recent advances made in this field of industrial physiology and psychology.

This Section provided an excellent opportunity for bringing before the notice of their medical colleagues, as well as the public generally, the important work which was being carried on in industrial life by the Industrial Fatigue Research Board, the National Institute of Industrial Psychology, and by other societies and welfare workers interested in industrial hygiene.

A sound system of industrial psychology and physiology must be built on two principles: first, that every normal human being should strive to obtain some sense of satisfaction from energy expended and work done; failing such requirement, effort became reduced in volume or was diverted into other channels. The actual doing of the work itself must provide a fuller sense of satisfaction.

If industrial toil were less exhausting to mind and body, more stimulating, more health-giving, more interesting, then the growing demand for higher wages and shorter hours would be less insistent and greater benefit would be conferred on the worker. Consequently, a discussion of the factors in industrial life which tended to promote or to diminish the attainment of this sense of satisfaction must be of great importance. Among these factors the questions of monotony and fatigue had a very important aspect. The second principle was that the industrial problem was essentially an evolutionary one. It was largely a problem of adaptation to the industrial environment. If the worker was not fitted by nature, or had not been fitted by training, for his particular occupation, then he had not become adapted to his industrial environment. This opened up the important problem of vocational selection and vocational guidance in industry. In fact, it was not too much to say that the fitting of the work to the worker and the worker to his work was one of fundamental and growing importance, not only to the future of industry in our own country, but to the future of industry in the world.

### DISCUSSION ON THE PHYSICAL AND MENTAL EFFECTS OF MONOTONY IN MODERN INDUSTRY.

#### OPENING PAPER

BY

A. HUDSON DAVIES, B.A.,

National Institute of Industrial Psychology.

MONOTONY and fatigue are two aspects of a problem that affects the happiness and health of hundreds of thousands of workers in our civilization. It is not so easy, as mere separation on a notice of meeting would imply, to mark off two clearly defined fields of inquiry, and I think it is safe to say that in talking about monotony we shall find ourselves dealing simultaneously with some of the questions which will come up for discussion this afternoon. For although in our minds we can separate the more or less crude conceptions of fatigue and monotony, yet, when dealing with facts, and with situations in industry, it is often impossible to define clearly the responsibility due to either of these two factors, and frequently the remedies which we propose for one are directed to the relief of both. In work on these subjects we are to some extent handicapped by the long bridge from the laboratory to the factory. In other sciences data which at first lack sharpness respond to the refined treatments of the laboratory, but in dealing with human beings so many of the essential factors vary, when conclusions are sought in the midst of work, that in proportion to the extent by which we are forced to depart from objective controlled measurement, the possibilities of forming a clear opinion dwindle away.

The overlapping of work on fatigue and on monotony is explained by the fact that all evidence leads us to treat monotony as in some ways a special case of fatigue. To a limited extent we are justified in treating fatigue objectively. It has results which under suitable conditions can be expressed quantitatively. When work of any kind is done feelings of weariness, of disinclination for further work, and of desire for rest become prominent after a time. Muscular work causes diminished capacity for further activity, a decreasing rate of output (when the first slight stimulating effect of fatigue is past), an accumulation of waste products in the tissues, and finally increasing nervous inco-ordination. These effects can often be translated into terms of quantity. Physiological changes are not so obvious after mental work, but the general effects on rates of output and on accuracy of work are comparable with those following muscular activity.

Monotony is more elusive. It has no immediate physiological results distinguishable at present from those of fatigue—indeed, if we look on monotony as a special kind of fatigue this is not to be expected. It is not universal in its incidence under any given set of conditions, and it is not necessarily relieved by any particular remedy. In all



our deductions are effective only in a general sense. This limitation is possible to make broad deductions, most of us fatigue and monotony do in the making of ideas.

can make reaction automatic. They have not been bored.

dom, even when, owing to the variations over this whole range in industry, the physical sense. jobs—physically as well as mentally accompanies the exercise, and the men that peculiar colour of

monotony, while there are no general laws of monotony, and yet the workers are keenly affected by monotony if they persevere, they develop in time the symptoms of ordinary mental fatigue.

defined monotony, and he put forward evidence that workers tended to defend themselves against it by paying attention to minute differences between repetitions of the working cycle. By various laboratory tests, in which successive series of similar and different stimuli were applied to many subjects, he claimed to have distinguished between people in whom each experience in a uniform series facilitates a reaction to the succeeding ones, and those in whom the uniformity of the successive experiences has an inhibitory effect on the response. The former respond with less effort to each stimulus, the latter with an increasing effort as the series proceeds. He found evidence, by a general inquiry into the behaviour of all his subjects towards monotonous work, that those in whom this inhibitory effect was most marked were the ones who most disliked uniformity of work.

best working conception of monotonv is the one which we owe to the signal body there who looks on monotonv as a danger of fuel, balances of nervous exhaustion. In the structure of end-plate—there are certain material limits—reserves of synapse and acid and base, resistance of synapse and end-plate—which set a term to activity. These limits are always guarded by earlier nervous inhibition, which training, or the stress of some overwhelming necessity, can push nearer to the point of physiological exhaustion. impulses are to the point of physiological exhaustion, which tend to the point of physiological exhaustion. This is in the

[illegible]

only to one special case, and the inhibition disappears. In the guard, acting far in advance of the real limits for work.

consciousness, and by their own efforts to keep these processes, make the continuance of monotony arise. If it is necessary for any reason to keep these distractions out of the mind, feelings of monotony will be possible. We now examine a little more closely the behavior under different circumstances it will be observed that under different training conditions di-

body, matter, or form. The object is remote. The day is too far off to be stimulated by its prospect. There is advice of the permanence; the race about the long practice paddles, about the depressing. There is coach, which the crew finds infinitely depressing. There are times when nothing but a complete holiday will restore their poise. Uniformity and continuity of work, without the close incentive of competition, have temporarily destroyed interest, and the work is found more and more monotonous.

Now these features are increasingly obvious in the institution for there will be no going back from organization and organization which has been built up on the large scale.

the development of the work, in the last century revolutionized the operations of the worker, production becomes more rapid and goods cheaper. At every point in the increasing the functions of the worker, production is being split off, to be performed by a new machine, or by a hand which, because of the industrial process small jobs are being split off, to be performed by a new machine, or by a hand which, because it now does one operation instead of two, develops a skill which changing work would not permit. In the shoe industry the original work done by the village shoemaker is now divided between scores of operatives, using special knowledge and the skill of years on one fraction of an operation. The original working cycle is split up into many small work cycles, repeated with a minimum of variation hundreds, perhaps thousands, of times in the day. In some trades variety is demanded of the manufacturer, in others efforts are made further to standardize both operation and product, because the manufacturer believes that variation in either causes waste of skill and loss of productive power. With this tendency to division and to specialization the possibilities of interest and expression in work decline.

Repetition is, of course, not a new problem. Even the making of one boot after another; domestic work made one boot after another; and in hoeing the soil made one hoeing after another; and in every similar movement of the hand and mind, the same monotony is present.

Repetition is one boot-  
 maker made an inspiring routine.  
 is often a rather uninspiring routine.  
 twenty-acre field a large number of very similar  
 ments are made. But, through the logical extension of a  
 process that began as soon as men ceased to provide all things  
 for themselves, many more people are busy nowadays with  
 repetition work, and the average length of the working  
 cycle becomes progressively shorter. Two hundred years  
 ago there was nobody living who was faced with the  
 necessity of performing a two-second operation all day  
 long for years on end. There are many in that position  
 to-day, and to that extent we have a new situation.

It is not only that repetition destroys the possibility of interest, though any experience has only to be repeated often enough for further repetition to become irksome. Only while there are possibilities of new discriminations, of new reactions in ourselves, is it possible to attend with pleasure to the repetition. When once our favourite poem is sufficiently familiar to be quoted without shock in the morning newspaper leader something of its attraction has gone for us.

But the tendency of modern industry to deal with material as so many identical samples also removes the elements of interest from work. When the bootmaker finished his boot there was character and history in the making. Problems had been faced, particular difficulties overcome, which remained associated with the product. There was the possibility of an almost personal relation to the product. Because the modern worker deals only with one process, the range of difficulty is limited; in a short time there are no surprises, and his own contribution to a piece of work is overlaid at a later stage by the labours of other hands. All that is left is the necessity of passing a standard and of achieving output. Although derived interests do arise in connexion with work there is no longer the individual and personal response which was once possible. Work is becoming a price that is paid for leisure.

With increasing uniformity of material there is a steady pressure towards increasing continuity of work. The pictures which those unacquainted with industrial life draw of repetitive processes usually fail to allow for the fact that work is rarely continuous. Dr. Vernon of the Industrial Fatigue Research Board made an inquiry into the conditions of fifty apparently continuous jobs spread over boot and shoe making, tin canister making, laundry work, and packing operations. The working cycle varied from under one second up to as much as two minutes, with an average length of under four seconds. By making time studies of the work of various operatives, the number and duration of the breaks was analysed. Dr. Vernon examined only those jobs which seemed noticeably regular. Stops occurred for many reasons. Work had to be carried away or fetched; machines had to be stopped for cleaning or adjustment; there were waits when new supplies were not forthcoming. In the most continuous work—handkerchief-folding—there was an average of three breaks in the hour, totalling four and a half minutes. In other jobs there were breaks of as much as eleven minutes in the hour. Over the whole group workers who habitually sat at work got four breaks in the hour, which they spent walking or sitting, while standing workers got five breaks. There is, however, a tendency for these stoppages to be eliminated, although by affording opportunities for change of posture, for walking, and for conversation, they offer a welcome relief from the rhythmical inevitability of the work. Such unproductive time is from one point of view waste, if a skilled producing agent is performing small transport services, but it would be well to weigh against machine-like efficiency the human cost of increasing the continuity of work and the likely oppressiveness of its monotony in these circumstances. Output does not entirely depend on productive time.

Although on very uniform and very continuous repetitive work a higher proportion of workers will suffer from monotony than on more varied and interrupted work, there are still people who are not bored by work of this kind, and people who, even on the most varied work, maintain a steadily depressed attitude to life, and complain bitterly of monotony. It is safe to generalize and say that the actual temporal or material conditions of work do not make it monotonous. Monotony is a reaction, not to particular selected features of work, but to the whole circumstances of its performance. Its appearance is conditioned, not only by the industrial environment, but by personal relations of all kinds and by the circumstances of life in general for the worker who feels "fed up."

The theory of monotony as a warning symptom of central nervous exhaustion, consequent on the effort to maintain some mental process in the face of strong competing interests, is capable of being brought into close connexion with the operative in a factory. All industrial work in-

volves the maintenance of certain attitudes of mind—to the work itself, or to the people engaged in the work. The worker feeding a dial machine, or counting screws, is able to perform these operations with a minimum of attention after a time. It is not generally possible to concentrate on anything else, however, without detriment to the work, or even sometimes danger, and there are consequently voluntary restrictions on freedom of movement, necessities of behaviour, and inhibitions of normal impulses (such as looking up at a sudden noise), which have to be preserved. There is a perpetual holding of oneself in check. If there are no incentives powerful enough to strengthen the workers in these efforts, then sooner or later the special kind of fatigue which lies behind monotony will set in.

It is often extremely difficult to decide to what extent the monotony of work is oppressive. Suggestion always operates among groups of workers engaged on similar processes—a new-comer will suddenly open the eyes of a group to defects or conditions which had not affected them before. A worker genuinely affected by the dullness of a job sometimes destroys by her complaints the attitude of acceptance which others have managed to achieve. Recently, in a factory where the work involved was the counting of certain forms, and the sorting from them of a very few defective specimens, and where there was a periodic shifting of the workers from branch to branch, there was among new-comers a strong antipathy to the work, for lurid stories of the conditions in the counting office were circulated in the other offices of the firm. The new-comers were usually pleasantly surprised, for the compensations had not achieved the same publicity as the drawbacks. But among the old hands there was a good deal of complaint of the monotony of the work, in spite of short hours of work and very high pay. It was difficult to decide whether this tendency to complain of monotony arose because long continuance at the work reduced all to a state of boredom, or whether, as there seemed some reason to believe, suggestion from the few who really found the work intolerable—and however good the conditions, there are always some who hate such work—produced a general reaction against the work. There was a fixed quota of output, not unduly high, and many opportunities for breaks in the work, so that the conditions were not oppressive. There are likely to be many cases in industry where the oppressiveness of monotonous work will only be felt when suggestion has undermined resistance.

The mental effects of monotonous work vary from person to person. In nearly all repetitive jobs in which monotony is felt opportunities are afforded for reverie. Probably there is no opportunity for thinking of a systematic kind, owing to the slight attention which must still be paid periodically or continuously to the work; but a vague, loose series of associations floats through the field of consciousness. To some workers there is an attraction in work which does not require close concentration. Others fall into an attitude of passive acceptance. The day slips by, and output piles up, while fragmentary pieces of experience are caught up, turned over for a few moments, and allowed to drift away again. There are workers to whom it had never occurred that objectively dull work was boring. If there are no standards of criticism towards aimless mental activity of this kind the worker is contented.

But increasing intelligence, and especially increasing education, have their effects. Among the girls on the counting process there were many to whom the limited scope of the work added to its burden. "Any fool could do this," they said, and they also in their work found opportunities of reverie. But their dreams were not altogether happy. Because at bottom tendencies were failing to find expression in the work, reverie became a means of escape, which is never adequate so long as the worker is conscious of the discrepancy between fancy and reality. These girls realized that their full powers were not being used. By way of reaction many of them said that though they once read books they had ceased to do so now. They seemed resentful that this should be so, and projected the responsibility on to the work. They felt, as one of them said, as if they were becoming "turnips," that they were not so intelligent as they used to be.

Reverie appeared by no means unpleasant, except in so

far as purposeless fantasy seemed undesirable. The girls felt an inertia, which seemed to be due, not so much to uniformity of work, as to the possibility of reshaping the world, which can be realized in fantasy. When the mind habitually turns away from externals the workers find relief in the easy play of ideas which goes on concurrently with work. It is not surprising if years spent in this way slowly destroy among the workers the wish to effect changes in themselves or in their environment. There is an easier path to a kind of half release which prevents efforts to a more positive satisfaction. Among these counters, who had all had secondary education, there were some who realized this vaguely, and added a slight feeling of guilt to the combination.

But there are more sinister effects of excessive reverie. Unless monotony is relieved it may be pushed, in limiting cases, to a point where there is a failure of inhibition, which allows the release of repressed unpleasant memories from the unconscious. This is liable to happen when central control is weakened by fatigue, and the peculiar circumstances of unlimited time for reverie and for unsystematized association, which monotonous work provides, set the stage for the development of neurosis. Even among normal people on monotonous work there are signs of maladjustment. Unreasonable fears are displayed of quite safe pieces of machinery, used thousands of times without accident; anxieties are more than usually obvious about output, about the opinions of fellow workers, about health; others admit to a feeling of being trapped, or "as if the day were leaving them behind"; while some girls on the counting process had a feeling that they were being watched, which was not justified by facts, even though some of their work was checked. The feelings of "guilt" also are in this class.

All of these tendencies may be the beginnings of psychopathic lesions. They do not occur in all people; they are always put forward apologetically as something rather stupid and not worth mentioning by those who experience them. In most cases, even after a long time at the work, the acquirement of interests outside the work and a generally healthy attitude to life offsets their beginnings. But in a few cases the symptoms develop to the point where psycho-therapeutic treatment becomes necessary.

Even when the stage of genuine psycho-neurotic breakdown has not been reached the presence of people with such tendencies has a noticeable effect on the atmosphere of the workshop. The internal dissatisfaction of a worker whose powers are not being used is sometimes not consciously seen at its true value, but spreads itself in resentment and criticism of the whole system. Such people grow irritable, the ordinary social amenities disappear, the perspective of affairs vanishes, and sometimes a tendency to aimless mischief arises. Thus there was a case where, out of detestation of monotonous work in a very poor environment, a crew of men handling fragile sheet material at a conveyor extracted an undoubted pleasure and relief from periodic destruction of some of the material. When conditions were improved the spoilage was reduced to insignificance. The protest of such workers is not always foolish, because it comes by way of reaction to the monotony of the work, and the mere fact of investigating their complaints adds something of interest to their work.

The only way in which physical effects can be attributed satisfactorily to monotonous work is by the comparison of groups of workers. This has so far not been done, though I believe an investigation on these lines is proceeding. The physical effects will not be connected with monotony, *prima facie*, for in those cases where monotony is felt to be most oppressive, the lesion that occurs will be functional and in the nature of a defence against continuance in the work. We have only to remember the case of miner's nystagmus to see that this is a possibility. It was found that the eye twitch which characterized this disease was functional in origin, and to some degree its occurrence was a method of unconscious self defence against the discomforts and dangers of the pit.

One of the obvious ways of preventing the development of boredom is to stop work. It was pointed out earlier that by increasing the continuity of work there was not necessarily a gain in output, and one of the tendencies

noticed in workers under these conditions is the taking of unofficial rests. Here again the counters before mentioned provide us with an example. Time study showed that, although counting was found dull and monotonous, it actually occupied less than two hours out of the six-hour day which was worked. There was a traditional, but unofficial, allowance of ten minutes away from work twice a day, whenever it was most required. But analysis revealed the fact that even with the slowest workers at least forty minutes of the day went in odd seconds and minutes of complete rest from work. With the fast workers even longer time was taken. Out of the total about two-thirds was taken in the afternoon spell. The feelings of monotony are most oppressive in the afternoon, and, as is usual when work consists of short repeated cycles, it was found that, although the actual speed of counting did not greatly fall off, increasing amounts of rest were being taken between repetitions towards the end of the day.

It has been thought also that the work curve can, in certain circumstances, provide evidence of monotony. This curve shows the rate of working at various times in the day, and in its usual form shows a rise from the start to a maximum at about the third hour of work, followed by a decline to the dinner hour. The afternoon curve rises rapidly at first, and then declines more or less sharply as the afternoon wears on.

Laboratory curves of work found to be monotonous by the subjects very often show a depression in the middle of the spell. The workers dash at the work at a pace which cannot last. Boredom causes a decline in speed, until, overestimating the time that they have been at work, a spurt begins because they anticipate the end of the spell. They finish strongly.

Wyatt has shown in continuous addition and comptometer work that this tendency to slow down in the middle of a spell is most clear in those people who find the monotony of the work most distasteful. It was found by Miss Burnett, in an experiment under conditions very close to those obtaining in industry, in which work was done with and without rest pauses, that the depressed curve was given preponderantly by the more intelligent subjects—who were also the most bored—and especially on those days when, through the absence of rest pauses, the tendency to monotony would seem to be most marked.

From our inquiry it will be seen that any method of reducing the uniformity of work will be a step in the right direction, so long as the necessity of keeping a balance between too much change, with its irritating effect on piece workers and its depressing effect on output, and too little, with the danger of monotony, is realized. Any method which we can use to increase the interest or the incentive to work will be effective. Boredom is not felt, or at least has no chance of developing into serious nervous exhaustion, if the worker feels that, though the work is dull, it is worth doing. What makes it worth doing may be anything—from a high wage to a young man in the same factory. It may be pride in the organization, pride in one's own skill, or personal liking for the company the workshop affords. With a good factory atmosphere the plea of monotony is not put forward on work where other conditions would at once produce feelings of resentment and boredom.

In order to increase interest in work, short talks on the relation of each worker and his process to the general scheme have been suggested. Wherever it is possible some method of giving the worker an interest in output is desirable, and the change of outlook is often most marked when this is done. Miss Burnett's experiments were designed to illuminate this point among others. Her four subjects worked for two periods of three months, first on time rates and later on piece rates. The work was identical in both the periods. During the piece-rate period the girls worked harder, found much greater interest in the work, showed an almost complete absence of the monotony curve, and achieved increases of output which ranged from 9.3 to 17.9 per cent.

The value of rest pauses and of changes of work is also marked. The effect of breaking up the working period is to allow the prospect of stopping work to be an

incentive to continuing for the time being. Change of work, if that is possible, is more desirable than rest, for there comes a complete temporary breakaway from the attitude which has become wearisome. There may be opportunities for collecting together into a definite period various subsidiary operations, fetching and removing work, which would otherwise be done sporadically. Or it may be necessary to specialize the work of a group of people still further to get the required conditions. The National Institute of Industrial Psychology had a case where a group of girls were employed on a process which involved opening certain parcels, checking the contents, performing a punching operation on the contents, and remaking the parcels. The average time per parcel was thirteen minutes under ordinary conditions, but under supervision, not working at an exorbitant rate, two workers averaged eight minutes over a long period. Every one complained of monotony. There was much congestion and litter in the room, and between each parcel and the next a journey had to be made to the store shelves. By dividing up the work process, so that one team of girls did the preliminary opening of the parcels while the distribution and collection of work went to two inspecting and punching teams, not only was output increased by 10 per cent., even when rest pauses were inserted, but by having the three teams change functions at intervals there came a break to which all looked forward. Although each job involved more repetition than the old complete cycle, yet three repetition jobs done for an hour each proved permanently more interesting than the former longer and more varied process repeated less frequently. Here also we had an example of the environmental influence. As a result of the change in organization the room became tidier. There were fewer people, since with a 10 per cent. increase in output some could be moved to do other jobs. There was less moving about, and the possibility for the first time of developing rhythm or swing in the work. It became obvious that a part of the reaction against work in this room, which was so severe that only half-day shifts were operative, was due to the congested, irritating, and untidy conditions of work.

There is one more step which can be taken to reduce the incidence of monotony: there is still the possibility of selecting workers for the more dull and repetitive work by diagnostic tests. It has often been stated that intelligent people are more likely to suffer from monotony than the unintelligent, and it is quite true that, *a priori*, we should expect those who are most capable of dealing adequately with new and unexpected situations to suffer most in work which makes demands for no initiative. Miss Burnett found that of the four girls, the two most intelligent, as indicated by a simple "directions" test, found the work most monotonous and furnished the most objective evidence of monotony. But the stage has not yet come for the preparation of norms above which entry to a monotonous job will not be recommended. There must be time for the collection of more data, and valuable results may be forthcoming when the figures of labour turnover on repetitive jobs are analysed, with respect to intelligence, at the conclusion of the experiment on vocational guidance now being carried out by the National Institute of Industrial Psychology.

Specific tests of capacity to tolerate uniform work have been suggested. Except for Munsterberg's tests quoted earlier, which have not been much developed, most of these take the form of long uninteresting tasks in which the rate of output is measured continuously. There is some slight evidence that an erratic performance, with a widely varying rate of output from minute to minute, is an indication of the future liability of the subject to monotony. In addition to these special tests any method of selection which guides people into work for which innate dispositions and aptitudes fit them will, *pro tanto*, reduce the possibilities of disharmony, and so minimize the effects of monotony. Some of the worst sufferers are those who, through lack of dexterity or other disability, feel themselves on the verge of failure at their job, and, struggling against something which they do not realize as inevitable, grow disheartened and depressed.

I have tried in this paper to show how monotony depends on the interaction of many factors, of which perhaps the most important are personal ones. Since there is no doubt that many of the determining conditions are bound, under the present methods of production, to increase their influence over the general body of workers, it is important to recognize the results when we see them, and the ways in which monotony may be combated. If, finally, there is a gradation of interest, then suitable people must be steered into the most exacting work, for the general social welfare suffers while the wrong person fights against the uncongenial job. If the costs of improving monotonous work are economic, the losses through its continuance are not only in human values. One fears to preach to the converted, but it cannot be too strongly emphasized that mental attitudes are vital factors in production.

#### DISCUSSION.

Miss MAY SMITH (Industrial Fatigue Research Board) said that complaints and criticisms of monotony were usually made by highly educated people who went through a factory as observers, or in some instances as investigators. The besetting sin of the investigator was to put himself in the place of the worker, and then judge that work as it would affect him were he doing it. It was necessary to see the work as it really was to the worker. The word "monotony" meant one tone, and represented absence of stimulation; it was frequently attached to "repetition of movement." Repetitive movements must either be studied as such, in which case their problems belonged to the psychology of habit formation, or they must be put in their complete setting, which setting would include at least the repetition work, the varying amount done as the hours go on, the opinions of fellow workers and authorities about that work, physiological changes, emotional changes, and the collective life of the factory. Workers on one process frequently stigmatized as monotonous some other process, when to the observer there was nothing to choose between them. In itself, monotonous work could not be said to be detrimental to the health of the worker as such; as in so many other industrial problems, it was a question of relation—that is, of the effect of a given type of work on a given type of person. It was useless to criticize or attempt to assess a process regardless of the person who was to work at it. It was now comparatively easy to measure a person's general intelligence or neuro-muscular equipment; it was impossible to measure objectively the emotional make-up. A worker of average intelligence and skill engaged on routine work in an office or factory where the general atmosphere was dull, and where there was nobody in whom she took any interest or for whose approval she cared, might react in one of four ways: she might become a bad timekeeper, seize every opportunity for leaving the work, and become just as unsatisfactory as she could be without losing the job. She would probably be called "difficult," and be frequently in trouble. Secondly, in a person of similar intelligence and speed but of lower vitality boredom might quickly lead to sensations of tiredness, which in turn led to attention to some part of the body. That part which she was using might come into consciousness, and she would feel a pain and complain that her eyes ached, her head ached, that she had rheumatism, or that she suffered from indigestion which nobody could cure. It was rarely the happy and well placed people who had a sequence of sick leaves every year. The boredom acted as a negative agent, weakening resistance. Thirdly, the worker might carry on for years with gradually diminishing interest. Here the monotony was related to the general conditions of the work rather than to the actual repetition of movements. She would complain that the work got on her nerves; she would be irritable, and would probably have some form of "nervous breakdown." Breakdown was not infrequently equivalent to "fed up." Fourthly, the worker might get interested in the work, and might laugh if asked about its monotony; or she might accept it and compensate outside. Finally, there was the way out via the day-dream. This reaction was by no means universal, nor were its effects simple. Some people

## EFFECTS OF MONOTONY IN MODERN INDUSTRY.

could day-dream quite happily and carry on their monotonous work efficiently. The content of the day-dream could rarely be elicited, but it was usually of a compensatory type; it allowed of the expression of activities and emotions not normally expressed in reality. Others found that the day-dream interfered with their work; they tended to oscillate between the work, which did not occupy them fully, and the day-dream. Others, again, looked upon the day-dream as something to be opposed, and resisted it, wasting in the process valuable energy; they tended to have psycho-neurotic symptoms of a serious nature. Occasionally the day-dream, instead of being pleasant and controllable, became the master, and the subject became more and more self-centred and a victim of fantasy. In these cases the work was looked upon as a refuge from the unpleasant character of the day-dream.

Major T. KNOWLES (Supervisor of Messrs. Boots' Welfare Centre) said that the monotony of modern industrial processes was a subject of constant discussion, and visitors to some firms would remark of the work, "How monotonous! I couldn't do it; it would kill me." But what was monotony? Monotony was surely a question of individual preference, and it was impossible to generalize and say that such and such a thing was monotonous. If everyone found the same things monotonous, how monotonous every one would be. Was it possible to find interest in stamping boxes every day? His inquiries tended to show that the girls found much of interest in the work. No work was unskilled, and there was a definite pride in the way the work was done and in the speed of the work. Where girls were working in teams there was the desire to play a part in the group results, and where these results were posted the pride in individual skill and in the collective skill of the group was accentuated. In addition to the interest which the work itself created, there was the interest created by companionship and surroundings. It was said that there was deadening effect on the mental faculties of these workers, and a lack of opportunity for self-development. But leisure was the time for self-development, and Major Knowles would support any movement which removed the monotony from leisure and offered to the workers opportunities for development. He would claim that work need not necessarily provide the development, but it must provide the means for that development; and it was only by what had been called monotonous repetitive methods that this could be secured. Girls who had been for some years on repetitive work took their part in the mental recreations that were offered, and the non-vocational culture classes were made up largely of girls of this type. Finding it unnecessary to absorb their evenings at classes in shorthand, book-keeping, or that vague subject commercial practice, they were free to attend the housewifery, cookery, needlework, and leatherwork classes. To show the absence of detrimental results in repetitive work Major Knowles quoted the experience of an office department. In this particular office department there was a staff of two hundred girls, one-third of whom were engaged in adding machine work, the other two-thirds were employed in ordinary office work. The percentage of sickness amongst those engaged in repetitive work was about one-half of that for the rest. The girls on repetitive work were happy and healthy; they resented any effort to change their work; they were playing their part in the social, educational, and recreational work, and to arouse artificial discontent by constantly suggesting that the work was injurious was a futile thing to do.

The wise employer realized that his responsibility did not cease with the weekly pay envelope. Repetitive methods or any other methods would be harmful if the working conditions were not good. The employer should take every precaution, in time and motion study, ventilation, rest pauses, and the provision of suitable apparatus to ensure safe and easy working; and welfare work in its medical, educational, and recreational aspects must co-operate. The problem of monotony, said Major Knowles, was one of the many problems of industrial management, but they should be somewhat slow in their judgement on these problems. There was a new spirit in industry which would in time remove the suspicion and consequent opposition

that existed to-day. It was not by rules and regulations that they would succeed; statutory methods must fail. They must secure the atmosphere, and, above all, be moderate in their statements.

Miss SLOCOCK (Superintending Inspector of Factories) said that in endeavouring to get examples of what were generally considered the most monotonous occupations, or rather processes, she was at once confronted with the fact that in one sense there was no such thing as monotonous work. It was rather the reaction of certain human beings to certain work carried on under certain conditions, not necessarily repetitive work or work carried on for long spells. The question of character and temperament played such a large part that what appeared monotonous to one person might not prove in the least so to another. Inquiries showed that it was repetitive work of various kinds that was generally considered to be monotonous. It was probably the absence of creative aspect in any work that brought about the sensation of monotony. This aspect was well expressed by an old collar maker in the West of England who said: "Nowadays it is difficult to take any interest in one's work when one only does a small portion when you made the whole collar article. In the old days when you turned out a good one, you felt satisfied when you finished belongs to no one." Nowadays the collar when finished belongs to no one. It seemed impossible to get any very definite information as to the adverse effect of repetitive work on the mental and physical health of workers; but there were certain factors which had an important bearing on the subject. Thus it was customary to draft the new young worker on to the most monotonous job and to promote her as soon as opportunity offered to work requiring more intelligence. If the time spent on the monotonous work was not too long it was scarcely likely to affect the mental capacity of the worker and make her less adaptable to other work. Secondly, the shortened working day of eight to nine hours and the week of forty-seven or forty-eight hours had doubtless mitigated to a very large extent the fatigue which would result from longer hours of monotonous work. Under modern conditions and shorter hours the workers appeared to be brighter and more alert, even when performing monotonous jobs. Thirdly, automatic feeds were now eliminating much monotonous work. The tending of such a machine and keeping it supplied with material was a very much more interesting and less monotonous job than the continuous feeding of small parts or sheets into the machine. Fourthly, it was undoubtedly the environment in which the work was done rather than the work itself which affected the mental and physical condition of the workers. The mental atmosphere of the factory, if it was friendly and interesting, might soon compensate for lack of interest in the job. Constant nagging by an over-anxious foreman or forewoman and bad hygienic conditions, on the other hand, might soon create such a feeling of strain and worry that the most interesting work became irksome and burdensome, and the workers lost heart and health. Lastly, while scientific investigation into vocational selection, methods of work, the elimination of wasteful movements, the adoption of labour-saving appliances, and rest pauses and hours of work had helped to show how monotony could be counteracted, there was real need for warning as regards overspeeding. Work carried on at too high pressure was probably far more fatiguing and likely to affect the health adversely than work at the worker's own pace spread over a slightly longer period. Alternation of employment on unskilled monotonous work appeared to have an affection for their own particular job.

Miss K. DOWDING, of the Chiswick Polish Company, said that the inevitability of mechanical industry was now undisputed, but that highly organized methods brought new problems for the psychologist and physiologist, one of which was this new form of monotony. She used the term "new form of monotony" advisedly, for it was only reasonable to suppose that monotony and its ill effects had been present in connexion with the work ever since the



discovery that a subdivision of labour increased the sum total of work produced by any given number of men. Hand spinning, for instance, was now looked upon through very rosy glasses as one of the "old crafts," but to sit and spin alone would be indeed monotony to our modern girl.

Miss Dowding thought that there was very little real monotony felt by girls in well organized factories to-day. There was a type of girl who was constitutionally or emotionally unable to work either with machinery or on piece-work, because her natural rhythm was of a leisurely type. There were other girls who were truly mechanical and loved machinery, becoming peculiarly attached to their own particular machine, and others whose activities were excited and kept elated by piece-work. It was in greater care in the choosing and placing of the workers, and the more thoughtful provision and arrangement of their working environment, that the prevention of the mental and physical ill effects of repetitive production could be looked for. Correct placing in the first instance or transference in the early days determined frequently between the drifter and the contented artisan. Correct placing had its effects upon the whole group of workers. Nothing was easier than for a discontented worker to turn a pleasurable job into monotonous drudgery for a whole group of workers. This suggestibility of the workers made the whole problem of monotony so difficult. It was a most contagious complaint, and they should be extremely careful before they labelled monotony as an urgent industrial problem. Miss Dowding had been unable to collect evidence of any serious deleterious effects arising from repetition work, save in isolated cases of unsuitability which were capable of readjustment. In factories with good conditions it was easier to find instances of keen resentment and genuine distress at a suggested transfer. The whole question was largely one of the attitude of mind of the worker. It was the general feeling of being absorbed into some vast impersonal "thing" which was the foundation of the irksomeness of factory work—whether repetitive or otherwise. It was only by attacking this impersonality that the "dead level" of work could be altered.

In a paper which she was unable to read through absence, Professor WINIFRED CULLIS submitted that the word "monotony" now definitely carried with it more or less descriptive colour. To speak of a job as monotonous did not mean only that it was repetitive, made up of a series of efforts which might or might not in themselves be unpleasant, but that the general effect was an unpleasant one—in other words, it connoted an unpleasurable reaction to repetition. The discussion dealt with the repetition of actions which, though not sufficiently arduous to bring into play the type of protection associated with heavy muscular work, yet could produce a state of exhaustion quite as serious, or even more so. This kind of fatigue or boredom which came from repetitive work might be due to fatigue in certain nerve centres concerned in the performance of the action; or, as had been suggested by C. S. Myers, the fatigue might arise from the fact that the successful performance of a certain act necessitated the suppression of other actions not compatible with it. These inhibited mental processes became more and more difficult to suppress as fatigue from that inhibition set in. Investigation had shown that individual differences were very marked in reference to reaction to repetitive work. In the laboratory tests those subjects who gave the best showings on the findings of the intelligence tests were the most variable workers on the findings of the experimental tests. The introduction of rest pauses always had a beneficial effect; there was less fatigue, and the average output was increased quite definitely. Group working might counteract the particular desires or inclinations of an individual member of the group, and the fatigue of repetitive work might be lessened by paying special attention to the general arrangement of the work, and more particularly to the adjustment of the machine to the worker. In fact, the requirements were to make the times of work such as to be consistent both with the health of the worker and the prosperity of the industry; to introduce rest pauses under expert advice as to the period and duration, since these differ

from industry to industry; to give sufficient free time to the worker to undertake activities of a different kind; and to give the individual such an education as would enable him to make an enlightened and stimulating use of his spare time.

Dr. J. STEWART MACKINTOSH (Hampstead) said that the issue was ultimately a biological one. The inhabitants of this country had passed successively through the hunting, pastoral, and agricultural stages, and the industrial era was at least as great a revolution as those which had preceded it. The simple traditions, whereby communities attached to the soil through many generations maintained their health, proved unserviceable to the huge, uprooted, and floating populations of the industrial districts. A new and more complex tradition must be devised by which physical and psychological adjustment to new conditions might be effected. They had to ask themselves the searching question whether they were eliminating the elements in their national composition which had made them great, or whether they were still going to maintain the quality of the British people by adapting the industrial machine more to the man and the man less to the machine.

Dr. J. JENKINS ROBB (Birmingham) agreed that it was most difficult to separate monotony from the question of fatigue. Both seemed to him interdependent and inter-related in their complexity. He feared that there was a distinct danger in the overemphasis of the question of psychology in industrial conditions, and in too much being claimed for it might lurk a factor akin to psycho-analysis. Psychology was not an exact science, and therefore its claims, so far as labour conditions were concerned, should be carefully watched. In reading the council's reports he felt they were in the most initiatory stages, that some of their tables referred to very small groups, the smallness of the group making conclusions unsafe. Judgement and conclusive evidence must be based on large experience properly correlated. Monotony was not so apparent to the less educated, an argument against such labour, though thoughtful workers, he found, resented it. In his opinion much of what was termed neurasthenia was so caused. He would like to know the relation of monotony to sickness benefit, for in looking into this question in a large group of organized workers in a friendly society's report, he found that in this section sickness was now costing more, and last year showed that income from sick rates did not meet expenditure. Taylor's motion study had for its object increase of production, and even Taylor's figures showed that while production went up to a great extent, wages made a comparatively small advance, and the percentage of rejected was high. So the present-day worker was suspicious of any system or plan which meant observations with a stop-watch in hand so that he might be speeded up; for to him it meant, as a rule, a relative drop in wages; it bred discontent; and discontent in work was twin brother to monotony.

Dr. J. LOCKHART (Nottingham) objected to the frequent use of the term "neurasthenia" in certificates. When the patient was only vaguely ill the panel doctor, whose certificate alone was valid for benefit, had to put something down. He used the word "neurasthenia"; and the label, once applied, took months to unstick. Medicine was a clinical problem; if industrial medicine was to be any good it involved co-operation with the doctor outside. Dr. Lockhart desired that the Ministry of Health should make this co-operation official.

Dr. CHRISTINE MURRELL (London) believed that the element of compulsion produced monotony. She hoped that the development of machinery would in time remove monotony to the machine. The testing of vocational capacity was of the utmost importance.

Dr. C. FORBES (Aberdeen) said that monotony appeared, at the present time, to be an essential part of industry. It might be anticipated that the progress of invention would gradually replace by mechanical devices the more monotonous processes now carried on by human beings.

In the meantime welfare work was to be encouraged, aiming as it did at neutralizing as far as possible the effects of monotony in work. While many workers employed in monotonous work did not find it irksome some undoubtedly did, and, either on account of intelligence, education, or of temperament, were broken in health and happiness by routine. These should be eliminated by vocational tests and given more varied work to do.

Sir THOMAS LEGGE (Home Office, Whitehall) thought that welfare work would gradually bring back some portion of the interest in work that existed in the mediæval guilds. In the guilds there was comity between employer and employed; the sick were cared for, good work was important, and pride was taken in the work. Trade unions and employers should have the same aims nowadays. Competition, which was absent in the guilds, was producing monotony, though complaints of monotony had not been brought before him much by the workers themselves. There were, indeed, many more urgent conditions that required to be got rid of before monotony was tackled.

Dr. BRACKENBURY (London) said that Sir Thomas Legge was thinking more of the physical effects of monotony; they should think also of the mental effects. It was curious that nearly all the speakers had spoken on female mentality. Was there not also a mentality of men? He would like to see communal pride, as well as individual, in the products of labour—pride in the finished products in which the workers had taken part. There should also be artistic pride in the products, and the development of this would be helped by the nature of the surroundings, an artistic environment for the worker. And, most important of all, work must not be separated from the rest of life. A proper attitude towards life in general should be instilled into the minds of the worker.

Dr. H. S. BEADLES (Romford) said that he, like others, had started as an idealist; but with thirty years' inside experience of many of the large factories of most types of industry, he wished to warn his hearers against too much interference with the life of the worker, particularly outside the factory. Having been asked by the Home Office to help in the formation of statistical records, he did not feel in a position to do so; and he noted that statistics were quoted in percentages on the result of as few as three cases investigated. Welfare departments had been of great help to the worker inside the factory provided they had been in suitable hands, but some of the superintendents of these were following the workers into their own homes; the interference involved in this was seriously resented by many of the employees.

## DISCUSSION ON THE PHYSICAL AND MENTAL EFFECTS OF FATIGUE IN MODERN INDUSTRY.

### OPENING PAPERS.

I.—W. LIONEL HICHENS,

Chairman of Cammell, Laird and Co.

I have no pretension to expert knowledge on the subject of industrial fatigue, and I cannot even claim that degree of practical knowledge which comes from daily contact with workshop practice. But I can claim to be keenly interested in the subject, since I have been a member of the Industrial Fatigue Research Board from its early days, and have followed its activities closely.

This has been called the age of science, and the importance of research and the application of science to industry is widely recognized. We realize the importance of an exhaustive research into the properties of coal or of iron and steel, but we are not perhaps so fully alive to the need of research as applied to the human factor in industry. And yet the human factor transcends all others in importance. It is not merely that we want industrial workers to be healthy; it is not merely that we want them to be wealthy—and in spite of all that is said to the contrary we do want that; we want them also to be wise and con-

tented. And contentment must be based on the knowledge that their health and well-being are cared for.

"Industrial fatigue" is perhaps an unfortunate term, because it is both too wide and too narrow. It is too wide because it seems to imply that there are certain trades in this country which demand such strenuous physical exertion as to affect the bodily or mental health of the worker. Under the modern conditions of an eight hours day, and given good health and good training, I do not believe that this is the case. I do not deny, of course, that many forms of industrial work are physically exhausting if pursued too strenuously or for too long spells, but on the whole legislative safeguards are adequate, combined with the natural human instinct of self-preservation and the experience of ages, to cause all classes of workers to adjust their output so as to prevent physical or mental injury. During the early days of the late war a heavy demand was made on the workers in certain industries, and they responded magnificently. But it was found that after a time the workers were unable to maintain the pressure, and that a better output resulted from reduced hours of work. The instinct of self-preservation asserted itself before the health of the workers was seriously undermined. At the same time, it is obvious that some forms of work are more fatiguing than others, and they deserve study in order that the point at which fatigue begins may be postponed as far as possible, and in order that the well-being and efficiency of workers thus engaged may be improved. Again, it is undoubtedly true that fatigue—even where its direct consequences are not injurious—pre-disposes its subject to certain diseases. Hence I am convinced that the work carried out by the Industrial Fatigue Research Board is of great value, and deserves the widest public support.

I propose to indicate broadly some of the directions in which the study of the problem of industrial fatigue may be pursued with advantage. In the first place, it is obviously desirable to eliminate all unnecessary physical effort, and as far as possible to substitute machinery for hand labour. This is primarily, of course, a problem for the engineer, and it is difficult to overrate its importance. If the objective of industry is to be, as it should be, to pay high wages, this can only be done as the result of high productivity, and improved mechanical devices must necessarily play a principal part in the attainment of this end. But while, as I have said, the substitution of machinery for hand labour is primarily the work of the engineer, research workers engaged on the problem of industrial fatigue have also their part to play in studying the design of machinery from the point of view of the comfort and physical convenience of the workers. This is one of the problems that are now engaging the attention of the Industrial Fatigue Research Board, and the inquiry is likely to be fruitful in results.

Time and motion study is another important aspect of the industrial fatigue problem. Most people are familiar with the work that was initiated by Mr. Taylor and Mr. Gilbreth in America. We know how, as the result of a brilliant piece of investigation, Mr. Gilbreth reduced the motions involved in bricklaying from eighteen to five, and increased the number of bricks laid per man per hour from 120 to 350. We are familiar with Mr. Taylor's studies in regard to the rate of loading pig-iron. We know, too, that "scientific management" met with determined opposition in America when it was first started. But it is important to remember also that this opposition has died down, and that American trade unions are in general strong supporters of scientific management. Many of them, in fact, have their own efficiency engineers, whose task it is to educate backward managers, as well as workers, in efficient methods. And herein, I think, lies the main difference between America and this country. We are in no way behindhand in scientific research, but I fear that the attitude of trade unions to scientific management is less friendly here than in America, although I believe that the Industrial Fatigue Research Board, of which the chairman is a prominent Labour member of Parliament, has done much to break down earlier suspicions. But here is one of the ways in which employers and workers might with great advantage co-operate more closely.

It has been established that a scientific study of the motions in industrial operations has led to the elimination of much unnecessary effort. The study of posture, change of posture—the method of carrying weights, for example—have an important bearing on the well-being of the worker and contribute to the lessening of fatigue as well as the increase of efficiency. In this work the Board has received valuable assistance from the National Institute of Industrial Psychology. An important aspect of motion study which may lead to valuable results is the study of classes of work that involve the excessive use of certain muscles, and set up a local fatigue which may result in illness. Telegraphist's cramp is a case in point. It may be possible sometimes to bring other muscles into play and thus relieve the strain, or steps may be taken to improve the circulation through other muscles, since it has been established that recovery from severe fatigue in a sharply localized group of muscles may occur by the removal of the fatigue product—lactic acid—through other parts of the body.

Another subject of considerable importance to those interested in the problem of industrial fatigue is that of rest pauses. What is the optimum spell from the point of view of efficiency and the well-being of the worker in any given trade? Dr. Vernon and Mr. Wyatt have collected important evidence which tends to prove that wherever spells of work are four and a half hours or longer the judicious use of rest pauses of from five to ten minutes is beneficial. Hours of labour are to-day a subject of political controversy rather than of scientific inquiry; this is to be regretted, because the problem will never be solved by cries of "slave-driver" and counter-cries of "slacker." Those of us—and they are many—who believe that employer and employed alike should give to the community the best work of which they are capable, consistently with physical and mental well-being, will probably agree that more time should be given to the scientific study of the problem, believing that along these lines alone can be found a solution which safeguards both the welfare of the worker and the well-being of the community.

I have mentioned certain subjects which appear to have a direct bearing on the problem of industrial fatigue, but there are many others which ought not to be ignored. One of the most important is the effect of temperature upon output. Dr. Vernon has shown that in heavy work, especially when it involves exposure to high temperatures, output undergoes a consistent seasonal variation, being with very few exceptions greatest in winter, least in summer, and intermediate between the two in spring and autumn. Again, there is evidence to show that the capacity of workers in hot mines is some 30 per cent. less than that of workers in cool mines. This, perhaps, goes to prove that the natural protective instinct is at work to prevent workers from putting an undue physical strain on themselves in unfavourable conditions. But it also shows the importance of studying problems of ventilation and atmospheric conditions with a view to minimizing fatigue. It is also important that the incidence of sickness in the heavy trades should be more closely studied. Dr. Vernon has shown that in the iron and steel trade men on the heaviest work experience the most sickness—mostly rheumatism and respiratory diseases. Probably this is due to the greater risk of chills, and it might largely be prevented by proper precautions.

Other subjects which might be mentioned are the proper lighting of factories, the provision of baths in certain trades, liability to accidents, vocational selection and guidance, all of which have a bearing on the problem of industrial fatigue; but I think I have gone far enough for my purpose. My object has been to try to show that there are many problems connected with fatigue which repay study. There is still much to be done to improve the conditions under which industrial work is carried out, and it is of national importance that the operations of the Industrial Fatigue Research Board should be encouraged, not merely by the Government, but by employers and workers alike. In some respects the Board is still groping in the dark; in some cases it is only able to carry out laboratory experiments because the necessary co-operation of the industries concerned is not yet forthcoming so as to enable

large-scale experiments to be made. But important results have already been secured, and, since the effect of its work is cumulative, I feel confident that, if it receives the support it deserves, the Board will render services of lasting importance to the industries of this country.

## II.—H. M. VERNON, M.D., B.Ch.,

Investigator for the Industrial Fatigue Research Board.

THE opener of this discussion has dealt with the physical effects of fatigue in general terms, so it may be worth while to bring to your notice some specific instances of fatigue effects which have been investigated during the last few years. Fatigue affects both the health and the efficiency of the workers, but as it is much easier to measure its influence on efficiency than on health, I will first describe some of the observations I have made on fatigue in relation to working capacity. My first instance relates to the tin-plate trade. In the manufacture of tin plates, "bars" or plates of steel, usually about 20 inches long by 9 inches wide and weighing 20 to 40 lb., are heated to a bright red heat in a furnace. The furnaceman pulls them out, one by one, by means of long tongs, and pushes them across the floor to the rollerman, who picks them up with short tongs and passes them between heavy revolving iron rolls. This flattens them out to about three times their previous size, and then they are taken in hand by the doubler, who folds each sheet over, and presses down the bend by means of his foot (on which he wears a special boot). The bend is further flattened by means of a mechanical squeezer, and then the sheet of metal is flung back to the furnaceman, who returns it to the furnace for a further heating. During the whole of these operations the sheets of steel remain red-hot, so the men have to endure exposure to a very large amount of radiant heat, as well as suffer the fatigue of lifting the heavy sheets of metal. They stream with perspiration, in spite of their wearing short shirts, open at the waist and neck. As the result of observations collected at five factories over a period of several years I found that the output of the men was at a maximum in January, the coldest month of the year, and fell steadily till it reached a minimum in July and August. Then it rose again steadily as colder weather set in. However, this seasonal variation was by no means the same at all the factories. Many of the factories have artificial systems of ventilation in which cool air is blown down on the heads of the men, and at the best ventilated factory I came across the summer output of the men was only 3 per cent. less than the winter output. At another factory, where the artificial ventilation was moderately good, it was 6 per cent. less, while at two other factories, where there was no artificial ventilation at all, it was 11 to 13 per cent. less. For reasons which I will not go into now, I concluded that the installation of a thoroughly efficient system of ventilation in an unventilated factory would increase the average output for the whole year by 12 per cent. or more.

I have described these observations on tin-plate millmen in some little detail as the conclusions hold, in greater or less degree, for many other classes of men employed in the iron and steel trade. Take the steel melters who produce steel on open hearth furnaces. When these men have tapped their furnaces, and run off the molten steel, amounting in some instances to 100 tons, they sometimes have to mend the floor of the furnace. They do this whilst it is still white-hot, and as they approach within a few feet of the open furnace doors the work is excessively hot and exhausting. I found that the output from the steel furnaces was distinctly less in the summer than in the winter, and in one steel works where the ventilation was poor the summer output was 11 per cent. less. In other works, where the ventilation was good, the reduction of output was much smaller. Similar seasonal variations were observed among the men working at the rolling mills and the blast furnaces, and the men engaged in puddling wrought iron; so it may be laid down as a general rule that the more strenuous the work, and the less favourable the conditions under which it is performed, the more does the output tend to fall off during hot weather, in consequence of the extra fatigue induced.

Confirmatory evidence of the adverse effect of high temperatures has recently been obtained by Mr. Bedford and myself in coal mines. It is almost impossible to compare the output of different miners, as the ease with which they get the coal varies so much from day to day and from place to place, so we adopted another method of measuring their physical efficiency. This depends on the fact that no man, when engaged in heavy work, is able to work continuously. Inevitably he rests occasionally, so we kept individual coal hewers under observation for a period of one and a half to two hours each, and noted down the number and duration of their rests from work. Observations were made on 138 men in all, and we found that whilst the men working under the best atmospheric conditions, when the wet-bulb temperature was 66° F. and the cooling power (as estimated by wet kata-thermometer) was 15 to 18, rested for seven minutes an hour on the average, those working under more adverse conditions took longer rests, and the men working under the most adverse conditions of all, when the wet-bulb temperature was 79° and the wet kata cooling power was 6.4, rested for twenty-two minutes an hour. The atmospheric conditions influenced the speed of work as well as the rest pauses, for we found that whilst, under the best conditions, the men took eight minutes to fill each 10 cwt. tub with coal, they took 9.6 minutes, or 20 per cent. longer, to fill them under the most adverse conditions. From these data we were able to calculate that the efficiency of the men working under the most adverse conditions was 41 per cent. less than that of the men working under the best conditions, whilst with intermediate conditions intermediate reductions of efficiency were observed. The men appeared to be particularly susceptible to air movement, and a moderate improvement of ventilation produced a considerable increase of output, so we seem justified in concluding that all men engaged in heavy work which causes them to perspire freely are considerably benefited by good ventilation.

In spite of the adverse effect of poor atmospheric conditions on efficiency, it does not necessarily follow that the health of the men is affected. In order to obtain direct information on the subject Mr. Rusher and I obtained access to the National Health Insurance cards of 22,000 iron and steel workers, and determined the time lost from sickness over a six-year period. We found that the hotter and heavier the work of the men the greater their loss of time from sickness; for the steel melters, to whom I have already referred, lost 23 per cent. more time than the average, whilst the puddlers lost 20 per cent. more, and the tin-plate millmen 12 per cent. more. On the other hand, the iron and steel men who worked at ordinary temperatures lost 9 per cent. less time than the average. The excess of sickness in the men exposed to high temperatures related chiefly to rheumatism and respiratory diseases. This sickness was largely due to the men sitting about, in the intervals of their work, in clothes which were damp from perspiration, and we concluded that, generally speaking, physical fatigue influenced health indirectly rather than directly. This conclusion was supported by the mortality data, for the various groups of iron and steel workers investigated showed a lower mortality than the general population (of all males, occupied and retired), with one exception. This related to the steel melters on open hearth furnaces. Their mortality was 20 per cent. greater than the average of all males, and 26 per cent. above the average of our whole group of iron and steel workers. We concluded that the excess of sickness and mortality in the steel melters might, in some degree, be the direct effect of the work of furnace mending, as this is far more exhausting than any other kind of industrial work known to us.

Apart from its influence on general health, physical fatigue undoubtedly has an influence on accident liability. Striking instances of this fact came to my notice during the war. At a large fuse factory the hours were at first twelve a day and seventy-five a week, but subsequently they were reduced to ten a day and sixty-four and a half a week. This reduction of hours had no effect on the accident frequency of the men, but that of the women fell to about one-third of its previous value, as it so greatly relieved their physical fatigue. Again, Mrs. Osborne and I found

that accident frequency was much influenced by atmospheric conditions, such as temperature. We found that the minor accidents incurred fell to a minimum at a factory temperature of 67°, whilst at a temperature of 77° they were 39 per cent. more numerous in the men. Probably this rise was due, at least in part, to the physical fatigue of the men, though it acted indirectly rather than directly by diminishing their attention and alertness.

Evidence bearing on accident liability in relation to the fatigue of miners was obtained by Davies at the Morro Velho gold mine, Brazil. In the deepest workings of this mine, some 6,000 feet below the surface, the wet-bulb temperature reached the almost insupportable figure of 89° F. A cooling plant was introduced, which cooled the intake air to 43°, and the wet-bulb temperature in the deepest workings to 80°, and it was found that whilst in the sixteen months previous to the installation of the plant there were twenty fatal accidents, they were reduced to six in the subsequent sixteen months. Again, Mr. Bedford and I found that the accident liability of the miners studied by us was distinctly influenced by the atmospheric conditions. We obtained data relating to 3,000 miners for a six-year period, and we found that the accident rate of the men working at the coal face of the deeper and hotter seam in a mine (with a wet-bulb temperature of 74°) was 52 per cent. greater than that of the men in the upper and cooler seam (with a wet-bulb temperature of 62°), in spite of the fact that the physical conditions, such as the soundness of the roof, were better in the deeper seam than in the upper one.

It is desirable that further evidence on the subject be obtained before a definite conclusion is arrived at, but in the light of the information so far available we are justified in assuming that improvements in the atmospheric conditions under which the miners work would have an appreciable effect in reducing the terrible accident mortality to which they are subject.

To sum up, it appears that whilst the physical fatigue induced by heavy industrial work is apt to reduce health and efficiency and to increase accident liability, much can be done to diminish these adverse effects by improving the atmospheric conditions under which the work is carried on.

#### DISCUSSION.

Dr. J. STEWART MACINTOSH (Hampstead) said that fatigue phenomena might be excited by agents other than excessive muscular effort, aggravated or not by an ill devised environment. Toxic and psychic influences were also potent determinants of physical fatigue. Toxic causes included bad or unsuitable food (with its disturbance of the digestive and other systems of the body), septic foci, endocrine disorders, etc. Again, anything provocative of mental conflict, such as trouble in the home or the young man courting another girl, frequently resulted in diminished output or carelessness through a portion of the total available energy of the individual being consumed by intrapsychic tension. Fussy or inquisitive interference by so-called "welfare workers" was to be deprecated; but the hinterland as well as the foreground of the industrial field must be surveyed. Much good work could be, and some had already been, done in this regard by persons possessing the requisite tact and knowledge.

### Memoranda: MEDICAL, SURGICAL, OBSTETRICAL.

#### SCOLIOSIS DUE TO UNILATERAL MUSCLE SPASM.

THE following case is of some interest and sufficiently rare to warrant publication.

In March, 1924, a girl, aged 15, had what appeared to be an attack of lumbago: it became more acute until after about ten days she developed a bilateral sciatica. Pain was worse on walking and worse off somewhat during the day. In spite of salicylates, and later complete rest in bed, pain and stiffness increased. Diathermy and, later, change of air gave no benefit. She then went to Bath, where ionization, baths, and hot packs were tried, at first without effect, but later the sciatica ceased to be continuous and was only brought on by movement, and the back became temporarily less stiff after the baths. At this time

she developed intermittent spasm, sometimes of the middle portion of the right erector spinae and sometimes of the right abdominal muscles, bending her either directly to the right or forwards and to the right. The spasms increased in violence and were only loosened by the hot baths; lateral curvature and pelvic tilting increased till she could only stand on one leg, and kneeling was the only tolerable posture one whole night being spent in this position. The spasm generally came on during sleep and woke her up. Massage and exercises made matters worse. A skiagram taken at this time was negative. She returned home and remained in bed with daily massage, but the lateral spasm and consequent scoliosis increased. Hysteria was diagnosed by one physician, on what would appear somewhat inadequate grounds; and an osteopath manipulated the spine, but no benefit accrued. By August, 1924, the spasms were so acute that sleep could only be had in short spells. At the suggestion of a neurologist intramuscular injections were made under an anaesthetic; there was no immediate effect, but in September the spasms decreased in frequency and violence, the pain diminished and she could sleep better, and even walk occasionally for some distance, although the abdominal muscle spasm attacked her when she became tired. However, the erector spinae spasm and scoliosis increased with occasional exacerbations, generally relieved by recumbency. The condition remained stationary through the winter.

In February, 1925, she was seen by Sir Robert Jones and myself. Pain and acute spasm were intermittent, but the right erector spinae between the mid-dorsal and mid-lumbar regions was in continuous spasm and stood out as a hard mass, and the spine was correspondingly held convex to the left, with pelvic tilting. There was no permanent abdominal spasm. She appeared to be a most intelligent and healthy girl with no symptoms of hysteria. We came to the conclusion that the trouble was caused by adhesions around the spine and nerve exits, and accordingly mobilized the spine fully under an anaesthetic. Many adhesions were felt and heard to give way. From that time onwards she has been under my care.

The day after the mobilization the spasm had disappeared and only occasional suggestions of it remained for about a month. Exercises were prescribed and have been continued, and I have seen her three or four times during the year ending April, 1926, and she has remained perfectly well and with no scoliosis.

This case never suggested a diagnosis of hysteria and was entirely unlike the hysterical curvatures and tilted pelvis with which we are all familiar. It was obvious that there was a definite irritative lesion of the nerves supplying the affected muscles. Personally, I had seen one similar case, much less severe, and Sir Robert Jones tells me that he has seen three or four such cases in the course of his experience, but none more marked than this.

London, W.

P. JENNIFER VERRALL, F.R.C.S.

#### RECOVERY AFTER INTRACARDIAC INJECTION OF ETHER.

In view of the cases recently described, the following, which have lately occurred in my practice, may be of interest.

*Case 1.*—An adult male on whom I was proposing to operate for inguinal hernia gave no history of previous heart trouble, and the heart sounds appeared normal. Just as I was about to make the primary incision with the patient under open ether he stopped breathing, no pulse could be felt at the wrist and no impulse at the apex. Artificial respiration was commenced and both strychnine and ether given hypodermically, but, as was to be expected in the absence of circulation, these were ineffective. One cubic centimetre of ether was injected directly into the left ventricle, and almost immediately the pulse became palpable, breathing began again, and I was able to do the radical operation. The patient made an uninterrupted recovery and suffered no after-effects.

*Case 2.*—I was sent for by the midwife to a woman in labour (sixth confinement), and found a shoulder presentation with one hand in the vagina. There was a history of previous "heart weakness," and she had a systolic murmur heard at all orifices. I gave chloroform while my colleague proceeded to turn and pull down a leg. She became rather grey, so I went cautiously with the anaesthetic. The after-coming head jammed at the outlet, and during manipulations to release this the patient stopped breathing. I could feel no pulse and no apex beat. Artificial respiration and subcutaneous medication were again tried, but were ineffective, so that 1 c.cm. of ether was injected directly into the left ventricle. I had my finger on the radial artery and the return of a palpable pulse was very striking. The first beat was felt after perhaps ten seconds, the second about five or six seconds later, the third after about three seconds more, and thereafter the normal rhythm was rapidly established. The child was extracted and was, of course, dead, but the mother made an uninterrupted recovery and suffered no after-effects.

Whether in these two cases the heart actually stopped or went into fibrillation I cannot say. But the response to intracardiac ether was dramatic and most gratifying to all concerned.

Wrotham, Kent.

N. HAY BOLTON, M.D., F.R.C.S.Ed.

## Rebuelus.

### ELLIS ISLAND.

THE title of Dr. BERTHA M. BOODY's very interesting book, *A Psychological Study of Immigrant Children at Ellis Island*,<sup>1</sup> is somewhat misleading; her experimental study occupies little more than a third of the pages, and, although suggestive, particularly with regard to the possibilities of testing intelligence when examiner and examinee have no language in common, would be too slight for separate publication. That her work is thoroughly worthy of book form is due to the fact that it contains a readable account of the history and present administration of immigration laws in the United States of America. Fears that the United States might become the dumping-ground of undesirable aliens are not new. In 1819 these words were used by the committee of a New York society: "As to the immigrants from foreign countries, the managers are compelled to speak of them in the language of astonishment and apprehension. Through this inlet pauperism threatens us with the most overwhelming consequences." Similar apprehensions were voiced during the ensuing fifty-three years, but it was not until 1882 that any Federal regulation was attempted, when lunatics and idiots were legally excluded. After 1891, when deportation of aliens admitted contrary to law was ordered, control became tighter. In 1907 feeble-minded persons were debarred, in 1917 all aliens over 16 unable to read the English or some other language were excluded, and by the Act of May 19th, 1921, immigration was restricted to a quota of 3 per cent. per annum of the number of the particular nationality recorded in the census of 1910. Finally, in May, 1924, the quota was changed to 2 per cent. of the foreign-born population shown at the census of 1890. After July 1st, 1927, the annual quota is to be a number bearing the same ratio to 150,000 that the number of inhabitants of the United States at the census of 1920 having that national origin bears to the whole population. Dr. Boody says that the result will be the reduction of the number of immigrants from 360,000 to about 150,000, but, unless the term "national origin" is to be understood in some very peculiar sense, we should suppose that the annual number would be considerably short of 150,000. This at least is quite clear—namely, that immigration will soon be a relatively unimportant source of population increase in the United States. Already there is a great difference between the million and a quarter of the "peak" year of 1907 and the net influx of less than half a million in 1923.

The object of this legislation and the administrative measures based upon it is not only to ensure that those admitted are physically sound, but, in the words of one authoritative body, to ensure that "no alien should be admitted who has not an intellectual capacity superior to the American average." Since the would-be immigrants speak twenty different tongues, and include children who cannot read or write, psychological tests alone present a formidable problem. It is not easy to devise a rapidly applicable test of intelligence success under which is wholly independent of acquired knowledge, and the language difficulty greatly complicates the task. When, in addition to all this, it is desired to take account both of eugenic factors and the mysterious attributes of "race," one realizes how difficult is the problem which American administrators and men of science are attempting to solve. The scientific and administrative machinery so far developed functions on its largest scale in Ellis Island, a name which neither the British Ambassador's report of three years ago nor recent press reports have favourably recommended to the home-keeping Englishman. The fourth chapter of Dr. Boody's book, which describes the present procedure, is sure to be read with particular interest. At the outset one perceives that the American Government has at least overcome one of the prime difficulties of both research and administration—that of

<sup>1</sup> *A Psychological Study of Immigrant Children at Ellis Island*, By Bertha M. Boody, Ph.D. Mental Measurement Monographs, Serial No. 1, Baltimore: The Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1925. (Med. 8vo, pp. 163. 18s. net.)



expense. It seems that Ellis Island, far from being a source of expense, returns a handsome profit. In the year ending June 30th, 1923, the net profit of the island was rather more than 1,800,000 dollars. If the American Government had already devised a method of preventing any but the physically and intellectually elect from entering its territory, and of securing an annual bonus of more than £350,000 as well, our reverence for the great republic would be, if possible, increased. It does not, however, appear that Ellis Island quite rises to these heights. The actual psychological testing, as described by Dr. Boody (we do not, of course, refer to her own studies of small groups of children), does not seem to be anywhere beyond the level of technique of any medical man, and although Dr. Boody speaks with no doubt justifiable admiration of the skill of the medical staff, one has that feeling of regret so often felt by readers of the novels of the late Mrs. Humphry Ward. That accomplished novelist was prone to assure us that the conversation of her characters was wonderfully brilliant, but she omitted to give us satisfying examples. What Dr. Boody does enable us to realize very vividly is what an extremely disagreeable place Ellis Island must be. One sees the shepherding of immigrants along passages and into pens:

"People, here again, often criticize the partitions or pens, as they call them, which are used to make the immigrants go in the right direction, or to keep them in the appropriate place. If these critics had once tried to stop a stampede into the *wrong* place, when 15 different languages would have been needed to make all understand, and when there was no way of knowing which language would cause the desired effect on the leading man, they would need no explanations of the great usefulness of all partitions, not only for the convenience of the examiners, but for accomplishing the greatest saving in the immigrant's time and comfort."

Then there is the period of waiting for the next move—"a time of tension, and specially so for the women, in that the children, who always go with the women, are restless—often hungry and fretful." People will ask questions, too, in unintelligible languages, and "the great skill that all workers at Ellis Island have developed in avoiding, where necessary, direct answers to questions, is very remarkable." What people do when waiting for an examination "is also a matter of great interest. They may walk, or sit stupidly, or sit with a most alert interest in everything that is happening in the waiting room around them. One girl slept. That does not often happen. The process is not conducive to sleep." The separation of members of a family, one perhaps being detained for special medical examination while the others pass on, is attended with some emotional disturbance, but it is comforting to know that "the cause is often traced, not to the main feature of separation and anxiety, but to some small and little unexpected thing." Still, there is evidently some emotional disturbance:

"At the separation point, where one way leads to the Immigration floor, and the other, parallel to it for a distance, leads to the Doctor's rooms, the wire dividing partition is covered with canvas, but after a few yards, the canvas covering is discontinued. Now at the time of separation, there is a shock, and people stop. Moved on by the attendant, as long as the canvas keeps them from seeing their companion, they 'move on,' to stop at once when the removal of the canvas gives a chance to talk, and pass belongings back and forth. This means that the passage is kept from being blocked, and yet that a chance is given for communication, before the pathways finally separate."

For the sheep who pass to the immigration floor the ordeal is almost finished. The illiterate test must be passed at the immigration inspector's desk, certain questions answered, and it is all over. For the goats there is more to come. An immigrant held back for inquiry by a board of three inspectors is not allowed to see his friends, but may call witnesses, and the calling in of the witnesses is, says Dr. Boody, "a most interesting moment to watch." It is so because

"the sister may be looking at the brother for the first time in many years, or a woman, for the first time, may be seeing the man that she has come thousands of miles to marry. Yet in this moment, there is no break in the proceedings. The immigrant is not allowed to speak to the witness—the witness sometimes does not even glance at the bench where the immigrant is sitting. All thoughts center on the inquiry itself. Personal thoughts have no place. But if the verdict is favorable, and the word of admission is briefly announced, witnesses and immigrants, in the midst of tears and embraces, may have to be swept out

of the inquiry room together, by the messenger who has to clear the decks instantly for the incoming case."

Whether some small percentage of the 1,800,000 dollars of annual profit might not be devoted to rendering this interesting moment a little less interesting—after all, prisoners on remand may see their friends—is a question we have not sufficient knowledge to answer. But justification of our opinion that Ellis Island is an extremely disagreeable place has been given, and we conclude by thanking Dr. Boody for her valuable book.

#### THE ABDOMEN IN LABOUR.

THE Oxford University Press has issued, in a book with the title *The Abdomen in Labour*,<sup>2</sup> the essay by Dr. NORMAN PORRITT to which the British Medical Association this year awarded the Sir Charles Hastings Prize. The subtitle is "A General Practitioner's Clinical Study of the Parturient Abdomen," and it is briefly a plea for the importance of the examination of the abdomen in parturition. Dr. Porritt is one of those men who, while engaged in a busy general practice, yet find time, as did the late Sir James Mackenzie, to take careful notes and often drawings of their cases. Dr. Porritt's observations were made during the period of six years preceeding 1910, and in that time he accumulated nearly sixty sketches of the abdomen of women whom he delivered, as well as careful notes of the abdominal condition in numerous other cases of labour. The author is very modest in regard to the merit of his drawings, but the important point is that they formed a graphic record which at any rate conveyed much to his own eye, and in many cases must convey a great deal to the eye of every reader.

With the conclusions of the author we need not deal in detail. They reinforce from practical experience arguments that have found their way into most modern textbooks of midwifery. The significance of the book—and in our view this significance is profound—is that here we have a general practitioner coming to the assistance of the specialist authors of textbooks and teachers of midwifery, and proving up to the hilt from his own experience that practice in the abdominal examination of the parturient woman enables one to dispense in very large measure with the procedure of vaginal examination. Dr. Porritt has become profoundly impressed with the numerous advantages which this reduction in the number of vaginal examinations may confer. We offer our cordial congratulations to him, for he has, in our opinion, done a very distinct service to his fellow practitioners by his teaching. We would like to think that this little book, which can easily be read in an hour, and which costs only 5s., will find its way into the library of every general practitioner throughout the country.

#### DIABETES MELLITUS.

THE second edition of GRAHAM'S *Pathology and Treatment of Diabetes Mellitus*<sup>3</sup> contains many alterations consequent upon the advances made in the knowledge of carbohydrate metabolism since the first edition was published in 1923. The treatment of diabetes by insulin has made considerable progress, and Dr. Graham has added new chapters on the special properties of insulin and on the details of treatment with it. These chapters are written with Dr. Graham's customary care and good judgement. He is greatly to be congratulated on the happy way in which he presents his description of scientific facts, and his accounts of the experimental work of himself and others add remarkably to the interest of a book which is essentially clinical.

One point alone occasions some surprise. Dr. Graham inclines still towards a certain degree of undernutrition in the dieting of diabetic patients. He still advocates a "ladder" diet which only brings the patient gradually to a full "maintenance" diet. This has not proved, in the opinion of other observers, so satisfactory as the Toronto

<sup>2</sup> *The Abdomen in Labour*. By Norman Porritt, M.R.C.S., L.R.C.P., London. Humphrey Milford, Oxford University Press, 1925. (Cr. 8vo, pp. xiv + 73; 23 figures. 5s. net.)

<sup>3</sup> *The Pathology and Treatment of Diabetes Mellitus*. By George Graham, M.A., M.D., F.R.C.P. Second edition. Oxford Medical Publications, London. H. Milford, Oxford University Press, 1925. (Cr. 8vo, pp. vii + 168. 8s. 6d. net.)

plan of placing the patient at once on an adequate diet and balancing this diet with sufficient insulin. This plan appears to hold out a better prospect of recovery of carbohydrate tolerance and more likelihood of the patient being enabled to discontinue the use of insulin. For this reason it is doubtful whether Graham's book is to be recommended as one of the best practical guides to the treatment of diabetes. His account of the pathology of the disease is, on the other hand, excellent.

#### DICTIONARIES OF MEDICAL TERMS.

DICTIONARIES of medical terms, or, as they are often erroneously called, for short, medical dictionaries, have been found useful by generation after generation of medical men. Nearly three hundred years ago Bartholomew Castells published one at Basle, on which, in 1717, Dr. John Quincy of London based his *Lexicon Physico-medicum*, which went through eleven editions. In Germany the excellent *Kritisch-etymologisches medicinisches Lexicon* of L. A. Kraus first appeared exactly a hundred years ago, and Hoblyn's *Dictionary of Terms used in Medicine and the Collateral Sciences* followed very soon after in England and reached its eleventh edition in 1887; it was written, not by a medical man, but by a clergyman, without medical training, although well versed in science. America has been very fertile in medical lexicography. Dorland's and Stedman's books are well known, and Dr. Robley Dunglison's *Dictionary of Medical Science* had attained to its twenty-third edition in 1903.

Dr. GEORGE M. GOULD of Philadelphia brought out in 1890 the first of a series of dictionaries of medical terms, and it is the latest of these that is now before us for review. *Gould's Medical Dictionary*,<sup>4</sup> as this is called, is really the direct descendant of the original *New Medical Dictionary* through its avatars the *Student's Medical Dictionary* and the *Practitioner's Medical Dictionary*. The editor of this and former works, Dr. R. J. E. SCOTT, tells us in his preface that this may be said to be the sum of all of Gould's dictionaries, including no doubt the *Illustrated Dictionary of Medicine, Biology, and Allied Sciences*, as well as the *Pocket Medical Dictionary*. In reference to this last Dr. Scott writes: "If every printing had been called a new edition, the current edition would be the fifty-fifth instead of the eighth."

The *Practitioner's Medical Dictionary* was certainly a compact and handy volume, notwithstanding the fact that it contained 71,000 definitions. The new volume is printed in larger type and on rather thicker and heavier paper, and contains 76,000 definitions and a number of portraits. We must confess that we cannot share the complacency with which the editor writes of these portraits. They seem to us to be very strangely selected and to be artistically unworthy of the reputation of the book. What can be said for a selection which leaves out James Paget and Jonathan Hutchinson but includes John Houston and William Allingham? With the greatest appreciation of the worth of the two latter, we must say that we cannot understand the principles on which the choice was made.

We rise from the study of such a work as this sadder if wiser. It is a saddening experience to find that there are so many hundreds of symptoms, methods, signs, operations, and so on, all called after their discoverers or inventors, but of which we are either forgetful or quite ignorant. It would need the memory of a Macaulay to retain the mere names, let alone the definitions, some of which seek to establish the inventor's claim by fine-drawn distinctions between the new syndrome, sign, or method and its predecessors.

A book, however, in so well known a succession as this needs no recommendation. Its standard of accuracy is generally high, but in a necessarily cursory survey we have noted some lapses from it which might be corrected in subsequent issues. For instance, the definition of Thomas's splints leaves much to be desired. "Lovesickness" is scarcely adequately rendered by "erotomania," which in its proper place is correctly defined as "morbid exaggeration of the affections usual towards the opposite

sex." "Pillion" is probably a mere printer's error for "pilon." Among its 76,000 entries we have failed to find the following: Glisson's sling, Volkmann's ischaemic paralysis, gonad, Scarpa's shoe. Perhaps it would be too much to expect to find such an obsolete term as "algebra chirurgica," which was used in the beginning of the nineteenth century to signify bonesetting—one of the classical meanings of the word "algebra." These defects are noted in no carping spirit, but are recommended to the editor as helps towards that perfection which always recedes before the pursuit of the ardent lexicographer.

#### THE COST OF LIVING.

A HANDY little volume of the "Westminster Library," entitled *The Cost of Living*,<sup>5</sup> by Dr. NORMAN DEARLE, will be of interest and value to many of our readers. The phrase constituting its title is one of the most insistent in the course of popular economic discussions, and the meaning which it connotes is still a most important factor in the remuneration of civil servants and others, and has been frequently referred to in negotiations concerning the proper remuneration of various classes of medical practitioners. To give an exact meaning to the phrase, therefore, and to appreciate the different circumstances and influences which may lead to variations in the cost of living and should be taken into account in calculating those variations, is of great practical importance. These are the things to which a study of Dr. Norman Dearle's book will help us. It requires a little study and not a mere cursory reading, because it is throughout concentrated in matter and closely reasoned. After a careful examination of the real meaning of the phrase—"the cost of living"—consideration is given to the methods of the measurement of cost by means of index numbers. The subject of the relation of prices and costs to real wages or remuneration and the effect of this upon the standard of living of various classes of persons are next discussed. This is followed by an historical review of the course of prices and standards, briefly from the year 1350 to the year 1914 and more fully from 1914 to 1925. In conclusion, certain special problems bearing on the matter are considered: rates and taxes, the co-operative societies, profiteering, and the functions of the middleman.

The book should succeed in clearing away some of the misconceptions as to the method of compiling the Ministry of Labour index number. There is a widespread opinion among many classes that this index number does not in fact correspond to the actual position of affairs; yet, although he recognizes some logical imperfections in its compilation, and even though he suggests that some factors, which are commonly ignored (such as community provision of education and health facilities which are in practice taken advantage of by certain classes of the population only) may properly be taken into consideration, Dr. Dearle appears to be satisfied that the index number may still be accepted as sufficiently just in its general application.

It would have been interesting to have had some comment on Professor Bowley's figures of the professional costs of living which were prepared on the basis of actual household budgets supplied by the British Medical Association and given in evidence before the Court of Inquiry on the remuneration of insurance practitioners, but these are nowhere referred to. Those figures, though they are admittedly founded upon an inadequate number of returns, appear to be quite reliable and to afford almost the only actual statistics relating to a middle-class or professional standard of living.

#### A NEW JAPANESE MEDICAL JOURNAL.

AN interesting departure in medical periodical literature has been made by the recently established National Research Council of Japan, which has begun the publication of a periodical<sup>6</sup> divided into thirteen different parts, each dealing with a separate department—physiology, ophthalmology, internal medicine, and so on. The old

<sup>4</sup> *Gould's Medical Dictionary*. By George M. Gould, A.M., M.D. Edited by R. J. E. Scott, M.A., B.C.L., M.D. London: H. K. Lewis and Co. Ltd. 15s. (Imp. 8vo, pp. xi + 1333; illustrated, 30s. net.)

<sup>5</sup> *The Cost of Living*. By Norman Dearle, M.A., D.Sc., Lond. The Westminster Library. London: P. Allan and Co., Ltd. 1926. (Cr. 8vo, pp. 183, 3s. 6d. net.)

<sup>6</sup> *Japanese Journal of Medical Sciences*. Transactions: IV, Pharmacology. Tokyo: National Research Council of Japan. 1926. (7½ × 10½, pp. 167; illustrated.)

established journal *Mitteilungen aus der medizinischen Facultät der Kaiserlichen Universität zu Tokyo* has in consequence ceased publication after a long and honourable career. The editors of the new journal, which has an English title, *Japanese Journal of Medical Sciences*, will publish papers written in English as well as German, which is undoubtedly a wise course. The system of dividing the journal into separate parts appears to be so far sound that it will make it easier for anyone to find the papers on a subject in which he takes particular interest. Apparently under this scheme a number of a part will be published as soon as a sufficient amount of material has been collected. The success of the scheme will, of course, depend very largely upon the frequency with which it is possible to publish numbers in this large variety of different subjects, for unless these can be issued with fair regularity there will be undue delay in publication.

We have before us the first number of the first volume (Part IV, Pharmacology). It is a substantial production, but the danger of the delay in publication is illustrated by the first paper, which is by Dr. Seiji Ogawa, on tetania parathyreopriva; it is dated December, 1924, but during the past eighteen months a very large amount of important work has appeared on the parathyroids, and the article suffers in some degree from the delay in its publication.

The number contains six articles, and most of them come from the University of Tokyo. An article of particular interest is by Dr. K. Otsuki on the action of yellow phosphorus on bone regeneration; he has performed a large number of experiments, and the article is illustrated with excellent plates; he finds that doses of phosphorus too small to produce intoxication cause an increase in callus formation in fractures and a delay in callus absorption. He concludes, therefore, that the action of phosphorus on the healing of fractures is harmful rather than helpful.

## NOTES ON BOOKS.

Dr. J. G. DE LIJNT, lecturer on the history of medicine at the University of Leyden, has brought out the first instalment of an *Atlas of the History of Medicine*, dealing with anatomy. Dr. De Lijnt was stimulated to undertake this work by the Vesalian exhibition at Leyden in 1915, and a draft was ready in 1916, but publication was delayed by the war. The 199 figures illustrate the evolution of anatomy from the earliest times down to comparatively modern days, the last two portraits being those of Charles Darwin and the veteran Dutch biologist Hugo de Vries. The first figure is of a clay model of a sheep's liver, which was used for instruction in Babylonian temple schools about B.C. 2000. Some of the figures are from photographs lent by Dr. CHARLES SINGER, who in a thoughtful introduction dwells on the advantages of a study of medical history, and how the method of presenting a series of pictures overcomes some of the difficulties inherent in the study of the history of science. Wherever possible the original drawings of discoverers of anatomical facts have been reproduced, and where this was not available a portrait of the discoverer or of the title-page of his book has been used. The interesting and generally well produced illustrations naturally include a good many Dutch anatomists, some of whom are not so familiar as no doubt they should be—for example, Cornelis van 's Gravezande of Delf and Ysbrand van Diemerbroek Montfoort, both fine full-page portraits. Each illustration is accompanied by a brief description, and attention may be called to the illustrations connected with Harvey and his critics, such as James Primrose of Hull, Jean Riolan, and Caspar Hoffmann, and of his supporters, such as Jan van Beverwyck, Hendrick van Roy, Antony Deusing, and Lazarus Riverius.

The *Hand-Atlas of Clinical Anatomy*,\* by A. C. EYLESMEYER and T. JONES, contains 395 line drawings, mostly in colour. Some of these are systematic dissections, the various structures being grouped in systems, such as the bones and ligaments, blood vessels, nerves, etc.; others are regional dissections to illustrate the anatomical relations of particular localities. A number of complete sections also show structures as they

appear in frontal, sagittal, and transverse sections. These are all well done, and should help the student. This atlas contains also two other types of picture which will considerably extend the field of usefulness of the book. These are the projection-pictures, which represent the deeper structures in their natural position as though the overlying structures were transparent, and the surgical incision pictures, which show the anatomical relations observed in the early stages of the commoner surgical operations. The book is divided into four parts, which deal respectively with the head and neck; the thorax, abdomen, and pelvis; the upper extremity; and the lower extremity. There is an explanatory index intended to render unnecessary any descriptive text to the pictures. The B.N.A. terminology is used throughout in labelling the illustrations. Of course, a large number of the pictures are reproductions of the familiar illustrations of standard textbooks of anatomy, but many of the drawings are original. Considerable ingenuity has been used in sketching out the transparent projections. The book has developed from an earlier and smaller manual of surgical anatomy prepared for the Medical Corps of the American Army and Navy during the war.

The unending stream of additions to methods of diagnostic procedure has compelled Dr. C. L. GREENE, formerly professor in the University of Minnesota, to revise and enlarge his volume on *Medical Diagnosis*, of which the sixth edition<sup>†</sup> has just been received. Basal metabolism is now dealt with in a short special section, and the early diagnosis of cardio-vascular disease receives careful attention, with particular reference to the use of the more modern instruments devised to detect cardiac irregularities. Care has been taken to make the index complete and easy to consult; the illustrations are numerous and good, and the new edition will undoubtedly be as popular and useful as its predecessors.

Mr. T. CREW, clerk to the Leicester Insurance Committee, has compiled under the title *Health Compendium and Health Publicity*<sup>‡</sup> a book which will be to health workers and members of public health committees what the familiar "Inquire Within Upon Everything" is, or was, to the housewife. There is a statement of the aims and objects, officers, and domicile of every sort of society even remotely related to health, from the Medical Research Council to the Searpa Society and the Research Defence Society. There are also reproductions of numerous pamphlets, posters, and other forms of literature used in health propaganda in this country, the United States, and in Germany. Some of it is instructive and much of it not a little amusing. We suggest that the author might well exercise some supervision over the contents of the advertisement pages in any future edition.

\* *Medical Diagnosis for the Student and Practitioner*. By Charles Lyman Greene, M.D., St. Paul. Sixth edition, revised and enlarged. London: W. Heinemann (Medical Books) Limited, 1926. (Sup. roy. 8vo, pp. xxvii + 1468; 709 figures, 14 plates. £3 3s. net.)

† *Health Compendium and Health Publicity*. Compiled by T. Crew, F.F.I., F.I.H. Foreword by Professor A. Bostock Hill, M.D., etc. Leicester: The Reader Printing Company, Ltd. (Demy 8vo, pp. v + 260; illustrated. 7s. 6d. net.)

## PREPARATIONS AND APPLIANCES.

### Administration of Ethyl Chloride.

MR. JOSEPH M. COPLAND, L.D.S.R.C.S., L.R.C.P. and S.Ed., L.R.F.P.S.Glas., and MR. E. COPLAND, M.R.C.S., L.R.C.P. (Lancaster Hill, S.W.), send the following description of a method of administering ethyl chloride which they find minimizes the spasm and toxæmia attending this anaesthesia. A three-way tube, with rubber tubing ends, is led to the tube connecting the mask with the closed bag, and an ampoule of ethyl chloride is inserted firmly in each of the three free ends. After the mask is placed over the mouth, one tube is broken towards the bag with the fingers; the second and third are broken if it is found necessary to prolong the anaesthesia. Before giving the anaesthetic the bag is one-quarter filled with hot water, and this is kept in the bag the whole time. It would seem that the heat and the steam, mingled with the ethyl chloride vapour, have the softening and antispasmodic effect referred to. Hundreds of cases have been done by this method, often the whole mouth being cleared at one sitting.

### A Micrometer Syringe Apparatus.

The accurate instrument for the measurement of extremely minute quantities of liquids described by Dr. J. W. Trevan in the *Biochemical Journal*, vol. xix, No. 6, p. 1111, is now obtainable from Burroughs Wellcome and Co. It is known as the "Aglia" micrometer syringe apparatus, and is suitable for the measurement of volumes from 0.5 c.c.m. (with an error of less than ± 0.1 per cent.) to those as small as 0.001 c.c.m. (with an error of less than 5 per cent.). In immunological work the instrument can measure volumes of the order of 0.01 c.c.m. with an error of less than ± 1 per cent. The price in London of the complete set is £2 15s. Further details may be obtained from Burroughs Wellcome and Co., Snow Hill Buildings, E.C.1.

\* *Atlas of the History of Medicine, I. Anatomy*. By Dr. J. G. De Lijnt, Lecturer on the History of Medicine at the University of Leyden. With a Foreword by Charles Singer. London: H. K. Lewis and Co., Ltd. 1925. (122 x 8), pp. 58, 159 figures. 7s.)

† *Hand-Atlas of Clinical Anatomy*. By A. C. Eylesmeyer, M.D., and Tom Jones with special dissections by O. E. Nadeau, M.D. London: H. Kimpton. 1925. (Double sup. roy. 16mo, pp. viii + 424; 395 figures. 69s. net.)

## THE POST-GRADUATE HOSTEL, LONDON.

## WHEN NOT TO OPERATE FOR HERNIA.

A DISCUSSION on "When not to operate for hernia" was opened by Mr. W. McAdam Eccles, M.S., F.R.C.S., at a meeting of the Hostel on August 28th. We are indebted to Mr. McAdam Eccles for the following notes of the remarks he made.

Whilst it is a fact that a very large number of cases of hernia should be treated by operation, it is also true that there are a number of conditions in connexion with hernia which negative treatment by operation, or at any rate render such treatment undesirable. I propose briefly to refer to some of these. I will take them specifically under headings.

## I.—THE TYPE OF PATIENT.

## Age.

1. *The very young.* Because: (a) Nature tends to bring about a cure. (b) Very young children do not stand operation well, and a fatality would be a tragedy. (c) Asepsis is, to say the least, uncertain.

2. *The "aged"* (take a man over 60). Because: (a) The tissues are not in most cases such as allow of a radical cure resulting from even a radical operation. (b) Persons do not like operation and then to have to wear a truss. (c) A properly made and properly adjusted truss will bring about such an improvement that the person may not know that he has a hernia, and simply wears the truss as part of his clothing.

## Sex.

*Male.*—(i) In large inguinal herniae it is difficult to occlude the inguinal canal and the apertures—superficial and deep inguinal—sufficiently so long as a passage for the spermatic cord has to remain. (ii) Where there is much disturbance of micturition, the result of enlargement of the prostate.

*Female.*—(i) Cases in which pregnancy is present in the later months; (ii) where the abdominal wall tissues are weak, particularly as the result of stretching from repeated pregnancies.

## Visceral Lesions.

*Heart.*—Advanced cardiac disease negatives an operation for cure. Operation may have to be undertaken for strangulation as a last resort.

*Lungs.*—Any advanced pulmonary lesion. (i) A general anaesthetic is contraindicated, although a local one might be used. (ii) The liability to cough produces a liability for the return of the hernia.

*Kidneys.*—Any advanced disease of the kidneys.

*Liver.*—Especially when ascites is present.

## Some General Conditions.

*Obesity.*—Unless reduction of the fat can be brought about.

*Ptoxis* of the abdominal organs in any marked degree.

*Dermatitis*, until this is cured by proper treatment.

## II.—THE TYPE OF HERNIA.

1. *Inguinal Hernia.*—A largish inguinal hernia with feeble abdominal walls, and with much dilatation of inguinal apertures, is very unlikely to be "cured" by operation. It may be very definitely controlled by proper truss pressure, and this control will tend to cause the danger and discomfort of the hernia to diminish most appreciably. An operation then may place the patient in complete safety, and enable a light efficient truss to be worn with comfort so as to prevent recurrence.

An inguinal hernia which has recurred is very unlikely to be cured by operation, and a suitable truss is then advisable.

2. *Femoral Hernia.*—A femoral hernia of a large size is still more difficult of cure than an inguinal. It is well again to try to obtain control of it by truss, and subsequently to consider operation, with a view, not perhaps of cure, but of rendering the wearing of a proper truss efficient and safe.

A femoral hernia which has recurred is still more unlikely to be cured by operation, and a suitable truss is then advisable.

3. *Umbilical Hernia.*—(a) Infantile acquired: There is a great tendency for these small umbilical herniae in infants to become cured by natural means. Therefore operation is not necessary before, say, 5 years of age. (b) Adult acquired: When there is present a large umbilical hernia in an obese woman, the question of operation is a serious one. It must always be remembered that literally there may not be sufficient room within the abdominal cavity for the contents of the sac. Cure of such herniae by operation is most doubtful, but operation may make the condition such as to allow the wearing of a proper truss with comfort and safety.

4. *An Irreducible Hernia.*—There is no doubt that operation which allows of reduction of the contents of the hernial sac

is ideal, but two points must always be very carefully considered: (i) Can all the contents find room within the abdomen? (ii) Will the operation permit of a truss being discarded?

From the foregoing remarks it will be seen that there are a number of conditions in which operation, to say the least, is not desirable. It is in these cases that a knowledge of the proper types of trusses becomes so very necessary.

## THE ADVANTAGES OF THE HOSTEL.

SIR,—May I draw attention to several points of interest concerning the Hostel? It presents all the advantages of a club with few of its disadvantages.

1. No introduction beyond the presentation of a visiting card is required. This is of importance for Dominion men and women who arrive here unacquainted.

2. There is no entrance fee. This is a consideration for anyone spending perhaps only a week or two in London every few years and to those who can "drop in" only very occasionally.

3. Women practitioners may have access to all the discussions and rooms except the smoking room.

4. A doctor may bring his wife and family, and whilst not enjoying the privileges of the rooms reserved for members they can be at least under the same roof. A ladies' subcommittee will be formed at an early date to care for the interest of the family of a medical man, as it is realized what sacrifices they make when a doctor takes a "busman's holiday."

—I am, etc.,

August 27th.

A. P. BERTWISTLE.

## ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the Committee thirty-five cases were considered and £388 10s. voted to twenty-five applicants. The following is a summary of some of the cases relieved.

L.R.C.P., aged 76, is unable to get engagement as locumtinent, although fit to undertake the work; his only income consists of the Epsom pension of £40 and Fund pension of £26 per annum. Special appeal made for help to meet arrears for rent. Committee voted £5. Total relief given by the Fund to March, 1925, £82; elected to an annuity of £25, January 1st, 1925.

Widow, aged 70, of L.S.A. who died in 1897. She has been in domestic service for fifteen years; a year ago she broke her wrist, but pluckily continued working; finally she had to give up and go into the infirmary, where she remained for some months. Recently a lady offered her a room rent free, but the applicant has to pay something towards her maintenance. The Fund voted £12 in twelve monthly instalments of £1 each, and an application has been made for the old age pension.

Daughter, aged 48, of M.R.C.S.Eng. who died in 1910. Her mother died eight months later. She started a small business which she was induced to sell so that she might live with and help some relatives, but was not strong enough to do the work and had to leave them. After various vicissitudes the Charity Organization Society found her starving in an underground room and gave her temporary help. The Fund was able to get her much-needed hospital treatment, but she is subject to asthma and bronchitis and is not sufficiently strong to undertake continuous work. It has been arranged for her to go to a convalescent home, and the Fund has voted her £25 in twelve monthly instalments. Previous relief amounted to £18.

Widow, aged 40, of L.R.C.P.Edin., who, when her husband died in 1923, was left with four children aged 8 to 18 with only £100 a year. A son aged 17 requires help for maintenance whilst studying. Voted £3 for three months. Previous grants for the same purpose total £29 7d.

Daughter, aged 27, of M.R.C.S.Eng. who died in 1907. She is confined to bed with heart disease and her only income is £1 a week, allowed by an aunt. As she requires constant attention a sister gave up a post in Canada to nurse her. The Fund voted £10.

Son, aged 15, of M.D. who died in 1922, was found living in undesirable surroundings. A place was found for him as a telephone boy, but he proved incapable. A suitable home has been found for him and arrangements made for private tuition, as his education was totally neglected by his parents. Fund voted £25 in four quarterly instalments towards his maintenance.

Widow, aged 60, of M.R.C.S.Eng. who died in 1908. She is dependent on daughter, aged 36, who teaches French in Paris. Mother and daughter live in one room. The applicant has been ill. The Fund voted £12 in twelve monthly instalments and a special grant of £5. Previous relief since 1913 amounted to £105.

Widow, aged 71, of M.R.C.S.Eng. who died in 1913. She has a small cottage outside London and supplements her income of £30 a year by letting, from which she has received £41 during the last twelve months. With a friend's help (£20) she has been able to pay her way, but asks for assistance for repairs as the rooms are in a bad condition for letting. Voted £15. Previous relief since 1916 amounts to £28.

Daughter, aged 75, of M.R.C.S. who was in the R.A.M.C. and died in 1891. A condition of residence in a home is an income of £40 a year, and the applicant received only £32 a year from the War Office. The Fund voted £20 in four quarterly instalments. Previous relief since 1921 amounts to £70.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 58, Great Marlborough Street, W.1.

## THE BOARD OF CONTROL.

## ANNUAL REPORT FOR 1925.

MANY matters of the first importance, not solely for those whose work is with the mentally afflicted, but for social workers, and indeed for all who are concerned with the public welfare, are discussed in the twelfth annual report of the Board of Control.<sup>1</sup> This report is all the more interesting by reason of the recent publication of the report of the Royal Commission on Lunacy and Mental Disorder, of whose recommendations a sketch was given on July 31st (p. 208). They have borne out in many instances the previous contentions of the Board and of the British Medical Association, and may, it is hoped, expedite long-looked-for reforms.

*Early Treatment.*

The Board has for a long time past pleaded for greater facilities for the treatment, without prior certification, of early cases of mental illness. The Mental Treatment Bill which passed the House of Lords in 1923 would have enabled this to be done; but further progress with the bill was arrested in consequence of the appointment of the Royal Commission. It must be gratifying to the Board to find that this Commission has unanimously endorsed its views, and, recognizing the necessity for early treatment, has recommended the alteration of the lunacy laws to ensure its provision without preliminary certification.

The Commission's desire that treatment of mental disorder should approach as closely as possible to that of physical ailments makes us regret, with the Board, the divorce which has been brought about between the mental hospital and the general hospital and "the failure to recognize that, among the cases grouped under the term insane, there were many whose mental illnesses were short and curable, as to whom the law, rightly solicitous as to the liberty of the subject, need not have insisted upon certification, and for whom, under progressively improving treatment, arrangements in connexion with general hospitals might have been retained with advantage to these patients, and to medicine as a science."

*Need for Increased Accommodation.*

In April of last year two important conferences were held—one to consider the nursing service in mental hospitals, and the other to consider in what ways the need for increasing mental hospital accommodation in England and Wales can best be met. The question of accommodation has given the Board very considerable anxiety. On January 1st, 1926, the number of notified insane persons in England and Wales was 133,883—an increase of 2,332 on the number on January 1st, 1925. This number has no necessary connexion with the incidence of mental disorders in the general population; and, indeed, there is no evidence to show that the incidence of insanity is increasing. It is in consequence of the growth of the population that further accommodation is required. The need for new accommodation is much more acute in some areas than in others. It is intended shortly to call regional conferences, the results of which, it is hoped, will show how best the pressure on the existing accommodation may be relieved.

*Mental Defectives.*

In its report for 1924 the Board gave special prominence to the lack of accommodation for all types of mental defectives. Instead of there being any alleviation of the situation as a result of its appeal the position has become more acute. The response by the local authorities to the Board's invitation to submit schemes for the further provision for mental defectives has been meagre and by no means commensurate with the serious position which was fully explained in last year's report. The Board regards the failure of local authorities to fulfil their duties as hampering the beneficent objects of the Mental Deficiency Act. Out of the 124 local authorities under the Mental

Deficiency Act, only 17 have at present provided any accommodation, and in no case is the provision adequate to the needs of the population of the particular district. "The responsibility," says the Board, "for the degradation, crime, pauperism, and disease which follow the neglect of the mentally defective rests now on the local authorities."

An interesting section of the report deals with the problem of procreation by mental defectives.

"Many of us," says the report, "have had experience of homes where the father or mother is mentally defective, and have been deeply impressed by the tragic lives of the children. Sometimes cruel by nature—more often cruel through ignorance—generally without self control, a feeble-minded parent is utterly unfit to nurse and train children of tender years. It can be shown that many such children inherit mental defect, and though if one parent is normal this is not always the case, it is clearly a misfortune that the child who is not mentally defective should be subjected to the crass stupidity and uncontrolled impulses of a defective parent."

Many tragic case histories bear out the truth of this statement. The Board, whilst suggesting various measures which would diminish marriage and procreation by mental defectives, is none the less inclined to think that the law should be altered so as to provide that marriage by a defective when under Order should be void. Sterilization as a means of preventing procreation is discussed, and does not find favour, for the Board considers that there is a danger of some public authorities welcoming sterilization as a cheap method of ridding themselves of their obligations under the Mental Deficiency Act. The advocates of sterilization, as against the alternative measure of segregation, are answered by the Board in the following:

1. The great majority of mentally defective persons require protection, care, and control on account of their incapacity to maintain an independent existence, and apart from the question of the procreation of children.

2. Unrestricted freedom in a large number of cases would lead to a return to the conditions prevalent before the passing of the Mental Deficiency Act. Sterilization would not prevent these persons from leading useless and harmful lives in and out of Poor Law institutions, prisons, hospitals and refuges, or from spreading venereal disease.

3. As far as immediate expense is concerned, the economic burden to the State is not likely to be lessened by the discharge of sterilized mental defectives.

4. Discharge would not, in our opinion, increase the happiness of the majority of the patients at present under care in institutions.

5. Sterilization as a compulsory measure is likely to arouse public opposition, and so delay the fuller operation of the Mental Deficiency Act.

Sterilization of mental defectives is sometimes advocated, not as an alternative, but as a complementary measure to segregation, but the Board, whilst recognizing its possible application to those cases which are only under permanent institutional care because of the risk of propagation, does not favour it.

*Number of Patients.*

The number of rate-aided patients on January 1st, 1926, was 118,065 (males 49,253, females 68,812), or 88.2 per cent. of all the notified insane. Practically the whole of the increase (2,380) during the preceding year occurred in county and borough mental hospitals. At the close of 1925 there were 695 voluntary boarders, including 142 at the Maudsley Hospital, where the patients are on a voluntary footing, and eight at the City of London Mental Hospital, where, under the Local Act of 1924, patients can now be received on this footing. The total number of certified patients discharged recovered during the year was 6,956. The deaths numbered 8,551. The number of direct admissions was 21,784, and of these first admissions accounted for 17,345, or 79.6 per cent. of all the direct admissions.

The whole report makes interesting and stimulating reading. In a supplement a detailed account is given of the scientific research work carried out in mental hospitals during the year. The Commissioners of the Board are to be congratulated on a report which, testimony anew to their conscientiousness, suggests foresight.

<sup>1</sup> London: H.M. Stationery Office, or through any bookseller. 1926. 12s. 6d. net.



# British Medical Journal.

SATURDAY, SEPTEMBER 11TH, 1926.

## MONOTONY.

IN the Section of Medical Sociology at Nottingham, of which the full report appears in this issue, one fact was brought out very clearly—namely, that it behoves the sociologist, no less than every other variety of philosopher, to be most careful in the definition and use of his terms. At the morning session the subject was the physical and mental effects of the monotony factor in modern industrial work; and it was plain that every speaker felt it necessary to apologize for, or to explain, the use of the word "monotony." The opener of the discussion, Mr. Hudson Davies of the National Institute of Industrial Psychology, gave a choice of meanings, quoting Munsterberg's, that monotony is a subjective dislike of uniformity, and Myers's, that monotony is a danger signal of central nervous exhaustion. He himself defined monotony as a reaction, not to selected features of work, but to the whole circumstances of its performance. Miss May Smith, of the Industrial Fatigue Research Board, called attention to the etymological meaning, "one tone," and said that the word represented absence of stimulation. Major Knowles, of Boots' Welfare Centre, asked whether, not being a fisherman, he was entitled to tell a friend sitting on a river bank hour after hour that his occupation was monotonous. Miss Slocock, an inspector of factories, thought that there was no such thing as monotonous work; monotony was a reaction of certain human beings to certain work carried on under certain conditions. Professor Winifred Cullis gave her opinion as a physiologist that the word "monotony" now definitely carried with it more or less of descriptive colour, that a job was monotonous when the general effect was unpleasant, and that monotony connoted an unpleasurable reaction to repetition.

It will be observed that through all these definitions there runs a similarity of idea, and a recognition that a simple word meaning a single musical tone has now received a descriptive colour or a subjective attribute of unpleasantness. It quickly appeared, however, during the discussion, that this descriptive colouring could not be applied to any occupation as such. An occupation that appeared monotonous to one person might be full of interest to another. The besetting sin of the investigator, as Miss May Smith said, is that he puts himself in imagination in the place of the worker, and then judges the work from what he imagines would be its effect on him. It is here that we reach the point at which ill defined terms become a danger. The girl who has hitherto been quite content to stick labels on bottles suddenly learns that she is engaged in a monotonous occupation. Probably she has often heard the word "monotony" used in common parlance without attaching any meaning to it other than boredom. She now learns that monotonous work has physical and mental effects. She begins to feel that her work is monotonous, and through the influence of suggestion spreads the feeling through her group. As Major Knowles said, "to arouse artificial discontent by constantly suggesting that the work is injurious is a futile thing to do." Nothing is easier, said Miss Dowding, than for a discontented worker to turn a

pleasurable job into monotonous drudgery for a whole group of workers.

It would appear that most of those who took part in the discussion attached the factor of monotony to what is called repetitive work. The terms are not synonymous: to make repetitive work monotonous involves not only questions of the frequency and duration of the repetitions, but also the personal equation of the worker. It is possible, however, that until the matter has been more fully investigated it would be better to speak of repetitive work rather than of monotonous work. For it would appear that what the investigators are really concerned with is a disease (or a group of symptoms) called monotony which affects some people who are engaged on repetitive work. Doubtless this adds a further meaning to an ill defined word. Some of the speakers showed a preference to call the disease "boredom."

As regards the etiology of the disease, it seems quite clear that there is a predisposing cause in the temperament of the worker. Mr. Hudson Davies seems to think that the predisposition is universal; he describes the oarsman training for a boat race as becoming bored with training, though he never notices the monotony involved in rowing the race. Mr. Davie also alleged that intelligence is a predisposing cause and also education. Amongst exciting causes is the subdivision of labour, so that the worker sees only small portion of the work, and never the finished article. Miss Slocock called this the absence of "creative" aspect in the work. In some cases, she said, too long and continuous use of a special sense causes monotony, and she told a story of a girl who had to smell every egg that went to the making of biscuits in a factory. It was impossible to do this for more than an hour at a time. Dr. Murrell thought that compulsion produced monotony. Another speaker ascribed it to competition. It was admitted during the discussion that the shortened working day and lessened number of hours a week had largely mitigated the effects of repetitive work.

The symptoms of the disease vary. In one case a worker may become a bad timekeeper, seize every opportunity for leaving work, and become as unsatisfied as possible without losing her job. Another develops sensations of tiredness, and complaints of pain in the eyes, head, or stomach. A third will gradually lose interest in her work until she develops a "nervous breakdown." Some will develop psycho-neurotic symptoms of a serious nature.

On the proper method of treatment opinion appeared to be largely agreed, as was natural in a body of speakers many of whom were concerned in welfare work. There should be reasonable hours of work with rest pauses when necessary; the environment should be cheerful; singing and conversation should be encouraged where possible; talks about the finished product should be given; supervisors should be chosen carefully in order that there may be no "nagging" interests and recreations outside working hours should be encouraged. There was a difference of opinion, however, on some of the suggestions made. Some speakers thought that change of work was useful. Others were decidedly of opinion that change was often resented. Mr. Hudson Davies thought it necessary that the balance should be held between too much change, which was irritating, and too little, which was monotonous. Anyhow, it seemed quite certain that many girls took an interest in their monotonous work and would resent the jolt to their habits involved in changing to and learning a different process. Several

## THE INSECT VECTOR OF DENGUE.

speakers described the day-dream or reverie as one of the methods by which workers neutralize the monotony of repetitive work, though this method of relief carries with it dangers of its own. Dr. Beadles uttered a word of warning on the propensity of some welfare workers to follow workers to their homes; and Dr. Robb reminded the investigator that the worker was suspicious of observations with a stop-watch. Almost all the speakers ended what they had to say by emphasizing the necessity for vocational selection. Vocational selection may no doubt be regarded as preventive treatment for the disease. Unfortunately it was not considered sufficiently germane to the subject under discussion for the speakers to elaborate their views on the matter. It is perhaps a little curious that people who have had free choice in the selection of their profession—unless perchance they were driven to it by a hard, old-fashioned father—should be found unanimous in advocating outside selection for the children of labour. The free and independent child of the "classes" is allowed to select his vocation, and to kill himself in carrying it out if he chooses. The child of the "masses" is only to exercise his choice within limitations to be dictated by someone else—the speakers did not say whom. It is clear that a youth is entitled to his predilections. But we are equally clear that an employer need not employ a youth whom he considers unfit for the job. But we have a lurking suspicion that the welfare worker and the investigator are after something more. Some are avowedly in favour of a scheme to employ experts to examine aspirants in each trade. Speculation on the intentions of those who advocate vocational selection is interesting, because vocational selection is one of the tenets of the communistic state.

There were two minor points of interest in the discussion. As Dr. Brackenbury pointed out, nearly everyone who took part in it spoke in terms of the female sex. Apparently the thought of burden of monotony. It was the introduction, plainly, of large quantities of female labour into factories that led to the discovery of the monotony of repetitive processes. The other point of interest was Major Knowles's passing reference—with which we sympathize—to the monotony of the life of the housewife, who has been unable to organize her home and reduce her hours by the introduction of simple repetitive processes.

The whole discussion undoubtedly demonstrated the value of the Section of Medical Sociology, even though we agree with Major Knowles that we should be slow in our judgement of these problems, and, above all, be moderate in our statements.

## THE INSECT VECTOR OF DENGUE.

THE combined issue of the first two numbers of the *Philippine Journal of Science* for 1926 is devoted to a monographic report on Dengue, which is of great interest to all engaged in tropical medicine. The whole is characterized by thoroughness and careful attention to detail, and, although the investigators have not succeeded in isolating the causative agent of this disease, the work commands respect for the great service it renders in confirming certain points which were only probable and clearing up certain others which rested on a doubtful foundation.

They have proved definitely that dengue is a

mosquito-borne disease, that the vector (in Manila at all events, and probably elsewhere) is *Aedes aegypti* (*Stegomyia fasciata* as it used to be called), thus confirming the work of Cleland, Bradley, and McDonald in Australia, and that *Culex quinquefasciatus* (*C. fatigans* of old) is not the transmitter. They have thus shown that Graham was correct in his surmise that the disease was transmitted by a mosquito, but wrong in inculpating *Culex*. They have demonstrated that Graham's "dengue parasite," the *Haemamoeba denguii*, is probably an artefact, as they found the same appearances in normal blood, examination of which had apparently been omitted—another instance of the danger of neglecting controls.

As the result of experiments ingeniously planned and carefully performed the investigators have determined the conditions under which a dengue patient may infect the mosquito. This can happen during a period from a few hours before the first symptoms appear to the end of the second day of the disease, and possibly, though with less certainty, for another twenty-four hours or so, after which mosquito infection fails. They have determined also the conditions under which an infected mosquito may again transmit the disease to man—namely, after the lapse of a period of ten to eleven days, the vector being not a mere mechanical transmitter. No animal other than man has been found susceptible, so there is no evidence of any reservoir host in nature.

For the purposes of experiment and for making accurate clinical observations 64 volunteers were obtained who were perfectly healthy, had resided in the tropics for a brief period only, had never been in a dengue fever district, and had no record of any illness suggestive of this disease. Of this number 52 were infected experimentally by *Aedes* which ten to eleven days previously had bitten a dengue patient in the prodromal period or the first two to three days of illness. No experiments with *Culex* succeeded in producing infection. Clinical observations showed that the time of incubation in 61 per cent. was four to six days, and in 89 per cent. was four to seven days; very exceptionally it was as long as ten days. The symptoms varied much in their severity; some cases were so mild that had not the diagnosis been confirmed by experimental transmission from them it would have been in considerable doubt. It was also found that the onset was less abrupt than is generally believed, as prodromal symptoms were observed for six to forty-eight hours before the initial rise of temperature. In rare instances patients were afebrile throughout the spread of an epidemic.

The authors' deductions as regards immunity are of importance. Of newcomers to Manila from the United States under military conditions about 40 per cent. are attacked during their first year; of these some 30 per cent. may expect a second, and a few a third and even fourth attack. The "acclimatization fever," known locally as *chapotonada*, is dengue. The degree of immunity resulting from an attack is decidedly individual in character, and is rarely solid and lasting. Many went through the succeeding epidemic season without being attacked, but others had relapses or repeated attacks, tending, however, to diminish in severity. The immunity exhibited by native children is probably due to a first attack in early life and constant reinforcement by frequent bites of infected mosquitos.

The points of similarity between dengue and yellow fever are well brought out. For example, that the

patient is infective only up to the third day of illness; that there is a period of development of the virus in the mosquito of the same duration before it is able to infect another human subject; that the virus, which is still to seek, is, at one stage at least, filterable, present in the peripheral blood of the patient, and transmissible to non-immunes by the blood or filtrate; that epidemics only arise when there are simultaneously present cases of the disease, large numbers of *Aedes aegypti*, and large numbers of non-immune individuals. On the other hand, the mortality from dengue is nil, and the degree of immunity weak and variable, both of which points are the direct converse of what obtains in yellow fever. Prevention is summed up in antimosquito measures and the co-operative efforts of individuals, healthy and sick.

There are other points in the report of much interest—such as the history of the condition, details of the arrangements for breeding and storing mosquitos, special points in the bionomics of the insect, the epidemiology of the disease in the Philippines, which space alone forbids our dealing with here. The report is clearly written and well produced, and misprints are very few, the most noticeable being that Sir Rubert Boyce is named Rupert throughout, a point which does not detract from the scientific value of this excellent record.

#### JONATHAN HUTCHINSON'S MUSEUM.

THE new buildings of the educational museum were opened at Haslemere on August 27th by the Earl of Midleton. The museum was founded thirty years ago by Sir Jonathan Hutchinson, who not only made many gifts to it, but also applied certain ideas of his own in the matter of arrangement which were then considered revolutionary, and even yet have not found general appreciation. Since his death, up to which time he defrayed the whole cost of maintenance, including the services of a curator, the work has been continued by voluntary contributions, and last year it was decided to acquire more permanent and central quarters as a memorial to the founder. A house and grounds were purchased, and were adapted to museum purposes by one of Sir Jonathan Hutchinson's grandsons, and in this new setting—much more suitable than the series of huts in which the specimens had previously been lodged—the collections are seen to advantage. The museum contains sections on geology, botany, natural history, and the history of mankind, as well as a local exhibit to which it is the pride of the people round about to contribute. Lately the museum has been enriched by the gift of a section illustrating peasant art, the nucleus of which was formed twenty years ago by the Rev. Gerald Davies, now Master of Charterhouse, who gathered articles, such as mangle-boards and other domestic implements, as well as textiles, mostly in the remoter parts of Scandinavian countries. An excellent ornithological collection has been rearranged to illustrate, not only what some birds are like, but their migrations and life-histories and economic value. The governing principle of the museum is still Hutchinsonian simplicity and unpretentiousness, and the interpretation of science in a direct, pictorial, and diagrammatic way. One of Sir Jonathan Hutchinson's ideas, carried out on a large scale, is his "space for time" method, whereby the walls are arranged in vertical panelings, each panel representing, in the historical section, a century, and in the geological section a period; exhibits—pictures, printed information, or specimens—are arranged in the appropriate spaces. The ceremony at the opening of the new buildings was presided over by Dr. Arnold Lyndon, O.B.E., chairman of the committee of manage-

ment, who recited briefly the particulars just given, and drew attention to some of the outstanding exhibits. Lord Midleton said that Jonathan Hutchinson was a great surgeon, naturalist, and investigator, but those who knew him best would perhaps think of him first as an educationalist in the sense that he wanted to bring to every community in its own locality the results of scientific research, and to do so in the most simple and direct way. A visitor to an ordinary museum might often plaintively ask what, humanly speaking, a particular specimen was, but under Sir Jonathan Hutchinson's guidance a museum became not only human but exciting. An address on Hutchinsonian method was given by Dr. F. A. Bather, F.R.S., keeper of the geological department of the South Kensington Natural History Museum, who said that Sir Jonathan Hutchinson was accustomed to set his educational museum rather in contrast to the ordinary local museum, though possibly a synthesis of the two might prove the most advantageous. Hutchinson's idea was that the museum should be for the untaught. He also dissented from the view that the museum should be a mere addition to book knowledge; it was to be a compromise between the printed book and that outside nature study opportunity for which it was so difficult for an urbanized community to obtain. Hutchinson taught through concrete objects; to his mind no museum worthy of the name was simply a "series of labels illustrated by specimens"; it was to be a series of specimens which as far as possible told their own story. Another point on which this master in museum making insisted was that objects as far as possible should not have to be viewed through glass. If the injunction "not to touch" could be waived so much the better. Things were best seen when the fingers assisted the eyes. Hutchinson also followed the plan of first asking his questions of his students and then turning them loose among the material to gather their answers—a better plan, Dr. Bather thought, and one worthy of extension into larger fields, than the usual method of taking students through a course of study and putting the questions at the end. A vote of thanks was proposed by Mr. H. A. L. Fisher, lately Minister of Education, who, however, declined to be drawn into a tempting discussion, and was seconded by Dr. Roger Hutchinson (Haslemere), who remarked that when his father started his museum his ten irreverent children thought it was a device for forcing more knowledge down their unwilling throats. His father was devoted to the demonstration method; if he shot a rabbit in the field he would immediately open the animal and demonstrate its anatomy to his sons, or he would pluck a flower to pieces while he talked about stamen and pistil. A primrose by the river's brim meant to Hutchinson far-reaching Darwinian theories and much else. On behalf of the family he expressed gratitude for this living memorial in which another soul went "marching on." At the close of the proceedings a memorial tablet commemorating Hutchinson's great work among his Surrey neighbours was unveiled.

#### THE DEFINITION OF MENTAL DEFICIENCY.

A new Mental Deficiency Bill has been passed by the House of Lords, and was ordered by the House of Commons to be printed on July 29th last. It will be considered by the latter House in the autumn session. The main purpose of the bill is to alter the definitions of defectives as set out in the Mental Deficiency Act, 1913. It is a curious fact that neither in that Act nor in any other is there any definition of mental defectiveness; there are only definitions of the several classes of defective persons—idiots, imbeciles, feeble-minded persons and moral defectives, or "moral imbeciles," as they have hitherto been termed. The

definitions in the case of the first three classes require that the mental defectiveness must have existed "from birth or from an early age," and in the last class that the particular conduct they manifest must have been displayed "from an early age." For some years these definitions have been found to have important administrative disadvantages in at any rate two respects. In the first place, magistrates, in order that they may deal properly and legally with persons before them, have required evidence that the undoubted present mental defectiveness of those persons had existed "from birth or from an early age," and such evidence it has naturally in some cases been difficult or impossible to produce, although the nature of the case might not be seriously disputed, or might, indeed, be convincingly evident to any medical or psychological expert. In the second place, an increasing prevalence of encephalitis lethargica has led to a considerable number of cases in which a very real arrested development of mind has arisen in the course of childhood or adolescence, therefore, of course, not inherent or germinal or congenital, but definitely acquired. It is very desirable that there should be power for authorities to deal appropriately with cases of this nature. The new bill proposes to remedy these defects, or to effect these purposes, by eliminating the words "from birth or from an early age" from the old definitions of the classes of defectives, and to add that for the purposes of the Act mental defectiveness shall mean "a condition of arrested or incomplete development of mind whether innate or induced after birth by disease, injury or other cause." The new definitions, in what is now probably their final form, may be regarded as satisfactory, but they have not reached that final form without a good deal of thought and trouble on the part of the Board of Control, the Medical Committee and Council of the Central Association for Mental Welfare, and others interested. From the medical aspect the danger has been lest the new definitions should lead to the ignoring in practice of the fundamental distinction between the arrest of mind taking place before the developmental period is ended, and a perversion or decay of mind occurring after the mind has attained normal development, and so include, in fact, cases of insanity which were never intended to be, and should not be, dealt with under the Mental Deficiency Acts. This distinction does not need emphasizing to medical practitioners, but to some others who have to take an important part in administering or enforcing the law it seems necessary to insist upon it. It is unfortunate, therefore, that the words "arrested or incomplete development of mind," occurring towards the end of Clause 1 of the bill, are not stressed in the explanatory memorandum prefixed thereto, as they should have been, but are rather slurred over and have their meaning obscured or weakened in the first paragraph of that memorandum. It is true that the preface is no part of the bill, but it is what many people read instead of the bill itself, and it is of some importance that the meaning should be made clear and the emphasis properly placed when the bill next comes before the House of Commons, so that there shall be no misunderstanding as to its application and administration.

#### THE NEW INTERNATIONAL SANITARY CONVENTION.

IN July last Sir George Buchanan read an address before the conference of port sanitary authorities, at the Jubilee and London Congress of the Royal Sanitary Institute, on the recent revision, at the conference held at the Office International d'Hygiène Publique in Paris, of the International Sanitary Convention for dealing with the chief "pestilential" diseases which are liable to be carried by shipping. The chief diseases were cholera, plague, typhus, small-pox, and yellow fever; and Sir George Buchanan pointed out that British influence in framing regulations

had been exerted uniformly on the side of freedom. All systems which involved long detention in quarantine had been contested; in regard to cholera the application of the authorized conventions had been proved to be consistent with a minimum of interference with passengers and crews, and practically no interference at all with merchandise. The carriage of plague infection by ships required different measures from those adopted against the carriage of cholera. Human plague cases, whether on ships or on the shore, were quite an uncertain factor; ports became infected one after the other through the carriage of plague rats. It was necessary, therefore, to suppress rat plague on ships, to prevent the access of rats from ship to shore, and to keep down the rat population in wharves, docks, and warehouses. The methods adopted were systematic rat-catching, fumigation with sulphur or with cyanide gases, rat guards to prevent landing, and various schemes for dealing with the discharge of cargo likely to harbour rats. The International Sanitary Convention of 1912 provided some measures of co-ordination, but there were obvious deficiencies, one of the worst being that a ship which swarmed with plague rats would be classified as "healthy" and not as "infected" if no human cases had occurred during the voyage. Sir George Buchanan said that yellow fever had been diminished almost to the point of extinction by quarantine in its newer sense of restrictive measures scientifically applied. Typhus and small-pox had required measures subject to some general rule, so as to avoid friction and dispute between different nations. In preparing the new convention one of the first points concerned the arrangements between different countries to inform each other of the prevalence of the disease. The Office International endeavoured to get rid, as far as possible, of provisions based on formal declarations that a particular port had been infected, and to increase the means by which countries might obtain information of the prevalence of the diseases from any part of the world—for example, through the consular services and the Health Organization of the League of Nations. The new convention required the signatory Governments to reply to any inquiry addressed to them by the Office International d'Hygiène Publique in Paris for information about the transmission of infectious disease from one country to another. The convention also improved and simplified the declaration which Governments are required to make by means of their consular services, and imposed a new requirement that these occurrences should be notified direct to the Office International, which would decide on the methods of distributing knowledge of the facts. With regard to rats, the conference adopted a system by which each country should undertake to do its best to ascertain the conditions of rats in its ports, and to communicate the results to the central office in Paris. The convention, therefore, aimed at placing responsible authorities in each country with the fullest possible information, leaving the countries to decide what action, if any, was necessary. It also laid down a code of measures which were applicable to the ship, passengers, and crew, and this code had been made strictly reasonable, and the measures suggested constituted a maximum. No obligation had been imposed on any Government to take the measures prescribed in the code. An important article in the convention recommended the conclusion of special agreements between individual countries to make the sanitary measures "more efficacious and less burdensome," and to encourage preventive action, such as vaccination, at the port of departure. After considerable criticism of the use of bills of health, the conference recommended that such bills should be issued free, that fees for consular visas should be reduced, that the bills should be set out in one of the languages recognized in maritime commerce, and that the gradual abolition of bills of health should be aimed at. A separate code had

been made for "infected," "suspected," and "healthy" ships according to each disease in question. Provision had been made for protective cholera inoculation. The full inspection of ships for rat plague was authorized; where the ship was "healthy" and there was no evidence of rat plague or unusual mortality amongst rats, fumigation was not entirely forbidden, but was only to be undertaken in exceptional cases and for good reasons. Particular ports were to be designated as sufficiently equipped to undertake effective destruction of rats, the process would be undertaken not more often than once in six months, and a certificate that it had been done, specifying the methods and results, would carry the ship on to the next half-yearly examination. The inspection officer was authorized to exempt from "deratization" when circumstances permitted, and the exemption certificate had the same six months' validity as the "deratizing" certificate. In conclusion, Sir George Buchanan said that while the new convention was not a world-shaking instrument of hygiene, it embodied a practical world code which should assist administration, and at the same time furnish a reasonable protection to the freedom of commerce and transit.

#### SIR HENRY ACLAND.

In the *Times* of September 4th appeared an announcement of the gift to the Bodleian Library of the correspondence of that great personality the late Sir Henry Wentworth Acland, Bt., K.C.B., M.D., F.R.S. (1815-1900), of Oxford, who, finding medical science in the "home for lost causes" in a state of suspended animation in the early and mid-Victorian periods, brought it to life by his vigour and far-seeing wisdom. Coming of an old Devonshire family, the fourth son of the tenth baronet (creation 1678, with precedence from 1644) of Columb-John, he was created a baronet in 1890, was President of the General Medical Council for thirteen years (1874-87), and Regius Professor of Medicine at Oxford for thirty-six years (1858-94). He was a most striking figure, and, like his friend Henry Liddell, the great dean of Christ Church, combined handsome impressive features with the highest intellectual culture in a way seldom rivalled. An artist and lifelong friend of John Ruskin, it was indeed fortunate for Oxford that he directed the building of the University Museum; this interesting story has been told more than once—by Ruskin and himself in 1859, by Dr. H. M. Vernon and his wife on the jubilee of the museum (1909), and by Sir Henry's son Dr. Theodore Acland in the "Contributions to Medical and Biological Research, dedicated to Sir William Osler in Honour of his Seventieth Birthday" (1919), in which there are most appropriately portraits of Sir Henry Acland and John Ruskin. His wide sympathies, versatility, and personal influence did a unique service in promoting the study of natural science in Oxford. Looking back on Sir Henry's plans in the eighties for medical education and the developments of public health and State medicine, we discern now a marvellous foresight and accuracy which then may have appeared visionary. His correspondence of six thousand letters should be a mine of information about the history of the science and medical school of the University of Oxford, and show even more clearly what a great man he was.

#### A CONFERENCE ON CANCER.

A CONFERENCE ON cancer is to be held at Lake Mohonk, New York State, on September 20th, by the invitation of the American Society for the Control of Cancer. The conference will last for the greater part of a week. Its main purpose is to ascertain what measure of agreement on the various problems of cancer in which the public are

interested can be reached by discussions between pathologists and clinicians of America and European countries. The representatives from this country are Sir John Bland-Sutton, Past President of the Royal College of Surgeons of England, Dr. J. A. Murray, director of the Imperial Cancer Research Fund, Dr. Archibald Leitch, director of the Cancer Hospital Research Institute, and Mr. Sampson Handley, surgeon to the Middlesex Hospital. In addition to these there will be about a dozen delegates from various European countries, including Professor W. M. de Vries (Amsterdam), Professor H. T. Declan (Gröningen), Professor Gustave Roussy, Dr. C. Regaud, Professor Hartmann (Paris), Professor Bérard (Lyons), Professor Marié (Toulouse), Dr. C. du Bois (Switzerland), Professor Maisin (Louvain), and Dr. R. Bierich (Hamburg).

#### PRE-MEDICAL INSTRUCTION IN AMERICA.

We welcome the first number (July, 1926) of a new series of the quarterly *Bulletin of the Association of American Medical Colleges*, stated to be "the only publication in the world devoted to medical education and medical pedagogy." It has been resuscitated after an interval of thirteen years, for the first series was brought to a close by financial stress after two years' existence. Besides much news, it contains the views of educational authorities, such as deans of the medical schools; in this instalment there are expressions of opinion on the two years of pre-medical study which, though of course presented from the American standpoint, may not be devoid of interest in this country, and even, perhaps, capable of some degree of application. Some of the teachers feel that too much attention is given in these two years to scientific subjects to the neglect of the humanities, and that there is therefore a risk of excluding from the medical schools those students with the broader human interests and knowledge of the forces governing behaviour. Samuel P. Capen, Chancellor of the University of Buffalo, asks the familiar questions: (1) Which is the more important for the medical student, a thorough grounding in the basic sciences or a wider general education? and (2) Is it possible to improve the accomplishments in the natural sciences and at the same time to provide a broader and better education in other directions? He is in favour of curtailing the scientific preparation and making it more attractive to the student, who often fails to see its object, except as a disagreeable preliminary penalty which must be paid for the privilege of studying medicine; to achieve this he would introduce into it illustrations from material now reserved for the medical school. A considerable amount of the social sciences, especially sociology, psychology, economics, and history, should, he thinks, be added to the curriculum of the two years spent in pre-medical study. Professor Hugh Cabot, Dean of the Medical School of the University of Michigan, while inclined to think that more scientific work, such as physical chemistry and biophysics, should be taught, and that the instruction in English and rhetoric should, if anything, be increased, expresses a doubt whether, apart from culture, the learning of French and German adds anything essential to the equipment of the medical man, since the greater extent to which foreign literature is available through translations has altered the situation to an important degree in recent years. It appears that at Michigan University, at any rate, this bold and rather striking conclusion has been arrived at; no doubt the abandonment of the widely held ideal of a knowledge of these two modern languages has been reached only after due consideration and the realization that in practice the student is seldom able to read freely the language he takes up for admission, and as he rarely uses the knowledge the time thus expended has really been lost.



## INFANT WELFARE.

MUCH work has been done and much has been written in recent years on the determining causes of infant mortality. Special interest nevertheless attaches to a contribution to the subject by Miss E. M. Elderton of the Galton Laboratory in a memoir on the relative value of the factors which influence infant welfare.<sup>1</sup> The first section of the memoir and part of the second were published last year, and were reviewed on January 9th (p. 59); the remainder of the second section has now appeared, and further sections are to be issued later. Miss Elderton is a recognized authority on the application of modern statistical analytical methods to problems bearing on the relative importance of the influence of heredity and the various environmental and social factors in determining types of disease, and has made so detailed an analysis of the various factors that her conclusions must be of considerable general interest and of much value to those who have to deal practically with infant welfare. The data on which the investigation is based were derived mainly from the five North Country towns, Blackburn, Preston, Salford, Rochdale, and Bradford, and were provided by the respective medical officers of health. In Blackburn, Preston, and Salford the information relates to babies who were born in 1908; in Rochdale to those born in 1909 and 1910; and in Bradford to those born in 1911 and 1912. The number of infants comprised 500 from Blackburn, 633 from Preston, 854 from Salford, 4,006 from Rochdale, and 2,931 from Bradford. All the particulars were obtained by lady inspectors or health visitors. Some data relating to the city of Birmingham in 1908 derived from a report by Sir John Robertson, and data for the district of Westminster, London, from reports of the City of Westminster Health Society, were also considered. The baby who had been under observation for a year was the centre of investigation. As the problem for solution was the arrangement in order of importance of the factors that influence the infant death rate and the health of the surviving children, the method of correlation was employed for the analysis, and the correlation coefficient was used in its various forms—the product moment, the biserial, and the fourfold. Partial correlations also were used to distinguish the influence of certain interrelated factors. The death rates per 1,000 births for the various comparable groups were also tabulated. The first section of the memoir deals with the influence of various environmental and parental factors on the viability of the child. The term "viability" is used in preference to "mortality," as the latter word has more the idea of a rate behind it. The principal conclusions are that the health of the mother is an important factor in determining infant mortality in the data examined, and that the habits of the parents and the occupation of the father both show a small association with infant mortality. Both the health and habits of the parents are associated with the various environmental conditions considered, and allowance must be made for parental health before any statement can be made as to the relative importance of the environmental conditions for infant viability. When this correction has been made very little association is found between infant mortality and any environmental condition. Any association that exists between the employment of the mother and infant mortality is very slight; in the majority of districts there is none. When any association is present it is chiefly a secondary result of the presence of inferior stock, and the correlation is made insignificant by retaining the habits of the parents constant. There is no evidence that the employment of the mother, in itself, leads to lack of

cleanliness in the home. There is a rather higher infant death rate among first-born than among later-born children, but later-born children in larger families do not show less vitality. If any such tendency exists it may be ascribed to the fact that the parents have bad habits. Evidence of the influence of the age of the mother is conflicting; there is a heavier death rate in infants of mothers under 23 years except in Bradford, but more data are required. No evidence is found that bottle-feeding in itself causes a high infant mortality. In the majority of cases bottle-feeding follows poor health in the child, and does not cause it. It is held, however, that this subject calls for fuller consideration. Poverty, whether judged by the wage of the man or the income of the family, was not found to be associated with infant mortality except to a slight extent, and this association disappears when the health of the mother is made constant. It appeared that the type of housing has very little influence on infant mortality, and that indoor sanitation had no advantage over outdoor sanitation so far as infant mortality was concerned. Miss Elderton urges the need for more complete statistics of the factors that have an influence on infant welfare, particularly as to the health of the parents, and to the attack rate of certain diseases in infancy; she asks also for some method which would make it possible to identify on entrance to school, for the purpose of further inquiry in regard to health and social conditions, the children whose circumstances have been the subject of investigation in infancy.

## PLAYING GROUNDS FOR THE PEOPLE.

IN these days when vast areas in the vicinity of all large towns are being converted into residential neighbourhoods for various classes of the population, it is well that there should exist such an organization as the National Playing Fields Association. The movement was inaugurated at a meeting in the Royal Albert Hall on July 8th, 1925, under the presidency of the Duke of York. In town planning the provision of open spaces for recreation has often been overlooked; and it has been urged that the Ministry of Health should give closer attention to the matter, and co-operate with local authorities in establishing playing fields in places where extensive building is going on. In the meantime the National Playing Fields Association is endeavouring to support local authorities and other bodies in any steps they take to provide the people with adequate recreation grounds. It advocates an extension, with such variations as may be necessary, of the scheme started in Oxford in 1920 by Mr. J. R. F. Turner, whereby boys of the elementary schools are permitted to use college cricket grounds when these are not required by the undergraduates. Certain public schools have offered similar facilities and practice classes have been instituted at Lord's. The object of the association seems worthy of every support, not only in neighbourhoods that are being suburbanized or developed into towns, but also in many villages throughout the country where playing grounds seem sadly lacking. The address of the National Playing Fields Association, which is now being organized on a county basis, is 166, Piccadilly, W.1.

## THE MEDICAL REGISTER: UNTRACEABLE PRACTITIONERS.

AT the request of the Registrar of the General Medical Council we publish in the SUPPLEMENT this week a list of the names of medical practitioners who have not replied to his inquiries as to the accuracy of their postal addresses. Any practitioner who finds his or her name included in this list and desires it to be retained on the *Medical Register* should communicate at once with the Registrar, General Medical Council, 44, Hallam Street, Portland Place, London, W.1.

<sup>1</sup> On the Relative Value of the Factors which Influence Infant Welfare. By Ethel M. Elderton. *Journal of Eugenics*, vol. 1, Parts III and IV, April, 1925, pp. 277-381. Cambridge: The University Press. (Med. 4to; illustrated. Annual subscription, 60s. net; double parts, 35s. net.)

## THE STATE OF THE PUBLIC HEALTH.

## SIR GEORGE NEWMAN'S REPORT FOR 1925.

ENGLAND AND WALES.

[First Notice.]

THE annual report of the Chief Medical Officer of the Ministry of Health, which has now been issued,<sup>1</sup> deals with the state of the public health in England and Wales during 1925; the statistics in it are drawn from the Registrar-General's returns relating to births, deaths, and infectious diseases, and the various data and records in respect of invalidity under the National Health Insurance Acts. Supplementary information has been obtained from the annual and special reports of medical officers of health, from investigations by medical officers of the Ministry, and from the work of other governmental departments concerned with the physical, industrial, and social welfare of the people.

The report contains twelve chapters and four appendices, and is characterized by a quiet optimism as regards the progressive triumph over preventable disease. In this respect a warm tribute is paid to the valuable work of the insurance medical service, to which one chapter is devoted, and also to the increasing amount of attention to maternity and child welfare.

*Births and Deaths.*

The birth rate during 1925 was lower by 0.5 per 1,000 than that of the previous year, and by 7.2 as compared with 1920, which was the apex year of the increase in birth rate which followed demobilization. The death rate was just under 12.2 per 1,000, approximately the same as last year. Sir George Newman repeats the statement in his previous report that the crude mortality rate is likely to show a slight upward tendency in the coming years in consequence of a change in the distribution of age groups of the population, and not attributable to any strengthening of the conditions prejudicing vitality.

The following diseases were prominent in the mortality rates, the figure in each case being the proportion in 1,000 deaths: cardiac and circulatory diseases, 177; bronchitis, pneumonia, and other respiratory diseases, 165; malignant diseases, 110; diseases of the nervous system, 99; and all forms of tuberculosis, 85. Comparison of these figures with those for last year shows that whereas in 1924 the principal cause of death was respiratory disease (174), the leading place in 1925 was taken by diseases of the heart and circulation, which have increased from 168 to 177. In the two years 1924 and 1925 the figures for malignant disease are respectively 106 and 110; for tuberculosis 87 and 85, and for diseases of the nervous system 100 and 99. By classifying the total deaths in age periods it appears that there is practically no change in the two years in any group except for a slight decline in the first four years of life.

*Infant Mortality.*

In a table of the infant death rates for various age periods since 1881, it is shown that the reduction in mortality has affected mainly the age period of 3 to 12 months: the death rate under 4 weeks still remains relatively high. As regards the causes of death, an increase in whooping-cough was counterbalanced to some extent by a decrease in influenza. The maintained low level of infantile mortality (75 per 1,000 births) indicates that there was in 1925 a saving of some 37,000 infant lives. It also implies a healthier physical condition in children from 1 to 5 years of age, and a better state of personal and public hygiene. Sir George Newman adds that there is still room for further reduction, particularly as regards the exceptionally high mortality in the first four weeks of life, and the mortality among the illegitimately born, for whom the death rate under 1 year per 1,000 born was 136, as compared with 75 for all births.

*Mortality due to Respiratory Diseases.*

Although respiratory diseases came second in the list of causes of death during 1925, Sir George Newman devotes special attention to them in view of the possibility of their reduction by preventive measures. Influenza has retained its unhappy prominence. Each year since 1918 (except 1923, and for females 1921) has been characterized by a higher influenza mortality rate than 1906 to 1910, and both 1922 and 1924 surpassed 1891-95, the previous worst quinquennium. Pulmonary tuberculosis, on the contrary, has continued to decline; no year since 1918 had so high a death rate as 1906-10, and the rate for 1924 was for males only 74 per cent., and for females 79 per cent., of the rate for the five-year period. Other respiratory diseases in this respect occupy a middle position between influenza and pulmonary tuberculosis; the death rate for 1924 showing an improvement on the 1906 to 1910 figures of 16 per cent. for males and 17 per cent. for females, which is a greater relative improvement than has previously occurred. Commenting on the variation in death rates due to respiratory diseases since 1851, Sir George Newman recalls the observations of William Farr, who, after studying the increasing death rates due to bronchitis and pneumonia from 1850 onwards, suggested in 1866 that smoke pollution of the atmosphere as a probable cause should be dealt with. He returned to the attack with more decision in 1869, and urged the adoption by manufactories and kitchens of smoke consumption. In 1871 Farr admitted that the still increasing death rate might be partly due to change of nomenclature and improved pathology, but he also incriminated imperfect ventilation and dusty conditions in mines, shops, and factories. In 1875 he referred to risks in this respect arising from atmospheric temperature changes, one of his favourite lines of study, and again insisted on the importance of particles in the air. Sir George Newman remarks that Farr was well acquainted with the factors to which most importance is still attached. Under the heading of "Variation of mortality in districts," reference is made to the Registrar-General's annual report for 1913, which contained a table of pneumonia mortality rates in county boroughs, urban districts, and rural districts throughout England and Wales. Sir George Newman states that the death rate from pneumonia in 1924 in each of these classes was substantially the same as in 1913, and he quotes the words in the 1913 report: "Evidently pneumonia is to a large extent a preventable disease, and the North of England has still much to learn with regard to its prevention." He adds, as his own comment, "In a word, pneumonia is mainly a disease of industrial and urban districts, due to the total complex of town life." He then passes to the regional distribution of pneumonia notifications, and cites the year 1923, which was not conspicuous for any heavy influenza mortality. A table of incidence rates during four-weekly periods of this year demonstrates the unfavourable prominence of the northern and north-western parts of England compared with the rest of the country, the high incidence in the counties of Lancashire and Cheshire being particularly significant. The occurrence of harsh climatic conditions does not appear to explain these results fully, though statistical evidence indicates that sharp changes of temperature, particularly in their effect on the aged, are the real basis of the evil reputation of climate in relation to respiratory disease. Thus the maximum of mortality is reached, not in mid-winter, but in the early spring, in March, a time of great temperature variations. Generally speaking, a fall of temperature below the average for the season is coincident with an increased mortality; other instances of this relation were included in a special report by the Ministry on the influenza pandemic which was discussed in the JOURNAL, 1921 (vol. i, pp. 205, 348, and 355). The increase of mortality is not to be considered an inexorable consequence of a fall of temperature, for other factors have a modifying influence, and their statistical evaluation is a very difficult matter. Sir George Newman urges the necessity of more experimental and small-scale investigations, and concludes that there is undoubtedly an excessive rate of mortality in the north-western part of England from respiratory diseases which could be ameliorated by an increase of knowledge

<sup>1</sup> On the State of the Public Health. Annual Report of the Chief Medical Officer of the Ministry of Health for the year 1925. H.M. Stationery Office. (Med. 8vo, pp. 250, 3s. net.)

how to live healthily and a right use of measures of prophylaxis and treatment. He adds:

"Every form of industrial or mechanical contrivance which either prevents or reduces pollution of the atmosphere is a contribution to the public health, and this aspect of the problem calls for the continued and vigilant attention both of authorities and those responsible for commercial concerns. But this is not all. There is needed an increase in the knowledge and practice of healthy living. Much can be done by personal prudence; by cleanliness, by exercise, by correct breathing; by domestic ventilation, and by the practice of individual hygiene."

With reference to the part played by respiratory infection, Sir George Newman recommends regular bacteriological examinations of samples of the population in different places, and thinks that in this way it will be possible to forecast epidemics of respiratory disease, as has been accomplished in the case of cerebro-spinal fever. He does not believe that any form of treatment by drugs or vaccines is at present generally applicable, though in all acute respiratory infections early medical treatment and competent nursing are of supreme importance. Such treatment consists of rest, the maintenance of the patient's strength, the appropriate oxygenation of his blood, and the sustenance of his circulation. He considers that at present the effective provision of hospital accommodation for respiratory infections is proportionately inadequate, and suggests that treatment in isolation hospitals might well be extended to include that of respiratory diseases. He closes this section of his report with the following words:

"Lastly there is need for much more intensive study of pneumonia. Medically, we want more knowledge of its bacteriology, modes of transmission, relation to primary and antecedent disease—fatigue, colds, influenza, measles, whooping-cough, trauma, alcoholism, heart disease, diabetes, and renal disease. Socially, too, there is need for exact investigation of the depressant influences and circumstances which predispose to pneumonia."

#### Small-pox.

Small-pox continues to increase; 5,365 cases were notified in 1925, as compared with 3,765 in 1924, 2,485 in 1923, 973 in 1922, and 315 in 1921. In addition to these 5,365 cases local inquiries resulted in the discovery of fifteen other cases, but twenty-six of the notified cases were not confirmed as being small-pox by the Ministry's officers or the medical superintendents of small-pox hospitals, so that the net total number of cases which came under observation during 1925 was 5,354. Six patients died. Sir George Newman refers regretfully to the misunderstanding and misrepresentation which have resulted in the confusing in the lay mind of the medical question of the merits of vaccination with the administrative question of its compulsory application. An unfortunate sequel has been that the concession granted in 1907 by Parliament to the natural repugnance to compulsion has been misinterpreted as a weakening of professional belief in the efficacy of vaccination, which, nevertheless, in the opinion of those best qualified to judge, remains the one and only certain protection against the spread of small-pox. The general distribution of the disease in counties resembled that in 1924, but there were 1,138 cases in Durham as compared with twenty in the previous year. Control of the disease in that county was rendered difficult by inadequacy in the provision of hospital beds in certain of the invaded districts. The spread of the disease was facilitated by the consequent inevitable delay in removing the patients from their homes, and by the unvaccinated condition of the large proportion of the population. An instance is given of one district in which all the ordinary measures for limiting the spread of the disease were neglected for a long time, with the result that the infection became widespread in eight adjoining districts.

During the year under review small-pox remained mild in type with a low mortality. A few patients became acutely ill before the eruption appeared, delirium being occasionally reported. Instances of grave constitutional disturbance during the second week of the illness were recorded, and in some cases involvement of the eye resulted in permanent impairment of vision. Sir George Newman repeats the conclusion in his previous report to the effect that the present mild epidemic is indistinguishable from small-pox in respect of its clinical character, the protection

afforded by vaccination, its biological reaction, and the potential power of the virus. No vaccinated infants or young children were attacked, although in the days before infantile vaccination small-pox was in the main a disease of childhood. Of 925 cases of small-pox occurring in vaccinated individuals only nine patients had been vaccinated after infancy, and in these nine cases the lapse of time between vaccination and infection was between ten and sixty years. Sir George Newman quotes in this connexion the finding of the final report of the Royal Commission on Vaccination, that immunity could not be assured beyond nine or ten years. In contrast with these figures it is to be noted that a large proportion of the unvaccinated patients were children. Reference is made to the appointment in February of a departmental committee in conjunction with the Medical Research Council with reference to the standardization of vaccine lymph and the improvement of vaccination (BRITISH MEDICAL JOURNAL, February 13th, 1926, p. 294). As a result of the Therapeutic Substances Act, 1925, establishments for the preparation of vaccine lymph will have to be licensed, and the importation of lymph prepared in foreign countries will require to be controlled. The committee will therefore have to advise on the standard requirements and tests to be imposed, and it will also consider whether in certain circumstances advantages could be secured by varying the methods of vaccination—for example, in order to provide temporary immunity during outbreaks of small-pox.

(To be continued.)

## Australia.

### QUARANTINE PRACTICE.

THE Department of Health of the Commonwealth of Australia has issued another of its Service Publications, No. 31 of the series. The latest volume is entitled *Notes on Quarantine Practice for Quarantine Officers*,<sup>1</sup> and the compilation has been entrusted to the safe hands of Dr. Elkington, whose position as chief quarantine officer and experience based on work formerly carried out under the leadership of Dr. Gresswell, and vastly amplified later, are a sufficient warrant for the soundness of the rules laid down, and account for the high place which Australia holds among the foremost of the world's health organizers.

The notes are distributed into eleven chapters, dealing with the subject of quarantine in practically all its aspects—from training the employees in the service how to deal with rat-fleas to the behaviour to be observed by the visiting officer when entering the steward's cabin, nothing seems to have been omitted. The first chapter is introductory, and contains a rapid survey of the quarantine history and legislation from the earlier days when the question began to be considered seriously; this is followed by remarks upon the service itself and the various grades of persons employed in it, their duties, discipline, and so forth. The next chapter deals with the construction and working of ships so far as they affect the quarantine officer. At the end of this chapter, and before starting quarantine matters in real earnest, is a short comic interlude, the officer being instructed, for instance, that "Fanny Adams" means tinned meat, and a "donkey's breakfast" is a mattress (hence, perhaps, this animal's proverbial obstinacy). The following chapters contain very serious reading, dealing in succession with the local quarantine arrangements, the inspection of ships, including the powers and functions of the visiting officer. Next comes a chapter treating of the details to be attended to by the officer in regard to special diseases and suspected persons. The minutiae of active quarantine on ships and at stations occupy two chapters and deal naturally with the duties to be carried out from the point of view of inspection, removal of patients, disinfection, and the necessary reports and returns called for. The chapter on the epidemiology of ships is most interesting, but in our opinion rather unnecessarily detailed. To give one example: few

<sup>1</sup> *Notes on Quarantine Practice for Quarantine Officers*. By J. S. C. Elkington, M.D., D.P.H., Commonwealth of Australia, Department of Health. Service Publication No. 31. Melbourne: H. J. Green, 1925. (6 x 9½, pp. 151.)

quarantine officers, we think, are likely to test a doubtful case of small-pox by Paul's test of inoculating the cornea of a rabbit with the fluid from a pustule, and forty-eight hours later enucleating the eye and examining for opacity in an alcohol-subliminate solution.

The final chapter, on the training of quarantine assistants, shows how very thorough and painstaking that training is, and further, how keen the authorities are that the high standard should be maintained, by making it a rule that every assistant officer should undergo a brief revision course every year. All the important diseases are considered, the possible effects if cases of them should be overlooked, the ways of preventing them, the modes of disinfection and fumigation, the duties of the several officers in their actual quarantine work, and in the filling in of forms, reports, and returns which may be called for.

As the title states, this publication consists of "Notes," and as such fulfils its aim; in fact, there is but one thing needed to enhance its value—namely, an index.

#### MENTAL HOSPITALS IN NEW SOUTH WALES.

The report of the Inspector-General of Mental Hospitals for New South Wales for the year ended June 30th, 1925, has recently been issued. The number of insane persons officially known was 8,265, showing an increase of 120 over the figure of the previous year. The number of admissions during the year was 1,428. Natives of New South Wales formed 60.64 per cent. of the admissions, other Australian States 12.88 per cent., England 14.43 per cent., Ireland 4.90 per cent., Scotland 3.50 per cent., and other countries 3.64 per cent. The number of persons who recovered was 573, equal to a rate of 40.13 per cent. on the admissions and readmissions for the year. Of the 550 deaths during the year, 188 were caused through diseases of the brain: 65 were due to general paralysis, 40 to inflammation and other diseases of the brain, 27 to epilepsy and convulsions, 34 to maniacal and melancholic exhaustion, and 22 to apoplexy and paralysis.

The report comments on the valuable work done by the various reception houses where patients with slight mental disturbances of short duration may secure suitable treatment without the necessity of certification. During the year 1,687 persons were admitted to the reception houses; of these 667 were discharged, and thus avoided certification and removal to a mental hospital.

The Government measures to combat the overcrowded condition of the mental hospitals promise very shortly to bring considerable relief; but more buildings are still urgently needed. The lack of suitable accommodation for the criminal insane has been commented on in previous reports. Attention is again directed to the necessity of providing this accommodation, as the present lack of the requisite buildings causes many persons who should be dealt with in hospitals to remain in prison.

The Inspector-General expresses his dissatisfaction with the lack of provision for mentally defective persons in the State. Other Australian States have passed measures enabling the department to take charge of such persons. The adoption by Parliament of similar measures for New South Wales is strongly urged. A bill designed to deal effectively with mental defectives was drawn up some years ago by the late Dr. Eric Sinclair. Its provisions were founded on the recommendations of the English Royal Commission on the care and control of those classes, but adapted to meet the special conditions of New South Wales. It would have brought under the supervision of the Education Department those mental defectives who were of school age or were likely to benefit by instruction in special schools to be established, and to place the others—that is, those who would not be likely to benefit by instruction and the adolescents and adults—under the control of the Inspector-General of Mental Hospitals. This measure, or some similar measure, is held to be imperative for the welfare of the State, and is demanded by a growing public opinion.

#### ENDOWMENTS BY MEDICAL MEN.

Sir Alexander MacCormick has handed over his private hospital in Sydney, "The Terraces," as a gift to the Presbyterian Church to use as a hospital in whatever form they shall decide. This is a private hospital of some forty

beds, well equipped, and established. It is understood that it will be carried on in the future by the Presbyterian Church mainly as an intermediate hospital.

Mr. Gordon Craig, honorary urological surgeon at the Royal Prince Alfred Hospital, Sydney, has endowed a fellowship in urology at the University of Sydney, the clinical work to be carried out at first at the Royal Prince Alfred Hospital. It will be for the purpose of training graduates in the special study of urology, the fellowship to be, in each case, for a period of three years, during which a fellow must undertake clinical work at the Royal Prince Alfred Hospital and research work at a laboratory fitted up and handed over to the University of Sydney by Mr. Gordon Craig. In all, this generous foundation will amount to a sum of £20,000. The clinical work will, for the next five years, be carried out at the Royal Prince Alfred Hospital under the control of Mr. Gordon Craig, who will thus keep an active interest in the scheme, which will naturally be of great assistance in assuring its success.

#### THE LATE SIR CHARLES MACKELLAR.

The death is announced of Sir Charles Kinnaird Mackellar, K.C.M.G., M.B., Ch.M.Glas. Sir Charles Mackellar, besides at one time carrying on a large general practice, was also one of the most prominent of Australian public men. In 1886 he was appointed a member of the Legislative Council, and held the portfolio of Minister for Mines, being at the same time a representative of the Government of the Upper House. In 1903 he was appointed to fill an extraordinary vacancy that occurred in the Federal Senate. The work for which he was best known was that which he did when president of the State Children's Relief Board, where he was able to carry into practice the strong views he entertained as to the reception into institutions of such homeless children; and it was he who, during his fourteen years' tenure of office, carried out an extensive scheme of boarding out neglected children, a method that time has shown to be the most humanitarian. He also was instrumental in the establishment of the Children's Court and small farm homes for delinquent children. It was in recognition of this philanthropic work that a knighthood was conferred upon him in 1916.

## Scotland.

#### VITAL STATISTICS FOR SCOTLAND.

From the second quarterly report for 1926 of the Registrar-General for Scotland it appears that the number of births for the quarter, totalling 26,996, is 825 more than that of the previous quarter, although it is 913 less than that of the corresponding quarter for last year. The birth rate of the quarter was 22.1 per 1,000. This is lower than the birth rate of all the second quarters of years since 1855, with the exception of the three war years, 1917-1919. Of the children born, 13,763 were males and 13,233 females. It is pointed out that in England and Wales the quarterly birth rate was 18.7. The number of marriages was 336 less than in the corresponding quarter of last year. The number of deaths registered in Scotland during the quarter was 17,004; this is 924 less than that of the previous quarter, but 1,093 more than that of the corresponding quarter of the previous year, and 205 more than the mean of those of the second quarters of the preceding five years. The quarterly death rate was 13.9 per 1,000. Of the total number of persons dying during the quarter, 3,947, or 20.9 per cent., were children under 5 years of age; 6,959, or 40.9 per cent., were persons between the ages of 5 and 65; and 6,498, or 38.2 per cent., were aged 65 and over. Deaths of children of less than 1 year old numbered 2,153, and as the registered births of the quarter numbered 26,996, these deaths equalled an infantile mortality rate of 80 per 1,000. These infantile deaths were 90 fewer than those of the second quarter of the preceding year and 378 fewer than the mean of the second quarters of the preceding five years. In England and Wales the infantile mortality rate for the quarter was 62, or 18 less than the Scottish rate. Of the 17,004 deaths in Scotland during the quarter, 903, or 5.3 per cent., were due to epidemic

diseases. Of these, the greatest number, 370, were attributed to measles; 175 were due to whooping-cough, 111 to diphtheria, 90 to scarlet fever, and 151 to diarrhoeal diseases. There were 45 deaths from encephalitis lethargica and 27 from cerebro-spinal meningitis, as compared with 39 from the former disease and 23 from the latter during the corresponding quarter of the preceding year. Deaths from influenza numbered 797, as compared with 198 in the corresponding quarter of last year. The number of deaths attributed to tuberculosis was 1,436, which was 74 more than in the previous quarter, but 107 fewer than in the second quarter of last year. Deaths from malignant disease numbered 1,653, which was 27 more than in the previous quarter and 1 more than in the corresponding quarter of last year. Pneumonia accounted for 1,536 deaths, which was 152 fewer than the previous quarter, but 394 more than in the corresponding quarter of last year.

#### DEATH FROM ANTHRAX IN GLASGOW.

A fatal case of anthrax occurred recently in a northern district of Glasgow; investigations by the public health department have not yet definitely ascertained the source of the infection, but it is believed possibly to have been derived from a shaving-brush. Recently a case of anthrax was announced from Manchester as attributable to the use of cheap shaving-brushes imported from Czecho-Slovakia, and the Glasgow authorities withdrew from sale a number of brushes which had been included in the same consignment. These, on bacteriological examination, were found to be free from anthrax spores, but a different type of brush manufactured in the same country revealed anthrax spores in large numbers. The public health department has issued a warning as to the danger of using cheap shaving-brushes. The brushes in question had been retailed at prices varying from 6d. to 9d.

#### ABOLITION OF SLUMS.

At an interview which a deputation from the Slum Abolition League had recently with the Glasgow Presbytery Dr. Robert Forgan, secretary of the League, expressed the hope that the Church of Scotland would form a housing committee. Referring to a recent announcement that the corporation of Glasgow had approved of the erection of another 650 houses, Dr. Forgan remarked that all the houses in contemplation were of a type for people well able to afford a good rent. In order to rescue the slum dwellers from their present horrible conditions and to put them into new environments, houses at a much more reasonable rent were required.

#### CALEDONIAN MEDICAL SOCIETY.

The forty-first annual meeting of the Caledonian Medical Society will be held at Storrs Hall Hotel, Windermere, on Friday, September 24th, at 3 p.m. The annual dinner, at which ladies will be welcomed, takes place on that day; members of the society intending to be present are asked to communicate with Dr. W. E. Henderson, Applethwaite Lodge, Windermere, before September 14th.

## England and Wales.

#### PUBLIC HEALTH IN WALES.

In the seventh annual report of the Ministry of Health for 1925-26 the section relating to the Welsh Board of Health contains interesting details of the progress made in the provision of hospital treatment for maternity cases and for crippled children. The number of municipal maternity homes in Wales is now four, with a total accommodation of thirty-one beds; in addition nineteen local authorities have arrangements with voluntary hospitals for the admission of patients under the maternity and child welfare scheme, and a proposal is under consideration for the establishment of a small maternity home by a voluntary agency in connexion with the scheme for the training of midwives. Two homes for mothers and babies established by voluntary agencies furnish thirty-seven beds for mothers and twenty-nine for infants. There is at present only one home for children under 5 years of age in Wales; this has accom-

modation for fifty. Hospital treatment for crippled children is provided by thirteen local authorities, nine having made arrangements with the Prince of Wales's Hospital at Cardiff, three with the Shropshire Orthopaedic Hospital, and one with the Royal National Orthopaedic Hospital in London. Most of these authorities have also made arrangements to deal with out-patients and to supply after-care treatment. Schemes for the treatment of crippled children are being planned by eight other authorities. In view of the general increased activity in respect of maternity and child welfare several local authorities have found it necessary to increase their whole-time medical staffs.

Although in 1924 there was a slight decrease in the previous progressive decline in the infant death rate, the figure being 77 per 1,000 births, as compared with 74 in the previous year, the rate for 1924 was considerably lower than the rates for the years before 1923. The maternal mortality rate for 1924 was 5.01 per 1,000 births, which, though the lowest for some years, is higher than that for England and Wales combined. The number of stillbirths remains high, the number notified per 100 registered live births having increased from 4.1 in 1921 to 4.7 in 1924; the notification of stillbirths is stated to be probably incomplete. The percentage of the notification of births in 1924 was 94.8, as compared with 91.6 in 1921. The number of visits paid by the 454 health visitors during 1924 to children under 5 years of age was 482,884, an increase of more than 70,000 over 1921; visits were paid to approximately 11,000 expectant mothers. The number of trained midwives practising in Wales increased from 1,439 in 1923 to 1,487 in 1924, and the number of untrained midwives decreased from 509 in the first year to 443 in the year under review. Of the 57,426 births registered in Wales in 1924, about 90 per cent. were notified by midwives, and medical aid was summoned by them in 9,041 cases during the year, which represents an increase of 670 as compared with 1923, and of over 1,600 as compared with 1922. During the year 1925-26 eight new district nursing associations, employing nine trained nurse-midwives, were established; most of these nurses also act as part-time health visitors in rural areas. The number of maternity and child welfare centres in existence on March 31st, 1926, was 243; thirteen of these were provided by voluntary societies and the remainder by local authorities. More than fifty new centres have been established during the last five years, and in several urban areas, owing to the increase in the attendance, additional sessions have had to be arranged. Special ante-natal sessions are now held at nine centres—mainly in the county boroughs—but expectant mothers are encouraged to attend at many other centres. Dental treatment is now provided in connexion with the centres of eleven local authorities, and ophthalmic treatment by six; various minor ailments are dealt with at the centres of seventeen local authorities.

There was an increase in the number of new cases of tuberculosis from 4,794 in 1924 to 5,176 in 1925, due probably to improvement in notification rather than to increased incidence of the disease. On December 31st, 1925, there were on the registers of the medical officers of health 12,364 patients with pulmonary tuberculosis, and 4,514 with non-pulmonary disease; this excludes five sanitary authorities with an estimated total population of 24,000, from which figures have not been received.

All the county and county borough councils in Wales have now made arrangements for the treatment of venereal diseases, and during the year under review two auxiliary centres were opened for the treatment of mothers and infants referred from maternity and child welfare centres. There are now nine approved treatment centres and three auxiliary treatment centres, which work in conjunction with maternity and child welfare centres.

The number of medical practitioners under agreement with the Welsh Insurance Committees has increased from 904 in April, 1925, to 950 in 1926, and the standard of service is stated to be satisfactory. The number of cases referred by approved societies to the regional medical officers during 1925 for examination with regard to capacity for work was 18,325, as compared with 15,108 in the previous year.



### THE ORDER OF ST. JOHN AND THE BRITISH RED CROSS SOCIETY.

Further expansion of the work of the Home Service Ambulance department of the Joint Council of the Order of St. John of Jerusalem and the British Red Cross Society has been found necessary. In the sixth report of the council, which covers the period from April 1st, 1925, to March 31st, 1926, it is stated that the number of ambulances has been increased by ten during the year, and that 76,886 patients were carried, as compared with 70,432 in the previous year. Illustrations are given of the great value of the services rendered by these 351 ambulances and their staffs in saving life and affording quick transport of injured persons to hospitals. Help has been received from the Royal Automobile Club and the Automobile Association. The greater availability of ambulances has, moreover, enabled a larger number of sick persons to be transferred from their residences to nursing homes and hospitals. Throughout the country new divisions and detachments are being established by the two organizations for the provision of training in first aid and nursing which is often centred on the ambulances. In many counties every ambulance is worked by the associated Order and Society, and it is thought that there will be no serious difficulty in completing eventually the process of making the whole ambulance service of the country an integral part of the active peace time work of the two organizations. The ambulances are distributed according to local needs, and are replaced when they are worn out. There was a small diminution in the work of relieving sick and disabled ex-officers, but a slight increase in the number of tuberculous ex-officers who received temporary help while their cases were being investigated by the Ministry of Pensions. Assistance has also been given to some ex-officers whose disability was not considered by the Ministry to be attributable to their military service. Weekly grants for extra diet were made to many tuberculous ex-officers who were undergoing treatment at home as a sequel to residence in sanatoriums. The temporary relief of ex-service men suffering from sickness or disablement attributable to war service has continued, and help has also been provided for widows and dependants. During the year under review 372 grants were made to 62 hospitals and other institutions under the control of the Ministry of Pensions, and various kinds of recreation have been organized for the patients.

### TREATMENT OF SCHOOL CHILDREN AT BRIGHTON.

The report of the school medical officer for the county borough of Brighton for 1925 shows a considerable increase in the number of attendances at the school clinic, though there is a considerable decrease in the numbers of children medically inspected in what are called the code groups of entrants, intermediates, and leavers. The reduction in the numbers in these groups corresponds to the fall in birth rate. The procedure before operation for tonsils and adenoids has been improved by the introduction of more thorough inquiries into the existence in the patient or his surroundings of infectious disease. The after-treatment has also been improved by keeping the children in the sanatorium for one night, and sending them home by ambulance, accompanied by the school nurse. The report contains an interesting account of the case of a partially deaf and dumb boy, who could not be taught in an elementary school, and was certified as fit for teaching and training in the Brighton Deaf School. To this the father appears to have objected; he was summoned and fined on several occasions; but after various shifts and subterfuges for a year his business failed, and he eventually took the boy to the deaf school. As the parent can make no contribution to the boy's maintenance, the committee is waiving any claim for the moment. It seems that under Section 54 of the Education Act, if the authorities are satisfied, after consultation with the parent, that suitable provision for a defective child over 7 years of age is not being made, they may require the parent to send the child to a certified class or school, and the order of a court of summary jurisdiction "shall be a sufficient authority for the conveyance of the child to the class or school named in the order." The Brighton authority finds that there is

doubt about the exact interpretation of the word "conveyance." If it does not mean that the child can be forcibly removed, a parent with the necessary means can ignore the order by paying at intervals statutory fines. In the dental department, out of some 2,000 children leaving school 245 were found to have healthy mouths, and 138 of these had every tooth perfect. It is interesting, perhaps, to compare this position with that of the inhabitants of Tristan da Cunha (as noted in the *BRITISH MEDICAL JOURNAL* of August 28th, p. 399); who appear hardly to clean their teeth at all. However, the school medical officer at Brighton is of opinion that the percentage of healthy mouths in Brighton will increase as the result of periodic inspections and treatment.

### BOURNVILLE: WORK AND PLAY.

Members of the Association who attended the Annual Meeting at Nottingham this year could not have failed to gain some acquaintance with the organization of factories; for Nottingham is a noted centre for great "works." It may be that some of the more curious also saw a few of the lesser factories from beneath whose humble roofs quite excellent work is turned out. Maybe the latter type of works represent the workshops of days gone by and show the transition stage between the independent worker and the factory group. However much we may sigh for the passing of the independent hand worker (yet it is probable that there are more of these than ever to-day), there can be no manner of doubt of the need for great organized industries and for factories if our vast population is to be fed and clothed and housed in an efficient manner. The word "factory" has a bad smell about it, something like the smell of schoolrooms of fifty years ago. But the modern factory is as well kept as the modern school, and it is often no less indicative of life. The decrying of organized work on account of its "monotony" has been somewhat overdone of late, and there is a healthy reaction in the recognition that there is something satisfying in regularity and repetition. These reflections have been stimulated by the receipt of a handsome pamphlet issued by Cadbury Brothers, Ltd., as the *Bournville Annual*. This is a publication started in 1921 with the object of keeping customers informed about some part of the work of cocoa making. Each *Annual* deals specially with some one subject. In past years transport and housing have been described. The latter publication was of particular interest in that it gave a full account of Bournville garden city—a piece of work that the most progressive of civic communities might plume itself upon accomplishing. This year's publication deals with "work and play." The authors, with becoming modesty, suggest that this can hardly be so likely to interest widely as did the earlier publication on housing, but we are inclined to think that this year's subject is of even greater importance. High-pressure organized work differs in one material manner from independent work. The independent worker may go comfortably about his or her work for twelve hours or more at a stretch, just because he is not working all the time; he works as he pleases or as "the spirit moves him." He has no need for the pastimes of leisure, for leisure is taken at many intervals during the work, and perhaps in contemplating it. The worker in organized industries is in a different position; he or she must stick to it without a stop according to the time-table—start promptly, work strenuously, rest for the given interval, begin again, and so on to the end of the working period. A slack worker is ruinously expensive. It follows that the hours of organized work must be short, and there flows from this the problem of leisure—how to fill the unoccupied hours of the day. Nothing to do for a third of the day must be more repugnant than any amount of overwork. Dwellers in Bournville garden city who are gardeners have no lack of occupation. But there are some who cannot dig, and for them and also for the diggers, in Rowleath adjoining there is a sports ground of a size and equipment that must make the mouth of a secretary of any "sports club" water. The recollection of the friendly aspect and beauty of Bournville garden city lasts on from a visit paid during the Birmingham meeting. We have not seen Rowleath,

but the pictures and description of these playing fields and club-houses reserved for Cadbury's workers will make the cocoa and sweetmeats prepared by them still more sweet.

#### STAFFORDSHIRE MENTAL HOSPITALS.

The problems of overcrowding, the necessity of early treatment of mental cases, and the decrease of alcoholism as a factor in the production of mental disorder, are amongst the principal features discussed in the annual reports of Stafford, Brentwood, and Cheddleton Mental Hospitals, issued jointly by the Staffordshire Mental Board. At Brentwood the total number of patients under treatment during the year was 1,104, and the average daily number resident 924, an increase of 22 over the previous year. As there is a ward fewer on the male side than on the female side, the male wards have become inconveniently crowded; and it is hoped that the question of providing further accommodation will receive attention at an early date. At Stafford Mental Hospital only the unusually low admission rate during 1925 has prevented the accommodation being unduly taxed. At Cheddleton the medical superintendent, Dr. W. F. Menzies, discussing the necessity for the establishment of a large colony for mental defectives, points out that such a step would enable the insane patients to have adequate accommodation and treatment. "Overcrowding," says Dr. Menzies, "is bad for the health of the patients, expensive in the fight against communicable infections, trying to the tempers of patients and staff alike, and ultimately expensive to the public, owing to the small but certain percentage who each year should have recovered, but remain chronic for life." The necessity for early treatment is shown by the fact that of the recoveries for the past three years at Stafford Mental Hospital, numbering 211 cases, 55 per cent. were admitted within two weeks of the reported onset of their mental illness, 36 per cent. within three months, and only 9 per cent. after three months had elapsed. At Stafford alcoholism was not found to be so potent a factor in the production of mental disease as in past years. The explanation of its decrease as an etiological factor at Brentwood appears to be partly the result of greater sobriety and partly to the fact that a number of alcoholic cases are being treated to recovery in other hospitals.

#### A CASE OF PLAGUE IN LIVERPOOL.

The Ministry of Health has been notified of the occurrence of a case of bubonic plague in Liverpool. The patient, a boy of 10, became ill on August 27th, and was removed to hospital, where he died on August 30th. The diagnosis of plague has been confirmed by the Ministry's bacteriologist. The boy's father was employed at the docks; he is now in hospital recovering from an illness the symptoms of which are suggestive that he too may have suffered from plague. The remaining members of the household are under supervision and all possible steps to prevent the spread of infection are being taken by the Liverpool Public Health Department. A medical officer of the Ministry is investigating the circumstances.

## Ireland.

#### CENTENARY OF THE COOMBE LYING-IN HOSPITAL, DUBLIN.

An international congress is being held during the coming week in Dublin to celebrate the completion of the first hundred years of existence of the Coombe Lying-in Hospital, and we mentioned on August 21st (p. 358) some of the outstanding features of the programme. The inception and subsequent history of this institution presents many points of interest. The year 1825 had been one of poverty and sickness, particularly for the impoverished population of the Coombe district, and in the following year came one of those devastating epidemics of fever so common in the eighteenth and nineteenth centuries. The Rotunda was then the only lying-in hospital in the city, and one night two women, struggling towards it from the Coombe, were taken in labour, and next morning were found dead in the snow-covered streets with their new-born infants. In con-

sequence of this a large ward was immediately set apart for obstetrical work in the hospital which John Kirby had established in 1822 in place of the old Meath Hospital, and arrangements were made for attendance on women in their homes. So started the Coombe Lying-in Hospital towards the end of 1826. Expansion followed to meet the great demand, and in 1829 the hospital was reopened as a wholly lying-in institution with thirty-six beds under Richard Reed Gregory as its first master. Gregory, however, died of typhus soon after publishing a report of the hospital in 1830, and the building was closed for eight months, but it then restarted work under Thomas McKeever. Its existence was soon threatened by an unfortunate dispute with the Rotunda, arising largely out of its status as an educational centre, and for many years its beneficent work was harassed by financial stringency. In 1837 the Duchess of Kent became patroness, and her example was followed in 1864 by the then Princess of Wales. In December, 1851, Benjamin Lee Guinness, Lord Mayor of Dublin, presided over its first public annual meeting, and later gave considerable financial help, which resulted in the provision of more adequate accommodation. In this good work he was succeeded by his son Sir Arthur Guinness, and a new hospital was opened in 1877, since when its progress has been rapid and continuous. In connexion with the centenary a special number of the *Irish Journal of Medical Science* has been issued, and we hope to publish in a later issue a more detailed account of the history of an institution which has battled through to success in spite of a long succession of difficulties and disasters.

#### TUBERCULOSIS IN BELFAST.

Dr. A. Trimble, in his annual report on tuberculosis in Belfast, mentions the poverty and destitution due to unemployment, and describes the attempts made to mitigate the evil. As the census returns were not available, various calculations appear as estimates. The total number of new tuberculous patients was 1,111, the lowest figure since the institution was opened. There were 31,915 re-attendances, and in the case of 216 patients under domiciliary treatment it is stated that the disease had been either apparently cured or become quiescent. The highest tuberculous incidence was found to occur between 7 and 17 years of age, school children furnishing the largest number. Over 41 per cent. of the new patients were living under conditions favouring infection and had been presumably infected; the necessity of personal cleanliness in the household is therefore emphasized. Out of 901 patients definitely diagnosed as tuberculous, only 231 had separate sleeping accommodation. Dr. Trimble continues his series of statistics relating to the effect of tuberculosis on pregnancy, and furnishes the following figures. In the analysis of the end-results of pregnancy it was found that in 2,168 tuberculous mothers 7.9 per cent. miscarried, 89.3 per cent. were delivered of a living child at full term, and 2.8 per cent. of a dead child. Of 1,975 pregnant tuberculous women, 32.9 per cent. improved, 42.3 per cent. remained unaltered, 20.6 per cent. were worse, and 4.2 per cent. died within twelve months of delivery. Dr. Trimble believes that in mild forms of the disease in patients with good environments pregnancy and child-bearing have but little effect on the clinical course of the disease. Details are given of the x-ray, dental, and bacteriological departments, and an account is added of the Calmette, Spahlinger, and sanocrysin treatment, and some observations on the employment of the last named treatment in Belfast. During the year 444 patients were admitted to the municipal sanatorium. On the whole improvement is admitted, but Dr. Trimble insists that much remains to be done.

#### ELECTION OF A MEDICAL OFFICER IN NORTHERN IRELAND.

On August 17th the Enniskillen Board of Guardians considered the appointment of a successor to the late Dr. Moore Betty, F.R.C.S.I., who had been medical officer to the Enniskillen Union Hospital and Fever Hospital for many years. According to the report in the daily press, all the candidates held good degrees; but the supporters of individual candidates openly gave extraordinary reasons for their commendation: one said that on the day of the funeral of Dr. Betty "they" gave a guarantee that they would support Mrs. Betty—that is, support whoever bought

Dr. Betty's practice. This was denied, and a very undesirable argument ensued; the seconder said that he supported the candidate because he had signed an agreement to give up the appointment to young Mr. Betty when he got qualified, and the Bettys were an old and respected Fermanagh family. The supporter of another candidate said that he did so because his candidate was a native of the union, in which the family had been resident for 200 years. In the report in the daily press only one slight reference is made to the experience or qualifications of the candidates. No mention is made of the best candidate or of the best qualified. One may be sure that neither the candidates nor the family of the late Dr. Moore M. Betty are gratified with the efforts, although no doubt kindly meant, of their friends.

#### BELFAST MENTAL HOSPITAL.

The report of the Belfast Mental Hospital for 1925 shows the average daily number of patients was 515 males and 534 females; 219 new patients were admitted. The most prevalent type of disease was melancholia, which affected 28.3 per cent. of the whole of the admissions. Of 139 patients discharged 66 had recovered. An outbreak of typhoid in February, April, and June resulted in two deaths; otherwise the general health was good. The building of one villa for acute cases, one observation villa, one convalescent villa, a residence for the medical superintendent, and a new gate lodge, was commenced during the year, and these additions will be ready for occupation in October; this will provide the much required accommodation for the increasing numbers. The net capitation cost was £34 10s. 2d.: it is the lowest since 1918; and the farm account shows a profit of £2,301. The Ministry's report was highly favourable.

## Correspondence.

#### SANATORIUM TREATMENT.

SIR,—In your review of the statistical inquiry by Messrs. Stocks and Karn into the influence of sanatorium and dispensary treatment and of housing conditions on pulmonary tuberculosis, you do not mention some important fallacies which have not been avoided by the authors.

They come to the conclusion that patients who have dispensary treatment also; and the presumption is that if further progress and of survival than those who have not; and that there is no consistent evidence that bad housing conditions have any influence on the ultimate progress or rate of recovery.

To arrive at reliable conclusions in such an inquiry it is essential to choose similar material in the two groups and to make the difference in treatment mutually exclusive; and neither of these precautions appears to have been taken.

In spite of the statistical safeguards adopted, it is by no means certain that the material was similar in the two groups. Patients are recommended for sanatorium treatment because they specially need it; as far as possible nowadays sanatorium methods are adopted in home and dispensary treatment also; and the presumption is that if patients are sent to a sanatorium the home was unsuitable for such treatment, or the chances of recovery at home less favourable for some other reason. The factors considered by the authors as influencing selection are quite relevant, but they by no means cover the whole ground. Indeed, so many are concerned as to throw doubt on the value of such statistics for the particular purpose: but space precludes further detail here.

Then as regards treatment the two groups are not mutually exclusive. In one we have non-sanatorium treatment which includes a variable proportion of sanatorium methods; in the other, non-sanatorium treatment with stricter sanatorium treatment added for a short time. An average case of pulmonary tuberculosis needs one or two years' treatment. It is exceptional in this country to allot more than from three to five months of the time to sanatorium treatment. This may be sufficient to restore quite early favourable cases to health, but not the majority of those admitted to a sanatorium or applying for treat-

ment. Patients are only exceptionally admitted in a really early stage, and are usually discharged long before the disease is quiescent, the idea being to complete the cure at home with or without dispensary help.

In these circumstances useful conclusions may be drawn as regards the immediate results of treatment; but the later results depend so largely on conditions of life in great variety that it is difficult to institute a fair comparison. Immediate results are usually good, in spite of the handicaps. If relapses happen after leaving the sanatorium, surely the conditions of life are to blame rather than the sanatorium treatment; and conclusions to the contrary from statistics rather suggest that important factors have not been taken into account.

The authors have evidently taken much trouble over their report, which will be of great value, although some of the conclusions are very misleading if taken without further qualification.—I am, etc.,

F. R. WALTERS,

President of the Society of Superintendents  
of Tuberculosis Institutions.

Farnham, Aug. 31st.

#### TUBERCULOSIS AND THE STATE.

SIR,—In the interesting editorial article entitled "Tuberculosis and the State," published on August 21st (p. 349), there are several points which should be of more than passing interest to the tuberculosis officer.

The article itself is indicative of a feeling that things might be better if inquiry was made more into causation, and if effort was directed more towards the establishment of resistance than towards the prevention of infection; in fact, it is almost a challenge to the tuberculosis officer to vindicate his position in society. I am sure that there is nothing which is likely to do so much good as such a challenge.

The criticism that the dispensary system is mainly of statistical value should be answered. The system has been established not only in England but in many other countries. Where there is no definite effort on the part of the State such as exists here, still the dispensary for the supervision of the tuberculous comes into being. Where there is no full co-ordination between the health authorities, the school inspectors, and the medical profession generally, the tuberculosis dispensary exists and remains. The reason for the presence of the dispensary in such countries as Canada and the United States of America is that the sanatorium ultimately demands its existence by asking that the supply of patients may be made up of types which can be established in health. Hitherto it has been possible to find such types only through the agency of the tuberculosis dispensary. The function, indeed, of the dispensary in the long run is the establishment of the type which can exist in that area. It will be seen, therefore, that it is the dispensary which co-ordinates the work done, and in time establishes a close contact with all workers who have to do with tuberculosis.

In 1912 I was instrumental in commencing the dispensary system in Vancouver, British Columbia, and although there was no great enthusiasm at the beginning, within five years so great was the considered value of its work that the general public raised a very large sum to equip an up-to-date clinic for diagnosis and treatment. In fact, it was much easier to raise money for the dispensary system than for the sanatorium. Such was the feeling towards the dispensary system in that district.

Perhaps, however, the dispensary as it exists in England tends to cease to develop clinically, while the development would appear to be initiated by considerations having to do with the infectiveness of the disease.

In your editorial article it is suggested that the dispensary should be made use of more in connexion with such questions as immunization and of generally doing something towards increasing the resistance of the individual against tuberculosis. To go into the question of immunity is to enter into a controversy. What is immunity? Can an individual be established in immunity to tuberculosis in one generation? Is immunization of children a practical proposition? The question is so large and involved that there is room for many points of view.

During the last four years I have endeavoured to solve the question whether immunization could be practised by studying bovine tuberculosis, and I have already published certain conclusions in the *Annals of the Pickett-Thomson Research Laboratory*. I found that tuberculosis in a herd of cattle comes mainly from breeding from immature cattle. If immature cattle are used for breeding, the offspring are more susceptible to infection and to acute massive manifestation of the disease. This is true of both the male and the female. Factors of less importance in etiology are prolonged lactation and inadequate rest. The reason for the lesser importance of these two factors is that the tuberculosis is of a less acute nature and that the animals have a better chance of establishing some degree of resistance. I found that the young apparently sound female which was immature produced the calf most likely to become acutely tuberculous and acutely infective. I found that the mature cow, which reacted to the eye test, was far more likely to have healthy offspring than the immature animal inadequately reared.

It is manifest that decadence, as Aristotle contended, is a stern reality, that events occur in sequence, from the instability of man as a reasoning being to co-ordinate generation and growth.

I came to the conclusion that there is a great deal in immunization, but that to offer immunization only, or to make immunization of a relatively high importance, would be to defeat the end the breeder had in view. I mean by this that if immunization took the breeder away from his old-fashioned conceptions which were definitely eugenic, I could not help him to establish a high-class type which would exist under the conditions involved in commercial farming.

The work of the dispensary system is not merely with the manifestly tuberculous, but by adequate co-operation with all other medical men to collect young people and pick out those who require to be cared for till maturity. It is to use the sanatorium, and by modifying the life and feeding generally to try and give an adequate constitution which may be handed on to the next generation. This work is especially easy in the care of girls before puberty. The main factor in the reduction of the tuberculosis death rate is the more sensible age at which people marry, and that nowadays they breed truer.

The work of the tuberculosis officer is not of a spectacular nature, and unless he has been continuously at the work for a long period he will be apt to grasp at such quicker methods as immunization. I would, however, contend that immunization has a very important place.

The value of the work Sir Robert Philip has done by the introduction of the dispensary system—a system of co-operation with everyone else, a system which has spread widely—is that it is the only system which can help to establish type. His work will be measured by the recognition of the influence of tuberculosis as a factor in civilization.

The tuberculosis officer will retain the conviction that the solution of the tuberculosis question is in the tuberculous. He will continue to regard his patient as a criterion, and when he sees deterioration arising from the infringement of inevitable law, he will tend continually to direct his observations towards the conditions which modify growth and health in the youth of his area.—I am, etc.,

Northallerton, Aug. 23rd.

J. J. THOMSON.

### THE TUBERCULIN DISPENSARY.

(Abridged.)

SIR,—Dr. Camac Wilkinson's letter (p. 967) and your commentary (p. 953) in the *BRITISH MEDICAL JOURNAL* of June 5th will be welcomed by all who have been using tuberculin in ambulatory cases in spite of the "damning with faint praise" of authors and professors who so often refer to the Brompton Hospital Report of the nineties. Sir Almroth Wright's valuable work in 1903-4 reintroduced tuberculin as a valuable remedy in tuberculosis and placed it on a scientific basis. I have used tuberculin since 1906, first as laid down by Sir Almroth Wright, and later following Dr. Camac Wilkinson's method, and can endorse with conviction the latter's opinion, that tuberculin is by far

the best remedy yet known for 75 per cent. of those suffering from tuberculosis and in the type of cases quoted by him, "provided it is given in doses of suitable strength, properly timed, properly administered, and carefully controlled by constant clinical observations."

I quite agree with Dr. Robert Carswell, in your issue of June 12th, when he says that the treatment should be supplemented by every other useful adjunct. It would, however, be difficult in a country like India to give the wage earner complete relief from daily toil; light work would be possible and profitable, but enforced idleness might do more harm than good.—I am, etc.,

C. J. FOX, L.M.S.S.A.Lond.,

Clinical Research Laboratory, Simla, India.

July 29th.

### CRIMINAL RESPONSIBILITY.

SIR,—I have read with interest your leading article (August 28th, p. 392) on criminal responsibility in relation to insanity, and especially dealing with Sir E. Marshall-Hall's able article in the *Sunday Express* of July 25th. As you are aware, this is a subject on which for many years I have been writing, and my opinion of the present law and its effect upon many judges has been brought home to me by practical experience.

I fear there is little chance of the M'Naghten rule being revised, although it is entirely opposed to the present scientific knowledge of mental disease. How can we then alter the paradoxical position by which an insane prisoner is condemned to death in the criminal court, his appeal dismissed by the Criminal Appeal Court, and he is then either handed over to the common hangman or he is sent to the criminal asylum on the report of two medical men who have visited him in the condemned cell and who, under no cross-examination, have put on a piece of foolscap paper their opinion that the condemned prisoner is insane?

I maintain that if we had degrees of murder as in so many other countries this paradoxical condition would not exist.

No one can deny that there are degrees of murder, and yet, if found guilty, the punishment is the same for all. Armstrong, who slowly poisoned his wife; Smith, who drowned his wives in a bath after obtaining possession of their money, assuredly deserved to hang; but are there not many murders committed with no definite "malice aforethought," some on the impulse of some strong emotion and some by persons of definitely weakened intellect and to whom justice could be meted out in the criminal court if the jury were by law able to classify murders in first, second, or third degrees? I believe I am right when I say that almost every murder in which insanity is the only defence would then be placed in either the second or third degree, and the prisoners while serving their sentence in penal servitude, if proved to the satisfaction of the prison medical officer to be insane, could be transferred to the criminal asylum.

I was glad to see recently that the Right Hon. E. Shortt, K.C., late Home Secretary, strongly advocates degrees of murder, the jury to decide in which degree the crime is to be placed, the judge to pronounce sentence.

I fear the statement so often made by judges, that no insane man or woman is now ever sent to the scaffold, is a statement not warranted by facts—known by medical men who have given evidence in these sad cases.—I am, etc.,

Bournemouth, Aug. 23th.

LIONEL A. WEATHERLY, M.D.

### GOITRE IN CHILDHOOD.

SIR,—In the discussion following Dr. Milligan's interesting paper on goitre in childhood, published on August 28th (p. 373) reference was made to the fact that endemic goitre was still very prevalent in Derbyshire, and doubt was cast upon the view by some speakers that it is not diminishing in this county.

A large number of medical men who have practised in this county for many years have told me, both personally and on inquiry, that in their experience endemic goitre has very considerably diminished since they first commenced practice; moreover, the prevailing opinion when many of them commenced was that the disease had for long been

diminishing. Many villages in Derbyshire where goitre was formerly endemic are now goitre-free—for example, Youlgreave and Beeley, to mention only two examples. In places where it formerly existed and where it exists at the present time it is neither so prevalent nor so severe in its endemicity. This diminution is due to improvement of water supplies. I see that Dr. Milligan supports the opinion that pollution of water supplies is, when the evidence is balanced, the likely cause, but McCarrison, in a paper published in April of this year, stated that he had been able to produce in pigeons and rats colloid goitre by the administration of excess lime in the diet over a period of eight months. I have produced goitres in animals by feeding them on cultures of micro-organisms isolated from a water supply in this county, but these goitres were of hyperplastic type and had no resemblance to colloid goitre as seen in adults living in that district. The distribution of goitre in this county shows how closely it is related to places situated either on the carboniferous limestone, or on other geological formations, but deriving their water supply from this formation. In the Ashbourne area goitre was and is still much more frequently seen to the north on the limestone than to the south on the trias. It is likewise much less commonly seen in places deriving their water supply from the millstone grit, of which Buxton is an example. More than one doctor who practises in regions composed of both millstone grit and carboniferous limestone has assured me that goitre is much more commonly seen on the latter than on the gritstone. The view that endemic goitre is seen only in hilly districts far from the sea is not correct. I have observed it to be common in villages to the south of the Lincolnshire wolds, and I am assured by many, well acquainted with the particular district, that it is of frequent occurrence in Bourne. None of these places is far from the sea, neither is any one of them in any sense protected by ranges of high hills from sea breezes.

Information derived from statistics of goitre in childhood alone is misleading; I have observed that many of the slight "goitres" seen so commonly in childhood disappear spontaneously. Goitre statistics based on the examination of school children alone are valueless; and as in many cases the swellings are small and trivial and have no title to be classed as goitre, many observers would miss them altogether. This is undoubtedly the reason for the enormous variation in the incidence of goitre in childhood seen in statistical tables. The incidence of goitre among children in Wirksworth, where it is said to be high, bears no resemblance to the incidence in adults in that area, where it is comparatively low. Moreover, goitre is said to be absent in children in the town of Melton Mowbray, but it is prevalent among adults, and I was recently informed by a practitioner in that town that since the introduction of a new water supply of a very calcareous nature it has increased. There are a large number of women in this county who have very slight and trivial thyroid enlargements, but in many places not more so than I have observed in London or other places which are reputed to be non-goitrous. The majority of these can only be classed as physiological, for they are not seen nearly so commonly after 25 years of age, and in many people are observed during menstruation only. This class of physiological goitre, apparently, has nothing to do with locality, distance from the sea, or water supply; neither can it be said to be in any way related to endemic goitre as I observe it in Derbyshire and in other counties.—I am, etc.,

PHILIP H. J. TUNTON, M.D.

Heanor, Derbyshire, Aug. 31st.

SIR,—In the discussion on goitre in childhood (August 28th, p. 373 et seq.) no reference was made to the possibility that the enlargement of the thyroid is secondary to the commencing of menstrual life in girls. I concluded a good many years ago that there was a very definite connexion. Enlargement of the thyroid is relatively common in girls of about 13, the age when menstruation begins. Dr. Milligan's figures show that goitre is more common in girls, and that it is far more common in girls of 13 years

of age than in younger children. It would be interesting if he would examine the affected children a few years later and note the results. I feel very confident that a large number of the goitres would have disappeared—that is, the enlargement is physiological rather than pathological in a good many cases. Organotherapy is still very largely an unknown field, but all the evidence goes to show that the various ductless glands act and react on one another, and that there is a definite sympathetic interaction between the thyroid and the sexual glands.

I have found enlargement of the thyroid a rarity in boys, but in their case the proper age to look for corresponding signs would be two years later—that is, at about 15 years of age—because the sexual development in boys is about two years later than in girls.

During commencing menstrual life girls are frequently nervous and emotional, and this is probably due to temporary hyperthyroidism. No doubt goitres can be caused by external agents, but the fact that they are found most commonly in girls during a very trying sexual period is suggestive that internal conditions may be an important, if not a fundamental, causative agent in many instances.—I am, etc.,

Birkenhead, Aug. 30th.

D. J. GAIR JOHNSTON.

#### OBSTRUCTION AT THE VESICAL OUTLET AFTER PROSTATECTOMY.

SIR,—Mr. Ainsworth-Davis, in his letter in your issue of July 31st (p. 226), wrote that in his experience perurethral removal of the prostate is "never" followed by contraction, yet in the *JOURNAL* of August 28th (p. 403) he writes that he follows up all cases of prostatectomy, using the cystoscope to anticipate any possibility of post-operative obstruction. If his first statement is correct, routine cystoscopy for the purpose mentioned would appear to be an unnecessary precaution. Passing a cystoscope to determine whether there is contraction at the vesical outlet resembles the use of a sigmoidoscope to detect an anal stricture. Personally I have never experienced any difficulty in finding an opening if the patient can "micturate naturally," in spite of Mr. Ainsworth-Davis's experiences.

Both he and Mr. Loughnane advocate routine packing of the prostatic cavity. I worked under Sir John Thomson Walker and Mr. Pardoe over a period of several years, but cannot remember either of them packing a single uncomplicated case. To adopt such a method indiscriminately is primitive and against all the principles of surgical pathology. An article in the current number of the *British Journal of Surgery* deals with the unsuitability of gauze-packing in these cases.

Mr. Loughnane says that an opening into the bladder can always be seen with the urethroscope, but sometimes there is no opening.

Treatment of contraction after prostatectomy by dilatation is probably as old as the operation itself. Sir John Thomson Walker described the unsatisfactory results of this procedure in the *Lancet* for May 14th, 1921.—I am, etc.,

London, W., Sept. 4th.

W. K. IRWIN.

#### INTESTINAL DIVERTICULA.

SIR,—In the article by Dr. E. I. Spriggs and Mr. O. A. Marxer on intestinal diverticula (*BRITISH MEDICAL JOURNAL*, January 23rd, 1926, p. 130), all diverticula of the small and large intestine are treated as pathological, no matter what their size or etiology, or whether they cause pathological symptoms. No distinction is drawn between the diverticula due to developmental faults and those arising from disease of the potential food pouches, which occur in numbers along the inner wall of the large intestine.

These food pouches or crypto-sacs (if I may be permitted to coin a word from the Greek descriptive of them) are mentioned in my book, *The Ileocaecal Valve* (1914). They are not visible, looking into the bowel during life or after death. The crypto-sacs are caused by the purse-string action of muscular fibres, which, on their contraction, form a pouch or sac, into which semi-fluid faeces are drawn and where they became inspissated. In the living



bowel, through a fistula, their presence is shown by the extrusion of pencils of faeces from the wall of the bowel into the lumen. Before the extrusion of this pencil no sign of an opening was visible, and after the extrusion the bowel wall was quite smooth. The extrusion occurred frequently, when the patient was mentally at ease in the presence of the nurse; but in the presence of the doctor was suppressed, except on rare occasions. The nurse in charge stated that the bowel in the region of the ileo-caecal valve was full of holes, from which faecal pencils were extruded frequently.

The crypto-saks may have their openings closed by disease; the retained contents would then cause trouble by fermentation.

The x-ray photograph No. 10 in the BRITISH MEDICAL JOURNAL article, which is described as diverticula occurring in an otherwise normal bowel, suggests to me a series of these crypto-saks photographed while they contained fluid faeces mixed with barium.

In the future, as series of x-ray plates are taken and studied, they will show whether these crypto-saks occur regularly along the large bowel in the ordinary healthy individual. The evidence brought forward in my book, *The Ileocaecal Valve*, mentioned above, would point to crypto-saks being present along the course of the large bowel.—I am, etc.,

A. H. RUTHERFORD, M.D. Ed.

Sydney, N.S.W., May 18th.

#### LIVE BIRTH.

SIR,—The paper by Dr. Godfrey Carter (August 28th, p. 385) draws very timely attention to the question of infanticide, and, most important of all, the legal definition of live birth.

A full-time normal child, with lungs completely or almost completely aerated and expanded, has lived, and should have survived with proper care; the question whether it was entirely separated from the mother at the moment of death should not be considered. These conditions being found at the *post-mortem* examination should lead to the mother, or other person present at the birth, being put in the witness-box to explain why the child did not survive. There is, however, unfortunately, as can easily be understood, considerable difficulty in finding the mother or person disposing of the body of a dead child, and unhappily these cases of concealment of birth are fairly frequent in big centres.—I am, etc.,

Woodbridge, Aug. 29th.

HOWARD M. STRATFORD.

#### GONGYLONEMA AND CANCER.

SIR,—A paper by Professor R. T. Leiper, entitled "Some observations and reflections on recent attempts to implicate the *Gongylonema* worm in the causation of cancer in man," recently published in the annual report of the British Empire Cancer Campaign (p. 56), contains many references to work of my own on *Gongylonema*. These require some comment. Professor Leiper's remarks may prove misleading to those who have not followed the work which he criticizes. He seems to imply that much of the recent work in which I have had the honour to be associated with Dr. Sambon and the Cancer Field Commission of the Tropical Disease Prevention Association, bearing directly or indirectly upon the problem of cancer causation, is worthless or even pernicious.

My own share in the work, which was mainly concerned with certain districts in Northern Italy, has been the subsidiary one of investigating certain helminthological problems, chiefly concerning nematode worms of the genus *Gongylonema*.

(1) In a paper published in the *Journal of Tropical Medicine and Hygiene*, February 2nd, 1925, I endeavoured to show (among other things) that there was no satisfactory morphological distinction between two alleged "species" of *Gongylonema*—namely, *G. pulchrum* of swine and *G. scutatum* of ruminants. As the former was the earlier name, I proposed that it should be adopted, and *scutatum* be regarded as a synonym. In the same paper I ventured very tentatively to suggest that the *G. neoplasticum* of rats "may perhaps have to be added" to the synonymy of *G. pulchrum*. I was careful, however, to point out

that (in addition to general size, to which I attached less importance) there was an important difference in one character between the two forms, namely, the length (though very variable) of the left spicule of the male. This organ was found not to exceed a length of 0.67 mm. in the specimens of *G. neoplasticum* available, whereas in specimens of the *Gongylonema* of ruminants it varied from 5.0 to 23.0 mm. In view of my inability to fill in the wide gap in these measurements I did not, and do not, feel justified in definitely regarding these two forms as one. My statement meant that, should the gap between them be filled up in the future, then it might perhaps have to be admitted that they were identical.

(2) In another paper in the same journal (October 15th, 1925) I recorded the result of my own examination of certain specimens of *Gongylonema* found in a human being and recorded by Professor Alessandrini of Rome, and stated that in my opinion they were indistinguishable from *G. pulchrum* (using this name, of course, as including *G. scutatum*).

(3) In a joint paper with Dr. Pan and Miss Juliet Sambon in the same journal (December 1st, 1925) I described (among other things) an experiment in which two rats were successfully infected with the *Gongylonema* of ruminants. Inasmuch as the left spicule of a male worm thus obtained measured 4.9 mm. in length, I did not in any way suggest that *G. pulchrum* had, by the change of host, been converted into *G. neoplasticum*. On the contrary, I was at some pains to prove that it had remained *G. pulchrum*.

Turning now to Professor Leiper's treatment of my work, I find that on page 58 of the "Report" he apparently uses my own identification of Professor Alessandrini's human *Gongylonema* as *G. pulchrum* to support the view that the *Gongylonema* occurring in man is not *G. neoplasticum*. On page 60, however, he represents me as believing that the two forms are the same species. Professor Leiper cannot have the argument both ways. Had I really formed a definite opinion that the species were identical, I could not have pretended to differentiate between them in the case of the human specimens.

My mind is still open on the question of the identity of these two forms, as I think is quite clear from all that I have written on the subject. However, Professor Leiper attributes to me a definite opinion in favour of it, and "to determine if there are any real grounds for" my alleged "supposition on the unity of the species," he proceeded to try to carry out the very experiment which I was myself performing—see (3) above—on the infection of rats with the *Gongylonema* of ruminants. In order to do this, while my colleagues and I were already in the Trentino with a grant from the British Empire Cancer Campaign, and without first offering us his valuable assistance, he went independently with Dr. Cameron to Italy, with another grant from the same body, to collect material. Returning to London, he used as intermediate hosts cockroaches from the Zoological Gardens, and was obliged to abandon the experiment on finding that his cockroaches were already naturally infected with the rat-*Gongylonema*. He then reversed the direction of his experiment, and found that he could transmit the rat-*Gongylonema* to sheep. Apart from the fact that *G. neoplasticum* occurs in the London Zoological Gardens, this appears to be Professor Leiper's only constructive contribution to the subject of *Gongylonema* infection, and I had already shown that the converse experiment was possible.

It is difficult, in any case, to see why the correctness of my alleged "supposition" depends on the conversion of typical rat-*Gongylonema* into typical ruminant-*Gongylonema* by a single change of host. Supposing that the species are really distinct, many generations in the new host might reasonably be expected to be required to bring about a definite and recognizable morphological change, and an isolated experiment could hardly throw much light on the question.

Professor Leiper goes on to argue from the result of his own experiment that "it appears probable therefore that the other species, viz., *Gongylonema pulchrum* of the pig, regarded by Baylis as identical with *Gongylonema scutatum* of sheep and cattle, may prove also to be distinct." This conclusion may be "probable," but surely Professor Leiper is not entitled to assume it, as he later apparently does, as an established fact. A recent, and as yet unpublished, experiment of my own has shown that it is not impossible (as appeared likely from an earlier, unsuccessful, attempt) to infect pigs with the *Gongylonema* of ruminants. This, I think, lends no support to the theory of distinctness of species, but tends rather in the

reverse direction. It is, of course, open to Professor Leiper to regard the naturally occurring pig and ruminant forms as separate physiological races or strains—a matter which, so far as I can see, feeding experiments are never likely to settle. But unless he can find some morphological distinction which, for my part, I have failed to detect, he is not on safe ground in asserting that they are distinct species.

Throughout Professor Leiper's paper it appears to be assumed that, as the *Gongylonema* of rats is the only species yet definitely implicated in cancer causation, other extremely closely related species need not be considered. The reason for this assumption is not clear to me. The purely negative statement (p. 60) that "none of the *Gongylonemas* found in domestic stock are associated with the occurrence of cancer in these animals, nor has cancer been observed in any of the cases in which *Gongylonema* has hitherto been recorded in man" may be, up to the present, perfectly true, but it is not conclusive.

Although no evidence is produced by Professor Leiper to prove his contention that *G. pulchrum* and *G. scutatum* are not identical, he propounds some remarkable conclusions, including the following:

(1) That "*Gongylonema pulchrum*" does not occur at Villa Lagarina (cf. p. 59: "Practically all the local cattle slaughtered in this district were found infected with *Gongylonema*"). As Professor Leiper has not investigated Villa Lagarina himself, he is presumably relying upon statements of my own.

(2) That "*G. scutatum*" has not yet been found in man (cf. p. 59: "It is evident that *Gongylonema* in man is the species which normally occurs in pigs").

—I am, etc.,

British Museum (Natural History),  
London, S.W.7, Aug. 19th.

H. A. BAYLIS.

We referred this letter to Professor Leiper, who writes as follows:

SIR,—The reader will be assisted in understanding the above argument if it be made clear that Dr. Baylis differs from other observers, including myself, who regard the gongylonema worms of swine, ruminants, and rodents as belonging to at least three distinct species, named respectively *G. pulchrum*, *G. scutatum*, and *G. neoplasticum*, and has taken the position that *G. scutatum* is merely a synonym of *G. pulchrum*; tentatively—now "very" tentatively—suggesting also that *G. neoplasticum* may have to be added.

Wherever in my report *G. pulchrum* appears it refers to the gongylonema of swine, and *G. scutatum* refers to the gongylonema of ruminants. Applying, however, his own terminological usages (or, as I view them, nomenclatural inexactitudes) to my report, Dr. Baylis arrives, on my behalf, at some "remarkable conclusions." The statement that *G. pulchrum* does not occur in Villa Lagarina, referring obviously to gongylonema of swine, and based upon the failure of the Cancer Field Commission to reveal its presence by an intensive study of the problem in this village, is not invalidated by a further quotation that "practically all the local cattle slaughtered were found infected with *Gongylonema*"; for these cattle harbour *G. scutatum*. Nor is the statement that *G. scutatum* has not yet been found in man—referring, of course, to the gongylonema of cattle—invalidated by a quotation "*Gongylonema* in man is the species which normally occurs in pigs."

Dr. Baylis rightly assumes that I accept the results of his own examination of Alessandrini's material as showing that this gongylonema was merely a case of accidental infection of man with *G. pulchrum* of swine, which was, moreover, as in its normal host, unaccompanied by any cancerous reaction. This determination justifies the conclusion that, so far, "no case of *G. neoplasticum* had been found in man," and thus supports my contention that there is not the slightest scientific foundation for Dr. Sambon's belief that gastric cancer, stated to be very prevalent in certain houses in some villages in northern Italy, is due to invasion with a gongylonema associated with the presence of rats and cockroaches in these so-called "cancer houses."

Dr. Baylis complains that, with a small direct grant from the same body which indirectly but lavishly financed the commission to which he became attached, we tried to carry out the very experiment he was himself performing.

But he has forgotten two points of some interest—namely, (a) these grants were made at the same time (to the knowledge of Dr. Baylis before he left England) with a wisdom and purpose I do not need to concern myself to discuss. (b) The need for such independent investigation arose, not only from his own work, but was actually publicly suggested by him some months previously on two separate occasions in a paper published on February 2nd, 1925. On page 73 he wrote:

"But unless, and until, it can be experimentally proved by those in a position to undertake such investigations [italics are mine] that the form found in one host cannot be transmitted to another host there appears to be no alternative but to regard all these forms as belonging to one and the same species."

And again on page 75, writing on the difficult question as to whether *G. neoplasticum* should be considered a distinct species or not, he remarks:

"It appears to depend upon the importance to be attached to a single character limited to the male sex, viz., the length of the left spicule. Many helminthologists would doubtless consider this quite sufficient to constitute a 'good' species. The writer feels, however, that in view of the amount of variation possible in the forms from other hosts and until a much larger number of males of *G. neoplasticum* has been examined the evidence is rather strongly in favour of specific identity. This view does not, of course, exclude the possibility of the existence of a 'host-race' or even an incipient species confined to rodents. As in the other cases previously discussed, the question calls for careful experimental investigation by those able to undertake it."

Incidentally, it may be remarked that the above gives Dr. Baylis's own words, a précis of which he submits (in the first section of his second paragraph). I will merely ask the reader to compare these two statements.

Although Dr. Baylis claims that we have merely repeated his experiments—the nature of which, by the way, was unknown to us until months later—the purpose in his mind and in ours appears to have been different. That an animal can become infected under experimental conditions although it is never found so infected in nature is a common experience. The fact of successful experimental infection is of somewhat small significance. What is significant is that in the case of *G. neoplasticum* the slight but specific characters remain entirely unchanged, even when the parasite is experimentally reared in sheep. I see no reason to assume that if this species were carried on through several generations in sheep any morphological change should necessarily be in the direction of *G. scutatum*, or to assume that if man became accidentally infected in a rat-infested house the gongylonema found should fail to present the slight peculiarities characteristic of *G. neoplasticum*.

This, as Dr. Baylis affirms, is my chief constructive contribution, but it suffices to warn me against a placid acceptance of his concept of what constitutes a species. Of course, he is fully entitled to his own concepts, and little harm can result from their application to the National Collections. But the acceptance of a ruling, or the adoption of a tentative suggestion concerning the identity of a parasite in different hosts, if one of these hosts be man, is for the medical man not merely an interesting nomenclatural decision. It may raise now and serious problems in the control and prevention of disease. Dr. Baylis does not, apparently, realize the responsibility involved in the publication from the British Museum of an opinion such as the following:

"If, as has been suggested, all these species are identical the fact has very interesting and important bearings upon human pathology." . . . "These domesticated animals—sheep, goats, cattle, and pigs—will have to be considered as important reservoirs of the parasite, and, if Dr. Sambon's theory receives confirmation, as factors in the spread of carcinoma."

Dr. Baylis states that as the gongylonema of rats is the only species yet definitely implicated in cancer causation I appear to assume that other extremely closely related species need not be considered. To this the reply is that until evidence is forthcoming of the association of any species of gongylonema with cancer in man, direct or indirect suggestions that it is so are both worthless and pernicious; for they engender in the public mind false hopes that in the control of the reservoirs and intermediaries of gongylonema lies a solution of the problem of human cancer.—I am, etc.,

London, N.W.11, Sept. 7th.

R. T. LEIPER.

## CORRESPONDENCE.

## MEDICAL DEFENCE.

SIR,—Recent correspondence in the JOURNAL emphasizes—if such emphasis were needed—the unsatisfactory position in which practitioners still find themselves as regards legal protection from attack. Possibly if the North of England Branch had utilized its fullest endeavours at Bath in support of the Warrington and St. Helens recommendation that the Association itself should provide legal protection for its members, we would have been well under way for comprehensive assistance, with a speedy remedy if delay took place.

I would respectfully suggest that at Edinburgh the Divisions of Newcastle and Sunderland should have on the agenda a considered instruction to Council to proceed with an optional scheme forthwith. They will receive strong support from Lancashire.

If pharmacists can receive from their association legal assistance for all difficulties—including even divorce—why cannot the British Medical Association provide similar facilities for its members?—I am, etc.,

JOHN D'EWART.

Manchester, Aug. 30th.

SIR,—Dr. Woods, General Secretary of the London and Counties Medical Protection Society, Ltd., writes (August 28th, p. 405):

"Dr. Murray has evidently not seen my letter which appeared in your issue of April 17th, in which it is explained that this society has for many years protected, and still does protect, its members in respect of locumtenents."

In order to appreciate the true value of this statement in relation to the whole problem it will be necessary to repeat the classification of my last letter.

1. A member of either society may be covered for the acts or omissions.
2. A member of either society may be covered for the acts or omissions of his assistant, locumtenent, house-surgeon, or other subordinate medical officer who is also a member of either society.
3. A member of the Medical Defence Union, Limited, may be covered for the acts or omissions of his locumtenent who is not a member of either society.
4. A member of the London and Counties Medical Protection Society, Limited, will not be covered for the acts or omissions of his locumtenent who is not a member of either society.
5. A member of either society will not be covered for the acts or omissions of an assistant, house-surgeon, or other subordinate medical officer who is not a member of either society.
6. A member of either society will not be covered for the acts or omissions of a nurse or other lay person acting on his instructions.

The question at present being considered is the cover afforded for a locumtenent. There is no dispute about paragraph 2 where the locumtenent is a member of either society.

Paragraph 3 will not be disputed, for the Medical Defence Union, Ltd., made this concession the subject of a special resolution, and the effect of that was published in the BRITISH MEDICAL JOURNAL a few months ago. The whole question arising out of Dr. Woods's letter is one of the truth of paragraph 4. Dr. Woods may rest assured that we have read his letters very carefully and have failed to get any positive evidence that his society has come into line with the Medical Defence Union on the point of covering a principal for the acts or omissions of a locumtenent who is not also a member of either society. I have before me a letter from Dr. Woods, dated February 23rd, 1926, wherein he has very carefully stated the position of his society on several matters, and I will quote the paragraphs relevant to this point.

- "1. That a principal may be held legally responsible for the acts of his assistants or locum."
- "2. That if the principal was a member of a medical defence society and his locum or assistant was not, the defence society would not as a rule defend him on account of the acts of the action being brought against him on account of the principal."

This is Dr. Woods's own explanation of the policy of his society in greater detail than his letter, and there is no evidence that his society has moved from this very uncertain position. So long as these gaps exist in the protection afforded to a member for the acts of his locumtenent so long must paragraph 4 stand as a true statement of the position.

Dr. Woods's letter is quite true, so far as it goes, but does

not give the whole of the case. Let him state in unequivocal terms that his society has come into line with the policy of the Medical Defence Union as set out in paragraph 3, paragraph 4 may then go, and paragraph 3 will apply to both societies. I wish to emphasize the point that Dr. Woods's letter only refers to paragraph 4 of the classification, and the rest stands at this date uncontradicted.

There is a danger that this plain writing may give the societies the impression that we are out on a policy of ruthless destructive criticism. The position is not so. We are all deeply grateful for the help of the societies in the past, and we are now doing our best to get all men to join one or other of the societies. We are anxious that the protection should be complete, and we would much prefer that the old societies should realize the limitations of their present protection and give us what we want. If, however, they absolutely refuse, and persist in trying to persuade us that margarine is better, we will be forced to go elsewhere.—I am, etc.,

R. H. DIX,  
Honorary Secretary, Sunderland Division,  
British Medical Association.

August 30th.

SIR,—Dr. R. H. Dix's letter in the BRITISH MEDICAL JOURNAL of August 28th (p. 404) gives expression to his dissatisfaction at the present position of medical defence. I think he does not fully appreciate the actual position. According to him a complete and comprehensive cover of the legal liabilities of a doctor arising from the practice of his profession is not afforded by membership of any one of the defence societies. In a certain sense, of course, this is true. No society pays for the preparation of partnership deeds and the like for its members, not to speak of the hire, etc., of motor cars, all of which may be regarded as legal liabilities arising from the practice of the profession. The cover is, I believe, nearly as complete as is practicable, and is, moreover, very much better than if an extended and apparently larger cover was expressed in the terms of a policy. Very many cases which involve heavy expenditure are taken in hand for members of the society which could hardly, by any ingenuity, be brought within the terms of a practicable insurance policy. The discretion possessed by the societies is of greater use in enabling them rather to defend members in cases outside the limits of their scope than to decline to defend their members. Dr. Dix says that he and others had thought that "all our burdens" would be borne by the society to which we belonged. This seems to indicate the loose way in which the matter is regarded, as it is out of the question that any society could bear all the burdens of its members, and it would be well if there was some exact definition as to what was intended to be included in "all our burdens."

Dr. Dix gives a categorical statement of the limits he regards as applying to the protection afforded by the societies. The limits which actually exist are given in the memorandums of association of the societies, which are wide enough to cover any protection which anyone well acquainted with the subject would think of being given. As regards the present protection of the societies, Dr. Dix's statement should be altered as follows:

1. A member of either society is covered for his own acts or omissions subject to the articles of association of his society.
2. A member of either society is covered for the acts or omissions of his assistant, locumtenent, house-surgeon, or other subordinate medical officer who is a member of the other society.
3. A member of the Medical Defence Union, Limited, is covered for the acts and omissions of his locumtenent who is not a member of either society.
4. A member of the London and Counties Medical Protection Society, Ltd., is covered for the acts and omissions of his locumtenent who is not a member of either society.
5. A member of either society may, or may not, be covered for the acts or omissions of his assistant, house-surgeon, or other subordinate medical officer who is not a member of either society, at the discretion of the society.
6. A member of either society is, at the discretion of the society, covered for the acts or omissions of a nurse or other lay person acting on his instructions within the scope of the society.

Dr. Dix seems to complain that the societies are not under such compulsion as to compel them to take up every case that comes before them. In the absence of a strictly drawn policy the taking up of cases without any discretion on the part of the councils of the societies would involve

very grave risks of serious disputes and costly litigation, since some members are apt to expect defence in matters that do not at all come within the scope of the societies. Moreover, it would be objectionable for the councils to defend a member who has deliberately persisted in criminal conduct or conduct involving serious legal penalties. I am quite convinced that the discretion which the societies have very wisely given to their councils by their articles of association are altogether in the best interests of the members; not restricting the benefits but greatly extending the scope of the societies.—I am, etc.,

HUGH WOODS,

General Secretary, London and Counties  
Medical Protection Society, Ltd.

London, W.C.2, Sept. 3rd.

#### NOTIFICATION OF PUERPERAL FEVER OR PYREXIA.

SIR,—We have read the article in your issue of August 21st (p. 356) in reference to the Minister of Health's amended regulations relating to the notification of puerperal fever, etc. Whilst agreeing that in the past many cases of uterine sepsis have not been notified, we should like to point out that if cases of pyrexia only are notified a large number of patients with uterine sepsis will go untreated.

After a long experience we are convinced that the cases of sepsis which produce a raised temperature are in the minority. We think that there is another most important sign of sepsis in the early puerperium, and that is the persistence of the red lochia. If attention is not paid to this sign and treated, and if Nature does not do its work, many patients return to hospital for treatment.—We are, etc.,

REMINGTON HOBBS.

MARY R. LEVACK.

St. Mary Abbots Hospital,  
Marloes Road, Kensington, Sept. 4th.

#### SUBACUTE APPENDICITIS.

SIR,—The object of this letter is to stress the fact that there is a subacute insidious form of appendicitis which, independent of any previous appendical storm, does not give rise to any local manifestation, but frequently induces symptoms which point to ulceration of duodenum or stomach. In my experience radiological revision in some cases of this occult form of appendicitis is not reliable in that it not infrequently indicates some gastric perturbation which I find may be compatible with either lesion.

In regard to the diagnosis of this type of appendicitis I know of only one genuine sign: distinct localized pain and tenderness (often accompanied with reflex pains) on deep digital pressure over Munro's point—namely, just at the outer edge of the right rectus muscle in the line passing from umbilicus to anterior iliac spine.

In instances in which similar definite localized pain and tenderness can likewise be elicited on digital palpation in gastric or duodenal areas the diagnosis becomes obvious—a dual lesion, which is quite a common coincidence; the moral is not to omit to examine the appendix when operating for gastric or duodenal ulcers. This treacherous type of appendicitis is constantly associated with obvious inflammation and hypertrophy of the adjoining segment of the ileum, with, as often as not, formation of a deadly dense inflammatory adhesion which binds down the gut in V fashion in the right pelvic dip.

The pathology of this complication does not strain imagination if one briefly visualizes the distribution, and connexion, of the lymphatic vessels of the appendix and ileum, not to add the proofs which have been demonstrated of infection ascending from former to latter. The peristaltic strain involved in forcing material into a caecum bound down by an adherent appendix must necessarily result in some hypertrophy of the muscular coat of the small gut; the discoloration of the involved segment, and nature of adhesions, so frequently encountered in the ileo-caecal angle and beneath the last few inches of ileum, clearly indicate infective participation.

For years past I have made it a rule when operating for appendicitis not to quit the abdomen without carefully

inspecting the distal ileum, and have been rewarded by finding, in at least 30 per-cent. of cases, an adhesion, which, if unobserved, would in all probability ultimately have caused acute intestinal obstruction. It is almost superfluous, nowadays, to add that it appertains to the septic past to open any clean abdomen without taking due stock of its contents.

In conclusion, I find the incidence of this subacute form of appendicitis so constantly associated with diseased teeth that I beg leave to repeat the recommendations—(1) have obviously decayed teeth extracted, (2) do not have any tooth filled or crowned without x-ray examination of its roots and socket, and (3) in all cases of dinghonic perplexity, and pains and swelling of the "rheumatic" type, irrespective of an apparently "perfect set," have the teeth x-rayed.—I am, etc.,

Buenos Aires, June 1st.

JOHN O'CONNOR.

#### WEEDS, CANCER, AND ACIDITY.

SIR,—Anent the suggestions of Dr. A. Mackenzie on the above subject, I beg to call attention to the remarks of Joulie with respect to hyperphosphatic and hypophosphatic patients—namely, that he has never met with cancer associated with hyperphosphatic urine as defined by him in his method, and he therefore recommends the examination of the urine, for this condition to be secured, for those who have been operated on for cancer. It is ever the hypophosphatic urine which is associated with cancer.—I am, etc.,

London, S.E.24, Aug. 29th.

J. BARKER SMITH, L.R.C.P.

#### Universities and Colleges.

##### UNIVERSITY OF CAPE TOWN.

At the graduation ceremony held in July the following were admitted to the degrees of M.B., Ch.B.:

S. Goodman, S. S. Hoffmann, J. Hotz, J. I. Lipschitz, B.A., W. Milne Murray.

#### The Services.

##### KING'S HONORARY SURGEON.

THE KING has been graciously pleased to approve of the appointment of Colonel Frederic Hibbert Westmacott, C.B.E., T.D., F.R.C.S., Assistant Director of Medical Services, 42nd (East Lancs) Division, T.A., to be Honorary Surgeon to His Majesty, in succession to Colonel E. C. Montgomery-Smith, C.M.G., D.S.O., T.D., M.D., retired.

##### BLANE MEDAL.

SURGEON LIEUTENANT COMMANDER STEWART R. JOHNSTON, R.N., has been awarded Sir Gilbert Blane's Gold Medal, he having obtained a first-class certificate at the examinations held in 1926 for promotion to the rank of surgeon commander.

##### DEATHS IN THE SERVICES.

Lieut.-Colonel Walter Frederick Hamilton Vaughan, R.A.M.C. (ret.), died at Bridgwater on August 26th, aged 47. He was born on March 1st, 1879, the son of W. Filmer Vaughan, Esq., educated at St. Mary's, and took the M.R.C.S. and L.R.C.P. Lond. in 1901. After acting as resident senior medical assistant at Marylebone Infirmary, Notting Hill, and as clinical assistant at Leicester Infirmary, he entered the R.A.M.C. as lieutenant on January 30th, 1904, and became major on July 1st, 1915. He was placed on half-pay, on account of ill health, on August 9th, 1920, and in his subsequent retirement was granted the rank of lieutenant-colonel.

Lieut.-Colonel John Oldfield Greatrakes Sandiford, R.A.M.C. (ret.), died on July 11th. He was born on May 11th, 1854, educated at Queen's College, Cork, and graduated M.D. and M.Ch. in the Queen's University, Ireland, in 1877; he took the L.A.H. Dubl. in the same year. He entered the army as surgeon in 1880, became lieutenant-colonel after twenty years' service, and retired in 1901.

Surgeon Captain John Charles Grosart Reed, R.N. (ret.), died at Salisbury on August 2nd, aged 53. He was educated at Guy's, and took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1895. He entered the navy in May of that year, became staff surgeon in May, 1912, and retired in 1923, with an honorary step in rank as surgeon captain. He served in the China war of 1900 as surgeon of H.M.S. *Algerine*, when he was present at the capture of the Taku Forts and the relief of Tientsin (medal with clasp). When the recent war began in 1914 he was serving at Bermuda, but during the last two years of the war was senior medical officer of the battleship *Exeter*, in the Grand Fleet.

## Obituary.

JOHN GEORGE ADAMI, C.B.E., M.D., F.R.S.,  
F.R.C.P., F.R.C.S., Hon. D.Sc., LL.D.,

Vice-Chancellor of the University of Liverpool; late Strathcona  
Professor of Pathology, McGill University, Montreal.

THE death of Dr. J. G. Adami on August 29th removes one who played a prominent part in pathology and medical education.

Coming originally of Italian descent, his ancestors had for several generations been medical men, but not his father. John George Adami, the fifth child and eldest surviving son, was born on January 12th, 1862, at Manchester, and had the same christian names as his father; his mother, Sarah Ann Ellis Leech, daughter of Thomas Leech of Urmston, Lancashire, was a sister of Dr. Daniel John Leech (1840-1900), professor of materia medica and therapeutics in the Victoria University and physician to the Manchester Royal Infirmary. The Adami family lived in Manchester and Ashton-upon-Mersey, and George received his early education at Owens College. His medical life may be divided into four periods: the first in Cambridge, as undergraduate, demonstrator of pathology, and John Lucas Walker Student in Pathology (1880-92); the second in Montreal as professor of pathology (1892-1914); the third when, during the war, he served with the Canadian Army Medical Corps in Europe (1915-18); and the fourth when he was vice-chancellor of the University of Liverpool (1919-26).

Adami went up to Christ's College, Cambridge, in 1880 at the same time as his life-long friend Arthur Everett Shipley, Master of the College since 1910, to whom he dedicated his *Principles of Pathology* in two volumes. He was a scholar and Darwin prizeman (1885) of the College, and in 1920 was elected an Honorary Fellow. As an undergraduate he was an active member of the Cambridge University Natural Science Club, being elected on August 6th, 1881, at the same time as A. E. Shipley; he read three papers—on "Rudiments in man," "The thymus," and "Medical degrees"—before he took his degree. He obtained a first class in Parts I and II of the natural sciences tripos in 1882 and 1884, taking physiology as his subject in the second part, and being in both years in the same class as A. E. Shipley and Henry Head. W. Bateson and Sherrington were a year senior to him, so there were giants in his time. He then worked for eight months at Breslau in Heidenhain's laboratory on the blood supply of the frog's kidney, and by careful experiments showed that it was impossible by ligaturing the renal artery to deprive the glomeruli of blood (*Journ. Physiol.*, Cambridge, 1885, vi, 382), thus controverting Nussbaum's earlier statement. After doing his clinical work at Manchester, where he was under the eye of his uncle, the late Dr. D. J. Leech, and being house-physician for six months at the Manchester Royal Infirmary under Drs. Morgan, Dreschfeld, and Ross, he returned to Cambridge in April, 1888, as demonstrator of pathology to Professor C. S. Roy, following, after a short interregnum,

Sir Almroth Wright, who had held this post for a brief period. With Roy, a disciple of Colnheim and a genius in experimental work on the border-line between physiology and pathology, he did a large amount of research on the cardio-vascular system, as is shown by a series of contributions, such as the opening paper in the Pathological Section at the Glasgow meeting of the British Medical Association, on "Failure of the heart from overstrain" (*BRITISH MEDICAL JOURNAL*, 1888, ii, 1321). In this communication reference was appropriately made to the observations of Clifford Allbutt, who at this meeting delivered the address in medicine, on his own sensations when overcome in the Alps. Roy and Adami wrote:

"Of acute overstrain of the heart from intense muscular exertion, one of us (R.) has on one occasion had personal experience: when, during convalescence from typhoid, he found himself called upon as a medical man to make a fatiguing and rapid journey over the Mer-de-Glace to the 'Jardin' to attend to a Chamouni

guide. . . . The sensations felt were well described by Clifford Allbutt, with those observations on overstrain of the heart our own results fully coincide. . . . With regard to the objective phenomena, it did not occur to the one of us personally involved in this matter to percuss out his heart, as was done by the more intelligent Clifford Allbutt, who found the area of dullness increased; but such characteristics of the condition as are appreciable to the non-medical eye led the injured guide in question to remark 'Mais vous êtes essouffé, Monsieur, il faut prendre du cognac.'"

This short excursus is perhaps admissible from its interest concerning three distinguished teachers in the university, although Allbutt was not to take up his work there until 1892. This paper, like those in the *Practitioner* (1890, xlv and xlv), the *JOURNAL* (1892, i, 455), and the more detailed memoirs in the *Philosophical Transactions* (1893, cxxxiii, 199-298), and *Proceedings of the Royal Society* (1891-92, i, 435), contained a number of tracings. Adami, however, was busy in other directions besides teaching and collaborating with Roy; he wrote on the functions of the glomeruli of the kidney and albuminuria (*Practitioner*, 1889, xliii, 241), and in 1889 had a curious experience which might have been very

serious, as he related in "Notes on an epizootic of rabies with a personal experience of M. Pasteur's treatment" (*BRITISH MEDICAL JOURNAL*, 1889, ii, 808). In investigating an epidemic rapidly killing off the fallow deer in Ickworth Park, which had been assumed to be anthrax but was subsequently shown to be rabies (*Ann. Inst. Pasteur*, Paris, 1889, iii, 658), he cut his finger during a necropsy on a deer; though thinking little of this accident, he went, on the urgent advice of Roy, to the Pasteur Institute in Paris for treatment, and then began to suffer from insomnia, depression, tingling in the limbs, and finally from difficulty in swallowing. Of the two alternatives—an abortive attack of hydrophobia or a nervous condition due to auto-suggestion—he inclined to the second interpretation. In 1890 he was appointed John Lucas Walker Student in Pathology, and, continuing his experimental work, brought out a number of shorter papers—for example, on pseudo-tuberculosis due to a minute nematode (*Med. Chron.*, Manchester, 1890-91, xii, 466), on immunity (*ibid.*, 1891-92, xv, 95, 151), and on the variability of bacteria and the development of races (*ibid.*, 1892, xvi, 366), a subject he returned to on several occasions.



Photograph by

[Lafayette, Manchester.

J. GEORGE ADAMI, C.B.E., M.D., F.R.S.



He worked for a time at the Pasteur Institute, but returned to Cambridge on being elected a Fellow of Jesus College in 1891, and, having taken the degrees of M.A. (1888) and M.B. (1889), proceeded to that of M.D. in 1892.

In the autumn of 1892 he went to Montreal as Strathcona Professor of Pathology in McGill University, and at once became most actively engaged in teaching, leading, and research in pathology, and continued to do so until after the outbreak of war in 1914; he did not, however, actually resign the post till 1919. In Montreal he was engaged in organizing the university department and directing the necropsies at the Royal Victoria Hospital, and his energies were wisely and widely directed on the broadest lines; he encouraged his pupils and others to do original work in his laboratories, among them being Professors O. Klotz and C. W. Duval, W. W. Ford, G. A. Charlton, and Maude E. Abbott. There was thus a continuous stream

of papers from his laboratory dealing with all branches of pathology and its application to other sciences as well as to practice—for example, such diverse subjects as Pietou cattle disease, hepatic cirrhosis, subinfection, the relationship between inflammation and sundry forms of fibrosis (Middleton-Goldsmith Lectures, 1896, Pathological Society, New York), the classification of tumours, retroperitoneal lipomas, exogenous ulceration of the intestines, tuberculosis, myelins (with Professor L. Aschoff of Marburg), heredity of disease, eugenics, town planning, and child welfare. The position he attained is shown by some of the high offices he held; he was president of the Royal Society of Canada (1912), an honour which had not previously been conferred on a pathologist, of the Association of American Physicians (1912), and of the Canadian Association for the Prevention of Tuberculosis (1909-12). After the death of Professor A. A. Kanthack in December, 1898, Adami was obviously the ideal successor to the chair of pathology at Cambridge, and his university friends made this known to him in no uncertain terms. There can

be no doubt that had he consulted his own wishes he would most gladly have come back, but almost at the last moment unselfish considerations made him withdraw his candidature, and he remained at Montreal, though he was not free from temptations to go elsewhere. He was President of the Section of Pathology and Bacteriology at the Ipswich Meeting of the British Medical Association in 1900.

With the outbreak of war he enthusiastically gave his services unreservedly to this country, and received a temporary commission as colonel C.A.M.C. and Assistant Director of Medical Services in Charge of Records, with headquarters in London. In 1918 he wrote a very readable work, the first volume of *The War Story of the Canadian Army Medical Corps*, which brought the history down to the autumn of 1915, and recorded the outbreak of cerebrospinal fever among the troops on Salisbury Plain soon after their arrival in 1914, and the events during the second battle of Ypres. *The Bulletin of the Canadian Army Medical Corps* (March, 1918, to May, 1919) bears evidence of his activities in articles on the presence of diphtheria and diphtheroid bacilli in wounds, and a detailed report of the enemy air raids upon Canadian hospitals. In 1917

the Medical Research Committee appointed a special committee to report on the standardization of routine pathological methods, consisting of J. G. Adami, Dr. (now Sir) F. W. Andrewes, and Professor W. Bulloch; this committee, of which Adami was the first chairman, was responsible for reports on the Wassermann reaction, the detection of spirochaetes, the laboratory diagnosis of gonococcal infections, and the reaction of media.

In June, 1919, the council of the University of Liverpool unanimously elected him vice-chancellor in the place of Sir Alfred Dalo, and he keenly threw himself into the manifold duties of this last phase of a life full of successful endeavour. Entering thoroughly into the routine duties, the social life, and educational problems of all sorts, he was very active on the Consultative Committee of the Board of Education, particularly in connexion with the report on the differentiation of curricula between the

sexes in secondary schools (1923), and the report of the inspectors on the visitation of the medical schools of the University of London (1924). In 1923 he had been appointed inspector for the intermediate and final subjects and had as his colleague for the preliminary medical studies Dr. George Senter, Principal of Birkbeck College. Adami carried through the task, which might, in other hands, have been difficult and delicate, of inquiring into the doings and domestic details of the medical school with tact and sympathy for their post-war difficulties and wrote an admirable report balancing the relative claims of the large and small schools. But with all this he did not lose touch with his old love pathology, and was active at the Liverpool Medical Institute reading papers on the diphtheroid group of organisms (1920), in which he had taken much interest during the war, on the pathology of influenza (1921), and critically set out the difficulties in accepting Dr. James Young's cancer parasite with a complex life cycle (1925). Before the

full survey of the 1918 pandemic, which he had completed two years before but had not then been published.

His great work, *Principles of Pathology*, came out in two volumes, the first on general pathology (pp. 948) in 1909, and the second dealing with special pathology (pp. 1,082), in which he was assisted by Dr. A. G. Nicholls, in 1910, and met with such a cordial reception that a second edition was published in 1910 and 1911. As these two bulky volumes covered more ground than the average student could be expected to master, an admirable *Text-Book of Pathology* (pp. 759) was brought out to meet his needs in 1912 by Adami and the late John McCrae, and rapidly passed into a revised and enlarged second edition (pp. 873) in 1914. A very important piece of work was his article on inflammation in Allbutt's *System of Medicine* (1896, i, 54-139), which was considerably expanded in the second edition of this *System* (1905, i, 702-818), and published separately by Macmillans, passing into a fourth edition (pp. 254) in 1909. In this monograph the wide knowledge of biology and the kindred sciences, for which his Cambridge training was responsible, was obvious. His contribution on inheritance

and disease to the first edition of Osler and McCrae's *Modern Medicine* (1907, i, 17-50) was a valuable summary of a subject of which he had long taken an independent view, and to which he returned ten years later in his Croonian Lectures before the Royal College of Physicians of London. In the second and the present third edition of this *System*, which were cut down to a smaller bulk, Adami's article, together with other general articles, was sacrificed. He became a Member of the Royal College of Physicians of London in 1910 and a Fellow in 1915; he gave the Croonian Lectures in 1917 on "Adaptation and disease," in which he argued with much skill and many illustrations against the biological doctrine that acquired characters are not transmitted; he thus became involved in a rather vigorous controversy with Sir E. Ray Lankester. These lectures, under the title *Medical Contributions to the Theory of Evolution*, were, with a number of previously published papers dating back to 1892, brought out the following year in a book which was reviewed in the *JOURNAL* (1918, i, 619) by the late Sir William Bayliss.

Both as a writer and a speaker Adami had a graceful and attractive style, and, whatever the actual truth may have been, they seemed, especially speaking, to come easily and without the effort that most of us experience, for he had a light hand and a saving grace of humour. As has been shown, he covered a very wide field and was much in request, particularly in his Canadian period, for addresses. He was very happy in his biographical and historical essays—for example, in "The Edinburgh tradition" (1900); "Sir John Harington" (1908); "A great teacher (Sir Michael Foster) and his influence" (1910); "Charles White of Manchester (1728-1813) and the arrest of puerperal fever," the Lloyd Roberts Lecture, Manchester Royal Infirmary, 1921; and his two articles in the recent Memorial Number of the *Bulletin of the International Association of Medical Museums* (1926) on Sir William Osler, that entitled "Last days" being particularly fine in feeling and human touch.

While the most optimistic and genial of men and never speaking evil of others, he was very independent, was no mean fighter, and spoke out fearlessly when he felt it his duty, as was shown by his address on venereal disease among the dominion and colonial troops entitled "The policy of the ostrich" (*BRITISH MEDICAL JOURNAL*, 1919, i, 98). He was always extremely open-minded in investigating any new idea which might be brought to his notice, and in sympathetically encouraging research of any promising point, especially when support was not freely forthcoming elsewhere. Thus in 1916 he pleaded generously for more consideration and recognition of the late E. C. Hort's work and conception of the complex life cycle of bacteria, and more recently he supported and supervised Dr. W. Blair Bell's views on cancer and the treatment by lead. He indeed intended, on his retirement next year from the vice-chancellorship on account of the age limit of 65, to devote his energies to the latter subject.

He had many outside interests, especially in art and music; he had an extensive knowledge of Continental picture galleries, had exhibited his own water-colours, made fine collections of drawings and china, and composed an anthem, "Lighten our darkness." In 1924 he wrote for the Anglican Evangelical Group Movement a pamphlet (No. 51), "The unity of faith and science."

Numerous honours came to him; he was elected F.R.S. in 1905 and was subsequently on the council, he was awarded the C.B.E. for his war services in 1919, was an LL.D. of three universities, and received the honorary D.Sc. on the celebration of the bicentenary of Trinity College, Dublin, in 1912. He was created a Fellow of the Royal College of Surgeons of England (1919), and an Honorary Fellow of both Jesus and Christ's Colleges, Cambridge, in 1920. The Medical Society of London awarded him the Forbergillan Gold Medal in 1914.

For more than two years he had courageously fought the progress of a disease of which he, more than most medical men, must have known the inevitable end, and with ups and more downs in its course, had successfully carried on his work almost to the end. He took an active part at the Cambridge meeting of the universities of the British Empire, July 12th to 16th, and on July 23rd opened the

discussion, in the place of Dr. W. Blair Bell, who was ill, on the nature of malignant neoplasia and their treatment with lead, in the Section of Medicine at the British Medical Association meeting at Nottingham. It will be remembered that at the rather animated discussion of the treatment of malignant disease by lead at the Medical Society of London on March 22nd last, he was prominent in presenting the work done by the team of experts engaged on this research at Liverpool. After the Nottingham meeting he rapidly went down hill and died peacefully at 6.30 p.m. on Sunday, August 29th. He was twice married; to his devoted wife, his daughter, and son the deep sympathy of the profession which he served so long and devotedly will go out.

HUMPHRY ROLLESTON.

#### OUR LIVERPOOL CORRESPONDENT writes:

The medical profession in Liverpool was justly proud that the vice-chancellorship should be held by a medical man; he was well known to the profession, and on intimate terms with many of its members. His advent to the high office was signalized by a strenuous endeavour to improve the finances of the university. With this object Dr. Adami enlisted the services of the civic authorities, and at all times insisted on the importance of town and gown being united in every good object. He never lost sight of the importance of the university motto—"Hæc otia studia forent." He felt it to be his duty, not only to promote efficiency in the university, but to show that sound knowledge was the basis of human happiness in every path of life. In his multifarious engagements the progress of the university was ever uppermost, and in his addresses at public meetings Dr. Adami always left with his hearers some facts to ponder over. He was a convinced believer in "mens sana in corpore sano," and rather deplored that the students did not take more interest in athletics and physical exercises. He was a great favourite with the students and thoroughly entered into their amusements. He will indeed be sorely missed by the academic youth. As a man Dr. Adami was genial and affable in no slight degree, ready with a quip if occasion offered, and broadminded in his outlook on the world. His after-dinner speeches were always good. He enjoyed life, and always gave the impression that he desired others to do so too. Dr. Adami was an enthusiast in what he undertook, and infected others with a like feeling. We feel in Liverpool that a great light has gone out, a man full of energy has been removed from our midst. Dr. Adami will be indeed missed, not only by the students but by all classes of the community. He was an example of indefatigable energy: "Whatsoever thy hand findeth to do, do it with thy might" might be said to have been his guiding principle.

The funeral service took place on September 2nd at the Cathedral Church of Christ, Liverpool, when the Bishop of Liverpool (the Right Rev. A. A. David, D.D.) gave an eloquent appreciation of the late Vice-chancellor; the interment at Allerton cemetery followed. The university and city will attend a memorial service at the beginning of the Michaelmas term.

The funeral service in the cathedral was most impressive. Its note throughout was one of gratitude for a noble life and eternal hope for all those present. The large congregation contained representatives of the university, the civic authorities, educational establishments, and social and philanthropic institutions. Lord Derby, as chancellor, headed the university representation; the Lord Mayor, accompanied by the leading city officials and merchants, represented the city; and the mayors of several neighbouring municipalities also attended. The Bishop, in his address, touched upon the character and intellect of Dr. Adami. His note was one of praise and thankfulness for that gallant spirit kept bright and high, undimmed by weariness and suffering. To his great gifts of intellectual grasp and penetration, of fine courage in the quest of truth, Dr. Adami added his knowledge and love of man. He saw the best in men and believed in it. That was the secret of the vice-chancellor's happiness and his influence over those with whom he came into contact. The service

was expressive of such thoughts, and the whole congregation was sensible of the cautious and solemn dignity in which it was executed. The organ was played by the cathedral master of the music, Mr. Goss-Custard. During the assembly of the congregation Chopin's *Marche Funèbre* was played, and the hymns chosen had a dominant note of praise and were exquisitely rendered by the choir.

**JOHN HOWARD MUMMERY, C.B.E., F.R.C.S.,**  
Past-President, British Dental Association.

We regret to record the death of Mr. John Howard Mummery, at the age of 79, after a short illness.

Mr. Mummery was the son of a dentist, and early cultivated an interest in dental microscopy. He received his medical and dental education at University College Hospital, and obtained the diplomas M.R.C.S.Eng. in 1870 and the L.D.S. in 1873. He was awarded the honour of election as F.R.C.S. in 1923 as a member of twenty years' standing. In recognition of his distinguished services during the war in connexion with injuries of the jaw he received the C.B.E.; the University of Pennsylvania had previously conferred upon him the honorary degree D.Sc. in 1915. He was president of the Odontological Society of Great Britain in 1892, and again in 1908 when the society was incorporated with the Royal Society of Medicine as its Odontological Section. He had held office as president of both the British Dental Association and of the sixth International Dental Congress in London in 1914. He served on the committee appointed by the Medical Research Council for the investigation of dental disease. In 1922 he was awarded the Miller Prize of the International Dental Federation for original scientific research in dental histology.

Mr. Mummery combined a keen interest in scientific research with a literary ability which enabled him to communicate his discoveries freely to others. After a long and patient investigation of dentine he was able to show that it was abundantly supplied with nerve fibres; while his recognition of the importance of comparative morphology combined with embryology in dental science enabled him to make discoveries which won him an international reputation. Advancing years brought with them no diminution of energy, and at the age of 72 he published a book on the microscopical and general anatomy of the teeth, which almost at once became a classic. He contributed numerous papers to the *Philosophic Transactions* of the Royal Society, and within the last two months two important articles by him were published in the *British Dental Journal*.

To his wisdom he added a warm affection for his colleagues and a keen interest in the work of younger investigators in dental anatomy. He spent himself freely in the service of his friends and in devotion to dental science; his loss will be mourned deeply and widely.

Dr. HUBERT TEMPLER DEPREE died in a nursing home at Exeter, after a short illness, on August 30th; his sudden end came as a great shock to his relatives and to all who knew him in the various stages of his career. He was born in 1885, and was educated at Clifton College, where his musical genius was soon recognized. He won the Organ Scholarship at Clare College, Cambridge, but elected to study for the medical profession; he was a prominent member of the University Musical Society, and his skill as a pianist and accompanist was in great demand at concerts and "smokers." On leaving Cambridge he obtained the Organ Scholarship at Guy's Hospital, where his natural aptitude for clinical medicine and surgery was at once evident; he was recognized by his teachers as exceptionally brilliant. He possessed to an extraordinary degree the faculty of absorbing the bedside teaching of the registrars and clinical staff, and this, combined with a rare clinical instinct and an almost devastating common sense, reduced the need of laborious textbook study. He obtained the diplomas M.R.C.S., L.R.C.P. in 1911, and graduated M.B., B.Ch.Camb. in the following year. After holding house

appointments at Guy's, and being house-physician to the late Dr. Lauriston Shaw, he went to St. Mary's Hospital as resident anaesthetist, and later returned to Guy's as a staff anaesthetist. On the outbreak of war he immediately joined up as a naval surgeon. After the war he resigned his post at Guy's and entered general practice in Exeter, where he became honorary anaesthetist to the Royal Devon and Exeter Hospital and surgeon to the Exeter Dispensary. He married Miss Lilian Willey, and leaves one son and two daughters. In accordance with his wish, repeatedly expressed, he was buried at sea off the Devonshire coast on September 2nd, a memorial service being held at the same time in Exeter Cathedral.

Dr. JAMES GLOVER, who died from chronic diabetes at Barcelona on August 26th, received his medical education at Glasgow, where he graduated M.B., Ch.B. in 1903. After holding the posts of assistant surgeon to the Eye, Ear, and Throat Free Hospital, Cheltenham, and senior assistant tuberculosis officer to the Royal Hospital for Diseases of the Chest, he spent some years in South America; on his return to England he took part in founding the Psychotherapeutic Clinic in Brunswick Square, London, and was its director until it ceased work in 1922. He spent a considerable time at Berlin studying psycho-analysis under the late Dr. Karl Abraham. At the time of his death Dr. Glover was a member of the council of the British Psycho-Analytical Society, and chairman of the Medical Section of the British Psychological Society. He gave great assistance in the preliminary organization of the London Clinic of Psycho-Analysis which is about to be opened, and had recently been appointed assistant director of it. Dr. Ernest Jones writes: Modest and retiring by nature, James Glover was not widely known in the profession, though his valuable qualities were rapidly compelling increasing recognition. By a small circle, however, he was already recognized as a man of quite unusual gifts. He possessed insight of the highest order into psychological problems, combined with remarkable sagacity and shrewdness of judgement. He was unsurpassed as a practitioner of the psycho-analytic method of treatment. He would easily rank among the first half-dozen psycho-analysts in Europe. His contributions to medical literature, all of a highly technical nature, are mostly contained in the *International Journal of Psycho-Analysis* and the *British Journal of Medical Psychology*. James Glover's death, at the early age of 42, has removed one of the most accomplished figures in a difficult branch of medical research. There is little doubt that had he lived he would in ten years' time have been widely recognized as a worker of commanding importance in this sphere of psychopathology.

Dr. CHARLES VANCE SMITH, who recently died while taking a holiday on the Continent, received his medical education at Sydney University, where he graduated M.B., Ch.M. in 1924. He came to England in the autumn of the same year and engaged in post-graduate work; afterwards he was temporarily attached to the Croydon General Hospital, and held appointments also at the Essex County Hospital, Colchester, and the West Kent General Hospital. A colleague writes: Dr. Smith's bright nature made many friends, and the deepest sympathy is felt with his parents in New South Wales.

The death took place at Turnberry on August 23rd of Dr. S. J. MOORE, a well known practitioner in the west end of Glasgow. Dr. Moore was educated at Glasgow High School and at the University of Glasgow, where he graduated M.B., Ch.B. in 1901 and took the M.D. degree in 1919. Dr. Moore, together with his wife, Mrs. Mary Theresa Moore, who was also a graduate of Glasgow University, took special interest in the diseases of children, and they held appointments as physicians to out-patients at the Royal Hospital for Sick Children in Glasgow. During the war Dr. Moore served as a temporary captain in the R.A.M.C.

## Medical News.

THE seventh annual lecture conference of the Industrial Welfare Society has opened at Balliol College, Oxford, and will continue until next Wednesday. A lecture on dental service in industry is being given to-day (Saturday) by Mr. H. A. Mahony, secretary of the Public Dental Service Association of Great Britain, and Dr. Innes H. Pearso will speak on the future of preventive medicine in industry on Tuesday afternoon.

AN intensive course in operative surgery at the Central London Throat, Nose and Ear Hospital, Gray's Inn Road, W.C.1, will commence on October 4th, preceded by a preliminary course of six lectures on methods of examination and diagnosis, which starts on September 15th. The syllabus may be obtained from the dean at the hospital.

A SPECIAL two weeks' course in orthopaedics will be given at the Royal National Orthopaedic Hospital from September 20th to October 2nd. The fee is two guineas. The course is open to all post-graduates, and further particulars may be obtained by applying either to the Secretary, Royal National Orthopaedic Hospital, 234, Great Portland Street, London, W.1, or to the Secretary, Fellowship of Medicine, 1, Wimpole Street, W.1.

THE Minister of Health has issued a circular letter (735) to the effect that the Civil Service bonus will be based from September 1st, 1926, on an average cost of living figure of 70. The bonus payable for the six months commencing on this date to officers whose annual salaries do not exceed £500 will therefore be one-eighth less than that paid during the six months commencing on March 1st. Officers whose remuneration from local authorities is subject to the sanction of the Minister of Health are similarly affected.

THE twelfth annual report (for the year 1925) of the International Health Board of the Rockefeller Foundation by the general director, Dr. Frederick F. Russell, gives in greater detail and with admirable illustrations the data summarized in the review of the president of the Foundation, who is also chairman of the International Health Board. In hookworm disease the use of carbon tetrachloride, which is more effective than other means, is, like them, occasionally followed by poisoning, and most often when taken in association with alcohol or by children with *Ascaris lumbricoides*, and gives rise to necrosis of the liver; to diminish the risk it is administered in combination with oil of chenopodium, which is highly effective in removing ascarides. Further evidence has accumulated to confirm Dr. H. R. Carter's conclusion that in South America *Anopheles quadrimaculatus* is the important vector of the malarial parasite. As a result of the increase of malaria in Europe since the war a station was in 1925 established in Corsica to study its epidemiology and train malarialogists for work in Europe.

THE Home Secretary gives notice that he has withdrawn from John Symington Stewart, M.B., Ch.B., of 252, Morrison Street, Edinburgh, the authorizations granted by the Regulations made under the Dangerous Drugs Act, 1920, to duly qualified medical practitioners to be in possession of and supply raw opium and the drugs to which Part III of the Act of 1920 applies, and has also directed that the exception in Regulation 4 of the Dangerous Drugs Regulations, 1921, which permits dangerous drugs to be supplied on a prescription given by a duly qualified medical practitioner, shall not apply in respect of prescriptions given by Dr. John Symington Stewart. Any person supplying Dr. Stewart with raw opium or any of the drugs to which Part III of the Dangerous Drugs Act, 1920, applies, and any person supplying the drugs on a prescription signed by Dr. Stewart, will be committing an offence against the Acts.

THE annual report of the National Institute for the Blind is a most excellent and interesting statement of the valuable work done by this organization. There is scarcely a single part of the whole range of activity of blind persons in which the institute does not take a leading and directing part. The activities of the institute include the printing of books for the blind, the production of newspapers, the organization of home visits to blind infants, the two colleges for the blind children at Worcester and Chorley, the training of blind workers in which the institute takes a large part in co-operation with local authorities. A new and useful feature of the report is a "Who's Who" of the institute, the executive council of the institute, and the various committees, by similar charitable organizations, and the various committees, by frankness of statement. The total number of blind persons now gauged by the annual total show that the number of blind persons now reaches £312,411; the accounts for each branch of the institute's work are set out separately; in many cases they are pre-

sented in the form prescribed by the Ministry of Health or the Board of Education, and in all instances they are so clearly stated that the least knowledgeable in financial affairs cannot fail to understand their import. A new form of activity which has engaged the attention of the institute is assistance and advice in the provision of wireless sets for the blind. Broadcasting is one of the most valuable means of bringing the blind into close touch with the life of to-day. Braille newspapers cannot hope to give them all the information that is desirable. A beginning was made in a small way through the thought of some readers of newspapers, and the institute has taken the matter up with enthusiasm; it is aided by technical advisers. For a gift from the sighted to the blind there can be none better than a wireless set, or the putting of the blind person in the way of securing an efficient and simple set for himself.

COURSES of lectures and demonstrations at the Royal Sanitary Institute will commence on October 4th for sanitary inspectors, and on October 8th for meat and food inspectors. Further information may be obtained from the Secretary of the Institute, 90, Buckingham Palace Road, S.W.1.

ACCORDING to the Health Office of the Swiss Confederation the epidemic of small-pox in Switzerland, which has lasted for five years, is dying out. Only 329 cases were notified in 1925, as compared with 1,274 in 1924.

THE thirty-fourth Italian Congress of Surgery will be held at Padua from October 25th to 28th, when the following subjects will be discussed: (1) The surgery of the visceral sympathetic, introduced by Professor M. Donati of Padua. (2) The surgical treatment of pulmonary tuberculosis, introduced by Professor Leotta, representing the Italian Society of Surgery, and Professor F. Galdi, representing the Italian Society of Internal Medicine.

THE seventh congress of the German Society of Urology will be held at Vienna from September 30th to October 2nd, when the following subjects will be discussed: the pathology, pharmacology, and treatment of anuria; the pathology and treatment of malignant growths of the bladder. Further information can be obtained from the secretary, Dr. H. G. Pleschner, Altesstrasse 20, Vienna IX.

THE centenary of Laennec's death was recently celebrated at Plonarec, near Donaronec, where he died. Addresses were delivered by Professors Charnard and Marcel Labbé, and Dr. Laigret-Lavastere.

## Letters, Notes, and Answers.

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## QUERIES AND ANSWERS.

### X-RAY TREATMENT OF RINGWORM.

"T. E. R." asks for advice on the use of filters in x-ray treatment of ringworm of the scalp. Is any advantage to be gained, he asks, from the routine use of aluminium filters of, say, 1 or 2 mm. thickness, either as regards increased safety or more uniform results in epilation? If so, how is the exposure calculated (taking 4/5 tint B Sabouraud as a safe unfiltered dose), and is the pastille exposed to filtered or unfiltered rays?

## ELECTRIC CURRENT.

DR. J. S. TOWNLEY (Crickhowell) asks how many Léclanche cells would be needed to pass a current of 5 to 20 milliamperes through a 12 st. man from the mastoids to the hands, and what such a battery with proper resistance would cost approximately?

Approximately thirty cells. A resistance would not be wanted, but a collector switch would be required, so as to be able to switch in (say) at twenty cells and afterwards to thirty. The cells cost 2s. 6d. each. A collector switch on the board would have to be specially made, and 30s. should be allowed for that. A better arrangement would be a self-contained battery of dry cells—generally forty cells—in a box, with a collector switch all mounted up together. This gives a slower and better regulation, and is a recognized piece of apparatus in electro-medical catalogues. The cost is about £9; this is higher than the other arrangement, but it has the advantage of being a single unit.

## CHRONIC ULCERS OF MUCOUS MEMBRANES.

DR. C. E. PRATT (Bexley Heath) writes, in answer to "A.F.'s" question (August 28th, p. 407) as to the treatment of chronic ulcers of mucous membranes, to recommend a course of colossal manganese and small doses of thyroïd. Of the former he advises *mxv* three times a day in water, gradually increasing to 1 drachm; of the thyroïd a tablet of 1/2 or 1 grain.

## ASTHMA AND BRONCHITIS.

"GENERAL PRACTITIONER" writes in reply to "P.'s" query of bronchitis: I prefer to relieve the mixture recommended, I believe, Ammon. chlor. gr. x, Potass. bicarb. gr. xv, Liq. picea aromat. (Bell) 5ss, Ext. glycyrrh. liq. *mx*, Tinct. cardam. co. 5ss, Aq. ad 5ss; in water every four hours. The asthmatic element, provided no immediate cause can be found, is relieved by hypodermic injections of pituitary extract and adrenaline. The administration of 1 c.cm. of pituitary extract and 0.5 c.cm. of adrenaline 1 in 1,000 gives in nearly all acute attacks almost instant relief, and I find that a course of six injections at intervals of five days is followed by a period of, usually, several months free from attacks, and with breathing comfortable. In the case of a woman aged 56, who had suffered fairly continuously for several years, there has been no return of asthma for five years, save once, three years ago, when the attack was immediately stopped after one injection. The combination of pituitary extract and adrenaline is that usually supplied in ampoules by manufacturing chemists.

## INCOME TAX.

"J. E. F." says: I buy a practice for £700 and sell it in six months for £500; the profits for that time are £200; previously they averaged £800 a year, but were decreasing. On what sum am I liable for tax for that six months?

On £200—but it will be necessary to make special application for the reduction of the assessment for the six months to that figure, on the ground that the profits fell off subsequent to the succession from some specific cause. The £200 lost on purchase and sale of the practice represents a loss of capital and not an expense of working the practice.

## LETTERS, NOTES, ETC.

## ACUTE PULMONARY OEDEMA.

DR. F. B. JULIAN (Liverpool) writes: In the BRITISH MEDICAL JOURNAL of June 19th (p. 1033) reference is made to contributions by myself and others, on the subject of acute pulmonary oedema, in the JOURNAL of April 17th. As I have also received inquiries by letter, perhaps you will allow me space in which to make reply. One of your correspondents considers my action in administering antimony tartrate as open to serious criticism. Had I given the antimony in the usual form and dosage I would agree. The phrase "guided by the principle of similars," however, should have made it clear that the antimony was not administered in the usual dosage, for this principle—otherwise known as the homeopathic principle, and utilized successfully but unconsciously by thousands of medical men who would refuse to admit a close correspondence between the symptomatology of the drug used and the consequently demands attenuation of the dose. The dose administered by me in the case recorded was attenuated to a degree which rendered it infinitesimal. The result was, however, as noted, both effective and dramatic.

## VENEREAL DISEASE PROPYLAXIS.

DR. M. W. BROWDY (London, W.) writes: As reported in the BRITISH MEDICAL JOURNAL (August 7th), the Society for the Prevention of Venereal Disease at its annual meeting passed a resolution to urge the Government to amend the Venereal Diseases Act, 1917, so as to permit the sale by chemists of approved disinfectants. Without entering into the problem of prophylaxis, I would draw attention to the evidence now accumulating of primary syphilis retarded by prophylactic treatment and the consequent danger of neuro-syphilis. This alone should make one pause before recommending such a measure. At the same meeting attention was drawn to the remarkable fall

in the incidence of venereal disease during the last four years, attributable to the prevention, diagnosis, treatment, and anti-venereal disease propaganda. Might I ask if this is so? Does it not merely indicate a gradual clearing of those infected during the war period? The only comparison lies between new infections, pre-war and present day; and if this comparison were made it would probably be found that the removal of the only deterrents to promiscuous sexual intercourse—namely, fear and cost of treatment—has produced very little change in the incidence.

## MINER'S NYSTAGMUS.

DR. T. L. ASHFORTH (Doncaster) writes: After twenty-five years' experience in Scotland (Lanarkshire), Durham, and South Yorkshire coalfields I agree with Mr. A. S. Porcival (July 31st, p. 224) that the light conditions have nothing to do with miner's nystagmus, nor have errors of refraction. I have read the Commission's Report, and I am afraid many practitioners with vast colliery experience will only smile at it. If one wants a reliable statement of affairs, bring the matter up at a meeting of the British Medical Association or a special conference or conferences at certain centres and invite everybody interested to attend.

## TUBERCULOSIS AND THE STATE.

DR. A. J. BROCK (North Queensferry, N.B.) writes: I have read and enjoyed your summary in the BRITISH MEDICAL JOURNAL of August 21st (p. 349). The subject is, to say the least of it, complex. Might I suggest that, in order to distinguish the wood from the trees, a useful beginning might be made if we all definitely realized the following principle: that there are two chief kinds of tuberculosis—one pathological and the other physiological. Some expense might then be saved if we stopped attempting to cure cases belonging to the latter category.

## THE REVISION OF THE "BRITISH PHARMACOPOEIA."

DR. GEORGE W. CHEATER (Woodford Green, N.22) writes to suggest that on the proposed new edition of the British Pharmacopoeia, which will be at least one member's degree, has had experience as a member, he thinks, would be able to give points of view, for he is a B.P.'s medical men have not always seen eye to eye with the pharmacists and vice versa. For instance, there are several preparations which are prescribed with extreme rarity by the medical profession and, from the pharmaceutical aspect, are anything but elegant, such as mist. galnaci and mist. ferri co. Again the number of ingredients of confectio emmao might be "pruned" down by half without any detriment to its medicinal value. This point, he is sure, will be endorsed by anyone who has had to make it by hand in his apprenticeship days.

## GOLDFISH AND MOSQUITOS.

A CORRESPONDENT, jealous of the space of the JOURNAL, asks us why room was found for a short review of a book on how to keep goldfish, published on August 28th (p. 390). The answer is that goldfish eat mosquito larvae. This well known fact may be illustrated by a true story. Not long ago a teacher about to give a lecture on malaria wanted to show his class some larvae, but they were not to be obtained from the animal dealers. In despair he offered a penny apiece. A colleague who, ever since he had made himself a small ornamental pond in his garden, had been plagued by mosquitos, thought he saw a way of turning a few honest pennies. When he got to the pond side he could find no larvae, nor any mosquitos. The explanation, which satisfied him, was that not long before he had put into the pond a few goldfish, and they had swept it clear of larvae.

## FORD CARS.

WITH The Original Book of the Ford no driver of that estimable vehicle need fear any trouble. Mr. R. T. Nicholson's book is now in its tenth edition, so that students of the work must be numerous. Every detail of the car, and every possible disease or disorder, is described. Our only fear is that the owner who follows out all the directions given in the book may find that he has little time left for any other occupation than nursing his Ford.

## ERRATUM.

WE regret an error in our issue of August 28th (p. 376). The name of the President of the Section of Public Health should have been given as Dr. Philip Boobyer, instead of Dr. William J. Howarth, who was prevented by illness from being present at the Nottingham meeting.

## VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found on pages 40, 41, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies on pages 42 and 43. A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 149.



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## SECTION OF PATHOLOGY AND BACTERIOLOGY.

### British Medical Association. PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926. SECTION OF PATHOLOGY AND BACTERIOLOGY.

Professor J. SHOLTO C. DOUGLAS, M.D., President.

#### PRESIDENT'S OPENING REMARKS.

The President, in opening the proceedings of the Section, paid a warm tribute to the memory of Sir William Leishman, who, but for his much lamented death, would have presided over the meetings of this Section. Sir William Leishman, said Professor Douglas, was one of the small band who worked out the preventive inoculation against the enteric disorders, with the result obtained in the recent war. The reduction in the case incidence and in the case mortality resulting from these labours was nothing short of miraculous. Leishman's stain had stood the test of time, and was now in such universal use as to have become a standard method in the clinical examination of the blood. Students of tropical medicine would long honour him for his discoveries in connexion with kala-azar, and here, too, his name will be handed on to posterity in the word "leishmania." He had devoted his life to the Royal Army Medical Service, and it was while serving it that he carried on his wonderful researches and stimulated others to a realization of the value of sound pathology. As professor of pathology in the Army Medical Department, and subsequently director-general, Sir William Leishman had done a great work and endeared himself to those who came into contact with him. His death had been an incalculable loss to the Pathological Section of the British Medical Association. They owed him much for the organization of this meeting, which he had left practically completed.

#### DISCUSSION ON THE RELATION OF STREPTOCOCCI TO SCARLET FEVER AND ITS COMPLICATIONS.

##### OPENING PAPERS.

I.—R. A. O'BRIEN, C.B.E., M.D. MELB.,  
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The title of our discussion assumes that a relationship exists between streptococci and scarlet fever. It may be of service to sum up the grounds for the acceptance of this assumption and for our personal belief that streptococci are the cause of scarlet fever. Haemolytic streptococci have been found practically always present in true scarlet fever. Clinical scarlet fever has been produced (according to the statements of the Drs. Dick) by the tonsils of susceptible people; a culture filtrate or "toxin" prepared from the streptococci gives reactions which are specifically related to scarlet fever, for practically all patients, in the earliest stage of the disease, give a positive response to the intracutaneous injection of the toxin, and during convalescence, when their immunity is developed, the serum of immunized patients give a negative response to their toxins, when immunized with these streptococci or their toxins, when injected intracutaneously, produces the serum of infectious of a scarlet fever rash; finally, the serum of immunized animals has what, in the opinion of medical men with long training in the observation and treatment of infectious fevers, amounts to a specific curative action. This "confession of faith" will cause a certain repetition in the logical consideration of our subject, but it has appeared advisable to define at the outset what is believed to be the ground already won.

When the subject of our discussion was chosen, some months ago, it was fervently hoped that before this meeting a test applicable in the laboratory for the measurement of

scarlet fever toxin and antitoxin would have been discovered, and that with such a test we should have been able to clear up many uncertainties. That hope proved vain, for no satisfactory test has yet been found. In consequence we shall be obliged to some extent rather to formulate questions than to add much to our common stock of knowledge.

We are to inquire, What is the relation of the *Streptococcus haemolyticus* to scarlet fever and its complications? There seems little doubt that haemolytic streptococci are closely related to scarlet fever, and we are justified, for the purpose of discussion, in postulating a "*Streptococcus scarlatinæ*" (or possibly a group of streptococci) which causes infectious scarlet fever. But as soon as we seek to define this *S. scarlatinæ* our difficulties begin. If we isolate from the throat of a patient suffering from scarlet fever a streptococcus which we think may be the characteristic organism, we must determine that it is haemolytic, and that on the ordinary media it grows like the haemolytic streptococci obtained from any other pathological conditions; it has, unfortunately, no characteristic of growth sufficiently distinctive to help us materially in identification. Its fermentation reactions must agree with those of *Streptococcus pyogenes*; lactose, salicin, and saccharose must be fermented; but not raffinose or inulin; mannite is fermented by some strains and not by others, yet in both cases we must accept these strains as true *Streptococcus scarlatinæ*. (In passing we may note that this character appears to be not very deeply implanted, for a strain of the mannite-fermenting variety, which Dr. Dick kindly sent us, has in our laboratory, in the course of some months, apparently lost its power to ferment mannite.)

The organism, when grown in ordinary peptone or tryptic digest broth, must produce in the filtrate a "toxin," having the same property as that described by G. F. and G. H. Dick. It must, in a reasonably high dilution, give a positive "Dick" reaction in almost all cases of scarlet fever tested during the first two or three days of the disease; it must, when injected into positive Dick reactors in a quantity containing about 1,000 times the minimal skin reacting dose, produce in existence of instances "miniature non-infectious scarlet fever" or the "scarlatinoid syndrome"—that is, sore throat, fever, vomiting, and characteristic rash; it must be neutralized by the specific antiserum, so that when a mixture of toxin and antitoxin is injected intradermally into a positive reactor to the Dick test, no reaction is produced. Before our scientific scepticism is satisfied we may ask more—that is, that our living culture will, when applied to the throat of a positive Dick reactor, produce unmistakable scarlet fever. It is probable that only three strains in existence have had their authenticity tested thus far—the mannite-fermenting and also the non-fermenting strains of the Dicks, and one strain in Park's laboratory, which was accidentally sucked into the mouth of a worker and apparently caused typical scarlet fever.

We may inhumanly still press our demands and say that we are not yet satisfied, for natural scarlet fever is infectious, and we have yet to prove that the disease we have produced will infect susceptible contacts as the natural disease does. This test has not been carried out, nor is it probable that our common humanity will ever allow it. It is only the interesting history of swine fever that makes us even contemplate such a demand. Until Dorsett's classic investigation it was everywhere accepted that the *B. suis* was the cause of swine fever, for clinically *B. suis* can be produced a fatal disease clinically resembling swine fever and showing post mortem certain characteristic ulcers in the intestine. Dorsett noted that the disease this bacillus produced was not infectious, and it was only when he was able to produce a disease clinically from bacilli that he was able to produce a disease clinically resembling natural swine fever and also resembling its intense infectiousness. The *B. suis* is apparently a "secondary invader" which produces the ulcers, and is so commonly present in pigs in most countries where true swine fever occurs that in the opinion of those charged with the control of animal diseases it is safe to found a diagnosis of swine fever, justifying administrative measures, on the finding of the ulcers really caused by *B. suis*.

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With regard to septic complications, there seems little doubt that the majority of the organisms causing otitis, septic adenitis, etc., belong to the *Streptococcus scarlatinae* group, for a number of workers (Stevens and Dochez, 1926; J. Smith, 1926; etc.) have isolated strains from such complications which agreed with the Dochez-Dick strains in every test which was applied.

There remain for discussion at least three important questions:

(a) Given a haemolytic streptococcus of unknown origin, can we decide quickly and certainly whether it is a *Streptococcus scarlatinae* or not?

(b) Are there different types of scarlet fever caused by different strains of the streptococcus, or is there but one clinical scarlet fever caused by serologically differentiable streptococci?

(c) Does the *Streptococcus scarlatinae* attack only as a toxigenic organism, or has it another mode of attack which we may call the septic or pyogenic method?

Our best hope of getting answers to questions (a) and (b) lies at present in the agglutination and intracutaneous tests.

**Agglutination.**—There seems little doubt, from the investigations of the past few years in which both American and English workers have played an important part, that the agglutination and agglutinin-absorption methods are of service. If one handed to any of these workers two groups of some twelve strains of haemolytic streptococci, one group taken from the throats of scarlet fever patients, the other from patients suffering from erysipelas, puerperal fever, or septicaemia, etc., it is probable that in every such experiment the scarlet fever group would be identified with certainty. But if one wishes to identify individual cultures difficulty arises. Our own limited experience suggests that a small number of individual strains fail to give satisfactory results, and it is interesting to note in the American literature the occasional reservations of the more critical workers that a certain small proportion of strains will not form stable suspensions or do not fall clearly into the scarlet fever agglutination group or subgroups. Stevens and Dochez (1926) stated their position thus:

"Erysipelas strains form a closely related group of haemolytic streptococci. Scarlatina strains form an equally compact group. The two groups are related antigenically, but less closely related than the strains within the groups. These groups are related to pathogenic strains, but less closely than they are related to each other."

Had these authors added that there were apparently subgroups, as indicated by agglutination and absorption reactions, inside the scarlet fever group, etc., their position would have corresponded almost completely to that of most American workers and of Gordon, Smith, Eagles, and F. Griffith in England.

The answer to our first question is that, unfortunately, we cannot quickly and certainly identify a given haemolytic streptococcus as *Streptococcus scarlatinae*, for though the group is fairly clearly defined serologically, occasional scarlet fever strains fail to agglutinate with the specific scarlet fever serum, and some strains derived from other diseases agglutinate and absorb with the specific serum. The difficulty in dealing with suspected "carriers" is unfortunately obvious.

If we attempt to answer question (b) by the agglutination method we cannot give a clear reply. From various published reports (notably that of J. Smith) it seems fairly certain that inside the scarlet fever group of streptococci it is possible by agglutination to define more or less closely several subgroups. The biological significance of these subgroups we cannot at present determine. So far as I know, no worker has suggested that these different subgroups are associated with different varieties of scarlet fever. Our own results in diphtheria, where we can take a group of true virulent *C. diphtheriae* excreting a toxin neutralizable by one specific antitoxin, and proceed by agglutination and absorption methods to differentiate a large number of subgroups, make us disinclined to believe that this serological subgrouping has any pathological significance.

**Toxigenic Power.**—There remains another method of attempting to answer questions (a) and (b). The specificity of the intradermic toxin reaction is high, but it is probably

not as absolute as it certainly appears to be in connexion with *C. diphtheriae*. If a haemolytic streptococcus which grows normally and is specifically agglutinated by anti-streptococcus agglutinating serum produces a toxin which is neutralized only by scarlet fever antitoxin, the evidence that the organism is a *Streptococcus scarlatinae* becomes almost convincing. Yet in the light of the available evidence it cannot be said that the absence of this toxigenic power is sufficient absolutely to exclude a given organism from the scarlet fever group, or that its presence warrants a dogmatic assertion that the organism is undoubtedly the *Streptococcus scarlatinae*.

The idea that there may be varieties in the toxins produced by the group of scarlet fever organisms has suggested itself, and Park<sup>1</sup> has, from his observations on specific neutralization with scarlet fever serum, recently put forward the conception that there may be groups of streptococci which produce toxins not identical but having an antigenic overlap.

**Schultz-Charlton. Blanching.**—This test may carry us a little further. If an antitoxin made by injecting animals with the toxin of a given streptococcus blanches the rash of scarlet fever and not of measles, rubella, enema rashes, etc., there is strong justification for considering the organism as the specific *Streptococcus scarlatinae*. Yet even here we must make a slight reservation, for, though we know that the great majority, some 80 to 95 per cent., of scarlet fever patients, if tested within seventy hours of the appearance of the rash, will show the specific blanching, we cannot be certain that we can produce the phenomenon on 100 per cent. of patients tested. Since scarlet fever antitoxin produced in the horse, or the serum of a patient convalescent after scarlet fever, will "blanch" a very high percentage of scarlet fever rashes, we are justified in considering all strains of *Streptococcus scarlatinae* as toxigenically identical. It is true that few clinicians obtain 100 per cent. of positive blanching results when testing scarlet fever patients, but so far as one can judge from the very meagre observations available, the serum of these "non-blanching" patients, taken during convalescence, will in its turn blanch ordinary scarlet fever rashes, which also blanch with the antitoxin serum produced in the horse. There is here no clear evidence that there are two types of scarlet fever.

Our answer to the second question, then, is that there is probably only one type of clinical scarlet fever, which may be caused by a group of haemolytic streptococci containing subgroups that are differentiable by agglutination methods, but not at present clearly separable by intracutaneous injection of toxin or the Schultz-Charlton method of test. "Puerperal scarlet fever" and "surgical and burns scarlet fever" are puzzling syndromes, and their relation to ordinary infectious scarlet fever is not at present clear. Many authorities consider these attacks as true infectious scarlet fever occurring in patients whose illness may possibly have increased their liability to scarlet fever; others think that such patients develop "scarlet fever"—that is, fever with scarlatiniform rash but with little or no inflammation of the throat—caused by streptococci derived from the vagina or wound, which may not be identical with the ordinary *Streptococcus scarlatinae*; further, that such attacks are not infectious, probably because the cocci are not liable to be spread as droplets in coughing and talking as they are in an ordinary attack of scarlet fever with sore throat. It should be easy, by a careful study of such cases by means of the Dick and Schultz-Charlton reactions, and of the cocci isolated therefrom, to establish clearly what is the relation between these curious attacks and true scarlet fever.

In attempting to answer our third question the available data at present are insufficient to give much help. The large amount of evidence available has convinced practically all observers that scarlet fever antitoxin is a specific curative serum, and that, given early in the disease, its beneficent action approaches that of the specific antitoxin used in the treatment of diphtheria.

In addition, considerable evidence is also available suggesting that the giving of antitoxin early in the disease decreases the liability to complications. Some clinicians state that scarlet fever antitoxin will benefit late septic cases also; most physicians have had no such good

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results. If "late septic cases" gave invariably or usually a "Dick-positive" response this would be fairly clear proof that they possessed little or no antitoxin, and one could believe that the antitoxic serum might be useful. Unfortunately, no long series of Dick tests on late septic cases have been published, but apparently these patients more often than not show a negative response to the test. We would not, therefore, expect antitoxic serum to benefit these patients. If further experience were to prove that the giving of purely antitoxic serum to "septic" cases is beneficial we should almost be compelled to believe that the "toxic" mode of attack of the streptococcus is by far the most important and almost the only one—that is, that the toxin causes local damage in the ear or in the tissues, and that in this damaged area the streptococci, which must be circulating in the patient's blood at some stage of his illness, can settle down and produce further damage.

The laboratory evidence is at present against the extreme view that the toxic attack is all-important and the attack by the living streptococcus but of secondary import. The rabbit is almost completely resistant to the toxin of the *Streptococcus scarlatinae*, whether given intracutaneously, subcutaneously, or intravenously, whereas the living culture injected intravenously kills, and, given intracutaneously, causes a large lesion often followed by septicaemia and death.

#### Summary.

Haemolytic streptococci cause infectious scarlet fever. These streptococci tend to form a group which can be differentiated by agglutination methods from the haemolytic streptococci of erysipelas, septicaemia, puerperal fever, etc. There is some agglutination relationship between the more or less sharply defined scarlet fever group of haemolytic streptococci and the groups associated with other diseases. The streptococci causing the "septic" complications of scarlet fever probably usually belong to the group of scarlet fever haemolytic streptococci.

REFERENCES.  
1 See Journ. Exper. Med., xliii, 1925, Table IV, p. 387. 2 Journ. of Hygiene, xxv, 2. 3 Journ. of Immunol., 8, 1925, p. 829.

II.—C. C. OKELL, M.C., M.B., M.R.C.P., D.P.H.,  
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With regard to the validity of the streptococcal theory of scarlet fever there seems little to add to the general statement of the opener of this discussion. It cannot, of course, be maintained that the streptococcus is the cause of scarlet fever with the same certainty that the Klebs-Loeffler bacillus is the cause of diphtheria. At the same time the work of the Dicks and Dochez has shown how profitable a working hypothesis the streptococcal theory of scarlet fever has proved. It would be unwise, however, to overlook the possibility of other agents being involved in the etiology of the disease. All who have worked in this field have met with facts which appear to be discordant with the simple statement of the theory. That this is admitted, but it affords in attacking any new problem the difficulties and must also be confessed that in this subject the difficulties and discrepancies become more numerous with the progress of observation and experiment.

The solidly established facts are: (1) The Dick test indicates—though by no means with precision—the state of susceptibility or non-susceptibility to the disease. (2) Streptococcal "antitoxin" has a curative value in suitable cases of the disease. There seems little doubt that both the toxigenic and the progenic activities of the scarlet fever coccus are responsible for most of the clinical manifestations of the disease, and that the injection of sterile toxin alone can produce a syndrome bearing the closest resemblance to scarlet fever.

With regard to most other aspects of the problem there seems much to be said on both sides. It has been frequently pointed out that one great obstacle to the advance of knowledge on this subject is due to the difficulties in titrating both scarlet fever toxin and antitoxin. To begin with, the only animal which has been conclusively shown to be susceptible to the toxin is the

human being, and such progress as has been made is entirely due to experiments on human volunteers. The activity of toxin is estimated from its activity on susceptible persons, but it must be remembered that probably comparatively few people, especially in the older age groups, can be taken as being virgin soil so far as scarlet fever infection is concerned, and still fewer so far as streptococcal infections in general are concerned. This may or may not be the explanation of the difficulty met with in trying to compare the activity of two toxins. One can imagine the uncertainty that would have arisen in connexion with the similar problem in diphtheria had so only experimental animals been men or horses, who have so frequently acquired some degree of immunity to that infection. As it is, the comparison can only be made after a large series of observations and with great caution.

The difficulties of finding the neutralizing power of an antitoxin in terms of a known toxin dose are still greater. One of the difficulties is that reactions due to the serum may be misleading, but even apart from this it has proved very difficult to evaluate either serum or toxin in terms of the only phenomenon which is at present available for the purpose—namely, the delicate skin reaction due to the toxin. The toxin reaction, indeed, appears to be almost entirely a vasomotor effect, and can be easily disturbed by non-specific factors. It tends, moreover, to be an all or nothing phenomenon. It may happen that injections containing very different amounts of toxin produce almost indistinguishable reactions. In the case of diphtheria toxin the size of the reactions bears a definite relation to the amount of toxin used.

Most of those who have experience in titrating streptococcal antitoxin in terms of skin doses of toxin admit that very wide discrepancies may occur even when the greatest pains have been taken to ensure standardized conditions of test. In some cases the neutralizing value of a sample of serum, as determined by different observers in terms of skin doses of toxin, has varied as much as tenfold. Under such conditions it is obviously premature to lay down standards of either toxin or antitoxin. Most of the competent authorities in America seem to be in agreement that such standards as are chosen should be of a purely provisional character.

If accurate standardization is aimed at it is important that the fundamental standard should be that of a serum rather than a toxin. Drs. McCoy and Dyer of the Hygienic Laboratory in Washington have prepared a serum which they propose to issue as a provisional standard, and there seems no reason why this should not be accepted in this country also. It is a serum of apparently high antitoxin content, and will serve as a constant for comparison until more definite standards can be laid down. The method at present customary in America of giving the titration of antitoxin in terms of units is liable to be misleading, and in this country we have not as yet seen any sound reason for adopting it. The present position in regard to the standardization of scarlet fever serum may be summarized as follows: The distinction of good from bad serum depends ultimately on its therapeutic effect. By means of toxin neutralization tests, blanching tests, or the passive immunity method, the therapeutic value of the serum can be predicted, but at the moment anything like close quantitative comparison of serums is impossible. On the evidence available it is not even clear which of the methods customarily used in evaluation is the best. The important thing for the time being is that serum of reasonable clinical efficiency be issued, and that what titration experiments indicate as the effective dosage should be stated.

Before leaving the question of toxin and its titration reference should be made to the methods of test which do not involve the use of human subjects. The *in vitro* methods on the lines of the Ramon test gave no results in our hands. Liko Dyer we found that flocculation occurred in mixtures of scarlet fever toxin and antitoxin, but we could establish no numerical relationship between the two. This is confirmed by Dyer's latest and as yet unpublished work. No animal we have tried has reacted at all promisingly to the toxin except the goat. This animal has been used by Kirkbride and Wheeler for the titration of toxin and antitoxin. We have found goats

which reacted to 0.2 c.cm. of very dilute (1 in 4,000) toxin, but here again the numerical difficulty occurred. As much as 80 times the minimum reacting dose produced a reaction of very much the same size as the minimum reacting dose: One goat also, which gave a good reaction intradermally with 0.2 c.cm. in 1 in 1,000 dilution, failed to show the least abnormality when 5 c.cm. of pure toxin was given subcutaneously. If the skin reaction in goats is therefore a true toxin effect it is strange that 25,000 skin doses should produce no effect, general or local, when given subcutaneously. It would be unwise to say that the goat cannot function as a test animal, but until such discrepancies as we have mentioned can be explained away it would be as well to be cautious.

It must not be forgotten that it is one of the most characteristic properties of a true toxin that the toxic effect produced is proportional to the amount of toxin given. Dick toxin, as regards its effect on human beings, falls into line with other toxins. As far as the work of Parish and myself has been concerned this has not been the case with goats or other animals, and we are disposed to look upon such reactions as are produced in these animals by filtrates as due to some form of allergy rather than to a true toxin effect.

Another point to which I wish to refer is of both clinical and immunological importance. The streptococcus plays a dual role in scarlet fever: (1) it produces a toxin, and (2) it may invade tissues like any other pyogenic organism. Uncomplicated scarlet fever appears to be almost purely a toxæmia, which is rapidly combated by the production of streptococcal antitoxin; but the streptococcus can, and often does, take a further role as an invasive organism, producing effects similar to those produced by any other pyogenic streptococcus. The pyogenic function of the streptococcus appears to be more or less separate from the toxæmia function from the immunological and even from the clinical point of view.

The most important fact bearing on this is that the patient who has a pyogenic complication of scarlet fever is "immune" to the toxin—that is, he almost always has a negative Dick reaction. Once pyogenic complications are established antitoxic serum has no effect on them. This dual nature of the streptococcus is paralleled by animal experiments. Mice and rabbits are not susceptible to the streptococcal toxin, but they may be killed with a septicaemia by the scarlet fever coccus. Rabbits may also be given a typical pyogenic infection of the skin with the scarlet fever streptococcus. It is not clear that any amount of scarlet fever antitoxin *per se* can be depended upon to protect against such infections. H. J. Parish, working with me on this point, has been unable to show that serums prepared either against toxin or bacterial bodies are able consistently to prevent the septicaemia of mice or the pyogenic skin reactions in rabbits. On the other hand, rabbits may be killed with 5 c.cm. of a young broth culture of the scarlet fever streptococcus, given intravenously. Scarlet fever antitoxin which was prepared entirely by immunization with sterile filtrates (toxin) when given five hours beforehand will prevent the death of the rabbit. Under certain conditions of experiment this effect is quite constant. It is not clear to us if this preventive property of the "antitoxin" is purely an antitoxic effect, but if it proves to be such it gives us hope that an animal test of an antitoxic activity might be evolved on the basis of Parish's experiments. If, on the other hand, the effect is due to the accidental presence of an antibody other than antitoxin it still seems worthy of close investigation, since a serum rich in such antibody might be useful in treating human patients in the pyogenic stages of the disease.

Though scarlet fever antitoxin does not deal with all the pathogenic activities of the streptococcus it is very important as a therapeutic agent. Experience has been uniformly in favour of the view that if it is given sufficiently early it tends to prevent the septic complications of the disease. The aggressive action of the toxin seems to be an important factor in the invasive power of the streptococcus. Antitoxin appears, therefore, to be an invaluable therapeutic agent in the toxic phase of scarlet fever, while it is quite ineffective in the purely pyogenic phase of the

disease. Indeed, in the pyogenic phase there is generally in the patient's serum more than enough antitoxin to do all that antitoxin can do.

With regard to the value of agglutination as a means of identifying scarlet fever streptococci I might refer to the results obtained by Miss G. I. Steed and myself. We examined thirty-four strains of haemolytic streptococci from cases of scarlet fever by the technique described by Mervyn Gordon in his work on the subject. Twenty-seven strains absorbed the agglutinin from a serum made by injecting a rabbit with the killed Dochez streptococcus. The titre of the serum was 1 in 800. No detectable agglutinin was left when 1 in 100 was tested after absorption. Two strains completely failed to absorb agglutinin from this serum, but absorbed it from serum prepared from S. F. 18, a toxigenic strain isolated by ourselves. The two Dick strains, and also one from Dr. Anna Williams, only absorbed Dochez serum to 3/4 titre; S.F. 18 serum was completely absorbed by these three strains. Eleven strains of haemolytic streptococci from sources other than scarlet fever—for example, puerperal fever, pyorrhoea, etc.—were also tested for absorption; the great majority of these did not absorb the agglutinin, but five strains which seemed to have no connexion with scarlet fever did absorb it. These were respectively a strain isolated from strangles in a horse, one from a case of pyorrhoea alveolaris, and two from cases of pyogenic infection. It was thus possible arbitrarily to separate by absorption the bulk of scarlet fever strains from non-scarlet fever strains, but not with sufficient certainty to allow the diagnosis of an individual strain. These results confirm the work of Stevens and Dochez, and other recent investigators. At the best positive agglutination or absorption results are but presumptive evidence that a given streptococcus is a scarlet fever organism.

### III.—KONRAD E. BIRKHAUG, M.D.,

New York.

From a bacteriological study of more than 500 cases of scarlet fever we have been able to isolate *Streptococcus scarlatinae* from the tonsillar crypts during the first three days of the disease in 97 per cent. of cases. Type specificity of these organisms was determined both by agglutination and absorption and by the toxigenic power and the specific neutralization of the toxin by *S. scarlatinae* antitoxin. The average duration of *S. scarlatinae* in the tonsillar crypts of clinical cases of scarlet fever was ten days, and after the disappearance of this organism an invasion of non-specific haemolytic streptococci dominated. These were faintly toxigenic in nature and their toxic products non-neutralizable by the scarlatina antitoxin. It is curious to note that the disappearance from the throat of the *S. scarlatinae* is coincident with the appearance in the patient's blood serum of an adequate amount of antitoxin, which, when injected intradermally in the rash of an acute case of scarlet fever, will produce the Schultz-Charlton blanching phenomenon. The longest persistence of a true agglutinable and toxigenic *S. scarlatinae* in the tonsillar crypts of a scarlet fever patient was 246 days after the initial onset of the disease. Without being able legally to quarantine this patient, she was left at large. From the patient's family three members were returned to the hospital with clinical scarlet fever during the first two months after her return home, and the patient's father developed acute pharyngitis five months later. The culture of haemolytic streptococcus isolated from the throat of the father revealed a true *S. scarlatinae*, but the "carrier" gave a negative Dick reaction to the toxin produced by his own organism. Williams and Stevens have already called attention to the wide distribution of *S. scarlatinae* in osteomyelitis, endocarditis, acute, subacute, and chronic tonsillar infections, without the clinical symptoms of true scarlet fever. The seriousness of the scarlatinal "carrier" problem in close as well as disseminated epidemics of scarlatina must some day demand the same attention we have paid to the diphtheria "carrier" problem. Dr. O'Brien has already so commendably pointed out the difficulty which confronts

us when we are called upon immediately to determine a *S. scarlatinae*. At the best it takes an expert bacteriologist about three days to make such a determination under favourable conditions. Inspired by the good results obtained by Ramon's flocculation method for determination of the antitoxic titre in diphtheria toxin on the water-bath, I laboured for several months in applying this method to the determination of specific highly specific reaction to diphtheria neutralizations, scarlatinal and erysipelas toxin-antitoxin neutralizations, but without any positive results. Until a quicker *in vitro* method is invented than agglutination and absorption, which in themselves are faulty and unreliable, in that they are produced by a number of non-specific strains, we may find the best method available that invented by Dick and Dick—namely, specific neutralization of *S. scarlatinae* toxin by scarlatinal antitoxin in the skin of susceptible individuals.

#### Varieties of *Streptococcus scarlatinae*.

Although several groups of *S. scarlatinae* are suggested by agglutination and absorption, yet, antigenically speaking, *S. scarlatinae* forms as compact and closely related a group of organisms as we shall shortly learn is the case with *S. erysipellatis*. Toxigenically we are confronted with the problem of varieties of toxic products of true scarlatinal organisms. My experience has been the same as that of Wheeler and Kirkbride and Park, that one person may give a strongly positive Dick reaction to a toxin produced by one scarlatinal streptococcus and yet give no reaction with a five times stronger toxin of another true scarlatinal streptococcus, and vice versa in other individuals susceptible to one toxin and not to that produced by another strain. Inasmuch as there is only one type of clinical scarlet fever and the specific curative effects of scarlatina antitoxin are unquestionably the same in every case treated early in the disease, is it not possible that the toxigenic power of *S. scarlatinae* presents a variable picture only *in vitro* after the organism has been artificially grown for some time, in, so to speak, unnatural surroundings? Our experience has been the same as that of Dr. O'Brien—that our original mannite-fermenting true scarlatinal strain lost its power to ferment mannite in the course of some months of artificial toxigenic specificity? For it not likewise lose its original toxigenic specificity? For practical purposes, then, a polyvalent toxin employed for the Dick test would give more uniform results than those already conflicting data obtained by the use of monovalent toxins.

#### Schultz-Charlton Phenomenon.

An interesting study has been in progress on the mechanism involved in the production of scarlatinal rash and its neutralization or blanching by means of specific scarlatina antitoxin. By studying microscopically the capillaries in the erythematous area during the height of the rash, we are able to count as many as forty capillary loops in one eye-field, using a magnification of 300 times. Normally only eight to ten loops come into view. When a deeply erythematous area of skin is infiltrated intradermally with 0.1 c.cm. of scarlatina antitoxin, we notice from hour to hour that the capillary loops diminish in diameter and that the flow of blood is retarded, and eventually, when the Schultz-Charlton blanching phenomenon is complete, we are able to discern only from eight to ten normally appearing capillary loops. When the scarlatinal rash is infiltrated with erysipelas antitoxin, diphtheria antitoxin, tetanus antitoxin, pneumococcus serum, or normal horse serum, the capillary picture remains undisturbed, or rather aggravated. When the scarlet fever patient's serum is taken during the first five days of the disease and injected intradermally in Dick-positive individuals, we obtain as a rule a strongly positive Dick reaction. If this serum is mixed with scarlatinal antitoxin or convalescent scarlet fever serum and then injected in susceptible individuals, no skin reaction is obtained. If, now, we take the patient's serum at about the twelfth day of the disease and inject it into the skin of Dick-positive reactors, we obtain no skin reaction; but if the same serum is injected intradermally into scarlet fever rash, we obtain in the course of ten to eighteen

hours the blanching phenomenon. There is here a strong justification for considering the antitoxin produced in the patients during the acute attack of scarlet fever identical with the antitoxin produced in laboratory animals by the injection of *S. scarlatinae*.

#### Specific Therapy.

The rapidly accumulating literature on the subject of specific scarlatinal antitoxin therapy makes it increasingly certain that we are dealing with a highly curative serum. My early observations with Dochez's serum in 1923-24 brought me to the conclusion that adequate doses of scarlatinal antitoxin administered during the first four days of the disease brought about a rapid recovery without septic complications. As Dr. O'Brien has already pointed out, I stated at that time that the antitoxin seemed without avail in the late septic cases, and during the past three years of continuous observation of specifically treated scarlet fever patients I have had no cause to change that early observation. The clinical picture of the late septic cases of scarlet fever resembles in some degree that of the late untreated case of diphtheria, in that it yields irregularly to massive doses of diphtheria antitoxin. It is possible that the toxins are so thoroughly fixed in the tissues that they cannot be neutralized by the administered antitoxin. In summary, then, we may say that the significance of *S. scarlatinae* in its relation to scarlatina is an established fact, which must remain as another milestone along the eternal road of medical progress—a milestone of which our profession should be doubly proud because the labours of two continents steeped in similar traditions and aspirations have made this monument to modern medicine possible.

#### GENERAL DISCUSSION.

The PRESIDENT asked whether complement fixation was of any avail in recognizing the streptococcus of scarlatina. It was difficult for the general pathologist to get first-hand experience of scarlet fever because cases were removed to special hospitals. These hospitals were so far away that it was quite impossible for the pathologist to pass from his laboratory to the bedside and to follow up his findings by the observation of cases. For this reason the knowledge of the pathology of infectious diseases, and therefore of their treatment, had been delayed. The best plan would be for the hospitals to follow the admirable example set by the Metropolitan Asylums Board and develop their own pathologists. At present the pathology was done by junior medical officers, untrained in this branch of work. This condition of things was most unsatisfactory.

Dr. W. J. TULLOCH (Dundee) said that two points of considerable importance arose out of the papers by Dr. O'Brien and Dr. Okell. The first was that apparently the *S. scarlatinae* was not, from the agglutinogenic point of view, a single definite entity, but was divisible into subgroups. Notwithstanding this it appeared from Dr. O'Brien's paper that all the immunologic varieties of *S. scarlatinae* produced the same toxin. There was here a close analogy with *B. tetani*, which, by the agglutination test, could be divided into several "types," but all those "types" produced the same neurotoxin. Therefore the toxic effect of any tetanus bacillus, no matter what its "type," could be neutralized by the antitoxin to any "type." The same was probably true of the diffusible toxins elaborated by *S. scarlatinae*. Therefore the toxin element in scarlet fever should be counteracted by an antitoxin prepared against any authentic strain of *S. scarlatinae*. There was, however, another aspect of the problem—namely, that the agglutinogenic types might be of importance in relation to infection, and, if this were so, typing by agglutination would assume considerable importance in connexion with prophylaxis. Recent work by Ten Broeck and Bauer suggested that even in tetanus the typing of the bacillus might be of importance in that infection of a non-disease-producing nature with one "type" already existing in an animal precluded an infection capable of producing disease by that same "type" in that animal, although infection and disease production



due to another "type" might well occur. The second point was of a purely practical nature and arose from Dr. Okell's remarks concerning the standardization of the toxin of, and antitoxin to, *S. scarlatinae*. Unless some species of susceptible animal was available for such standardization they must fall back upon *in vitro* tests. Notwithstanding the failure that had so far attended the application of a test similar to the Ramon test for the purpose in view Dr. Tulloch thought that further work on tests of this nature was indicated. When the extreme subtlety of all biological precipitation reactions was realized, a precipitation which occurred in colloidal systems of extreme complexity, it was obvious that much work would have to be done before concluding that a method of standardization based upon precipitation was valueless. He suggested, therefore, that in performing precipitation tests designed for the standardization of scarlatinal antitoxin a variety of electrolytes might be used for diluting the interacting reagents. The use of a suitable electrolyte might eliminate the difficulty which arose from false positive reactions, since non-specific agglutination, for example, occurred whenever the electrophoretic potential was reduced to + or -15 millivolts. There were certain electrolytes—phosphate buffer solution—which allowed specific agglutination to occur when the potential was much greater than the range + or -15 millivolts. He offered this as a suggestion to those engaged in the practical work of standardization of the reagents in question with the hope that it might prove of some value to them.

Dr. D. SAGE SUTHERLAND (Manchester) said that the practical application of the Dick and rash-extinction tests was of value in fever hospitals for purposes of control and disposition of cases. All cases of scarlet fever should be tested for the Dick and Schick reactions on admission, and at intervals of about seven days. A positive Dick reaction, becoming negative in two or three weeks, was confirmatory of the diagnosis; the persistence of a positive reaction beyond this period would make one regard the case in a more critical manner. The convalescent serum in such cases might then be tested as to its rash-extinction producing properties on undoubted cases of scarlet fever with controls. The application of the Dick test in cases of diphtheria on admission was of assistance in the differential diagnosis of serum, enema, and scarlet fever rashes, or the occurrence of faint rashes of doubtful nature should such occur during the period of convalescence. On the accidental introduction of scarlet fever to a diphtheria ward a knowledge of the most susceptible patients (those giving positive Dick reactions) was at their immediate disposal; passive immunity might be established in these cases without delay by injection of prophylactic doses of immune serum. Discharge of cases and control of infectivity by bacteriological examination for demonstration of the absence of *S. scarlatinae* would be difficult to carry out in hospitals without the assistance of a special pathologist on the staff.

Dr. PENFOLD asked Dr. O'Brien whether he would give details of the "suitable broth" he had mentioned as a culture medium for *S. scarlatinae*. He would like to know the percentage loss of antibody during concentration of the serum. He also asked whether it was possible to produce nephritis in animals.

Dr. DONALDSON asked Dr. O'Brien to what extent the so-called *Streptococcus scarlatinae* had been found responsible for the septic complications following scarlet fever. Far from having been converted to the view that scarlet fever was caused by the *S. scarlatinae*, the facts which he had heard rather suggested that the true primary cause had not yet been discovered. The disease seemed to have points of close analogy with swine fever, where the actual virus was usually accompanied by a bacillus. Dr. Donaldson suggested that possibly the *S. scarlatinae* might be regarded as an indicator of scarlet fever rather than as its cause, in the same way as *Bacillus suispestifer* might be regarded as an indicator of swine fever. The *S. scarlatinae* bore a very close relationship to scarlet fever, but they must not be induced on those grounds alone,

however strong the temptation might be, to accept it as the cause. From the point of view of science its claim had not yet been established.

Dr. FLOID asked whether there was any explanation of the well known fact that the type of scarlet fever had become much milder in recent years.

Dr. O'BRIEN, in closing the discussion and in answer to questions, said that the work of Dr. Parish seemed to show that a good scarlet fever antitoxin would consistently protect a rabbit against a lethal dose of culture of *Streptococcus scarlatinae*, both being given intravenously, while a poor serum would not. The immunization of nurses was already being practised in England with, so far, very promising results. It was at present premature for the bacteriologists to claim to speak with authority to the public health administrator and tell him which people were potential carriers—that is, distributors of scarlet fever. Dr. Trevan had tried the effect of scarlet fever toxin on the capillary loops of the intestine, but could not find any consistent effect. He agreed with Professor Douglas that the absence of research in infectious fever hospitals was lamentable, but hoped that the appointment of the pathologists to the Metropolitan Asylums Board and also, probably, to the fever hospital in Manchester, would mark the commencement of a time when the amount of clinical pathology in infectious fever hospitals would be comparable with that in large teaching general hospitals. He felt that if the antibacterial serum made by the injection of streptococci could be of any use, that fact would have been discovered during the many years that antistreptococcal serums had been used for the treatment of scarlet fever. He was, however, at present disinclined to hope much from antibacterial scarlet fever serum. He had concentrated scarlet fever serum on a large scale; apparently considerable losses occurred if the routine processes were used, but it was very difficult to check the loss, since the present methods of titration were so difficult to command and so liable to fallacy. The speaker now fully accepted the *Streptococcus scarlatinae* as the cause of the disease. If belief was retained in a filterable virus it was necessary to show that "subcultures" through many generations of Dick "toxin" must still produce the "Dick reaction," and, further, it must be assumed that the virus survived and grew *pari passu* with the streptococcus through many generations in artificial culture, for antitoxin made by injecting the toxin of the streptococcus subcultured for several years was specific.

## THE ETIOLOGY OF ERYSIPELAS AND ITS SPECIFIC THERAPY.

BY

KONRAD E. BIRKHAUG, M.D.,

New York.

[Abstract.]

Dr. BIRKHAUG said that two years ago he was able, by means of agglutination and absorption tests, to show that 91 per cent. of erysipelas strains of haemolytic streptococci isolated from typical erysipelas lesions fell antigenetically into one group, and that this group could be readily distinguished from other types of haemolytic streptococci. He then produced erysipelas experimentally in rabbits. The pathological condition closely resembled that seen in human erysipelas. He found that intracutaneous infiltration of immune erysipelas serum with *Streptococcus erysipelatis* prevented the development of lesions. Subcutaneous or intravenous administration of the serum protected the animals against lethal doses of *S. erysipelatis*, but not against other streptococci. In a study of the toxin produced by the erysipelas organism he found that a skin test dose of 0.1 c.cm. of a 1 in 1,000 dilution of the toxic filtrate produced in susceptible persons a lesion similar to that found in the Schick and Dick tests. The lesion was neutralized by mixing the skin test dose with an equal amount of convalescent erysipelas serum or with 0.001 c.cm. of immunized rabbit or donkey serum. Dr. Birkhaug had then set to work to try the effects of erysipelas antistreptococcal serum on clinical cases. For

# SECTION OF OBSTETRICS AND GYNAECOLOGY.

this purpose he immunized a donkey and a horse according to the method of Dochez. Up to the present the treatment had been tried on sixty patients. The average dose was 100 c.cm. of the unconcentrated and 15 c.cm. of the concentrated serum. In only eight cases was more than one dose given. The most marked effect was the prompt improvement of the toxic depression of the patient. This was followed, if the serum had been given early enough in the disease, by an almost critical drop in the temperature and the rapid disappearance of the erysipelatous lesion, together with the accompanying cedema and blebs. Dr. Birkhaug showed a very interesting series of lantern slides of erysipelas in rabbit and man, illustrating the effects of treatment.

## DISCUSSION.

Dr. OKELL said that the reactions obtained in the rabbit with the *Streptococcus scarlatinae* resembled those of Dr. Birkhaug with the erysipelas organism.

Dr. O'BRIEN raised the point as to whether the serum was antibacterial as well as antitoxic. Work had been done in Russia twenty years ago on the streptococcus of scarlet fever. But the serum they made was antibacterial, produced by the injection of cocci, and was apparently not antitoxic. If this serum had been of value in the treatment of disease it would have long ago come into general use; antibacterial serum was conceivably of no value. The antitoxic serum probably contained all that was required.

Dr. BIRKHAUG, replying, said that it was Dr. Park's experience that horses immunized against *S. scarlatinae* produced a serum highly antitoxic during the first six months of immunization, but that the serum first became bactericidal after eight months. The same held true of the erysipelas antiserum. It had been interesting to note that patients having recurrent attacks of erysipelas had been actively immunized intramuscularly. It was premature to judge the persistence of this active immunity, but so far this had lasted six months in individuals who previously had attacks every six to eight weeks. They might find that this active immunity followed the same lines as diphtheria toxin-antitoxin immunity, and recently scarlet fever.

# SECTION OF OBSTETRICS AND GYNAECOLOGY.

COMYNS BERKELEY, M.D., M.Chir., F.R.C.P., President.

## DISCUSSION ON THE PLACE OF INDUCTION OF PREMATURE LABOUR IN THE TREATMENT OF CONTRACTED PELVIS.

### OPENING PAPER

BY  
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F.R.C.S. ED.,  
Consulting Obstetric Surgeon, Queen Charlotte's Maternity Hospital; Assistant Obstetric Physician, Charing Cross Hospital; Surgeon, Chelsea Hospital for Women.

A PRURAL of the annual reports of maternity hospitals brings to light the frequency with which Caesarean section is performed in the management of cases of pregnancy complicated by contraction of the pelvis, while in the last few years much valuable information has been obtained as regards the dangers, after-results, and subsequent labours attending or following the operation. I confess to a growing suspicion that Caesarean section is being employed oftener than is justified in the presence of, or in the anticipation of, difficulty in labour due to pelvic deformity, and I am grateful to the officers of this Section in that they have done me the honour of asking me to open a discussion upon the place of induction of labour in cases of contracted pelvis. I stand here as a sinner who has repented,

knowing that in the past I have been guilty of performing Caesarean section more often than a ripper judgement would allow me to do to-day, and conscious that there is more in the treatment of labour in cases of contracted pelvis than the employment of Caesarean section. I am convinced that the operation of induction of premature labour has fallen into unjustifiable disrepute, and that it can be employed with success in many cases where a Caesarean section is now done.

This discussion does not embrace any consideration of the methods of inducing premature labour, for those in use to-day are perfectly simple and straightforward.

The conclusions put before you to-day are based upon an analysis of 745 cases of induction of premature labour, an analysis carried out at Queen Charlotte's Hospital, Charing Cross Hospital, and in my own private work. I should, therefore, like to thank my predecessors and colleagues at those institutions for their kindness in allowing me to use their records.

The first consideration in advising any procedure which departs from the normal is the danger to the mother of the means suggested. In this connexion the series under review contains one maternal death, which occurred from a pulmonary embolism on the twelfth day. This gives a maternal mortality of 1.3 per 1,000, which certainly absolves the method of any abnormal risk.

Next the danger to the baby must be taken into account, both as regards the delivery and as regards its chance of survival. In this series there were in all 99 foetal deaths, 56 of these being neo-natal and 43 post-natal in occurrence. This high mortality must be corrected by the subtraction of 5 cases in which the cause of death was wholly unconnected with the induction of premature labour. The causes of death in these cases were placenta praevia, foetal asphyxia, deformity of heart, exomphalos, and eclampsia. We have, therefore, 94 deaths in the series up to one month after birth, which gives a mortality of 12.6 per cent. A closer examination of the foetal mortality also brings out very clearly the enormous advantage of obtaining a natural delivery if possible. In 589 cases in this series unassisted delivery was accomplished, with a foetal mortality of 50. This gives a percentage mortality of just under 8.5 per cent. On the other hand, 132 cases were completed by forceps delivery, and of these 31 babies died before the end of the first month. This gives a percentage mortality of 23.4 per cent., amply demonstrating the danger attending the use of forceps in delivering premature infants. Yet another point worthy of mention in considering the infant mortality attending induction is the position of the baby at the onset of labour. These cases show that the incidence of posterior positions of the vertex is relatively much greater in labours resulting in the infant's death than in those cases where the child survives.

The relation between the date at which induction is carried out and the result to the baby is generally stated to be that the mortality rate drops as the date of induction advances, and this is borne out by the results in the series under review, with the exception that the inductions carried out at or near term show a greater mortality rate. This we must frankly attribute to the fact that the induction was sometimes delayed too long.

In 24 cases the method failed, and either embryotomy or Caesarean section had to be adopted. There are in the series 5 cases in which perforation was required, some of these being followed by craniotomy, and 8 cases where the labour was terminated by Caesarean section. In all these last a live baby was obtained and thrived, while the mothers all made uninterrupted recoveries.

Turning now to complications encountered, we find that the morbidity rate is no higher than that obtaining among normal deliveries. In this series 29 patients had a pyrexial puerperium, giving a morbidity rate of just under 4 per cent. In a few cases a certain amount of haemorrhage is noted to have occurred after the introduction of bougies, but this was never serious.

In 12 cases the cord prolapsed, and this accident was in this series attended by a very high foetal mortality, no fewer than 9 of the children being born dead. This prolapse seems to me to be the most important complication

from the foetal point of view, but may be attributed to the pelvic contraction as much as to the premature induction of labour.

These 745 cases show, I think, that premature induction of labour presents a safe method as far as concerns the mother, and in favourable cases gives good foetal results. It remains to suggest the application of the method in regard to, first, those cases suitable for its employment, and secondly, the choice of the time for carrying it into effect. Ante-natal examination is now an integral part of the duty of practitioner to patient, and one would assume that the first examination is carried out during the mid weeks of pregnancy. The presence of pelvic deformity is now recognized and the degree of contraction noted. If on measurement of the given pelvis the true conjugate is calculated to be  $3\frac{1}{4}$  in. or less, induction of labour is contraindicated. It is certain that with a pelvis of this size or smaller there is but little chance of delivering naturally a child of sufficient size to have any real prospect of survival, and the rational treatment will be to perform a Caesarean section at full time. When, however, the pelvis is found larger than this, the question of induction may be considered, and the next problem to be solved is the optimum time for the operation.

There is no doubt that the choice of the best time for induction of labour in a case of contracted pelvis calls for repeated careful investigations by the practitioner in charge. Two main points have to be considered—that is, the relative sizes of the presenting part and the pelvic brim, and the shape of the pelvis. In addition, but subsidiary to these, is the position of the child's head.

In order to appreciate fully the points which lead us to a decision frequent examinations are imperative. It is not too much to say that these patients should be seen every week, and that the relation between the child's head and the pelvic brim should be investigated each time. The shape of the pelvis may be of no small value in gauging the time for induction of labour. If I might generalize, I would say that a pelvis contracted in all directions presages an earlier induction than one in which the deformity consists of a flattening.

Should the contraction be oblique, the position of the occiput must be accurately known. If this be upon the contracted side, the mechanical difficulties of delivery will be greatly increased and induction should be carried out relatively early; if it be found on the wider side, the mechanical conditions are in favour of delivery, and induction may be accordingly delayed.

By far the most important clinical investigation is the determination of the coaptation of the child's head to the pelvic brim—the endeavour of the practitioner to answer for himself the question, "Will this head go through this pelvic brim?"

Whatever method be used, we endeavour by bimanual examination to obtain an appreciable descent of the head through the brim, and if this descent is achieved we can with safety consider that induction may be postponed awhile. At weekly intervals this examination is repeated until the time comes when descent is doubtful. At this stage an examination under anaesthesia is of very great assistance, for by this means the conditions present can be most fully determined. It has been my experience that examination under anaesthesia at this time nearly always leads to the conclusion that the disproportion is not so marked as was thought before the anaesthetic was given. Should this happen, it is my practice to advise induction in fourteen days' time, provided the pregnancy has advanced to thirty-five weeks. Should the result of examination be that only a small amount of movement be obtained, I would advise induction in one week—again with the same proviso as to the length of gestation. If the head cannot be made to engage at all, but there is no real overlapping at the upper border of the symphysis pubis, the indication is towards immediate induction. As was pointed out by the present Master of the Rotunda Hospital, experience brings to all of us an increased belief in what Nature can accomplish in dealing with cases of contracted pelvis, and it is this reliance on her power that enables us to wait to induce labour until the head will just not enter

the brim, always provided that we see the patient at short enough intervals.

Certain special points may also be noticed during this complete examination relating to the position and attitude of the head. For example, in dealing with a generally contracted pelvis, if the head is noticed to be well flexed and in an occipito-anterior position, induction may be safely advised, although manual efforts may not be able to produce much descent; while, to take another example, if in a flat pelvis the sagittal suture is felt to be definitely nearer the symphysis than the promontory, and the child's head more extended than flexed, it is doubtful whether induction should be recommended at all.

It may be said that these frequent examinations, and particularly the employment of anaesthesia, will be resented by patients, and even that they will refuse to submit themselves to them. I do not believe this to be true in the majority of cases, for the tendency to-day is for prospective mothers to demand ante-natal care, and protection from the difficulties of childbirth. Moreover, a frank explanation of the reasons for the frequent examinations will remove any resentment which might possibly be shown, and will prove to the patient that the object is to ensure, if possible, a natural labour and delivery. If this be gained, surely the discomfort of several ante-natal examinations and an anaesthetic is but small cost. Again, it may be urged that these preliminary investigations require time which the busy practitioner can ill afford; but in reply it is surely fair to suggest that upon the opposite side of the account we may place the saving of the time and mental wear and tear which accompany a long and difficult extraction through a small pelvis.

May I suggest, too, that in the employment of induction of premature labour we can obtain evidence of incalculable value as to the capacity of the particular uterus to deliver itself of children? The trial labour has been spoken of on many occasions, and it has very many advantages. If such a trial labour be arranged at a carefully calculated date, we are surely using it in its most advantageous form, and we shall obtain therefrom most valuable knowledge as to what one might perhaps term the capacity for delivery of a particular patient. We obtain it, it is true, at a certain risk to the life of the child, but we have the consolation of knowing that we also obtain it at a risk to the patient one-tenth as great as that involved in Caesarean section (putting the mortality as low as 1.3 per cent.), from which is gained of the possibilities of non-

The knowledge subsequent pregnancy and labour, renders the task of deciding upon the means to be adopted very much simpler. At the best we may discover that a patient is capable of delivering herself with infinitely greater ease than we either expected or hoped, and as a result we may be able to leave the next pregnancy to go to full term. Conversely, we may find more difficulty than we expected, and may have to revise the procedure on a subsequent occasion.

"Once an induction always an induction" is not a true saying. On each occasion the same care in investigation is necessary, together with a careful interpretation of the evidence gained at previous confinements. Every induction of labour, even in the same patient, must be justified by a consideration of the attendant circumstances, and the fact that a patient has had an induction before cannot be accepted as anything but presumptive evidence.

Within the last month I have had news of a patient who had her first child by induction at the thirty-sixth week in three hours from the onset of pains, her second by induction at the thirty-eighth week, and her third and fourth at full time, the last child weighing 8 lb. 2 oz. According to my investigations, she has a flat pelvis with a calculated true conjugate of just over  $3\frac{1}{4}$  inches.

Finally, the points I would leave with you are these. First, that the wider use of induction of labour in cases of contracted pelvis should be urged, and that this is especially necessary to-day in view of the widespread employment of Caesarean section. It should be urged because it is simple, safe, and unaccompanied by untoward complications and sequelae.

SEPT. 18, 1926]

# INDUCTION IN CASES OF CONTRACTED PELVIS.

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Secondly, that premature induction of labour is not to be decided upon lightly, but should be dependent upon very careful investigation and frequent examination. Thirdly, it affords the only actual test of the power of a given uterus under conditions which imply a reasonable chance of the survival of the baby. Last, but not least, it is an attempt to procure what is rightly regarded as the highest aim of the true obstetrician—a natural parturition.

## GENERAL DISCUSSION.

Dr. RHODA H. ADAMSON (Leeds) said that the question of induction of labour as a form of treatment of contracted pelvis depended in the first instance upon the degree of contraction, and secondly, upon the shape of the pelvis as regards general deformity and also the tilt of the sacrum. The type of contracted pelvis met with in the district in which she practised varied very much with the social position of the patient. Her private patients mostly had symmetrical pelvis, and if they were contracted they fell under the heading of "small round pelvis." Her hospital patients were drawn from an urbanized community, brought up under poor housing conditions and suffering from the result of infantile rickets. The infant welfare movement was in its early days when she was appointed to the staff of the Leeds Maternity Hospital fifteen years ago, and the result of its work was not yet apparent in the better physical development of their present hospital patients. They had, therefore, many cases of contracted flat pelvis as well as the simple flat variety; the classical type of small round pelvis formed only a small proportion of their hospital cases of pelvic contraction. The small flat pelvis as she had seen it was not suitable for any treatment except that of Caesarean section, as the pelvic inlet would not permit of the passage of a viable child. The simple flat pelvis had in her practice given rise to most surprisingly good results when left alone and allowed to go into labour at term, the presenting head having engaged somehow in the only diameter of an asymmetrical pelvis through which it could pass. She had a patient who was on the black list of the local supervising authority of the Central Midwives Board, having lost her first three children as a result of difficult and instrumental delivery for her flat pelvis. Dr. Adamson had had this patient under her care with her fourth and fifth labours. On both occasions she had been prepared for Caesarean section; and both times she had delivered after a few hours, the frontal region having slipped into the recess to one side of the sacrum after labour had started. In Dr. Adamson's opinion the type of case that was best treated by induction of premature delivery was one in which there was a moderate degree of general contraction, when the head could still be pushed into the pelvic inlet at the thirty-fifth or thirty-sixth week of pregnancy. It was worth remembering that the child's head tended to resemble in shape and hardness the head of its father, and that in the case of the petite primipara with a small round pelvis it was worth while having some personal knowledge of the size and build of the husband. Dr. Adamson considered the actual measurements of various diameters of far less importance than the relative fit of the presenting head at the inlet. She had no personal experience of induction before the thirty-fifth week, as she felt that at an earlier date the strain of a long labour equal to that at full term with a normal pelvis.

Dr. J. S. ENGLISH (Singapore) had always found that a careful vaginal and external examination, together with Munro Kerr's method of estimation of relationship of the head and pelvis, were of a great deal more value in estimation of the date of induction than a measurement of the exact size of the pelvis by a Skutsh pelvimeter. It frequently happened that a 7½ lb. baby was delivered through an 8.5 to 9 cm. pelvis, and in other cases a 7 lb. baby was arrested in a 9.5 to 10 cm. one. He suggested that when a physician had had any trouble with a confinement the patient should be given a history of the case in order to guide another in the conduct of her future labours.

Professor LOUISE McILROY (London) said that in antenatal work it was essential to ascertain the date of the pregnancy so far as possible, since mistakes might be made as to the exact time when induction of labour was performed. An immature infant might die in labour from prolapse of the cord, or it might be brought into the world and survive only a short time. For this and other reasons it was better to perform Caesarean section at labour. There was better contraction of the uterus, less risk of haemorrhage, and by giving labour a trial Caesarean section was often found to be unnecessary, even in cases where the head would not enter the brim until just before expulsion of the child. In one patient sent for advice as to the possibility of the continuation of pregnancy in a case of marked spinal deformity, and where Caesarean section seemed the only method of delivery possible, the patient had a normal pregnancy with the exception of a pendulous abdomen. Labour, however, unexpectedly occurred before term, and the patient was brought into hospital and delivered herself of a small but healthy child without even the use of forceps.

Induction of premature labour should never be considered before the thirty-sixth week of pregnancy, and in the majority of cases the thirty-eighth week gave good results. The difficulty in most labours in minor degrees of generally contracted pelvis as seen in London was not only in the size of the head but in the failure of flexion. If manual rotation of the posterior occiput and flexion of the head was performed in labour, or, if possible, in late pregnancy by the abdominal route, many cases of difficulty and delay in labour could be avoided. Cases of failure of the head entering the brim could be estimated to some extent, but the chief difficulty lay in cases of contraction of the outlet where complications only arose when the presenting part arrived in the cavity of the pelvis. Although a general estimate of the contraction could be arrived at there was no definite method of accurate measurement yet invented. The difficulty would always be to estimate the size of the outlet with that of the presenting part. In a case of breech with extended legs it was extremely difficult to give any prognosis as to the character of the future labour. In the majority of cases version failed when an attempt was made to bring the head into approximation with the pelvis for the process of estimating their relations. More attention should be paid to the conduction of labour. The patient should not be urged to strain or pull on any fixed object, as the work entailed caused fatigue of the uterus and loss of contractions. Sedatives should be given and labour should be allowed to take its course. If mother and child were well there was no need to hurry, no matter how busy the medical attendant was. The administration of morphine was very beneficial in avoiding fatigue; the use of pituitrin was dangerous. Post-maturity was sometimes a cause of difficulty in labour in a slight degree of pelvic contraction, and induction of labour in these cases would save a considerable number of infant lives. The size of the father's head was a very important point when dealing with a mixed race such as the Anglo-Saxon. The relative sizes of the parents was also given consideration in stock-breeding farms. In young pregnant girls Caesarean section should not be performed until after the pelvis, since the pelvis was not fully developed during 18 years of age. Repeated vaginal examinations for special pregnancy were as a rule unnecessary except for special indications. Obstetrical patients seemed to object more than gynaecological to examination. This in itself might be protective, and indicated that as few as possible should be made; abdominal palpation and external measurements were sufficient in the majority of cases. The methods of induction varied, the most satisfactory one, apart from drugs, being the flexible rubber tube. X-ray plates showed that the tube reached the fundus, and by coiling up between the ovum and the uterine wall proved a very effective irritant to the uterus.

Mr. HUNTER EVANS (Newcastle-on-Tyne) thought that Dr. Banister had established the value of induction of premature labour in cases of contracted pelvis. As one who did a great deal of ante-natal work, the practical difficulty

which he encountered was the sorting out of the borderline case. The gross case was generally obvious, but the pelvis with a true conjugate above  $3\frac{1}{2}$  inches was somewhat difficult to sift. In the multipara they could be guided by the previous obstetrical history, but the real problem was the primigravida with the borderline pelvis. If the head was above the brim of the pelvis at the thirty-sixth week a vaginal examination should be made to determine the internal pelvic measurements as well as to get the head to the brim. External measurements might be a useful guide, but the ultimate result would depend upon the fit of the head to the brim. His investigation of 150 cases of head above the brim in primigravidae with slight degree of contracted pelvis showed that about 12 per cent. came to Caesarean section. Undoubtedly a large number of these cases would have been unnecessarily induced, but induction would have saved some unnecessary sections. In his opinion the greatest trap was the asymmetrical pelvis. Where the contraction was of the simple generally contracted or the simple flat variety estimation of the fit of the head to the brim could be fairly accurately gauged. This, however, did not apply to the asymmetrical case.

Mr. L. C. RIVETT (London) drew attention to the importance of recognizing the relative proportion of the head to the pelvis. He emphatically agreed with Dr. Adamson that the size and build of the husband might have an important bearing on the size of the child. He stated that small women usually had small babies, and that in consequence the actual measurements were not as important as the proportion. He had observed several cases of very fat women, in whom he thought that fat in the sub-peritoneal tissues and in the obturator fossae might be a factor in reducing the available room in the pelvic canal, and gave details of a case he had treated by Caesarean section of a woman, aged 22, who weighed 15 st. He had noted that third, fourth, and fifth babies were often of larger size than the first two, and pointed out the importance of ante-natal examination of all multigravidae. After induction the duration of labour was an important guide when taken in conjunction with the weight of the baby. He advised that all patients in whom the pelvis was below normal should be given a note stating the duration of labour and the birth weight of the child, for the guidance of the practitioner who attended future confinements. He emphasized the importance of recording the correct weight, and described how erroneous weights might be given by the patient. He quoted some figures from Queen Charlotte's Hospital giving the foetal and neo-natal death rate after induction, showing the optimum time to be the thirty-eighth week and the great increase before the thirty-sixth week. He drew attention to the danger of allowing a patient with a small pelvis to go over time.

Mr. S. W. MASLEN JONES (Wolverhampton) stated that the previous speakers had all presumed due provision of maternity beds and supervision, and that the problem of induction assumed a different aspect when such a service was not available. He had not found the castor oil and quinine method very efficacious in inducing labour before term, and felt that the family doctor was averse to undertaking mechanical induction as a rule. He thought that induction by such methods as the stomach tube or bougies could be safely undertaken in private, as opposed to institutional, practice, and that the little trouble involved by this procedure would be more than compensated for by the ultimate saving of time and anxiety, quite apart from the avoidance of permanent after-injury to the mother and the production of an uninjured child.

Mr. A. B. DANDY (Birmingham) said that after a long experience of ante-natal work he had come to the conclusion that the actual measurement of the diagonal conjugate was of little importance, and that the most important single method of examination was "fitting the head," which he usually did at the thirty-fourth week, although it was his practice never to induce labour before the thirty-sixth week. He wished to draw attention to the fallacy of fitting a deflexed head, very often associated with an occipito-posterior position, which in a number of cases would not enter the brim of the pelvis. When, however,

the position was converted into an occipito-anterior by the pad and binder method of Buist, he had found that in a large number the head would enter quite easily. As regards the point raised by Dr. Adamson and several other speakers as to the relative size of the father to the mother, he was of the opinion that the cardinal point was the size of the paternal head, and his maxim had been that "a man with a large head should never marry a woman with a small pelvis." Mr. Danby said that in any discussion on the induction of premature labour it was of vital importance to know the methods employed in this procedure, and he hoped that Mr. Banister, in his reply, would give them details as to his technique and the length of time occupied in inducing labour. At the Birmingham Maternity Hospital it had been the custom to induce these cases with a Jaques solid rubber oesophageal tube, size 14, instead of the usual stomach tube, the technique employed being the same as that advocated by Gibbon FitzGibbon at the Robunda Hospital. In his experience it was a more certain and quicker method than employing Krause's bougies, when the average interval between the introduction of the bougie and delivery of the child was usually estimated at seventy-two hours. From an analysis of the figures of this hospital it was found that in the last 20 cases induced by the modified stomach tube method, over 35 per cent. were delivered within twenty-four hours, and 60 per cent. within forty-eight hours. In 10 per cent. of cases it was unsuccessful, Caesarean section being subsequently performed, and in no case did the induction-delivery interval exceed seventy-two hours. Touching upon the quinine and castor oil method of induction, an analysis of 38 district cases where it had been employed showed 68 per cent. of successful cases and 32 per cent. of failures. He had no record of the induction-delivery interval in this series, but was informed that in a number of cases the procedure was repeated on several occasions, and that it was most successful at or about term.

Mr. T. H. RICHMOND (Stoke-on-Trent) said that, like Mr. Maslen Jones, he was in practice in Staffordshire, where, so far as he knew, there were no maternity or ante-natal beds. Therefore they had no opportunity of making an extended investigation as to whether the patient could be allowed to deliver herself or intervention would be necessary. His method, if the woman gave a past obstetric history or there was any doubt, was to induce at the thirty-sixth week. He had had good results with the use of pituitrin at term, as recommended by Professor Blair Bell to prevent post-maturity.

The President entirely agreed, as the result of his experience at the Middlesex and City of London Maternity Hospitals, that induction of labour was far safer than Caesarean section in the cases which they had been discussing. He thought that safety was much greater than had been stated by Mr. Banister, who gave the mortality of Caesarean section as 1.3 per cent. After all, this figure had reference more to the work of experts. Medical students were so well taught nowadays that many more operated than in the past. If such a body of expert opinion as was present had declared themselves in favour of Caesarean section, naturally such advice would be relied upon, and the mortality of Caesarean section would go up by leaps and bounds, since while the induction of premature labour was a comparatively simple operation, the operation of Caesarean section required for its safe performance and result much experience and skill. The President asked Mr. Banister if he had had any experience of the administration of pituitary extract as an aid to other methods of induction. He had always fancied that the drug did not act till labour started, and yet he had heard that it was the custom to sensitize the uterus, in some quarters, with repeated small doses the week before the insertion of bougies. He had never had any personal experience of this drug in these circumstances, but he knew of a case in which bougies had been inserted to start labour, and because it did not start satisfactorily an injection of pituitary extract was given, leading to rupture of the uterus and death of the patient. Just as the death of so many children at term was due to the untimely use of the forceps, so he wished to warn practitioners against using the forceps to hasten



delivery in a labour that had been induced. Most of the deaths during premature labour that he knew of had been due to such a procedure. Nature moulded the head much better than the obstetrician could with the use of instruments. There was very little harm, so long as some progress was being made, in allowing the second stage to continue beyond the classical time, and a premature head was more likely to suffer from rapid extraction than one at term. He agreed that with an estimated conjugate of  $3\frac{1}{4}$  inches and under induction of labour was contraindicated, not only because of the great foetal mortality at birth which had been mentioned, but also from the fact, which they should all bear in mind, that, according to the statistics of the Tarnier Hospital in Paris, taking those children who were born apparently healthy, nearly 80 per cent. were dead within a year. He always tried to induce at not less than thirty-six weeks, and otherwise as late as possible up to term. Several speakers had mentioned the importance of the relative sizes of the parents. A good example of this was that in African, and probably other semi-savage tribes, difficulty due to disproportion between the head of the child and pelvis of the mother was practically unknown, and in most of the cases in which such obstruction had been encountered by medical men, it was due to a white man having impregnated the black woman. Some of the speakers had stated that they placed no reliance on external measurements of the pelvis. The commonest form of abnormal pelvis in London was that of general contraction, and the most difficult cases he had met with were in those who had not been to an ante-natal centre and in whom the head entered the pelvis, so that everything was thought to be all right. Later, however, it was found that the head would not pass out of the pelvis. He thought a knowledge of the external measurements of the outlet of the pelvis was very important. Such measurements might be very difficult or impossible to take accurately, but an idea could be obtained by a comparison with one's fist or a tape measure, and so a warning of the greatest importance might be given. He never examined a patient vaginally with the object of ascertaining the size of the pelvis before the thirty-sixth week. In the first place, no object was gained, since if the head would not enter the pelvis then it was a case for Caesarean section; and secondly, an examination before this time might be followed—*post hoc*, not *propter hoc*—by a premature labour or miscarriage, for which the doctor would surely be blamed.

Dr. RUODA ADAMSON, in replying, said that when she was not certain whether the head would enter the brim or not she generally tied a tight binder before making an examination under an anaesthetic. Quite a number of her patients were never submitted to vaginal examination at all; she preferred herself, and taught her students, to rely more upon examination per rectum. She agreed with the President that no extensive examination was advisable before the thirty-sixth week. In regard to the methods of effecting induction, she had not found castor oil and quinine effective before the thirty-eighth week. She confessed she was rather frightened at the ante-partum use of pituitrin. Up to three years ago she had used bougies, since then she had used a stomach tube. If, as sometimes happened, a patient could not be induced by these methods, the alternative was Caesarean section. It was very difficult to obtain the accurate weights of babies at birth; she had found the weight of the child generally increased up to the mother's thirtieth year and then remained stationary or decreased. She had had two patients who delivered themselves spontaneously after Caesarean section.

Mr. BANISTER, in his reply, took strong exception to the saying, "once a Caesarean, always a Caesarean." In quite a number of cases where Caesarean section had been performed for the first baby, subsequent children had been born easily with induction. With regard to contraction at the outlet, this was very definite but comparatively rare. Of 900 cases of contracted pelvis, in 8 only was the contraction at the outlet the predominant feature. A head in the vagina with the patient under an anaesthetic would enable an estimation of the condition

at the outlet to be formed, though it would not give a measurement in inches or centimetres. He looked upon a breech with extended legs occurring in a primipara with pelvic contraction as a *suo* indication for Caesarean section. He advocated external measurement of the pelvis at an early date, but every vaginal examination on the pregnant woman must be justified and no such examination should be done earlier than the thirty-fifth or thirty-sixth week. He was strongly opposed to rectal examination being used in place of vaginal. He had employed most of the methods for inducing labour. At full time castor oil and quinine gave a fair measure of success, but it was useless for the induction of premature labour. He relied upon Krause's No. 12 gum-elastic bougies, usually inserting three. With the patient in the lithotomy position, after the usual toilet had been carried out, the bougies could be easily passed directly into the cervix, which had been drawn down by a vulsellum. No douching or plugging or other after-treatment was necessary or advisable. The time for labour to be completed was on the average fifty-four hours in primiparae and forty-seven hours in multiparae. Since the introduction of the 10 per cent. solution of pituitrin he had had good results by injecting  $1\frac{1}{4}$  c.cm. every hour till 1 c.cm. had been given in cases where no pains came on within ten hours of the insertion of the bougies.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### THE FILLED DEAD TOOTH AS A SOURCE OF STREPTOCOCCAL BLOOD INFECTION.

THIS case is recorded not merely because I have so far been unable to find a similar case in the literature, nor yet because it is interesting, but with the object of discovering other cases and so establishing its identity. A symposium on this subject will be held at the Post-Graduate Hostel on October 28th, when it is hoped that cases will be brought forward either personally or in writing.

The patient was a male, aged 29. The history probably dated from May, 1919. An attack of follicular tonsillitis was clearing up, when one evening there were peculiar pains in the left ankle. The following day these had ceased, but the ankle was swollen and pitted on pressure. The patient did not go to bed until "tightening" pains of the lower part of the right chest and considerable constitutional disturbance, temperature  $101.5^{\circ}$ , ensued. No urinary symptoms or albuminuria were present. The pains in the chest gradually disappeared in six weeks, but the oedema increased, extending up the leg, but never affecting the toes. There was no further pain in the ankle nor was there effusion, though it was put in plaster for four weeks on that supposition. Many diagnoses were made, of which the most likely was thrombosis of the posterior tibial venae comites.

The tonsils were removed one month later, and the appendix, which had become acutely inflamed, four months later. During the next four years the ankle frequently showed a slight oedema, though a crêpe bandage was worn constantly and usually sufficed to restrain it.

In August, 1923, the first of the attacks of erysipelatoid occurred. A feeling of malaise and a temperature of  $101^{\circ}$  developed in about half an hour. Profuse vomiting occurred, lasting about twenty-four hours. The inguinal glands then became extremely painful, and in a further twelve hours the whole distribution of the saphenous vein was hot, painful, red, and swollen. The vein itself showed no signs of inflammation, not being hard; the affection was apparently of the accompanying lymphatics. The thigh and knee were fixed, preventing all walking. In a month the leg was quite normal.

Similar attacks occurred in June and August, 1924. In January, 1925, there was a mild attack; vomiting was much less noticeable, however. A second, even milder, attack occurred in May, when three injections of streptococcal vaccine were administered at four-day intervals; radiant heat was used during the attack. In August a very severe manifestation occurred, though vomiting and glandular involvement were slight. The leg was tender; all movements of toes and ankle were exquisitely painful; the course of the flexor tendons round the ankle was red, tender, and swollen. Mr. W. McAdam Eccles saw the case and suggested a dental focus of origin and advised having the teeth X-rayed, which was done, although unsatisfactorily.

In February, 1926, another attack occurred, but no vomiting; 40 c.cm. antistreptococcal serum was given. In April and June other attacks similar to the previous one developed. Dr. H. G. Adamson saw the patient; treatment by X rays was instituted, and the affected areas painted with a solution of silver nitrate in spirit. He advised re-examining the teeth, which was done at University College by Mr. McVillie; the films were referred to Mr. J. T. Carter. His diagnosis of an abscess at the root of the

second molar tooth was confirmed by Dr. Human, pus welling up from the infected root on removal of an apparently perfect filling. A strong antiseptic dressing was applied in July, and unless in eight weeks' time all sign of rarefaction has disappeared the tooth is to be removed. All the other teeth show large healthy pulp cavities. The tooth in question had not had root treatment, though three others had been so dealt with.

It is too early to predict a cure, but the patient has felt very much better since treatment to the tooth. One of the least explainable features was a distinct reduction in the slight permanent swelling of the ankle after an attack.

I suggest as a working theory that the first trouble was a venous thrombosis which, lowering the natural resistance of the limb, paved the way for the deposition of streptococci from the septic focus. The parts rendered vulnerable by previous attacks readily succumbed to a large dose of organisms set free from the tooth from time to time. They bore no direct relation to the first attack, which was venous in origin. The case, if it proves to be of dental origin, bears out the statement in a recent article<sup>1</sup> that it is the filled dead tooth which has not had its root treated, in otherwise healthy mouths, which is oftenest the source of constitutional symptoms.

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### A CASE OF DIFFUSE TARSTITIS.

LOCALIZED inflammatory infections of the tarsal plates of the eyelids are extremely common—for example, in Meibomian infections—but the following case of diffuse inflammation throughout the whole of a tarsal plate and confined to the plate is worthy of record.

A man, aged 22, consulted me, stating that a small swelling had appeared on the lid several months previously, but that during the month prior to the consultation it had increased rapidly. There was no pain and no tenderness. His chief concern was the disfigurement caused by the swollen lid, which was found to be greatly enlarged throughout its whole length; the swelling was slightly accentuated at the junction of the inner three-quarters with the outer quarter. Viewed from the side the lid had the appearance of a pendulous sac. The skin of the lid, which was somewhat tense, but could be easily picked up from the underlying tarsal plate, was bluish, due to compression of the venous return. The conjunctival vessels were engorged, especially over the accentuated swelling at the junction of the inner three-quarters with the outer quarter. The lower margin of the tarsal plate could be easily felt along its whole length, and the plate itself could be grasped by placing a thumb and forefinger at each end. By exerting a little pressure the plate could be felt as an elastic body with a large amount of "spring."

The accentuated swelling was incised on the conjunctival surface, but pus was not found, neither could any softened tarsal plate be removed with the sharp spoon. Hot fomentations were applied for one week, and as the swelling of the lid had not subsided it was again incised at the site of the previous incision. A small head of pus was evacuated and also a small amount of softened tarsal plate. Since then the swelling has gradually diminished, the skin folds becoming visible in two weeks.

Two months after the second incision the lid had resumed its normal colour, and only a slight enlargement could be discerned on close inspection.

The diffuse inflammation in the plate itself was doubtless due to the primary infection in the Meibomian gland.

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### OVERDOSE IN SPINAL ANALGESIA.

REPORTED cases of overdose in spinal analgesia are so rare as to be worthy of record. For inducing spinal anaesthesia I had been using Barker's solution made up in 2 c.cm. ampoules, each ampoule containing 0.1 gram of stovaine and 0.1 gram of glucose in 34 minims of fluid. The average dose for an adult was 1.2 c.cm.—that is, 0.06 gram of stovaine, varying slightly with the age and physique of the patient, and the nature and the extent of the operation. When the supply of the preparation was exhausted the dispenser replaced it by another made up according to Chaput's formula, containing stovaine 0.1 gram, sodium chloride 0.1 gram, in distilled water 1 c.cm., which was the quantity each ampoule contained. I was informed that two ampoules of the new preparation contained the same amount of stovaine as one of the older, and acted on that information in the two cases here recorded.

<sup>1</sup> E. Sprawson, *Lancet*, August 7th, 1926, p. 300.

### CASE I.

A boy, aged 11, suffering from right inguinal hernia. He received 1.2 c.cm. of the solution (that is, 0.12 gram of stovaine instead of 0.06 gram), so that he had twice the usual dose. He became pale, retched, vomited, and showed all the signs of shock; the systolic blood pressure fell to 80 mm. of mercury. On the third day after the operation he was reported to have developed incontinence of urine, and I discovered that he had retention with overflow. A catheter was passed every eight hours, and soon afterwards the patient developed cystitis and haematuria. At times there was incontinence of faeces. Evidently there was complete paralysis of the bladder, with partial paralysis of the rectal sphincter. Electricity was applied to the spine, strychnine was given hypodermically, and urinary antiseptics and tonics were administered. After three weeks, control of micturition was partially regained, the cystitis and haematuria subsided, and the general condition greatly improved. Finally he recovered complete control of the bladder and the rectum, though he was left with frequency of micturition. I saw the boy again well over a year after the operation, when he was perfectly fit.

### CASE II.

The second patient, who was operated upon the day after the first one, was a girl, aged 19, admitted with acute appendicitis and abscess formation. She, too, received an overdose, as I had not by that time discovered the error. She exhibited a similar series of symptoms to those of the first patient, except that she did not develop cystitis. She suffered, at first, from frequency of micturition, but regained control in three weeks. I recently heard from her to the effect that she was perfectly fit and well.

The interest in the two cases is that a double dose of stovaine injected, owing to a misapprehension, into the spinal theca produced severe shock with retching, vomiting, and a marked fall in the blood pressure; and temporary, but complete, paralysis of the bladder centre in the cord, resulting in retention of urine with overflow and partial paralysis of the rectal sphincter, causing incontinence of faeces.

London, W.1.

M. SOURASKY, M.D., Leeds, F.R.C.S.Ed.

### DIFFUSE ADENOCARCINOMA OF THE COLON.

THE following case of this condition occurred in our practice.

A man, aged 64, was first seen by us on July 10th. He stated that he had suffered two years ago from distension of the abdomen, flatulence, and vague pains. He was seen at that time by a surgeon who suspected colitis or malignant disease and recommended laparotomy, which was refused. He had since suffered intermittently from the same symptoms, which became more severe; he lost weight (about 3 st.) and observed lumps in the abdomen, which were described as "being here one day and gone the next." When seen by us he was weak from loss of weight and inability to take food, and suffered from pain all over the abdomen, diarrhoea, which consisted of blood-stained mucopurulent debris, and occasional sickness. The abdomen was generally distended, the bowel standing out in typical ladder pattern in both iliac fossae. A definite mass could be felt, about the size of the fist, round the umbilicus; it was elusive and receded from the palpating hand. In the epigastrium was a hard mass running transversely along the line of the transverse colon. Gurgling and splashing could also be elicited all over the colon. The abdomen was opened in the mid-line and a malignant condition was found inside the lumen of the bowel, involving the whole length of the colon from the caecum to the rectum; the muscular coat of the bowel could be freely moved over the mass inside, and polypoid masses could be felt even in the rectum.

The condition was taken to be one of a diffuse adenocarcinomatous infiltration of the mucous and submucous coats of the bowel, and the only action taken was a lateral anastomosis of the lower end of the ileum with the pelvic colon, with the idea of obviating the inevitable obstruction which must occur were nothing done.

E. V. PHILLIPS, M.R.C.S., L.R.C.P.

J. S. MACBETH, M.B., Ch.B.Ed.

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### ADRENALINE IN CARDIAC ARREST.

WE read with interest the memorandum on adrenaline in cardiac arrest published on August 28th (p. 388). A fortnight ago we had a similar experience.

A boy suffering from a Colles's fracture was given an anaesthetic. When the fracture was set, and fully a minute after ceasing to administer the anaesthetic, the boy ceased breathing and the heart stopped beating.

Artificial respiration was without result. We then injected about 1/2 c.cm. of 1 in 1,000 adrenaline solution into the heart, and in fifteen seconds it was beating again.

The boy was apparently dead for at least sixty seconds.

JOHN S. O'DONOVAN, M.B.

T. D. FITZPATRICK, M.B.

Cross Cop, Morecambe.

## MEMORANDA.

PRIMARY ABDOMINAL TORSION OF THE  
GREAT OMENTUM.

Mr. ERNEST COWELL recently directed attention to the subject of primary abdominal torsion of the great omentum. He suggested that the condition is probably not so uncommon as the literature would lead the observer to believe. In this connexion the notes of the following case are of interest.

A man, aged 46, of somewhat obese habit, was admitted to hospital after two days' illness. The onset was not acute; a dull pain began to the right of the umbilicus, and gradually increased in intensity. There was no vomiting, and the bowels acted as usual. The tongue was dirty. The temperature was 97.2° F. and the pulse rate 86. There was tenderness to the right of the umbilicus, and rigidity of the right rectus in the lower half. There was no tenderness over the gall bladder. An indefinite mass was palpable to the right of the umbilicus, and was regarded as an inflamed appendix wrapped up in omentum. Rectal examination afforded only negative information. The temperature and pulse rate were not inconsistent with the case being one of appendicitis. A diagnosis of subacute appendicitis was made, and operation performed forthwith.

Operation.—The abdominal cavity was entered through a right paramedian incision, the right rectus having been retracted medially. Free fluid, slightly smoky, was present in excess in the peritoneal cavity. The appendix was encountered, attached by the index finger upwards a mass was encountered, attached by light adhesions to the anterior parietal peritoneum, purplish-red, was extended upwards and a piece of omentum, the size of a green fig, and was undergoing red infarction. It arose from the right-hand edge of the omentum, and lay in close relationship to the hepatic flexure of the colon. At first sight it seemed to protect a lesion of the bowel, the mass was readily isolated, inflamed diverticulum. However, the mass was readily isolated, a twisted pedicle defined and ligatured, and the neerotic tissue twisted away. Finally, the appendix was removed. Recovery was uneventful, and the patient went home in a fortnight. It was not possible to untwist the pedicle to estimate the number of turns. No cause was assignable to account for the torsion of the omentum.

This case is similar to the one recorded by Mr. Cowell, and may fairly be taken to represent the type. In endeavouring to distinguish, before operation, between torsion of the omentum and acute appendicitis the following considerations are of value.

1. The onset of the illness is not usually so acute as that of appendicitis.
2. Pain and tenderness are located slightly higher than is usually the case with appendicitis.
3. With torsion of the omentum pain is not so severe, and tenderness is not so exquisite.
4. The twisted mass of omentum is, in many cases, palpable, and at a slightly higher level than a normally situated appendix wrapped up in omentum.

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INFLUENZA ANTIGEN IN THE TREATMENT  
OF ENCEPHALITIS LETHARGICA.

An interesting and valuable article by Dr. Crofton of Dublin on the causation and treatment of encephalitis lethargica appeared in the *JOURNAL* of March 27th, 1920. Dr. Crofton holds the opinion that the influenza bacillus is the cause of the disease, and in his communication adduces evidence in favour of this by giving the history of several cases of the malady which were cured by pure influenza antigen. To the perusal of his article are owing the highly gratifying results which followed the same method of treatment in the case of two patients suffering from the disease who have come under my observation.

## CASE I.

A gardener, aged 58, had an attack of influenza in the second week of May, 1924. This complaint was very prevalent in the village in which he lived; two other members of his household (wife and lodger) had suffered from it not long before. Soon after getting about he began to complain of increasing weakness, and on May 20th he was found to have diplopia. These symptoms increased and then somnolence began to show itself. He would fall asleep at any time but was restless at night. He was treated with Easton's syrup, suprarenal extract, hexamine, and influenza vaccine (Parke, Davis and Co.), of which three hypodermic injections were given. The patient grew steadily worse, and on June 25th seemed to be in a highly critical state. Incontinence of urine and faeces was present, somnolence was very pronounced, and ptosis was almost complete, the patient being unable to see anything unless an eyelid was raised. External

strabismus of the right eye also showed itself and some time later the Parkinsonian facies; both of these have become permanent. There was also marked mental aberration, the patient occasionally thinking that he was busy "working with wood." An injection of influenza antigen, made from pure influenza bacilli isolated from cases who had or had had influenza, was given that day. Three days later incontinence of urine was present only when the patient was asleep, while he had more restful nights. On July 5th the fourth injection of antigen was given. The ptosis had now greatly diminished. Five days later, when the fifth injection was given him, he could count fingers correctly, while on July 22nd slight ptosis was present in the right eye only, he was able to walk about the room, and his mental condition was normal. Incontinence of urine had occurred only once, and that in sleep during the preceding week. On July 29th he was able to sit in his room for half an hour daily. The somnolence, which had been passing off gradually, was now slight; he might sleep for half an hour or so twice a day. The incontinence of urine had completely disappeared. From this time onward the patient continued to improve, though slowly. In the middle of October he was able to walk out of doors, and in January, 1925, to resume light gardening work, which he has been able to carry on to the present time.

## CASE II.

A girl, aged 9, in the end of last May was rather suddenly seized with illness, the clinical features of which were drowsiness, severe headache, vomiting, and obstinate constipation. Some time later other signs appeared, double optic neuritis, Kernig's sign, Brudzinski's "sign of the neck," and the temperature rose to 101°. There was leucocytosis of 42,800. On June 17th the patient was seen by Dr. Turton of Hull, who performed lumbar puncture. The cerebro-spinal fluid proved to be the same as Mustretat and Rodriguez state is found in encephalitis lethargica—namely, "the study of recorded results gives a definite impression that the formula of nearly so."

On July 1st a hypodermic injection of one million pure influenza antigen was given; seven days later, when a second dose, the same in amount as Brudzinski's sign being less pronounced, Kernig's sign and Brudzinski's sign had disappeared. Four more injections followed on July 14th, 18th, 23rd, and 28th, respectively. Improvement was steadily maintained. On July 18th Kernig's sign and Brudzinski's sign had disappeared, while the child was taking its food well and putting on flesh. On July 23rd the discs were normal. After the last injection on July 28th the child was with great rapidity and the patient convalescence proceeded with great rapidity and activity. was able to walk in the garden on August 2nd, and about a fortnight later was in possession of her usual health and activity.

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STRANGULATED INGUINAL HERNIA IN AN  
INFANT SIXTEEN DAYS OLD.

Actual strangulation of an inguinal hernia during the first few weeks of life appears to be sufficiently infrequent to warrant the following record. Somewhat similar cases were reported by Dr. Simmons in the *JOURNAL* of July 24th, 1924, and by Miss Herzfeld in that of October 11th, 1924.

A male infant, born prematurely in the seventh month, was noticed to have a right inguinal hernia. This was kept reduced without difficulty, but the bowels did not act satisfactorily, and the breast feeds were not well taken. At 11 a.m. on the sixteenth day after birth the hernia was found to be irreducible, and soon after this the child vomited. Hot fomentations and postural treatment were applied, but without success.

At 4 p.m. the case was viewed by Dr. W. H. Milligan of Lytham to see the case with a view to operation. The infant, which weighed only 5 lb., was fretful and the pulse 130. In the right groin the temperature was 99° and the pulse 130. In the right groin there was a tense cystic swelling, the size of a pigeon's egg, which was obviously very tender. Gentle attempts at reduction were unsuccessful. No testicle could be felt in the scrotum on this side. In view of the danger of very light chloroform anaesthesia was undertaken by Dr. Wilfrid Milligan of normal saline was injected into each flank. The sac when opened was found to contain a quantity of dark blood-stained fluid, and about five inches of small intestine, black and covered here and there by flakes of lymph. The obstruction was relieved, and the bowel flushed repeatedly with lot saline lotion. As soon as the bowel showed a slight inclination to revive it was returned to the abdominal cavity. The sac, which was of the funicular type, was ligated and one catgut suture passed through the external abdominal ring.

The baby was put back to the mother's breast, and apart from the passage of a blood-stained motion on the following day recovery was without incident.

The interesting feature about the case was the advanced degree of strangulation—actually bordering upon gangrene—which had occurred so soon after impaction. The case also illustrates the urgent necessity for operation immediately palliative methods have failed.

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## Reviews.

### ORTHOPAEDIC SURGERY.

As far as our knowledge goes—we write under correction—the book on *Orthopaedic Surgery*,<sup>1</sup> by Mr. W. A. COCHRANE, assistant surgeon to the Royal Infirmary, Edinburgh, is the first modern handbook on the subject published in Scotland. We welcome it for this reason and also on its merits.

The first eighty-five pages deal with an aspect of orthopaedics to which little attention has hitherto been given in this country, yet the pathological results of faulty posture have been much insisted upon by a certain school of surgeons in America. Many symptoms, such as constipation and other "medical" conditions, are attributed to visceroptosis, which it is asserted is itself the result of faulty posture. On this side of the Atlantic we are inclined to regard such faults of posture as lordosis and kyphosis as the effects and not the causes of disease. Much further study will be necessary before the truth can be ascertained. In the meantime, good must come from the bringing forward of this subject in Mr. Cochrane's treatise. His experience as a clinical assistant at the Massachusetts General Hospital at Boston, U.S.A., has qualified him as an exponent of the practice of the Boston school of orthopaedics.

The second part of the book, which includes all but the first eighty-five pages, is arranged on a regional basis, beginning with the foot. The anatomy and statics of each part are adequately and clearly stated, and methods of treatment and of preparing and applying plaster-of-Paris and such appliances as foot-plates are clearly described. When he comes to treat of the pelvis and hip-joint Mr. Cochrane adopts the American view of the frequency and importance of such lesions as strain and malformation or displacement of the parts entering into or situated near the sacro-iliac joint. This, again, is a view that might be more seriously considered in this country. It seems possible that some of the bonesetters' triumphs may be achieved in cases of this sort which have been overlooked by surgeons. In reference to what is somewhat oddly called "painful back-ache," the importance of anatomical variations from normal in the lower part of the spinal column is insisted upon, and various abnormalities are illustrated by means of x-ray pictures. The radical treatment of such deep-seated conditions is, of course, difficult. A great deal of attention has been paid in New England to the question of back strain, which, whether acute or chronic, seems to afflict the American male much more often than the British. Spinal supports are not in much favour with British orthopaedic surgeons, but under the name of back-braces of various kinds they are advocated by the school of Goldthwait, and no doubt are often of use. Certainly they are pleasanter to the wearer than the plaster jackets which are also described and advised for certain cases in this book. The relation of round shoulders—"stoop-shoulder deformity," as the author and the Americans prefer to call it—with abnormalities of the scapula is an interesting subject, but one which is not illuminated by much dead-house pathology, opportunities of dissecting such cases being necessarily rare. Here again Goldthwait has insisted on the importance and frequency of such aberrations from normal. It is good that the views of a distinguished authority, which have hitherto not been much considered here, should be stated fairly, and we are obliged to Mr. Cochrane for doing so. For the rest the usual subjects of orthopaedic textbooks are lucidly dealt with in a manner which should be useful to practitioners. The illustrations are numerous and clear, and answer their purpose well.

### NEURITIS AND NEURALGIA.

On the subject of this book, *Neuritis and Neuralgia*,<sup>2</sup> Dr. WILFRED HARRIS can write as an accepted authority, and he has succeeded in giving us a work which is full

<sup>1</sup> *Orthopaedic Surgery*. By W. A. Cochrane, M.B., Ch.B., F.R.C.S.E. Edinburgh: E. and S. Livingstone. 1925. (Demy 8vo, pp. xxiii + 528; 504 figures. 21s. net, postage 8d.)  
<sup>2</sup> *Neuritis and Neuralgia*. By Wilfred Harris, M.D. (Cantab.), F.R.C.P. London: Oxford Medical Publications. London: Humphrey Milford, Oxford University Press. 1925. (Demy 8vo, pp. xiv + 418; 45 figures. 12s. 6d. net.)

of interest and information. It is no disadvantage that the text is coloured by a strong personal note, for any possible drawback on this account is amply made up by the extensive experience upon which the author draws—an experience which is freely used to enrich his clinical descriptions.

Multiple neuritis forms the subject of one chapter; in it the usual types of the disease receive adequate recognition and description, and its value is enhanced by the discussion of rare forms which have come under the author's own observation, such as that associated with haematoporphyria. The various forms of neuritis which affect the cerebro-spinal nerves and nerve plexuses are carefully described, with numerous useful clinical notes. The diagnosis and treatment of sciatica are well discussed, and the different lesions of the cranial nerves receive adequate notice in lucid and concise chapters. But the chapters which are most likely to attract the attention of the reader are those dealing with the fifth cranial nerve, the gustatory functions, and the various types of trigeminal neuralgia. In writing of the last two author can draw upon an unusually ripe experience; he has provided a remarkably full and valuable account of the nature and treatment of paroxysmal trigeminal neuralgia, in which full details of his own method of alcohol injection are given. Such rare conditions as glossopharyngeal neuralgia and geniculate neuralgia are very fully described, and in these, as in other matters, the anatomical and physiological descriptions lend an additional value. There is a chapter on migraine and allied neuralgias, which provides again many illuminating cases from the author's experience. The illustrations, both figures and photographs, are good; at the price of 12s. 6d. we think that the volume is a very valuable and informing production.

### UROLOGY.

THAT the American School of Urology is in a flourishing condition is shown by the excellent literature it has produced during the last ten years, and the latest work coming from this source, Young's *Practice of Urology*,<sup>3</sup> is yet another proof that genito-urinary surgery has fully established itself as a definite specialty on the other side of the Atlantic. Dr. H. H. Young, with whom is associated Dr. DAVID M. DAVIS in the production of these two volumes, is, of course, already well known in urological literature, and much of the contents of this book has already appeared in urological periodicals. It is, however, undoubtedly an advantage that these important contributions to the subject of urology have been gathered together. The author is particularly well known as the champion of perineal prostatectomy, and his operative results are given here. That in his hands the perineal route has justified itself would seem to be proved up to the hilt, since in seven years during the last twenty the annual mortality has worked out at zero. Even when the hospital type of patient is considered the mortality rate is remarkably low, there being 36 deaths in 1,049 consecutive cases operated on in hospital, giving a mortality of 3.4 per cent. This is considerably lower than any figure that can be furnished on this side of the Atlantic for suprapubic prostatectomy. It is also interesting to note that, contrary to what has been the experience of most British urologists, Young has found that his mortality rate definitely increases with each decade of life, so that after 75 years of age the operation is considerably more dangerous. The most frequent cause of death would appear to have been pneumonia, renal failure being second on the list. This, again, is contrary to the experience of most other surgeons, in whose mortality tables these two items appear in the reverse order. From this we are forced to conclude that the tests of renal function and preliminary treatment of the patient are remarkably successful in Dr. Young's clinic. Another chapter worthy of particular attention is that on urogenital infections, and infestations. The author and his collaborators have been carrying out at the Brady Urological Institute since 1917 a systematic search for better germicides and

<sup>3</sup> *Young's Practice of Urology*. By Hugh H. Young and David M. Davis, with the collaboration of Franklin P. Johnson. Philadelphia and London: W. B. Saunders Company, Ltd. 1925. (Sup. roy. 8vo; Vol. I, pp. 746; 482 figures, 17 plates. Vol. II, pp. iii + 738; 521 figures, 3 plates. £5 5s. net the two volumes.)

antiseptics, and in this chapter is given a summary of their results. Numerous drugs have been tested for stability, germicidal strength, toxicity, and reliability. Amongst the preparations used intravenously have been mercurochrome, gentian violet, crystal violet, acriflavine, and proflavine. Good results would appear to have been obtained from all of these preparations, but after reading this chapter and other articles that have already appeared in urological journals, the average surgeon will hesitate to take the risk that these intravenous injections would appear to entail. However, we agree with Dr. Young, and also with that great authority Erhlich, that the future hope of improvement in the treatment of many infections of the urinary tract lies in chemotherapeutics and in the discovery of an efficient disinfectant that can be administered intravenously without risk to the patient. Whatever criticisms might be directed against the author's work on this important branch of urology, no one can fail to admire the thoroughness with which the investigations at the Brady Institute are being conducted. The most important feature of the chapter on tuberculosis is an attempt to justify the radical methods adopted by the author in genital tuberculosis.

The second volume deals with less controversial matter and ends in four chapters on: "Urology in infancy and childhood," "Urology and urologists in the war," "Testicular and prostatic organotherapy," and "The study and teaching of urology." The chapter on organotherapy has been contributed by Dr. D. S. Macht, whose work on the internal secretion of the prostate is well known on this side of the Atlantic.

We must not conclude this review of Dr. Young's book without referring to the excellent illustrations and coloured plates with which it is provided. Like the majority of American medical publications, a certain lavishness has been shown in this respect, but although the numerous illustrations must add materially to the cost of production and the price of the book, they undoubtedly assist the reader. In conclusion, it may be said that, although many will disagree with the opinions expressed by the author in dealing with some of the more controversial points in genito-urinary surgery, no one can rise from the perusal of these volumes without a feeling of admiration for the thoroughness and skill with which they have been prepared. Young's *Practice of Urology* will take its place with Cabot's *Modern Urology* as one of the two most important American works on genito-urinary surgery.

#### DYSTROPHIES AND DIARRHOEAS OF INFANCY.

PROFESSOR LANGSTEIN has written a short book on dystrophies and diarrhoeas in infancy,<sup>4</sup> and in it he has included all the chronic nutritional disorders, a subject which has produced a cloud of theories which have only served to darken knowledge. Dr. Langstein's aim in writing his book, which he says is the fruit of fifteen years' clinical experience, is to simplify both the clinical pathology and the treatment of these conditions. As to classification and nomenclature, he is not satisfied with the scheme of Czerny and Keller based on etiology and comprising the three factors of food, infection, and constitution, nor with that of Finkelstein based on clinical features, and divided into disturbance of balance, dyspepsia, decomposition, and intoxication. He falls back upon a simple clinical division into the group dystrophy where wasting is the predominant feature, and the group diarrhoea where that is the chief symptom. In this simple classification he follows the recent trend of opinion both in Germany and America, and he justifies the caution and conservatism of the British school which has always hesitated to accept the theoretical and very complicated views of the subject which have been put forward in Germany. Fortunately his aim at simplification does not stop at classification, but extends to treatment. He ridicules the employment of complicated food formulae and of numerous varieties of milk foods. Either for the healthy or the sick infant he finds a complete system of dietetics in two simple dilutions of

milk (with the addition of sugar), in buttermilk, or in human milk.

The book falls naturally into the two broad clinical divisions he has chosen, and in each he deals in an orderly way with pathogenesis and causation, with the clinical features and their degrees of severity, and with treatment. An important and valuable feature is the inclusion of a considerable number of typical cases, which are illustrated by very complete clinical charts showing the essential data in a graphic form, and also by excellent photographs of the babies before and after treatment. These case records and photographs make the book more accessible to those who have difficulty in reading the German language. Further, the book is also unusual in an introduction which describes the healthy or eutrophic baby, again with good photographs, and thus furnishes the essential foundation of physiology. It is a noteworthy contribution to a difficult subject, especially in bringing clearness and simplicity where before there has been much complication and obscurity; and also in giving a sufficient number of case records by means of which the views and the results of the author may be examined and tested.

#### AN OPHTHALMIC BIRTHDAY PRESENT.

EDWARD JACKSON is the doyen of ophthalmic surgeons in the United States of America, and in honour of his seventieth birthday some three hundred American ophthalmic surgeons have presented him, as a token of their appreciation of his distinguished and unselfish services to ophthalmology, with a volume of contributions to the literature of that subject. It bears the title *Contributions to Ophthalmic Science*,<sup>5</sup> and has been edited by Drs. William H. Crisp and William C. Finnoff. Dr. G. E. de Schweinitz introduces the scientific papers by a sketch of the life and work of Dr. Jackson. He is a native of Pennsylvania, and after gaining some experience elsewhere became professor of ophthalmology in Philadelphia. Some years later he went to Denver, and became professor in the University of Colorado. He has been a great teacher and a prolific writer. At the end of the volume is a bibliography of his contributions to ophthalmology and general medicine, which fills fifteen pages of closely printed titles; the first is a single paper in 1882 on mydriatics, and each succeeding year the number increases until in 1925 the titles fill nearly a quarto page. He wrote books also, and edited the *American Journal of Ophthalmology*. He possesses a trained mathematical mind, and is deeply versed in physiological optics; so that he was able to apply theory to the elucidation of the practice of retinoscopy and muscle balance when these were mysteries. Withal he is intensely practical, as witness his lecture (the Jacob Lambert Lecture) on "The prevention of blindness by good lighting."

To review so many as forty communications which form the subject-matter of this tribute would be impracticable. Perhaps those which make the strongest appeal are the following: "Studies in ocular fatigue," by Conrad Berens, L. H. Hardy, and H. F. Pierce is a fascinating piece of research. "The general management of incipient cataract in adult life," by Luther C. Peter, may well be studied by all ophthalmic surgeons. The author is convinced that improvement in vision, where there are only the earliest signs of striae, can be obtained by subconjunctival cyanide injections followed by the instillation of Dor's solution; well formed opaque striae cannot be absorbed by this method. "The cataract operation of election," by L. Webster Fox, is suggestive; he has tried all forms of operation, and after much experience concludes that the method of the linear extraction with iridectomy and capsulotomy is the best and safest.

But there are many other papers of interest, and very many fine illustrations. The book is worthy of its dedication to the veteran ophthalmologist. Dr. Edward Jackson must be proud to have elicited such a tribute from his friends.

<sup>4</sup> *Dystrophien und Durchfallkrankheiten im Säuglingsalter*. Wegweiser für den Praktischen Arzt von Dr. Leo Langstein. Leipzig: G. Thieme. 1926. (Roy. 8vo, pp. 207; 73 figures, 31.14; bound, M.16.)

<sup>5</sup> *Contributions to Ophthalmic Science*. Dedicated to Dr. Edward Jackson by his pupils and colleagues in the United States. Menasha, Wisconsin: George Banta Publishing Company, 1925. (Sup. roy. 8vo, pp. xiv + 319; illustrated.)



## "ANNALS OF MEDICAL HISTORY."

THE summer number of the *Annals of Medical History*<sup>6</sup> opens with an article by Dr. Theodore H. Bast on the life and time of Adolf Kussmaul (1822-1902), whose impressive portrait appears on the cover, and whose death-bed is reproduced as the frontispiece. His name, signifying "kissing mouth," was thought to be a handicap to professional success, but he declined any change, and declared that he was descended from the great Oribasius, and, indeed, used this name for some of his privately published poems. In his article on medical numismatics Dr. Fielding H. Garrison deals in a charmingly learned manner with medals, medical coins, plaques, jetons, touch-pieces, and tokens, and pays a tribute to the skill of Professor Tait Mackenzie. To those intending to become surgeons Dr. J. H. Gibbon holds up the example of Samuel D. Gross, who was a prodigious writer, and by what he published did much to make American surgery respected abroad. In his account of pioneer medicine in Western Pennsylvania Dr. Theodore Diller shows how many of the medical men in the eighteenth century were also military officers, and provides some fine portraits. Dr. W. B. Howell's article "Concerning some old medical journals" is inspired by a study of the first volume of the *Lancet*, the centenary of which was celebrated in 1923. Dr. Joseph Walsh, in a well illustrated article, gives a short history of the career, with five portraits, of Galen, and describes his discovery of the function of the recurrent laryngeal nerve. The two remaining articles deal with Chinese medicine; K. K. Chen and S. H. Ling supply interesting accounts of the great surgeon Hua Tu (115-205 A.D.), who, by rendering patients unconscious by means of an anaesthetic mixture, was able to do laparotomies and even end-to-end anastomoses; and of Pen Tsao, who doubled the number of drugs in use. Dr. Wang Chi Min of Hangchow describes China's contributions to medicine in the four periods of the ancient or legendary times, the historical or classical, the mediaeval or controversial, and the modern or transitional.

## NOTES ON BOOKS.

PROTOZOÖLOGY is one of the branches of science which have progressed so rapidly in recent years that their devotees are in danger of having general principles obscured by details. Professor CALKINS, who has recently published a well written and well illustrated book entitled *The Biology of the Protozoa*,<sup>7</sup> considers that, although many advances have been made in taxonomy, morphology, cytology, physiology, pathology, and so on, there is "no common aim, little common background, and no common point of view through which these many aspects of protozoa study are woven together in any definite way to make a science of protozoology." His book is accordingly an attempt of one of the best known American teachers of the subject to provide this unifying background and common point of view; in it he discusses the general structure, physiology, reproduction and fertilization, and vitality of the protozoa, and the special morphology and taxonomy of the four great groups of the phylum—the Mastigophora, Sarcodina, Infusoria, and Sporozoa. Many keys are given, and many succinct definitions provided. The whole of protozoology is surveyed—not merely the parasitic forms—and so the book is one primarily for the zoologist. The medical biologist, however, will learn much from its perusal, and will gain that sense of perspective which is so necessary for a complete understanding. The tendency to specialize in the parasitic forms only, at the expense of the more natural free-living types, leads to many misunderstandings and misinterpretations, and can only be corrected by the wider knowledge supplied by more general works such as this.

VOLUME VII<sup>8</sup> of the archives published by the School of Tropical Medicine at Lisbon will doubtless be useful as a work of reference, but does not contain much of interest for the practitioner. Of the four contributions in it the first, which fills more than four hundred pages, gives an account of the

climate of Portuguese India, with a wealth of detail as to the physical geography, geology, and vegetation, and of the temperature, humidity, and other meteorological observations made in various regions and districts. These are carefully tabulated, and may be valuable therefore from a statistical point of view, but it seems that a good deal of unnecessary information is included—for example, the degree of mist month by month since 1860. The compilation must have been a labour of love, for to the general reader it is about as interesting as Bradshaw—a work which it in some respects resembles. The second article is a report on the prophylaxis of paludism in the Portuguese colonies, which was presented at the International Malaria Congress at Rome. This consists of general remarks, acquiring added interest from the quaintness of the expressions, being apparently a verbatim translation of Portuguese into English. The third is a contribution to the history of malaria in Portugal, and is divided into three parts. The first deals with the disease prior to the fifteenth century, the second with the period from the fifteenth to the seventeenth, and the last brings the subject down to the early years of the second half of the nineteenth century. In the final section is given a summary, in the form of minutes drawn up by Professor Kopke, of the proceedings of the International Congress on Sleeping Sickness.

Dr. CAROLINE W. LATIMER has revised her book entitled *Girl and Woman*,<sup>9</sup> the first edition of which we reviewed on April 9th, 1910 (p. 878). The book is written in simple language, and has a popular appeal, inasmuch as it discusses the physical, mental, and moral disturbances of girlhood, the daily life during school-days and after, personal hygiene, and such special subjects as cardiac disability in youth, the inheritance of insanity, and instruction on matters of health and sex.

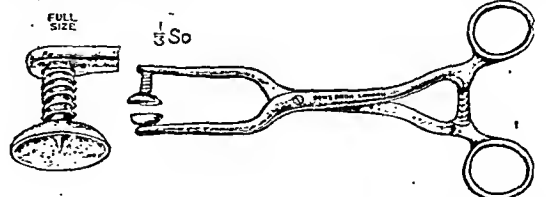
Dr. J. J. SCANLAN has reprinted in a small book, under the title *Medico-Legal Factors in Accident Insurance*,<sup>10</sup> three of his contributions to medical newspapers. He advocates the adoption under the Workmen's Compensation Acts of a schedule of fixed amounts of compensation for specific injuries. At the same time, he seems to admit that it is very difficult to set up a percentage scale of incapacity, though the Ministry of Pensions assesses various injuries in terms of money for gratuities or in terms of percentage incapacity for life pensions. The second article presents some medico-legal aspects of general practice; and in the third the art of medical assessing is discussed. Dr. Scanlan's style is disjointed, and his aim is not always clear. His merits are brevity and occasional appropriateness in illustration.

<sup>6</sup> *Girl and Woman*. By Caroline Wormley Latimer, M.D., M.A. With an Introduction by Howard A. Kelly, M.D. New edition. New York and London: D. Appleton and Co. 1926. (Cr. 8vo, pp. xviii + 331. 7s. 6d. net.)  
<sup>7</sup> *Medico-Legal Factors in Accident Insurance*. By J. J. Scanlan, L.R.C.S. and F.R.C.P. London: Post Magazine, 9, St. Andrew Street, E.C.4. 1926. (Cr. 8vo, pp. 27. 1s. net; post free, 1s. 2d.)

## PREPARATIONS AND APPLIANCES.

## Gland-holding Forceps.

Dr. WILLIAM ANDERSON (assistant surgeon, Aberdeen Royal Infirmary) writes: In removing encasing tuberculous glands it is frequently difficult to obtain a firm hold by the ordinary gland-holding forceps, and artery forceps tend to tear the capsule, thereby soiling the wound. The forceps here illustrated, designed



by Mr. L. G. Walters, medical student, Aberdeen University, and made by Messrs. Down Brothers, Ltd., London, has proved to be very helpful for this purpose. It consists of two cups, which on application grip the gland, and by further closing of the handles the gland is transfixed by a pin on which the upper cup moves. As the cups are closely applied to the gland, leakage of the contents is prevented, and a very satisfactory hold is obtained by the transfixing pin.

## A Sight Exerciser for Children.

Dr. Kenneth R. Smith, formerly of the R.A.F. Medical Service, has designed a simple apparatus for exercising the sight of children. He was led to its construction by the success of sight-training in the treatment of heterophoria in the Royal Air Force. Accepting Worth's observation that the vision of infants is monocular, and that binocular vision develops gradually in the first six years of life,

<sup>8</sup> *Annals of Medical History*. Vol. III, No. 2, June, 1926. Edited by Francis R. Packard, M.D. New York: Paul B. Hoeber, Inc.; London: Baillière Tindall and Cox. 1926. (8 1/2 x 12 1/2, pp. 95-211; illustrated. Subscription in Great Britain £2 2s. per volume of four numbers.)  
<sup>9</sup> *The Biology of the Protozoa*. By Gary N. Calkins, Ph.D. London: Baillière, Tindall and Cox. 1926. (Med. 8vo, pp. ix + 233; 238 figures. 35s. net.)  
<sup>10</sup> *Arquivos de Higiene e Patologia Eritéica*. Vol. VII. Lisbon: Pap. e Tip. Casa Portuguesa. 1925. (Med. 8vo, pp. 556; illustrated.)

Dr. Smith concluded that the development might be assisted and squint discouraged by an apparatus which would compel the child to use both eyes. A child's picture book, or an elementary lesson-book, or a card of letters of the alphabet, is supported on an adjustable book-rest. To this book-rest is connected, by a hinged attachment, a wooden guiding rod, which can be moved up and down but not laterally. The guiding rod terminates in an eyepiece which is of one of two forms. One form is a blackened vertical fin, somewhat like the tail of an aeroplane, behind which a notch to rest on the bridge of the nose keeps portions of the fields of vision of the two eyes separate. The other form resembles the eyepiece of the stereoscope, but without prisms or lenses. When a child looks through either eyepiece, it is only by binocular vision that it can see the whole picture or the whole series of letters. Of three letters in a row, with the first eyepiece it will see the left-hand letter with the left eye, the right-hand letter with the right eye, and the middle letter with both eyes. With the second kind of eyepiece it sees the left-hand letter with the right eye, the right-hand letter with the left eye, and the central letter again with both. In this way, Dr. Smith says, the tendency of vision in one eye to inhibit vision in the other—a tendency which exists up to the end of the sixth year of age—is neutralized. The child's attention is compulsorily attracted to that part of the field of vision which is not visible to the other eye; and the difficulty of getting a child to see with the squinting eye is overcome. Errors of refraction should, of course, be corrected. The child may be given a pencil and a piece of paper and told to copy the letters or figures which he sees without looking at his hands. Children who can read should read aloud when using the exerciser. Children of 3 or 4 years of age, it is said, use the exerciser easily. The exercises should be stopped or varied when the child's attention begins to flag.

#### Measurement of Ultra-violet Radiation.

Messrs. H. D. Griffith, B.A., and John S. Taylor, M.B., Ch.B., have devised a cadmium photo-electric violet radiation intensity. To measure for scientific purposes a material must be of light of the wave-length responsible. Cadmium exposed behind a quartz window fulfils this condition. Cadmium is completely insensitive to visible light of a wave-length greater than 350 mμ, while the quartz window cuts off all radiation of a wave-length less than 200 mμ. The maximum sensitivity is, approximately, at 300 mμ. The photo-electric cell is glass-walled and has a receptacle or side tube blown on to it. One end of the cell is closed by a quartz window. A microscopical cover-glass shields the inside of the quartz window, while a globe of cadmium introduced into the receptacle is distilled so as to cover part of the glass wall of the cell with a layer of the metal. When the highly evacuated cell has been prepared the cadmium globe and the cover-glass fall down into the side tube, and the cell is filled with inert gas at low pressure. A plate inside the cell serves as the photo-electric electrode, and the rate of loss of charge is measured by an electroscope. The time between charge and discharge is proportional to the intensity of the ultra-violet radiation falling on the cell. The apparatus is made by Watson and Sons, Ltd., 43, Parker Street, Kingsway, London, W.C.2.

## THE STATE OF THE PUBLIC HEALTH.

### SIR GEORGE NEWMAN'S REPORT FOR 1925.

ENGLAND AND WALES.

[Second Notice.\*]

#### GENERAL EPIDEMIOLOGY.

ENTERIC FEVER (including paratyphoid) was less prevalent, 2,779 cases being reported in 1925, as against 4,121 in 1924, 3,211 in 1923, and 2,414 in 1922. There was an increased incidence of both scarlet fever and diphtheria; in the first case the notifications numbered 91,362 in 1925, as compared with 84,654 in the previous year; while diphtheria notifications rose from 40,009 in 1923 and 41,980 in 1924 to 47,720 in 1925. The diphtheria death rate continues to fall. In 1911, of every 1,000 persons attacked 104 died, whereas in 1925 the death rate was only 58. This reduction is attributed partly to decline in the severity of the disease and partly to improved methods of diagnosis and treatment. As in the previous report, reference is made to the prevention of diphtheria by immunization. In the preparation of the immunizing mixture toxin has now been replaced by toxoid, which is toxin treated by formalin so as to become non-toxic while retaining immunizing powers. A toxoid-anti-toxin mixture is at present being extensively employed; it has proved to be effective and free from any danger of loss of potency or dissociation of the antitoxin constituent. In the early part of the year, as the result of a survey by the Ministry, it was found that 4,528 children and adults had been treated by the Schick method in fourteen different schools. Most of those found positive were immunized, and

in every case the schools had been free from epidemic diphtheria. Only two mild cases had occurred in treated children, and six in Schick-negative children who had not been immunized. Sir George Newman states that a small percentage of children seem to be unable to develop and retain immunity, but in these any attack of diphtheria is slight. He expresses surprise that there are still many hospitals for infectious diseases in which nurses are allowed to attend diphtheria cases without having been offered the advantage of becoming protected by immunization. He adds that one large authority calculated that the total cost to the hospital of each nurse who contracted diphtheria was £28 10s., while the cost of immunizing a nurse was 2s. 2½d. It has not yet been possible to ascertain how long the protection afforded by immunization lasts. Deaths due to influenza and pneumonia decreased, the respective figures being 12,721 and 36,990 in 1925, as compared with 18,926 and 38,970 in the previous year. Sir George Newman considers that at present the medical prophylaxis of influenza is unreliable, vaccines, throat gargling, and nasal douching having been found unsatisfactory.

#### Measles.

The number of deaths attributed to measles and rubella in 1925 was 5,379. Sir George Newman explains that since there is at present no effective means of preventing or controlling either of these maladies, compulsory general notification would be of little value. In areas where the essential point in treatment—good nursing—is available in the homes or provided by the local authority, the Ministry welcomes the adoption of notification. A short account is given of the attempts made to discover the cause of measles since Francis Home in 1759 tried, with doubtful success, to cause experimental infection in man, nor were those who followed him in this line of research—Wachsel (circa 1809), Speranza (1822), Katona (1842), McGirr (1850-51), and Bufalini (1869)—more fortunate, though Hektoen in 1905 seems to have produced a mild form of disease. It is doubtful also whether it can be conveyed to animals, though an atypical form has been produced. The conclusions at present are that uncomplicated measles is a mild and non-fatal disease, due to a non-filterable virus which has not yet been isolated, but which is present during the first thirty hours of the eruption in the buccal and nasal secretions, and also in the blood of patients. The gravity and high mortality of measles seem to be due to the associated streptococcal, pneumococcal, and influenzal infections. The serum of convalescent patients has been believed to have a prophylactic value in some cases, but the immunity is apparently very transient (two to three months, according to Zingher), and the supply of such serum is too limited to permit its employment on a large scale in epidemic periods. Degwitz has reported the preparation of a prophylactic serum from sheep, and it is stated that the Ministry, in conjunction with the Medical Research Council, is watching his investigations closely.

#### Encephalitis Lethargica.

In 1925 notifications were received of 2,635 cases of encephalitis lethargica with 1,372 deaths, as compared with 5,039 cases with 1,467 deaths in 1924, and 1,025 cases with 531 deaths in 1923. It is believed that, though these figures do not reflect accurately the true case incidence of the disease, yet that each year the number of cases wrongly diagnosed as being encephalitis lethargica is decreasing, and that an increasing number of mild or atypical cases is being included in the returns. The figures of the seven years during which it has been notifiable gave an average death rate for the period of 51.2 per cent., and suggest that a larger proportion of those attacked are ultimately killed by it than is indicated by the current records of hospitals or particular local epidemics. The disease appears to be more prevalent during the second quarter of the year. The proportion of patients who sustain some permanent injury of the mind or body remains high. Provision has been made recently by the Metropolitan Asylum Board for the special treatment of such cases, and hope is expressed that further accommodation of this kind will come into existence throughout the country.

\* First notice, BRITISH MEDICAL JOURNAL, September 11th, p. 431.

*Cancer.*

In the course of the last thirty-five years the cancer mortality has doubled, and during the past five years, with the exception of 1922, there has been an annual increase of the death rate amounting to 30 to 40 per million of the population. Sir George Newman agrees that part of this increase is due to improvements in diagnosis and recording the causes of death, and also to a larger proportion of persons surviving till the "cancer age," but he believes that there is also an appreciable increase of the disease. It is held to-day that cancer is due either to a specific exogenous infection or to some permanent change in the cell nutrition or metabolism. After referring to the researches of Peyton Rous, and of Gye and Barnard, it is added that such observations only constitute one stage in the vast field of research necessary before an effective preventive weapon can be forged. An outline is given of the activities of the Departmental Committee on Cancer, the British Empire Cancer Campaign, and other organizations, and the need of statistical investigation and public education being undertaken more extensively by local health authorities is emphasized.

*Tuberculosis.*

The prominent position still held by tuberculosis as a problem of public health is shown by thirty-one pages of the report being devoted to this disease. Notification and the examination of doubtful cases are generally receiving increasing attention, but examples are given of some areas which are still remiss in these respects. In a general review of the tuberculosis position in which reference is made to his previous survey in 1920, Sir George Newman indicates five great influences in operation. Increased attention to sanitary reform, factory legislation, child welfare, and predisposing diseases coincides with an advance in the social and communal health since 1851. There has been a general spread of knowledge about the contagiousness of the disease, especially since 1881; special measures of prevention and treatment have been employed, and there has been an increase in the immunization and resistance of the population as a whole. Looking forward, he emphasizes the importance of educational work, and mentions in this respect the new Public Health Act (1925), which gives increased powers to local authorities to provide public lectures and demonstrations. He considers that the community generally needs at present to learn the vital importance of seeking skilled advice as soon as there is the slightest suspicion of the lungs being affected, and of accepting treatment as soon as recommended, instead of waiting until the disease has sapped the working capacity; the treatment should be continued as long as ordered, and not be interrupted by a return to work as soon as the obvious signs have disappeared. Sir George Newman then gives an account of the tuberculosis medical service, including in it general practitioners, school and tuberculosis medical officers, medical superintendents of the various residential institutions, and medical officers of health. A table is given to show the nature of the controlling authorities of the 474 hospitals and sanatoriums approved by the Minister of Health for the treatment of tuberculosis, with over 21,000 beds. Local authorities have the charge of 428 dispensaries and voluntary organizations of 55. Considerable importance is attached to occupational treatment, and a report on special vocational training centres appears as an addendum to this section. The difficulties of this work are frankly admitted, and it is recognized that patients so trained can, as a rule, be employed subsequently only by an *ad hoc* organization. The last of the training centres for tuberculous ex-service men carried on in co-operation with the Ministry of Pensions closed in April, 1925. Through these centres 1,252 men had passed, of whom 996 were resident in England. The extent of success was diminished by too many patients having been received with extensive or active disease for lasting benefit to be gained. Of the 996 patients 612 completed the course of training satisfactorily, 134 failed for medical reasons, and 250 for non-medical causes. The after-history of 574 of the 612 fully trained patients is available, and it is

shown that 25 per cent. were incapacitated within twenty months. From the industrial point of view it appears that only 7 per cent. of the 996 men have materially benefited, in spite of receiving treatment allowances during training, pensions subsequently, and in many cases money grants for tools and equipment; it is therefore concluded that the extension of a scheme of this kind to the civilian population would be inadvisable.

*MATERNITY AND CHILD WELFARE.*

Work under the Maternity and Child Welfare Act (1918), being permissive and not statutory, varies considerably in different districts, and financial considerations have also an important bearing on such questions as the extension of established schemes or the inauguration of new ones. The maternal mortality rate has increased from 3.70 to 3.86 per 1,000 births. Ante-natal work is in progress at 675 centres, but it is still the case that skilled supervision of pregnancy is neither requested nor received by the great majority of women, and so there is at present little hope of a substantial reduction in the maternal death rate, or in the amount of injury and disability so frequently associated with child-bearing. The hope is expressed that greater use will be made of ante-natal clinics established as part of maternity and child welfare schemes, and associated with maternity institutions for consultation and treatment. Attention is also directed to the importance of recognizing venereal disease in the course of maternity and child welfare work. There are now 146 institutions in England recognized by the Ministry for maternity work, and containing 2,216 beds. Reports from 116 recognized maternity homes, excluding voluntary hospitals, show that during the year under review 21,559 women were admitted for confinement or observation; 17,459 were delivered by midwives, and 3,930 by medical practitioners. There were 46 cases of notified puerperal fever in these homes with 14 deaths, and 96 maternal deaths occurred from other causes. In view of the expense attached to the upkeep of a maternity home and the preference of many women for confinement in their own homes, it is recommended that more attention should be given to domiciliary midwifery, and assistance be provided by local authorities in necessitous cases in respect of payment for the midwife's services, contingent upon there having been ante-natal supervision by the midwife or at a maternity centre. Local authorities have previously been invited to consider the provision of sterilized dressings, pads, and towels, but it appears that there has been little response except in Birmingham and Blackburn. During the puerperium also skilled nursing is very necessary.

Recognized infant welfare centres number 2,195, of which 561 are controlled by county councils, 861 by local sanitary authorities, and 773 by voluntary organizations. Establishments for the orthopaedic treatment of children have been approved in 17 county areas, 11 county boroughs, and 15 other areas, while in other parts of the country arrangements have been made for treatment at orthopaedic hospitals. It is urged that there should be no artificial demarcation, so far as treatment is concerned, between the child of pre-school age and the child at school. Increasing attention is now being directed to the mental health of the child, especially with a view to build up adequate self-reliance, independence, and emotional control; it is recognized that the mental health of adults is largely determined by influences operative in early childhood. Sir George Newman states, however, that in maternity and child welfare work such psychological considerations still receive too scanty recognition, and that few, if any, local authorities have considered the possibility of the practical application of psychology in this connexion. He thinks that the child's mental health should be no less a matter of national concern than its physical health, and believes that there is evidence that the principles governing the preservation of mental health can be given practical expression. He adds that the early signs of mental ill health in children can be recognized and their causes traced and treated. Parents can be enlightened on these matters by instruction and propaganda.

(To be concluded.)

## NOVA ET VETERA.

### FRACASTORIUS.

THE readers of Dr. Paul de Kruif's witty book *Microbe Hunters* will find there many and happy illustrations of the extreme futility of both discussion as to "priority" in scientific research and the award of championships. Was Koch a greater man than Pasteur? is as idle a question as, Was Shakespeare a greater poet than Aeschylus? One might indeed go much further and maintain that in scientific investigation, the emotional element, the appeal, not to cold reason, but to the dramatic instincts of mankind, has had much more to do in the making of scientific history than we like to admit.

The place in history of Hieronymus Fracastoro illustrates this. Fracastoro has secured an immortality of the same kind as that of Brook Taylor. Very few educated men have never heard of "Taylor's theorem," but even of those who could correctly enunciate that theorem, only a small minority know anything more of the defunct Taylor than that it was his theorem. Probably even more people have heard, or rather read, the name of Fracastoro, since that sinful curiosity upon which Samuel Johnson commented must have led millions to turn up in a dictionary the word "syphilis," where they have found that "the word is borrowed from the name of a figure in Fracastoro's poem, *Syphilidis Libri III.*" That little spar, one word of a Latin poem, has saved the physician of the Tridentine Council from the waters of oblivion.

Fracastoro's poem was published in 1530, when he was 47 years of age; he lived another twenty-three years and was a voluminous writer. But, with one exception, no work of his other than the poem has been reprinted for more than a century. The exception is a treatise on *Contagion and Contagious Diseases*, which was first published in 1546. Of this book two versions have been issued within our generation. In 1893 Dr. Léon Mennier of Paris brought out a translation into French (with a reprint of the Latin text), and in 1910 an abridged German translation, by Professor Viktor Fossel, was issued in the series of *Klassiker der Medizin* edited by Professor Karl Sudhoff. Fracastoro's Latin prose has no special grace, so that nothing is lost by reading a translation. It is, however, better to study him in Mennier's edition because Fossel's interpretation of the phrase "trifling abbreviations" (*geringfügige Kürzungen*) is rather generous, and all might not agree with him as what really are "interpolations of altogether unessential matters."

The historical importance of the book is this: that Fracastoro was the first writer to state with precision the biological doctrine of contagion. He first postulated a living *contagium* capable of propagation. Fracastoro was not of course the first to perceive that diseases spread from person to person; that had been recognized much more than a thousand years before his day; nor did he even accept the logical conclusion of his own reasoning. Thus, although he is satisfied that syphilis is usually spread by contagion, he shrinks from accepting that as a universal explanation, for "it would have been impossible that the contagion, which in itself is a slow business and not readily conceived, should have spread in so short a time over so great an area." Yet the logical distinction between Fracastoro's doctrine and the traditional doctrine is clear. In none of the ancient writers is there a hint that they conceived of contagion as more than the passing on from person to person of an unchanged something; there was no question of an active part played by the recipient of contagion—he was a mere conducting medium. Fracastoro had a clearer insight. He likened contagion in disease to the rotting of fruits in contact.

The process was, he thought, analogous to a putrefaction. Hampered as we all must be by the common associations of words, he was troubled by the associations of the word he used, *putrefactio*, but he was striving to express the idea of fermentation, and actually used the illustration of the souring of wine. What happened, he said, was that *seminaria*<sup>1</sup> were conveyed from one person to another, and these germs, "which possess the property of propagating and begetting their like," are the essential factors of contagious disease. Hence the essential difference between poisoning and contagion. The poison can destroy but it cannot initiate a putrefaction—that is, a fermentation. The differences between diseases conveyed by direct contact, by fomites and through the air, are referred to differences in structure and viability of the germs. In the sixth chapter of his first book, Fracastoro definitely contrasts the biological and the metaphysical standpoints. The thesis is that "The cause of contagions taking effect *ad distans* is not to be referred to occult properties."

"Those who invoke occult properties," he writes, "extricate themselves easily from these difficulties, all they have to do is to explain the whole of such contagions by reference to these properties, so that here and in other matters, they can rest quite happily and free from any trouble." He then proceeds to show how idle are these metaphysical speculations. Nothing which is a "spiritual quality" will help us to explain the facts that in contagions "not only is there a putrefaction but from the original germs others are begotten and propagated similar to the first in nature and quality (*natura et missione*)."

Such was the teaching of Fracastoro in 1546, and, making the necessary allowance for differences of vocabulary and the occasional use of illustrations which are fictitious, there is hardly anything in his exposition which could not be taught to medical students in 1926. Shall we, then, say that not to Pasteur and Koch but to Fracastoro belongs the credit of the germ theory of disease, and that we have ignorantly given to men of our own time that which rightfully belongs to our ancestors? If we endeavour to move the "previous question" and assert that Fracastoro only guessed what Pasteur proved, the *laudator temporis acti*, particularly if he has read Dr. de Kruif's book, will most assuredly retort that Pasteur frequently reached correct and enormously important conclusions by processes which the modern statistician, logician, and bacteriologist, who agree on so few topics, would agree in regarding as hopelessly insufficient. The right answer to the question is, we believe, this: there is no such thing as an absolute scale of values in scientific truth. We must judge everything pragmatically. Fracastoro may have been, perhaps was, as great a genius as Pasteur, but the world actually owes little to Fracastoro and much to Pasteur, for the seed Fracastoro sowed fell upon stony ground and that sowed by Pasteur upon good ground.

It is perhaps true that many of the most important of the results which we attribute to the application of the experimental method might have been deduced by strict reasoning from natural observation. But it is a matter of historical fact that until the experiment (very often a quite inconclusive experiment) has been made, the logical deduction fails to convince. Thousands of able physicians in the days before experiment must have read Fracastoro; to none of them did his argument seem really important. This was not his fault nor their fault. There may be truths of the greatest importance to us in Chinese literature, but until they are translated into a language we can understand they are of no value to us, and it seems as if, at least in medicine, the language of experiment is the only one all can understand and appreciate even when it is ungrammatical. Still, the image of the old physician of Verona deserves a niche in the medical Pantheon. His claim to immortality ought not to depend upon the coining of one word.

<sup>1</sup> According to Lewis and Short, *seminarium* is not used in classical Latin in any other sense than that of a seed-plot or nursery, but Fracastoro evidently means something more nearly equivalent to *semen*, and the French and German translators rightly render by *germe* and *Keim*.

# British Medical Journal.

SATURDAY, SEPTEMBER 18TH, 1926.

## THE REGISTRATION OF NURSING HOMES.

LONG before the days of Caesar Augustus there went forth decrees for the registration of the people, but there has never before this era been a time when registrations were so numerous. Some yearn for registration, others have registration thrust upon them. Some aver that registration gives the registered a monopoly inimical to the body politic; others, like the circus proprietors, declare that it has killed their job and robbed the children of a thing of joy. A year or two ago the nurses, or most of them, clamoured for registration, and got it; now they desire that the "homes" and institutions where they work should also be registered. The project has been the subject of inquiry by a Select Committee of the House of Commons. The report of this committee has been published,<sup>1</sup> and the substance of it has appeared in our columns.<sup>2</sup> The evidence given to the committee was reported in our parliamentary column from time to time. Some of it was rather wild, or founded on hearsay, but the report itself contains a sufficiency of facts and some reasoned arguments; the balance of opinion is discovered to be in support of the recommendations made. The committee seems always to have held in mind the vision of the intensely human, and humane, purpose of nursing homes, and to have striven to frame its recommendations in such fashion as to help them in their work and not to harry them. That attitude is to be counted to it for righteousness.

The first business of the committee was to discover whether there was any case for registration. The answer given is an unhesitating affirmative. We must take their word for that. The members of the committee, after hearing the available evidence, conclude: "The need for the registration and supervision in nursing homes is fully established." We may wonder at the diversity of the evidence. The witnesses of the Ministry of Health and the British Medical Association, on the one hand, stated that there was no evidence of widespread abuses; but the College of Nursing and the Society of Medical Officers of Health made out a strong case to the contrary, the latter stating that "privately managed nursing homes form the source of constant complaints to medical officers of health all over the country." A strong point made in favour of the committee's recommendation is the fact that there is no essential difference between the maternity home and the nursing home, and since the former is registered by Act of Parliament the other should be also. The decision to supervise being taken, there arose the question by what body and what type of visitor this should be done. The committee considers that the authority should neither be so central as to be removed from contact with local conditions, nor so parochial as to involve risk of personal interest in the homes. These considerations

caused it to recommend the county councils and county borough councils, with the London County Council in the metropolis. The recommendation seems to be wise.

Evidence given by the British Medical Association indicated that there was no objection to registration provided that doctors and nurses were on the local committees upon which the work was to devolve; that medical records and case-sheets were not to be open to inspection; and that doctors who received patients into their homes for treatment should be exempt from registration, or at any rate inspection. The committee endorsed the first and second suggestions, but disagreed with the third, although it had some sympathy for it. It formed the opinion that "if an individual doctor decides for purposes of gain habitually to take in patients, whether into his private house or into a nursing home, he does so with the full knowledge that he is taking up a definite trade and entering into competition with other persons who have to comply with such regulations as may be enforced." In these circumstances the committee declined to recommend any general exemption from registration of inspection in respect of any premises covered by the definition of a nursing home on the sole ground that such premises were under the direct control of a medical practitioner, resident or otherwise. "From this it would follow," the committee continued, "that the present practice of exempting maternity homes in such cases should no longer be permitted." The committee, however, made other recommendations which relieve the doctor of much of the anxiety that was expressed in the discussions at the Representative Meetings of the Association, for the committee is opposed to the compulsory exhibition of brass plates and printed rules, or any methods of inspection that would destroy privacy or a home-like atmosphere.

So much for the report. What may we conceive will be the effect of legislation in accordance with its recommendations? It would seem certain that two consequences will ensue: private nursing homes will be fewer, and with a higher tariff on the average; and private wards and private hospitals will increase. Another probable effect of registration and supervision of nursing homes will be that their standard will be raised—that, indeed, is the aim of the proposed legislation. The raising of the standard involves an increase of costs. Many small homes may be expected to go out of business, because they will not be able to meet the capital charges for improvements nor the increased current expenditure on trained staff. So that a provision which has for some years in some fashion met the needs of many middle-class patients will almost certainly be diminished, if it does not cease altogether. There will be nothing for these patients between the high-class nursing homes the cost of which they cannot pay, and the hospital charity, except in those few places where foresight and public spirit have provided wards and rooms for private patients in the voluntary hospital, or in private hospitals.

It therefore behoves the boards of the voluntary hospitals to be up and doing whilst it is yet day. They should recognize the new conditions; and at the very least have ready to hand a considered scheme for the extension of the work of the hospital for which they are responsible to meet the needs of private patients. Such a scheme they could put into operation when it became necessary owing to the contemplated changes, or earlier should a demand for it develop among the great middle-class public.

<sup>1</sup> Report of the Select Committee on Nursing Homes (Registration). London: His Majesty's Stationery Office. 1926. Price 4d. net.

<sup>2</sup> BRITISH MEDICAL JOURNAL, July 24th, 1926, p. 174.



## A GOOD HEALTHY WATER.

LAST year we commented on Sir Alexander Houston's hope that some day the Thames would become again a salmon river. In his report for the year ending March, 1926,<sup>1</sup>—his twentieth as Director of Water Examination to the Metropolitan Water Board—a large proportion of the pages is devoted to the romance of the New River. The more prosaic portions of the report deal with the chlorination of Thames and New River water; with filters and pre-filtration waters; with meteorological notes, suspended solids, and a variety of health subjects. Sir Alexander Houston wonders if the Londoner realizes what chlorination means bacteriologically and financially. By its use, under skilled supervision continually exercised, the water of London is kept pure even in flood periods, while the addition of ammonium chloride and potassium permanganate, as "taste preventers" with some sterilizing action, renders the water palatable. There was a slight breakdown in "taste prevention" in the Palmers Green area in December last; but the weather condition (cold fog, with decrease in organic matter) had already provided a warning that less of the chemicals was necessary, and the reduction had been made just before the first complaints reached the Water Board. From the financial point of view heavy capital expenditure for larger storage accommodation and increased filter beds is avoided by chlorination, and filtration can be carried on more rapidly.

The examination of pre-filtration waters is based on the view that if these waters can be pronounced epidemiologically "safe," the perfect working of the filtration process becomes almost of secondary importance except for the production of a physically attractive fluid. Sir Alexander Houston regards the condition of pre-filtration waters as the pulse of the water supply that must be felt. Experiments in filtration have been conducted at the Barn Elm (West Middlesex) works since January, 1923. It has been found that the life and activity of filters can be materially increased by a preliminary rapid filtration of most of the growths and much of the suspended matters in water. Preliminary filters, working at the exceedingly high rate of at least 120 gallons per square foot per hour, can remove so much of the materials which choke slow sand filters that the latter can work five times as fast and enjoy a longer life. It is hoped that this double process of filtration will prove in the end more economical than the older single process. Sir Alexander Houston has no objection to the water being less perfect physically and chemically provided it is as safe, or safer, bacteriologically and epidemiologically. He looks to chlorination for this safety. In some places, however, it would appear that any economy effected by rapid filtration would be neutralized by increase in the costs of pumping. Experiments are therefore being conducted in the inhibition of the development of algal and other growths in water by the addition of minute doses of copper sulphate. The author notes that in looking through his album of photographs of organisms present in water he has been struck by the countless occasions on which the water should have tasted fishy (*Eudorina*, *Pandorina*, *Uroglena*, etc.); like ripe cucumbers (*Synura*); grassy (*Aphanizomenon*, etc.); and aromatic (*Asterionella*, *Tabellaria*, etc.). He recalls only one or two instances in which London water had really an unpleasant taste due to growths; one, which many readers will remember, in 1915, when the West Middlesex water was variously described as tasting like geraniums,

rotten fish, and castor oil. The taste was due to a copious growth of *Tabellaria* and *Asterionella*; the dissemination was caused by some raking operations carried out to prolong the life of the filter beds between successive cleanings; the taste was removed by adding two or three pounds of permanganate per million gallons of water; and it is gratifying to learn that the raking operations have been discontinued.

A new and fascinating, but perplexing, problem has arisen in water biology; and a section of the report is devoted to leptospira in London water. The subject was dealt with by Dr. Hindle in the *BRITISH MEDICAL JOURNAL* of July 11th, 1925 (p. 57). Sir Alexander Houston, on the available evidence, does not regard the presence of leptospira as of paramount significance, whether on scientific or common-sense grounds. Leptospira are found to be almost universally present, not only in the raw sources of supply, but also in filtered waters and in pure deep wells. All cultures have proved to be non-pathogenic, except the cultures from one well, the supply from which has now been chlorinated; and it is satisfactory to know that leptospira are easily killed by minimal doses of chlorine. At the same time, as Sir Alexander Houston says, the possibility of a change from a saprophyte to a pathogen opens many disquieting possibilities. He thinks that rats have something to do with poisoning water and slime, and rendering possible the production of jaundice by leptospiral water. At all events, he cannot believe that infection comes simply from saprophytic leptospira occurring in water, soil, or foodstuffs. On such a hypothesis the whole world would be jaundiced.

Sir Alexander Houston is a picturesque, discursive, and at times inconsequent compiler of reports, and we turn with interest to the earlier part of his report, the "Romance of the New River," which he describes as an oasis in a desert of dry facts, but it is really half a continent. Therein he displays his imagination, and with a touch, as he says, of *joie de vivre*, describes some of the wonderful and romantic happenings of bygone days. For him there has been nothing in the annals of preventive medicine finer than Sir Hugh Myddelton's conception of three hundred years ago, which led to the safeguarding of the health of the metropolis by bringing pure water from the Chadwell and Amwell springs in Hertfordshire by an artificial channel forty miles long to London. And so, after a preliminary account of the history of the undertaking of the thirty-six "adventurers" and King James I, we are led by Sir Alexander Houston along the whole course of the New River, from its origin in the upper River Lee and Amwell Pond to its termination in New River Head at the Metropolitan Water Board offices in Clerkenwell. The journey is illustrated by sketch maps and innumerable photographs, some of beauty spots or monuments of interest, such as Rye House, sundry churches, and Temple Bar, others of pumping stations. For the power and utility of the latter Sir Alexander Houston has no less admiration than for the beauty of the former; for are they not all part of "an immortal work: since men cannot more nearly imitate the Deity than in bestowing health"? The author's enthusiasm will inspire many of his readers to make the pilgrimage themselves—if only they possessed that master key which opens to him the private property through which the New River runs.

Sir Alexander Houston's adventurous fancy leads him beyond the waters of the New River. He does not confine his interest in meteorology to mere

<sup>1</sup> London: P. S. King and Son, Ltd. Price, 2s

rainfall. He enters on a diatribe against London fogs, asserts the possibly controvertible principle that "everyone has the right not only to live, but to enjoy life to the full"; and looks forward to the time when everybody will indulge in ultra-violet rays or sun-baths, with or without suitable permeable clothing. He discusses the opinions of Sir James Berry, who, in a lecture to the Hunterian Society last January, ventured to dispute the "lack of iodine" theory of goitre. Finally, Sir Alexander Houston describes how, by means of copper sulphate and chlorine, the water of swimming-baths can be kept sweet and clean-looking for a prolonged period with hardly any changes of water and no complaints as regards taste and smell. He admits, however, that the use of the same water over prolonged periods, even if well purified, is sentimentally objectionable. It would seem that the saving effected by the Metropolitan Water Board by its methods of chlorination and rapid filtration fully justifies the expense of issuing this delightful report of its Director of Water Examination.

#### THE WASSERMANN AND THE FLOCCULATION REACTIONS.

An attempt to add to the present scanty information about the nature of the essential mechanism underlying the Wassermann and flocculation reactions has been made in the Bacteriological Department of the University of Edinburgh by Professor T. J. Mackie and Dr. H. Ferguson Watson, who have set themselves to solve the question whether these syphilitic serum reactions represent the activity of a natural antibody present normally in all serums in minimal amounts, and capable of being reinforced by certain infections, or whether they are the result of metabolic alteration or chemical changes in the tissues incidental to syphilis and the other conditions in which the Wassermann reaction has been noted. The occurrence of similar reactions with the serums of various normal adult animals, including the rabbit, ox, sheep, horse, mouse, cat, dog, macacus, and pig, was also investigated. Although attention was paid more particularly to the complement fixation phenomena, the flocculation reaction was studied simultaneously. A uniform antigen and technique were used throughout, and the process of fractionating positive and negative human and animal serums by carbon dioxide was utilized as an aid in the analysis of the serum function. The two investigators submit an interpretation of the Wassermann reaction, which is set out in detail in the *Journal of Hygiene* (July 14th, 1926). In the rabbit, ox, sheep, and horse the serum heated to 55° C. was found to retain the power of fixing complement in conjunction with the antigen used in the Wassermann test, and to produce a flocculation effect similar to that of syphilitic serum. They believe that these reactions represent a natural property of the serum, and do not depend upon pathological conditions, though they are absent in man, guinea-pigs, frogs, and white rats. The unheated serum of the white rat, however, was found to yield a definite, though weakly positive, flocculation reaction, while in some other animals there was dissociation in the reactions. Thus in the pig, pigeon, fowl, and cat a negative Wassermann reaction was associated with a positive flocculation, while the reverse was the case of the dog, mouse, and rabbit. In the mouse the positive Wassermann reaction was uniformly weak, and in the other normal animals it was always limited in degree, contrasting sharply with the pronounced reaction characteristic of active syphilis in man. Moreover, it was shown that young animals, 3 to 8 weeks old, of species giving positive reactions, reacted negatively. In rabbits the reacting power increased progressively with age, and in parallel with the development of

a natural antibody. This parallelism supported the view that these reactions were due to principles in the serum resembling antibodies. The deduction made is that the serum reactions in the case of syphilis are due to such principles, which resemble antibodies and are homologous to antibodies natural to certain species and widely distributed among animals. Marked augmentation of the Wassermann reaction in rabbits was produced experimentally by immunization with heterophile antigen, confirming the work of Taniguchi, and by infection with *B. tuberculosis*. It was next found that the fractions of normal human serum insoluble in carbonic acid and the serum of negatively reacting animals might yield, after being heated at 55° C., a weak complement fixation effect with the Wassermann antigen. This property is described as being "masked" in whole serum, lost when heat over 60° C. is employed, and more marked in the unheated fraction. Differences were detected in this respect between the serum fractions of normal animals and of human syphilitics, but these are held to be due to variations in the total content of the reacting substances in the serum and their distribution in the serum fractions. These observations seem to indicate that the principle in serum responsible for the Wassermann reaction is present normally, in minimal amount and in a "masked" state, even in those animals which give a negative reaction when tested in the usual way. It would appear, therefore, that the diagnostic reaction in man is due to the non-specific augmentation of this natural principle. The dissociation of the Wassermann and flocculation properties in syphilitic serum was manifested by carbon dioxide fractioning, the soluble fraction being more active in the flocculation test, and the insoluble moiety in the Wassermann test, though in some cases the dissociation was less obvious and in others absent. It is suggested, therefore, that the Wassermann syphilis reaction represents the increase of a "lipoidophile" antibody naturally present in the serum in minimal amount, and in a masked state, which in syphilis is non-specifically augmented in an analogous manner to the augmentation of the natural anti-sheep haemolysin by heterologous stimuli.

#### THE MEANING OF PHYSIOLOGY.

THE discipline of physical science does not encourage in its servants excursions beyond the stubborn facts which feed its thought. Yet, if we have "intellotto d'amore," the imagination must often break the barrier between the objective contemplation of nature and the wider consciousness of man, though it may only tease the soul in secret. When, however, an eminent man of science does attempt an expression of the wider meaning of his observation of matter, our reticence will not forbid enjoyment of his philosophical adventures. In *Brain and Heart*<sup>1</sup> we have a translation of a series of lectures by Professor G. Fano, a distinguished Italian physiologist who, as Professor E. H. Starling in a foreword very properly observes, "is also philosopher, artist, and man of letters." Since the translation conveys to us a live picture of the manner of man we feel the author to be, it is probable that the translator, Dr. Helen Ingleby, has been very successful in her task. The lectures represent the autobiography of an experimentalist whose observations feed his restless mind. His problem is the investigation of the physical nature of the heart rhythm and the inwardness of the excitability of living matter. His material is the fresh-water tortoise, his apparatus the conventional equipment of the physiological laboratory artfully employed. Much productive work has derived

<sup>1</sup> *Brain and Heart. Lectures on Physiology. By Giulio Fano. Translated by Helen Ingleby. With a Foreword by Professor E. H. Starling. C.M.G., M.D., D.Sc., F.R.S. Oxford Medical Publications. London: H. Milford, Oxford University Press. 1926. (Demy 8vo, pp. ix + 142; 19 figures. 8s. 6d. net.)*

from the immediate conclusions of the author's experimental work in the special problems with which it has been concerned. But imagination generalizes his studies and, in his mind, the heart and brain become symbolic respectively of the automatism and the wilfulness of life—the inescapable logic of causation and the physical perversity of the mind. Man can comprehend the rhythm of the tides, but the wind bloweth where it listeth. Professor Fano seeks first a meaning for “living matter,” and finds in the reciprocity of structure and function the fundamental principle of life. With Cuvier, he sees form to be more significant than matter. The theory of evolution represents the intuitive faith of the human mind in the reasonableness of the conception of continuity rather than a deductively established dogma. Living matter is only material organized by the “will to live,” and the search for the origin of life becomes a subjective inquiry weighted by a temperamental bias respecting finality. And so there remains only purposive action as the characteristic of life, and the tortoise teaches the author that this resides in an inherent automatism of metabolism upon which is imposed an excitability which, paradoxically, is essentially directive inhibition of vital automatism. Enough has been said to indicate the scope of this little book. It is one to which the adjective “stimulating” may properly be applied, and it will not fail to raise contention; for, while some may find consolation in the assumption of a “cosmic will,” there will be others who will feel that there is no rest for the human spirit that resolutely pursues the continuity of Nature which passes unbroken still into the unknown.

#### INDUSTRIAL HYGIENE IN JAPAN.

THE expansion of the factory system in Japan has been attended by industrial legislation which has proved of benefit both to the industries concerned and to the employees engaged in them. The Japanese Factory Act came into effective operation in 1916, and year by year since that date hygienic standards in factories have shown improvement. An account of present-day conditions is contained in a recent report<sup>1</sup> by Dr. Yasutoshi Kose, inspector of factories and mines under the Home Department, Tokyo. There are, he states, 343 inspectors and assistant inspectors, of whom seven are physicians, for factories in Japan. The corresponding figures in the British Isles, excluding Ireland, were, in 1924, 205 inspectors and assistant inspectors, of whom five were physicians. The duties of the Japanese medical inspector include the supervision of safety in factories, the advancement of industrial hygiene, the prevention of industrial disease, and health propaganda generally among employers and work-people. In these particulars his range of service is similar to that of a medical inspector in Great Britain. He has, however, additional functions in connexion with compensation for accidents. In the United Kingdom workmen's compensation, though under the Home Office, is not in charge of its Factory Department. Dr. Kose reports that of a total of some 20,000 factories in Japan, 52 per cent. are textile. In Great Britain in 1924, out of a total of 142,494 factories, less than 6 per cent. were textile. Of the total factory hands in Japan 60 per cent. are women; while of textile workers 81 per cent. are women. Of those female workers few are from the locality and few married. Most are girls brought in to the factories from agricultural districts and lodged in boarding-houses provided by employers. The boarding-houses at the large factories are usually of good type. Their equipment, heating, and ventilation are satisfactory, and their water supply abundant; the bathing accommodation, as in most Japanese dwellings, is a salient feature; the workers take a bath

every day or every other day, or at least twice in the week. This frequency, as Dr. Kose remarks, is different from other countries, among which it is to be feared Britain must be numbered, though Dr. Kose does not say so. Many factories have separate houses for the married workmen. The married miner lives, as a rule, in a tenement of from one to three rooms forming part of a common building. The quality of the food supplied in the boarding-houses comes under the scrutiny of the inspectors. For men the calories allowed are from 2,500 to 2,800 a day; for women from 2,300 to 2,500. All factories in Japan except the smallest have their own doctor. Large factories and most mines have their own hospital also, well equipped and staffed by competent medical men. The factory doctors, besides treating the sick and injured, advise employers in matters of hygiene, acting for this purpose in co-operation with, or under the guidance of, the medical inspectors of the Home Department. Accurate statistics of industrial mortality are not available, but steps are being taken to procure authoritative figures, which it is intended to publish. Existing data for 1925 show 11 cases of all forms of tuberculosis per 1,000 workers, 8 being cases of phthisis. The incidence of beri-beri was at the rate of 55 per 1,000, and that of trachoma at 19. Information on industrial sickness is incomplete, but reference is made to twenty-two cases of lead poisoning among storage battery workers, and also to the occurrence of poisoning by carbonic oxide and aniline. Among persons handling native wool and hair for use by upholsterers anthrax has been unknown for some years, but several cases come under notice annually in the bone manure trade, the raw material of which is imported from other countries. Ankylostomiasis is common in the collieries, and preventive measures are urgently required. Dr. Kose's report furnishes interesting information with regard to the industrial hygiene of Japan, revealing as it does the nature of the problems which call for attention and the methods adopted, or intended to be adopted, for their solution.

#### THE GOVERNMENT LABORATORY.

THE routine work of analytical chemistry must, we think, be a depressing pursuit. At all events, the report of the Government chemist for the year ending March, 1926,<sup>1</sup> is singularly unenlivening reading. One almost sighs for a report such as a mediaeval alchemist would have produced from the depths of his imagination. Sir Robert Robertson, with a stern sense of duty and a recognition of the need for economy, condenses his report on 445,606 investigations of samples into thirty-three pages. No amount of ingenuity, we believe, could extract an atom of amusement out of the report. Yet with eighteen Government departments pouring into his laboratory all sorts of material, from offal tobacco to sea water, from condensed milk and herb beer to sheep-dip and policeman's clothing, we feel sure that Sir Robert Robertson's staff must occasionally meet with some humorous incident. The number of samples examined was some 2,500 fewer than in the previous year, but still many thousand above the number for 1923-24. The Custom House has curtailed its efforts by more than 10,000 samples. The samples of wine and of tea have decreased; but the depression in tobacco samples, caused by the cessation of large exports to the Irish Free State, is gradually being made good. The silk duties have provided the Government chemist with some extra work. From the food examinations carried out for the Ministry of Agriculture it may be gathered that the producer is behaving himself very well on the whole; but we are not informed whether drainage from roads treated with the eleven samples of proprietary road dressings which were examined had any effect on the health of the fish in

<sup>1</sup> *Japan Medical World*, February, 1926.

<sup>1</sup> H.M. Stationery Office, 1s. 6d. net.

contiguous rivers. At one point the report drifts away from bald statement of examination results to note that proceedings against the sellers of the Sussex ground oats and of barley meal containing tapioca resulted in conviction of the sellers; though why they did, or why the sellers of sharps containing rice husks escaped, we are not told. The establishment of the Irish Free State has rendered it necessary to sample consignments of beer from that country. This, we gather, is not for the purpose of ensuring that the Guinness absorbed in Britain is of the right potency and flavour, but in order that the Government may get the full duty. One hundred and fifty-nine samples of matches were examined, but no white phosphorus was found. Of parcel post packages coming into this country 2,200 samples were sent to the laboratory; but the report does not tell us how many of these contained dutiable perfumery, essential oils, and so on. The Public Record Office submitted to the laboratory a silk tassel from a sixteenth-century seal which had become brittle, but the Government chemist could only report that there was no clear evidence of destruction by organisms. However, washings sent from the cleaning of the Leighton frescoes at the Victoria and Albert Museum showed that none of the original pigment was removed in the treatment, so that these works of art will no doubt be preserved for us. Amongst the papers communicated by members of the laboratory staff, the only one of medical interest concerned deposits of arsenic and copper on eating apples.

#### CARE OF THE DEAF.

For some fifteen years there has been a small society working in the interests of the deaf. Recently it has been reorganized under the title of "The National Institute for the Deaf." The president of the new society is Lord Charnwood, a man who has made his mark for judgement in other spheres. Besides a good working executive committee there is a strong medical committee, which combines practising aurists, school medical officers, and publicists. Deafness is a terrible affliction. The loss of hearing may not be so severe a handicap as the loss of sight, yet there can be little doubt that deafness causes more unhappiness than does blindness. Perhaps this is because our sympathies are more attune to the plight of the blind than that of the deaf. It is so difficult to communicate with the deaf; with the blind it is easy. Much has been done for the deaf in this country, but there is much more to be done before these sufferers get their fair chance in life. Under the Education Acts there are schools for the deaf up to the age of 16 years; they give splendid aid in training the youthful deaf, and in many cases following them up afterwards. But for the most part, after the age of 16 the main dependence must be upon voluntary societies. There are some sixty of these in the country, and if they were adequately supported much could be done for the youthful deaf and for those whose deafness is of later years. No less than 600 deaf and partly deaf leave the schools each year; and, excluding the partially hearing, there are some 40,000 deaf-born persons in the country. It is clear, therefore, that there is room for organization of the work of directing the deaf into suitable spheres of work. There are, besides, records of some 4,500 deaf in the workhouses and a couple of thousand in mental hospitals. The major part of these cases are due to old age, but there are some able-bodied amongst them for whom work should be found. The committee of the new institute, which has its offices at 67, Frith Street, Soho Square, London, W.1, has set itself two initial tasks: the first is to compile a list of trusts and charities for the deaf; by this research it has already discovered an almost unknown trust with an income of nearly £1,000 a year. The second, and more important,

task is an inquiry into the industrial conditions of the deaf in four or five distinctive areas. Such an inquiry will show in what branches of work the deaf most easily succeed; and in this way much economy of effort may be obtained in educational direction. The name "National Institute for the Deaf" is a reminder of the older National Institute for the Blind, and if the new institute for the deaf should attain a success such as has attended the labour of that for the blind, the organizers of the new society will deserve well of the community. But to achieve success there must be funds; the appeal is made for £2,000 a year for the carrying through of the initial investigations cited above; at present only £650 a year is assured.

#### MEMORANDUMS ON CANCER.

In August, 1923, the Ministry of Health issued for the guidance of local authorities a short general memorandum on cancer (Circular 426), summarizing in non-technical terms our knowledge regarding etiology and incidence, and offering suggestions for the guidance of public opinion. This was followed in March, 1924, by a memorandum on the effects of radium and x rays upon normal and cancerous tissues (Circular 476). Further memorandums appeared in May and July of the same year, the one relating to cancer of the breast and the results of surgical operation for that condition (Circular 496), and the other reviewing the main lines which experimental cancer research had followed in recent years, and the broad conclusions, negative as well as positive, which seemed to be deducible (Circular 516). The responsibility for these pronouncements, of which notices appeared in the JOURNAL on their publication, was undertaken by the Departmental Committee on Cancer appointed by the Minister of Health, with Sir George Newman as chairman. A further memorandum on cancer of the breast is being issued this week.<sup>1</sup> This supplements the information already given by incorporating the additional and more exact data which the committee has since obtained. The statements in the memorandum of May, 1924, based mainly on an examination of the literature, have been put to the practical test of several following-up inquiries by a subcommittee of medical officers of health. These investigations have established the previous conclusions of the committee on a firmer basis of fact, and demonstrate that the results of early complete operation are even better, in terms of subsequent healthy life, than had been revealed by the literature. We hope to refer again in more detail to this brief but authoritative summary of the position in regard to cancer of the breast.

#### THE ROYAL SANITARY INSTITUTE.

To commemorate its recent Jubilee and London Congress, over which Mr. Neville Chamberlain presided, the Royal Sanitary Institute has issued a retrospect of its history, compiled by Dr. Louis C. Parkes, one of the vice-presidents. The historical portion of the book is very complete, beginning with the early efforts of Dr. Lory Marsh and the few members of the first committee who took the trouble to attend meetings; tracing the extraordinary progress made in the face of financial difficulties; recording the incorporation of the Parkes Museum with the institute in 1883; describing the institute as it is to-day; and reproducing photographs of many eminent men who aided in its promotion and objects. At the end of the volume are special articles recording the sanitary progress of the last fifty years from the medical, sanitary engineering, architectural, and other aspects. Professor Bostock Hill, chairman of the council of the institute, describes the

<sup>1</sup> Ministry of Health. Memorandum on Cancer of the Breast (Circular 716). 1925. London: H.M. Stationery Office. 1d. net.

medical aspect. Public administration is dealt with by Sir William J. Collins, one of the vice-presidents; and the Hon. Sir John Cockburn, Colonel C. H. Melville, and Fleet Surgeon W. E. Home write on the overseas dominions, military hygiene, and sanitary advance at sea. The rest of the book summarizes the multifarious activities of the institute, including congresses and conferences, lectures and examinations, and the publication of transactions and a journal. There are now about 5,000 members and associates of the institute, the work is extended to India and most of the dominions, and since the institute obtained its present premises at 90, Buckingham Palace Road, in 1909, a much larger space has been available for the Parkes Museum. For this museum, which is open without charge, the public may well be grateful to the Royal Sanitary Institute.

## LEAGUE OF NATIONS ASSEMBLY.

[FROM OUR CORRESPONDENT AT GENEVA.]

THE brilliant skies under which the League of Nations Assembly is meeting at Geneva do not tempt the delegates to shorten their discussions. Some of the meetings are held in the open air, in the gardens of the Secretariat, and these continue until the closure is moved by the coming of dusk. The political barometer, too, is high; although there is a depression centred over Spain, and another over South America, a large anticyclone has set in from Germany. The welcome of the German delegates was all that could be desired, and the acclamations which greeted M. Briand's speech of goodwill, in which he said that France and Germany had had enough of battle and must now turn to co-operation in peace, will be long remembered.

### *Opium and Dangerous Drugs.*

The question of opium and other dangerous drugs is occupying a large place in the committee business of the Assembly. At a meeting of the League Council, M. Unden, the Swedish representative, gave a report on the eighth session of the Advisory Committee, and spoke in serious terms of the magnitude of the illicit traffic. He urged all States to complete without delay their ratification of the Geneva Convention of 1925, although he had to admit that his own country had not yet done so, and that the only States members of the League which had so far forwarded their ratifications of the Convention were Great Britain, Australia, New Zealand, the Union of South Africa, and India.

Sir Austen Chamberlain spoke strongly in the Council on this subject, emphasizing the great importance which attached to the ratification of the Geneva Convention, particularly by those States which are members of the Council. He said that the work of the Advisory Committee at the present time was seriously impeded and largely at a standstill for want of this ratification. On the proposal of M. Scialoja, the representative of Italy, the Council instructed a communication to be sent to the various States emphasizing the importance of speedy ratification, and decided also to draw the attention of States to the importance of the regular receipt of information from them on the traffic in drugs, including the quantities seized by their authorities, and, in the case of countries producing coca, statistics relating to the export of this raw material and of crude cocaine. Special attention was drawn in the Council to the steps taken in Great Britain to prevent the maritime insurance of consignments of opium or drugs destined for illicit purposes, and the Council decided to urge other countries to take similar steps. It was decided also to bring to the notice of all governments and of the Universal Postal Union the evidence available as to the extensive use of the post by illicit traffickers in morphine and other drugs with the Far East.

The question of this traffic also came up in the Fifth Committee of the Assembly, where M. Neverka, delegate

for Czecho-Slovakia, stated that there was no doubt that the quantity of drugs manufactured was considerably in excess of medical and scientific requirements; but until the Geneva Convention of 1925 came into operation effective control of the international traffic would be extremely difficult. M. Parra-Perez, the delegate for Venezuela, declared the production of narcotics at the present time to be from ten to twenty times in excess of what was required by medicine and science. Viscount Cecil also spoke of the seriousness of the situation and the need for ratifying the Geneva Convention, and Sir B. Mullick, delegate for India, gave statistics to show how well the Indian Government is fulfilling its duties in the matter of control. He said that steps had been taken to introduce an absolute prohibition of exports within a term of ten years—that is, by 1935—and that internal distribution was being gradually restricted in spite of the difficulties proceeding from the ingrained habits of the people.

The discussion is continuing in this Committee, and the matter will be brought in due course before the Assembly.

### *Epidemiological Intelligence.*

Viscount Ishii, the representative of Japan on the League Council, reported to the Council on the work of the Health Committee. He said that the committee was not yet in a position to submit definite recommendations regarding the establishment of the proposed sanitary and epidemiological bureau on the West Coast of Africa, but an experiment is being undertaken by the inspector-general of the Algerian medical service in the shape of the collection and transmission of such epidemiological intelligence as is at present available in northern, western, and central Africa, and the results will be reported to the Health Committee at its session next month. Viscount Ishii also described the nature of the revision by the recent International Sanitary Conference in Paris of the international convention of 1912. The revised convention makes it incumbent on the signatory States to notify the International Office of Public Health in Paris of the appearance and progress of the more important epidemic diseases in their territories; in addition, information has to be given concerning the measures imposed on ships arriving from infected territory, the existence of rat-plague in ports, and the sanitary equipment of ports. The Japanese statesman spoke of the great utility of the work done by the epidemiological intelligence service of the League.

### *Intellectual Co-operation.*

A statement was made to the Council by M. Briand on the work of the Committee on Intellectual Co-operation. He said that Madame Curie had compiled a report on inter-university relations, especially with regard to the award of scholarships to young students intending to engage in disinterested scientific study and research after obtaining their university degrees. At Madame Curie's suggestion a meeting of experts is to be summoned to help in co-ordinating this effort and to promote a fairer allocation of these scholarships in different fields of scientific activity, both in the exact sciences and the humanities. As regards the important problem of liaison between universities, university professors, and students, the Committee on Intellectual Co-operation reported that valuable results had been achieved by a recent meeting of representatives of the International Association of University Students. Another development along the lines of intellectual co-operation is an international museums office, to be established during the autumn. Proposals are also shortly to be submitted on certain natural extensions of copyright, such as *droit en suite*, which entitles the author to share in the surplus value which his work may fetch at public sales, and the *droit en respect*, in virtue of which any deliberate alteration of the text of a work by any person other than its author is prohibited. A further proposal is to create an international office of meteorology, which is considered a matter of some urgency. The Council of the League passed a resolution noting with satisfaction that the influence of intellectual co-operation is continually growing in the different countries, both members and non-members of the society of nations.



## Union of South Africa.

[FROM OUR CORRESPONDENT IN CAPE TOWN.]

### THE LATE DR. A. REITH FRASER.

THE funeral of the late Dr. A. Reith Fraser [of whom an obituary notice was published in our issue of July 31st] took place on July 12th at Plumstead Cemetery, Capetown, in the presence of a large gathering of friends and colleagues. The burial service at the graveside was conducted by Bishop W. T. Gaul, who, in the course of a brief but eloquent address, referred to the baffling mysteries of this life, exemplified by the taking away from our midst of a life so full of promise. Here was one, he said, who was engaged in scientific investigation the results of which might have been of inestimable benefit to mankind at large, yet it had pleased the Almighty to remove him while many others, living lives of apparently no value to the community, were left. The pall-bearers, chosen from among Dr. Fraser's personal friends, were Mr. T. Lindsay Sandes, F.R.C.S., Mr. Ph. A. Smuts, F.R.C.S.E., Mr. C. E. Jones-Phillipson, F.R.C.S.E., Dr. A. W. S. Siehel, Dr. W. P. Mulligan, Dr. R. Lanco Impey, Dr. J. P. Duncan, and Dr. D. Herman Wessels. The Western Branch of the British Medical Association, of which Dr. Reith Fraser was so popular and efficient an honorary secretary, was represented by the President (Dr. D. H. Wessels), Vice-President (Mr. T. Lindsay Sandes), and many members. Among others present at the ceremony were: Dr. G. Watson Robertson, Government pathologist; Dr. F. C. Willmot, assistant medical officer of health for the Union; Dr. W. Darley Hartley, editor of the *South African Medical Record*; Dr. C. L. Leipoldt, editor of the *Medical Journal of South Africa*; Dr. W. P. Cooney, medical superintendent of the City Hospital; Dr. Hugh Smith, Dr. D. J. Wood, Dr. C. H. Krüger, Dr. H. M. Bosman, Dr. C. C. Carr, representing the Southern Peninsula Medical Society; Mr. W. A. M. Beard, representing the Royal Cape Golf Club; Mr. J. Bruce Cleghorn and Mr. Berrange, representing the Civil Service Club; and many others. The wreaths were numerous and beautiful, and at the conclusion of the interment the grave was one mass of flowers, testifying to the esteem and affection with which Dr. Fraser was regarded. Among the floral tributes was one from the President, Council, and members of the British Medical Association (Western Branch).

### THE HEALTH OF THE CITY OF CAPE TOWN.

The annual report of the medical officer of health for the City of Capetown (Dr. T. Shadick Higgins) for the twelve months ended June 30th, 1925, has just been published. The deaths registered numbered 3,945 (1,298 European, 2,646 coloured, and 1 of unknown race), which is equivalent to an uncorrected annual death rate of 9.27 per 1,000 for all classes (11.04 European and 30.36 non-European). Corrected for outward and inward transfers, the true European death rate is given as 10.15. The report states: "The European death rate (corrected for outward transfers) for the year is the lowest recorded since unification. There has been a steady improvement in the European death rate since 1913-14, but no such improvement has taken place in the non-European death rate. It has again to be recorded that for the year under review the non-European death rate (corrected for outward transfers) was three times as great as the European." The true European infant mortality rate, corrected for inward and outward transfers, was 70.91 per 1,000 births. The non-European rate, corrected for outward transfers only, was 173.95. These figures are the lowest on record with the exception of the year 1921-22. The marked disparity between the figures for European and non-European, both as regards the death rate and infant mortality rate, should be noted by those with little experience in health matters as affecting the coloured races. The births registered in Capetown for the year 1924-25 numbered 7,439 (2,538 European, 4,897 coloured, and 4 of unknown origin), corresponding to an uncorrected annual birth rate of 36.33 per 1,000 for all classes (21.58 European and 56.19 non-European). The true European birth rate, corrected for

outward and inward transfers, was 21.22. The report states: "It will be seen from these figures that in spite of their higher death rate the natural increase of the non-European section of the Capetown population exceeded that of the European section by more than one thousand." The number of male births per 1,000 female births was 1,041 amongst Europeans and 1,063 amongst non-Europeans, as compared with 1,142 and 1,065 for the previous year. The percentage of illegitimate to total births was 5.8 amongst Europeans and 24.1 amongst non-Europeans. The number of stillbirths corrected for outward transfers was 432 (73 European and 359 non-European).

### HOSPITAL BOARD REFORM.

A Draft Ordinance to amend the law relating to the constitution of the Cape Hospital Board is at present before the Provincial Council. Among the more important provisions are the reduction of the number of members of the board from thirty-six to eighteen, and the abolition of local committees of management. The board as at present constituted is, many consider, unwieldy, and there is little doubt that on account of its repeated procrastinations and unbusinesslike procedure from time to time it has almost entirely lost the confidence of the public. So unsatisfactory has the position become that a large section of the members of the Hospital Board itself, favouring a scheme of decentralization, are actively urging that the board should be abolished altogether, and the control of individual hospitals vested in local committees responsible directly to the Administrator. The Draft Ordinance, however, allows for a policy of centralization, but has applied the pruning knife very freely. Under its provisions the reduced board of eighteen members may appoint committees of three to assist in the management of institutions. At present local committees consist of fifteen members elected by the subscribers residing in an area. There are close upon 200 persons at the present time engaged in the administration of hospitals in the Cape peninsula, and their reduction to eighteen may seem unnecessarily drastic; however, the intention of the Administrator, it is stated, is to give a board so reduced an opportunity to make good before introducing amending legislation. The Draft Ordinance provides that of the eighteen members to constitute the Cape Hospital Board one-sixth shall be appointed by the administrator, one-sixth by the honorary visiting medical officers, one-third by the local authorities, and one-third by the registered contributors. Doubt exists as to whether the newly constituted board will be able to break away from the past and make a fresh start. At any rate, the general feeling seems to be in the direction of giving the Administrator's scheme a fair trial, although there are many who would prefer to see a board consisting of twenty-five members, with provision made for committees of five from its number to act as local committees of management.

### NEW HOSPITAL AT BEAUFORT WEST.

On June 23rd, 1926, the ceremony of laying the foundation stone of the new hospital at Beaufort West was performed by the Administrator of the Cape Province (Mr. A. P. J. Fourie) in the presence of a large gathering, including many visitors from the outlying districts. The occasion was a great one for the town, the day being proclaimed a public holiday. Mr. A. R. Truter, chairman of the local hospital board, in introducing Mr. Fourie, gave a brief account of the efforts which had resulted in the building of the hospital, in which provision is made for sixteen beds at an approximate cost of £10,000. The building, which is already well advanced, occupies an eminently suitable site, exceeding 7 morgen in extent, granted by the town council. Voluntary effort has raised already a sum of £3,000 towards the cost of equipment; this is due in large measure to the co-operation of the Women's Hospital Board of Aid. Before laying the stone the Administrator was presented with a silver trowel by Mrs. Peter Weeber, to whose constant devotion to the interests of the hospital he referred in eulogistic terms. In the course of a speech dealing with the problem of hospital administration Mr. Fourie said: "Whilst the sick poor must be catered for at the expense of those who are

blessed with worldly competence, we know that they also need provision for hospital treatment, especially in isolated towns. But those who can afford to pay for treatment must, of course, do so. Their fees must be part of the hospital revenue, and they ought to pay not less than their attention costs the hospital. This is bare justice to those who subscribe to hospital funds, which are intended to cover treatment of those who cannot pay, and not treatment of those who can. The effect of proper management in this respect will keep down the daily cost per patient, which I find in some places reaches an abnormally high figure. A hospital, to be successful, must be managed with all those business instincts which one applies to one's own affairs, for in no other way can it be successful and serve the purpose for which it is established." Following the ceremony the Administrator was entertained at a public luncheon, where his health was proposed by Mr. W. M. Luscombe, M.P.C.

#### PROFESSOR JOLLY.

During the bicentenary celebrations of the founding of its medical faculty the University of Edinburgh conferred the honorary degree of LL.D. on Professor W. A. T. Jolly, dean of the Faculty of Medicine of the University of Capetown. By so doing the University of Edinburgh has done the younger university a signal honour. It is a fitting reward for consistently good work, not only in the field of research, but also in the organization of medical teaching. Ever since his appointment to the chair of physiology in 1911 Professor Jolly has thrown himself heart and soul into the task of building up the medical faculty, and it is due in no small measure to his energy and enthusiasm that the School of Medicine to-day rests on a sure foundation. Professor Jolly, who graduated M.B., Ch.B. at the University of Edinburgh in 1906, was lecturer in experimental physiology under Professor Sir E. Sharpey-Schafer when appointed to the chair of physiology at Capetown in 1911. He acted as chairman of the Medical Committee of the South African College, and, on its incorporation with the University of Capetown, became dean of the Faculty of Medicine. Professor Jolly is a member of the Royal Society of South Africa, and is its honorary secretary. He is a past-president of the Cape of Good Hope (Western) Branch of the British Medical Association, and continues to take a close interest in all its affairs, being a member of council at the present time. Professor Jolly is a universal favourite both with colleagues and students, and the news of the honour awarded by his Alma Mater gave very real pleasure to a wide circle of friends and colleagues.

### Scotland.

#### JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

The syllabus of work for the winter session of 1926 at the James Mackenzie Institute for Clinical Research includes meetings on Tuesdays for medical discussions and clinical meetings on Fridays. The subjects dealt with on the Tuesday afternoons will be found in our Diary, published weekly in the SUPPLEMENT. On October 5th the introductory address will be given by the honorary director on the muscles of the heart, intestinal tract, iris, and ciliary body, the discussion being opened by Professor Waterston. The two following discussions will be introduced by the Regius Professors of Aberdeen (Physiology) and Cambridge (Medicine), who will deal with high blood pressure from the physiological and clinical aspects respectively. Professor John Shaw Dunn of Manchester will speak on October 26th about the disturbance of renal function in experimental nephritis, and on November 2nd Dr. R. Barclay Ness of Glasgow will discuss the difficulties in diagnosis and prognosis in chronic Bright's disease. The treatment of arteriosclerosis will be considered by the Regius Professor of Medicine at Aberdeen on November 9th, and Dr. Hector Cameron will describe some forms of acidosis in children on the following Tuesday. The three subsequent discussions will be introduced respectively by Professor Adam

Patrick on diabetic coma, Mr. A. E. Maylard on the bearing of high blood pressure, albuminuria, and glycosuria on surgical operations, and Professor G. Lovell Gulland on these three conditions as affecting life insurance. Professor Murray Lyon will describe methods of influencing the blood pressure, on December 14th, and the present series will be closed on the following Tuesday by Major Walter Elliot, Parliamentary Under Secretary for Health, who will consider clinical research in its relation to the public health services. The syllabus of this course may be obtained from the secretary at the Institute.

#### TREATMENT OF VENEREAL DISEASES IN SCOTLAND.

A reprint has been published in pamphlet form of the chapter dealing with venereal diseases in the Annual Report of the Scottish Board of Health for 1925; it may be obtained through booksellers or from H.M. Stationery Office, price 2d. net. In addition to a description of these diseases, their diagnosis, treatment, and possible sequelae, conveyed in simple language and intended to have a popular appeal, information is given about the working of the forty-five approved treatment centres in Scotland during last year, with a summary of returns of patients treated up to the end of May, 1925. The pamphlet is designed to impress upon the lay public the importance of early and continued treatment of venereal diseases, to assist the general practitioner in diagnosis and treatment, and to indicate when he should have recourse to the public services. It is stated that during the year under review 25,243 cases were treated, as compared with 23,153 in the previous year, the number of new cases having risen from 12,316 to 13,011. It is believed that there is a progressive decrease in the incidence of syphilis in Scotland; there is also evidence that the serious nature of venereal diseases is becoming increasingly recognized. The percentage of patients abandoning treatment before the completion of the first course was 26, and of those finishing the first course, but before tests to establish the absence of disease, 25. Propaganda work was carried on by some local authorities, but the bulk of it was performed by the Scottish Committee of the British Social Hygiene Council.

#### NEW EDINBURGH VENEREAL DISEASE CLINIC.

The Public Health Committee of the Edinburgh Corporation has opened a new Seamen's Dispensary at Leith. This is intended to provide extended facilities for the diagnosis and treatment of male patients suffering from venereal disease at the Port of Leith. The dispensary will be open daily from 9.30 to 1, and from 3 to 8.30 p.m., for routine treatment, and a medical officer will be in attendance during the forenoon of Tuesday, Wednesday, Thursday, and Saturday, as well as on Monday and Thursday evenings. Routine treatment will be continued as before at the chief centre in the Royal Infirmary of Edinburgh.

#### PUBLIC HEALTH BACTERIOLOGICAL EXAMINATIONS IN EDINBURGH.

The public health authority in Edinburgh has recently made a new arrangement with regard to routine bacteriological examinations, which have hitherto been carried out at the Usher Institute of the university. From October 1st, 1926, such routine examinations will be carried out in part of the University New Buildings, Teviot Place, and the general arrangements will be much the same as in the past, the work being undertaken by the staff of the bacteriological department under the direction of the professor of bacteriology. Specimens sent by post on and after September 30th should be addressed to Bacteriological Department, University New Buildings, Teviot Place, Edinburgh. Specimens delivered by hand between 9 a.m. and 5 p.m. should be handed in at No. 2 Laboratory of the bacteriological department. After 5 p.m. on week-days or 1 p.m. on Saturdays, as well as on Sundays, specimens should be left at the Warder's House, University New Buildings. The present system of supplying containers and reporting results, both in writing or where necessary by telephone, will be continued. In cases of urgency, when an immediate examination of a specimen is required after the usual laboratory hours, application may be made by

telephone, when one of the members of the department will make the necessary arrangements for carrying out the examination.

#### EDINBURGH ROYAL MATERNITY HOSPITAL.

A letter has been sent by the directors of the Edinburgh Royal Maternity and Simpson Memorial Hospital to the Edinburgh Town Council, making an appeal for financial aid to the institution. The letter points out that the working of the hospital for some years past has resulted in deficits which have had to be met by legacies and from a small reserve fund. In view of the very difficult time lying ahead, the directors state that they must appeal to the local authorities and child welfare centres of the districts from which many of the patients are drawn. They base this appeal chiefly on the fact that the hospital affords its benefits to a great number of poor women who cannot make payment of any kind; also on the fact that one of the chief functions of the hospital is to train nurses for taking up maternity service and child welfare positions all over the country.

## Ireland.

### TUBERCULOSIS MORTALITY IN DUBLIN.

MORTALITY from tuberculosis has been reduced considerably in recent years in Dublin. Earlier diagnosis, better treatment, and greater care exercised by the patients to prevent infection have contributed to this condition. The very high death rate, however, is sufficient to impress the necessity for still greater effort to stamp out the scourge. Dr. A. Trimble, chief tuberculosis officer for Belfast, issued recently a report of the condition in that city (see *BRITISH MEDICAL JOURNAL*, September 11th, p. 499). This stated that the rate had decreased by 30 per cent. in the last ten years and 68 per cent. in the last forty years, but the number of sufferers is still very high. In Dublin the mortality in the past ten years from tuberculosis has shown a greater decrease, being almost 50 per cent., as the following table shows:

	All forms.	Pulmonary.
1916	1,390	1,065
1917	1,371	1,058
1918	1,163	896
1919	999	738
1920	820	615
1921	749	583
1922	738	574
1923	666	507
1924	623	505
1925	664	515

There has been a steady decrease in the deaths, and in considering the figures it must be borne in mind the present scheme for the treatment of tuberculosis in the county borough of Dublin only commenced in 1913. At the Dublin Corporation Dispensary, West Charles Street, where, under the supervision of Dr. P. J. Murray, chief tuberculosis officer, much work is being done to check the disease among the poor, an *Irish Independent* representative was informed that the cases examined were 1,294 in 1925, and of these 539 suffered from pulmonary tuberculosis and 156 from surgical tuberculosis. The number of these cases occupying with family one, two, or three or more rooms was: one room, 746; two rooms, 319; three rooms or more, 229. This shows the effect of bad housing on the spread of the disease. Notifications of the disease showed between 1916 and 1923 a decrease, but in 1924 and 1925 there were sharp increases. The figures were:

1916	750	1921	527
1917	761	1922	511
1918	814	1923	505
1919	734	1924	701
1920	583	1925	690

No explanation of the increase in 1924 and 1925 was forthcoming, except the possible one that it might have been due to earlier and more correct diagnosis. It is well known that among the poorer class and in more congested areas the disease is more prevalent than in the outlying districts, and this is clearly demonstrated by the figures for last year, which show 1.45 deaths per 1,000 in the urban districts, compared with 1.98 in the city. Portions of the north side of the city are, and have

always been, the most generally affected. A prominent medical practitioner who has considerable experience in treating tuberculosis attributed the decline in mortality to improved methods of treatment and the steps taken to prevent infection. Much, he said, yet required to be done to reach a minimum, and he thought it all came back to the housing conditions of the people. Better housing and better conditions of living generally were the fundamental grounds on which the best progress could be made. Housing conditions in Dublin were lamentably bad, and it was in the slum areas that the disease took its biggest toll.

### CANCER IN DUBLIN AND THE IRISH FREE STATE.

So far as cancer is concerned, the statistics show that there has not been any appreciable change in mortality in the last ten years in Dublin. The figures are:

1915	434	1921	426
1916	423	1922	419
1917	381	1923	461
1918	451	1924	474
1919	438	1925	471
1920	420		

For the years 1915-24 the yearly average per 1,000 of the population of Dublin was 1.04, while for 1925 it was 1.07. The total deaths from cancer showed an increase—not, however, very pronounced—in the Saorstat in the last decade. The figures are:

1914	2,567	1920	2,588
1915	2,553	1921	2,609
1916	2,679	1922	2,525
1917	2,633	1923	2,730
1918	2,618	1924	2,903
1919	2,673		

### TUBERCULOSIS AND THE MILK SUPPLY.

An effort to improve the health of Limerick is being made by the corporation, and at an early date a dispensary for the free treatment of tuberculous patients will be opened. In that connexion the comments on the need of a pure milk supply are of interest. In regard to the dispensary itself a doctor and nurse will be employed, the sick will be visited in their homes, and chronic cases will be sent to suitable sanatoriums. £1,500 will be provided by the Government for equipment, and a special rate has been levied by the corporation in anticipation of the scheme being adopted. In an interview the Mayor of Limerick stated that for a number of years the Government had been asking the corporation to formulate a scheme for the city, but the request had been declined because of the expenditure. The corporation, he said, conferred with the county council with a view to its co-operation in getting dispensaries opened in different parts of the county, and the real reason for doing nothing was because the corporation could not come to terms with the county council. The dispensary would, he added, be confined to the city, but it would be of great assistance if the county council co-operated. The medical profession in Limerick considered that very unsatisfactory provision was made for the distribution of milk in the city. In the county dirty vessels were frequently used, and there was no proper system to ensure the milk would be delivered free of dirt. Cases at the district courts showed how very careless the milk vendors were in this respect. Utensils and carts were discovered in a deplorable condition, and in many instances vessels were found without any covering to keep out the dust.

The prevalence of dirty milk and its connexion with consumption are referred to in a report on Purdytown Fever Hospital, Belfast, written by the Belfast medical superintendent of health. He states that during the past ten years the number of cowsheds has been reduced from 160 to 97, and the number of cows from 3,000 to 1,469, so that only a small proportion of the milk supply is now produced in the city, whereas formerly at least one-third was produced there. The officers have no authority to inspect dairies outside the city. He adds that 299 samples of fresh milk were specially examined for tuberculosis, and seventeen of these (5.7 per cent.) were found to be infected. In seventeen cases two were from milk inside the city boundary.

## England and Wales.

### ST. THOMAS'S HOSPITAL LADY ALMONER'S DEPARTMENT.

In the report of the lady almoner's department of St. Thomas's Hospital for 1925 it is noted that the wage-earner can, from the age of 17, now "look forward to some allowance if ill, to a weekly sum if unemployed, to a medical adviser if sick, and later, if he marries, to some provision for his wife and family if he dies out of due time, or, if he and his wife live to 65, to a pension of £1 a week for life." However, as the report goes on to say, the benefits are on a limited scale, a number of people who still work for themselves or for relatives do not come under the insurance scheme, and patients of the professional or middle classes are outside all benefits. Thus there is still need for the help of the Samaritan Fund. Of the work of this fund and of the Northcote Trust the report gives a very full and interesting account, with illustrative cases of patients who have received benefit from the various departments. The activities cover a very wide range. Thus out-patients and casualties are visited at home. Under the Northcote Trust advice and assistance is given in carrying on the home while the breadwinner or housewife is in hospital. Convalescence and maternity are provided for. Assistance is given in the supply of surgical appliances and dentures. Tuberculosis and venereal disease cases are dealt with; and the Northcote Trust Hostel provides treatment for women and girls suffering from venereal disease or requiring social care and help. There is a note in the report of a special investigation now being undertaken by Dr. James Birley into the mental condition of some of the girls in the hostel, with a view to providing for their future training, occupation, or management. The lady almoner's department seems to be extremely well organized and complete.

### ALNWICK INFIRMARY.

The new wing of Alnwick Infirmary was opened recently by the Duchess of Northumberland. The extension consists of a five-bed ward, a single-bed ward, and five bedrooms. Many special sinks, stoves, and other fittings have been presented by friends of the institution, the remainder of the expenses of furnishing being met by a fête held on the same day, at which a sum of over £650 was raised. Dr. Scott Purves, who has been associated with the infirmary for more than forty years, gave an account of the history of the institution, which was founded as a dispensary in 1815; five years later the work was transferred to another building, which, in 1849, was used as a cholera house. In 1850 its name was changed to the Alnwick Infirmary, although it still acted chiefly as a dispensary. A new infirmary was built in 1908, and further enlargements had become necessary owing to the great advances of surgery and the custom of performing operations in places specially equipped for the purpose rather than in private dwellings. The work of the hospital had been considerably increased by traffic accidents, and the accommodation for the nursing staff had hitherto been inadequate, but with the provision of the new wing a considerable advance had been made.

### LIVERPOOL OPEN-AIR HOSPITAL FOR CHILDREN, LEASOWE.

At the Liverpool Open-air Hospital for Children at Leasowe, Cheshire, some 250 children suffering mainly from non-pulmonary tuberculosis are treated annually. But treatment for non-tuberculous crippling disease is being developed by means of out-patient clinics. In his report for 1925 the senior medical officer (Dr. T. Hartley Martin) says that 82.8 per cent. of all the patients admitted to the hospital were discharged with the disease quiescent: the least satisfactory cases were those of lupus. Artificial sunlight has been of use in the majority of cases treated, and has prevented relapse during the sunless months, but it has not helped to prevent the occurrence of lardaceous disease. Orthopaedic workshops have been established, so that splints and appliances can be made cheaply and expeditiously. It is hoped that the development of the out-

patient clinics will tend to prevent relapses. The maintenance costs of the hospital are covered by grants from the Liverpool Corporation, various local authorities, the Ministry of Health, and the Board of Education. But capital expenditure is met by voluntary subscription, so that the management is appealing for £13,000 to wipe out the debt which remains on the capital account.

### SPECTACLES FOR SCHOOL CHILDREN: NEEDLEWORK.

The London Central Spectacles Committee for aiding the local supply of spectacles to elementary school children has now been working for five years, and its latest report is satisfactory. Despite much unemployment during these last years there has been a steady improvement and less need for grants from the central committee to the local committees. There are twenty-three local committees; five years ago only seven of them managed to finance their local work, now no fewer than nineteen do so. Last year 25,555 spectacles were ordered for the children, and of these 89.8 per cent. were obtained. Arrangements have been made in some districts for the opticians to pay periodical visits to the schools to adjust the frames of spectacles and do minor repairs. This is a move in the right direction; it might be copied generally in school areas. The report quotes a reply received from the London County Council Education Committee on the subject of needlework.

"The Council's regulations at present prohibit the teaching of needlework by artificial light, except in cases in which the Council's medical officer is satisfied that the artificial light is sufficient for the teaching of needlework without involving risk of injury to the children's eyesight. Further, when on any occasion it is necessary to use artificial light during the time when instruction, according to the time-table, should be given in needlework, arrangements are made for an alternative lesson to be given. In order to avoid the necessity for too frequently departing from the time-table, head-teachers are required to make provision, where practicable, for instruction in needlework to be given before 3 p.m. on any given day. The Council has directed that special attention shall be drawn to these regulations, and that the conditions shall be borne in mind when time-tables are approved."

The honorary secretary of the London Spectacles Committee is Miss M. Frere, 20, Ladbroke Square, W.11.

### LOCAL AUTHORITIES AND CANCER.

Dr. W. D. Champneys, assistant medical officer of health for Willesden, has reprinted his memorandum on cancer which was embodied in the report for 1925 of the Willesden Health Department. After summarizing present knowledge of cancer, Dr. Champneys indicates what, in his opinion, local authorities can do, under their existing legal powers, in the way of controlling the disease. He divides his proposals under the headings propaganda, diagnosis, treatment, and research. For propaganda in the medical profession he admits that local authorities should convene meetings of local medical practitioners to consider means for controlling cancer; that post-graduate lectures and demonstrations by recognized authorities should be given; and that local authorities should establish cancer clinics. Propaganda among the general public should be carried out by leaflets, posters, advertisements, and articles in the press, and by lectures. For diagnosis municipal clinics would be relied on. Dr. Champneys thinks that the minimum requirements of a clinic would be a staff consisting of a surgical specialist, a radiologist, and the necessary number of nurses; beds for the temporary admission of suspected patients; and an x-ray equipment. Diagnosis should be free to all persons applying for it, with perhaps a small charge for a barium meal. The treatment given to patients should include conveyance by ambulance to and from hospital; deep x-ray therapy at a hospital established or subsidized by the local council; surgical treatment at the same hospital. Research work should be carried out either in connexion with the work of the departmental committee of the Ministry of Health or as independent investigations, such as the inquiry into varieties of cancer made at Leeds. Dr. Champneys bases his propositions on the statements that cancer is steadily increasing in Willesden, as in the rest of England and Wales, and that, although the true nature and origin of the disease is unknown, enough is known about the conditions under which it occurs and the symptoms to which it gives rise to form the basis of a successful scheme

for its prevention or cure in a great many cases. With no wish to damp enthusiasm, it may yet be pertinent to suggest that some estimates are desirable as to the cost of such a scheme.

#### THE MIDWIVES AND MATERNITY HOMES ACT (1926).

Our attention has been called to an omission in the summary of the provisions of the Midwives and Maternity Homes Act (1926) which appeared in our issue of August 14th last. Section 2, Subsection 2, of the new Act amends the wording of a subsection of Section 14 of the Midwives Act, 1918, relating to the payment of fees to medical practitioners called in to assist midwives in cases of emergency. The subsection now reads as follows: Subsection (2) of section fourteen of the Midwives Act, 1918 (which imposes a condition on the payment of a fee to a medical practitioner called in to assist a midwife in case of emergency), shall have effect as though at the end thereof there were added the words "and shall submit his claim within two months from the date on which he was called in." As Part I of the new Act comes into force at once, medical practitioners should remember, when called in to assist a midwife, that if they do not give notice within two months they may find that their claim is statute-barred.

## Correspondence.

### GROWTH AND DIET FOR BOYS AND GIRLS OF SCHOOL AGE.

SIR,—The work of the Medical Research Council on diets for boys during school age is of the highest practical value to all who have the care of children, whether in the home or institution.

Dr. Corry Mann demonstrates the high value of milk, when added in sufficient quantities to "a basic diet of poor quality but adequate physiological value," to promote increased physical development. Boys who were having 1/4 pint of milk daily, as part of their basic diet, were found to gain, on an average, 1.84 inches and 3.85 lb. in the year.

Some of the lads were then given 1 pint of milk a day extra, with the result that they grew 2.63 inches, and gained 6.98 lb. in the year. Moreover, the increased rate of growth was maintained for the three years the experiment was carried out, the milk boys being 2.37 inches taller and 9.39 lb. heavier than the non-milk boys at the end of the three years. These valuable findings of Dr. Corry Mann add yet another stone to the building of the perfect man.

It is not claimed, of course, that milk is the only article of diet which produces and maintains growth. The boys who had 1 1/2 oz. butter were not far behind those who had 1 pint of milk. The boy daily supplied with 1/2 to 3/4 oz. of watercress weighed heavier, but did not grow more than the boy on the basic diet.

As a matter of interest, these results were compared with those of boys and girls (of the same age as those Dr. Corry Mann experimented with) who live under different conditions. His boys were under model conditions in an institution. These groups to be compared are in boarded-out homes in the country and in small branch homes. There are ten in each group. The observations cover a period of two years. One year's average is taken.

Group A.—Boys in boarded-out homes in country cottages gained an average of 2.33 inches and 6.65 lb. in a year.

Group B.—Girls under similar conditions to Group A, 2.32 inches and 7.05 lb.

Group C.—Girls in a small branch home, 2.30 inches and 7.15 lb.

Group D.—Girls in another small branch home, 2.14 inches and 6.70 lb.

In the boarded-out homes under review the children certainly do not have a pint of milk a day. Half a pint is what is aimed at. There are, however, more frequent suet puddings and fresh greens, such as lettuce. It has been noted in various reports that the boarded-out child tends to be tall, and the institution child stumpy. The child in the smaller branch home has, in one case, 1/4 pint

of milk, and in the other, milk a little in excess of that quantity. They hold their own in height and weight with the milk-fed boy. No butter is used. But there is only wholemeal bread in both, and in one rolled oats every day. The boys in the model colony have white bread, and porridge three times a week.

It is impossible to attribute growth to any one particular article of food. Milk, butter, suet, porridge, wholemeal bread, and fresh greens all make a difference when added in sufficient quantities. There is another influence which cannot be measured, and that is the personal supervision during meals which, however carefully it is tried to be maintained, tends to break down in large institutional life.

In one home, where the average rate of growth among ten girls was 1.75 inches and 5.4 lb. in 1924, it was found to be increased to 2.85 inches and 8.90 lb. in 1925. At the close of 1924 butter took the place of margarine, and wholemeal bread only was substituted for white factory bread. A handful of "sun-maid" raisins was given to each child every day, and almost every day of the year fresh fruit was doled out. Here is a difference which for one year, at any rate, exceeds the pace for the milk-fed boy.

What we do learn, however, from these figures is, first, that we must reasonably expect the child from 7 to 14 to gain 2 inches and 6 lb. in one year; second, that if he is not doing this, the diet he is being reared upon is deficient; third, that growth can be stimulated and maintained by the addition of many articles. (I am not going into the question of what can be curtailed from the diet.) It is taken for granted that personal hygiene, oral cleanliness, physical culture, fresh air and sunlight, judicious clothing, with happy and contented environment, have all been seen to. If strict attention is paid to all these matters to do with the child's health, a taller and heavier race will be produced, even when the foundations have been badly laid by early neglect and injudicious feeding.—I am, etc.,

A. H. MACDONALD,

London, E.1, Sept. 13th. Chief Medical Officer, Dr. Barnardo's Homes.

### THE PERIOD OF INFECTIVITY OF WHOOPING-COUGH.

SIR,—With the return of children to school in the near future an authoritative pronouncement is badly needed on this subject.

Medical officers of schools are in a dilemma. On the one hand they are told that infectivity of whooping-cough lasts "until two weeks after the last whoop," on the other that it ceases "four weeks from onset of catarrhal symptoms." Which is right? Recently a parent was given the first rule for his boy and the second for his girl, both of whom had had recent whooping-cough.

I believe medical officers of schools would welcome an authoritative pronouncement from a bacteriologist interested in Bordet's bacillus. Can Bordet's bacillus be isolated from the throat four weeks from the onset or not?

My own view is that, failing proof to the contrary, it is safer to exclude children until two weeks have elapsed since the last whoop. If the period of infectivity of four weeks only is regarded as correct, then a child may return to school with the whoop in full blast, for we all know that the whoop may not appear for three weeks or so after the child is suspect on account of a cough, etc. Again, a vaccine of a pure culture of Bordet's bacillus appears to me to act beneficially after the four weeks' period.—I am, etc.,

Malvern, Sept. 9th.

A. C. DEVEREUX.

### CHOLECYSTOGRAPHY.

SIR,—So much has been written and said recently regarding the advantages of cholecystography as a means of diagnosis in gall-bladder affections, that I think special attention should be drawn to a circular letter written by Mr. Martindale on August 9th.

As a preface to his letter he quotes a statement made by Professor Graham at the recent British Medical Association meeting to the effect that "Toxic reactions occurred in a certain number of cases after intravenous injection and



more after oral administration of the drug. . . .” Mr. Martindale then states that he has previously suggested the disuse of sodium tetraiodophenolphthalein as an intravenous injection, because in his opinion there will always be an element of risk with this chemical when used intravenously on human beings, however carefully it has been made and however carefully it is administered. He continues that if medical men still desire to use the substance in any form they will do so entirely on their own responsibility; and, moreover, in future he will not supply the drug for intravenous use.

Mr. Martindale is to be congratulated upon a very emphatic expression of his own conviction, and, coming from one of the greatest authorities in research work on pharmaceutical products, it is particularly significant.

Cholecystography is undoubtedly being widely practised in this country, and more especially in America, and the clinical and radiological investigations of affections of the bile passages have made rapid progress since its introduction. The opinion was expressed at Nottingham that it should become a standard method of investigation, but a little later the same speaker pointed out that very great care in technique was necessary to prevent reactions. Professor Graham stated that no death had been recorded following the injection, but Mr. Martindale tells us that the American literature abounds with references to toxic effects following its administration. Nearly all observers agree that reactions of a more or less severe degree occur in a certain percentage of cases, and various drugs have been advocated to counteract them. There is thus abundant evidence that there are very material dangers in what is, after all, only a diagnostic procedure.

I have used the iodine salt in about fifty cases, adopting the technique described by Graham. In a very substantial percentage of cases toxic reactions followed, varying in some from slight dizziness and nausea to repeated vomiting, a very appreciable fall in blood pressure, severe headache and collapse in others. In two cases, however, the symptoms became much more alarming. One patient became so ill that subsequent x-ray examination was deemed inadvisable, while the other towards the end of the administration suddenly became very ill, pulseless, and, in fact, one thought that she was going to die. She remained extremely ill for twenty-four hours in spite of most vigorous treatment, and for four days was as though recovering from a severe operation. Finally she left hospital, it being considered advisable to postpone operation. It is true that with the exception of this case no patient showed any untoward symptom on the day following the injection.

Alongside these cases, in all of which I have actually given the injection myself, a death has taken place at another hospital in this city. Following upon these experiences Mr. Martindale's letter came as no surprise. Apart altogether from the advantages and results of any test, it must be absolutely safe from a patient's point of view, and not until then can it be recognized as a routine method of diagnosis.

It appears to me, furthermore, that a most careful selection of patients has to be made, refraining particularly from employing cholecystography in elderly patients with a low blood pressure; but even then there remain patients who seem peculiarly intolerant to the drug.

Is it not probable that, just as in pycnography the use of sodium bromide has quite supplanted the irritant silver salts, we shall some day be furnished with a preparation free from any risk or even discomfort?—I am, etc.,

Birmingham, Sept. 4th.

CYRIL A. RAISSON.

#### SANATORIUM TREATMENT.

SIR,—In the JOURNAL of August 28th (p. 397) there appeared a review of a memoir on the influence of sanatorium and dispensary treatment and housing conditions on pulmonary tuberculosis, recently published in the *Annals of Eugenics*. My interest was aroused by the review, and I have now read the memoir.

I express no opinion as to whether the conclusions of the authors of the memoir will be confirmed by further investigation, or otherwise. But I would point out that their argument is invalidated by a most serious defect in

the data, on which they have spent so much ingenuity and labour. There are other defects—for example, that 29.1 per cent. of the “sanatorium treated” cases were lost sight of, and 51.6 per cent. of those “otherwise treated”; that fourteen days in a sanatorium was held sufficient for a case to be classed as “sanatorium treated”; and that for a patient to be classed as under “regular” medical treatment at the dispensaries the criterion was “not less than four visits per year with a minimum of three months’ treatment.”

But the great defect to which I refer is the want of information as to the presence or absence in each case of sputum containing tubercle bacilli. On the fifth page of the memoir the following statement is made:

“It was found impracticable to use the presence or absence of tubercle bacilli in the sputum as more than an adjuvant in diagnosis, since the number of cases in which bacilli were sought for and found was relatively small. Thus the percentages of cases in which the diagnosis was thus confirmed were:

	Lt.	Lz.	Is.
Males ... ..	6.1	13.1	19.0
Females ... ..	4.2	10.8	11.9

Investigation of county Down cases has shown me that among patients suffering from pulmonary tuberculosis who have survived for more than six months from the time when they first came under observation, there has been an enormous difference, as regards both survival and recovery of working power, between cases in which tubercle bacilli were found in the sputum and those in which, though sought for, they were not found. Hence it is unscientific to lump these two classes together without any indication of the relative proportions of each class in the various subsections tabulated in the memoir.

In any investigation of this kind, T.B.+ and T.B.—cases should be kept quite separate, and data which do not permit of this being done should be avoided.—I am, etc.,

JOHN R. GILLESPIE, M.A., M.D., D.P.H.,

Tuberculosis Medical Officer, County Down.

Knock, Belfast, Sept. 8th.

SIR,—Judging from your review of Dr. Stocks's work on sanatorium treatment, it appears that, if all other factors have been rightly evaluated, its chief worth is the knowledge it gives that sanatorium treatment as administered in the North of Ireland is unsuitable for the people who live there. In England nobody who had received sanatorium treatment for less than two months would have been included.

Another and a most important consideration will occur to everyone who has done general sanatorium work. This is that the Irish are, as a rule, the worst sanatorium patients we meet with.—I am, etc.,

August 29th.

MÉDECIN POITINAIRE.

#### HARVEY AND THE LANCASHIRE WITCHES.

SIR,—In your interesting article (August 14th, p. 311) on a Harveian Tercentenary you refer to Harvey's association with the trial of the four Lancashire witches in 1634, but it was not on Harvey's judgement alone that their fate was decided. Their story as it can be traced by documents preserved at the Record Office is interesting.

Throughout the seventeenth century belief in witchcraft was very general, and in the spring of 1634 a serious outbreak of that offence, as it then was, occurred in Lancashire.

A letter dated May 16th, 1634, written by Sir William Pellham of Brocklesby to a friend, says there had been discovered “a huge pack of witches in Lancashire wherein it is said 19 are condemned and at least 60 already discovered; there are divers of them of good ability and they have done much harm. It is suspected that they had had a hand in raising the great storm wherein his majesty was in so great danger at sea in Scotland.”

The women examined by Harvey and others were the survivors of a batch of seven, three of whom had died in

gaol, and they had already been examined by Bishop Bridgeman of Chester as to their spiritual condition. The evidence given before the bishop of their intimate relations with the devil is amusing to read now, but it was a very serious matter in 1634.

The women were brought to London in charge of the under-sheriff of the county. A letter dated from Whitehall, June 29th, 1634, and addressed to Alexander Baker, Esq., and Sergeant Clowes, Esq., His Majesty's surgeons, directed them "to make choice of midwives to inspect and search the bodies of those women lately brought up by the sheriff of the county of Lancaster, indicted for witchcraft, wherein the midwives are to receive instructions from Mr. Dr. Harvey, the King's physician and themselves." This letter is signed by Henry Montagu, Earl of Manchester, Lord Privy Seal; Sir John Coke; and Sir Francis Windebank, who were the principal Secretaries of State, and is endorsed, "The prisoners are at the Shippe Taverne, Greenwich." In obedience to this letter the prisoners were examined, probably at Greenwich, and the following certificate was sent to the Council:

"July 2nd, 1634. Surgeon's Hall, Mugwell Street, London. That in humble obedience to the Council and by the direction of Mr. Dr. Harvey and in his presence, they have made diligent search and inspection on those women lately brought up from Lancaster and find as follows: On the bodies of Janet Hargraves, Frances Dicconson, and Mary Spencer nothing unnatural nor anything like a teat or mark. On the body of Mary Johnson they find two things which may be called teats; the first in shape like the teat of a bitch, but in their judgment nothing but the skin of the fundament drawn out as it will be after the piles on the application of leeches; the second is like the nipple or teat of a woman's breast, but of the same colour as the rest of the skin, without any hollowness or issue of any blood or juice to come from thence."

This certificate is signed by William Clowes and Alexander Baker, and by five other surgeons and the midwives, but is not signed by Harvey. Alexander Baker was Master of the Barber-Surgeons in 1622. William Clowes was Sergeant-Surgeon to the King, and Master of the Barber-Surgeons in 1626 and again in 1638. He was the son of William Clowes (1544-1603), Surgeon-General to Queen Elizabeth, and surgeon to St. Bartholomew's Hospital.

The certificate probably helped to liberate the women, but the evidence given against them was very unreliable and grotesque. Two of the chief witnesses were Edmund Robinson and his son Edmund, a boy of about 10 years of age. The boy had told some marvellous stories, but on July 10th, when examined before George Long, justice of the peace for Middlesex, made a recantation of his evidence, and said that he had told the tales about the women to excuse himself when he had been at play. The father was imprisoned, and there are several references to appeals for his release. I do not find any account of a formal trial in court of the women, and they were probably liberated soon after Harvey's examination. On July 4th, 1634, at a meeting of the Council at Whitehall, Robert Maudesley, the under-sheriff who brought up the witches from Lancaster, was discharged from further attendance, and it was ordered by the Lord Treasurer that he should be rewarded.

During the seventeenth century trials for witchcraft were very numerous. The last trial in England was in 1712, and the laws against witchcraft were repealed, 10 George II (1736).—I am, etc.,

London, N.W.3, Aug. 26th.

H. A. CLOWES.

#### CAN BEACH BATHING BE MADE SAFER?

SIR,—The numerous bathing tragedies that occur around our coasts in the summer season raise the question whether the precautions taken are adequate to meet the risk of sudden and unaccountable drowning. The causes of drowning under the conditions of beach bathing may be set down in four categories.

1. Sudden loss of consciousness due to syncope or temporary heart failure.

2. Loss of consciousness due to an epileptic fit. In themselves these causes are not necessarily fatal when they occur on land, but in water, even of very moderate depth, drowning occurs owing to the helpless condition of the person. While these causes

account for a few of the fatalities, there are two other causes which account for the vast majority—namely:

3. Cramp or painful rigid spasm of the voluntary muscles.

4. Sudden fright accompanied by complete loss of confidence, a sense of helplessness, and a paralysis of the will.

Three and four may be combined. Cramp does not seize the four limbs simultaneously; if this did occur the person would be as helpless as if attacked by the two first mentioned causes. As a rule one limb is seized, then there supervenes a depressing feeling of loss of confidence, and if there is no support near at hand to which the bather can cling, he struggles in a more or less frenzied state and sinks. A similar mental state is often induced when a bather is swept out of his depth by the strong undertow of a breaker.

The moral of this is that beach bathing could be made much safer if provision were made so that bathers in temporary difficulties could easily cling to some support near at hand. The present precautions of prohibiting certain portions of a beach and of providing beach watchers and men in boats are insufficient. Drowning in these cases takes place with extreme rapidity. In less than five minutes a healthy vigorous person becomes a corpse. What is required is something to help the bather to help himself at the moment of temporary difficulty. A drowning man will clutch at a straw, and I suggest that this effort indicates the means by which beach bathing could be made more safe.

If a portion of a beach were taken and strong wooden posts were driven into the sand at suitable intervals apart, from low-water mark to high-water mark, a wire rope stretched across these posts and anchored beyond low-water mark and stretched tight to a fixture above high-water mark would provide a means whereby small hempen ropes with floats attached could be suspended to the water level. It may be said that some rash persons would not bathe in the area equipped for safe bathing, but while that may be so, the responsibility for disaster would not lie with the local authority which had made such provision.

It may surprise some to know the numbers drowned yearly while bathing. The Registrar-General reports that the number of deaths from drowning was as follows:

		Males.	Females.
1917	...	231	9
1918	...	153	19
1919	...	177	16

It may be assumed that the majority of these persons were healthy vigorous individuals in the early or middle period of life. The cost of the suggested equipment is not great, certainly not great to those much advertised seaside resorts where thousands of pounds are spent on questionable amusements.

Beach bathing is a healthy and joyous recreation, and any suggestion to lessen the annual toll of heart-breaking tragedies should be welcomed.—I am, etc.,

September 1st.

NEPTUNE.

#### PUERPERAL FEVER AND PUERPERAL PYREXIA.

SIR,—I wonder if practitioners fully realize the amount of work which is imposed upon them by the recent Order relating to the above conditions. Not only are they required to notify the case, but they may also have to furnish a complete report on the condition of the patient prior to the confinement, the names of those who have made vaginal examinations, the clinical course of the labour or miscarriage, amount and character of the lochia, copy of temperature chart, etc., and all for 2s. 6d., less the cost of postage—that is, 2s. 4½d. To be sure that the case is notifiable some reliable person must take the temperature during a period of twenty-four hours.

Although I am all in favour of doing all that can be done to ascertain the cause of puerperal fever or pyrexia, I do not think the doctors should be called upon—nay, compelled—to give so much time and skill for the ridiculous fee of 2s. 6d. As the necessary report is to be so full I suggest 7s. 6d. as being the least that should be paid. I have personally no financial interest in the matter as I have ceased to take midwifery cases.—I am, etc.,

Plymouth, Sept. 4th.

S. NOY SCOTT.

## APPENDICITIS AND VEGETARIANISM.

SIR,—The increase of appendicitis during the present century has been attributed to the increased consumption of imported meat, both tinned and frozen, and the decreased consumption of vegetables containing a plentiful supply of cellulose.

If this theory were correct we would expect to find vegetarians immune from the disease. At the present time I have a case under my care of acute gangrenous appendicitis in a boy of 10, whose parents and himself have been life-long vegetarians.

I am interested to know if this case is an exception.—I am, etc.,

Birmingham, Aug. 25th. HAMILTON BAILEY, F.R.C.S.Eng.

## GONGYLONEMA AND CANCER.

SIR,—The only reply to Professor Leiper's letter that seems to be necessary is the statement that my views on the synonymy of the various species of *Gongylonema* are based upon evidence which I have published in full. Professor Leiper, so far as I am aware, has not yet made public the evidence which leads him to differ from me.

As a zoologist, I have never ventured to express a personal opinion on the causation of cancer.—I am, etc.,

British Museum (Natural History),  
London, S.W.7, Sept. 11th.

H. A. BAYLIS.

## Obituary.

HERBERT WILLIAM PAGE, M.A., M.Chir., F.R.C.S.,  
Consulting Surgeon, St. Mary's Hospital.

WE regret to record the death of Mr. Herbert William Page, consulting surgeon to St. Mary's Hospital, which took place at Farnham on September 9th, after a long illness, in his 81st year.

He was the eldest son of William Bousfield Page, F.R.C.S., of Carlisle, and was born on December 22nd, 1845. He entered Edinburgh University in 1864, and subsequently went to Christ's College, Cambridge, where he graduated B.A. in 1868, M.B. in 1870, and M.A. in 1872; he became Master of Surgery in 1873, having obtained the Fellowship of the Royal College of Surgeons in 1871. He was a student at the London Hospital, and was house-surgeon to Sir Jonathan Hutchinson. Amongst his teachers were Sutton and Hughlings Jackson, from the latter of whom he derived his interest in neurology. He studied also at Vienna.

On the outbreak of the Franco-Prussian war, Page volunteered and joined the German army as assistant surgeon in the Hessian Division, serving at the Princess Alice Hospital at Darmstadt. When he returned to England he joined his father for a short time in practice at Carlisle; but in 1875 he was appointed surgical registrar at the London Hospital, and in the following year became assistant surgeon to St. Mary's Hospital. In 1881 he won the Boylston Medical Prize at Harvard University for his essay on "Injuries of the back, without apparent mechanical lesions, in their surgical and medico-legal aspects." A second edition was published in 1885 under the title "Injuries of the spine and spinal cord, without apparent mechanical lesions, and nervous shock in their surgical and medico-legal aspects."

From 1899 to 1907 Mr. Page served as a member of the Council of the Royal College of Surgeons of England, and was for eight years a member of the Court of Examiners of that body. He was also examiner in surgery at the Universities of Oxford, Cambridge, and Birmingham. He served as president of the Neurological Society, an unusual position for a surgeon. But the work in which he chiefly distinguished himself was as an expert in conditions arising from injuries in railway accidents. As surgeon to the London and North-Western and Great Western Railways he devoted much time to the investigation of symptoms produced by such injuries, and in his frequent appearances as witness on behalf of these companies he displayed great logical power and knowledge of medicine.

He was a straightforward witness, forming his opinions carefully, and adhering to them strongly and clearly when formed. Moreover, his tact and courtesy when called upon to meet witnesses on the other side must frequently have saved his companies from unnecessary appearances in court. Page devoted much attention to the condition known as "railway spine," or "concussion of the spine"; and with no uncertain eye could recognize the cases in which cure was likely to be effected speedily by heavy damages. It was in cases such as these that he employed his powers of persuasion in the endeavour to prevent medical experts on opposite sides from lowering the prestige of the profession.

Page's highly original views on "railway spine" gave rise to great controversy in the medical profession, and were opposed by those who supported the opinions of Professor Erichsen. The views were embodied in the Boylston essay which gained the Harvard prize, and were subsequently elaborated in Page's book, *Railway Injuries*. It was as a result of his work that traumatic neurasthenia came to be better recognized; and though the war has greatly increased the stock of remedial measures, the curative effect of legal damages still remains.

Page's surgical work in connexion with injuries of the head has been described as unequalled among his contemporaries. It was conscientious and careful, and of great value to his students. His lectures were clearly reasoned and scholarly, if not dramatic. Of the assistance he gave in raising the medical school at St. Mary's to its high position there can be no doubt; no less certainly must Page be regarded as a pioneer among those experts in medico-legal matters for whom the school is now so famous. At the Annual Meeting of the British Medical Association held at his birthplace—Carlisle—in 1896 he was vice-president of the Section of Surgery; and at the Ryde meeting in 1881 he had acted as honorary secretary of the same Section.

As Page never sought to enter the limelight, his name is not connected to any extent with public affairs; but he was a justice of the peace for Surrey. His first wife was a daughter of the Rev. Christopher Parker of Skirwith Abbey, Cumberland. In 1905 he married Kathleen, daughter of Canon Houghton. He leaves two daughters by his first wife; and he is survived by all his brothers—Mr. Ernest Page, K.C., Recorder of Carlisle and Benchet of the Inner Temple; the Very Rev. Arnold Page, Dean of Peterborough; and Mr. Lawrence Page, until lately solicitor to the Great Western Railway Company.

S. A. POWELL, M.D.,

Formerly Professor of Medical Jurisprudence, Grant Medical College, Bombay.

DR. SAMUEL ARTHUR POWELL, O.B.E., V.D., died suddenly at Sutton on August 28th, aged 62. He had been in the Oriental Club, in his usual health, for some time on the previous afternoon. He was educated at Trinity College, Dublin, and at Belfast, and graduated as B.A. in the natural sciences tripos in 1885, and as M.B., M.Ch., and M.A.O. of the Royal University, Ireland, in 1887. After qualifying he was for many years a planter's doctor in the tea districts of Assam. In 1899 he went to South Africa in Lumsden's Horse, the corps raised in India, chiefly from among the planters, by Colonel Lumsden, for service in South Africa. He was mentioned in dispatches, received the Queen's medal with three clasps, and received a commission as honorary captain in the army. On his return to India he was appointed police surgeon of Bombay, and professor of medical jurisprudence and biology in the Grant Medical College, Bombay. He was also a justice of the peace for that city, a fellow and examiner of Bombay University, consulting physician to St. George's Hospital, Bombay, and inspector of lepers, Bombay; and held a commission as lieutenant-colonel in the Indian Defence Force, formerly Indian Volunteers. He had received the Indian Volunteer officer's decoration. During the great war he was commandant of the Byculla officers' hospital in Bombay, was mentioned in dispatches, and received the O.B.E. Retiring under the age limit a few years ago, he

set up as a consultant in Harley Street, and was consulting physician for tropical diseases to the Ministry of Pensions.

The above outline of Dr. Powell's career may be supplemented by extracts from an appreciation of his work and character sent us by a friend:

"Dick" Powell, he writes, was no doubt better known in India than in this country, but his brilliant qualities had won for him here also a high reputation for scientific skill, as well as the affection of a wide circle of friends. He had to an extraordinary degree the power of winning true and abiding friendships. In 1888 he sought a career in India as medical officer in North-West Frontier. There he saw an extraordinary diversity of practice, but he threw himself into the work with all the zest of his nature, and yet found time to attend to bacteriological studies, which fascinated him. As a professor in Bombay he had the faculty of making his lectures very interesting, both by the originality of his treatment and by his eminently practical demonstrations, and his memory will always be cherished with great affection by his old students. He did valuable work also in the Senate of the University of Bombay, and his friends often recalled his witty and piquant speeches whenever he had to deal with obstructionists. His range of knowledge was extraordinary, and in India he carried out a far greater number of operations for cataract than most eye specialists could boast of. On one occasion he operated successfully on an elephant, and the great animal used afterwards, when he saw him, trot over and follow him like a dog. His principal achievements in medicine, however, consisted in a series of his observations in yaws, which resulted finally in the best description and definition of that disease that we possess. For one thing, he clearly differentiated the lesions of yaws from those of syphilis. When Schaudinn discovered the spirochaeta of syphilis in 1905 Powell had his specimens examined for a similar organism, with positive findings, though Castellani's discovery of the organism found precedence in time. Powell showed that the invasion of syphilis had taken place as a subsequent infection in well defined cases of yaws. His medico-legal work in Bombay soon earned him not only distinction but popular fame, for in addition to his expert knowledge he added a keen insight into human nature and an intimate acquaintance with local conditions. One of the results of his observations was that it was not so much opium as alcohol and cannabis indica that caused crime and degeneracy in India. His papers at the Royal Society of Medicine and elsewhere were greatly appreciated, not only for the matter, but for the style. He might have acquired a bigger position in the world's eye but for his innate modesty; but all these things will not now matter to his friends, who will rather remember "Dick" Powell for that spirit of kindness which went so well with his unselfish and genial nature.

Mr. CECIL JOHN DAVENPORT, who died suddenly in Shanghai on September 4th, aged 65, was born in Adelaide, South Australia. He received his medical training at St. Bartholomew's Hospital, whence he obtained the diplomas M.R.C.S., L.R.C.P. in 1887, and the F.R.C.S. Eng. in 1889, in which year he went to China as a medical missionary of the London Missionary Society. He worked first in Chungking and later in Wuchang, and in 1905 was appointed medical superintendent of the Shantung Road Hospital, Shanghai, a large voluntary hospital for the Chinese. This post he held till his death, and under his superintendence the hospital extended its activities and improved in efficiency; it became also a training centre for doctors and nurses. Recently the hospital received £5,000 under the will of the late Mr. Henry Lester of Shanghai (JOURNAL, July 24th, p. 166), and it was hoped that Mr. Davenport's guidance and judgement might be given to the trustees in its administration. Mr. Davenport was a kindly man, with high Christian principles; his life was devoted to his work without desire for personal distinction, and his loss will be felt by all classes in the community where he lived. The value of his labours was

recognized by the Chinese Government, which bestowed upon him a decoration, and he was a past president of the China Medical Missionary Association. He married in 1890 Miss Miles, who was before marriage Sister Martha at St. Bartholomew's Hospital. He is survived by his widow and three children, of whom one, Mr. R. C. Davenport, is an ophthalmic surgeon in London.

Dr. JOHN JONES GASPERINE, who died on August 13th, at the age of 36, as the result of a bathing accident at Long Island, in the United States, was born in Ireland and received his medical education at Edinburgh and St. Bartholomew's Hospital. He obtained the diplomas M.R.C.S., L.R.C.P. in 1916, the D.P.H. in 1921, and the D.P.M. in 1922. He served with the Royal Navy from 1914 to 1919, and had held the appointments of house-physician and house-surgeon at St. Bartholomew's Hospital, assistant pathologist at the London Lock Hospital, house-physician and house-surgeon at St. Andrew's Hospital, Dollis Hill, assistant medical officer to the London County Mental Hospitals, and medical superintendent of the Norwood Sanatorium, Woodbridge. At the time of his death he was attached to the Cunard Line as surgeon. He was a member of the British Medical Association and of the Medico-Psychological Society of Great Britain and Ireland. A colleague writes: Dr. Gasperine was a man of singular kindness and charm. He had a quiet unassuming personality; his wide professional experience and knowledge of the world in general endowed him with a skill and wisdom more to be expected in a man of maturer years. He had made many friends on both sides of the Atlantic who will mourn his loss.

Dr. TOM BOWER FAWLEY of Hull, who died on August 22nd, received his medical education at Guy's Hospital and obtained the diplomas M.R.C.S., L.R.C.P. in 1902. After serving as assistant to Dr. A. Hawkyard of Leeds he started practice in Hull about twenty years ago, and was appointed visiting surgeon to the Hull and Sealecoates Dispensary. He built up a large practice among the industrial classes, by whom he was highly esteemed. He was much interested in music, had a fine tenor voice, and was an accomplished violinist. He was a member of the East York and North Lincoln Division of the British Medical Association.

## The Services.

### SURGEON REAR-ADMIRAL BEADNELL'S RETIREMENT.

The brief notice among "Naval and Military" of last week that Surgeon Rear-Admiral C.B., K.H.P., R.N., had been placed on the retired list at his own request. The notification appeared in the *London Gazette* of August 24th. At the time of his retirement Surgeon Rear-Admiral Beadnell was the senior of the six medical officers of that rank on the active list, having been promoted to it in February, 1922, while still in his 50th year. He entered the navy in 1896, and as surgeon of H.M.S. *Powerful* saw active service both during the Philippine war of 1898 and with the Naval Brigade in the South African war. For his work in the Boer war he was awarded eight years' special promotion to the rank of staff surgeon. In 1904 he was promoted fleet surgeon. During the first three years of the great war he served in H.M.S. *Shamoon*, flagship of the Second Cruiser Squadron. In 1922 he was British representative of the Army and Naval Medical Departments at the International Congress of Surgeons held in Washington. In the following year he received the appointment of P.M.O. commanding the Royal Naval Hospital, Chatham, and naval member of the Medical Consultative Board of the Admiralty. He was created C.B. in 1924. His retirement, nearly six years before attaining the age limit for his rank, will facilitate the promotion of his juniors, but removes from the navy an active-minded and able medical officer with a fine record of service afloat and ashore.

### DEATHS IN THE SERVICES.

Lieut.-Colonel William James Fraser, I.M.S., died of cholera at Raipur, Central Provinces, on August 19th, aged 45. He was born at Bannachie, Ceylon, the third son of the late John Fraser of Abbotsford, Ceylon, and of Bridge of Allan, and educated at Edinburgh, where he graduated as M.B. and Ch.B., with honours, in 1904; he also took the university diploma in tropical medicine and he took the F.R.C.S. Ed. in 1908, and the I.M.S. as lieutenant in 1925. He entered the I.M.S. as lieutenant-colonel on August 1st, 1925. He served in the great war of 1914-18, and was mentioned in despatches in the *London Gazette* of June 5th, 1919.

## Medical News.

THE next international congress of surgery will be held at Warsaw in July, 1929, under the presidency of Professor Hartmann of Paris.

THE new baths at Leamington Spa will be opened on Saturday, October 9th, by Sir H. Kingsley Wood, M.P., Parliamentary Secretary, Ministry of Health. The ceremony will take place in the Royal Pump Room at 3 o'clock.

THE opening ceremony of the winter session at King's College Hospital Medical School (University of London) will be held on Friday, October 1st, at 2.30 p.m. The introductory address will be given by Sir Humphry Rolleston, Bt., K.C.B., M.D., Regius Professor of Physic in the University of Cambridge. The annual dinner of past and present students will be held at 7 for 7.30 on the same day at the Criterion Restaurant, Piccadilly, W.1, with Dr. Frank H. Jacob in the chair.

THE inaugural address at the Westminster Hospital Medical School will be delivered on Friday, October 1st, at 3 p.m., by Sir Archibald E. Garrod, K.C.M.G., F.R.S., Regius Professor of Medicine in the University of Oxford. The proceedings will take place in the board room of the hospital, and tea and coffee will be served afterwards.

THE Association of Special Libraries and Information Bureaux will hold its third week-end September 24th to 27th at . . . Papers are to be given on various . . . collection and distribution of information by experts, including Dr. de Vos Van Steenwijk, of the League of Nations, and Mr. Kaiser, of the Engineering Societies' Library, New York, who will speak on systematic indexing. The British Medical Association will be represented by its Intelligence Officer, Miss A. L. Lawrence, M.A., LL.B.

DURING and after the second week of October three series of clinical lectures illustrated by cases will be given at the Maudsley Hospital, Denmark Hill, S.E.5, at 2.30 p.m. On Mondays Dr. W. Moodie will lecture on the relations of mental disorder to physical conditions, on Wednesdays Dr. Edward Mapother on neurotic and psychotic syndromes, and on Fridays Dr. W. S. Dawson on mental symptoms and their genesis. In addition a discussion on cases in the Mental Hospital is held in the wards every Tuesday at 11.30; and monthly, on the last Friday of each month, at 4.30, at which a group of patients from one of the London County Council Mental Hospitals is shown. These lectures and discussions are open to medical practitioners without fee. Posts as clinical assistant can be obtained on application to the medical superintendent. The course of lectures and practical instruction for the diploma in psychological medicine will be held at the Maudsley Hospital, beginning in January next. The lectures and demonstrations are given in series, and either group can be attended separately. The fee for the course is ten guineas, or for a single series two guineas, payable to the Fellowship of Medicine, from which office (1, Wimpole Street, W.1) copies of the syllabus may be obtained.

THE lectures arranged by the British Institute of Philosophical Studies for the forthcoming session, beginning October 4th, include ten lectures on medical psychology by Dr. T. W. Mitchell and a course on general psychology by Professor C. W. Valentine. In the Lent term Dr. C. Delisle Burns will lecture on the philosophy of social life, and Professor J. S. Mackenzie on social values, and the Dean of St. Paul's has promised to give a course of six lectures on the philosophy of religion in the summer term. The syllabus of lectures can be had on application to the Director of the Institute, 88, Kingsway, W.C.2.

THE sixth French Congress of Industrial Chemistry will be held at Brussels from September 26th to 30th, under the presidency of Dr. Gilbert, when questions of industrial hygiene will be discussed in the sixth section. Further information can be obtained from the General Secretary, 65, Rue du Canal, Brussels.

A COMPREHENSIVE course dealing with cancer will be held at Strasbourg from October 18th to November 6th, and will include practical work in the use of x rays, radium, and diathermy; the general principles of treatment; lectures on cancer affecting different parts of the body; and clinical demonstrations. The fee is 250 francs, and further information may be obtained from Dr. Gnnsett, Hôpital Civil, Strasbourg.

A MEMORIAL tablet has recently been placed on the house in the Luisenstrasse, Berlin, formerly occupied by the Reichsgesundheitsamt, where Koch discovered the tubercle bacillus.

COUNCIL meetings of the Medical Women's International Association were held in Prague on August 26th and 29th. The President, Lady Barrett, took the chair, and reports of the activities of the various national associations were presented by the respective national corresponding secretaries. The most recently formed association was that of Hungary; and Hungarian delegates attended the meetings for the first time, and presented an excellent report. In addition to the other business of the council, medical meetings were held at which the subjects of tuberculosis and pregnancy, and women as police surgeons were considered. Representatives from the Czechoslovakian Ministry of Health attended these and took a prominent part in the discussions, a full report of which will be published in the current number of the *Medical Women's International Journal*. The president gave a dinner on the night preceding the council meeting, at which she welcomed the Lord Mayor and other officials and delegates. The association was also fortunate in having been invited to hold all the meetings in the Old Town Hall. The Lord Mayor and town councillors received the delegates and entertained them at a luncheon party; and the State Railways and Ministry of Health arranged a full programme, granting facilities to visit various spas, hospitals, and institutions.

THE list of candidates for election to the Royal Infant Orphanage, Wanstead, E.11, is now open. Children of both sexes who have lost both parents or the father only, and who are under 7 years of age, are eligible and are received from all parts of the United Kingdom. Applications should be addressed to the secretary at the orphanage.

## Letters, Notes, and Answers.

ALL communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

THE TELEPHONE NUMBERS of the British Medical Association and the *British Medical Journal* are MUSEUM 9361, 9362, 9363, and 9364 (internal exchange, four lines).

THE TELEGRAPHIC ADDRESSES are:

EDITOR of the *British Medical Journal*, Aitiology Westcent, London.

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate Westcent, London.

MEDICAL SECRETARY, Medicisera Westcent, London.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

## QUERIES AND ANSWERS.

DR. CHARLES LANT SANSON (Port Health Office, Calcutta) writes in reply to "P. S. H." (*JOURNAL*, July 31st, p. 235), who asked for a method of killing fleas in his home: I was bothered with fleas in South Africa—tried sulphur and chlorine fumigation and other means, and failed until I used calcium hypochlorite. This was spread all round the rooms and brushed into the centre, and in a short time all the fleas disappeared.

### X-RAY TREATMENT OF RINGWORM.

DR. H. HALDIN-DAVIS (London, W.) sends the following reply to the query by "T. E. R." in our last issue (p. 511): For the most part aluminium filters are used in the x-ray treatment of ringworm in America because there, owing, I understand, to the dryness of the atmosphere, the Sabonard pastille does not work so well as it does here and on the continent of Europe. Here there is no need for filtered rays if the pastille be properly used. The difficulty is to judge the tint correctly under varying conditions of light. This difficulty is much lessened if a Lovibond tintometer be used; it is made by Lovibond of Salisbury, who are specialists in colorimetry. I have used it in over 700 cases without mishap. I have never used filtered rays myself, but I understand that when they are employed the pastille is exposed to the filtered rays and brought to 4.5 tint B, as with unfiltered rays. In America they employ other methods of measurement of the dose, owing, as stated above, to the unreliability of the pastille.



## ETIOLOGY OF MENTAL DISEASE.

"F. O. S." asks what is the best and latest work on insanity as showing that insanity and other abnormal mental conditions are due to structural alterations in the brain caused by disease or injury or other defect?

\* \* \* That insanity and other abnormal mental conditions are due to structural alterations in the brain is a thesis now seldom advanced in psychiatric textbooks. The proposition, as it stands, is, in our present state of knowledge, unproven. Most observers, however, firmly believe that in all such conditions there is some functional disorder of the brain, presumably of a biochemical nature; and that there may, of course, be simultaneous functional derangements of the endocrine organs and the vegetative nervous system, which are possibly causative. There is no gainsaying the unsatisfactory nature or the theory of the psychogenesis of certain mental disorder, of which Bleuler is perhaps the leading exponent; for where there is a psychogenesis there must indubitably be physiological reasons why the brain should be vulnerable. The late Sir Frederick Mott was perhaps the leading exponent of a purely materialistic interpretation. His views are to be found in his many lectures and addresses, most of them published in our columns during the last few years. Dr. J. S. Bolton, in *The Brain in Health and Disease*, and in many recent writings, is a vigorous advocate of similar views. Almost all recent textbooks (for instance, that of Craig and Beaton, reviewed in our issue of June 26th, 1926, p. 1088) consider all theories, and the necessary arguments may be abstracted therefrom. Tanzi's *Textbook of Mental Diseases*, which was translated into English in 1903, would still answer our correspondent's purposes very well. So far as we can ascertain, there has been no more recent edition of the English translation.

## INCOME TAX.

"MEDICUS IN A BRITISH COLONY" proposes to spend rather more than a year in England and on the Continent in doing some post-graduate work. He inquires whether he will be liable to income tax in the United Kingdom in respect of income derived from colonial investments.

\* \* \* No—provided that he does not spend six months in this country in any one financial year. (N.B.—The financial year commences on April 5th.)

"J. D. B." inquires why relief in respect of wear and tear and upkeep of a motor car is allowed to a private practitioner and not to an army medical officer who uses a car in his professional work.

\* \* \* The former's earnings fall under Schedule D and the latter's under Schedule E, and, as different rules apply to the two schedules, seeming anomalies occur sometimes. If "J. D. B." uses his car "wholly, exclusively, and necessarily in the performance of the duties of his office," he should be allowed to deduct the running cost. Judicial decisions have excluded the expense of travelling between the residence and the place of work from the allowance.

"T. C. L." replaced his car in 1925, the replacement cost being £290; the inspector of taxes proposes to allow this sum as a professional expense of the year 1925, but assumes that that will affect the 1926-27 assessment only.

\* \* \* Presumably the inspector is assuming that the three years' average will cease to operate for 1927-28; that is the existing intention, but it is perhaps not certain that the change will then be made, and in any event the accompanying provisions for relieving hard cases might assist "T. C. L." As regards the depreciation (20 per cent.) allowance on the new car, we are of opinion that an allowance of £87 should be given as for 1926-27; the ground for withholding it is no doubt that depreciation and replacement allowances cannot be given simultaneously, which is correct, but may be met by pointing out that the claim to deduct the £290 may be regarded as made under the statutory provision for an "obsolescence" allowance.

## LETTERS, NOTES, ETC.

## POST-GRADUATE HOSTEL.

MR. A. P. BERTWISTLE, F.R.C.S.Ed. (honorary secretary of the Hostel), writes: The Post-Graduate Hostel, Imperial Hotel, Russell Square, W.C.1, is arranging for a series of discussions on anatomical and physiological topics, in order that a graduate may have the opportunity of hearing the views of teachers from schools other than his own. Their purpose will be to show the practical value of these subjects, and they should therefore interest the body of the profession, besides making the subject more interesting to the graduate studying them. The first of these will be on Tuesday next, September 21st, when Professor F. R. S. Frazer (St. Mary's) will open the discussion on "Some clinical bearings of embryology."

## CANCER IN FAMILIES.

DR. ALFRED PACKMAN (Roohester) writes: Probably many other practitioners come across cases of cancer affecting members of the same family, but the following cases in two families particularly are worthy of note:

Family 1.			
Edward B., 76	...	...	Cancer of stomach.
Emma, 74	...	...	Ditto.
Emma, 45 (her daughter)	...	...	Cancer of breast.
Charles, 56	...	...	Cancer of liver.
James, 52	...	...	Cancer of bowel.
Family 2.			
Mrs. B., 76	...	...	Cancer of breast.
Mrs. P., 73	...	...	Cancer of bowel.
Mr. P., 74	...	...	Cancer of right cheek, mouth, and throat.
Mrs. W., 72	...	...	Cancer of breast.
Mr. P., 55	...	...	Cancer of right eye.

In addition, I have records of mother and two daughters—all cancer of stomach; two sisters—cancer of uterus; also brother and sister—cancer of liver.

## HERPES ZOSTER AND VARICELLA.

DR. W. P. LE FEUVRE (M.O.H. Knysna, South Africa) writes: With reference to the case, reported by Drs. L. E. Green de Woolfson and W. H. Smith in the JOURNAL of May 29th (p. 902), may I point out that the appearance of the herpetic and varicellar eruptions in an infant of 8 months is probably a record as regards age only, as numerous similar cases have been reported in the JOURNAL and elsewhere, both in children and adults. An early case is to be found (at first mistaken for small-pox) in the Sydenham Society's *Transactions* for 1867. A recent case was also described in this JOURNAL on March 6th (female, aged 42), and in children aged 4 and 7 years respectively on December 6th, 1924, and August 22nd, 1925. The 8-months infant apparently inherited a very sensitive nervous system from her mother, as evidenced by the latter's attack of shingles three months previously, necessitating hospital treatment—an unusual event in the case of a comparatively young subject, such as I presume the mother to have been. As far as one can judge, it is this sensitiveness, either inherited or acquired, that decides what form the eruption shall take—herpetic, varicellar, or both—in those who have been in contact with either shingles or chicken-pox. The incubation stage seems to be practically the same in all reported cases. I am still wondering how long it will be before the two eruptions come to be recognized as part and parcel of one disease, which, as I suggested some years ago, might not unfitly be termed "varicella herpeticæ." In the case of a boy, aged 6 years, who came under my care about three years ago, the mother was intensely musical and highly strung, and the youngster seemed to inherit these same characteristics. After a short contact with chicken-pox he developed first an attack of shingles, necessitating morphine for the extreme pain and sleeplessness, and four days later (the usual interval) was covered with an ordinary chicken-pox rash. His elder sister, less nervous, was satisfied to take the disease in the shape of the varicellar eruption only.

## AN ANCIENT NEEDLE.

DR. G. VARIAN (Watford) writes to record the case of a spinster, aged 74, who consulted him for a large extravasation and ecchymosis over the lower third of Hunter's canal and this adnexa. As she had a high blood pressure the blood pressure was raised to this and its attendant pathologic... her." Dr. Varian continues, "about a month later, she complained of pain under the area affected, and on applying some pressure to the deep tissues a sudden little coars of skin appeared, on the point of which I pricked my finger. I removed a needle, of a type which has not been seen or made in this country for many years. It is a hand-made black steel needle, with a roughly squared eye end and a simple hole punched through for the thread. My patient never saw such a needle before and has no memory of its painful entry. I suggest that she sat on her mother's needle in early childhood."

## ARSENIC IN APPLES.

In his annual report Dr. W. J. Howarth, medical officer of health for the City of London, states the results of investigations into the presence of arsenic in apples brought from America. The only apples with indications of arsenical deposits were "Jonathans"; it was with apples from America corresponding to these that prosecution was instituted in another area. The fruit contained 1-700 grain of arsenious oxide per pound. As the quantity of arsenic was so small Dr. Howarth did not consider it necessary to restrict the sale of these apples, but he considers that fruit should be exported entirely free from arsenic, since, if small quantities of poison are disregarded in one food, other poisonous substances, also in small quantities, might be added to other foods, and the aggregate consumed might be considerable.

For the convenience of residents in the London area a showroom has been opened by Messrs. Boulton and Paul, at 135-37, Queen Victoria Street, E.C., where specimens of their motor houses, shelters, etc., may be seen.

## VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 37, 38, 39, 42, and 43 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 162.

## MISTAKES IN ARTIFICIAL FEEDING OF INFANTS.

Observations  
ON  
COMMON MISTAKES IN THE ARTIFICIAL  
FEEDING OF INFANTS.BY  
ERIC PRITCHARD, M.A., M.D. OXON., F.R.C.P. LOND.,  
MEDICAL DIRECTOR OF THE INFANTS HOSPITAL, LONDON.

It is common experience that we learn more from our mistakes than we do from our successes, but in no sense is this more true than in connexion with infant feeding. It is a disadvantage rather than a blessing, both for himself and his patients, when the young practitioner is successful in this department of his work at the threshold of his career, for in such circumstances he is apt to regard himself as an expert and an authority in a matter of which no man can become a complete master, even though he devote a long life to the subject. We learn more from our own mistakes than we do from those of others, and I offer no apology for making certain confessions of the mistakes which I have made myself during many years of practice, for although they may not be so helpful to others as they have been to myself, they may possibly assist others to avoid falling into the same traps.

During his novitiate the practitioner learns very little about the details of infant management; at least, in my day he learned very little until he married and had children of his own; on these he could experiment and learn at first hand from bitter experience the full degree of his own incompetency. The worst thing that can happen to such a tiro is to beget a child of such irrepressible vitality that his sins of commission or omission remain unrevealed. I fed my first child, with the most perfect results, on milk carefully modified on a percentage basis by the Walker Gordon Laboratories. Exactly the same feeding had fatal consequences in the case of my second child—through no fault of the laboratories, but solely owing to a study of the means of obviating such disasters in the future. I came across a somewhat analogous case the other day when a young practitioner asked my advice in respect of a desperately wasted baby which had been fed in exactly the same method as two of his own infants, which, according to his account, had fared extremely well. The food employed was a baked flour sold under a particularly attractive and high-sounding title. As he was leaving the house he said, "By the by, do you happen to know what this food really is?" When I told him that it consisted of nothing more than baked flour sold at a fancy price he seemed greatly disturbed, and told me he always understood it was some artificial digestant.

It often takes a long time to learn the insistent truth that what is one man's food is another man's poison, and want of appreciation of this fundamental principle in infant feeding frequently leads the young practitioner to hold in high regard for general use certain peculiarly constituted preparations which have proved of signal service in the treatment of pathological conditions. For instance, infants who have been fed on rich nursery milk, with an excessive percentage of cream, and who have in consequence acquired intolerance of fat, may be fed quite rationally for a time on a malted milk which contains practically no fat but a very high percentage of malt sugar. The inexperienced person who is ignorant of the exact chemical composition of such and similar foods, and who does not realize the physiological necessity of balance, may very easily draw faulty inferences from his observations, and regard foods which are really suitable only for pathological conditions as physiological foods applicable for normal conditions. A great many of the ill balanced proprietary foods which are still on the market owe their reputation and popularity to causes of this kind.

Owing to recent discoveries of biochemists, and to elaborate and carefully conducted feeding experiments on animals, often carried out on whole colonies of quickly

breeding varieties, we now know a great deal more about the essential requirements of animals and, by inference, the ultimate results of incorrectly balanced dietaries in the case of human beings, than we knew a few years ago—in fact, a great deal more than we ever learned or could learn from the observations of feeding experiments carried out only on individuals for very short periods and practically on human individuals for more than one generation. We are very apt to judge of the suitability, or the reverse, of certain methods of feeding or of particular foods by the immediate and not by their ultimate results. The human organism has such wonderful reserve powers, such remarkable powers of adaptation and compensation, that the full consequences of a defective dietary may remain latent or unobserved, not only during the greater part of infancy, but possibly during a whole lifetime. This has been clearly shown in the case of animals experimentally fed, and it may be read in the epidemiological histories of whole nations who have perpetuated the same faulty dietetic customs for several generations. If infants were capable of holding up the danger signal of distress immediately they were improperly fed, their feeding would soon be placed on a more satisfactory basis. But from the analogy of the feeding of lower animals we now have so complete a knowledge of the nutritional requirements of the human body, both from the point of view of development and maintenance, that, even in the absence of symptoms which attract attention, it is easy to predict what will be the ultimate consequence of any particular line of feeding. Even in such widely studied matters as the vitamin deficiency diseases we have no means of diagnosing their first beginnings except from the history of the feeding. We know, for instance, that the symptoms of scurvy in infants do not manifest themselves for some three or four months after the commencement of a vitamin-free diet. This is the reason for the astonishing practice, which is so prevalent in this country, of delaying the administration of antiscorbutics until after the third month of life. The argument is so plausible: infants under three months of age do not have scurvy; therefore they do not require antiscorbutics. If there is one period more than another when infants, and especially premature infants, stand in need of this and other accessory factors in their diet, it is during the first three months of life.

Another example of the delayed effects of faulty balance is the ultimate development of hyperchlorhydria in infants fed on whole milk, or unmodified dried milks; for a while they appear to thrive and do well, but if they can survive this monstrous liberty with their digestive and metabolic functions, they must, on grounds which are now thoroughly well understood, acquire an immense capacity for secreting hydrochloric acid, and they either die in an attempt to produce enough acid to overcome this buffer influence of the caseinogen, or suffer at a later date from the success of their early adaptability.

A considerable number of the dietetic misconceptions under which humanity is still groaning have their origin in the fallacy enunciated by the older physiologists that food subserves in the animal body the identical function that fuel subserves in the mechanical engine—namely, that of a potential source of kinetic energy and heat. The belief that the be-all and end-all of dietetics was to balance the intake and output by a careful adjustment of caloric values has put back the clock of scientific feeding by more hours than one cares to contemplate. It is perhaps hardly fair to describe the pioneer work of some of our greatest physiologists as wrong; their views and observations in these matters were true as far as they went; but they did not cover the whole ground—were in fact half truths, as the next generation of physiologists pointed out when they discovered the significance of balance, and when the present generation of physiologists further demonstrated the part which the accessory factors play in the utilization and combustion of the simple fuel foods.

The essential difference between the fuel required by a mechanical engine and the food which is shovelled into the furnaces of the animal organism is that, while the former should only contain sources of energy, food must contain either the ready prepared elements or the crude material out of which the latter can be elaborated for such

purposes as those of cleaning the machine, for lubricating it, for controlling its carburettors, its sparkers, its dynamos, its exhaust, and all the other elaborate mechanisms of the most complicated and perfect automatic engine. The mere supply of fuel to such an engine, no matter how well such fuel is mixed or balanced, is only a very small part of the duty of the stoker. And this is where the older physiologists, as well as the most modern percentage feeders, have gone so seriously astray; they have given infinite attention to the exact percentage relationships of the fats, the proteins, and the carbohydrates, and they have almost completely neglected the still more important duty—that of making provision for the control and running of the machine by providing the required accessory factors.

There are in milk, which one must regard as a complete and perfect food, three different classes of fuel, and there are also at least thirty-seven other elements or proximate principles, each one of which subserves some nutritional purpose which is of equal or perhaps greater importance, but is in no sense a fuel. We cannot believe that Nature, in her infinite wisdom, is so prodigal as to supply anything that is redundant or unnecessary, or so careless as to omit any essential in the food she supplies for the nourishment of the young; it is, indeed, implicit in the survival of the race that such must not be the case with respect to human milk. It is true that at present we do not know exactly how much of any of the vitamins or of the other accessory factors, such as iodine, or lecithin, or cholesterol, or iron, any baby or adult requires, but we are surely justified in believing that the representation of each in breast milk is of about the correct standard for the infant, as in the milk of other mammals their representation is correct for their respective progeny. It is possible that the representation in cow's milk is approximately the same with respect to most of them as it is in human milk, and if so the human infant ought to thrive when a given volume of cow's milk is substituted for a given volume of breast milk. But early experience taught the older physicians that whole cow's milk could not be digested like whole breast milk, and therefore cow's milk was diluted with one, two, or three parts of water, in order that the great excess of the indigestible constituent—that is, the caseinogen—might be watered down to the point of tolerance. A later school, recognizing that the infant suffered from the coequal dilution of the fat and of the sugar, added these to make up the deficit or supply the special requirements. A later generation recognized the need for making good the deficiencies of the vitamins and perhaps one or two other essential factors; but how many at the present time, when providing for these adjustments, think of the deficits of iron and iodine and perhaps a dozen other essential factors in nutrition? This, to my mind, is an explanation of some of the failures of feeding with cow's milk modifications, and of some of the apparent successes of whole-milk feeding, which on other counts has little to commend it.

Many years ago that great chemist Barou von Liebig enunciated his law of "the minimum," a law which to-day, in view of our more accurate knowledge of nutritional requirements, has more cogency than at the time of its formulation. This law is that the maximum degree of nutrition possible under any system of feeding or with any diet is determined by its greatest fault, and not by its greatest virtue. For instance, if we allow that some forty different constituents are requisite for a complete dietary, and that the faulty representation of any one of them in any particular diet allows only of a 50 per cent. realization of the possible maximum of nutrition, the net result will be only a 50 per cent. success, no matter what degree of perfection is attained by the thirty-nine other elements. It is quite easy to visualize such a hypothetical result in the case of such a default as that of a vitamin, but it is less easy to realize that the same catastrophe will follow faults in the supply of such little-considered elements as iodine, chlorine, fluorine, and many other constituents of diet which at the present time receive little consideration.

I have purposely included in the category of essential elements certain mineral constituents, for although it is well recognized by plant physiologists that for success in

agriculture or floriculture the supply of a considerable number of mineral elements is absolutely necessary, the same need is not by any means realized by those who concern themselves with the nutrition of developing human beings.

Soils which are deficient in certain mineral elements will not produce the maximum, or even a good crop, until the required balance is redressed. In animal nutrition there is not only a comparable need of many different minerals, but a far more comprehensive one. Owing to the fact, however, that when any form of milk diet is employed in the feeding of infants there is never a complete absence, but only a relative shortage, of any required element, defects in this respect never make themselves obtrusive. In this connexion I would observe that there is practically always a great deficiency of iron in the artificial feeding of infants when cow's milk dilutions are employed as the basis of their diet, and further, that there is often a grave deficiency of iodine, potassium, and ionic calcium. I do not propose to discuss this point further than to indicate that any one single defect in this respect will, in accordance with Liebig's law of the minimum, reduce the standard of nutrition to a degree which is proportional to the default.

Mistakes in respect of such niceties of balance are to a large extent excusable, for the reason that, owing to want of exact knowledge, no clearly defined rules are available with regard to the quantitative or qualitative requirements; but there should be no excuse for gross mistakes with respect to the balance of the fuel elements or their caloric value, because we have certain general indications for their adjustment. I do not want to flog a dead horse, but I cannot help making some passing comment on the argument which I constantly hear—namely, that in whole-milk feeding the large excess of nitrogenous elements is justified on the ground that such excess is required because, owing to the indigestible character of its contained caseinogen, the infant cannot assimilate an adequate supply unless it is proffered in massive amount. It is to my mind a strange argument to contend that, because a particular element is incapable of digestion, it should be supplied in excessive amount. It might be logical to suggest that it should be given in a more digestible form or replaced by some more digestible equivalent, but to maintain that it should be given in larger amount requires a good deal of justification.

As there is an optimum balance with respect to the combination of the energy-affording elements of an infant's food—namely, with respect to the combination of the proteins, fats, and carbohydrates—so also is there an optimum as regards their united caloric value. The tolerance of the animal organism in this respect is admittedly great, but any serious default, either in the direction of excess or inadequacy, must interfere with the attainment of that optimum result at which we should aim.

I do not claim that the age, or weight, or sitting height, or any other single factor taken by itself, will give us an accurate measure of the caloric requirements of any particular infant, but whatever means we may use to arrive at an approximate estimate of the energy value of the food required, we ought at least to be consistent, and not vary the amount when we find it necessary to change some unsatisfactory combination of foods for one we believe to be better. Inconsistencies of this character, in changing from one food to another, are my common experience; the following instance may illustrate my point.

An infant was ordered a milk mixture of a certain definite composition, and of a value of 600 calories; when this did not answer a diet of condensed milk was substituted of a caloric value of 150. Another infant was directed to be fed on a dilution of half cream ("cow and gate") with a caloric value of 400. When this method of feeding was found to be a failure, a diet of almata was substituted for it with a caloric value of 800. The law of the conservation of energy is either applicable or not in the feeding of infants; if it is applicable such transgressions must inevitably bring their Nemesis. I may add that these two dietetic mistakes were not made by inexperienced practitioners, but were the directions given at two children's hospitals in London, and are of the kind

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of which I have made many myself in my unregenerate days, before I based my estimation of quantities on calorie values.

Speaking of quantities, I may be allowed to draw attention to the serious mistakes to which the employment of such indeterminate measures as teaspoonfuls and tablespoonfuls may lead the unwary. An ordinary tablespoon has a fluid capacity of about one ounce, and not half an ounce as is generally supposed, while the actual weight of a level tablespoonful of such a dry food as glaxo or "cow and gate" milk is about three drachms. The fluid capacity of an ordinary teaspoon is seldom less than a drachm and a half, while its capacity for a dry powder is little more than half a drachm. From this it is obvious that serious mistakes may arise when more accurate means of measurement are not employed. As an example of the sort of error into which the employment of such inaccurate measures may lead us I may quote the following instance:

An infant was brought to the Infants Hospital with serious symptoms of nutritional failure; it had been fed on condensed milk, and I was anxious to know the exact quantity which had been given it. On inquiry I was told that it had been given one teaspoonful in three ounces of water for six feeds, giving a total quantity of six teaspoonfuls in the twenty-four hours, with a face value of 80 calories in the twenty-four hours. The deficiency in food value seemed to me to be so great that I attempted to check the estimate by asking how long a tin of condensed milk lasted. The mother told me that she used, on an average, three tins (1 lb. by weight each) every week. Reckoning on this basis I argued that the infant was daily supplied with about 7 ounces of condensed milk with a value of about 700 calories. The discrepancy between the actual and true as estimated in teaspoonfuls and the actual and true quantity as estimated in milk purchased and used shows unquestionably the fallibility of the domestic measure. I could multiply pitfalls of a similar nature almost indefinitely, but perhaps I have said enough. I submit, however, that recent development in our knowledge of nutrition has not simplified the feeding of babies, but has rendered it an infinitely more responsible and difficult task.

## THE SCHICK TEST:

A SCHEME FOR ACTIVE IMMUNIZATION AGAINST DIPHTHERIA  
IN PUBLIC HEALTH PRACTICE.

BY  
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ALTHOUGH most medical men are familiar with the Schick test, yet for the benefit of those who have not had practical experience of it the following explanatory note may be of assistance.

The Schick test is a definite quantitative test to demonstrate the amount of diphtheria antitoxin in any given person. Those patients in whom the test proves to be positive have only a small amount of antitoxin, and are therefore liable to contract diphtheria, whereas those in whom the result is negative have sufficient antitoxin to ward off the disease. Those who are positive to diphtheria—in other words, those who are susceptible to diphtheria—can be rendered immune by the injection of a prophylactic mixture.

The following figures show that there is sufficient evidence of the efficacy of these procedures to warrant their more extensive use in combating the disease.

In New York City for the ten years preceding the introduction of Schick testing and immunization, the average number of deaths from diphtheria was 1,337; in 1919 the number of deaths was 1,239. Since 1919, when modern methods were first introduced on a large scale, the number has fallen to 663. Similarly, in Chicago, there has been a fall from an average of 797 deaths to 239 deaths. It has also been shown that in 23 representative American cities the death rate from diphtheria has fallen an average of 10.3 per cent. per annum.<sup>1</sup>

In this country about 22,000 of the population have been Schick tested, and about 4,000 have been immunized. A large

proportion of these cases are the children and staffs in institutions.<sup>2</sup> On one occasion reported, the inmates in an institution remained free from diphtheria although exposed to infection at school and in constant contact with children amongst whom the epidemic continued.<sup>3</sup> Dr. E. H. R. Harries of Birmingham has succeeded in entirely eliminating diphtheria among the nursing staff of the Birmingham fever hospitals.<sup>4</sup> It has also been shown that in other fever hospitals where nurses have been adequately protected by immunization, the incidence of diphtheria among them has dropped practically to zero, whereas no such drop has occurred where nurses are not thus protected.

In the summer of 1925 I immunized the children susceptible to diphtheria in an orphanage in Surrey. Within the previous eighteen months there had been two outbreaks of the disease in the institution and among the children of the elementary school attended by the orphans. No case of diphtheria has occurred in the orphanage since this work was carried out, although a number of cases have occurred in the school. During the summer holidays in 1925 two of the immunized children slept for three nights in the same bed as a child who was incubating diphtheria, but neither of them contracted the disease.

In a training ship where diphtheria had been endemic the boys were tested, and those found to be positive were immunized. As long as all the new entrants were immunized (where this was indicated) no case of diphtheria occurred, although there were many profuse carriers of virulent diphtheria bacilli.

These are a few of the results obtained in this country, but up to the present Schick testing and immunization have only been carried out on a small scale, in comparison with what has been done in the United States.

So far as I am aware there have been no failures—that is to say, genuine diphtheria has never occurred in a Schick-negative person. A certain number of failures have been reported, but it has been found on careful scientific investigation that these are not true cases of diphtheria; or it has been found that the Schick test has been improperly carried out. To establish a diagnosis of diphtheria in a Schick-negative person three conditions must be satisfied—namely:

1. The clinical picture must be typical.
2. Virulent Klebs-Loeffler bacilli—that is, as tested in a guinea-pig—must be present in the throat or nose.
3. A sample of blood taken before a therapeutic dose of antitoxin has been given must show that there is sufficient natural antitoxin to ward off an ordinary attack of diphtheria.

### Immunity.

Immunity may be active or passive. The process by which the production of antitoxin in the tissues of an individual is stimulated, whether artificially or otherwise, is called active immunization. The immunity produced by this process is much more lasting than the immunity produced by the introduction of artificially prepared antitoxin into the circulation. The former lasts for years, and potentially for life; the latter lasts only for a short time, generally three to eight weeks.<sup>5</sup>

Active immunity is produced by the injection, at weekly intervals, of 1 c.cm. doses of diphtheria prophylactic. This preparation consists of toxoid (prepared by treating diphtheria toxin with formalin) and antitoxin. Three or four weekly injections are usually sufficient to produce immunity, but some individuals require further injections if they are found to be Schick-positive three months after treatment.

### Defects of Present System of Combating Diphtheria.

It may be as well to point out here the defects of some of the older methods of preventing the spread of diphtheria. The two most widely used of these methods are:

1. The swabbing of all contacts, and the isolation of those giving positive cultures, those with negative cultures remaining free.
2. The injection of a prophylactic dose of antitoxin (500 to 1,000 units) to all contacts.

As regards the first of these procedures, six types of subject may be met with, from the point of view of their immunity and infectiousness,<sup>6</sup> and may be set out thus:

- A. Schick-positive, swab negative, bacilli avirulent.
- B. Schick-positive, swab positive, bacilli avirulent.
- C. Schick-positive, swab positive, bacilli virulent.
- D. Schick-negative, swab negative, bacilli avirulent.
- E. Schick-negative, swab positive, bacilli virulent.
- F. Schick-negative, swab positive, bacilli virulent.

Among those with "positive swabs" who are isolated (probably together) there may be a number from classes B, C, E, and F. Class C is obviously those who are incubating diphtheria, and will develop the disease in a day or two. Class E is not susceptible to diphtheria, and, since their bacilli are avirulent, it is immaterial whether they are isolated or not. But the juxtaposition of Class F, the non-susceptible carriers of virulent bacilli—among whom there may be profuse carriers—and Class B, the susceptible subjects, involves danger, probably acute danger, to the latter. On the other hand, if the modern method about to be described is employed, such a juxtaposition will not occur, because the susceptibles and non-susceptibles will be separated.

As regards the second of these procedures—that is, the injection of prophylactic doses of antitoxin—there are two distinct disadvantages: First, such an injection may render the person injected serum-sensitive, and so complicate treatment in the event of a subsequent attack of diphtheria. Secondly, the immunity conferred is of a comparatively short duration. This was proved in the case of one institution observed by Dr. Okell, where an epidemic was checked by prophylactic doses of antitoxin, but cases occurred again within a few weeks. I came across two cases at the orphanage mentioned above, where therapeutic doses of antitoxin had been given, and within eight weeks they were non-immune. On the other hand, the experience of Park and his colleagues in New York, and of workers in this country, shows that the active immunity produced by the injection of toxoid antitoxin mixtures lasts for some years in a great majority of cases, and probably for life.

Another defect in the present system is that it is not sufficiently realized that the diagnosis of the true Klebs-Loeffler bacillus from its microscopic appearances is extremely difficult and in itself insufficient. There are certain forms, indistinguishable from it, which are quite harmless and do not produce diphtheria. This, therefore, involves a risk that people who have not got diphtheria are segregated with others who have; and, on the other hand, Schick-positive carriers of harmless diphtheroid organisms may be isolated, possibly for months, as true diphtheria carriers.

When a positive report is obtained it is advisable to have the cultures tested to see if they will produce diphtheria in guinea-pigs. Where the modern methods of Schick testing and active immunization are being applied it is important that medical men should have the above facts clearly in mind, otherwise confusion is likely to arise.

#### *Proposed Scheme for Combating Diphtheria on a National Scale.*

The practical utilization of modern methods for the control of diphtheria consists in a routine application of Schick testing and active immunization in interepidemic times; and the employment of these methods to gain control during an epidemic, which will be referred to as "emergency application." This will now be discussed under the following headings:

1. Routine application: (a) in resident institutions; (b) in special clinics; (c) in day schools; (d) for those in attendance on cases of diphtheria.
2. Emergency applications: (a) in resident institutions; (b) apart from resident institutions.

#### *Routine Application.*

**Resident Institutions.**—Diphtheria is conspicuously an "institutional" disease, and it is in institutions that modern methods can best be applied. The application of the Schick test is a simple matter in the hands of those trained to its use. One operator, with a trained assistant and efficient marshalling of those to be tested, can easily test fifty cases in an hour. At the end of seven days the positive cases can be separated from the negative, and active immunization can be commenced. With efficient organization the injection of toxin-antitoxin is a very simple matter, and takes up very little time.

**Special Clinics.**—At first sight it would seem to be a simple matter to have children under 5 years of age tested and immunized at child welfare centres, but if

children were sent in large numbers this would interfere seriously with the ordinary work of the centres. Schick testing and immunization have been carried out at welfare centres, but I am of opinion that it would be simpler to follow the plan adopted at Fraserburgh and conduct special clinics at suitable intervals. By means of those clinics it should be possible to immunize the majority of children under school age. This is most important because, as pointed out by Park and Zingher, the mortality is greater among these than among older children; also there is a risk of their contracting diphtheria when they enter school.

**Day Schools.**—Schick testing and active immunization can be carried out in the schools with the co-operation of the teaching staff. The interference with school work need not be great. If the marshalling is properly arranged the interference is scarcely greater than at an average routine medical inspection. Moreover, once a school has been tested and the positive cases have been immunized it is only necessary to deal with fresh entrants. If younger children are being immunized at special clinics before entering school, the number to be dealt with in the schools will rapidly diminish. As many children as possible should be immunized before entering school, otherwise there is some risk of their contracting diphtheria while awaiting immunization.

#### *Emergency Work.*

A method of rapidly getting control of epidemics in institutions has been devised.<sup>6</sup> This method is applied in the following manner:

1. Schick test all persons in the institution.
2. If possible swab all persons, throat and nose.
3. In twenty-four to forty-eight hours, isolate all Schick-negative reactors.
4. For a few days see twice daily all positive reactors (to detect any who may develop the disease).
5. Test for virulence all positive swabs from Schick-negative reactors, release "avirulent," but rigidly isolate all "virulent carriers."
6. Begin at once to immunize all Schick-positive reactors.

The originators state that this plan depends upon the following "propositions," which are sufficiently true for the effective working out of the plan:

1. Schick-negative reactors are not susceptible to diphtheria.
2. Schick-positive reactors are susceptible to diphtheria.
3. Schick-positive reactors never harbour virulent bacilli detectable by ordinary swab culture methods unless they are suffering from or are incubating the disease.
4. Carriers of virulent bacilli are immune and are always Schick-negative reactors.
5. "Avirulent" bacilli do not cause diphtheria, and therefore "avirulent" carriers are of no importance to the public health authorities.
6. One efficient swabbing of a population gives a sufficient working knowledge of the location of infection—that is, all profuse, and therefore dangerous, carriers will be detected.

Independently of the originators of this plan, Dr. E. H. R. Harries worked out a similar scheme to control outbreaks of diphtheria in fever hospitals, and found it very effective.

Apart from resident institutions the scheme would be much more difficult to work, but if the organization were good there seems to be no insurmountable obstacle. The main difficulties would be that the whole population possibly would not be tested, and dangerous carriers might go undetected; and that to separate negatives from positives outside institutions would not be easy.

As regards the first difficulty, if the local practitioners understood the scheme properly their influence would help very materially to ensure that the vast majority would be tested. Moreover, in the presence of an epidemic objections would be far less numerous than at other times. Much could be done, too, by carefully worded explanations.

As regards the second difficulty, assuming that nearly all the population were Schick tested and swabbed, the dangerous carriers could be removed to the isolation hospital, which would not be unnecessarily filled with Schick-positive carriers of harmless diphtheroids.

For emergency work in rural districts it would be necessary for the county medical officer of health to have on his staff a number of medical officers trained in the use



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of modern methods of diphtheria control, and health visitors trained to assist them. When an outbreak occurred these officers could be sent to the area concerned and could then proceed to carry out the necessary work.

It should not be difficult to organize "mobile units" of this description. Obviously these officers would need to be tested, and if necessary immunized. All those who come in contact with diphtheria should be immune. There is no expense nowadays for nurses, or others who have the care of diphtheria patients or suspects, contracting the disease. At the present time the number of medical officers who understand modern methods of combating diphtheria is quite inadequate. Large numbers require to be trained. The technique is very easy, and experience in interpreting results does not take long to acquire.

No candidate should be allowed to graduate in State medicine unless he or she is proficient in applying the Schick test, and understands the fundamental facts of immunity. Local authorities should insist on as many of their medical officers as possible being trained for this work.

In order to avoid haphazard and inefficient working and to co-ordinate the work throughout the country, certain standards would have to be laid down and an advisory committee would have to be appointed, consisting of experienced immunologists who could ensure that, although details of administration would obviously vary locally, fundamental points would not. This committee might also act as an investigation department, to examine into reported "failure" of the methods and to research workers. Such a department could prevent the methods from falling into discredit through uninformed criticism, and by keeping the public informed would be able to frustrate the efforts of those misguided people who are striving to abolish the experimental method on which every advance in medical science depends. They would also save a good deal of time for research workers by relieving them of the trouble of extracting information on subjects of interest to them from a mass of irrelevant matter.

It would be an advantage to have at selected centres a number of reliable laboratories where the workers would be capable of making a scientific bacteriological diagnosis of diphtheria, and who would be able to perform properly controlled virulence tests, and to titrate antitoxin in blood samples. This need not be a matter of great expense, as existing laboratories could be utilized if brought up to date. It seems probable that in the near future (as pointed out by the BRITISH MEDICAL JOURNAL for February 13th, 1926, p. 295) the "diphtheria simultaneous prophylactic and indicating mixture" will simplify and shorten the whole process of testing and immunization.

## Conclusions.

1. That the Schick test has been proved to be a reliable test for susceptibility or non-susceptibility to diphtheria, and that the immunity conferred by injecting toxin-antitoxin mixtures is lasting. My own experience in testing and immunizing an institution agrees with the experience of others.

2. That with careful preparation of the public by fully explaining the facts about diphtheria, and with the co-operation of the general practitioners, modern methods of diphtheria prevention could be employed on a national scale; and that a campaign on these lines, resolutely carried out, would result in the reduction of diphtheria incidence to negligible proportions. If properly organized the cost of such a campaign would be extremely small, compared with the enormous cost of treating thousands of cases annually. It is interesting to note that the outbreak at an orphanage in Surrey, already referred to, involved an expenditure of £500. Schick testing and active immunization (with swabbing of Schick-negative cases) cost about £25—certainly not more than £50—and the cost of testing the new-comers each year will be negligible.

I wish to express my indebtedness to Dr. Joseph Cates, county medical officer of health for Surrey, for entrusting me with the work of diphtheria prevention by modern methods, and for kindly permitting me to make use of the records of work done in the country; also to Dr. R. A. O'Brien and his colleagues of the

Wellcome Physiological Research Laboratories, Dr. C. C. Okell and Dr. H. J. Parish, and Mr. A. T. Glenn, for the assistance, advice, and instruction which they have so generously given, and for carrying out antitoxin titrations and other laboratory work.

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## A CASE OF CHLOROMA IN A CHILD.

BY  
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CASES of chloroma in children are considered sufficiently rare to warrant the following notes of a case.

A girl, aged 4½ years, was referred to me for investigation as to the cause of pallor, weakness, and cough. On January 28th she was admitted to the Belfast Hospital for Sick Children under Dr. M. Brice Smyth, to whom I am indebted for permission to publish these notes.

She was well nourished, but pale, and had a certain amount of "fullness" in the upper eyelids suggesting proptosis; right-sided facial paralysis, probably due to haemorrhage into the facial canal, was present. The lungs presented no definite physical signs other than scattered rhonchi. The heart was normal. The spleen was easily palpable, reaching for its position. It did not appear to account entirely for its position.

A blood count showed red cells 1,480,000 and white cells 41,000. The film showed myeloblasts and numerous normoblasts, and numbered 1,430,000 and white cells 1,450,000, the white cells 56,000. Film as before. On February 19th the red cells numbered 1,430,000 and white cells 81,000. Haemoglobin 24 per cent. The film showed a large number of normoblasts and various types of white cells. Two days later it was noticed that the lymph glands in the size of the spleen. A left subconjunctival obvious change in the size of the spleen. The next day the left eyeball was more prominent than the right.

On February 28th the following differential count of the film was made: Neutrophils 8.4 per cent., metamyelocytes 7.6 per cent., lymphocytes 12.6 per cent., premyleocytes 5.8 per cent., 1.2 per cent., myelocytes 12.6 per cent., micromyeloblasts 7.2 per cent., myeloblasts 23.6 per cent., normoblasts numbered 6,720 per cubic millimetre.

On March 3rd the left eyeball was much more prominent. An examination of the fundus oculi revealed numerous haemorrhages. The eyeball was protruded further and further, and at the end of a week was almost outside the orbit. The spleen was definitely larger. On March 11th there was a crop of petechiae on the arms and some purpuric spots elsewhere. Unfortunately the parents would not permit a post-mortem examination, but by a partial enucleation of the left eyeball a portion of the tumour was obtained. It was distinctly green in colour, and remained so for more than twenty-four hours in formalin.

## Microscopical Examination.

On section the tumour was seen to be lymphosarcomatous in form, and it infiltrated the surrounding fat. It showed numerous lymph spaces scattered throughout. The stroma, while not abundant, was better developed than in a round-celled sarcoma and in places showed masses stained pink by van Gieson. The cells were mainly of the large round-cell type; there were several multinuclear cells, the nuclei being grouped together in the centre. Several mitotic figures were seen.

## Summary.

1. A case of chloroma in a child of 4½ years is recorded.
2. The chief subject of complaint by the parents was pallor, weakness, and cough.
3. When first seen there was a right-sided facial paralysis, enlarged spleen, and the blood picture of a fairly nente myeloblastic leukaemia.
4. With the onset of haemorrhages, purpura, and rapid growth of the tumours, deterioration was rapid and death quickly supervened.
5. The colour of the piece of tumour removed was green. Recognizing that in many cases all the clinical and haematological criteria of chloroma may be present and yet the tumours be white, this would appear to be a genuine case of the condition.

\* Dr. A. Piney of the Institute of Pathology, Charing Cross Hospital, very kindly made this count. Dr. J. T. Lewis, honorary bacteriologist to the Belfast Hospital for Sick Children, was responsible for the others. I am much indebted to them both for their interest and help.

## THE ABDOMINAL CRISES OF PERNICIOUS ANAEMIA.

BY

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Much attention has been directed to the simulation of the gastric crises of tabes by perforated gastric ulcer. At the present time the mistake of operating upon a patient with a tabetic gastric crisis is rare. During six years' continuous association with emergency surgery in widely separated clinics I have not come across a single example of this error, which has been eliminated by the routine practice of testing the reaction of the pupil and for the presence of the knee-jerk in every suspected case of gastroduodenal perforation.

The object of this note is to call attention to another medical condition which simulates very closely an acute abdominal catastrophe.

The later stages of pernicious anaemia are occasionally complicated with what may be termed abdominal crises. They resemble so closely one of the recognized acute abdominal conditions, such as perforated gastric ulcer or acute pancreatitis, that when confronted with one for the first time even the most conscientious surgeon may be trapped. The ghastly pallor, especially in artificial light, is mistaken for that of profound shock or internal haemorrhage, and when this picture is combined with a history of sudden agonizing abdominal pain and vomiting, and is accompanied by abdominal rigidity, the difficulty in diagnosis is occasionally almost insurmountable, unless, of course, we are in possession of the knowledge that the patient is the subject of an aplastic anaemia. The explanation of the sudden attacks of abdominal pain is fairly clear. During the katabolism of large numbers of erythrocytes the liver is called upon to excrete a prodigious amount of bile pigments. These pigments are too concentrated to be held in solution, and are precipitated in the form of "bile mud," which gives rise to severe biliary colic. Furthermore, the subjects of these crises, being worn out by a long illness and an impoverished blood supply, react very strongly to the painful stimuli. This theory is supported by the following cases, in one of which I performed laparotomy. The gall bladder was enormously distended, and when opened was found to contain thick, black "biliary mud."

## CASE I.

A Jew, aged 55, was admitted to the London Hospital on October 17th, 1922, at 2.30 a.m., as an "acute abdomen." He spoke no English, and the history was translated by a relative, who said that the patient was seized with sudden very acute abdominal pain seven hours previously. The pain was at first in the epigastrium, but later became general. He had vomited several times. As far as could be gathered the patient had previously been quite well, except for indigestion. The patient was exceedingly pale, and obviously in great pain. The abdomen did not move freely with respiration, and there was board-like general rigidity and tenderness, especially marked in the epigastrium and right hypochondrium. The liver, spleen, and kidneys could not be felt. The rectal examination and examination of urine were negative. The heart and lungs were clear. A diagnosis of perforated gastric ulcer was made, and laparotomy performed. The only abnormality found was a very distended gall bladder. By cholecystotomy a large quantity of biliary mud was evacuated. Three days later the patient became comatose, and died shortly afterwards. It was at this time ascertained that he had been in hospital one year previously with advanced pernicious anaemia.

## CASE II.

A woman, aged 58, was admitted to Dudley Road Hospital on January 25th, 1926, with a history extending over two years of frequent attacks of acute abdominal pain. The pain was always most marked in the left hypochondrium and passed through to the back. The present attack began four hours before admission, and was considerably more severe than any of the previous ones; the patient had vomited. On examination in artificial light she appeared to be somewhat jaundiced. The tongue showed evidence of superficial glossitis. There was general abdominal tenderness and slight upper abdominal rigidity. The spleen and liver were enlarged, and the latter distinctly tender. A diagnosis of gall

stone colic was made. Next morning it was noticed that the patient was not jaundiced in the ordinary meaning of the term, but was of a bright lemon tinge. A colour index was immediately taken, and gave typical reading for pernicious anaemia. She was transferred to the medical side, where this diagnosis was confirmed.

## THE TREATMENT OF VARICOSE VEINS BY INJECTION.

BY

A. H. DOUTHWAITE, M.D.Lond.

The necessity for an efficient non-surgical treatment of varicose veins is emphasized by the ever-increasing number of advertisements of quack remedies in the press. The standard works on surgery affirm that, short of operation, the only treatment lies in mechanical support. As the result of two years' experience in the production of thrombosis in varicose veins, I am convinced that this line of treatment is superior to excision.

The procedure originally suggested by Geneyrier has been followed throughout. The solution used is composed of quinine hydrochloride 4 grams, urethane 2 grams, in distilled water 30 c.cm. A pneumatic tourniquet is applied with moderate pressure above the line of vein to be dealt with and 1/4 c.cm. of the solution injected into the lumen through a fine hypodermic needle. Perivenous administration is usually unnecessary; it is not, however, contraindicated, as the resultant inflammation is not severe, provided only a few minims are introduced outside the vein. The puncture is sealed with collodion, which may be removed the same night, and the injection repeated about two inches further up the vein. It is wiser not to introduce more than 2 c.cm. at one sitting.

The amount of pain accompanying the artificial thrombosis varies greatly in different patients, but is never sufficient to render walking impossible, and in the vast majority of cases little or no discomfort is experienced. All my patients have come to my consulting room and returned home in their usual manner. Several of them played tennis on the following day.

With very large varices the same areas may have to be injected two or three times. As a rule, however, one injection is sufficient for each two or three inches of vein treated. Of the 88 cases dealt with all have been completely successful, and no recurrences have as yet been observed. Initial swelling of the vein was not uncommon, but this soon subsided, and after a few weeks it may be felt as a nodular cord, causing no bulging on the surface of the leg unless it be situated over the subcutaneous surface of the tibia.

The relief of the lancinating pains or bursting sensations associated with the presence of varicose veins is very striking, and patches of eczema and ulcers often heal completely.

The cases treated were not selected. Many of them occurred in fat, middle-aged women, the veins extending up both legs into the thighs; yet they responded to treatment as readily as young adults. One lady was purposely avoiding a second pregnancy on account of her previous unhappy experience with varicose veins. Artificial thrombosis was produced, and she has since had a child with no mishap or recurrence of venous trouble. When commencing this treatment it is natural to be anxious lest embolism occur. The thrombosis appears, however, to be very firm and adherent, and has never given rise to embolic disturbances in injections which I have given—numbering more than a thousand.

The disability produced by varicose veins in this country is enormous. Thousands of otherwise healthy men were unable to take active part in the war on this account. Hundreds of men and women have to give up work to which they have been trained because it entails much standing. Furthermore, modern fashion decrees that the feminine leg shall be covered by thin silk only. The unsightly bulging of varices in this locality occasions the patient much distress. The advantages of this treatment over operation are obvious. Neither work nor pleasure is interfered with; neither preparation nor anaesthetic is required. If the treatment is carried out carefully and with reasonable dexterity no harmful effects will follow.

# SECTION OF SURGERY.

## British Medical Association.

### PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

SECTION OF SURGERY.  
Sir D'ARCY POWER, K.B.E., M.B., F.R.C.S., President.

#### DISCUSSION ON THE PLACE OF GASTRO-JEJUNOSTOMY IN GASTRIC AND DUODENAL SURGERY.

##### OPENING PAPERS.

I.—HERBERT J. PATERSON, C.B.E., M.C., M.D.,  
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THERE is probably no operation in surgery which has added more to the sum of human happiness than gastro-jejunostomy. Nevertheless every new discovery and every improvement has some attendant drawbacks, and the very success of gastro-jejunostomy has led to its performance without proper indications and in unsuitable cases, and so has brought upon the operation discredit which is totally undeserved.

There are some who consider gastro-jejunostomy an out-of-date, if not, indeed, an obsolete operation. More complicated but less rational measures have been designed to supersede it. It is time that a stand should be made against operations which are unnecessarily severe. Surely our duty is to get our patients well with the minimum of surgical interference and with the minimum of risk. My contention is that in the great majority of cases gastro-jejunostomy is a thoroughly satisfactory treatment both for gastric and duodenal ulcers, provided it is properly performed and that prolonged and efficient after-treatment is carried out.

Let us consider for a moment some of the arguments which are put forward in favour of partial gastrectomy.

First, that it is a more certain cure. This has still to be proved. The operation of partial gastrectomy in the treatment of gastric ulcer is on trial, but the interval which has elapsed since it became a fashion is not long enough for us to judge as to the permanency of the cures. It is already certain that partial gastrectomy is not infallible. It is certain also that the mortality rate is higher. I am well aware that in the hands of a few experts the death rate may be little higher than that of gastro-jejunostomy; nevertheless few will be prepared to deny that partial gastrectomy is a more severe operation than gastro-jejunostomy, and that it is necessarily attended with a higher mortality. I agree with the opinion expressed by Sherren that the death rate from the large and complicated procedures devised to supplant gastro-jejunostomy at least approximates to the combined deaths and unsuccessful cases after gastro-jejunostomy. I shudder to contemplate the probable mortality in all cases by all operators.

Secondly, it is alleged that as some 60 per cent. of operation of choice in all cases by all operators.

Secondly, it is alleged that as some 60 per cent. of chronic ulcers show malignant changes, therefore all gastric ulcers should be removed. The teaching that I regard as one of the most insidious heresies which have been invented to beguile and mislead the innocent surgeon. The evidence, if evidence it can be called, for this allegation is partly clinical and partly pathological, but is of the flimsiest description. It is indisputable that in a considerable number of cases of gastric cancer there is a history extending over years suggestive of gastric ulcer. Suggestion, however, is not proof, and a careful scrutiny of such histories leads to the suspicion that the symptoms are due, not to ulcer, but to intestinal stasis. Be this as it may, a diagnosis of gastric ulcer cannot be made on the clinical history alone, and we are not justified from such a history in assuming that the carcinoma has originated in an ulcer. So far from the clinical evidence being in favour of this view, it is absolutely opposed to it. The case may be

stated as follows: If it be true that 60 per cent. of chronic ulcers are, or become, malignant, then it follows that often we must perform gastro-jejunostomy for ulcers which we believe to be innocent but which are in reality malignant. Therefore a large number of these patients should die subsequently from gastric cancer. We know that is not the case. Those who have investigated this point tell us that the proportion of those who die from carcinoma after gastro-jejunostomy for supposed simple ulcer is about 2 per cent. In my own cases 2.5 per cent. of the patients are said to have died subsequently from cancer. Further investigation into these cases has made me sceptical as to accepting such estimates. In the main they are based on statements made by the patients' relatives. Although death was attributed to cancer in 2.5 per cent. of those on whom I have performed gastro-jejunostomy for ulcer, I have been able to discover only one case in which the cancer was indubitably gastric, and in that case it was not at the site of the original ulcer. In the majority of the cases there was no certain proof as to the existence of cancer, and in others there was a primary cancer elsewhere than in the stomach. Further, if it be true, as has been alleged, that in 60 per cent. of the cases of gastric ulcer there is evidence of malignancy, then the logical conclusion is inevitable that in course of time every gastric ulcer will become malignant, which, as Enclid would say, "is absurd."

For many years I have been asking this plain and straightforward question: If it be true that gastric ulcer is so frequently the precursor of gastric cancer, why is it that a large number of patients do not die after gastro-jejunostomy performed for supposed simple ulcer? So far not even the late Admiral Sir Percy Scott's intelligent midshipman has come to the rescue, for as yet I have received no answer. This is not surprising, as the only two possible answers impale the opposition on the horns of a dilemma. Patients seldom die from gastric cancer after gastro-jejunostomy for supposed simple ulcer because either the ulcers are rarely malignant or because gastro-jejunostomy cures cancer. Those who teach that gastric cancer usually originates in gastric ulcer can take what comfort they can gain from either answer.

The pathological evidence has been based on the finding of small downgrowths of epithelium near the edge of the ulcer, which downgrowths are regarded as evidence of malignancy. In a recent admirable paper<sup>2</sup> Dr. J. H. Dible has given cogent reasons for disregarding these assumptions. I submit that the clinical reasons I have stated above are a death-blow to this pernicious bag. Dr. Dible has completed the obsequies by cremating the corpse. *Requiescat in pace!*

Thirdly, it has been alleged that partial gastrectomy is less likely to be followed by jejunal or gastro-jejunal ulcer. This may or may not be true. I am old enough to remember that in the early days of gastro-jejunostomy a reason urged in favour of the posterior operation was that it was never followed by a jejunal ulcer. Indeed, it was a good many years after its introduction before a jejunal ulcer was reported as following this operation. Now we know that secondary ulceration is at least not less frequent after the posterior operation than after the anterior method.

THE REMOTE RESULTS OF GASTRO-JEJUNOSTOMY.  
What are the remote results of gastro-jejunostomy? As a contribution to this discussion I have reviewed my cases of gastric and duodenal ulcer for the ten years ending 1923, and the results are tabulated in Table I.

Recovered	...	110	82
Died	33	57	
Died since*	61	48	
Fairly well	316		
Quite well	...	172	
Bad result	...	525	
Untraced	...	4	
Gastric ulcer	...		
Duodenal ulcer	...		
Gastric+duodenal	...		

\* Cured of gastric trouble.  
Adding together those who are quite well, those who are fairly well—that is, are well so long as they take some care

in their diet—and those who have died from other diseases, but were quite well after their operation, it is seen that 82 per cent. may be regarded as cured.

The percentage of cures is lower than in my previous series, and lower than the percentage given by some other writers. There are two reasons for this. First, I have taken the percentage as that of all cases submitted to operation, and not the percentage only of those patients who recovered and have been traced. All the untraced cases are counted as "not cured." If, as is done by some writers, the untraced cases were disregarded, and the percentage of cures calculated with regard to the cases traced, the cures would be 91 per cent. Obviously, however, this is a doubtful method of representing the case. Secondly, the series includes nearly 300 operations on war pensioners at the Ministry of Pensions hospital, and it is these cases which reduce the percentage of cures. Most of the pensioners were bad subjects, out of work and in straitened circumstances, and not in a position to pay careful attention to their diet. For the same reason the incidence of jejunal ulcer among those patients is high. I am well aware of the danger of making any assumptions in drawing conclusions from statistics. As Sir Berkeley Moynihan once said wittily, "statistics may be made to prove anything, even the truth." Nevertheless I think it is justifiable to point out that if even half the untraced cases were well, the percentage of cures would rise to 88 per cent. It will be noted that only 7 per cent. of the cases were ascertained to be unsatisfactory. I think it is not an exaggeration to say that in patients who can and do take reasonable care of themselves the proportion of cures is over 90 per cent. The Mayos, Moynihan, Sherren, and others have reported a like proportion of successes.

Up to the year 1907 the anterior operation was the method I employed. In the year 1906, in the columns of the *Lancet*, I had a long and friendly clash of arms with Sir Berkeley Moynihan, who thrust and parried with that polished dialectic rapier which he handles with such skill. He disagreed with my advocacy of the anterior operation, and prophesied that soon I would be a convert to the posterior method. Twenty years later, in spite of those rapier thrusts, I am still alive—an unrepentant heretic. As a result of Sir Berkeley's persuasion and a visit to the Mayo Clinic I adopted the posterior method. During the ensuing years the impression grew upon me that the remote results of the posterior method were less good than I had obtained in former years by the anterior operation. In the course of time this impression became a conviction, a conviction possibly not demonstrable by statistics, but one the truth of which has been forced on me by a comparison of the late results in my patients. My experience is that the good results of the anterior operation are better than the good results of the posterior operation. Consequently, since the war I have adopted the anterior method almost exclusively, and in Table II are set out my cases divided into two groups.

TABLE II.—Results of Gastro-jejunostomy.

	Anterior.	Posterior.
Recovered ... ..	384	111
Died ... ..	4	0
Quite well ... ..	244	72
Fairly well ... ..	52	9
Died since (cured of gastric trouble) ... ..	27	6
Bad result ... ..	28	9
Untraced ... ..	33	15

As the proportion of untraced cases in the posterior method group is higher than in the anterior group, it is not possible to make a fair comparison of the results of the two methods. What difference there is in favour of the anterior method, but I do not suggest drawing any comparisons from these statistics.

#### HOW DOES GASTRO-JEJUNOSTOMY ACT?

For many years I have taught that gastro-jejunostomy is a physiological operation. The anastomosis between the stomach and jejunum allows small quantities of bile and pancreatic juice to "back-flow" into the stomach and so reduces the acidity of the gastric contents, and also neutralizes hypersecretion. This is Nature's method of lowering the acidity of the gastric juice. In health the

gastric contents are modified by the intermittent regurgitation of bile and pancreatic juice through the pylorus. Gastro-jejunostomy increases this reflux and allows of it even when there is pyloric spasm. For years I was as one crying in the wilderness. This hypothesis was received with scepticism by many and scoffed at by some. To-day, many of the "multitude make virtue of the faith they have denied." The admirable experimental work of Dr. Charles Bolton has proved the correctness of this hypothesis. As yet no other satisfactory explanation of the beneficent effects of gastro-jejunostomy has been put forward. Anterior gastro-jejunostomy results in a slightly greater "back-flow" of alkaline secretion than does the posterior operation, and this may be the reason why the results of the anterior operation are slightly better than those of the posterior operation. Operations of the Y type are quite unsuitable for the treatment of gastric and duodenal ulcers, as they short-circuit the bile and pancreatic juice so that they do not reach the stomach.

#### JEJUNAL AND GASTRO-JEJUNAL ULCERS.

The most serious remote complication of gastro-jejunostomy is the occurrence of a jejunal or gastro-jejunal ulcer. There were twelve instances of this in the present series (2.4 per cent.). This is slightly above the probable incidence of the complication, but six of the cases occurred among the pensioner patients, owing to the causes I have already mentioned. In eight instances the secondary ulcer followed the anterior operation (2 per cent.), and in four instances the posterior operation (3.6 per cent.). It would, however, hardly be fair to infer from such a number of cases that there is this difference in the incidence of this complication after the anterior and posterior operations. In three instances the result was fatal—in one case from a perforation, fatal before any operation could be performed, and in two others, in both of which the ulcer perforated into the colon, death followed the second operation. Whether or not secondary ulceration be more frequent after the posterior method, there can be no question that after this operation it is far more difficult to treat. Operation for a gastro-jejunal ulcer following the posterior operation is one of the most difficult, if not the most difficult, task in surgery. After the anterior operation the surgical treatment of a gastro-jejunal or jejunal ulcer, although not easy, is a very different problem. The predisposing if not the exciting cause of secondary ulceration is hyperacidity. At any rate I have not seen a case in which marked hyperacidity was absent. It is, therefore, a complication which may be prevented by dietetic and medical treatment. It is met with rarely in private patients, and when it occurs it is usually in those who after the operation have lived "not wisely but too well."

#### THE PRESENT POSITION OF GASTRO-JEJUNOSTOMY.

What, then, is the present position of gastro-jejunostomy in the treatment of gastric and duodenal ulcers? Gastro-jejunostomy is the operation of choice for all cases of gastric ulcer except those in which there is a suspicion that the ulcer is a cancerous one. In his Hunterian Lecture in 1920 Sherren expressed the opinion that "gastro-jejunostomy for gastric ulcer will become the less frequent operation." Further experience has modified his views, for this year he has said: "My mature opinion is that gastro-jejunostomy is still the most satisfactory treatment for duodenal ulcer and all cases of free gastric ulcer, and that its results equal, if they do not excel, those of any other major surgical operation." I go further than this, for I believe that gastro-jejunostomy will in most instances bring about the healing of an ulcer even when it has eroded the pancreas. This is no mere surmise, for in a number of instances I have seen a large excavating ulcer completely healed in patients who have died from some other cause years after the performance of gastro-jejunostomy. The results of gastro-jejunostomy are so satisfactory that more drastic measures may be wisely and safely deferred until the simpler operation has been tried and failed.

While there may be difference of opinion as regards the value of gastro-jejunostomy in the treatment of gastric ulcer, there can be no question that success can be attained by gastro-jejunostomy in over 90 per cent. of the cases of

duodenal ulcer. Therefore, in my view, duodenectomy is a totally unnecessary operation; it is one of the most tedious operations in surgery, the difficulties and dangers being far greater than with gastro-jejunostomy, and the remote results problematical.

In my opinion there is a further indication for gastro-jejunostomy—namely, that it should be part of the treatment of a perforated gastric or duodenal ulcer. I am convinced that it is a life-saving measure. When performed in addition to suture of the perforation and drainage, convalescence is smoother and more uneventful and the patient's recovery is more speedy and more sure.

It may not be amiss to repeat that gastro-jejunostomy should never be performed except when there exists an ulcer which can be seen and felt. It should never be done on a clinical diagnosis, however clear and definite the symptoms. Further, gastro-jejunostomy will not cure tabes dorsalis, migraine, gall stones, or cancer of the intestine; yet more than once I have operated on patients on whom gastro-jejunostomy had been performed for one or other of those conditions. Neither will gastro-jejunostomy give good results if a gall stone or a diseased appendix be left in the abdomen. Often we can learn more from our failures than from our successes. It is pertinent to inquire whether the unsuccessful cases would have been in the list of cures had some more radical procedure than gastro-jejunostomy been the operation of choice. In the series I have given there are 7 to 8 per cent. of known failures; of these approximately 2 per cent. are due to jejunal or gastro-jejunal ulcer, and 2 per cent. to chronic disease such as phthisis, chronic nephritis, or cancer elsewhere than in the stomach; 3 per cent. were apparently due to failure to reduce the gastric acidity, and 0.5 per cent. to adhesions or other complications incidental to abdominal operations. It is open to grave doubt whether partial gastrectomy *per se* would reduce the number of these unsuccessful results; on the other hand, there is no doubt that they would be reduced if the patients could and would keep to a more suitable diet.

#### THE IMPORTANCE OF AFTER-CARE.

This cannot be emphasized too strongly, for gastro-jejunostomy is but an incident in the treatment of gastric and duodenal ulcers. A prolonged period of restricted diet is imperative, especially in cases in which there is hyperacidity before operation. In all cases of hyperacidity increase in diet should be gradual and should be controlled by gastric analysis at regular intervals.

In dealing with some of the poorer hospital patients it is pathetic to restore a patient to health only to see the result of a successful operation marred through the inability of the patient to obtain adequate and suitable food. Two urgent needs to-day are convalescent hospitals where patients could have a prolonged period of rest and careful dietary amid healthy surroundings, and a system of "after-care" by which treatment could be continued on their return to their homes. Until these desiderata be secured our work is but half done. Through lack of them the value of the great work done by our hospitals is depreciated enormously and a corresponding economic loss falls on the nation. No detail is too trivial if it can aid us in our quest for perfection. We must use all and every means in our power to attain this ideal. With more efficient after-treatment gastro-jejunostomy will yield even better results than we know now.

In conclusion I cannot do better than quote a sentence from a paper by Moynihan,<sup>3</sup> which admirably expresses my own view: "I am an ardent and a sanguine advocate of this operation [gastro-jejunostomy], than which I think there is none in all surgery more completely satisfactory." These words are as true to-day as when they were written. With them I am in cordial agreement. I share the ardour and conviction of his advocacy. The worth of gastro-jejunostomy has been proved by time, and its value is inestimable provided it is used with judgement and with discretion in its proper place and with that

"Good sense, which only is the gift of Heaven,  
And tho' no science fairly worth the seven."

#### REFERENCES.

- <sup>1</sup> Sherrin: *Lancet*, 1925, II, p. 1007. <sup>2</sup> Dible: *Brit. Journ. of Surgery*, April, 1925, p. 666. <sup>3</sup> Moynihan: *British Medical Journal*, 1923, I, 1032.

#### II.—PROFESSOR H. FINSTERER, M.D., Vienna.

In my opinion the results of routine gastro-enterostomy in gastric and duodenal ulceration are not satisfactory because (1) the operation does not generally lead to the healing of the ulcer; (2) gastro-duodenal ulcers are not a very unusual complication of the operation; (3) haemorrhage from an unhealed ulcer is fairly frequent, and a perforation after gastro-enterostomy is not unknown. These were some of the reasons why certain Continental surgeons, such as Riedel, Payr, Clairmont, Haberer, and I myself decided in favour of the resection instead of gastro-enterostomy in gastric and duodenal ulceration. Since 1919 I have employed resection of the stomach in almost all cases which were not complicated with acute perforation; I have performed 593 resections for gastric and duodenal ulcers and 5 gastro-enterostomies for duodenal ulcer. It is evident from these figures that in my opinion gastro-enterostomy occupies a very minor position in gastric and duodenal surgery.

The objections to resections are that the mortality is much higher than in gastro-enterostomy, and that despite the resection recurrences are observed. In my material the mortality in resection for gastric ulcers was high (16.6 per cent.) before the war and during the war because of my lack of experience in resections of the stomach up to then, and because at that time in resections of penetrating ulcers the base of the ulcer was always excised from the pancreas because of a suspicion that these ulcers might become malignant. These resections of part of the pancreas led in many cases to pancreatitis, and increased the mortality. Besides this, during the war deaths from peritonitis without leakage were frequently observed because of poor asepsis due to war conditions. Since 1919 in resections for gastric ulcers the mortality has become lowered to 4 per cent. (175 resections with 7 fatalities) and in duodenal ulcers to 2 per cent. (357 cases with 7 fatalities). Fatalities were due mostly to peritonitis; there was one case of embolism, and haemorrhage occurred after operation in a patient suffering from severe cirrhosis of the liver in addition to his ulceration. But there was no fatality through operative shock or pneumonia in all the gastric resections, although 87 patients were from 60 to 78 years of age.

It is remarkable that resection for duodenal ulcers shows better results than for gastric ulcers. The dangers of this operation were avoided, since in all cases of duodenal ulcer in which the penetrating ulcer had extended as far as the papilla, or where the common duct could not be separated from the callosities, the ulcer was left in, and the stomach resection for exclusion was performed. In 1918 I recommended this method in order to avoid the gastro-jejunal ulcer, which was frequently (15 to 27 per cent.) observed after Eiselsberg's exclusion. My method was later employed in many clinics (de Quervain, Zaaier, Reichel, Burki, etc.), whereas Haberer rejected this method, because he affirmed that the excluded pylorus would cause a recurrence. The removal of the pylorus raises the mortality through leakage in the blindly closed duodenal stump. In 72 resections for exclusion in which the pylorus was not removed I had 2 fatalities—a mortality of 2.7 per cent.; whereas in 29 cases in which the pylorus was removed there were 5 fatalities—a mortality of 17.4 per cent.; 3 of the deaths were due to peritonitis following on a leakage of the blindly closed duodenal stump. As in my material the permanent results have not been improved through the removal of the pylorus I as a rule perform the typical resection for exclusion and remove the pylorus only in those cases in which the ulcer is located in the descending part of the duodenum, so that a safe closure of the duodenum can be expected. In these cases I put in a rubber tube to prevent peritonitis due to leaking.

In very hypertrophic stomachs the excluded part of the antrum must be greater; in those cases it may be advantageous to remove the excluded part with the pylorus and the duodenum in a second operation four to six weeks later, which is very easy, as the duodenal ulcer will already be healed. In this way the dangerous resection of the penetrating duodenal ulcer is done in two stages, each being



almost without danger. In cases with a very movable descending part of the duodenum I performed an end-to-side anastomosis between the partially closed stomach stump and the mobilized descending part. The advantage of this method is that good permanent results can be obtained with less extensive resection of the stomach (only one-third to one-half), as recurrence in the duodenum below the papilla is not to be feared.

The method of resection is of some importance for the immediate and permanent results. The method I generally use is a modification of the Billroth II developed by Hofmeister and myself. With this modification the disadvantages of the Billroth II method and its modification after Krönlein-Mikulicz—namely, the retrograde filling of the duodenum and bursting open of the duodenal closure followed by peritonitis—can be avoided. Up to now I have not observed any leakage or suture insufficiency.

Down to 1914 I performed the sleeve resection of gastric ulcers in 9 cases, but the permanent results were not satisfactory. Since 1914 I have always removed the pylorus. In ulcers reaching from the pylorus to the cardia or located near the cardia I perform a curved resection. In penetrating ulcers the stomach is separated from the base of the ulcer (pancreas, liver), leaving the base in. Since it is impossible to recognize the malignant degeneration of a gastric ulcer during the operation, I have performed no gastro-enterostomy for the last seven years, but have resected all gastric ulcers.

The Billroth I method is greatly favoured by Haberer; I use this method only in cases in which the duodenum is very broad, as otherwise one has to deal with stenosis of the anastomosis. In old or cachectic patients the danger of leakage is very great, as the power of healing is not sufficient and the sutures cut through on the third to the fifth day because tension is caused by every contraction of the stomach. With Haberer's modification there is no danger of stenosis and less danger of leakage, therefore I prefer this method to the original Billroth I method.

In acute profuse haemorrhages resection is the best method of stopping the bleeding. The results depend first on the duration of the profuse haemorrhage and the degree of the degeneration of the parenchymatous organs through anaemia. In the early operation (up to twenty-four or even forty-eight hours after the onset of the profuse bleeding) the results of the resection are good (26 resections with one death in a case of very extended gastro-jejunal ulcer=3.8 per cent. mortality), while in late operations, on the third to the fourteenth day, the results are unsatisfactory (28 resections with 7 fatalities=25 per cent.).

The mortality in resections for ulcers ranges from 2 to 5 per cent.; it is not much higher than the mortality of gastro-enterostomy, especially if the deaths from perforation or haemorrhage of the ulcers which will not heal are included. Nordmann states that in these cases the mortality with resection is lower (4.5 per cent.) than the mortality with gastro-enterostomy (4.7 per cent.). In Eiselsberg's clinic the mortality in resection was 3 per cent. in 449 cases during the last few years. The best results were achieved by Moynihan, who reported a mortality of 1.6 per cent. in resection for gastric ulcers. In over 500 operations—gastro-enterostomy and gastro-duodenostomy—for duodenal ulcer Moynihan has had no deaths during the last ten years.

The permanent results are of the greatest importance, as that method which shows not only the lowest mortality but also the greatest percentage of good permanent results can alone be the method of choice. The value of a method can be demonstrated through useful statistics. To obtain absolutely reliable statistics it would be necessary to get answers from all patients or to re-examine them. Statistics in which more than 10 to 15 per cent. of untraced cases are included cannot prove the value of the operation, as, especially among these cases, there may be many uncured patients, who do not reply because they believe that an unsatisfactory operation was the cause of their not being cured. Of 450 patients on whom I performed resection between 1911 and 1923, 43 were untraced—9.5 per cent. In many statistics this percentage is higher—15 to 30 per cent. and more.

The permanent results of resections for gastric ulcers are very satisfactory. Among 105 resections which were performed from 1911 to 1923, 103 have been cured=98 per cent. The patients have no diet limitations; they have gained up to 60 lb. in weight, and are able to do hard work. Two patients are restricted to a certain diet; otherwise they complain of some stomach symptoms—heartburn and eructation; in these cases an entero-anastomosis was also performed. I wish to emphasize the fact that after the resection it is necessary to keep to a certain diet for two or three months only, then the patient can eat any food, whereas after gastro-enterostomy careful dieting is always necessary (Moynihan).

Of 236 resections for duodenal ulcer which were performed from 1916 to 1923, 223 (94 per cent.) have been cured, 8 improved, and 5 not cured (2.1 per cent.). Among these 5 cases there are 2 recurrences of duodenal ulcer after operation by the Billroth I method, and one case of gastro-jejunal ulcer. This is the only case of gastro-jejunal ulcer among 292 resections. After a more extended stomach resection this patient has now been cured.

The permanent results with stomach resection for exclusion are not so good, as there have been 9 per cent. failures. As in cases of removal of the pylorus the permanent results are worse (53 per cent. of cures) than in the typical cases in which the excluded pylorus was left in (88 per cent. of cures), it is impossible that the excluded pylorus should be the cause of failure, as Haberer asserted. According to my experience the good permanent results depend on the size of the part of the stomach removed. In 1919 I resected only one-third of the dilated stomach, and in this way the failures can be explained. Through a more extensive stomach resection the patients could be cured.

It is very important to realize that almost as good permanent results can be achieved with the stomach resection for exclusion as with resection of the ulcer, if a sufficiently large part of the stomach is removed. The resection for exclusion is much easier and less dangerous than the resection of a penetrating duodenal ulcer, and it would be a great advantage if this method were performed instead of gastro-enterostomy. It cannot be expected that the results with gastro-enterostomy (which method is recommended by Haberer for such cases) will be better than those when gastro-enterostomy was used in every case. And at that time Haberer had only 37 per cent. good permanent results, while other surgeons (Müller, Payr) had from 50 to 70 per cent. I do not reject gastro-enterostomy altogether, but I reserve it for old patients without hyperacidity who are not in danger of getting gastro-jejunal ulcer.

My view that the extent of the resection and not the removal of the pylorus decides the permanent results seems to me to be proved by the following two cases.

Two brothers were operated on in 1919 for gastro-jejunal ulcers after gastro-enterostomies. I removed half of the dilated stomach with the pylorus and the old duodenal ulcer, and performed a Y-shaped anastomosis without giving relief; heartburn, haemorrhage, and severe pain continued, so that half a grain of morphine daily was required. In 1921 I operated again on both, and found big gastro-jejunal ulcers penetrating into the pancreas; after an extended resection of the stomach, leaving behind only one-fifth, a Y-shaped anastomosis was performed. Recovery followed and since that time the patients have remained well; they can eat anything, and have gained more than 30 lb. in weight during five years' observation.

The fact that in a dilated stomach scarcely more than the antrum is enlarged is very important, but not commonly known, and so it is not taken into consideration. Therefore after removal of two-thirds of a greatly dilated stomach there remains more than one-third of a normally sized stomach; this is the explanation of the recurrences. In a really extensive stomach resection the whole lesser curvature is removed.

In the radical operations for gastro-jejunal ulcer the immediate results are satisfactory—68 resections with 4 deaths—a mortality of 7.3 per cent. In order to get good permanent results it is necessary to make an extensive resection of the stomach and to avoid the Y-shaped

anastomosis which favours the recurrence. I have not performed Y-shaped anastomosis for four years. By this method also, and even after repeated operations, permanent recovery may be expected. In two of my cases four operations were performed by other surgeons without success. One of these was a resection of the stomach (antrum and pylorus); through a very extensive resection these patients were cured.

Of especial interest is the success in the following case of a man aged 33. He was first treated by a posterior gastro-enterostomy for duodenal ulcer followed by excision of the anastomosis for gastro-jejunal ulcer, and anterior gastro-enterostomy with entero-anastomosis. The antrum with the pylorus and anastomosis loop were next excised for a large gastro-jejunal ulcer according to the Billroth II method. Owing to stenosis resulting from gastro-jejunal ulcer a further gastro-enterostomy was performed. A gastro-jejunal ulcer formed on this anastomosis with perforation into the transverse colon (fistula gastro-colica) and was followed by resection of the transverse colon, jejunum, and a great part of the stomach, only one-fifth being left; lateral anastomosis of the colon, end-to-end anastomosis of the jejunum, and below this an anastomosis between stomach and jejunum (Hofmeister-Finsterer method). Each of these operations was performed by a different surgeon, the last by myself. Since that time, two years ago, the patient has remained absolutely well and has gained more than 40 lb. in weight.

The symptoms of too small a stomach do not depend on the size of the remaining part of the stomach, but on the width of the anastomosis. In my cases they have more frequently been observed in resections after the Billroth I method, where a greater part of the stomach remained than in my operation, but the anastomosis became narrowed.

The possibility of severe diarrhoea is also an objection to extensive stomach resections, but up till now I have not met this complication. I should like to emphasize the fact that I have not yet observed cancer develop in a stomach stump after the large resections.

#### CONCLUSION.

As in my material the immediate mortality in resections for ulcer is not much higher than in gastro-enterostomy, and the permanent results are much better, I prefer resection to gastro-enterostomy.

In gastric ulcers I perform resection in every case, even in old patients, because the danger of malignant degeneration is great, and it is almost impossible to recognize the degeneration during the operation.

In duodenal ulcers I prefer resection of the ulcer with a large part of the stomach. In non-resectable ulcers I perform the stomach resection for exclusion. As the permanent results depend on the extension of the resection, I remove the pylorus only if an absolutely safe closure of the duodenum can be expected. In old patients with a non-resectable duodenal ulcer I perform a gastro-enterostomy.

In every resection the pylorus and two-thirds of the normally sized stomach are removed, and, as a rule, an end-to-side anastomosis is performed between the reduced opening of the stomach stump and the first jejunal loop. As the Billroth I method shows a higher mortality and no better permanent results, I do not consider it the method of choice.

In gastro-jejunal ulcers it is necessary to perform a very extensive stomach resection and to avoid the Y-shaped anastomosis. In this way a good permanent result can be obtained after repeated operations, therefore I never refuse an operation even in apparently incurable cases.

#### GENERAL DISCUSSION.

Mr. K. W. MONSARRAT (Liverpool) said that questions of this character might be discussed from two points of view: they could either analyse results of different technical procedures, or they could discuss the subject from the other standpoint having regard to the nature of the morbid process requiring remedy. He preferred to discuss the subject of gastro-enterostomy from the second point of view. In stenotic lesions the problem was simple as there was no longer active ulceration. The patient had

recovered from his morbid process, but was left with a mechanical obstruction. Uniformly good results were obtained by a short-circuit. The problem was more complicated when actual ulceration was present. Full consideration of recent work supported the view that ulcers in the upper alimentary canal were secondary to disordered mechanism. Preceding the development of duodenal ulcers there occurred a hypertonus leading to rapid and early discharge of gastric contents into the duodenum, and a late pyloric spasm which checked regurgitation and produced a retention of gastric secretions during the hunger period. The result of this disorder was that as soon as food entered the stomach the duodenum was flooded with active gastric juice, which was damaging to its mucous membrane and produced necrosis in many cases. The problem was how to arrest the process of ulceration; how to suppress the hypertonus. Gastro-enterostomy could diminish the hypertonus if it provided a sufficient discharge of jejunal contents into the stomach. The effect of the discharge of fluid or food into the stomach, whether by the oesophagus or any abnormal channel such as a gastro-jejunal stoma, was to bring about relaxation of the hypertonus. With active ulcers, however, this was not enough. The ulcer should be protected from contact with gastric secretions, and this could be brought about by a temporary pyloric occlusion. The speaker added that hypertonus might persist in spite of gastro-jejunosomy, when it did, it depended upon such causes as mouth infections, infections of other viscera, irritability caused by certain foods, and certain forms of intoxication, such as that of tobacco. These primary causes of the hypertonic habit had to be sought for and eliminated, otherwise a definite risk of an ulcer developing in the region of the anastomosis was run.

In simple gastric ulceration the disordered function was characteristically different; it was pyloric spasm of early onset, and hypotonus. The result was retention of gastric contents in the stomach for an unduly long period. On the whole there was a tendency to hyperacidity, but he no longer considered free acid content of the gastric juice of primary importance in regard to ulcer production either in the stomach or duodenum. The remedy for gastric ulceration was excision of the actual ulcer area and the prevention of gastric stasis. Gastro-enterostomy did this, but the site of the anastomosis was of primo importance: it should be as near the pyloric end as practicable and of ample size. If high gastro-jejunosomy was performed there would remain a large pyloric segment where stasis persisted, and if this obtained, a recurrence of ulceration in this segment was likely. In actual experience they all knew that this was what occurred. In gastric ulcer gastro-jejunosomy was essentially a drainage operation, a short-circuit with an object in view which was primarily mechanical. When the extent of the lesser sac towards the right made it difficult to obtain an anastomosis with the pyloric part of the stomach he discarded gastro-jejunosomy for pyloroplasty. In the treatment of duodenal ulcer they aimed at relieving the hypertonus by making a large opening, through which regurgitation or admixture of jejunal and gastric contents would be considerable. The position of the anastomosis was not of primo moment. In gastric ulcer they desired to bring about an early and complete emptying, and the position of the anastomosis in relation to the pylorus was of great importance. In both cases the speaker was in the habit of making the gastric incision parallel to the greater curvature. Unless the stomach was much dilated he found it impossible to obtain as large an opening as wanted by making a vertical gastric incision.

Lastly, Mr. Monsarrat referred to a certain type of case he met from time to time, where he failed to find actual ulceration in the duodenum, although the clinical history was typical and the radiological evidence showed typical derangement of gastric function. In some of these cases, although there was no ulcer, there was evidence of active duodenitis. He did not hesitate to perform a gastro-enterostomy with temporary occlusion of the pylorus, just as though there were duodenal ulceration present. He believed that duodenitis was due to the same disorder of mechanism as duodenal ulcer, and was the first stage in the development of actual ulceration.

Mr. CHARLES ROBERTS (Manchester) said that his contribution to the discussion was based on the close observation and a follow-up of 157 operations of gastro-jejunostomy for ulcer, which he performed at the Manchester Royal Infirmary during the five years ending December, 1925. He believed that a true estimate of the role of gastro-jejunostomy in the treatment of ulcer could be most accurately formed by regular and prolonged observation of patients after operation. Posterior gastro-jejunostomy alone had been performed for duodenal and pyloric ulcers in the great majority of cases. For small gastric ulcers the operation had been combined with local excision of the ulcer when practicable. The appendix had been removed as a routine, focal sepsis dealt with, and the teeth carefully attended to. Printed general instructions, with special directions as to diet, had been given to all patients, and a powder containing magnesia ponderosa and the carbonates of bismuth and calcium had been prescribed for at least six months. Five patients had been readmitted for symptoms necessitating a further operation. In one of these, where the operation had been done for an irremovable ulcer, signs of malignancy were present. One case of duodenal ulcer was readmitted for recurring haemorrhage. In one case subacute intestinal obstruction followed anterior gastro-jejunostomy. In another the appendix had been left owing to difficulties with the anaesthesia, and appendicectomy was followed by a successful result. One patient (the only one he had been able to find) developed a gastro-jejunal ulcer. This man, who lived in a fried-fish shop, had disregarded all instructions as to after-treatment. Two patients refused readmission, and one patient with pyloric stenosis was operated upon again elsewhere. Nine, all of whom were cases of duodenal ulcer, had suffered from minor digestive disturbances, chiefly in the form of an inability to digest certain articles of diet. Instructions given for after-care had not been rigidly observed.

His observations led him to the following conclusions: Partial gastrectomy should be performed whenever practicable, for, apart from other reasons, malignancy might follow even if it was not already present. Local excision combined with gastro-jejunostomy was the most successful of all operations for ulcer. Anterior gastro-jejunostomy should be avoided whenever possible owing to its mechanical disadvantages. In the case of haemorrhage or the bleeding type of duodenal ulcer, a direct attack should be made on the ulcer itself. The appendix should be removed as a routine. Gastro-jejunal ulcer, recurrence of ulcer, formation of a fresh ulcer, and minor digestive disturbances could be almost entirely prevented if careful supervision and after-treatment were carried out. The speaker wished to emphasize that point because so little stress as a rule was laid upon the importance of after-treatment in surgical textbooks and communications.

Gastro-jejunostomy was to be looked upon as an adjunct to medical treatment and not entirely curative. The operation itself was to be regarded, not as the final treatment, but the commencement of a more efficient treatment. Under these conditions the results were so satisfactory that any alternative procedure, more mutilating in character or involving a higher mortality risk, was unnecessary and unjustifiable, and should only be resorted to as a second-stage operation.

Mr. E. DEANESLY (Wolverhampton) said that the question debated was whether gastro-jejunostomy retained its position as the best means of treating gastric and duodenal ulcers. Mr. Paterson maintained emphatically that it did, while Professor Finsterer said that he rarely employed it and recommended various more radical operations. Mr. Deanesly agreed in the main with Mr. Paterson. It could not be denied that gastro-jejunostomy gave excellent results in a very large percentage of cases, and it was difficult to understand the extraordinary discrepancy in the percentage of favourable results recorded by different surgeons of acknowledged eminence and experience. It could not, however, be denied that every surgeon had a certain percentage of cases of duodenal ulcer which gastro-jejunostomy failed to cure, and very few surgeons now, with the exception of Mr. Sherren, regarded this operation by itself as a satisfactory treatment for gastric ulcers. With

regard to the larger and more deeply penetrating ulcers of the duodenum, especially those in which serious haemorrhage had occurred, and also those ulcers in which an active ulceration was accompanied with marked stenosis, gastro-jejunostomy did not give good permanent results. For the last few years he had been treating such cases more and more frequently by Finney's gastro-duodenostomy, which was really a pyloroplasty, and he had had most encouraging results. This operation had the advantage of removing both pyloric stenosis and pyloric spasm. In smaller duodenal ulcers he had even contented himself with a simple Rammstedt's operation on the pyloric sphincter. Most textbooks spoke rather disparagingly of Finney's operation or exaggerated its difficulties, which were really no greater than a gastro-jejunostomy in most cases, and he had heard that Finney himself rarely practised the operation now. However that might be, it seemed to him that it had such obvious advantages in placing the ulcer at rest and in preventing the holding up of food in the stomach, with resulting increase in acidity, that he thought more surgeons should give an extended trial to this method before resorting to such a drastic and difficult procedure as resection of the duodenum.

Mr. A. B. MITCHELL (Belfast) agreed with Mr. Paterson that gastro-jejunostomy held the field in the treatment of duodenal ulcer. The ulcer, however, should at the same time be infolded or excised. If a severe haemorrhage had occurred the ulcer would almost always be found on the posterior surface or pancreatic border of the duodenum. In such cases he made it a rule to ligature the duodenal branch of the pancreaticoduodenal artery. At the Annual Meeting in Belfast in 1909 he had advocated the performance of gastro-jejunostomy in the treatment of duodenal perforation, but met with no support. It had been the routine practice in his clinic since that time, except where shock was profound and very rapid work was essential. He was very pleased to hear Mr. Paterson advocate it so strongly. Initial shock on perforation depended on the character and amount of extravasation. In duodenal perforation the extravasated material was aseptic and small in amount, because the moment the perforation occurred the pyloric sphincter suddenly contracted and remained contracted till it was wearied out or some indiscreet person put it to sleep by morphine. In either case a further leakage occurred. In gastric perforation the case was different and leakage was continuous. If the stomach was dilated and the perforation large, the peritoneum was rapidly drenched with material which might be highly toxic and cause the most profound shock. Such patients could bear very little handling. "Get in quickly and get out quicker" must be their rule. Apart from this, in gastric perforation he thought the question of gastro-jejunostomy should always be considered after the perforation had been closed. As regards the treatment of chronic gastric ulcer, gastro-jejunostomy, with or without partial gastrectomy, was now the recognized procedure. It was generally accepted that excision of the ulcer or infolding the ulcer would rarely in itself result in cure. It was also agreed that gastro-jejunostomy alone was not sufficient—the ulcer itself must be dealt with. Mr. Mitchell confessed to a great hesitation in resecting a large portion of healthy stomach for the cure of a small simple ulcer, say the size of a sixpence, high up on the lesser curve in a young patient. These ulcers might be treated by infolding—the through-and-through stitch around the ulcer being drawn so tight that the blood supply was cut off. It would then undergo necrosis and digestion. Leakage was prevented by a Lembert suture. A gastro-jejunostomy was then performed at the upper level of the pyloric segment. He could not follow Mr. Sherren in anastomosing the jejunum above the ulcer at the fundus of the stomach. Where the ulcer was in the lower segment or where it was adherent to the pancreas or liver it must be freely separated. The question of partial gastrectomy by the method of Polya would then arise. It was the operation of choice unless the damage to the stomach was very slight. He agreed that the mortality was very low and convalescence rapid. It was, however, too soon to say whether this operation was free from such sequelae as peptic ulcer.

# MEMORANDA.

SEPT. 25, 1925]

Where gastro-jejunostomy was performed *per se* the ideal opening, after due allowance had been made for normal contraction, should approximately equal the transverse diameter of the jejunum. It was a simple mechanical fact that the jejunum could not carry away more contents than its normal lumen when comfortably distended would admit. For the purpose of emptying the stomach the very large opening so frequently made was obviously unnecessary. The normal outlet of the size of when the pylorus was fully dilated was exactly the size of the duodenum. It would seem reasonable to copy this principle. The farther they got away from Nature's standard the more likely they were to fall into error.

Sir WILLIAM DE COURCY WHEELER (Dublin) said that most surgeons would be guided in the management of gastric and duodenal lesions by judgement based on their own capabilities and the results of personal experience. He agreed with Mr. Herbert Paterson that no complicated surgery was justified in the case of duodenal ulcer. Perforation and haemorrhage had alone to be considered, and every ulcer, when possible, should be inverted or covered with a piece of omentum; when bleeding was part of the history, excision, cauterization, or the picking up and ligature of the vessels round the ulcerated area should be practised in addition to gastro-enterostomy. The speaker feared cancer following gastric ulcer, but in his experience the pendulum of surgical opinion had swung too much over in this direction; Mr. Herbert Paterson too, he thought, gone to the other extreme. He had had several cases come back years after gastro-enterostomy for ulcer with inoperable cancer. In his hands resection had given better results than excision, but resection was only necessary in a limited number of cases. Gastro-enterostomy was futile as a palliative operation and two-stage operations were seldom necessary. It was most important to empty the stomach before operation when resection was contemplated. Fatalities had occurred by regurgitation of fluid into the mouth during the application of the clamps when this elementary detail had been omitted. Judgement was the keynote to success, and he refused to be bound by those who insisted, on the one hand, that gastro-enterostomy was sufficient in all cases, or, on the other hand, by those who argued partial gastrectomy as a routine. The sleeve resection which he had advocated on a former occasion did not give as good ultimate results as might have been expected.

Dr. H. BAKER (Toronto) said that gastro-jejunostomy was the most satisfactory operation. He feared the mortality that would take place if gastrectomy were performed by every surgeon.

Professor D. P. D. WALKER (Edinburgh) pointed out that time was the surest test of the value of any method or procedure. The fact that after more than forty years the operation of gastro-enterostomy remained the recognized procedure for duodenal ulcer was the strongest proof of its worth as an operation. The problem resolved itself into two questions: first, did the operation give lasting relief or cure for either duodenal or gastric ulcer or for both in a large percentage of cases? and secondly, did it entail unfortunate sequelae in any appreciable number of cases? He believed that this operation would remain the method of choice in all post-pyloric ulcers. It was seen at its best in cases of duodenal ulcer with some stenosis, and here they might anticipate 90 per cent. of satisfactory results. Where the duodenal ulcer was associated with a small hypertonic stomach and no stenosis the benefits of the operation were much less certain, and in this class of case medicine found its legitimate field. Where haemorrhage from a large posterior duodenal ulcer was the indication the results were still less certain, and permanent relief was not conferred in more than 60 per cent. of cases. Where there was an active florid gastric ulcer of the lesser curve gastro-enterostomy, although by no means useless, was insufficient for cure in too large a percentage of cases to be considered the operation of choice. The success of partial gastrectomy had given it aogue which he felt sure would not outlast the test of time. Local excision of the ulcer, and the treatment by cautery combined with gastro-enterostomy, although less dramatic in their performance

and in their immediate results, were, in his opinion, more logical operations. He did not wonder that a certain aftermath of poor results from gastro-jejunostomy occurred, considering the number of times this operation had been performed by all kinds of surgeons. Either the case was unquestionably due to bad surgery. Most of the bad results were unsuitable, the operation was indifferently performed, a coincident gastric ulcer was overlooked, the after-treatment was neglected, or infective foci were left untreated. Jejunal ulcer and bilious vomiting occurred occasionally in the practice of all surgeons. He believed that persistent hyperacidity was the deciding factor in the etiology of jejunal ulcer, and careful antacid treatment for some months after the operation was the surest safeguard against it. In all cases in which hyperacidity had been a feature prior to operation alkalis and belladonna should be given for some weeks thereafter. Where care in after-treatment was exercised, this complication would not appear in more than 2 per cent. of cases.

Post-operative vomiting of bile was almost always due to the opening in the mesocolon being too small. Where access through the mesocolon was restricted it was preferable to perform the anterior operation with a lateral anastomosis of the limbs of the loop, a procedure which, with some, had an undeservedly bad reputation. If the patient suffered from gastric flatulence with occasional bilious vomiting prior to operation, and no stenosis but rather a dilated duodenum was found, a duodenostomy in addition to gastro-jejunostomy would ensure post-operative freedom from vomiting. Persistent bilious vomiting did not occur in more than 3 per cent. of cases, and in most of these could be cured by a second anastomotic operation. The operation of gastro-duodenostomy was on physiological grounds preferable to gastro-jejunostomy in cases of duodenal ulcer. In male subjects, however, it was usually difficult to perform, and, in his experience, whilst the ultimate results were excellent, the convalescence was less smooth and the immediate effects less striking.

Mr. HERBERT J. PATERSON, in reply, said that on the whole the results of gastro-jejunostomy were eminently satisfactory; the mortality rate need not be greater than 1 per cent. He asked whether, on the supposition that 5 per cent. of the failures after gastro-jejunostomy could be cured by partial gastrectomy (an assumption which he declined to admit), it was justifiable, having regard to the small number of failures, to submit the remaining 95 per cent. of their patients to such a severe operation as partial gastrectomy, with its necessarily greater mortality rate. Surely the wiser course was to perform gastro-jejunostomy in the first instance, and to reserve more severe procedures for cases in which the simpler operation had been tried and had failed?

## Memoranda : MEDICAL, SURGICAL, OBSTETRICAL.

STOVAINE IN OTO-RHINO-LARYNGOLOGY.  
For about a year I have been testing stovaine as a local anaesthetic for operations on the nose, throat, and ear, in accordance with the request of the Cocaine Research Committee. On the whole it has proved very satisfactory indeed.

In fifty cases of cauterization with the electric wire anaesthesia with 5 per cent. stovaine was employed. The operation was quite painless: the drug produced less vasoconstriction than cocaine: there were practically no systemic effects and no toxic symptoms, and there were less after-effects than with cocaine, which gives a certain feeling of "cold" afterwards. For cauterization stovaine had all the good qualities of cocaine without the bad ones.

In fifteen tubular operations 10 per cent. stovaine was employed. The operation was painless, but there was more bleeding than with cocaine, though this could be controlled by mixing with adrenaline. There were no toxic effects, but the patient was more apprehensive, cocaine tending to diminish the dread of the operation. Thus stovaine, though quite satisfactory for these cases, was less so than cocaine.

In ten septum operations 10 per cent. stovaine was used,

mixed with 1 in 2,000 adrenaline. The mucous membrane anaesthesia was equal to that produced by cocaine, but the deeper bone was more painful. There was more bleeding, but no toxic effects. The "back-up" effect of cocaine was greatly missed. Stovaine was thus not so satisfactory as cocaine for this major operation on the nose. In operations for nasal polypi and ethmoiditis the effects were just the same as in the septum operation.

Generally, with regard to stovaine anaesthesia in the nose my experience has been that it is perfectly safe and the surface anaesthesia is excellent; it is perhaps better than cocaine for purely mucous membrane work; the anaesthesia is slower and the vaso-constriction less; but it is on the whole not so satisfactory as cocaine for the major operations.

Twenty operations about the mouth and throat were performed under 1 per cent. stovaine. It seemed perfectly safe, there were no toxic effects; and the anaesthesia was good. There was very little vaso-constriction. For these cases it is much preferable to the injection of cocaine; but I do not think it is preferable to novocain, though little if any behind it.

In twelve cases the tonsils were removed under 1 per cent. stovaine. The anaesthesia was good, but there was much more bleeding than with novocain, and it was therefore not so satisfactory for this operation.

As a laryngeal spray for performing minor operations I used a 5 per cent. solution of stovaine, with excellent result in the three cases—one a papilloma and two foreign bodies.

On the whole, therefore, I consider that stovaine should have as big a place in the world of local anaesthetics as cocaine and novocain, more especially in minor throat and nose operations.

FRANCIS MUECKE, C.B.E., F.R.C.S.,  
Surgeon, Ear, Nose, and Throat Department,  
the London Hospital.

### THE EPILEPSIES.

Is epilepsy ever really idiopathic? This is a question which has been lurking in a nebulous stato in my mind for years past. Recently I have had two cases bearing on this, where the apparently idiopathic condition has proved to be really secondary to a local irritation or lesion.

#### CASE I.

A young lady, aged 18, had had for two years bad attacks of twitching of the left side of the mouth and nose and indistinct exhausted sensations at irregular intervals, almost always after reading for a long time. Expert investigation of eyes and antrum gave negative results. The antrum was investigated, as I had detected signs of pain on pressure of the second left upper bicuspid. A skiagram of the upper jaw showed a thickening of the root of this tooth. On extraction it was found to have a slight exostosis, and there was some chronic inflammation of the periosteum and pulp. The tooth was extracted over twelve months ago, and there has been no recurrence of the attacks; the patient is healthy in every way.

#### CASE II.

A married woman, aged about 46, with one grown-up daughter, two years ago had a severe and prolonged attack of multiple peripheral neuritis, beginning with symptoms simulating acute bulbar paralysis. She is abstemious and a careful liver in every way. The paralytic symptoms gradually disappeared under treatment. The main active drugs given were an alkaline mixture containing potassium iodide and bromide, with a little free iodine (iodide, iodate, and free iodine were formed in the stomach). There were no signs, stigmata, or any suspicion of specific disease. The daughter is perfectly healthy and normal, and above the average in mental development. Since this patient lost the symptoms of peripheral neuritis she has had frequent attacks of what appears to be typical petit mal, and once I had an opportunity of seeing her in a typical grand mal fit. She always has an aura, referred to the epigastrium, just preceding the fit. She is not unconscious in these fits, but in a sort of semi-delirious state (except in the one grand mal attack).

These two cases give me my peg on which to hang my question—Is epilepsy ever really idiopathic?

Flackwell Heath, Bucks.

G. D. PARKER.

## Reviews.

### EARLY SCIENCE IN OXFORD.

OXFORD is fortunate indeed in the ability and enthusiasm of Dr. R. T. GUNTHER, Fellow of Magdalen College, whose *Early Science in Oxford*<sup>1</sup> forms a valuable and generously illustrated record of the great men of the past. The first instalment, on chemistry, was reviewed in our columns five years ago (1921, ii, 708), and we were then warned that the issue of the remaining parts must await a longer list of subscribers. Fortunately this appears to have been effected, for last year Volumes III and IV appeared, "printed for the subscribers," and now a further volume, *Early Medical and Biological Science*, extracted from *Early Science in Oxford*, has been brought out without plates at the request of friends, who have expressed regret that the cost of the complete work puts it beyond the reach of a large number of students for whom it was written. This additional volume, which reproduces the earlier pages of Volume III, deals first with medicine in two chapters (early and in the seventeenth century and after), and then with anatomy, physiology, zoology, and geology; although it does not contain the beautiful plates of the original, it is illustrated by 47 figures, several of them occupying the whole page, and is of special interest to students of medical history.

The original statutes of the University (circa 1325) accorded an honourable status to physic and reckoned those skilled in medicine as more learned than others, since they are entrusted with the "cure of the sick, the perils of death, and the ordering of life," and it is therefore directed that great care must be exercised that only competent persons be allowed to practise or incept in that faculty. The first known lecturer on medicine at Oxford was Nicholas Tynchewyke or Tingewick (obit 1324), who is not noticed in the *Dictionary of National Biography*, but cured Edward I of his illnesses; it is also recorded that he rode forty miles to see an old woman who cured jaundice by administering the lice of sheep bruised and compounded with honey and water (hydromel), and gave her a sum of money for instructing him in the cure. It is interesting to learn that John of Gaddesden prophetically gave urea as a diuretic some centuries before its usually recognized discovery. The debt of medicine to Robert Boyle, which is perhaps hardly recognized to its full extent, is shown to crop up in unexpected directions, such as his advocacy of simple remedies instead of elaborate mixtures and the invention of the ammoniated quinine which so many patients who have suffered from influenza have cause to remember. There is much about blood transfusion at Oxford in the time of Lower, and, as is usual in these volumes, the reader finds new data. In the first half of the nineteenth century medicine was in a stato of suspended animation, and in spite of a latitude in the choice of subjects, ranging from the botany of Virgil to a knowledge of volcanoes, allowed to candidates for the D.M. degree, there were not forty men on the books of all the colleges who had the right to put B.M. or D.M. after their names. The history of the Ashmolean Museum, which is finely represented in the frontispiece to the fourth volume, is set out in Volume III; its contents were given to the University by Elias Ashmole, "Mercuriophilus," who in turn had received its rarities from John Tradescant, junior (1608-62), though not without much trouble with his widow.

Volume IV is appropriately introduced by the Vice-Chancellor, who is also the Warden of Wadham, in a few words on the early association of his college with the Royal Society which grew out of the Philosophical Society of Oxford, the subject of this attractive volume. The Minutes of the Oxford Society for 1683 to 1690, reproduced from the manuscript in the Ashmolean Museum, are here

<sup>1</sup> *Early Science in Oxford*, vol. iii, Part I, *The Biological Sciences*; Part II, *The Biological Collections*. (Demy 8vo, pp. xii+564; 64 plates, 72 figures); vol. iv, *The Philosophical Society*. (Demy 8vo, pp. viii+259; 5 illustrations.) By R. T. Gunther. Oxford: Printed for the Publishers, 1925. *Early Medical and Biological Science* extracted from *Early Science in Oxford*. By R. T. Gunther, M.A., LL.D., F.L.S. London: Humphrey Milford, Oxford University Press, 1926. (Demy 8vo, pp. 246; 47 figures. 7s 6d. net.)



printed for the first time; they contain many curious medical items, some of which may anticipate later observations: in the Minutes of May 13th, 1684, there is a record of a thermometer three inches long "which serves to show ye duration, increase, and Diminution of feavors"; the present short clinical thermometer, it may be recalled, was introduced by the late Sir Clifford Allbutt in 1867. The following memorandum occurs on a page headed "Cases of Appendicitis," a disease so named in 1886 by R. Fitz of Boston, Mass.: "The Society was informed by Mr. Musgrave that in the dissections of two persons, who died not many years since in Oxford of Consumptions, the Intestinum Cœcum had these things remarkable in it; in one of them it was quite dried up, and grew fast to the peritoneum: in the other it was much looser, than usually it is." Possibly the first was the result of past appendicitis. The first case of acute appendicitis unearthed by Kelly and Hurdon was in France by Meslier in 1759, and was associated with a pin in the appendix; while the first case reported in this country has previously been considered to be that recorded by James Parkinson (of Parkinson's disease) in 1812. Dr. R. Plot of Magdalen Hall, of whom there is a very charming portrait, was a regular attendant at the Philosophical Society, and in 1685 described a case which arouses a suspicion of acromegaly, though this is not suggested by the editor.

These volumes are an inexhaustible mine of information, and our gratitude to Dr. Günther for revealing them in such a pleasant form is sincere.

#### MASSAGE AND THERAPEUTIC EXERCISES.

DR. KIRCHBERG, reader in massage and curative exercises in the University of Berlin, has issued the first volume of a manual<sup>2</sup> on these subjects, together with a supplementary volume on their relationship to physical or beauty culture.<sup>3</sup> In this first volume the history, technique, and effects of massage and manipulative and health exercises are discussed and described. The second volume will deal with these subjects in their application to the different organs and systems of the body, and will include chapters by gynaecological, surgical, ear, nose, and throat specialists and others. The fundamental principle, which the author insists upon throughout, is that a qualified medical practitioner should advise and control the work of masseurs, masseuses, surgical manipulators, and physical instructors generally. Different types of physical development demand different forms of exercises, and different diseases different forms of massage and manipulative treatment. The connexion, therefore, between the doctor and those who practise these arts must be close, if injurious results are to be avoided and quackery checked. Dr. Kirchberg even goes further and considers that the doctor should also be consulted in the use of massage and physical exercises for the preservation of beauty; as he very truly remarks, good looks depend chiefly on good health. From his point of view massage and physical exercises are simply instruments in the armamentarium of the surgeon and physician.

In the opening section of the first volume a concise account is given of the practice of massage in ancient times, in China, Greece, and Rome; and in the early and late Middle Ages. A special account follows of the influence of Ling, who flourished between 1776 and 1839 and who is regarded as the father of modern therapeutic exercises and the originator of the Swedish school that has spread its influence throughout Europe. The development of massage and physical training in Prussia and Germany since 1840 is described, together with a general history of the literature and progress of the subject during the past century.

The section on technique contains a detailed and illustrated description of the different procedures in massage, and the manipulative and physical exercises applicable to the movements of limbs, joints, and muscles, together with numerous practical details of clothing and the position

of masseurs and patients, the temperature, equipment and lighting of massage rooms, duration of the manipulations, and so on. The final section deals with the effects of massage and exercises on the body generally and on the different organs and systems; and concludes with a bibliography of general history and of works on the technique and effects of massage and therapeutic exercises.

The greater part of the supplementary volume is taken up with the physical culture of children and schoolgirls, and with face massage, but its final chapter on the preservation of good looks in advancing years is of much interest. The author impresses on us the advantage of continuing, after retiring from business or official life, some occupation or other, preferably in the open air; and not giving way to habits of inactivity and indolence. There is no reason why older men should not do gymnastic exercises. He recommends golf as a sport, and notes that there are golf courses now at most health and seaside resorts. There is also much good advice to women in this chapter and in the pages of the volume generally. Women are warned against painting their faces, which only makes them repulsive to sensible men. But in condemning the modern fashion of cropping the hair as likely to cause baldness, and of shaving the armpits as hygienically and physiologically objectionable, the author will find many dissentients. His views, however, on exercises and sports in the physical culture of women are sound and in accordance with present-day teaching. He approves of light clothing and short skirts, but considers that much of their value physically is lost by the wearing of high-heeled shoes. We can recommend both the manual and its supplement, not only to the medical profession, but to all who are interested in the subjects with which they deal.

#### THE LUMBAR REGION AND PELVIS.

THE publication of the third volume of Professor Guénon's treatise on the medical and surgical anatomy of the abdomen<sup>1</sup> brings the work to a completion. The regional classification adopted may to some appear somewhat arbitrary, but is amply justified in the course of the author's exposition. Volume I, the second edition of which was published in 1922, dealt with the thoraco-abdominal region; Volume II, which appeared in the same year and was reviewed by us in 1923 (vol. i, p. 575), dealt with the subthoracic region of the abdomen, and the present is concerned with the lumbar region and pelvis. In expounding the subject the author first describes, as regards the lumbar region, its external form, then the structure of its wall—skeletal, fibrous, muscular, and tendinous—and its vessels and nerves. Then follows a chapter on the weak spots of the wall—the lumbar groove bounding the mass of the erector spinae muscle externally, Grynfelt's space situated at the upper end of that groove, and the triangle of Petit. Next the compartments of the region are described—an upper or thoracic and a lower or renal compartment; and a section is added, discussing the best routes of surgical access in the lumbar region. A detailed description of the kidney and suprarenal gland, their relations, fixation, and vessels, and of the urinary excretory channels, completes this portion of the work. The account of the pelvis is on similar lines, but of greater length corresponding to the greater complexity of the subject; it includes matters of special interest, such as the sacro-iliac articulation and its mechanical principles, the floor of the pelvis and the sphincter apparatus of the lower outlet, the static relations of the uterus, and the fixation and relations of the prostate.

A mere summary of the contents of the volume, however, gives but a very imperfect conception of its merits. One very obvious feature is that the work is first hand and original from beginning to end, and after its perusal we have no difficulty in accepting the author's statement that he has written of what he has seen and expounded the facts according to his own comprehension of them. The book reads as if the author were handling the parts as he

<sup>2</sup> *Handbuch der Massage und Heilgymnastik*. By Dr. Franz Kirchberg. Leipzig: Georg Thieme, 1925. (Sup. roy. 8vo, pp. xiii + 279; 71 figures, 19 plates. M.14.50, bound M.16.50.)

<sup>3</sup> *Massage und Gymnastik im Dienste der Kosmetik*. By the same author and publisher. (Post 8vo, pp. v + 93; 26 figures. M.3.90.)

<sup>1</sup> *Anatomie Médico-Chirurgicale de l'Abdomen. III: Le Lomboire de l'Abdomen et le Petit Bassin*. Par Raymond Paris: J. B. Baillière et Fils. 1926. (Roy. 8vo, pp. 204; 82 fig. plates. 2 dollars.)

wrote, and this gives great freshness to the description as compared with those textbooks which consist largely of excerpts from other writers. Again, the author possesses the gift of verbal delineation in an unusual degree, and this, added to the natural clarity of the French language, renders his book eminently readable. It cannot be said that the majority of books on descriptive anatomy lend themselves readily to 'continuous' reading; as works of reference on special points or even taken in limited sections they are acceptable, but their continuous perusal involves exertion. Professor Grégoire, on the other hand, blends his facts with great skill, so that his descriptions almost assume the form of pure narrative. Among the original observations contained in the volume some do not appear to differ essentially from the teaching adopted in this country. Thus the excellent account given of the mechanics of the sacro-iliac joint is stated to differ from the accepted classical description, although it appears to agree in essential particulars with that of the best English writers on anatomy. On certain points, however, a discrepancy is manifest. Thus in dealing with the perineum the author refers to the current teaching that the triangular ligament forms part of the anterior wall of the pelvis, much in the same way as the obturator membrane helps to form its lateral wall. This, he points out, cannot be true of the female pelvis, for in it the hinder part of the so-called triangular ligament is deficient in the middle line and does not pass across from one limb of the osseous subpubic arch to the other behind the vagina, as is figured in some of our leading English textbooks, but terminates on each side at the posterior extremity of the bulb of the vestibule to which it is attached. Were the hinder part of the ligament continuous across the bony arch, the vagina would pass through a rigid and inextensible fibrous membrane. Professor Grégoire describes each bulb in the female as being connected with the ischio-pubic ramus of its own side by a suspensory ligament, and says that this arrangement is modified in the male by the two ligaments coming together and fusing in the middle line of the perineum. The book contains numerous full-page illustrations, almost all of them original and serving admirably to explain the more complicated relations.

Professor Grégoire is to be congratulated on the completion of a fine work.

### OBESITY.

It is some years since a work solely devoted to the subject of *Obesity*<sup>1</sup> has appeared, at any rate in this country, so that Dr. LEONARD WILLIAMS is able to present the subject with the new knowledge now available about the endocrine glands. Etiologically he divides obesity, which he has no hesitation in stigmatising as an unnatural condition inimical to bodily health and mental efficiency, into the alimentary, in which connexion he preaches the dogma of temperance in eating with much force and many apposite illustrations, and the endocrine, of which the historical cases of Napoleon and Daniel Lambert are held to be examples. There are five chapters and the same number of short appendixes, the latter giving weight tables and diets. Some of the chapter headings are sprightly—for example, the "Bantlings of Obesity," in which the early stages of the condition is discussed, and "Eve," which is concerned with the fat members of the female sex. In the last chapter, entitled "Counterechecks" on treatment, dietetic restrictions, including fasting, though not going all the way with Guelpa's purgative methods, are outlined with a firm but light hand. "Unfired" or uncooked foods are regarded as essential, even in almost all forms of endocrine obesity, for it has been said that the vitamins are to the endocrines what the endocrines are to the economy as a whole. In describing the case of Mr. Banting, who in 1862, on consulting a Mr. William Harvey for deafness, was shrewdly diagnosed as owing this to his obesity, and accordingly was treated by diet with benefit for both affections, Dr. Leonard Williams praises the insight of the otherwise unknown adviser. The tradition

that a rapid loss of weight is inadvisable is treated with scant respect, but the thyroid treatment is carefully discussed, and small doses recommended initially; the combinations of thyroid with parathyroid and pituitrin receive attention.

As the commonest form of obesity is brought about by an excess of alimentary intake over muscular output, increasing the amount of exercise would appear to be a remedy; but it does not always succeed in arresting the corpulence—indeed, some patients, it is said, do better when kept in bed until, by dietetic means, the habit of storing up food in the form of fat has been overcome. General physical exercise, it is thought, should be advised to the obese only with great care, as it may cause considerable strain on the heart, lungs, and excretory organs. Raising the body temperature reduces obesity, and it is in this way that thyroid extract is held to act; whereas iron acts indirectly by increasing the oxygenating properties of the red corpuscles.

### HANDBOOK OF DISEASES OF WOMEN.

The appearance of an eighth edition of *The Diseases of Women*,<sup>2</sup> by BLAND-SUTTON and GILES, is a gratifying indication of the continued popularity of what is by now becoming an old book.

The first edition was published in 1897; thirty years or thereabouts is a long span of life for a medical textbook, and is proof of the vital excellencies of the work. In this edition little alteration has been made, and, as we reviewed the previous edition somewhat fully, little need now be said. The authors have thought it advisable to introduce two new chapters, dealing with radio-therapy, and with the physiology and therapeutics of the endocrine glands in their relation to gynaecology. The former is a useful synopsis of the opinions of various experienced clinicians, including the authors, but the latter is a brief review of an exceedingly complex subject, which on that account is perhaps not quite up to the level of the rest of the book. Considerable space has been devoted to myomectomy for fibroids, which the authors think is a mode of operation which is liable to be overlooked. As to this there is room for differences of opinion, but it is needless to say that the description of the operation is as satisfactory as the rest of the operative section of this well known textbook.

### AMPUTATION.

Dr. ORR of Kansas has produced a monograph<sup>3</sup> which should be useful to those surgeons who, without much experience, contemplate the performance of an amputation, but he has hardly attained the ambition of his title. The methods described are modern in the sense of being in present use but not in the sense of being new. Most of them have stood the test of time. A chapter is devoted to Vanghetti's cineplastic method, but the author evidently has but little personal experience of it. In this country it has been practically abandoned after a fair trial, like some other methods which were vaunted during the great war, but which he does not mention. The only osteoplastic amputation described is the Stokes-Gritti, a proceeding which to many surgeons familiar with thigh stumps does not seem to be justified by any advantages over an ordinary amputation.

The illustrations are numerous and clear. This book may answer a demand for such a work in America, but in this country the practical handbook<sup>4</sup> of MARTIN HUGGINS will probably, and justly, be preferred, as although it is not a textbook on amputation it deals with practical results and indirectly points out the best methods of operation. Dr. Orr acknowledges his debt to this work among others.

<sup>1</sup> *The Diseases of Women: A Handbook for Students and Practitioners.* By Sir John Bland-Sutton, Bt., F.R.C.S. Eng., LL.D., and Arthur E. Giles, M.D., B.Sc. Lond., F.R.C.S. Edin. Eighth edition. London: W. Heinemann (Medical Books), Ltd. 1926. (Demy 8vo, pp. xv + 555; 152 figures. 15s. net.)

<sup>2</sup> *Modern Methods of Amputation.* By Thomas G. Orr, A.B., M.D., F.A.C.S. London: H. Kimpton. 1926. (Roy. 8vo, pp. 117; 104 figures. 16s. net.)

<sup>3</sup> *Amputation Stumps: Their Care and After-treatment.* By G. Martin Huggins. Oxford War Primers. London: H. Frowde and Hoelder and Stoughton. 1918. (7s. 6d. net.) Reviewed in the *British Medical Journal*, July 6th, 1918, p. 11.

<sup>4</sup> *Obesity.* By Leonard Williams, M.D. Oxford Medical Publications, Humphrey Milford, Oxford University Press. 1926. (Demy 8vo, pp. ix + 171, 25 figures. 10s. 6d.)

## NOTES ON BOOKS.

SINCE Dr. Budin established in Paris in 1892 the first infant welfare centre, there has been so rapid a multiplication of such places in this country that it is almost certain every medical practitioner must have come into contact with them either directly or indirectly. That everyone understands the purpose of these centres and their correct management is not equally certain. To inform those who have not this knowledge, and to assist those who are embarking upon this work for the first time, Dr. CHODAK GREGORY has written a little book entitled *Infant Welfare*.<sup>9</sup> The first chapter is devoted to the management of a welfare centre, with a brief reference to the Acts dealing with this subject. The second chapter deals with the general management of the child, and the kind of advice which should be given to the mothers in order to prevent ailments and disorders. A few discriminating remarks are given on the use of the "comforter." Dr. Gregory's championship of its wisely restricted use will probably provoke discussion. Doctors who have an intimate personal knowledge of infants, and have given thoughtful observation to this much abused object, will doubtless support the author. Chapters III and IV are résumés of modern methods of breast-feeding and artificial feeding. The other chapters are devoted to a brief consideration of food, stools, vomiting, prematurity, rickets, rashes, and pyrexia. The final chapter gives a short account of the infant mortality rate in this country. The author states in her introduction that the "welfare doctor" is there to prevent disease and not to cure it, but her book can nevertheless not escape the criticism that much space is devoted to treatment. The real function of such a doctor should be to prevent illness by education of the mothers, and when any departure from the normal occurs in the infants they should be referred to a paediatrician for treatment.

The first edition of Professor CHRISTIANSEN's book on cerebral tumours<sup>10</sup> was reviewed in these columns some three years ago. A second edition has now appeared in which, while the general form has been retained, the text has been emended and brought up to date. As a contribution to clinical neurology we have nothing but praise for this book. The subject is throughout presented in a style that is vivid, easy to read, and abounding in graphic clinical descriptions. The reader will find much fresh material in the chapter dealing with tumours in the region of the optic chiasma. A new and valuable chapter also is that on uncertain diagnosis. We find no mention of the modern method of diagnosis by ventriculography, an omission which some will perhaps approve. The book really consists of a series of clinical lectures, where the varieties of tumours are described and discussed according to their topographical distribution in the brain. It may be read with advantage by neurologists and students alike.

The second edition<sup>11</sup> of *Ear, Nose, and Throat Nursing*, by Dr. HARDIE NEIL, has been revised and considerably enlarged, and thus rendered more useful to hospital medical officers who are concerned with lecturing to nurses, and also to general practitioners. This book is well illustrated, and should be popular.

In a small book entitled *Electrothermic Methods (Desiccation and Coagulation) in the Treatment of Neoplastic Diseases*,<sup>12</sup> Dr. J. D. MORGAN gives a short account of electrothermic procedures, including the methods of producing desiccation and coagulation. With the aid of numerous illustrations he describes the types of apparatus employed and the various indications for these forms of treatment. The book is written from the practical standpoint, and gives a simple description of a form of treatment which has received a good deal of attention during the last few years.

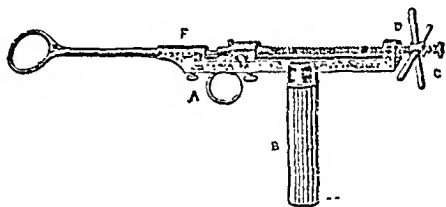
Were it not that Mr. GEORGE POPOFF states explicitly that his book is not an anti-Bolshevist pamphlet, it might well be thought that his "murky and horrible" descriptions in *The Tcheka*<sup>13</sup> were propagandist. To anyone in Western Europe it must seem incredible that a body such as the Russian political secret police should exist in a country which claims to have established a higher system of government than the

world has ever known. According to Mr. Popoff, the Tcheka is a State within a State; so that the Government in the Kremlin with which Europe has relations is overshadowed by the Government in the Luhjanka, which is making illusory all agreements with the Soviets. The frontispiece to the volume is a portrait of the head of this organization, Dshershinsky, who has since died in circumstances which are thought, even in Russia, to call for explanation; it is an unpleasant, crafty face, although Mr. Popoff describes it as ordinary and almost good-natured. Against this person the comparative moderation of Tchitcherin, Lunatcharsky, and Radek were apparently of no avail; consequently a system of terror, the author says, goes on within the Luhjanka, where interrogatories are carried on by weird savages and boors, while more cunning traps are set for prisoners by a smooth-tongued ruffian Artusoff. The interrogatories not infrequently end at the hands of one of the guild of executioners, which is apparently a very well paid body in this Communist country, Russia. The only excuses that Mr. Popoff can make for this outrageous state of affairs are that such actions are natural to the Asiatic Tartar, and that the Tcheka is simply an inheritance of the Ochrana, or secret police of the tsars. Mr. Popoff anticipates an emphatic denial of the truth of this book from Moscow, where "the great Asiatic art of lying is admirably understood." Certainly the story takes one's breath away. Its truth can never be settled until this land of a new heaven and earth opens its doors to strangers and allows free intercourse with its neighbours.

## PREPARATIONS AND APPLIANCES.

## A Tonsil Snare.

Mr. D. MALLAM (Redhill) writes: Messrs. Mayer and Phelps have recently made for me a tonsil snare which combines the haemostatic advantages of Beck's instrument with the leverage and ease of application of F... 's sturdy and all parts are open to inspection. It is simple in action and devoid of The end pieces are similar to those used in Beck's instrument, may be of any



sized aperture, and are readily attached at r. After engaging the tonsil within the aperture the wire loop is tightened by approximation of the finger ring A to the handle n until the pedicle of the tonsil is tightly gripped. The revolving nut c is spun up into position against the body of the instrument p by means of its arms. The wire loop is then gradually tightened further by slowly turning up the nut c until the tonsil is separated.

## A Combined Skioptometer and Phorometer.

Lieut.-Colonel E. A. R. Newman, I.M.S.(ret.), who is ophthalmic surgeon to the Stamford Infirmary, sends a note on an automatic skioptometer which he has found very convenient and expeditious in use. The apparatus has been designed and made by Messrs. Clement Clarke of 16, Wigmore Street, W.1.

An endless chain of forty spherical convex and concave lenses is mounted on a vertical triangular frame, made of aluminium. The lenses are rotated through the sight holes by a milled wheel attached to an extensible rod. An indicator below the sight hole shows the power of the lens in use, and powers above five diopters are obtained by mounting an additional lens on a stud attached to the frame. At the suggestion of Colonel Newman Mr. Clarke devised means whereby the apparatus can be used as a phorometer. Twelve concave cylinders are mounted in a metal disc suspended in a bracket, which can be swung into position and clipped firmly against the sight hole. A fixed pointer shows the orientation of the axes of the cylinders on a scale engraved on the milled wheel which revolves the disc. The exact setting of the axis of the cylinder enables the measure of correction of the vision to be quickly arrived at, and any combination of sphericals with an astigmatic error of not more than 3 D., or any degree of astigmatism with a maximum or minimum error of 5 D. in hypermetropia and myopia respectively can be provided for. For refractive errors of a higher degree an additional spherical lens can be held in front of the apparatus.

In Colonel Newman's opinion the instrument, which is a product of British brains and workmanship, compares most favourably with far more expensive phorometers of foreign manufacture.

## Differentiation of Bacteria.

Messrs. Burroughs Wellcome and Co. (Snow Hill Buildings, E.C.1) ask us to inform medical bacteriologists that they are in a position to supply sodium salts of the following organic acid: d-tartaric, l-tartaric, meso-tartaric, citric, fumaric, and malic, now used in the differentiation of bacterial types in which "sugar reactions" are untrustworthy or fail.

<sup>9</sup> *Infant Welfare*. By H. H. Chodak Gregory, M.D., M.R.C.P. London: H. K. Lewis and Co., Ltd. 1925. (Cr. 8vo, pp. xi + 142, 4s. 6d. net.)

<sup>10</sup> *Les Tumeurs du Cerveau*. Par Dr. Viggo Christiansen, avec une préface du Dr. Pierre Marie. Deuxième édition. Paris: Masson et Cie. 1925. (Roy. 8vo, pp. x + 399; 107 figures, 45 fr.)

<sup>11</sup> *Ear, Nose, and Throat Nursing*. By James Hardie Neil, D.S.O., C. de G., M.B. New Zealand, M.R.C.S. Eng., F.A.C.S. Second edition. Auckland: Clark and Matheson, Ltd.; London: H. K. Lewis and Co., Ltd. 1925. (Extra post 8vo, pp. 106; 20 figures on 13 plates, 7s. 6d. net.)

<sup>12</sup> *Electrothermic Methods (Desiccation and Coagulation) in the Treatment of Neoplastic Diseases*. By J. Douglas Morgan, B.A., M.D. Philadelphia: F. A. Davis Company. 1925. (5 1/2 x 7 1/2, pp. 172; 36 figures, 2.50 dollars net.)

<sup>13</sup> *The Tcheka*. By George Popoff. London: A. M. Philipot, Ltd. 1925. (Demy 8vo, pp. 308; 1 plate. 8s. 6d. net.)

## THE STATE OF THE PUBLIC HEALTH.

## SIR GEORGE NEWMAN'S REPORT FOR 1925.

[Concluding Notice.\*]

## THE INSURANCE MEDICAL SERVICE.

THE total population of England and Wales in 1925 was 38,890,000, and 13,695,000 persons were entitled to medical benefit under the National Health Insurance Act. The number of insurance practitioners was 13,827, and the average number of persons on a practitioner's list was 957. The total cost of medical benefit in the year was £8,280,300, of which approximately £6,411,138 was devoted to the remuneration of doctors.

## Extended Medical Benefit.

A comprehensive scheme for the provision of consulting, nursing, and laboratory services was prepared in 1914, but was held up by the war. It will be remembered that in the report of the Royal Commission on National Health Insurance, issued last March, the need of such services was fully recognized, and it was recommended that there should be supplied expert medical advice and treatment with laboratory services. Sir George Newman considers that this new system of "expert out-patient services" would include advice in diagnosis and treatment and the provision of specialist treatment necessitating special equipment and skilled assistance such as that of masseurs or electricians. He thinks that the system should be built up, not as a supplement to the existing out-patient work of the hospitals, but as an independent scheme, organized effectively throughout the country, and furnishing the closest consultation and reciprocal communication between the general practitioner and the specialist. An obligation would be laid on the practitioner to refer a patient for specialist assistance, when necessary, and to supply an account of the clinical history and present condition of the patient; the specialist would be required similarly to report to the practitioner and to give advice about any further treatment required. This obligation, Sir George Newman thinks, would have a beneficial influence on the practitioner in defining his ideas and in drawing his attention to any possible defects in his previous conduct of the case; similar services would again be rendered by the specialist's report. Such co-operation would thus operate as a valuable form of post-graduate instruction, and would therefore be welcomed by isolated practitioners, the resulting educational benefits being extended to general medical practice outside the domain of insurance work.

## Obligations of the Insurance Practitioner.

The range of the insurance practitioner's obligations is discussed at some length. The insured population has statutory rights to receive all treatment, surgical or otherwise, which is covered by the contract of medical service. When an insurance practitioner claims that an operation or other service which he has actually performed is outside his insurance obligation by reason of its having necessitated special skill and experience beyond that possessed by general practitioners as a class, the onus is thrown upon him to establish the fact that he possesses such abilities. The regulations provide that he must prove that he has held appointments, or engaged in academic or post-graduate work affording opportunities for acquiring the skill and experience, and has also had recent practice of the special kind of treatment in question. Alternatively he must show that he is generally recognized by other local practitioners as having such special proficiency. Lists are given of such disputable cases in which decisions were given by referees or reached by agreement between the local medical and insurance committees. Sir George Newman considers that the procedure for dealing with these cases, which has been in operation for thirteen years, has stood the test of time, and he adds the following words:

"I think it is true to say, however, that insurance practitioners as a body are not disposed to take a narrow view of the range of their obligations; and it is known that there are practitioners who habitually and without charge render to their insured patients services which, if the question were raised, would probably be held to be outside the scope of medical benefit."

\* Previous notices were published in the JOURNAL of September 11th, p. 554, and September 18th, p. 555.

## Regional Medical Staff.

The regional medical staff was appointed in 1920 and enlarged in 1925; it now consists of five divisional medical officers, thirty-three regional medical officers, and thirteen deputy regional medical officers. In addition to these, from time to time part-time medical officers are engaged temporarily. During the year under review 201,832 cases were referred to it for decisions as to capacity for work, and 2,256 for a second medical opinion as to the possibility of expediting the restoration of a patient's working capacity; the corresponding figures for the previous year were 183,846 and 2,270. The great majority of these cases were referred by approved societies; and Sir George Newman expresses regret that medical practitioners have not made greater use of the facilities provided for obtaining a second medical opinion. The number of practitioners visited by the staff in connexion with the inspection of the registers of dangerous drugs was 5,197 and the number of hospitals was 54.

## FOOD EXAMINATION.

In a short reference to the importance of vitamins, Sir George Newman mentions the number of food preparations on the market for which a high vitamin content is claimed. He adds that recent research work points to the possibility that chemical tests may be devised to estimate approximately vitamin contents, in which case such food preparations could be brought within the operation of the Sale of Food and Drugs Act. He refers in some detail to the problems associated with tuberculous milk, and suggests that local authorities should now reconsider their responsibility for examining samples of milk for tubercle bacilli. In many rural districts this is not practised, and county medical officers are recommended to secure co-ordination and the adoption of some common procedure in the areas under their control. Although graded milk does not yet constitute more than about 1 per cent. of the total milk consumption, yet grading is important in that it provides a high quality milk for a section of the population, and exerts a valuable educational influence on all milk production. Graded milks are, moreover, increasing in popular favour; thus the producers' licences for "Certified," "Grade A—Tuberculin tested," and "Grade A" milks were respectively 94, 98, and 176 in 1925, as compared with 71, 61, and 92 in the previous year, while there was a corresponding increase in retailers' licences. The issue of the Public Health (Preservatives, etc., in Food) Regulations in August, 1925, secured that such staple foodstuffs as milk, meat, bacon, butter, margarine, eggs, and cream should be free from preservatives, and that the presence of permitted preservatives in sausages, sausage meat, coffee extract, pickles, and sauces should be declared.

## POOR LAW MEDICAL SERVICE.

It is noted with satisfaction that the practice of appointing consultant medical officers to Poor Law infirmaries is extending, and that increasing use is being made of their services, which in some cases include the actual treatment of patients under the administrative supervision of the medical superintendent. Co-operation between the medical officers of Poor Law institutions and tuberculosis officers is more complete, and it is suggested that there might well be more general co-operation also with health authorities in dealing with epidemic and venereal diseases. The total number of Poor Law infirmaries approved as training schools for nurses by the General Nursing Council at the end of 1925 was 137, 17 having been added during the year. The difficulties attending reduction of the working hours of nurses are mentioned, and it is suggested that any further decrease should be effected by lengthening the yearly leave rather than curtailing the number of daily hours of work. Sir George Newman emphasizes the special care necessary in dealing with aggregations of infants to prevent intestinal and respiratory infections, and recommends the construction and administration of nurseries on sanatorium lines, the treatment of young infants in quite small groups, the isolation of infants together with their attendants in the event of acute catarrh, and strict antiseptic precautions in dealing with individual infants and the preparation of their food.

## INTERNATIONAL HEALTH.

## INTERNATIONAL HEALTH.

## EXPANDING ACTIVITIES OF THE LEAGUE OF NATIONS.

[FROM OUR CORRESPONDENT AT GENEVA.]

SOME interesting discussions took place last week in the Third Committee of the League of Nations Assembly—the committee which, under the chairmanship of Mr. Desmond Fitzgerald, of the Irish Free State, is charged with the consideration of the health and other technical organizations of the League.

The first contribution of a German delegate was by Baron von Rheinbaben, a member of the Reichstag, who said that Germany, like other countries, recognized the importance of international health organization. German co-operation in this field had begun directly after the war, and had not awaited Germany's entrance into the League of Nations. Germany, now a member of the League, would naturally be all the more ready to place her great experience in medical and pharmacological matters at the League's disposal. German medical officers had already participated in health expeditions under the League's auspices. At present an international committee was studying the sanitary conditions in German ports, and at the same time a German was co-operating with British, French, Belgian, and Portuguese experts on the sleeping sickness commission now in Uganda. Various proposals mooted for the extension of the health work had Germany's full sympathy, especially a proposal that the League should take physical education and school hygiene within its province, and he reminded the Committee that Germany had a non-official organization, called the "high school for physical culture," which existed to promote athletics, and it was due to this organization that Germany had gained its recent prowess in the playing field.

*Physical Culture and School Hygiene.*

The suggestion that the League Council should consider the question of physical education and school hygiene was made by the Czecho-Slovakian delegate, Dr. Vererka, who said that his country possessed one of the most powerful organizations for physical culture in the shape of the Sokols, a civil association which works in conjunction with the army authorities for the physical welfare of the troops. The Sokols have one million adherents in Czecho-Slovakia and carry out a vast programme of physical culture. The proposal to ask the Council to consider the importance of physical culture as a means of preventing disease was supported by the delegates for Austria and for Japan, the latter gentleman referring to the great strides which had been made in school hygiene in his country during recent years. On the other hand, one of the Canadian delegates, the Hon. Philippo Roy, who is a medical man, while recognizing the benefits accruing from the physical instruction of youth, did not think this work to be of a sufficiently international character to warrant an appropriation of money by the League. It was decided to refer the proposal to the permanent Health Committee for consideration, together with certain other proposals, one by the Uruguayan delegation, calling for a study of nutritional problems in relation to race improvement, and another by the Cuban delegation, to make an international investigation of the problems of eugenics in a wider sense than the question of infant mortality and the protection of children, into which the Health Committee is already inquiring.

*Epidemiological Intelligence.*

A good deal of discussion centred round the newly formed bureau for epidemiological intelligence at the Singapore, which is the first extension of the League's activities in the Far East. Each week telegraphic information regarding the health conditions in upwards of eighty parts of Asia, Australasia, and the east coast of Africa is collected and disseminated, telegraphically to Eastern health administrations, and by post from Geneva to Western. The Japanese delegate pointed out that the Singapore bureau was supported for a limited time by the Rockefeller Foundation; when these allocations ceased he hoped that the League would assume the entire burden.

An Indian delegate also spoke of the extreme usefulness of the bureau, and several other speakers urged its importance, not only as a centre of information, but as earnest of the League's interest in Far Eastern conditions. The proposal that provision for the expenses of the bureau should be made in the budget of the League was accepted, subject to the additional credits not bringing the budget of the health section above the maximum at which it was stabilized last year. The last Assembly voted 988,000 Swiss francs (nearly £40,000) as the budgetary maximum for health services, but as the entry of Germany brings to the League another important national contribution, it was agreed that a further credit of 25,000 francs might be inserted in the budget without transgressing the spirit of last year's resolution.

*Malaria Commission.*

Dr. Lutrario of Italy spoke of the value of the malaria commission which had been studying the incidence of the disease and the measures taken in various countries for its control. A travelling commission had studied the preventive measures taken and the importance of regional and local conditions. This work, he said, had included the study of conditions in great river deltas, the effect of land reclamation and drainage, and climatological and meteorological conditions as affecting the intensity and spread of the disease. He referred specially to the importance of the studies made in India, where, by a careful study of the conditions, meteorological and other, it was possible to foretell the probable intensity of the malarial troubles during the ensuing malarial season.

*Expenditure, etc.*

The actual expenditure by the League on health work in 1925 was 813,611 Swiss francs (about £32,500), but to this has to be added the sum received from the Rockefeller Foundation—730,521 francs (nearly £30,000)—in order to arrive at the total amount expended under the League's auspices. The amount estimated to be received in the way of Rockefeller benefactions in 1926 is 667,726 francs, and in 1927, 538,161 francs. The objects on which the Rockefeller grants are expended are the interchanges of public health personnel, the epidemiological intelligence service, and demographic and public health studies. For the two latter purposes the allocations for 1926 are the same as for 1925, but there is a progressive reduction in the amount expended on interchanges of public health personnel.

Many references were made to the exchanges of medical officers. The Japanese delegate said that during the past year the tours of investigation had extended to the Far East, and it had been possible for Japan to make the acquaintance of the director of the Health Section, Dr. Rajchman, and of twenty medical experts. Dr. Ramos of Cuba recalled the fact that the first exchange of medical officers took place at Havana, which was becoming a permanent centre for the exchange of information in Central and South America. The first pan-American congress on eugenics and on the physical and moral education of children will be held at Havana in February, 1927.

Other work proceeding under the auspices of the Health Section includes a special investigation of national health insurance in various countries, of the control of the manufacture and distribution of foodstuffs, and of the prevalence of trachoma. A tuberculosis commission is continuing its study of the causes underlying the decline in tuberculosis mortality. The epidemiological intelligence service continues to expand, and the monthly reports contain information regarding the prevalence of epidemic diseases and certain mortality statistics in 29 European, 17 African, and 16 Asiatic countries, and in Australasia. The Third Committee, in terminating its health discussions, decided to recommend the Assembly to record its satisfaction at the widening character of the health work of the League, especially the highly valuable and somewhat dangerous work of the international commission on sleeping sickness now working in equatorial Africa, and the close collaboration which has been established with the sanitary and medical authorities of Japan as a result of the interchange of officers and the conferences held in that country.



## British Medical Journal.

SATURDAY, SEPTEMBER 25TH, 1926.

## EMOTIONAL CHANGES IN DISSEMINATED SCLEROSIS.

THE current number of the *Journal of Neurology and Psychopathology*<sup>1</sup> includes an important study on the affective symptomatology of disseminated sclerosis by Drs. S. Smith Cottrell and S. A. Kinnier Wilson. The conclusions reached by the authors, which are based upon the neurological and psychological investigation of 100 consecutive cases of disseminated sclerosis of both sexes, have more than a theoretical interest, because it is considered that the emotional symptoms described are definitely characteristic of disseminated sclerosis, that they are primary or direct results of the disease processes, and that they are wholly independent of degree, duration, or clinical type. It is stated, indeed, that affective symptoms are more frequent than any single symptom of the neurological series (nystagmus, scanning speech, tremor, spasticity, etc.), and that they constitute diagnostic criteria of greater value than any neurological symptom-complex. This clinical contribution is thus of definite practical interest, and merits the attention, not only of the neurologist and psychiatrist, but also of the general practitioner, who meets with cases of disseminated sclerosis in both its early and late stages.

The authors found that the abnormal emotional reactions were exhibited in three directions—in changes of mood, in changes of bodily feeling, and in changes in emotional expression and control. In 100 per cent. of the cases an alteration in the prevailing mood of the patients was observed. In 63 per cent. there was an increased sense of mental well-being. The authors suggest the phrase "euphoria sclerotica" to indicate this common affective state of ease, tranquillity, serenity, happiness, or even gaiety in patients with disseminated sclerosis, and the phrase "dysphoria sclerotica" to indicate the feeling of mental unrest, disquiet, uneasiness, or unhappiness which was observed in 10 per cent. of their cases. In 25 per cent. an increased variability of mood was noted in which the patients were subject either to abrupt transitions from a mood of sadness to one of euphoria, or from euphoria to sadness. In two cases an indifferent and stolid reaction was recorded as a change in the emotional attitude since the onset of the disease.

The sense of physical well-being (eutonia sclerotica) which the authors discovered in 84 per cent. of their cases led them to the view that this must also be accepted as one of the fundamental symptoms of disseminated sclerosis. It was discovered in early and late stages of the disease, and was in some cases in striking contrast with the actual physical incapacity of the patients concerned. Thus a patient who was almost moribund when examined declared that physically she "felt all right," and was neither tired nor weary, but quite at her ease. In many instances the patients were themselves more than a little amazed at the apparent incongruity between their

sense of bodily ease and health and their actual crippled state. A similar though much more extreme eutonic state is, of course, common in general paralysis of the insane. Here, however, the patients actually believe themselves to be possessed of unusual physical power, and are unable to appreciate the fact that they are the subjects of a crippling physical illness. This lack of insight is in some measure due to the fact that there is considerable intellectual deterioration—a condition very rarely observed in patients with disseminated sclerosis. The latter feel well, but are conscious of the fact that they are suffering from a physical malady. Indeed, disseminated sclerosis is but rarely associated with psychotic symptoms. Thus, of 6,700 patients in the Manhattan State Hospital (1921) there were only three cases of disseminated sclerosis. In 84 per cent. of the patients an attitude of optimism about the future and their prospects of ultimate recovery, similar to that which obtains in advancing cachectic conditions such as pulmonary tuberculosis (spec. phthisica), was observed.

The exaggeration and facility of outward expression of emotion in disseminated sclerosis is regarded by the authors as a symptom of immediate diagnostic value. Thus, when in a young person simple routine questions are responded to by gratuitous and uncalled-for smiles or laughs, disseminated sclerosis, it is suggested, at once becomes a diagnostic probability. In some cases, indeed, undue affective display was one of the earliest symptoms of the malady, before any somatic neurological sign had made its appearance. In only three cases was no emotional overaction present; in 71 per cent. the expression was "set" to smiles or laughter; it was "set" to tears in only 3 per cent.; and in 19 per cent. laughing and crying alternated. These emotional reactions occurred "in season and out of season"; under slight provocation, at the bidding of minimal stimuli, they made their appearance when there was obviously no warrant for them. In advanced cases in particular, when there is a serious defect of articulation so that the patient is unable to make himself understood, it is often difficult to know how far the uncontrolled emotional display is expressive of the actual mood of its subject. This problem was made the subject of a special investigation in this research, and it was found that in a large proportion of cases there was a definite and striking incongruity between the emotional content and its outward expression. Thus in one instance, while a depressed patient was recounting thoughts of suicide which she entertained, her face was wreathed in smiles and she frequently burst into uncontrollable laughter.

Apart from its purely clinical interest, this contribution would seem to add to our knowledge of the neuropathology of emotional disturbances. As regards the pathogenesis of the affective symptoms in disseminated sclerosis, it is considered that, like the somatic symptoms, they probably arise from invasion of the cerebral mechanisms by a toxic agent. More specifically, the abnormal emotional reactions are associated with the well known pathological fact that the disease almost constantly shows subependymal spread, and the relative conservation of the intellectual faculties with the relative conservation of the cortex. Evidence is also adduced which suggests that the affective symptoms are the outcome of the invasion of the paleothalamus by the morbid process. The interesting fact emerging from this research is that the alterations in the emotional life would seem to depend, not upon an alteration, either quantitative or qualitative, of the totality of the afferent impressions from

<sup>1</sup> The *Journal of Neurology and Psychopathology*, July, 1926. London: The British Medical Association. Published quarterly. Subscription 30s. per annum; single numbers 6s. 6d. net, post free.

somatic and visceral receptors, but upon a misinterpretation of these impressions due to a dynamic change in thalamic function, the sequel to toxic action. Briefly, the affective symptoms in disseminated sclerosis are probably attributable to disease of the emotional "centre" rather than to changes in organic sensibility, which are responsible, speaking physiologically, for mood changes in normal individuals.

Drs. Cottrell and Wilson suggest that the clinical data of disseminated sclerosis, so far as the affective sphere is concerned, may throw light upon the pathogenesis of the emotional phenomena of various psychoses and psychoneuroses, in which that sphere is definitely disordered. Such suggestions merit careful consideration, since the clinical resemblances between the affective symptoms described in this paper and those observed in some psychotic states are very striking, and it may be that they have analogous neurological determinants. As an instance, the curious dissociation between feeling, thought, and action (intrapsychic ataxia), which is so characteristic a feature of dementia praecox, may be cited. In such cases, as Kraepelin observes, "the patients laugh and weep without recognizable cause, without any relation to their circumstances and their experiences; and they smile while they narrate their attempts at suicide." The resemblance to the incongruous emotional reactions noted in disseminated sclerosis cases and referred to above is here very evident. It is useful also not only to compare but to contrast the affective disturbances in the biogenetic psychoses with those in disseminated sclerosis. In the latter, in spite of the presence of widespread disease of the central nervous system, the affective disturbances, though characteristic, are mild, and there is no disintegration of the personality. In the former, however, though there are no objective signs of organic disease of the central nervous system, the affective symptoms are severe, and there are profound disturbances of the personality as a whole. Though cerebral mechanisms are no doubt involved in psychoses, the biological factors responsible for the serious changes in the emotional and instinctive life which characterize these disorders must be sought for elsewhere than in the central nervous system, and it would seem probable that the source of these changes is to be found in the depths of the organic life—in disorders of the endocrine glands and the vegetative nervous system.

### INCOME TAX: THE THREE YEARS' AVERAGE.

THE Royal Commission on the Income Tax, which reported in March, 1920, received a good deal of evidence as to the suitability of a three years' average as a basis of assessment for professional and commercial profits. The report was emphatic on the point. Paragraph 479 says: "There has been a surprising weight of evidence in favour of the profits of the previous year being taken as the basis for Schedule D assessments. Hardly anyone has a good word to say for the average. . . . We have therefore no hesitation in recommending that the change be made." The change has been some time in coming, but that is perhaps not unnatural. In such a matter the interests of the Exchequer and the taxpayer are directly opposed. No Chancellor could very well desire the change if it meant that two "good" years would drop out of the average, while taxpayers as a whole would have a real grievance if the change were introduced at a moment which would enable the Chancellor

to collect tax on a single year's basis appreciably in excess of the amount payable on the basis which was discarded in their general interest.

Presumably when he was laying his plans for the 1926-27 Budget Mr. Churchill felt that he could reasonably expect the profits of 1926 to be fairly normal, and therefore to provide a suitable starting-point for the new basis. Accordingly there has been inserted in the Finance Act a group of sections, Part IV of the Act, the effect of which is, broadly, to sweep away the three years' average and to substitute the basis of the previous year. Having regard to the general expectation that profits are being adversely affected by the coal strike, it is perhaps unsafe to assume that second thoughts will not lead to the change being still further postponed. It is, of course, obvious that such a change, even if effected in a year when the profits of the nation were normal, might work unfairly as between one taxpayer and another, and it has therefore always been assumed that the change would be accompanied by some special relaxations to mitigate individual hardship. Some of the modifications introduced have reference to professions "set up" or "permanently discontinued"; a medical practice falling under either of these heads would not normally be yielding substantial profits, and consequently those sections are not of direct interest to practitioners. It may, however, be remarked in passing that the new rule which requires that the final year of a discontinued business or practice shall be assessed at the amount of the profit for that year will prevent a certain amount of "legitimate evasion" to which the three years' average is said to have lent itself in some branches of commerce.

The new rule which is of importance to medical practitioners is Section 29, Subsection 3, of the Finance Act, 1926. Where the change involves individual hardship it will presumably be because the years 1924 and/or 1925 were comparatively poor, so that their exclusion from the calculation of the 1927-28 assessment will adversely affect the practitioner. The line taken is that cases of substantial hardship will be met, but not those where the adverse effect is comparatively small; and the means for giving this partial relief are rather ingenious. It is important that our readers should appreciate the position, and we therefore make no apology for stating it in some detail. The relief given consists in affording the taxpayer the option, in certain circumstances, of having his assessments for 1927-28 and 1928-29 (the option applies to the two years, but not to only one of them) made on the three years' average. This right of choice, which must be exercised not later than October 5th, 1927, arises where the profits of 1924 or 1925 are less than the average profits of the six years to 1923 inclusive. It follows, therefore, that a practitioner will be well advised to examine his past returns before the time limit expires, to see whether he has this option, and if so to decide whether it is in his interest to exercise it. In making the latter decision he should have regard to his probable earnings for 1927; if they are likely to be small it may suit him best to allow his option to expire unexercised. If the taxpayer has not been in possession of the source of profits during the whole of the specified six years, he can take for the purpose of the comparison the average over the period during which he has been in possession of that source. The proviso dealing with partnerships has peculiar relevance to the medical profession. It will be realized that alterations in the personnel of partnerships would, by destroying the continuity of possession of the source

of profit of the person (that is, the firm) assessed, in many cases render the option nugatory unless steps were taken to obviate it. That point is met by providing that persons in partnership shall be deemed to have been in possession of the source of profit during any year if any of them was in that year a whole or part proprietor. If, for instance, X, Y, and Z succeeded to a practice carried on by X and Q up to December 31st, 1923, their profits for 1924 or 1925 can be compared with the average profits of X and Q for the previous six years. It is not unlikely that practitioners will find that the existence of the option will depend in particular cases on the years in which there was abnormal expenditure—for example, incurred in the replacement of motor cars. Where such replacements have occurred in 1924 or 1925 that may very well bring the option into play, and in that way compensate the practitioner for the partial loss of the allowance which the abandonment of the three years' average would otherwise entail.

The change has long been overdue, and we congratulate Mr. Churehill on the preparations he has made to give effect to it next year, at the same time cherishing the hope that he will not allow himself to be affected by the depressing financial circumstances of 1926, and shrink from the plunge when the time comes for the final decision next April.

#### OPIUM POLICY IN INDIA.

REPORTS from Geneva indicate that there have been lively discussions in the fifth committee of the League of Nations over the opium question.<sup>1</sup> Disappointment was expressed, even by those who were mainly responsible for the Geneva Opium Convention of 1925, at the few ratifications of that convention which have been as yet deposited; while the Italian delegate hotly dissented from Viscount Cecil's remarks, and maintained that the convention of 1925 was, in fact, in some respects a step backwards from the Hague International Opium Convention of 1912. Except for the new opium policy of the Indian Government, whereby export of opium for other than medicinal purposes is to be reduced progressively and extinguished within a definite period, there would seem to be little advance to record during the past year. This policy has been endorsed by the Council of State and carried "amidst acclamations" by the Legislative Assembly of India; though a recent reply in the House of Commons has indicated that the period within which extinction of exports is to be achieved has been extended to ten years. A pamphlet recently published by the Foreign Policy Association of America gives a concise summary of "The Opium Situation in India."<sup>2</sup> It postulates the world's medical requirement of opium at 350 tons a year, whereas a minimum estimate of the world's total production of opium is put at 3,500 tons a year. The surplus is accounted for by its use for smoking in the Far East, for eating in India, and by illicit traffic. Four countries are the main producers of opium—namely, Turkey, Persia, India, and China. The opium of the two latter countries is mainly consumed either by smoking or eating; that from the two former countries is largely used for medicinal purposes, for the production of morphine and other alkaloids, although much finds its way into illicit hands, and is used for non-medicinal purposes. The results of the Geneva conferences of 1924-25 are thus summarized: "No agreement could be reached on reduction of production to medical needs. The ten-year period for suppression of opium smoking (proposed by the United States) was extended to fifteen years, and made contingent on control of smuggling

from China and other producing countries. The United States and China withdrew before the conferences ended, but the other countries completed and signed two treaties, one dealing with smoking opium, the other regulating control of drugs." The question is raised, but not answered, as to whence the countries which have hitherto derived their supplies of smoking opium from India will obtain the drug when India ceases to export, if they fail to suppress the smoking of opium. In 1923-24 India exported more than a million pounds of opium to the Straits Settlements, India, China, Siam, Persia, Dutch East Indies, North Borneo, and Japan. As regards eating opium in India, a use of the drug which the Government has held, on the doubtful authority of the Royal Commission of 1893-94, to be "legitimate" and salutary—a matter of merely domestic concern and not one for international investigation—new light has recently been thrown on the problem by various non-official investigations and by discussions in the Legislative Assembly. Accepting the League of Nations index figure as 12 lb. of opium per annum for 10,000 population to meet medical requirements, it appears that while the average for all India is stated to be 24 lb., in Assam it is 104 lb., in parts of the Punjab over 100 lb., in Bombay 86 lb., in Rangoon 218 lb., and in Calcutta 287 lb. Such variations in the distribution of consumption point to opium addiction in particular towns and districts, an cannot be explained by its use as a domestic remedy in places where medical advice is not available. The relatively low average of consumption for the whole of India masks the grave addiction in certain localities, and shows that in rural areas this "treasured household remedy" is not so widely resorted to as may have been supposed. It is well to know that this question of internal consumption of opium in India is engaging the attention both of the Government of India and the local governments in the different provinces.

#### HOSPITAL CONSTRUCTION.

IN view of the prevalence of schemes for the rebuilding or extension of voluntary hospitals, an eight-page memorandum<sup>1</sup> has been prepared by the Voluntary Hospital Commission to guide those concerned in planning buildings which shall combine economy of cost and administration with suitability for their special requirements and allow extension in the future. Hints are given about the site, nature of access, including road-making, general disposition of the buildings for convenient grouping of patients, simplifying the service, and how to obtain the maximum sunlight. Hospital buildings are now less solidly and elaborately built than was the case during last century, and the provision of verandahs, roof wards, and sliding windows to wards is becoming more general. Modern buildings are simple in character, inexpensive in treatment, and depend for their pleasing effects on good design, appropriate grouping, and correct proportions. Buildings may be classed as permanent, semi-permanent, and temporary, and it is indicated that an apparent economy in adopting the cheaper and less permanent types may prove to be fallacious, since the saving in cost is usually less than the reduction in value. Such an initial compromise as the provision of permanent and fireproof walls and floors, with a subdivision into rooms by the use of partitions and not of permanent walls, may be advisable in some cases. Detailed recommendations are given about the construction of floors, interior linings of the walls, sanitary fittings, heating, and windows. The pavilion form of ward arrangement is becoming increasingly popular, and good cross-ventilation is so obtainable. Pavilions of three stories require lifts, and it is considered inadvisable to exceed this height in this country. In America, on the other hand,

<sup>1</sup> Memorandum on the Construction of Voluntary Hospitals. Voluntary Hospital Commission 17. Published by H.M. Stationery Office. Price 2d. net.

<sup>2</sup> BRITISH MEDICAL JOURNAL, September 18th, 1926, p. 537.

<sup>2</sup> F.P.A. Pamphlet No. 39. Series of 1925-26. May, 1926. New York City.

it is becoming more and more the practice to erect lofty hospital buildings, thus securing concentration of service, plumbing, and heating. Two rows of eight to twelve beds each are most convenient for a general ward, and at least one small isolation ward should be available. Sanitary annexes with cross-ventilated entrances should be readily accessible, and in each ward a large fixed wash-basin for staff use, with hot and cold water laid on, saves much labour. It is recommended that in main wards for adults a wall space of 8 feet per bed should be allowed, a floor space of not less than 86 square feet, and a capacity of not less than 1,056 cubic feet. In open-air wards having a single row of beds the wall space should not be decreased, but reduction can be made in the floor and cubic space. In isolation wards for one bed only, 120 square feet of floor space and 1,200 cubic feet are advisable, and for more than one bed the standards suggested for main wards are applicable. In most hospitals the provision of some day-room accommodation for ambulant patients is desirable. The operation department should be central, with a northerly aspect, readily accessible, and with the radiological department near. The out-patient department should form a separate block connected by a covered corridor with the receiving and casualty department. Practical suggestions are given in this memorandum about the disposition of administrative accommodation; and in general it will be found to be a valuable summary of the main points concerned in modern hospital construction.

#### THE LEAGUE OF NATIONS AND THE UNIVERSITIES.

Nor all the delegates attending the present Assembly of the League of Nations come from the senates and embassies. Quite a number this year have come from seats of learning. Almost every university of Europe is represented at Geneva. The French delegation includes two professors—one from the University of Paris and the other from that of Lille. The Belgian delegation is headed by the professor of social science at Brussels. Norway has sent two professors; one of them, Dr. Fridtjof Nansen, G.C.V.O., the Arctic explorer, has been professor of oceanography at Oslo since 1908. Finland is represented by a professor from Helsinki, and Rumania by two professors—one from Bucarest and the other from Cluj. One of the Swiss delegates has a university chair at Berne, and one of the Polish delegates is dean of the University of Cracow. All the five delegates and substitute delegates for the Netherlands are doctors of law and political science, and the most prominent of them is professor at Leyden. The Irish Free State has sent a professor from the National University of Ireland. The German delegates number about twenty-four persons, including the technical experts, and fifteen of them hold doctorates. Of the women delegates one of them is a Swedish master of law, and another a member of the Rumanian Academy. Only three medical men, apparently, are attending the Assembly in an official capacity. One of these is Sir George Buchanan, C.B., M.D., of the Ministry of Health, who is attached as an expert to the British delegation; another is the Hon. Philippe Roy, M.D., Commissioner-General for Canada in France; and the third is Dr. Domingo Ramos, who has taken a leading part in introducing into Cuba the principles of infant hygiene. The question of some international linkage of universities has been the subject of long discussions in the committees of the present Assembly. Italy, among other countries, is setting out to attract foreign students, by organizing special courses for them at the universities, with exemption from taxation during their stay, and with travelling facilities. Canada is establishing in the university centre of Paris a Canadian house for its students. The work of international interchange of professors and students is being subsidized by the Polish

and Czecho-Slovakian Governments and by an educational organization in Germany. Dame Edith Lyttelton, on behalf of Great Britain, assured the Assembly of the sympathy of her Government in any system of international scholarships and exchanges, and similar expressions were made by the delegates of Rumania and of the Netherlands. This work, so far as it has assumed any shape at all, is being done through the International Institute of Intellectual Co-operation, recently set up in Paris as the result of a gift to the League by the French Government.

#### TROPICAL TYPHUS.

DRS. WILLIAM FLETCHER and J. E. LESSLIE<sup>1</sup> of the Hospital for Medical Research, Kuala Lumpur, Federated Malay States, have given the name of "tropical typhus" to a disease which differs from ordinary typhus by its low infectivity, though the symptoms and behaviour of the Weil-Felix reaction are identical in both forms. The epidemiological features, however, are so fundamentally different in tropical typhus that they do not bear even a family resemblance to those of the epidemic disease. There is no evidence of the direct infection from man to man which occurs so readily in epidemic typhus. No body-lice were found on any of the patients, and there was strong evidence that these insects were not the vectors. On the other hand, the virus seems to be connected in some way with open, uncultivated grazing land. One of the most striking features of the disease as it exists in the Federated Malay States is its race incidence. Compared with the Malays, Chinese, and Tamils who form the bulk of the population, the numbers of other nations are comparatively insignificant. Punjabis constitute less than 1 per cent., and Europeans were less than 0.5 per cent.; yet seven of the typhus patients were Europeans and seven were Punjabis; only four were Tamils, and there were no Malays or Chinese. Nearly all the Asiatic patients were cowkeepers, and the high incidence of the disease among Punjabis is probably due to so many of them following this occupation. The number of Europeans affected is explained by the association of six of them with the same source of infection. The treatment of tropical typhus is the same as that of the epidemic form, but is easier to carry out because there is less likelihood of the infection spreading to the attendants. The authors maintain that the tropical typhus of the Malay States bears a close resemblance to the typhus-like disease described by other authors in different parts of Asia, Africa, and America, and in a recent communication<sup>2</sup> attribute the contradictory results of the Weil-Felix reaction to different strains being used in various countries.

#### DEGREES FOR PRACTITIONERS: M.D. LAUSANNE.

Or the five Cantonal or State universities in Switzerland which have a faculty of medicine and grant the degree of Doctor in Medicine, it is not as widely known as it might be that two of these—Lausanne and Berne—welcome British practitioners and allow them to proceed to the M.D. degree under reasonable conditions. The University of Lausanne has some thirty-five professors in the Faculty of Medicine, and about 800 students and 200 auditeurs attend the university. The teaching hospital, the Cantonal, situated in the Avenue du Buglon, contains some 500 beds, and the children's and maternity blocks on the other side of the road, built in 1916, contain a further 200 beds, surpassing in design, construction, and equipment any hospital in Europe. British practitioners are received upon the same footing as the Swiss holding the Swiss Federal Diploma, and may obtain the M.D. degree on complying with the following regulations. (1) Matriculation in the university and registration as a student, on production of

<sup>1</sup> *Brit. Inst. Med. Research, Federated Malay States, 1925, No. 2*  
<sup>2</sup> *Ibid.*, 1926, No. 1.

a matriculation certificate of any British university, or of any preliminary examination recognized by the General Medical Council for the purposes of registration as a medical student; also production of the certificate of the degree or diploma qualifying for practice in the United Kingdom and the certificate of registration as a medical practitioner in the United Kingdom. (2) Undergoing with success a colloquium—that is, a viva voce examination—in any three of the subjects of the final medical examination, at the choice of the candidate—for example, medicine, surgery, diseases of children, or midwifery. (3) The presentation of a thesis for the doctorate, which has been prepared and completed in the clinic under the direction of one of the professors in the Faculty of Medicine, in any subject in the medical curriculum. Condition (1) is usually complied with upon arrival, (2) after about three months, and (3) at the end of the session. Most of the professors speak English well, and the choice of subject for the thesis may be made by the candidate and approved by the professor, or may be made by the professor himself. The standard, though high, is well within the reach of steady work during the required semester of residence (October to March). After the thesis has been accepted by the Faculty of Medicine its printing is authorized by the dean, and 200 copies have to be handed in—150 to the university and 50 to the dean. The fees are: On matriculation 20 francs; on inscription for the colloquium 50 francs; on presentation of thesis 200 francs; diploma and graduation 25 francs; courses, lectures, library, and laboratory fees about 80 francs; the printing of the thesis costs about £7 to £12, according to length, tables, diagrams, etc. It is possible to live comfortably for £10 a month. Applications for admission should be made to the Dean of the Faculty of Medicine, École de Médecine, Place de l'Ours, Lausanne, and to the professor in the subject in which the candidate wishes to do his thesis. The *Students' Guide* is issued in October and April, and may be obtained for 50 centimes from F. Haeschel-Dufey, 3, Rue Centrale, Lausanne (*Guide de l'Étudiant*). Further particulars may be obtained from C. A. H. Franklin, M.D., honorary secretary of the Lausanne Medical Graduates, 56, Southborough Road, Bickley, Kent. The winter session 1926-27 opens on October 13th. It should be made clear that the university degree of M.D. does not confer the right to practise in Switzerland, which requires the possession of the State or Federal Diploma, the examinations for which are conducted by a board of examiners drawn from all the universities. The Swiss students, after matriculating in one of the universities, pursue a five years' course of study, taking the first, second, and final examinations for the federal diploma; when this has been obtained, they proceed a year or so later to the M.D. degree of their own Alma Mater (though they may take it in any of their universities), the Federal Diploma thus corresponding to our own M.B. The Swiss do not make it easy for foreigners to practise in Switzerland, as the cheapness of higher education gives them more doctors than they require, but they welcome British practitioners for a period of study and to spend a time in one of their schools.

#### IN PRAISE OF GAS FIRES.

At the Smoke Abatement Exhibition at Birmingham on September 16th a paper on the "Contribution of the gas industry to the problem of smoke abatement" was read by Sir Arthur Duckham, Director-General of Aircraft Production, and an authority on the carbonization of coal. He said that the domestic fire was the chief producer of smoke, and was responsible for five-sixths of the total production. It appears that of the 180 million tons of coal consumed annually in this country in normal times, about 40 million tons are used for domestic purposes. While

from the average factory furnace only about 0.5 per cent. of the coal escaped in the form of soot, no less than 6 per cent. escapes in this form from the tops of domestic chimneys. When coal is carbonized the gaseous and solid fuels obtained are smokeless when burned. Moreover, a considerable amount of sulphur is eliminated from the products, and so does not pass into the atmosphere. Birmingham, according to Sir Arthur Duckham, has taken the lead in substituting gas for coal in its manufactories, and also in domestic heating and lighting, although in the latter respect it is almost equalled by some of the large health resorts. In Great Britain Birmingham comes first with a consumption of 285 therms of gas per consumer per annum. In Bournemouth and Bath the consumption is about 250 therms. In several new housing estates and garden cities the houses are being rendered non-smoke-producing by the installation of a gas cooker, a gas boiler, and two gas fires. The development of small efficient hot-water boilers, working on gas or coke, is overcoming any hot-water difficulty. Sir Arthur Duckham laid down the general rule that domestic cooking and heating should be done by gas, and the general heating of water by coke if a continuous supply is required. The gas industry is certainly doing its best to overcome the Englishman's liking for the companionship of a coal fire, by artistic improvement in gas stores, and by a study of the ways in which gas coke can be cleaned and graded before delivery, and the consumer instructed in the proper way of burning it. An additional advantage is claimed for the independent water-heating apparatus, using gas or coke, in that radiators can easily be installed. In Sir Arthur Duckham's opinion the gas industry has placed remedies against smoke in the hands of consumers, and the production of smoke is a crime against our national welfare. While sympathizing in general with his views on smoke abatement, we are not quite sure he is correct, however, when he says that fear of "that family bugbear cold in the head or on the chest is greatly reduced" by central heating.

#### OPHTHALMIC WORK IN EGYPT.

THE tenth annual report on the ophthalmic work of Egypt<sup>1</sup> has just been issued. It is noted that a grant was made by the Imperial War Graves Commission, as a memorial to the men of the Egyptian Labour Corps and Camel Transport Corps who fell in the great war, for the building of a permanent laboratory at the hospital at Giza. The Egyptian Government has made a grant for the equipment of the laboratory. The most interesting section of the report is that dealing with blindness. The definition of blindness adopted is that proposed by Trousseau— inability to count fingers at one metre. Of the causes of blindness the results of conjunctivitis are the most important, as they account for nearly two-thirds of all the cases; glaucoma and cataract are responsible for some 5 per cent. each; the number of other cases—due, for example, to congenital defect, accidents, and uveal disease—is relatively small. A census of the blind taken in 1917 showed a small decrease as compared with those enumerated ten years earlier. It is stated that 31 per 1,000 of the population were blind in one eye and 12 in both. Moslems account for 44 per cent., Christians 37, and Jews 20. At all ages the percentage of males suffering from total blindness is greater than that of females. The figures obtained for infants under 1 year are thought to be relatively valueless. The greatest increase is between 1 and 9 years, when the proportion is practically doubled. The number of cases of total blindness increases to a striking extent after 40 years of age. School medical inspection and the treatment of elementary school children have led to a very real advance in dealing with trachoma.

<sup>1</sup> Tenth Annual Report of the Ophthalmic Section, Department of Public Health, Cairo: Government Press, 1926. (Pp. 48; P.T.10.)



## CANCER OF THE BREAST.

## THE MINISTRY OF HEALTH MEMORANDUM.

The new memorandum (Circular 716<sup>1</sup>) of the Ministry of Health on cancer of the breast, to the issue of which we called attention last week, is an extended and revised version of Circular 496, which was published in May, 1924. In this revision additional and more exact data, based chiefly on investigations by Dr. Janet Lane-Clayton, by a subcommittee consisting of medical officers of health of several great cities, and at Leeds, have been incorporated. The time has been thought ripe also for a section on the practical applications of the information which has been accumulated so far by the Departmental Committee on Cancer, of which Sir George Newman is chairman.

In the introduction to the memorandum it is pointed out that no other organ contributes more largely than the breast to the cancer mortality amongst women in England and Wales; that the upper and outer quarter of the organ is the situation in which cancer most commonly appears, and that the area surrounding the nipple is the next most common seat of the disease. The memorandum then describes the natural course of mammary cancer, and calls attention to the facts that the onset cannot be fixed with any degree of accuracy; that even in women of the same age and the same habit of body some cases run an acute and others a chronic course; and that age appears to have some influence on the course of the disease. The average natural duration of a case of cancer of the breast seems to be a little over three years.

*Etiology and Diagnosis.*

The Departmental Committee has come to the conclusion that recent investigations have demonstrated statistically that chronic mastitis and a history of injury are more commonly found in women who develop cancer than in those who remain unaffected. The investigations have shown also that the less fertile married women, those who have had acute transient mastitis, deformity or abnormality of the breast, and possibly those in whom suckling has been absent or excessively prolonged, are more liable to suffer from the disease. Neither disturbances of menstruation and the menopause nor the nature of confinements can be shown to exert any influence. The committee thinks this knowledge may open up a wide field of investigation for tracing the development of cancer back to its starting point.

Under the heading diagnosis, stress is naturally laid upon the early identification of the nature of a mass in the breast. The committee dismisses as dangerous and inconvenient the method of removing a portion of the growth for microscopical examination. It finds that the method of examining microscopical sections during the course of an operation has proved unsatisfactory, since masses which are difficult to identify with the naked eye are very frequently those which display doubtful appearances under the rapid microscopical examination during operation. The greatest reliability and least risk is to be found in incising the growth at the time of operation and being guided as to subsequent procedure by the naked-eye appearance of the incised tumour, every care being taken to avoid transference of cancer cells to the wound.

*Operative Treatment.*

At the present time the one chance for a patient with cancer of the breast is early surgical operation. The memorandum discusses operation from the standpoint of the surgeon and from the standpoint of the patient. It is the point of view of the patient which, in the opinion of the committee, has led to the unfortunate position that with improvement in surgical technique there has been no corresponding increase in the proportion of cases which reach the surgeon at a stage when operation offers the greatest advantage. On the average, patients do not seek medical advice until eight or ten months after the growth was first noticed, and it is hinted that even by the medical profession the good results achieved by early operation are imperfectly appreciated.

What is the measure of the success of surgical treatment? The memorandum sets forth the results of the special investigation carried out at Leeds, and contained in the Ministry of Health 1926 reports on public health and medical subjects No. 34.<sup>2</sup> This investigation showed that, with the modern complete operation, 52 per cent. of all the patients were alive and well after three years, 39 per cent. after five years, and 30 per cent. after ten years. But if the patients were classed as being in the early, middle, and late stages of the disease when operated on, it was found that of the early cases 94 per cent. were alive and well after three years, 91 per cent. after five years, and 87 per cent. at the end of ten years. The committee summarizes the position thus:

"On the average women affected by cancer of the breast have, in the absence of effective treatment, roughly one-sixth of the normal duration of life to look forward to; those subjected to the complete operation during the comparatively early stage of the disease at which the average patient applies for treatment under present unsatisfactory conditions have about one-third of the normal duration to expect; while those so operated upon at an early stage may anticipate approximately two-thirds of the normal after life-time."

It is estimated by the committee that about 50 per cent. of the total number of sufferers from mammary cancer undergo operation in large hospitals. Of the others some are operated on at their own homes, in nursing homes, and in cottage hospitals, others attend hospital too late for operation, while the remainder probably fall into the hands of unqualified practitioners or come under the care of registered medical men only at the latest stage. Not more than one in five or six of all victims of the disease obtains the best treatment available.

*Measures to Reduce Mortality.*

To reduce mortality every possible means should be taken to induce all women who are conscious of any abnormal condition in the breast to seek medical advice without delay, especially if they have reached, or are reaching, middle age. The committee suggests that for this purpose the information set out in the memorandum should be disseminated by leaflets, "talks," advice by local cancer committees, doctors, health visitors, and social workers. Educative advice, it is thought, should be of value, if directed towards securing treatment of the earlier conditions which precede cancer, and towards the avoidance of injury, especially habitual injury. The committee thinks that the intensive researches now being carried out may lead to the discovery of the cause of malignant disease, and yet may not necessarily indicate a means of prevention; also that preventive measures could not secure early results, since the disease is one of slow development due to effective or predisposing causes operating over a prolonged period. Hence the necessity of all the educative and remedial measures now available.

*The Situation Generally.*

In a memorandum such as that before us, addressed in as non-technical language as possible to local authorities consisting of laymen, there is, of course, little that is controversial. It is gratifying to learn that the departmental committee has satisfied itself statistically that the results of so-called early operation are so good. It is clear that no operation can be really early, since the growth of cancerous cells must have proceeded a long way before any mass in the breast becomes appreciable to the touch. It is italicized in the memorandum that "in its early stages cancer is usually unattended by pain," so that it is by palpation of a mass alone that early diagnosis can be made. Hence the disappointment which sometimes occurs when recurrence follows a complete operation for a growth which is no bigger than a pea. The educative advice proposed by the departmental committee for the purpose of securing treatment of conditions preceding cancer, and for the avoidance of injury, is based, no doubt, on Dr. Janet Lane-Clayton's report on "associated antecedent conditions," upon which we commented on March 6th last (p. 437). We still feel the doubt we then expressed whether the statistical method is conclusive on the close association between injury and the subsequent development of cancer. The human factor is too uncertain. We still maintain that a person

<sup>1</sup> H.M. Stationery Office, Id. net<sup>2</sup> BRITISH MEDICAL JOURNAL, August 14th, 1926, p. 312.

who develops cancer in an organ so liable to injury as the breast is much more likely to dig out from the "sub-conscious memory" instances of injury than one who is not suffering from cancer.

Of the advantages of early operation for mammary cancer there can be no doubt; it is equally certain that there is a tendency in the human being to postpone action which is unpleasant. Any reasonable proposal for overcoming this prejudice is justifiable; and to this extent another disease campaign is justified. We hope, however, that the female population will steer a middle course between the extremes of daily anxious breast palpation and devil-may-care insouciance. We hope, too, that the leaflets and "talks" of local cancer committees will not be made too lurid. The results of campaigns are rarely commensurate with the time, money, and energy expended on them; but measured and reasoned statements of the case, such as are given in the memorandum of the Ministry of Health, have an educative value which, though gradual, has in the end more permanent effect than mere luridity.

## INDUSTRIAL FATIGUE.

### WORK OF THE RESEARCH BOARD.

THE sixth annual report<sup>1</sup> of the Industrial Fatigue Research Board to December 31st, 1925, includes an analysis of the published work of the Board since its formation in 1918. For this reason, as well as on account of the interest of the report, it may be well to attempt something more than a mere summary of the purely medical aspects of the work of the Board. The machinery for the work consists of two kinds of committees—one, homogeneous from a scientific point of view, dealing with statistics, physiology of muscular work, and industrial psychology; the other kind heterogeneous, in that the committees are constituted of experts in the appropriate sciences, industrial representatives, and medical or technical experts. The work of the Board is roughly divided into three categories: (a) investigations of particular problems of wide industrial importance; (b) studies of specific problems submitted by Government departments or industrial associations; (c) experimental researches in university and other laboratories.

### Definition of Industrial Fatigue.

The report calls attention to criticism which has been directed against the term "industrial fatigue." It is said to be used to cover widely different phenomena, ranging from physiological muscular fatigue to boredom or ennui. It is also stated that the causes underlying fatigue are so varied and complex that any precise definition of the word is at present impossible. The report defends the use of the term if it be accepted quite loosely to include not merely the lessened capacity or inclination which results from previous doing of the same kind of work, but also all conditions affecting the body or mind that impede the normal man from working at his maximum efficiency. It will be seen, therefore, that the scope for its operations set by the Board is very wide, and might be made to comprise the effects of numerous sociological and economic factors. It has limited its functions, however, to conditions concerned with the factory itself, and hitherto has dealt very little with external factors, even when, like housing and transport, they have a direct bearing on efficiency in the factory.

The forty-three reports already issued by the Board, together with some twenty-four other articles or reports mainly by workers for the Board, have been collated and combined into three groups according to whether their principal points relate to the effects on fatigue and efficiency of (a) hours of labour, including spells, shifts, and rest pauses; (b) conditions of employment, such as ventilation and lighting; (c) methods of work, constituting the personal factors in efficiency and fatigue, such as vocational psychology and movement study.

For the estimation of industrial fatigue attempts have been made to employ two kinds of test—direct and indirect. The first consists in the application to the person himself of some previously standardized test. So far the problem

of evolving a direct and immediate test has eluded solution, and the Board has had to rely on indirect tests—namely, variations in output and other tests of performance, sickness and mortality, labour turnover (which means the rate of change in the working staff), lost time, and accidents.

### Hours and Output.

Under the heading "hours of labour" the report sets forth the variations in output that occur during the day, during the week, and over longer periods. Thus in the daily work there is often a "saddle-back" curve, an initial rise of output attributable to incitement, and a final drop attributable to fatigue. With mental or light work, however, the curve is often different, showing a fall in output during each spell, owing to monotony, with a final spurt in the afternoon at the approach of the end of work for the day. The weekly curves show that output is nearly always low on Monday and at the end of the week, and that the increased efficiency due to practice, which causes a rise in output, is neutralized by fatigue effects towards the end of the week. It is noted, however, that the distribution of output may be affected by some special incentive such as pay day. In longer periods there is a marked spurt observable in the second week before the annual holidays begin. Output is also affected by the length of shift; a reduction in the length of shift has often been followed by an increase in output per hour, though we gather that the percentage hourly increase with a shorter shift does not always lead to the production of the same total output obtainable with the longer shift. The false economy of hours of work above a certain length demonstrated by the Health of Munition Workers' Committee during the war is perhaps liable to misuse as an argument in times of peace.

A good deal of work has been done for the Board on the subject of "rest pauses," and the observers have satisfied themselves that the introduction of rest pauses brings about an unconscious increase in output. The slowest workers generally benefit most from the system. Improvement in output may also occur with changes of activity, but the results are at present inconclusive, though suggesting that there may be an optimum condition between extreme uniformity and frequent change.

### Conditions of Work.

As regards conditions of employment, the Board has made investigations into temperature, humidity, ventilation, and lighting, but has not, so far, dealt with noise, vibration, and dust. In some processes the workers' environment is independent of the conditions of manufacture; in others the environment is unfavourably affected by conditions which are not essential to the process, so that the investigator can freely suggest improvement. But there is a third class of process, such as some forms of weaving, where an unfavourable environment is required for manufacturing processes, and all that can be done is to bring about some degree of physiological improvement.

Observations made by investigators show that in heavy work involving exposure to high temperature the output is greatest in winter and least in summer. The adverse effect of higher temperatures and humidities on working capacity is shown by the longer time unconsciously taken by weavers to deal with stoppage and breakage when temperature and humidity reach a certain level. Ventilation has been closely studied by Dr. Vernon and others; the cooling power of air and air movement being measured by the katablathmometer. It is physiologically desirable that the head should be at a lower temperature than the feet, and that the temperature gradient between floor and head level should be as slight as possible. This is best achieved by placing the means of heating low or beneath the floor, instead of using steam-pipes above the head. It has been found that artificial lighting causes a fall in output, especially great in textile industries.

### Vocational Psychology.

The study of the effect of methods of work brings us to the subject of vocational psychology. At present the initial selection of an occupation is often a matter of chance, and permanent employment is only secured after a process of trial and error. Consequently the "labour turnover"

<sup>1</sup> 1926. H.M. Stationery Office. 3s. net.

amongst beginners is high. This has led to the development of vocational selection and guidance. In collaboration with the National Institute of Industrial Psychology the Board carried out an investigation of the occupations taken up by 2,000 children leaving schools in a London borough. An intensive individual study of all the children due to leave three of the schools in the following twelve months was then conducted, and vocational recommendations based on this study were made. After two years as many as possible of these children were traced. The complete study of the children involved examination of the home conditions, the physical conditions, and the mental conditions, including intelligence, specific capacities, educational attainments, special interests, emotional, moral, and social qualities. A distinct relationship was found between material prosperity of the homes and general intelligence of mothers and children; but the relationship was comparatively slight, the average intelligence of children from superior homes being only 20 per cent. above that of children from the poorest. Native intelligence, at any rate in children of school-leaving age, is regarded as of outstanding importance in the choice of a career; and this is the easiest of all psychological characteristics to test reliably. It appears that judgement on well defined elementary traits, especially the emotional, is generally far more accurate than judgement on more complex moral qualities, such as honesty, industry, and reliability. Judgement on the latter is extremely fallible; and it is in this direction that more carefully developed tests are expected to prove valuable.

The results of the investigation into the success of vocational guidance are indefinite owing to the smallness of the numbers of children dealt with. Apparently about 84 per cent. of those traced are satisfied; 14 per cent. are satisfied with their work, but not with their pay or prospects; and only about 2 per cent. are dissatisfied with the work into which they were guided. Of those who went into work dissimilar to that recommended, 40 per cent. are satisfied, 18 per cent. satisfied with the work, but not with the pay and prospects, and 43 per cent. are dissatisfied.

The section in the report on movement and time study shows, first, that movement study is a logical sequel to vocational guidance and selection. It aims at providing standard methods of training for beginners. Several interesting accounts are given of the alteration in comfort and output achieved by teaching the workers more suitable movements in carrying on their work. Thus in outside grease dollying, a process applied in the manufacture of spoons and forks, the reduction in time effected by a standard method over an original method amounted to between 30 and 60 per cent.

#### *Some Reflections.*

The subject of industrial fatigue and the researches which are being carried out by the Board can be looked at from various points of view. Scientifically increase in knowledge of the human being, of his psychology and his reactions to industrial life, is of value, and should be of value to medical men, every one of whom is bound to meet patients on whom their employment has had some effect physically or mentally. For the employer of labour the researches are important, in that they may assist in increasing production, in lowering cost, in showing him how to get the maximum of efficiency from that physiological machine which is his worker. To the industrial worker himself the researches should bring greater comfort and less fatigue. To the philosopher it may perhaps occur to wonder what exactly will be the end of these researches. He may feel, in reading the report, a sort of vertigo at the thought of the time when every possible emotion, volition, and action of the worker has been analysed, sorted out, and provided for; until the "factory hand" has become a perfect robot-like machine, doing with the maximum of efficiency the maximum of work in the shortest possible time. But if the philosopher is also a man of science he will remember that all knowledge is of value, and that the investigators of the Industrial Fatigue Research Board have still left the whole of the worker's unemployed time, his home life, his loves, his hates, and his amusements, for subsequent research.

## OUT-RELIEF FOR SINGLE MINERS.

### THE SITUATION AT HOUGHTON-LE-SPRING.

The following note describes briefly the trouble that has arisen in a coal-mining district through an attempt by the local board of guardians (the majority of whose members are professed socialists) to induce the medical officers to rescue it from a dilemma at the cost of their professional honour.

On August 16th and 17th the five part-time medical officers of the Houghton-le-Spring Union in the county of Durham had interviews with the board of guardians. The guardians informed them that outdoor relief had been given to single men since the beginning of the coal strike, the number being over 2,000. A letter had been received from the Ministry of Health pointing out that such indiscriminate relief was illegal; relief could only be given to single men if they were found on medical examination to be physically incapable of work by reason of want or privation. The guardians asked the doctors to get them out of this difficulty by giving such certificates to these men, certifying them to be incapable of work. The doctors were faced with the situation that to their knowledge the very large proportion of these 2,000 men were not so incapable, and the task of refusing certificates to such a large number of men who had been getting relief would carry serious consequences to themselves, their practices, and their property. They felt there was no alternative between incurring the odium of stopping this relief, or bowing before the pressure of local opinion and granting such certificates wholesale. One of the doctors was notified that 200 men would be at his house that evening, and 200 more on the following morning, for certificates.

After consultation with the British Medical Association the five medical officers decided that the only honourable course was to give a month's notice to resign their posts. They did so on August 17th, and in the joint letter of resignation stated that they would carry on their ordinary duties of attending to the sick poor during the month, but refused to carry out the duty of examining single men as to physical incapacity for work due to want and privation. The resignations were accepted on August 19th by the guardians, who advertised in the local papers for a whole-time medical man to do the work of the entire union, including the examinations in dispute, and asking candidates to state the salary required, applications to be received by August 26th.

During the interval representations were made to the doctors that the work might be made lighter by appointing all the doctors in practice in the area as temporary medical officers to assist the ordinary medical officers, no doctor examining a man who was his own patient; also that the relieving officer would not send such large numbers of men for examination, but only those about whom they had reasonable doubts. The whole of the doctors readily consented to participate in such an arrangement, and a scheme on these lines was drafted, which in the opinion of the doctors would enable them to examine these men and give certificates without fear or favour, and at the same time let each man feel that he had a fair examination. A letter was sent to the guardians on August 23rd stating that a deputation would wait on the guardians at 3 p.m. at its meeting on August 26th to lay the scheme before them. The deputation attended, but the guardians refused to see them.

No applications having been received for the whole-time medical officership, the guardians decided to advertise again and hold another meeting on September 2nd. In the meantime the guardians asked the medical officers to submit their scheme in writing. This was done by the honorary secretary of the Sunderland Division of the British Medical Association, Dr. R. H. Dix, whose handling of a very difficult and disagreeable situation has been beyond praise. No applications for the whole-time post were received, and the guardians asked the deputation to attend a meeting held on September 6th and discuss the scheme. The deputation (consisting of Dr. Dix, with a representative of the five medical officers, and a representative of the other local practitioners) attended the meeting, and on September 8th

the guardians agreed to work the scheme and rescinded the resolution accepting the resignations of the medical officers.

On September 10th medical examination boards were held in four of the five centres of the Houghton union. At Hetton the upper room of the Miners' Hall, where two medical men were examining applicants, was invaded by the assembled mob. The doctors on leaving the hall were followed down the street by 200 or 300 young men, some of whom struck them and threw stones. Both were hit by stones and only got away by motor omnibus after much rough handling. At the Herrington Centre the medical examinations were interrupted by members of the board of guardians, who abused the doctors and made speeches to the crowd outside. At the Houghton Centre there was a jeering and hooting mob, which eventually numbered about 600; police protection had to be sought, and the doctors escaped by making their way through the workhouse and down a side street.

In view of these hostile demonstrations the doctors have, very naturally, refused to go on with the examinations. They are carrying out their ordinary duties as parish medical officers, but no solution of the difficulty has yet been evolved.

## India.

### MEDICAL AID FOR WOMEN IN INDIA.

Four annual reports for 1925 of organizations of which Lady Reading was president until her departure from India have been published in one volume, and give a valuable survey of the work in preventing and treating disease in women in India that is being carried on by women. The four organizations are the National Association for Supplying Medical Aid by Women to the Women of India, which incorporates the Countess of Dufferin's Fund and the Women's Medical Service; the Victoria Memorial Scholarships Fund; the Lady Chelmsford All-India League for Maternity and Child Welfare; and the Lady Reading Women of India Fund, of which this is the final report. Grants from the Countess of Dufferin's Fund have been made to hospitals in the provinces where Women's Medical Service doctors are employed, as these institutions are still very poorly supported locally. In medical colleges and schools 256 students are working, of whom 108 are in the Lady Hardinge Medical College at Delhi. The hospital in connexion with this college provides clinical material in its 200 beds for the instruction of the women medical students in the last three years of their M.B., B.S. course, and it supplies medical aid by women for the women and children of the rapidly growing population of the new capital of Delhi and its surroundings. The students come from fourteen different provinces and States, and in the session 1924-25 thirteen graduated, as compared with eight in the previous year. Dufferin Fund scholarships and stipends are held by twenty-six students in medical colleges at Delhi, Madras, Bombay, and Calcutta, who after graduation are employed when possible as house-surgeons or house-physicians in hospitals staffed by medical women. The Fund aids hospitals for women and children by supplying one or more Women's Medical Service officers to the hospital free of charge, and by giving grants. The hospitals so supplied have during last year treated over 30,000 in-patients, and more than 380,000 out-patients; some 7,000 maternity cases were attended and 24,231 operations were performed. The work of the Victoria Memorial Scholarships Fund has been limited mainly to the training of local native midwives by health visitors, who, on passing out of various health centres, are encouraged to establish classes for midwives as one of their first activities in a new area. The propaganda work formerly undertaken by the Fund is now entrusted to the Lady Chelmsford League, the Fund contributing financially to its support. In addition to travelling health exhibitions, magic lantern lectures on child welfare, flies, tuberculosis, small-pox, and other medical subjects are given in large towns and villages; baby weeks are held, and a considerable amount of training of midwives has been carried on. The Lady Chelmsford

League by concentrating on such propaganda and assisting the education of health visitors is benefiting the whole of India. The League assists four schools at Delhi, Madras, Punjab, and Calcutta, the first of these being entirely supported. Lady Reading contributed generously towards the provision of a new Delhi health school, and support has been received from private sources. The new school includes classrooms, a laboratory, a lecture hall and library, ample accommodation for a resident superintendent, and living quarters for twelve students. The infant welfare centre will be a model of its kind, and will serve a crowded area. The Lady Reading Women of India Fund has now been closed, its various objectives having been attained. The nurses' hostel at the Lady Hardinge College is occupied, and the Lady Reading Hospital at Simla, which has been actively at work since 1924, has been endowed financially for the future.

### PUBLIC HEALTH IN CALCUTTA.

In his annual report on the public health of Calcutta for 1924 Dr. H. M. Crake reports that the death rate for the town was slightly higher than in the previous year, thus indicating a check in the steady improvement which had been registered year by year since 1919. Only thirty-three cases of plague occurred—less than half the number in 1923. The very mild recrudescence of this disease in Calcutta is held to indicate the possibility of the complete disappearance of plague in the near future, though as recently as 1922 the mortality rose to 144—a reminder that conditions favourable to its spread still exist in the town. Although the cholera mortality rose slightly in the year under review the epidemic was comparatively mild. In Calcutta epidemics tend to recur at intervals of about ten years; in Bengal, as a whole, though there is evidence of cyclical periodicity, there is considerable variation, epidemics occurring in some cases at intervals of three years, in others of six, and in others of ten; similar variations have been observed in Madras. Two encouraging features in the case of Calcutta are the increasing length of time between severe epidemics and the persistence of a low level of cholera mortality, instead of a sharp rise following a decline, as has been the case in previous years. A marked increase in the mortality from malaria and tuberculosis was recorded, the greater prevalence of the former disease being particularly evident in two districts. Mohammedans suffered nearly four times as severely as Hindus, and it is suggested that this may be due to increased susceptibility, particularly in the case of young girls. The tuberculosis death rate rose, particularly in the urban parts of the town, almost the whole of the mortality being due to pulmonary disease; only 125 deaths resulted from other forms of tuberculosis, which may possibly be associated with the rarity of bovine tuberculosis in Bengal. Dr. Crake considers that the absence of the bovine infection accounts in part for the prevalence of a very acute type of disease in man, while the serious spread in Calcutta is attributed to the prevalence of promiscuous spitting. A higher mortality occurs among Indian Christians as compared with Mohammedans and Hindus, and this is especially noticeable in the case of girls over the age of 10, below which there is no evidence of increased susceptibility among females. Dr. Crake blames the retention of the purdah system in the densely populated gullies of the congested town for this heavy mortality among young girls, and also mentions in this connexion the frequency of early marriage, subjecting them to the strain of repeated pregnancies and prolonged periods of lactation. An antituberculosis scheme, including the appointment of a tuberculosis officer with eight assistant medical officers, for systematic house-to-house visiting, a dispensary, and a publicity bureau, has been approved by the Health Committee of the Municipal Council. During 1924 nine ward health associations were established to deal with cases of tuberculosis, malaria, and kala-azar; several dispensaries are open for treatment, and sanitary surveys are made. This work has developed particularly rapidly in the case of kala-azar; the more difficult sanitary and preventive work is progressing less rapidly. No severe epidemic of small-pox occurred in 1924, though in the later months of the year scattered and sporadic cases occurred regularly, and led up to the serious epidemic of 1925. Measles appeared in

epidemic form, and resulted in the worst outbreak since 1913, Hindu children appearing to be three times as susceptible to it as Mohammedans. There are now five maternity centres at work, with resident medical women, qualified midwives, and health visitors. Each centre is on the telephone, so that complicated cases can be transferred to hospital at any hour of the day or night. The Buldeodas Maternity Home was opened in the northern end of the town in March, 1924, and contains a maternity ward with twenty-two beds, a series of seven cubicles, and a well equipped room for labour; a septic ward and a septic labour room are also available. From March 1st to the end of the year 417 patients were admitted, 353 cases of labour were dealt with, of which 116 were abnormal; four patients died—two from eclampsia, one from septicaemia after very irregular treatment for five days outside the hospital, and one from heart disease. It is hoped to add an ante-natal and a post-natal clinic to the home. A new ambulance station was opened in Calcutta in July, 1924, and provides accommodation for ten cars, six of these being available for accident and non-infectious, and four for infectious, cases. During the year over 10,000 calls were received, and four new ambulances are to be provided in order to cope with the heavy demand.

## England and Wales.

### HOSPITAL ACCOMMODATION AT HARROGATE.

H.R.H. PRINCESS MARY VISCOUNTESS LASCELLES visited Harrogate on September 3rd to lay the foundation stone of the new infirmary. The existing infirmary was opened in 1883 by the grandfather of Viscount Lascelles, and in 1906 an extension was opened by Lady Harewood. Only fifty-four beds are at present available, and the senior surgeon to the infirmary, Mr. H. Frankling, called attention to the fact that in Harrogate there was only one hospital bed for every 721 residents. The waiting list was consequently very long. The new infirmary would be built and administered as economically as possible. The necessitous poor would have priority of treatment, but many persons were both willing and able to make some contribution towards their maintenance while in hospital. In the new contributory scheme which had only been in operation for six months there were already 5,000 members paying three-pence a week, which represented an annual income of £3,000 in normal years. To this must be added a grant from the employers of 25 per cent. of the workmen's contributions. Provision would be made as soon as possible for patients unable to pay the usual nursing home fees, but desiring to support the infirmary by paying for their own maintenance. Sir Berkeley Moynihan spoke warmly in favour of the establishment of wards and beds for paying patients. The provision of hospitals to-day was only a temporary measure, and very considerable additions would be required in the future.

### ROYAL INSTITUTE OF PUBLIC HEALTH.

Under the auspices of the Royal Institute of Public Health a series of lectures on problems of personal public health will be delivered at 37, Russell Square, on Wednesday afternoons at 4 p.m., from October 13th to December 8th inclusive. Sir William Willcox will open the course, and will speak on intestinal infections in relation to personal health and disease. The subjects of the three succeeding lectures are the prevention and treatment of eczematous conditions of the skin of occupational origin, by Dr. W. J. O'Donovan; town planning in relation to health, by Professor L. P. Abercrombie of Liverpool; and ventilation in relation to health, by Dr. H. M. Vernon, investigator for the National Fatigue Research Board. Professor Winifred Cullis will describe the application of industrial psychology to the home, and Dr. Reginald Miller will lecture on the problem of rheumatism and rheumatic heart disease in children. Dr. C. W. Salcey will give a lecture entitled "From heliotherapy to heliohygiene," and Dr. P. C. Varrier-Jones will give an address on settlements for tuberculous workers. The series will be concluded by Dr. F. E. Fremantle, M.P., who will speak on the role of

Parliament in regard to health legislation. The Harben Lectures of the Institute will be delivered on the afternoons of November 15th, 18th, and 22nd by Professor W. W. C. Topley, on the subject of quantitative experiments in the study of infection and resistance. These lectures are open to all interested in medico-sociological problems. It is announced that the annual congress of the Institute in 1927 will be held at Ghent from June 1st to 7th.

## Correspondence.

### GOITRE IN CHILDHOOD.

SIR,—In your issue of September 11th I noticed correspondence on the above question. I do not think there is any doubt, as Dr. Turton states, that goitre is diminishing, at least the large colloid type of goitre. The whole question, however, of the causation of goitre is a difficult one. The theory put forward by Dr. Turton, that excess of lime has something to do with goitre prevalence, may be correct, and Sir James Berry (*BRITISH MEDICAL JOURNAL* of December 5th, 1925, p. 1060) has supported this view; on the other hand, there is a large amount of evidence which supports the opinion that alimentary infection either through polluted water or food is one of the causes; both causes might act together, and chalky supplies are very liable to pollution.

One of the places which I gave in my paper<sup>1</sup> as almost free from goitre was Margate, yet here the water comes from chalky strata and has a total hardness of 18, and a permanent hardness of 3.4, with chlorino as chloride 1.6. This water is also bacteriologically clean (see result of analysis by Mr. Hawkins and Dr. A. G. R. Foulerton contained in Dr. McCoombe's report on the health of Margate for 1925).

At Ramsgate Dr. Bannister tells me that enlargement of the thyroid was not observed in any child of 12 years of age during the survey in the schools in 1924, and that enlargement of the thyroid is a rare condition in the borough. He gives me the following extract from the analysis of the Ramsgate water supply: total hardness 33.3 parts, permanent hardness 10.9 parts, chlorine as salt 24.5 parts per 100,000.

At Bath Dr. Blackett states in his annual report for 1925 that the hardness of the water is 21 grains per gallon, and chlorino as chlorides 1 grain per gallon. The percentage of goitre in girls of 12 in the survey was 7.3, and boys of 12, 2.2 (annual report, school medical officer, Bath, 1924).

In my own district, where the water has a hardness of about 3 parts per 100,000, 4.2 per cent. boys of 12 had enlargement of the thyroid, and 17.5 girls of 12. I myself have carried out investigations at Bath and found that goitre was much less prevalent there than in my own district.

I only give the above details to show that any theory of goitre is difficult to prove and the excess of lime theory is no exception. It may be that there is a relationship between thyroid enlargement and calcium metabolism, but why should the chalky water supply in Kent not produce goitre and the chalky water supplies in Derbyshire produce it, or water like Bath with a lot of lime salts cause less goitre than the soft water supply of Glossop?

I entirely agree with Dr. Turton and Dr. Johnson that it is important to find out what happens after school life. I do not go so far as to say details of school life are valueless. I consider them very important, particularly if the children are carefully examined, but I do think they must be read with figures taken from examinations made after leaving school. This is one of the points I made in my paper and during the discussion at Nottingham. It is important also that any investigation after school should be made in co-operation with the school medical officer so as to prevent errors in diagnosis.

I do not think that there can be any doubt that goitre in children is to a certain extent physiological, but it is possible that the physiological enlargement may favour the onset of either endemic goitre or Graves's disease later

<sup>1</sup> *BRITISH MEDICAL JOURNAL*, August 23rd, 1926, p. 571.



in life. In conclusion I must say—and I think Dr. Turton and Dr. Johnson will agree—that the whole question is one for further inquiry.—I am, etc.,

E. H. M. MILLIGAN, M.D., D.P.H.

Glossop, Sept. 18th.

### SANATORIUM TREATMENT.

SIR,—Your review on sanatorium treatment appearing in the *BRITISH MEDICAL JOURNAL* of August 28th (p. 397) is somewhat disconcerting to one who has been treating pulmonary tuberculosis at a sanatorium provided to deal with a population of 300,000 persons for the past eighteen years. We find here that all kinds of cases, almost without exception, do better at the sanatorium than when treated at home; home treatment may be considered as dispensary treatment without the fatigue of attending the dispensary. This must be true unless dispensaries use a method of treatment unknown in sanatoriums. The explanation of these contradictions would seem to lie either in something being wrong in the treatment given at the sanatoriums concerned or in some unknown factor working for the good of the patients at the dispensary.

It is possible that the sanatoriums do not carry out the correct treatment, which has been known at least since 1870, when Niemeyer of Tübingen published his *Lectures on Pulmonary Consumption* (the New Sydenham Society, 1870). It has been practised for many years at sanatoriums which have not become infected with the heresy of "graduated labour," but have followed the method of "graduated rest," as explained by myself in the *Lancet* of April 3rd, 1909. The former method probably came into vogue owing to the too successful filtering of cases at dispensaries and elsewhere, with the result that none but chronic or acute advanced cases find their way into sanatoriums, the time for whose successful treatment was missed, because dispensary or home treatment was thought sufficient. The cases suitable for a sanatorium should be recent and exhibiting symptoms of activity.

In order that success may follow, it is necessary that the following conditions be complied with: (1) intimate medical supervision; (2) rectal temperatures must be taken four times a day; (3) the patients must be kept in bed until their temperatures conform to normal, being at least as low as 36.6° C. before rising in the morning—I cannot enter further into this matter here; (4) provision should be made for separate rooms where necessary.

Dying patients should not be sent to sanatoriums as their presence is a detrimental psychological factor.

Three methods of treatment have recently come into vogue which emphasize the importance of rest: (1) artificial pneumothorax, (2) thoracoplasty, and (3) phrenectomy. These operations, which are hazardous and uncertain in their effects, are efforts to prevent movement of the affected lung, and become necessary because efficient sanatorium treatment with rest was not given earlier.

The diagnosis of tuberculosis should be made by a study of the history of the patient and a careful inquiry into symptoms, and not by the presence of physical signs and the finding of tubercle bacilli in the sputum. It is somewhat wearisome to be told that our results will, of course, be excellent if we treat cases where tubercle bacilli are not found; that has always been our contention. A case treated early soon becomes well and therefore difficult to diagnose; this, of course, is an advantage, the patient being then in the position of the remainder of his fellow citizens—that is, he is a person who has been infected but has no symptoms. It is perhaps unfortunate that we cannot as a rule both cure our patients and at the same time verify the diagnosis by finding tubercle bacilli; nor can we make sure by having an autopsy.

If only patients exhibiting symptoms be treated we make sure that we are only treating those who need it, and are not wasting time treating quiescent patients, who (as always) will continue for long periods to carry on their occupations without any treatment other than a few days in bed occasionally.—I am, etc.,

EDWARD E. PREST.

Avonmouth Sanatorium, New  
Cl. Brock, Sept. 15th.

SIR,—There must be many of those interested in tuberculosis who have been waiting, like myself, to see what criticisms would be called forth by your review of the article on "The influence of sanatorium and dispensary treatment and housing conditions on pulmonary tuberculosis," recently published in the *Annals of Eugenics*. Nor have our expectations been disappointed. In the issue of the *BRITISH MEDICAL JOURNAL* for September 11th appeared a letter from Dr. F. R. Walters, and in that for September 18th appears a more damning indictment by Dr. J. R. Gillespie, both of these being medical men who have specialized in tuberculosis.

Most of your readers must have felt inclined at once to question the scientific value of Dr. Stocks's and M. Noel Karn's statistics when they read that patients who remained only fourteen days in a sanatorium were defined as "sanatorium treated." Dr. F. R. Walters, in his criticism, says "it is exceptional in this country to allot more than from three to five months to sanatorium treatment." I should have thought that in the present day it is generally admitted that anything less than a period of some six months is unlikely to have any material influence on the course of pulmonary tuberculosis. Speaking for Cheshire, I can say that a period of three to five months only is the exception rather than the rule. But in any case, to classify patients who have had only two weeks in a sanatorium as "sanatorium treated" is simply ridiculous.

Dr. Gillespie points out further fallacies, one of the most important (in his own view the most important) being the failure to differentiate "sputum-positive" from "sputum-negative" cases. Your editorial review states that "the memoir is based on an exhaustive study of the first 2,794 consecutive cases of undoubted pulmonary tuberculosis brought under the survey of the Belfast Tuberculosis Dispensaries." The most important step in the establishment of the diagnosis of pulmonary tuberculosis as "undoubted" is surely the demonstration of tubercle bacilli in the sputum. What value, then, can we give to the assertion that all these cases were cases of "undoubted tuberculosis" when the investigators themselves admit that "it was found impracticable to use the presence or absence of tubercle bacilli in the sputum as more than an adjunct in diagnosis, since the number of cases in which bacilli were sought for and found was relatively small" (italics mine), the percentages being given as 19 for males and 11.9 for females.

I think it is quite possible that the value of sanatorium treatment has been overestimated, and that we should preserve an open mind on the question. But it will require more carefully collated evidence than that published in *Annals of Eugenics* to prove that sanatorium treatment "is associated to a significant degree with inferior progress" of the patient afterwards, and that bad housing conditions, "as judged by . . . class of house, state of cleanliness . . . or overcrowding" have no influence on the patient's ultimate progress.—I am, etc.,

E. WEATHERHEAD,

September 19th. Tuberculosis Officer, Cheshire, North-East District.

### REGISTRATION OF NURSING HOMES.

SIR,—Your leader in the *BRITISH MEDICAL JOURNAL* for September 18th (p. 532) on the report of the Select Committee of the House of Commons draws attention to certain recommendations in that report, and visualizes the consequences if legislation is carried through to give them effect. But you fail to enlarge on two important aspects.

When talking or writing about "nursing homes" it is desirable to state exactly what is meant, as otherwise the popular idea that one is referring solely to places where a large number of patients can be received for medical, surgical, or maternity treatment holds the field. The Select Committee accepted as a definition:

"Any premises used, or intended to be used, for the reception of persons suffering from any sickness, injury, or bodily or mental infirmity for the purpose of providing such persons with nursing, where any payment or reward is made, or promised by, or on behalf of any person so received."

and desires even this definition to be amplified, as in its opinion it does not include premises for the reception of women in childbirth.

With regard to those places more generally accepted as being referred to as "nursing homes" you rightly conclude that the result of the legislation advocated will be to wipe out a large number of them, and you look to the voluntary hospitals to provide the necessary accommodation (as in public life one looks to the Government to end all our woes, so in medical life we seem to look to the voluntary hospitals to solve our problems). If this follows that will mean a further thrust for voluntary hospitals from being charitable places provided for indigent patients to become limited liability companies open to all. If this has to be it is just as well that the public and the medical profession should appreciate whither we are drifting.

But you touch very lightly on what would seem to be a more reprehensible part of the report. The Committee considers that doctors who receive single or two or more patients "are entering into a trade and into competition with others." I therefore should have inquired and public to appreciate the crossing permanently the border-line of mental soundness the earliest inducement should be offered to them to go where, alone or with a few others, proper medical supervision and assistance can be secured, whilst a home-like atmosphere is retained. Also, medical students are required now to have had some training in dealing effectively with such patients. Some hundreds of doctors now—and they could become thousands in the future—do receive one or more such patients, as well as those permanently unstable, into their family life. The result is most satisfactory to all concerned.

What will be the effect of legislation on these facilities, knowing what we do of registration, inspection, regulations, reports, and so on in other fields of public health? Will these doctors and their wives be content to submit their homes and home life to the inquisitorial control of a cold-blooded machine? If not, for such patients you suggest there will be hospital accommodation—that is, institutional treatment at an asylum, or State or voluntary hospital. And yet it is just that these patients and their relatives loathe and will not submit to unless driven by poverty, as they seem certain that such will make them into chronic; also it is often quite unsuitable. Well then; what is to be done about it?—I am, etc.,

Hove, Sept. 20th.

R. ROWLAND FOTHERGILL.

#### MAN AS THE INTERMEDIATE HOST OF THE TAENIA SOLIUM.

Sir, Your correspondent Mr. E. J. H. Roth, in his article on the above subject (September 11th, p. 470), says: "It has not been found possible to discover a record of appearances which may be seen in radiograms when man becomes the intermediate host."

May I point out that such appearances in different patients have been described and illustrated with radiographs by the following authors: Sich (1905), Pichler (1911), Fischer (1912), Geipel (1913), Pursche, Köhler, Sauper, Stieda, and Brailsford.

A list of references are given in the paper, "The X-ray Diagnosis of Animal Parasites (Helminthes) in Man," which was delivered by me to the Electro-Therapeutic Section of the Royal Society of Medicine on January 18th, 1926, and can be found in the printed *Transactions* of the Royal Society of Medicine.—I am, etc.,

JAMES F. BRAILSFORD.

Edgbaston, Birmingham, Sept. 14th.

#### CANCER MORTALITY AND AGE RATES.

Sir, In your issue of August 28th (p. 367) there is an article by Dr. John Brown entitled "Comments and practical suggestions on Circular 426 (Cancer)."

In this article Dr. Brown compares the death rates from cancer between mining districts and residential and seaside towns, and suggests that the lower death rate amongst miners and their wives is due to "their active and strenuous life and their plain but efficient dietary." Might I point out that the discrepancy in the death rates

is in reality occasioned by the variation in the age rates in the two classes selected for comparison?

In mining and intensive industrial centres the proportion of persons over 40 is considerably less than in residential centres. In the two centres specifically mentioned by Dr. Brown—namely, Rhondda and Wigan, the proportion of persons over 40 is 249 and 270 per 10,000 of population respectively. In Hastings and Bath it is 415 and 399 per 10,000 of population respectively (census 1921).

At the period of highest cancer mortality (55-75) this discrepancy is still more marked. At the age period over 60 Rhondda has an exceptionally low proportion of persons, whilst Hastings has a correspondingly high proportion. A comparison between other intensive industrial centres such as St. Helens, Warrington, and Middlesbrough, and residential centres such as Bournemouth, Oxford, and Cambridge, shows similar results.

I should be interested to ascertain if Dr. Brown has further evidence, outside statistical, to support his view. Is there any confirmation of the statement, frequently made, that cancer is more prevalent amongst the well-to-do than the poor?—I am, etc.,

London, S.W.16, Sept. 16th.

E. HUDSON.

#### SUBACUTE APPENDICITIS.

Sir,—The letter in the *JOURNAL* of September 11th (p. 506) under the above heading from Sir John O'Connor raises several interesting points.

The increasing frequency of definite localized pain met with in the gastric and duodenal areas due to a cause quite remote from these regions—namely, a subacute appendix—has become crystallized into one of the most common difficulties and pitfalls which beset the general practitioner. The absence of any lesion where bismuth meals and x rays have been invoked, especially if coupled with undue retention of the test meal in the stomach, often confuses rather than clarifies the diagnosis.

On one point I differ from Sir John O'Connor, which, however, may be attributable to a more limited experience than his. Instead of finding increased pain and tenderness over McBurney's point I have generally found the opposite—namely, that discomfort, tenderness, and pain (even with fairly deep palpation) are present in an inverse ratio to that complained of in the regions referred to above. Needless to say, this greatly increases the difficulty of correct diagnosis.

For some time I have been on the look-out for a satisfactory explanation as to whether parallelism of structure, position, with undue or irregular innervation can in any way be responsible for the interference which takes place between a chronic appendix and the pylorus with the gastric symptoms which follow.—I am, etc.,

Arnside, Westmorland, Sept. 13th.

D. M. MACDONALD.

#### THE MEDICAL PROFESSION AND LIFE INSURANCE COMPANIES.

Sir,—Is it not time to review the relations existing between the medical profession and life insurance companies?

A little while ago a patient of mine wished to take out a deferred policy on the life of his son, aged 9 years, with a certain London company. The company wrote to me, as his medical attendant, asking me to fill up a form containing a lot of questions bearing upon the family history of the proposer and his father, the answers to which were only known to me in my professional capacity. I took the form to my patient and with his permission answered the questions. One of the answers disclosed the fact of insanity in the family, and I now get a further letter from the company asking for information on this point.

Now this seems all wrong. If the company for its own interests requires this information it should address its queries to the proposer, or his father, if, as in this case, it is a child. In fairness to the company I must add that they paid me a fee of a guinea, but from one point of view this makes it worse, as they are paying the medical man to give away confidential information.

This brings me to another point—namely, the usual fee paid for examination. The fee remains the same as it was thirty years ago, though its purchasing power is much less, and, more important, the examination and report required are much fuller and more elaborate than they used to be.—I am, etc.,

Oporto, Sept. 11th.

W. A. MURRAY.

#### APPENDICITIS AND VEGETARIANISM.

SIR,—I was greatly interested in Mr. Hamilton Bailey's letter in the JOURNAL of September 18th (p. 545) as it is also my own conviction that diet has a close relationship to the incidence of appendicitis.

For a considerable period during the war I was responsible for the health of a large Arab population in Mesopotamia, and met with not a single case of appendicitis. The staple diet of these tribes was rice, dates, and other fruit. At the same time, among a much smaller British population in the same district, whose diet included tinned and frozen meat, numerous cases of appendicitis occurred.—I am, etc.,

R. J. McNEILL LOVE, M.S.Lond.,

London, W.1, Sept. 18th.

F.R.C.S.Eng.

SIR,—I was much interested in Mr. Bailey's letter. A similar case occurred in my practice about three years ago. In this case the boy was about 15 years of age, and had been brought up on strict vegetarian principles. The appendicitis was acute and the operation only just in time to prevent perforation.—I am, etc.,

JOSEPH A. PARKES, M.B., Ch.B.

Bristol, Sept. 21st.

#### Obituary.

Dr. JAMES CYRIL DALMAHOY ALLAN, who died in Hong-Kong on September 8th from infective endocarditis, received his medical education at Edinburgh, where he graduated M.B., Ch.B. in 1905, obtained the diploma of tropical medicine in 1907, and proceeded M.D. in 1911 with distinction. After graduation he acted as house-physician under the late Dr. G. A. Gibson in the wards of the Infirmary, and subsequently obtained the appointment of senior house-surgeon to Mr. Hogarth Pringle at the Royal Infirmary, Glasgow. In 1908 he became medical officer to Christmas Island, where he remained for two years, when he removed to Hong-Kong. A colleague writes: "On looking back at the old days in the university, one remembers an outstanding figure that strode smiling and cheerful through his classes and seemed to absorb facts and pacify examiners without apparent effort. His quick and ready mind went straight to the essentials, and many a slower-brained colleague was grateful for some point of difficulty cleared up by a short succinct explanation or demonstration. He had a host of interests besides the mere routine of class work. The Royal Medical and the Dialectic Societies were channels for the outflow of his superabundant energies, and under his stimulating guidance the English Public Schools Club took on a new lease of life. As a house-physician he ranked high, and he took to Christmas Island a knowledge of his profession that that small islet will probably never see equalled. A remarkable spontaneous demonstration of regret signalized his departure from the island, all the inhabitants, to the humblest Chinese coolie, uniting to do him honour. The value of his work was recognized in high places, as evidenced by his return to the island, for a brief period after the war, as governor. Allan arrived in Hong-Kong speaking Cantonese as easily as he did English. His practice among Europeans and Chinese rapidly increased, and he achieved notable success as a surgeon. With his strong sense of humour, his undeviating honesty, and a certain streak of fatalism that ran through his character, he found much about the Chinese to appeal to him. His interest in the country was profound, and he made several pilgrimages to the remote interior. On one occasion, in company with his faithful Chinese friend and body-servant, he walked over a thousand miles overland. During the tour he spoke no word of English and adopted the native costume. During the war he was at first

attached to a battalion in Franco, and later was transferred to the staff. For gallantry in the field he was awarded the Croix de Guerre by the French Government. It was hoped by many that he would elect to stay in this country, but his tastes and family traditions pointed the way eastwards, and the glamour of the Orient held him in its spell. He leaves us with a golden memory of a vivid arresting personality: one who was a born healer of the sufferings and sorrows of mankind. His generous heart had a genius for friendship, and his many friends adore him, rejoicing in the charm of his infinite variety. Breezy, hearty, joyous, a jest was never far from his lips, a kindly greeting ever in his eyes."

#### The Services.

##### INDIAN MEDICAL SERVICE.

###### STUDY LEAVE RULES.

WE have received from the Director-General, Indian Medical Service, a copy of revised study leave rules for the I.M.S. Army Instruction, India, B 206 of July 27th, 1926, published as Army Notification No. 890 in the *Gazette of India* of July 10th.

1. Study leave may be granted on the recommendation of the D.G.I.M.S., by the Government of India, or by local governments who may delegate their powers to the High Commissioner for India.

2. The amount of such leave which may be granted is one-twelfth of an officer's service qualifying for leave, up to a maximum of twelve months during an officer's service.

3. This leave may be taken at any time, but an officer who, after taking study leave, retires, on any ground except ill health, within three years of the date of his return to India, will be liable to forfeit all benefits which he has received in respect of that study leave, and to refund any additional pay or allowances received for such leave.

4. The minimum period of study is two months.

5. The minimum period of leave granted solely as study leave is six months.

6. Study leave can be combined with any other leave, provided that the period of study is not less than two months.

7. Except as provided in Rule 8, an officer should submit his application for study leave through the prescribed channels, stating the course or courses of study he proposes to undergo, the institution where he proposes to study, the dates of beginning and ending of the course, and the examination he proposes to undergo.

8. Officers on leave who wish to convert part of their leave into study leave must apply for India. If they wish to leave for purposes of study they must submit evidence of having obtained the approval of the High Commissioner in India to their application for extension and to the course of proposed study.

9. An officer may undertake a course of study during leave on average pay, and draw study allowance therefor, provided that study allowance is not drawn for a total period of more than twelve months during his whole service.

10. Study allowance is at present fixed at twelve shillings a day in the United Kingdom, £1 on the Continent of Europe, and £1 10s. in the United States. No allowance can be drawn until the officer has submitted the certificates required by Rule 12. The allowance is not admissible to an officer who retires at the expiration of his leave without returning to India, and may be retrenched, under Rule 3, if he retires within three years of his return. A period of vacation, not exceeding fourteen days, between two courses of study, may be counted as study leave. No course of study will be recognized as study leave for allowance or any other purpose unless the course of study has been approved in accordance with Rules 7 and 8.

11. The rate of pay admissible during study leave is half average pay, subject to the prescribed minima and maxima.

12. On completion of a course of study leave a certificate in the proper form, together with any certificates of special study, must be submitted to the High Commissioner for India.

13. Study leave will count as service for promotion and pension, but not for further leave. It will not be counted in calculating the aggregate amount of leave which an officer may take during his service.

The above rules apply also to officers in temporary civil employ, and in military employ, with a few variations, as follows:

2. The period of study leave allowable is one-twelfth of pension service.

6. The total period of all combined leave granted, in the first instance, will not exceed one year.

7. Such officers should apply to the Under Secretary of State, Military Department, India Office, instead of to the High Commissioner.

11. The rate of pay admissible during study leave is the rate of pay admissible under military leave rules.

As the above notes are considerably condensed from Instruction No. 206, all officers who propose taking study leave should carefully study the original Instruction.

## KING'S HONORARY PHYSICIAN.

HIS MAJESTY has approved the  
Sir Matthew H. G. Fell, K.C.I.  
Medical Services, to be Hono-  
rified from June 3rd, 1926, in  
General Sir William Lleshman,

General  
Army  
with  
tenant-

## EXCHANGE OF NAVAL MEDICAL OFFICERS.

ADMIRALTY Fleet Order No. 2607 states that a surgeon-commander R.N., is required for service as senior medical officer, Flinders Naval Depot, in exchange for a surgeon-commander, Royal Australian Navy. The depot hospital includes a theatre where all major surgical operations are undertaken, and the officer will be required to be an operating surgeon. The appointment will carry assisted passages for wife and children, and the Australian authorities state that information as to the prospects of obtaining a house can be communicated later. Early application should be made for this appointment through the usual Service channels. The position of officers lent for service in the R.A.N. is in all respects equivalent to that of officers who serve continuously in the Royal Navy, with whom they will be considered equally for promotion and appointment.

## Medical News.

DR. ANDREW BALFOUR, Director of the London School of Hygiene and Tropical Medicine, will attend the fiftieth anniversary celebration of Johns Hopkins University, Baltimore, next month, and deliver an address at the formal opening of the new building of the School of Hygiene and Public Health of that university.

THE opening function of the winter session at the Middlesex Hospital Medical School will take place at the Queen's Hall, Langham Place, on Friday, October 1st, at 3 p.m. Professor T. Yeates will deliver the introductory address, after which the Archbishop of Canterbury will distribute the prizes. The annual dinner of past and present students of the school will be held the same evening, at 7.30, at the Savoy Hotel, with Mr. Victor Bounney in the chair.

THE annual prize distribution at St. George's Hospital Medical School will be held on October 1st, at 3 p.m., in the board room of the hospital, when the inaugural address, entitled "Doctors and the public," will be delivered by Dr. E. Graham Little, M.P. The annual dinner will be held at the Hyde Park Hotel at 7.45 on the same day, with the Right Hon. C. C. Craig, M.P., in the chair.

AT the opening of the winter session of the London (Royal Free Hospital) School of Medicine for Women, Hunter Street, W.C., on Friday, October 1st, at 5.30 p.m., the introductory address will be given by Sir Walter Fletcher, K.B.E., M.D., F.R.S., Secretary of the Medical Research Council.

AT the opening of the eighty-fifth session of the School of Pharmacy of the Pharmaceutical Society of Great Britain on Wednesday, October 6th, at 3 p.m., the inaugural sessional address will be delivered by Dr. James F. Tocher, of the University of Aberdeen.

AN autumn course of lectures at the Hospital for Sick Children, Great Ormond Street, W.C.1, will commence on Thursday, October 7th, at 4 p.m., when Dr. Cockayne will deal with "Rickets as it is seen to-day."

A NEW course of post-graduate study at the National Hospital, Queen Square, Bloomsbury, will be held from October 4th to November 26th. It will consist of out-patient clinics, clinical lectures and demonstrations, lectures on the anatomy and physiology of the nervous system, demonstrations on the pathology of nervous system, and clinical demonstrations on methods of examination. The fee for the course, including the pathology demonstrations, is £5 5s., and for those holding perpetual tickets £3 3s.

A COURSE of post-graduate lectures will be given at Ancoats Hospital, Manchester, on Thursdays at 4.15 p.m., beginning on September 30th, when Mr. Harry Platt commences a series of six lectures on the treatment of common injuries. Three lectures on tonsillectomy will be given by Mr. F. Holt Diggle on November 11th, 18th, and 25th. There is no fee for the course, and all medical graduates are cordially invited. Tea will be served at 3.45 p.m.

A COURSE of twelve lectures will be given on Sunday afternoons, commencing October 3rd, at 3.30, at The Guildhouse, Eccleston Square, S.W.1, on the contribution of science to human life. Sir Richard Gregory (editor of *Nature*) will speak on the worth of science at the first meeting, and Dr. Bernard Hollander on the sound and unsound mind at the second. Sir George Newman will lecture on the contribution of medical science to human life, on December 5th. Further information may be obtained from the honorary secretary to the Guildhouse Advisory Board, 2, Rosslyn Mansions, Goldhurst Terrace, N.W.6.

DR. JOHN RUDD LEESON, J.P., senior consulting physician to St. John's Hospital, Twickenham, is the Charter Mayor of the newly incorporated Borough of Twickenham, and as such attended the celebrations on September 22nd.

AT the meeting of the Society for the Study of Inebriety, to be held in the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, on Tuesday, October 12th, at 4 p.m., Dr. J. D. Rolleston will read a paper on alcoholism in classical antiquity.

THE Biochemical Society has arranged the following provisional programme of meetings for the session 1926-27: Saturday, October 9th, Cambridge; Monday, November 8th, St. Thomas's Hospital, S.E.1; Monday, December 6th, Imperial College, S.W.7; Monday, February 7th, 1927, Lister Institute, S.W.1; Friday, March 18th, University College, W.C.1.

A COURSE of practical demonstrations on deep x-ray therapy in the treatment of tumours at the Beaujon Hospital, Paris, will begin on October 5th, and continue on following Tuesdays; while on Friday mornings from October 8th another course on electrical diagnosis and treatment will be given at Dr. Anbourg's laboratory. Further information may be obtained from Dr. Anbourg at the Beaujon Hospital. The demonstrations (which will be delivered in English, if desired) are free to practitioners and students.

THE People's League of Health will be represented at the conference convened by the International Union against Tuberculosis, to be held in Washington, U.S.A., from September 30th to October 3rd, by the following members of its medical council: Sir Robert Philip, Sir John Lynam-Thomas, Professor S. Lyle Cummins, and Dr. Edward Hope.

POPULAR talks on travel, science, and invention will be given in October and November, with experimental demonstrations or lantern slide illustrations, in aid of King Edward's Hospital Fund for London. The series, which commences with "Seeing by wireless," by Mr. H. L. Baird, at the Royal Institute of British Architects, on October 7th, at 5 p.m., will include talks on subjects as diverse as aviation, artificial production of the human voice, liquid air, the Sahara, and refrigeration. Tickets, price 2s. 6d. and 5s., or serial tickets 12s. 6d., may be obtained from the Secretary, King Edward's Hospital Fund for London, 7, Walbrook, E.C.4, or at the doors.

THE Council of Epsom College is about to award one of the Leopold Salomons Entrance Scholarships of £50 a year which were established "as a slight recognition of the splendid work of the medical profession carried on during the war." Candidates must be sons of legally qualified members of the medical profession and be unable to enter Epsom College without the help of this scholarship. They must have reached 11 years of age and be under 14 on January 1st last, and show a standard of education adequate for their age. Forms of application and full particulars will be supplied by the Secretary of the College, 49, Bedford Square, W.C.1, where applications must be sent not later than the morning of October 6th. The Council will also shortly award a special St. Anno's Home scholarship of £52 a year, tenable for about five years, to the orphan daughter of a medical man who was in independent practice in England or Wales for not less than five years. Only those are eligible as candidates who were fully 10 years of age and not over 12 years of age on May 1st last. Forms of application can be obtained from the Secretary.

THE first all-Russian ophthalmological congress will be held at Moscow from September 27th to 30th.

THE first German congress for combating tobacco smoking by young persons was held at Düsseldorf from August 7th to 9th, when papers were read on physical exercise and smoking, and smoking among the youth of the working classes. The use of tobacco by children in Holland has recently grown to an alarming extent. A recent investigation has shown that smoking is practised by 30 per cent. of boys aged 6, by 50 per cent. of boys between 9 and 10, and by 88 per cent. of those over 11 years of age.

A CHAIR for the history of medicine has recently been founded at the University of Louvain, with Dr. Tricot-Royer, president of the International Society of the History of Medicine, as its first occupant.

DR. MAURICE FAURE, President of the Société Médicale du Littoral Méditerranéen, informs us that his society has organized a visit of doctors from different countries to the French Riviera for the purpose of acquainting them with the therapeutic resources of that region. The journey will take place between December 15th and 24th, and will include visits to Hyères, St. Raphael, Cannes, Grasse, Venice, Nice, Beaulieu, Mentone, Monte Carlo, and Monaco. The programme and full particulars can be obtained from the Office Français du Tourisme, 55, Haymarket, London, S.W.1.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

**ORIGINAL ARTICLES** and **LETTERS** forwarded for publication are understood to be offered to the **BRITISH MEDICAL JOURNAL** alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring **REPRINTS** of their articles published in the **BRITISH MEDICAL JOURNAL** must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to **ADVERTISEMENTS**, as well as orders for copies of the **JOURNAL**, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the **BRITISH MEDICAL JOURNAL** are **MUSEUM 9861, 9862, 9863, and 9864** (internal exchange, four lines).

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**FINANCIAL SECRETARY AND BUSINESS MANAGER** (Advertisements, etc.); *Articulate Westcent, London.*

**MEDICAL SECRETARY**, *Medisecra Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*); telephone: 4737 Dublin, and of the Scottish Office, 6, Drumshugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*); telephone: 4361 Central.

### QUERIES AND ANSWERS.

#### PRURITUS.

"W. A." asks for suggestions in the treatment of a patient aged 52, who suffers from continual pruritus all over the body, most pronounced on the palms of the hands and increased after meals. The condition started in September, 1925. The urine is normal; there is no evidence of venereal disease, past or present. The skin is hardened and thickened. Mineral and sea baths, arsenic, and light diet have alike failed to give relief.

#### INCOME TAX.

##### *Production of Detailed Accounts.*

"H. E. E." has been asked by the inspector of taxes to supply him with copies of accounts—showing gross receipts and expenses—as a condition (apparently) of granting the depreciation allowance for a motor car; the request has been complied with, but is there any reason why it should be made on a depreciation claim?

There is just this technical ground, that the depreciation allowance is not due if cost of renewals (not "obsolescence" claim) has been included in the accounts, but it may be that the inspector's request would, in any event, have been made before long. "H. E. E." is entitled for 1926-27 only to the depreciation allowance on the value of the car as at April 5th, 1926, calculated on the basis of writing down the value of the car at the depreciation rate. "H. E. E." should bear in mind that when he renews his car he can submit an obsolescence claim—that is, allowance of the renewal cost less the depreciation actually allowed on the car.

#### *Assessments.*

"W. H. K." has been separately assessed under Schedule E in respect of the emoluments of an appointment; the fees have been included in the Schedule D return as part of the general profits of his practice.

We think that the separate assessment was made without knowledge of the circumstances, and that it will be discharged by the inspector of taxes on receipt of an explanation from "W. H. K."

"F. R. W." who practises in the Irish Free State, explains that he has recently been called upon to pay £12 odd, an amount assessed upon his father, since deceased, for 1924-25, and that if his father had "appealed against this assessment within the statutory time limit of twenty-one days he had ample allowances to counterbalance this amount."

If "F. R. W." refers to the statutory "allowances" for individuals (£135 or £225), wife, insurance, etc., he can claim repayment within six years from April 5th, 1925, but if he refers to a claim for a reduction of the gross amount assessed any appeal is now outside the time limit and he has no legal claim to redress.

#### *Replacement of Car.*

"X. Y. Z." had a two-seater 10-h.p. car (cost £475), which he sold in 1924 for £90, purchasing a four-seater 14-h.p. car of similar make for £375. What can he claim?

He can claim as an expense of the year 1924 the then cost of a 10-h.p. two-seater car less £90. This may seem somewhat inadequate, but the difficulty is that part of the expenditure incurred in 1924 went in improvement, and as such has to be regarded as capital outlay.

### LETTERS, NOTES, ETC.

#### SPONTANEOUS DISAPPEARANCE OF THE ARCUS SENILIS.

Dr. J. W. Tomb, O.B.E. (Asansol, Beugal, India), writes: An Englishwoman, married, aged 60, was attacked with influenza in 1918, from the effects of which she did not fully recover. Her relatives and friends stated that prior to her illness she had been more alert and vigorous than the average person of her age. When I saw her a year later she was very ill and anorectic, as well as somnolent and apathetic; she also suffered from pronounced anorexia. Examination did not reveal any very definite physical symptoms, except moderate anaemia and a slight degree of pyorrhoea. A distinct arcus senilis was visible in the lower semicircle of each iris. Treatment of various kind for the anorexia and anaemia was without effect, the patient continuing in the state described above for over twelve months. At the end of that period all teeth were extracted on her dentist's advice and artificial teeth provided. Following this procedure and without any further treatment, the somnolence and apathy gradually disappeared, and the patient again becoming alert and vigorous, so that when examined by me three years later she appeared many years younger than on her previous visit; the arcus senilis, in the meanwhile, had completely disappeared from both eyes.

#### TUBERCULIN DISPENSARIES.

Dr. Annie McCall, Chairman and Director, Clapham Maternity Hospital and Affiliated Institutions (London, S.W.), writes: Will you very kindly allow me to ask, through the medium of your columns, if perchance there is now a tuberculin dispensary in Brighton, where a patient going out from Rodgwick Sanatorium may receive treatment with tuberculin on the intensive system, as taught by Dr. Camac Wilkinson in 1910 and following years? I can hardly imagine a place of the size and importance of Brighton not having a public tuberculin dispensary, and there surely must be some of the many doctors there who are proficient in the method, but I cannot find any one who is known to be an expert in this treatment.

I personally have followed out his method of treatment ever since the Clapham Tuberculin Dispensary was opened in April, 1911, and am more than ever convinced that, up to the present time, no other treatment can give anything like such good results, and I have been working at Rodgwick Sanatorium ever since 1893. If this treatment is begun early enough about 99 per cent. recover completely, and that without having to give up their daily work, which is so important. In London, now that Dr. Wilkinson has returned, this early treatment may be obtained at 32, Fitzroy Street, Fitzroy Square, Tottenham Court Road, W.C., on Mondays and Thursdays, 9 to 11 a.m., and doctors are invited to come and learn it. Other towns should surely be able to work out such a system, so that patients everywhere may get the benefit.

#### JOHN HILTON.

Dr. Richard Gillbard (Wilkesden Green, N.W.) writes: Sir Arthur Keith, the great anatomist, in an address to the **BRITISH MEDICAL JOURNAL** to those entering the profession (September 4th, p. 409), avers that "every student should get to know Hilton's *Rest and Pain*, not only for what he has to say, but also for the way he says it." Besides that classical book, we are aware, as well, of the exquisite, unrivalled anatomical dissections in the Guy's Museum, representing "the day's work." We know, too, that John Hilton was surgeon to Guy's, President of the Royal College of Surgeons, and received other "decorations"; but is there any material to reveal the personality, the man behind it all? Is there a portrait, was he in love, did he marry, and whom? Was he acquainted with sorrow? Joseph Towne, who realized his dissections, was an artist; was Hilton an artist, too? It is said that, as a lecturer, "he had an unfortunate way of irritating students." There may be light here, for Landor, the perfect author and creator of *Rose Aylmer*, quarrelled—most of all with himself. After leaving Guy's, Hilton practised in the City, apparently toiling to the age of 74. Perhaps he had not been prosperous, and one would not like to think of Hilton as a "successful" Mendelssohn. We may speculate, as his thoughts wandered to his Alma Mater, and think—

No exile's dream was ever half so sad.

And, I return to my question, who was John Hilton?

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 42, 43, and 47 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 44 and 45. A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 166.



# A British Medical Association Lecture OR THE DIAGNOSIS AND TREATMENT OF PLACENTA PRAEVA.

GIVEN TO THE WINCHESTER DIVISION ON JULY 7TH, 1926,

BY

J. BARRIS, F.R.C.P., F.R.C.S.,

PHYSICIAN ACCOUCHEUR, ST. BARTHOLOMEW'S HOSPITAL.

THE subject of the diagnosis and treatment of placenta praevia is not only one of the greatest practical importance, but one much debated and upon which opinion is still divided.

## DIAGNOSIS.

It is first necessary to ascertain whether the blood comes through the cervical canal or from discoloration of the lower genital tract—as, for instance, carcinoma of the cervix. This can be determined by examination with the finger and with the speculum. If the blood be found to come through the canal we have then to decide between a diagnosis of accidental haemorrhage or of placenta praevia.

The presence of placenta praevia may be conjectured if the haemorrhage has been repeated owing to the gradual stretching of the lower uterine segment and resultant separation of it from the placenta. The existence of a malposition of the foetus, or the finding of the foetal head too high or unengaged, more especially in a primigravida at or near term in whom the pelvis is not contracted, is also suggestive of the condition. It is possible that if the woman is very thin the placenta may be palpable as a boggy mass at the pelvic brim on abdominal examination, or that the head may be felt more clearly one side than on the other. An unusually loud uterine souffle over this area has sometimes been noted. Vaginal examination may reveal a spongy resistance in the fornices obscuring the presenting part. The absence of albuminuria is also suggestive; it is much more commonly present in accidental haemorrhage, although several cases have now been recorded in which this condition has been found in association also with placenta praevia.\*

If, therefore, there is bleeding but no malposition, if the head is engaged and albumin is present, a diagnosis of accidental haemorrhage is suggested. If, on the other hand, the bleeding has been repeated, the head is high, there is a malposition, and albumin is absent, placenta praevia is the more probable diagnosis. But none of these symptoms or physical signs is of itself sufficient to enable us to establish a diagnosis. The only certain way to diagnose placenta praevia is to feel the placenta through the cervical canal; if then the spongy placenta can be felt the diagnosis is certain. Blood clot or a vesicular mole may be mistaken for the placenta; the former is distinguished by its friability and the ease with which the finger can be pushed through it. A vesicular mole is more difficult to distinguish, but the bleeding usually occurs far earlier in pregnancy; the undue size of the uterus in relation to the period of amenorrhoea and the inability to feel a foetus on abdominal palpation or to obtain internal ballottement serve to distinguish between the two conditions. It is rare that the cervix will not admit the finger; but if the cervix is closed, or if when open the examining finger cannot reach the placenta, the diagnosis must still remain in doubt.

Now early diagnosis is an essential part of the treatment of placenta praevia. It has therefore been suggested that if, during the later weeks of pregnancy, the cervix be closed, an attempt should be made to establish the diagnosis by passing a metal dilator through the canal, for if on withdrawing it bleeding occurs the presence of the placenta can certainly be inferred. In almost all cases, however, the cervix will allow the finger to be passed if care and gentleness are employed.

## TREATMENT.

We may first review the principles upon which the treatment must be based.

Nature's method of arresting bleeding from the placental site is threefold. It consists of thrombosis of the uterine vessels, and contraction and retraction of the uterine muscle. Of these thrombosis does not play a determining part, and contraction is effective only when the muscle is gripping the blood vessels, but is ineffective during relaxation. Retraction is the important factor, for the shortening of the muscle fibre is permanent. Now retraction can only be efficient if the uterus is empty. It therefore follows that the only efficient way to stop the bleeding is to terminate the pregnancy.

If this principle be accepted the next point that arises is whether, once the diagnosis is made, the pregnancy should be terminated forthwith, or whether we are justified in temporizing in order to increase the viability of the foetus. In this connexion it is necessary to take into account that permanent arrest can only be assured by complete retraction, and that until the woman is delivered she is open to the risk of further haemorrhage as the cervix and lower segment dilate, and so cause further separation of the placenta from the low placental site; nor is it known to what extent a further haemorrhage may be. Therefore a temporary cessation of bleeding must not be allowed to lull us into a false sense of security, for at any moment a fresh bleeding, and even one which may prove fatal to the mother, may occur.<sup>2</sup> Further, the life of the foetus is always precarious, for not only is it usually premature, but it is liable to die of asphyxia during the process of delivery, and is sometimes weakened by loss of blood through injury to the placenta and the foetal blood vessels. It is not right, therefore, to risk the mother's life by delay in order to give the child a better chance, and in deciding upon the treatment the interests of the mother must be our first consideration. It follows upon this that once the diagnosis is made the pregnancy must be ended, and ended at once; hence an early diagnosis is of the utmost importance.

We have now to consider the method of terminating the pregnancy. Our choice of method must be guided by a consideration of the following points. The haemorrhage must be arrested temporarily during the process of delivery by means of pressure of some sort upon the exposed placental site; the delivery should be carried out at such a time as the patient is in a condition in which she will be best able to bear it, and conducted in such a manner that will entail a minimum of shock, of further haemorrhage, and of injury to the maternal soft tissues. It is our intervention, therefore, which must be prompt, but the actual delivery must be slow. The arrest of the haemorrhage and the delivery of the patient are two distinct and separate points. To do both at the same time is a confusion of aim and of ideas. There is everything to be gained by delay after the bleeding has been arrested, for not only is the patient given time to recover from her shock, but she is less exposed to the risk of further haemorrhage and infection if the foetus is not rapidly extracted, but is allowed to be expelled subsequently by uterine contractions. The foetus also is less exposed to overmoulding of the head and to the other complications which rapid delivery entails.

The temporary arrest of the haemorrhage and the subsequent delivery of the patient may be effected by means of (a) rupturing the membranes and the application of a binder; (b) vaginal plugging and binder; (c) traction on the head if a vertex presentation; (d) the insertion of a hydrostatic bag; (e) version and plugging by the hand-breech. The choice of which particular method is best suited for the individual case must depend, not only upon the size of the cervix and the position of the placenta, but also, and primarily, upon the condition of the mother, the amount of blood which she has lost already, and the probable amount of further haemorrhage which will be involved during the process of the delivery.

Except for the cases of placenta praevia which can be described as slight, in that the patient's condition is good, little blood has been or is likely to be lost, and in which the cervix is well dilated, uterine contractions are strong,

and the placenta is not easily reached—except for such "slight" cases the patient requires so much attention, so much time and care, that institutional treatment in either a hospital or nursing home is essential.

We come now to a review of the various methods of treatment and to their application, having regard to the general principles which we have just considered.

#### *Rupture of Membranes and Application of Abdominal Binder.*

The object of this method is to bring pressure upon the placental site by allowing some of the liquor amnii to escape so that the uterus may drive down the presenting part and compress it against the lower uterine segment. It is a simple method which can be carried out, not only easily, but with little risk of causing fresh bleeding during the necessary manipulation. It will clearly be suitable if strong pains are present, if the cervix is well dilated—that is, the patient is in active labour—if the placenta is not over the internal os, if the membranes can be reached easily, and the lie of the foetus is longitudinal. In such cases it is the ideal treatment. But its employment must be limited to such cases, as it is unsuitable if the cervix is not dilated and pains are absent, for an attempt to rupture the membranes might then result in causing further haemorrhage or stripping up of the membranes only; also, in the event of being successful in rupturing the membranes, it would be by no means certain that uterine contractions would follow. No pressure would then be exerted upon the placental site, and, if too much liquor amnii escaped, version, if thought desirable, might not be possible to effect.

In the presence of uterine contractions and an open cervix it is wiser not to delay the rupture of the membranes for too long if the margin of the placenta can be felt fairly easily, for further haemorrhage is likely to occur as the cervix continues to dilate, and so to bring about further stripping up and exposure of the placental site.

Schweitzer<sup>7</sup> states that out of 333 cases of placenta praevia 22 partial cases were treated by rupture of the membranes with no maternal mortality; and according to Bourne,<sup>1</sup> of 17 cases treated at Queen Charlotte's Hospital by rupture of the membranes, with or without an abdominal binder, there was also no mortality of the mother. The foetal death rate for both marginal and lateral cases treated by rupture of the membranes was only 26 per cent., including all children irrespective of their maturity. The method is, therefore, an ideal one, but it is necessarily limited in its application to a certain group of cases in which strong pains are present, the cervix is dilated, the lie is longitudinal, and the placenta is not easily reached. For these it is all that is required and is to be strongly recommended; it entails little interference and the results are good. If the vertex is presenting, a firm abdominal binder is applied; if the breech is presenting, a leg should be brought down after rupturing the membranes, and in either case the labour is then allowed to proceed naturally. But for other cases in which the placenta is easily felt and in which uterine pains may be absent, some other method must be employed.

#### *Vaginal Plugging.*

The temporary arrest of the haemorrhage is here effected by the combination of pressure of the vaginal plug from below and the abdominal binder from above. The method acts further by stimulating uterine contractions, and allows the cervix to dilate. It is advisable first to rupture the membranes, or uterine contractions are not certain to come on soon. It must be carried out under the strictest precautions against sepsis, and it requires an anaesthetic.

At first sight the method presents many advantages. It entails no intrauterine manipulations, and its application is not so likely to bring on further bleeding as is any method which entails an instrument or the fingers being passed through the cervical canal; the size of the os is immaterial, and there is not the same danger of lacerating it or the lower uterine segment; no special apparatus is required, no damage is done to the foetus, and the mother is given time to recuperate if she is collapsed from a

previous haemorrhage. But, on the other hand, the method possesses many disadvantages. Uterine contractions do not necessarily follow within a reasonable time; the plugging may have to be removed and renewed, the risk of sepsis is extreme; the tight plug may cause lacerations of the cervix and vagina, and bleeding may occur above the plugging. Moreover, it demands a set surgical procedure under anaesthesia in order to be carried out effectually. It cannot be carried out effectually by the practitioner unaided, and if not so carried out it is not only useless but it is a positive source of danger from the risk of sepsis and of bleeding above the plugging. I know of patients who have died as a result of both of these causes from ineffectual plugging.

The disadvantages of plugging, from the risk of sepsis and of internal haemorrhage, far outdo the advantages, and its use in placenta praevia is not only inadvisable but is strongly to be deprecated, unless it be as a very temporary expedient. Its use in accidental haemorrhage is another matter. Jellett,<sup>5</sup> quoting his experience at the Rotunda Hospital, Dublin, concurs in this view. He states definitely that it should not be employed in placenta praevia except in the rare instances where the cervix is not large enough to admit the finger; he regards it as a grave danger, and if it is necessary to use it, it must be removed within a few hours. Bourne<sup>1</sup> gives the following figures as the results obtained by plugging the vagina for placenta praevia at Queen Charlotte's Hospital between 1916 and 1922:

No. of Cases.	Variety.	Mother Recovered.	Mother Died.	Good.	Child Stillborn.	Child Died.
8	Central	6	2	0	7	1
14	—	14	0	1	7	5
17	Lateral	15	2	6	9	4
2	Unstated	—	—	—	—	—

This shows a total mortality (maternal) of 9.7 per cent. of 41 patients treated by plugging the vagina.

#### *The Hydrostatic Bag.*

The bag is inserted into the uterine cavity, the membranes having been ruptured. Gentle sustained traction upon it arrests the haemorrhage by pressure upon the exposed placental site. It further helps dilatation of the cervix, and at the same time stimulates uterine contractions. The results of its use are claimed to be more favourable to the foetus than by pressure with the half-breech.

Its disadvantages are that it is not always available in case of emergency, or if available it may leak, as it is liable to perish. It also tends to displace the presenting part, and so may bring about complications from a malpresentation. Not uncommonly it is expelled from the uterus without the presenting part coming down and without fully dilating the cervix, so that there is a loss of continuity of pressure upon the placental site and the recurrence of bleeding above the bag. It further has the drawback that considerable haemorrhage may accompany its insertion. Nor does the medical attendant feel secure after its insertion, since it may be expelled too soon and bleeding occur above it. This entails, after its insertion, the constant attention and presence of the practitioner. For these reasons, although it is a good method provided the patient is in an institution, it is not suitable for the emergencies of general practice. It must be borne in mind also that it requires an anaesthetic, and should therefore not be used unless the patient is in a condition to stand a further anaesthetic should other manipulations be required, either to arrest haemorrhage or to deliver the foetus, after the bag has been expelled, such as the forceps or version. In 6 cases of placenta praevia treated by the bag at St. Bartholomew's Hospital it was expelled before the cervix was fully dilated in every case, thereby necessitating the use of other additional methods subsequently.

#### *Plugging by the Half-Breech.*

In this method the bleeding is controlled by the pressure of the foetus itself against the placental site. Steady but gentle traction on the leg will not only control the bleeding

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but will also, as in the case of the bag, help to dilate the cervix and stimulate uterine contractions. If the breech is not already presenting it will be necessary first to perform version. The best way to do this is to do external version and then to bring down a leg, as it entails less manipulation, and so less risk of accompanying haemorrhage from causing further separation of the placenta. Plugging by the half-breech requires that the cervix should be dilated enough to admit two fingers, but it is extremely rare that this criterion is not present by the time we are asked to see the patient. An essential part of the treatment is that, having performed an external version and brought down a leg, the labour should then be left to Nature in order to prevent laceration of the cervix and complications with the foetus.

The method possesses certain great advantages, for no special apparatus is required and an anaesthetic is often unnecessary. Moreover, continuous pressure upon the placental site is definitely secured. If the mother's condition is not good it is advisable, in that it not only stops the bleeding but it allows the mother to recover and to deliver herself naturally later on. It is undoubtedly the best available method in the majority of cases, and is especially applicable to the conditions of general practice. Jellett<sup>2</sup> advises version and bringing down a leg as the best method. He states that it requires two conditions:

(a) the membranes must be unruptured to allow two fingers. He finds the first is practically always present, and the second in "more than 99 per cent. of cases." In the rare instances where it is not he recommends that the vagina may be plugged for a few—but only for a few—hours, as he regards the pack as too dangerous. The os will then be sufficiently open to allow a leg to be brought down. He found in a collected series of 264 cases of placenta praevia so treated that the maternal mortality was 5.3 per cent., including moribund patients, and 3 per cent. only if these were excluded.

In Schweitzer's<sup>3</sup> series about 40 per cent. were treated by a hydrostatic bag where the condition of the mother was good and the foetus was sufficiently mature. He noted that a fairly copious loss of blood attended its use, but it gave a better chance to the child. He considers that if the mother has already lost considerably version is much safer for her, though attended with a high foetal mortality. His results were 3.8 per cent. maternal mortality if the bag was used, and 6.6 per cent. if version was employed, but he specially states that this was selected for more serious cases.

Conrad<sup>4</sup> had a maternal mortality of 11.6 per cent. using the bag, and 7.6 per cent. from version. He found the foetal mortality was 50 per cent. by version and 16.3 per cent. with the bag.

There were no maternal deaths in the St. Bartholomew's Hospital series treated by the bag, but the foetus was stillborn in every case.

To sum up, in comparing plugging by the half-breech with the bag, the former has the great advantages that no instrument is required and the pressure on the placental site is continuous and assured, so that further haemorrhage cannot occur. These advantages are not present if the bag is used.

**Traction on the Foetal Head.**  
Willett<sup>5</sup> recently brought forward the ingenious suggestion of exerting pressure upon the placental site by means of traction on the foetal head. He has used for this purpose an instrument which is a modification of the haemostatic scalp forceps employed in cranial surgery. It is passed through the cervix and applied to the scalp where it presents over the internal os, traction being maintained, as in the case of the bag or the half-breech, by means of a weight attached to the handle. He has used it in vertex cases where the os is dilated enough and the placenta does not lie completely over the os. It arrests bleeding while it allows labour to proceed naturally. Dilatation of the cervix is assisted and uterine contractions are stimulated. He finds that it inflicts little damage upon the scalp beyond the formation of a cephalhaematoma. I have no personal experience of its use, but the method

appears to be simple and applicable to those cases in which the cervix is not sufficiently dilated to allow the bringing down of a leg.

## Caesarean Section.

We have now to consider the arrest of haemorrhage and delivery of the patient by emptying the uterus through the abdominal route, so that all vaginal manipulations are avoided. The operation puts an end to the haemorrhage, and at the same time overcomes the risk of further bleeding during the subsequent delivery, which is at once accomplished. In the more difficult cases it gives the best chance to the child and it avoids for the mother any risk of lacerations of the cervix. These arguments, in addition to the ease with which it can be carried out, have led some observers to suggest that slight and suitable cases of placenta praevia should be treated by rupture of the membranes, and others by Caesarean section.

Watson and Miller<sup>6</sup> of Edinburgh, in a statistical analysis of 254 cases of placenta praevia, most of which occurred in the Royal Maternity Hospital, and including several who had come in from a distance in a moribund condition, had a maternal mortality of 25—that is, 9.8 per cent. Of these 25 maternal deaths, 13 were due to ante- and post-partum haemorrhage, 6 to sepsis, and one each to myocarditis, eclampsia, duodenal ulcer, post-partum collapse and mania, embolism, and ante-partum haemorrhage, the last two dying undelivered. The foetal mortality was 64 per cent.

The placenta was central in 81 instances; of these there was a maternal mortality of 22 per cent. and a foetal of 82 per cent. The placenta was partial in the remaining cases, the maternal mortality being 4 per cent. and the foetal 59 per cent. They state that a consideration of the results of the different forms of treatment adopted appears to show that the best results, both for mother and child, are by the two extremes of intervention—that is (a) conservative, such as rupture of the membranes and plugging, and (b) radical, by Caesarean section. They found it was in patients treated by intermediate methods, such as plugging, together with version or the bag or other methods, that the high mortality occurred. Thus of 61 slight cases treated by conservative methods with the minimum of intervention only one mother died, and that from eclampsia, and the foetal mortality was 41 per cent. Of 14 cases treated by Caesarean section only one mother and one foetus died, giving a mortality rate of 7.1 per cent. in both. On the other hand, of 179 patients treated by the vaginal pack, together with version or the bag or other methods, the maternal mortality was 13 per cent. and the foetal 81 per cent.

This raises the advisability of relegating some of these patients in the intermediate group to the more conservative methods and others to the more radical, leaving a residuo of some, upon whom conservative measures have failed, to the intermediate methods. They strongly emphasized the value of Caesarean section in the more severe type of cases. In the case of an elderly primigravida with a central placenta praevia it offered the only hope of a living child and entailed less risk to the mother. They consider, therefore, that the scope for Caesarean section might be increased and its wider adoption would tend to diminish the present high mortality rate for both the mother and foetus.

Conrad<sup>4</sup> performs the operation if the child is likely to survive, and gives a maternal mortality of 9.8 per cent. and foetal of 50 per cent. Schweitzer<sup>3</sup> thinks that Caesarean section will be the treatment of the future wherever conditions are good. Gansslo<sup>7</sup> regards it as the ideal treatment provided the child is living and viable and there is no obvious sepsis. He gives a maternal and foetal mortality rate of 6.4 per cent. by Caesarean section, and 8.7 per cent. maternal and 54.3 per cent. foetal when vaginal methods of delivery were employed.

Jellett, in a spirited reply to Watson, points out that the maternal mortality in a series of 264 cases was only 3 per cent. when treated by the vaginal methods of either rupturing the membranes or of pulling down the leg, which figure is far below the results from Caesarean section. He lays special emphasis upon the following points in comparing

the two methods: that the vaginal methods do not include the pack, together with version and the bag, as practised in Watson's statistics, but rupture of the membranes only in slight cases and version in the more severe. He regards the addition of the pack as a grave danger, and considers that no attempt should be made to dilate the cervix by the fingers; that the delivery should not be hastened unless the os is well opened and strong pains are present; and that the patient, once the haemorrhage has been arrested, must be allowed to recover before she is delivered.

We must also bear in mind that Caesarean section for placenta praevia has the special dangers of added shock; of further haemorrhage during the operation, and of sepsis.

In comparing the results from these two methods it is not only the actual method that we must consider but the manner of the subsequent delivery if the vaginal route is employed. Version and pulling down a leg is not of itself attended with much maternal risk, but it will be if the delivery is hurried and is not allowed to occur at a suitable time and to proceed at a slow rate. Caesarean section is obviously unsuitable in patients already suffering from shock and from severe haemorrhage. Here the indication clearly is to arrest the haemorrhage temporarily and to give the patient time to recover. But to deny all place to Caesarean section would be wrong. It is to be advised in the case of an elderly primigravida in good condition who is strongly desirous of a living child, in whom the foetus is alive at or near term, and the placenta covers the os, which is small and rigid. In such a case there is bound to be a considerable amount of inevitable haemorrhage; any vaginal manipulations necessary are certain to cause further haemorrhage, and the outlook for the foetus by the vaginal route is almost hopeless. By doing Caesarean section in such a case as this we can not only secure a living child, but considerably diminish the maternal risk.

#### SUMMARY.

The views which I have put forward and discussed may be summarized as follows:

1. Early diagnosis is essential.
2. Once the diagnosis is made the pregnancy must be terminated.
3. "Slight cases" are best treated by rupture of the membranes and a tight abdominal binder.
4. Plugging is inadvisable, except as a very temporary measure.
5. Certain selected cases may be treated by Caesarean section.
6. Most cases are best treated by external version and plugging by the half-breech. The labour in this case must be conducted slowly.
7. Institutional treatment is necessary in all but the "slight cases."

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## TWO CASES OF MIKULICZ'S DISEASE TREATED WITH RADIUM.

BY

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In 1892 Dr. Johann Mikulicz of Breslau published a paper on a peculiar symmetrical disease of the lacrimal and salivary glands. Four years previously he had shown a case at a medical meeting in Königsberg. In this patient both lacrimal glands and all the salivary glands were converted into tumours in a perfectly symmetrical fashion, thrusting them out of their normal position, and deforming the face. The tumours had arisen gradually, and at the time of examination were dense, painless, and without a

trace of inflammation. The patient exhibited no other sign of disease. The following is an abstract of Dr. Mikulicz's notes of the case.

#### MIKULICZ'S CASE.

January 13th, 1888. The patient was a powerfully built, well nourished man of otherwise healthy appearance. Nothing abnormal was found in the internal organs. No alumin. No enlarged glands found elsewhere. The blood showed no special changes. Pulse and temperature normal. The face was extraordinarily altered in appearance by symmetrical swellings in the neighbourhood of the upper eyelids, and of the parotid and submaxillary glands. The orbital fissures were narrowed to small triangular fissures, the base of which was formed by the inner two-thirds of the edge of the lower lid. A certain amount of convergent strabismus had resulted from this condition.

On palpation a small knobby, dense tumour of transversely oval shape was found under the outer half of each upper eyelid. The conjunctiva itself was slightly reddened and a little thickened. The sight was unaffected. In the parotid area on both sides there was a flatish, not very prominent, and uniform tumour, extending forwards to the middle of the cheek, backwards to the mastoid process, and so lifting the lobule of the ear considerably. In each submaxillary region was a tumour about as long as a hen's egg, of dense consistence, and slightly movable. The two tumours almost met in the middle line under the chin. On opening the patient's mouth the sublingual glands presented as two elongated swellings about the shape and size of an almond set on its edge, and occupying the floor of the mouth on both sides of the frenum linguae. The glands of the soft palate exhibited an enormous increase in size, forming a sharply defined tumour as big as a chestnut on both sides, and being separated by a groove 0.5 cm. wide in the middle line. During the examination of the patient there was a free secretion of saliva, though there was no appearance of a flow.

As the swelling of the eyelids was the only thing which caused the patient much discomfort, a partial removal of the enlarged lacrimal glands was undertaken on February 1st, 1888. On either side a mass of tumour, about 2.5 cm. long by 1.5 cm. broad, was removed. Healing was normal, and the patient left the hospital in a few days, well pleased with the result. The improvement was, however, very transient; the swelling of the upper eyelid speedily recurred, and the patient returned to hospital at the end of March, the swelling of the lacrimal glands being then nearly as large as before the operation. Pilocarpine was injected in the hope that an increased secretion might reduce the size of the glands. No benefit resulted, and on April 19th the right and on May 1st the left lacrimal gland was extirpated. The patient made an excellent recovery, and was discharged ten days later.

He wrote on July 12th, 1888, that he was well pleased with his condition, and that he had no trouble with his eyes. The parotid glands appear to have gone on increasing in size, but they did not bother him. He died of perityphilitis early in August, 1888, after nine days' illness. During his illness the parotids rapidly diminished in size, and at the time of his death were almost normal.

Microscopical examination of the lacrimal glands removed by operation showed that the proper gland parenchyma played a purely passive part, and that the increase in size was due entirely to a voluminous infiltration of the interstitial connective tissue by small round cells (lymphocytes).

Two cases of what appears to be the same disease have been seen recently at the Radium Institute, London.

#### TWO NEW CASES.

##### Case 1.

A married woman, aged 62, was first seen on January 21st, 1924. She was referred to the Radium Institute for treatment by Mr. H. P. Gibb, F.R.C.S. She had consulted him for diplopia which had existed for about eight weeks, and was obviously due to downward displacement of the left eyeball by an enlarged lacrimal gland. No very definite history could be elicited from the patient, but she thought that the swelling beneath the left upper eyelid had begun to be noticeable about nine months previously. She volunteered the statement that she had been in hospital in 1922 for a tumour of the spleen; but no further or more detailed information could be obtained.

The left lacrimal gland, which was the size of an unshelled almond, had displaced the contents of the orbit downwards and inwards, and the orbital fissure was much narrowed; diplopia was very marked. In the right parotid was a swelling the size of a golf ball; it was smooth and elastic, not fixed, and did not implicate the covering skin. In the upper part of the right parotid region was a small scar, indicating the site at which a portion of the growth had been removed for a pathological examination. The pathologist reported "lymphocytic infiltration of the tissues." The left submaxillary gland was swollen to the size of a thrush's egg. The right lacrimal, right submaxillary, and left parotid glands were unaffected. No enlargement of the spleen was appreciable. The blood count was normal. The Wassermann reaction was strongly positive.

The patient received a series of five sittings each of five hours duration on five successive evenings, with applicators containing 120 mg. of radium element, screened with 2 mm. of lead, applied over and around the enlarged glands, so as thoroughly to irradiate them. The last exposure was given on January 25th, 1924.

She was examined again on March 24th, 1924. The swellings in the left lacrimal, left submaxillary, and right parotid glands had completely disappeared. The left orbital fissure was as widely open as the right, and there was no longer any diplopia.





The general principles underlying the following method of preparation are the employment of a culture medium containing blood serum unsterilized by heat, so as to provide a medium as nearly as possible similar to that which obtains in the human body, and the inclusion of part of the filtrate in successive subcultures. It is necessary to emphasize the importance of several factors which are regarded as essential to the preparation of the tuberculin. These are (a) the preparation of a suitable culture medium containing sterile but unheated blood serum of human origin for bacilli of human type and of bovine origin for bacilli of bovine type; (b) the employment of a strain of human and bovine bacilli obtained from an acute or systemic type of the disease; (c) the evolving from this by culturing and subculturing of a strain of tubercle bacilli which will grow actively on the media of human and bovine material before proceeding with the preparation of the tuberculin; and (d) the avoidance in the preparation of the tuberculin of any measures which are likely to interfere seriously with the character of the final filtrate.

The general technique of the method recommended in the preparation of tuberculin of human origin is as follows:

(a) The growth of the special strain of tubercle bacilli on a medium containing unheated blood serum. The morphological, cultural, staining, and pathogenic characters of the bacilli and the toxic and infective properties of the filtrate to be investigated.

(b) A subculture from (a) on a medium comprised of unheated blood serum and an equal portion of the filtrate from (a). A similar line of investigation to be carried out.

(c) A subculture from (b) on a medium comprised of unheated blood serum and an equal portion of the filtrate from (b). A similar line of investigation to be carried out.

(d) A subculture from (c) on a medium comprised of unheated blood serum and an equal portion of the filtrate from (c).

The extent of subculturing will depend upon the growth obtained and the results of the investigations as to the character of the bacilli and the filtrates in the various subcultures. In the method described above the inoculum is taken from each previous culture, but an alternate series of experiments would be necessary in which a fresh inoculum from the original strain on each of the successive series of media is employed. The possibility of stimulating the growth of the bacillus in the various subcultures by oxygen or other means should be considered. The tuberculin, when completed, will consist of two portions: (a) the final filtrate, and (b) the final filtrate combined with an emulsion of bacilli from the final culture. The final filtrate should not be sterilized by heat but by repeated passing through a Chamberland filter, and experimental work would be necessary to prove that it does not possess pathogenic properties. Should experiments prove that in spite of repeated filtration it possesses pathogenic or infective characters, sterilization by some other means, such as by exposure to ultra-violet rays, must be considered. The tubercle bacilli forming the emulsion would require sterilization by heat before the final filtrate is added to constitute (b). The keeping properties of both (a) and (b) should be tested by prolonged incubation.

The aim of the above investigation is twofold. In the first place to obtain and to test a tuberculin composed of reinforced filtrate alone and of the same filtrate in combination with the bacillary contents prepared under conditions as nearly as possible approximating those under which the bacillus grows and develops in the human body. Secondly, to throw some further light on the life-history of the tubercle bacillus and on the character of the toxins elaborated by the organism in the process of growth under natural conditions.

If we attempt to visualize the life-history of the tubercle bacillus in the human body we are forced to accept the following conclusions: (a) That in the process of development and multiplication the bacillus at the outset elaborates exotoxin, and that it grows and matures on a medium of gradually devitalized human tissue and blood lymph which contains exotoxin. (b) That at some period during the life-cycle of the bacillus endotoxins are set free either by a process of extrusion in consequence of interference with the integrity of the fatty envelope or by a destructive process arising from the action of bacteriolysins or autolytic enzymes. The clinical features in the early and more

advanced stages of the disease can only be explained by some such conception with wide variations in the conditions required for the development and completion of the process.

In January, 1924, I submitted an outline of the method described above for the preparation of a tuberculin to Professor Tulloch of St. Andrews University, who kindly arranged for Dr. Cumming, who was working in his bacteriological department, to make a preliminary investigation as to the possibility of preparing a tuberculin by the method suggested. Professor Tulloch thought that before proceeding to investigate the growth on human media—the constituents of which are difficult to obtain—a technique should be elaborated on bovine material. The main results of the preliminary investigation by Dr. Cumming are briefly as follows.

"1. It has been found that even strains of tubercle bacilli which have become accustomed to glycerinated media, both bovine and human, grow reasonably on 1-4 non-heated sterile rabbit plasma with no addition of fresh tissue and no glycerin.

2. A very careful aseptic technique was elaborated for the growth of bovine tubercle bacilli on a cone-shaped island of flesh or heart one inch high and three-quarters of an inch in diameter at the base, in a layer of prepared ox heart extract from one to one and a half centimetres in depth in specially made bottles.

3. In the above and subsequent experiments different dilutions of serums and different diluents (saline, Locke's solution, etc.) were used along with an inoculum of human and bovine strains from human lesions and bovine strains from bovine lesions with practically always perfect results as far as aseptis was concerned, but always with disappointing results as regards growth of the tubercle bacilli.

4. The reasons for these disappointing results appeared to be due to the fact that when these bottles of serum and tissue were incubated autolysis of the tissue took place, with the result that the growth of the tubercle bacilli was thereby inhibited.

5. In one series of experiments growth (of a kind) was obtained in four successive generations, using in each case equal parts of fresh medium and filtrate from the previous batch. In these it was shown that the tubercle bacilli in the fourth generation had not been altered as regards morphology, staining reaction, cultural reactions, or pathogenicity, and that the final filtrate had only very slight antigenic properties, as evidenced by Koehl phenomenon.

6. It was further found that the strain of tubercle bacilli employed did not grow so well on fresh human serum sterilized by candlelight as was expected. Dr. Cumming was not able to satisfy himself that this was due entirely to the fact that the strains had been cultivated practically exclusively on glycerinated medium."

In the above summary of the results obtained in the preliminary investigation the one difficulty which at the outset has militated against success has been inability to obtain a vigorous growth of tubercle bacilli on sterile but unheated media of human and bovine material. In one series of experiments with a bovine strain and bovine material a somewhat feeble growth was obtained in four successive generations, using in each case equal parts of fresh medium and filtrate from the previous culture. The fact that such growth was obtained indicates the desirability of further investigation as to the possibility of obtaining a more vigorous growth on successive filtrate media.

The difficulty experienced in obtaining an active growth of tubercle bacilli on fresh human serum is significant and tends to support the thesis submitted in this paper. It emphasizes the necessity of further investigation in the direction of elaborating suitable unheated culture media of both human and bovine material with a view to the evolution of a special strain of tubercle bacilli which will grow vigorously on such media. The question of material of human origin for the preparation of suitable media may present some difficulty, but in the healthy human placenta there is to be found an inexhaustible source of supply.

A further important difficulty met with in the experiments was the inhibition of the growth of the tubercle bacilli in the bovine medium by the occurrence of autolysis of the tissue constituting part of the medium. This was no doubt due to the action of autolytic enzymes in the sterile but unsterilized cone of ox heart in the presence of unheated heart extract or blood serum. Sterilization of this tissue before use as an island for inoculation would prevent autolytic action taking place and would not seriously interfere with the experiment.

Owing to the absence of facilities it has not been found possible to continue this investigation beyond the point

described above. I submit the following proposals for further investigation:

1. The preparation of suitable media of human and bovine material containing unheated blood serum.
2. The evolving of a vigorous strain of tubercle bacilli which will grow on human and bovine media which are not sterilized by heat.
3. The elimination of autolysis in such media and investigation into the possible action of autolytic enzymes on the tubercle bacillus.
4. The preparation of a tuberculin by the method described above.
5. Preliminary investigations to be carried out with bovine tubercle bacilli on media of bovine material.

In conclusion I have to express my thanks to Professorulloch for his valuable advice and assistance, and to Dr. Humming for the time and labour he has given to the preliminary investigation.

## A CASE OF TRANSVERSE ECTOPIA OF THE TESTIS.

BY

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THE interest of the following case is increased by the note in Arthur Keith has been good enough to append.

A man, aged 28, married three years, no children, was admitted to the East Suffolk and Ipswich Hospital in December, 1925, with painful swelling in the left groin. Eighteen years earlier an operation for left inguinal hernia had been performed in the same hospital, but details are unobtainable. He had been aware of the lump ever since the operation and had noticed it becoming gradually larger, more superficial, and moving downwards. Nine months ago he had an attack of acute pain after lifting a heavy weight, and the lump became tender and swollen, and had remained more or less tender since. Two further attacks of pain occurred, one three months, and the other three weeks ago. On each occasion micturition was frequent for about two days; between the attacks there were no urinary symptoms. Sexual power developed when he was about 14, and has been normal since.

He was a spare, vigorous, active-looking man of good intelligence; the secondary sexual characters were well developed. Linear scar of old standing was present over the left inguinal canal, and lying at the external ring just below the pubic spine is a firm ovoid swelling about the size of a walnut, slightly movable and tender on pressure. The scrotum was small and contained only one testis (left), from which an easily palpable cord could be traced upwards. The right side of the scrotum was empty, and no opening could be felt at the usual site of the external ring (the entire absence of any weakness here was affirmed by intra-abdominal palpation during the operation).

### Operation.

An oblique incision was made over the inguinal canal and the swelling identified as a testis (although at first sight the appearance suggested an ovary). It had a well marked tunica vaginalis, on the upper border of the testis a fold of fascia and peritoneum, forming a definite mesorchium and having a cord-like structure with fibrillated end along its free edge, entered the right inguinal cavity through the ring and crossed obliquely over the adductor as a lax membrane to the opposite pelvic brim, where it was attached about the point of bifurcation of the iliac artery. The left testis was drawn out of the scrotum and examined. It was rather undersized, devoid of a tunica vaginalis, and on raising the tunica albuginea a normal testicular appearance was seen; the vas deferens of this testis was adherent to, and partially embedded in, a firm structure about a fingerbreadth thick, which ran through the inguinal canal, and down the left side of the abdominal part of its cord. When opened it was found to have a cavity admitting a fair-sized probe, the wall about a quarter of an inch thick, rose, and apparently lined with endothelium. The distal part was excised, about one to one and a half inches long, to avoid injury to the associated left vas deferens. The ectopic testis was removed with the accompanying fold, the latter having been freed from the above mentioned structure as far as possible, and the oblique muscles and skin sutured. The wound healed by first intention and the patient was perfectly comfortable on discharge two weeks later. A cystoscopic examination was refused.

Serial sections of the ectopic testis, kindly made by Sir Arthur Keith, showed only testicular tubules—no mixture of sex. "No spermatozoa are to be found and none in process of formation. The interstitial tissue is normal in amount (A. K.)."

The excessive rarity of the condition is shown by the fact that apparently only four cases of transverse ectopia are recorded.

1. Lenhossék in 1845 first described the condition in a man of 35 with two testes in the left half of the scrotum, the right lying a little higher than the left, in front and medianward. The vasa deferentia were closely united but distinct, the tubes separating only near the prostate.

2. Max Jordan in 1885 reported a case in a child of 8. There were two testes in one patent vaginal process with one vas which divided higher up. The testes were in the left half of the scrotum and the united vasa had coalesced for the greater part of their length.

3. Berg in 1901, operating on a congenital left inguinal hernia in a boy of 13, found two testes—one normal in a well developed scrotum, and the other, almond size, at the left ring. Both cords were intimately connected with the hernial sac; the ectopic cord had a distinct mesentery and passed up across the space of Retzius to the right inguinal region, whence it descended to the pelvis. The right ring was palpated and found closed.

4. Halstead (1907) records a case with two small testes and a large left inguinal hernia; the epididymes were fused, but the vasa deferentia were distinct up to the region of the internal ring where they were united.

### NOTE BY SIR A. KEITH.

The abnormal structure found passing upwards from the testis, and descending to the base of the bladder, can only be the result of fusion and persistence of the Müllerian ducts, forming a uterus masculinus of unusual size and persistence. If this were drawn down into the hernial sac, as is quite possible, it would bring with it the attached undescended right testis. The vasa deferentia should be embedded in the "structure," exactly as found at operation. This, I think, is the true interpretation, not a double or dichotomous condition of the left testis.

It is to be supposed, therefore, that in this patient there had been a persistence of the stage reached and usually passed through in the third month of development.

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## NEPHRO-URETERAL ANASTOMOSIS AFTER COMPLETE AVULSION OF THE URETER.

BY

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A MAN, aged 42, was referred to me on January 19th, 1926, complaining of constant pain in the right loin. It had existed with varying intensity for many years, but he had had nothing in the nature of an attack of renal colic. Investigation showed that there was a round calculus in the right renal pelvis, and that the urine was infected with *B. coli* and was delivering pus. The kidney function, however, by dyo tests showed that there was only slight loss of function on the right side as compared with the left. In the latter, indigo carmine, after intravenous injection, appeared in strong concentration in five minutes, while the dyo did not appear till six and a half minutes from the right side, but the concentration was good. The calculus appeared to be about 1 cm. in diameter, so pyelo-lithotomy was advised.

### Operation.

On February 12th the kidney was exposed with some difficulty owing to its high position; a portion of the twelfth rib had to be resected. The organ seemed healthy except for one or two points of subcapsular scarring. The pelvis was mostly intrarenal and the calculus was lying just outside the hilum, while immediately below it a ureter of normal calibre passed downwards. The calculus was removed by a vertical incision. The walls of the pelvis seemed to be very thin and there was a ring of ulceration where the stone had been lying. An attempt to stitch the walls of the incision with the finest round needle and catgut resulted in every stitch pulling through. My assistant had to exercise a certain amount of tension on the kidney to keep the field in view, and suddenly the ureter came completely away from the pelvis at the line of the circular ulcer. The line of separation was very close to the kidney, and the little pelvic tissue available for anastomosis was so friable that an end-to-end junction was impossible; after some attempts at this there remained no extrarenal pelvis, but merely a few bits of ragged tissue around the orifice of the renal sinus. Nephrectomy was considered, but owing to the comparatively good renal function present seemed undesirable. The ureter was not dilated and had good muscular walls. A No. 6F catheter

was passed butt-end first down the ureter into the bladder and the other end into the upper major calyx. The upper end of the ureter was split for half an inch on its outer surface and by means of stitches carried from it through the intrarenal pelvis and out through the kidney substance, so that the margins of the tube were approximated roughly to the frayed walls of the pelvis. A capsular flap was turned down to cover the junction. To ensure adequate drainage the pelvis was opened from the cortex and a drainage tube tied in. The free end of the catheter in the bladder was recovered and pulled through the urethra by means of flexible forceps through an operating cystoscope. The catheter was allowed to remain in place for seven days and the urine drained through the nephrotomy wound. At the end of that time there was spasm of the ureter on the right side and the ureteral catheter was removed.

Urine began to pass down the affected ureter, as evidenced by blood in the urine and a marked diminution in the leakage from the loin. On the tenth day a catheter was passed up the right ureter and met with no obstruction. Oxycyanide was injected through the catheter and out through the loin. In six weeks the wound in the loin was healed and all the urine was passing through the normal channel. Cystoscopy showed that the effluxes were normal, and a large ureteric catheter passed into the pelvis of the kidney without obstruction. The pelvis could be distended to 10 c.cm. and then caused discomfort. Indigo carmine given intravenously appeared from the left side in strong stream in three minutes and from the right in only moderate concentration in seven minutes. The calculus was of oxalate type, almost exactly spherical, and 9 mm. in diameter.

At the date of writing (June 3rd) the patient states that he has no trouble and is carrying on his work, but that he had one attack of renal colic after returning home.

In cases where the kidney is high the proper exposure of the ureter and pelvis for operations on the pelvis may require a good deal of tension to pull the kidney forward and expose the posterior aspect of the pelvis. This can be obviated to some extent by carrying the lower part of the incision almost horizontally inwards instead of obliquely downwards and inwards. Such a catastrophe as occurred in the case reported, however, is unlikely to occur except where the pelvis is extensively ulcerated and its walls thinned. The question arises as to whether the incision should be made down to the calculus through the extrapelvic fat without dissecting this away, so as to display the wall of the pelvis. It has been claimed that this technique gives quicker healing and is less likely to leave a urinary fistula. My own experience has been, however, that the quickest results are obtained by exposing the pelvic wall, and after careful suturing bringing a fat or capsular flap across, though it is probable that where any difficulty is experienced in sewing owing to the friable nature of the tissues the wound closes without any suturing at all if attention is paid to dilating the ureteral canal at the time of the operation and afterwards. To be forced, owing to an operative mishap, to remove a sound though slightly infected kidney in a case of stone is a disaster of the first magnitude, owing to the possibility of subsequent formation of calculus on the other side. An improvement in technique in this case would have been to pass the upper end of the splint catheter through the nephrotomy wound so as to give perfect control of both ends and prevent the possibility of the instrument coming out too soon.

## ECZEMA AND DENTAL DISEASE.

BY

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THEORIES of the etiology of eczema may be stated briefly as: (1) neurotic, (2) local irritation, (3) thyroid deficiency, (4) toxic. The last is perhaps the most popular. The toxins occur in connexion with (a) constitutional diseases—for example, gout, diabetes; (b) chronic Bright's disease; (c) certain diseases of the liver; (d) alimentary tract. While mentioning the alimentary tract most writers limit the suggestion to the gastro-intestinal portion of it, for imperfect metabolism and malassimilation are thought to be the cause. The importance of the oral part seems to be little recognized. Macleod admits that digestive derangements may aggravate the disease, but says there is no evidence that they cause it *de novo*. French writers, he says, consider eczema an entaneous manifestation of a diathesis not yet defined, and Brocq calls it "eczematiza-

tion," the symptom, rather than eczema, the disease. Given a diathesis or predisposition, the toxins arising from certain dental diseases can cause the manifestation of eczema or aggravate it if it already exists. The dental poisons may be absorbed in two ways: (1) by swallowing the pyorrhoal or other septic discharges from diseased dental tissues; (2) by direct passage into the general circulation of toxins from septic foci concealed in the bone related to the teeth. The immediate recovery from an illness previously protracted, which I report here, proves this conclusively.

A man, aged 44 at the time, had recurrent attacks of eczema, beginning at about the age of 37. The last attack was of eighteen months' duration. It was intractable and increasing in severity. After persistent treatment by his family doctor and the consultant there was, according to the patient, only a slight improvement. His doctor now began to suspect oral sepsis. When I first saw the patient the eruption extended literally from head to foot in all its forms: redness, vesication, exudation, and crusts variously distributed. Examination of the mouth revealed general periodontal disease. There were pyorrhoia and secondary changes in the alveoli with chronically inflamed gums over them. I made a clearance of all the teeth (twenty) under regional anaesthesia (superior maxillary and mandibular) with novocain E. The after-effects of the injections were remarkably mild—only a slight soreness at their seats. The eruption began to disappear almost immediately. Within a week there was marked improvement, and in a fortnight the patient was able to discard the dressings of his head, hands, and feet, and walk down to my surgery for his temporary denture. After another fortnight he was quite cured and strong enough to attend to his ordinary duties, the only trace left being a roughness of the skin.

This case was treated in June, 1923, and I deferred reporting the results to give time for observation. Since then he has had a few short and mild attacks, which are directly attributable to his own indiscretions. These later attacks support the suggestion of a diathesis, but the immediate recovery following the extraction of the teeth shows that dental disease can be a serious contributor factor to be reckoned with.

## British Medical Association.

### PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

#### SECTION OF PATHOLOGY AND BACTERIOLOGY.

Professor J. SHOLTO C. DOUGLAS, M.D., President.

#### DISCUSSION ON LEUKAEMIA AND ALLIED CONDITIONS.

##### OPENING PAPERS.

I.—G. LOVELL GULLAND, C.M.G., M.D., F.R.C.P. Ed.  
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At first sight it might seem impossible to say anything new about leukaemia, but the views of the profession evidently want clarifying as to the nature of the disease. The current textbooks of medicine and pathology are by no means dogmatic and some of them even evade any definite statement as to cause and nature. The original picturesque idea that it is a suppurative of the blood has, of course long ago disappeared, as well as that of a mixed leucocytosis. More recently came attempts to find parasites in the leucocytes, which also came to nothing, and for a long time back the view that the disease is neoplastic has steadily gained ground, though some workers adhere to the notion that it is caused by organisms. The neutrophil leukaemias certainly often enough resemble clinically an acute infection, and if fowl leucacmia is really the same disease the fact that it can be transmitted from one bird to another by the filtered cell-free juice of leukaemic organs is a strong point. But I do not think that we should be led away by a single fact, which after all may be capable of some other explanation, to neglect the great body of evidence which certainly points away from cause

LEUKAEMIA AND ALLIED CONDITIONS.

tion by a filter-passer and towards the neoplastic theory. A single filter-passer would not meet the case: there must be several, each capable of causing the proliferation of different varieties of leucocytes, and of such difference in virulence as to cause the death of the patient at periods varying from a week or two to ten years or more. For it must be remembered that leukaemia is always fatal in the long run, which cannot be said of any organismal disease with the same certainty. We have elaborated this argument fully elsewhere,<sup>1</sup> but I realize that the last word has not yet been said.

leucocytes, and that tumours would be formed by them more often than is actually the case were it not for the mobility of the cells and their non-cohesiveness—the fact that they permeate all fluids and tissues without forming a being a tissue in the proper sense. In leukaemia accidental tumours are formed in the skin, in the glands, in bone, and so on, as everyone knows; but the true tumour in this disease is the proliferation in the marrow, and the metastatic overflow thence into the blood, organs, and tissues. The leucocyte is the gipsy tramp to hold it—marrow for its own purposes, and so on—and encourages it to proliferate in lymph glands, and so on—and encourages it to proliferate there, but it is always eager to be off on its own business. It is true that to call leukaemia a neoplasm is merely a name known by the unknown, and none, either of tumour growth, or of the older ones of irritative disease.

It is true that to call leukaemia to explain the causes of tumour growth, and nothing of the modern theories or of the older ones of irritation seems to be specially applicable to this disease. It seems always to start *de novo*. But it is equally true that while we know a good deal about the behaviour of leucocytes in disease, especially about their response to organismal and other poisons, we know very little about their behaviour in health. In particular we do not know what influences maintain their numbers and proportions in the blood at so constant a level—so constant that a variation in number of a couple of thousand per cubic millimetre or an alteration of 10 in percentage at once sets us looking out for some pathological condition.

We are tempted to think that there is little to support this. The absolute or Graves's lymphocytosis which occurs in some cases of constant alteration of the thyroid gland is almost the only more or less constant disturbance that is known to us. It is open to anyone to maintain that the pineal, carotid, or coecygen gland regulates leucocyte number. It certainly has some influence, probably both through the blood and variations in the kind of food, and poisons present in the blood on the thyroid gland. The poisons must have some effect on the thyroid gland, washed from bacteria from the blood.

Food certainly has some influence, probably both through the amount taken and variations in the kind of food, and one may assume that poisons present in the blood on their way to excretion or destruction must have some effect. These poisons may be metabolic or absorbed from bacteria present in the hollow viscera. But if these are the only factors—they are the only obvious ones—it is curious that they should be so well balanced. There is probably some regulating factor, and it is possibly disturbance of this regulating factor, and it is possibly disturbance of this regulating factor, and it is possibly disturbance of

Leukaemias may be classified according as one looks at them from the clinical standpoint or the pathological. Clinically from the cells found in excess in the blood, the acute forms may be myeloblastic, lymphocytic, the really different—and myelocytic or promyelocytic; the chronic forms myelocytic and lymphocytic or lymphatic. The chloranias, as far as the blood is concerned, fall into either of these classes.

We have adopted the classification of non-granular types as follows:

Non-granular:

- Myeloblastic (acute).
- Lymphatic (acute or chronic).

Non-granular :  
Myeloblastic (acute).  
Lymphatic (acute or chronic).  
This classification, however, like any other, is merely a matter of convenience, and expresses a personal view. It is hard to get rid of such old terms as spleno-medullary, and auto lymphatic as applied to the myeloblastic form. Much more important than classification is it to try to understand what lies behind the different forms—why some are acute and others chronic in their course. Why

some show a million leucocytes per cubic millimetre and others a few thousands. To follow this we must briefly consider the phylogeny of the leucocytes and their relations to one another. The most primitive form is the myeloblast or lymphoidocyte, which is probably the precursor of all the others, and which remains throughout life in certain numbers in the bone marrow, though it probably does not take any active part in the production of the different series except in pathological conditions. The four series develop in much the same way. The mother cell of each is a leucocyte with large rounded nucleus and relatively small amount of cytoplasm. In the lymphocyte series this is known as the large lymphocyte. Its mitosis produces the small lymphocyte, which again becomes a large lymphocyte, and which may further develop into the large mononuclear or hyaline cells, and the transitionals, which last are the "ripe" form. In the three "granular" series there is this difference from the lymphocyte series—that a promyelocyte form with scanty granules is inserted between the myeloblast and the myelocyte, which latter is the functional equivalent of the large lymphocyte from the reproductive point of view in normal conditions. It is in these cells that mitosis is most frequently seen in the marrow. The rounded nucleus of the myelocytes is inserted between to develop further becomes kidney-shaped and horseshoe-shaped, from the action of the radii passing from them, and spheres, or rather of the radii passing from them, and ultimately the "ripe" polymorphonuclear form is produced in each series. It is this form alone which is really adapted to rapid amoeboid movement, though it occurs in all the forms to a greater or less extent. It is to a certain extent a misnomer to speak of the lymphocytes as non-granular, as all the forms contain azurophilic granules. The term "non-granular" is a legacy from the triacid stain and the eosin-methylene-blue mixtures of early days, but it has remained, as it is practically convenient.

The leukaemic process may affect this development at almost any point and in any series. But there is this striking peculiarity—that in the chronic granular forms all the series are affected, though not usually to the same extent. That is to say, all the cells normally present in the marrow—myeloblasts and lymphocytes—appear in ripe and unripe cells of the granular series—as well as excess in the blood, and of course that means that there is a great proliferation of all the forms in the marrow. Most commonly the neutrophil series preponderates, but the proportions differ greatly in different cases, and even in the same case from time to time, even from day to day. It is difficult to explain why this should be so. If the variations occurred only in early cases one might conclude that they represented the involvement of fresh areas in the marrow by the various types of cell; but they occur also in fully developed cases, which have been going on for years, and in which probably the whole marrow has long been affected. It is difficult also to understand why myeloblasts and lymphocytes should increase. Is it a result of the same stimulus, or is it a reactive phenomenon, like the formation of the stroma and the fresh blood vessels in true tumours?

The acute granular forms are so rare that it is difficult to say anything about them, but they are probably in most rather than because of their occurrence. They must be careful, however, not to miss the occurrence of a few.

to generalize about them, but they are probably in most cases promyelocytic rather than myelocytic. They also drag in too much importance to the occurrence of a few myeloblasts in the circulating blood. They appear in any condition in which there is profound marrow disturbance—in pneumonia and other conditions causing leucocytosis, in pernicious anemia, and even in severe secondary anemias. It is difficult to say whether they appear in these conditions in response to chemotactic influence, or as the result of mechanical disturbance.

The chronic non-granular form, or chronic lymphatic leukaemia, is unfortunately rare, for it is in some ways the most interesting variety and deserves very full study. It may be extremely chronic. I have seen at least three cases in which the enlargement of glands had lasted for ten years or more, though the blood had not been examined. Others show little enlargement of glands, but have large spleens, and in them also the blood, when they come under

observation, shows such a high leucocyte count that the disease must certainly have been present for a long time. During this latent period there seems to be less disturbance of general health even than in the chronic granular cases, and until the final breakdown occurs there is less anaemia and less tendency to the recurrent haemorrhages which may be so marked a feature of the chronic granular form. I am satisfied that many of the cases which are described as acute lymphatic leukaemias with high white counts are really the terminal stages of the chronic form. The striking feature of the blood in the chronic cases is the high proportion of lymphocytes, usually small, and sometimes reaching the high figure of 95 per cent. or even higher. Another feature is the fact that a large number of the cells are obviously dead or degenerated, and consist only of smeared nuclei in films—the thinner the films the more smeared nuclei. This degeneration of cells is far more common in all the non-granular forms, acute and chronic, than in the granular varieties, in which it is not nearly so obvious.

I am becoming somewhat sceptical of the existence of a really acute lymphocytic form. Most of the descriptions date back to a time before the myeloblast was recognized as a separate entity, and are based on staining which did not bring out the difference between lymphocyte and myeloblast, and I personally have not seen any case of late years which I could confidently call acute lymphatic, as distinguished from myeloblastic, leukaemia. As I have already said, many of the cases so described are really the terminal stage of the chronic lymphatic form. Probably most, if not all, as I am inclined to think, of the acute non-granular cases are really myeloblastic. But it is to be remembered that in many of the myeloblastic cases there is a lymphocyte overgrowth also. This is always most evident early in the case; the total white count may not be greatly raised, but there is a high proportion of non-granular cells—85 or 90 per cent.—of which 25 to 50 per cent. may be myeloblasts, the rest lymphocytes. As the case advances the proportion of myeloblasts steadily increases, until at last, if the case lasts long enough, practically all the cells are myeloblasts. Of course, a large haemorrhage or other accident may prevent the completion of the picture. This seems capable of two explanations—either that at first the myeloblasts continue to be capable of developing into lymphocytes, and later cease to be capable of doing so, or that the primary lymphocyte increase is reactive in the same way as that in the chronic granular type. I am not prepared to say that this happens in every case of myeloblastaemia. Certainly in many of them the myeloblast picture is fully developed from the first, but of course the first blood examination is not always made at the beginning of the disease.

I need say nothing about the "mixed" forms, for it will be evident from the foregoing that almost every case is "mixed" at some stage. Even in the chronic non-granular cases, which are more true to type than any of the others, some myelocytes and myeloblasts will appear towards the end of the case, for reasons which will be evident when I come to speak of the red cells.

It is a truism that leukaemic patients do not die because of the leucocyte excess, except in so far as the heaping up of cells in important organs, such as the liver and kidney, interferes with their function, or thrombi of leucocytes predispose to haemorrhage. They die most often of the accompanying anaemia and its results, of haemorrhage, or of intercurrent conditions. How is the anaemia produced? Why is it that the chronic forms will go on for years with only a slight secondary anaemia or none at all, while the acute forms may drop a million every few days and terminate with a count of perhaps a million, a high colour index, and megaloblasts in the circulating blood?

I feel sure that the answer to these questions lies in the rate at which the marrow is filled up by the proliferating leucocytes, so that it ceases to be an erythroblastic tissue to a great extent and becomes wholly or almost wholly a leucoblastic tissue. There is no other organ in the body, except perhaps the spleen, which has the same potentialities of expansion as the marrow, and we all know how this power of expansion is utilized in the diseases which produce leucocytosis and in the primary and secondary anaemias. In the

majority of leukaemias the primary change is in the marrow. We do not know, and possibly we shall never know, whether the change begins locally or generally; nor does it greatly matter, for the mobile altered leucocytes, when they pass into the blood stream, must be carried to all parts of the marrow as they are to all other organs, and start proliferation in fresh places. There must of course also, in addition to this, be the steady overgrowth and filling up of the fatty marrow in the long bones from the active foci at their ends. If this filling up of the whole available marrow space proceeds slowly, there is time for the erythroblasts which are crowded out of their normal habitat to spread themselves also into the newly activated parts of the marrow and to keep up the supply of red corpuscles to the blood. They probably do this at some disadvantage, for even in the earliest chronic leukaemias the colour index is usually lowered though the red count may be normal or nearly normal, but the process is a slow one, and patients adapt themselves to a lowered haemoglobin percentage in an astonishing way, not only in this, but in all chronic anaemias. In the chronic granular type normoblasts escape or are extruded in large numbers into the blood; and there is evidence that they proliferate there, and even also in the liver and spleen to which they are carried, thus recalling the blood formation of foetal life to a certain extent.

In the non-granular chronic cases normoblasts do not escape into the blood in the same way. In a myelocythaemia it is often difficult to find a single field without one or more normoblasts; in a chronic lymphocythaemia it is often difficult to find any. The reason for this is probably complex. We must remember that lymphocytes are not true marrow cells in the same sense that myelocytes are. They occur everywhere in connective tissue throughout the body—massed in lymph glands and adenoid tissue, scattered in ordinary fibrous tissues, and are found in the marrow quite as much because it is a connective tissue as because it is a blood-forming organ. I am inclined to think also that very many at least of the lymphocytes in the marrow lie in connective tissue spaces rather than in blood spaces, so that their relation to the erythroblasts is not as close as that of the granular cells. There is no reason to suppose that the leukaemic process may not start in any part of the lymphatic apparatus. If it begins in lymph glands or in the adenoid tissue of the hollow viscera which drains into lymph glands, it may remain localized for a long period, and there may be no influx of lymphocytes into the blood. Sooner or later the process will spread to the marrow, but even when it reaches it the reproduction of lymphocytes is slower than that of myelocytes, and possibly it occurs more in the connective tissue spaces. The result will be that there is more time for erythroblastic proliferation, so that the erythrocyte equilibrium is more easily maintained. With both the chronic types a point is reached at last when red corpuscle formation is seriously interfered with, a rapidly advancing anaemia occurs, and leads to death by haemorrhage or in other ways, just as in the acute forms. In the chronic forms one can sometimes restore the balance again by destroying the leucocytes by radiation or in other ways, and so give the erythroblasts a fresh chance, and the patient a fresh start. In the acute forms we have not yet succeeded in doing this.

In discussing the anaemia of the acute forms we need only consider the myeloblastic variety—the myelocytic or promyelocytic form acts in exactly the same way. Myeloblasts occur only in the bone marrow; when they are attacked by the leukaemic process they evidently proliferate with tremendous rapidity, and rapidly fill up the marrow spaces, leaving no room for not only the erythroblasts but even the myelocytes. I have sometimes found the marrow in these cases, in places at any rate, pure white to the naked eye, and have found practically nothing but myeloblasts in films from these bits of tissue. As a result normoblasts are found in the blood early, though never to the same extent as in some of the chronic granular cases, because regeneration is so profoundly interfered with in the marrow. Often, indeed, this interference is carried so far that the normoblastic function passes more or less into abeyance and the megaloblasts are called upon, so that



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# LEUKAEMIA AND ALLIED CONDITIONS

the colour index, which is always below unity at first, ultimately becomes high, megaloblasts appear in the blood, and as far as the red side is concerned, the picture of pernicious anaemia is produced with more or less fidelity. The same thing may occur in the terminal stages of the chronic forms, though not so constantly, and it is apparently more common in chronic leukaemias in children, in whom the regression to the megaloblastic type of blood formation is always easy. In all the forms haemorrhage, when it occurs, increases the anaemia much more than it would in a normal person, and is always badly borne outmost and there is no reserve.

The ordinary variations in the white count in leukaemia are easy to understand. The 500,000 of the chronic granular, 100,000 to 200,000 of the chronic non-granular, are due to the complete filling of the marrow, with constant reproduction, and very probably to reinforcement from the cells lodged in the liver and spleen, and perhaps those in the blood itself. The acute cases never show such high counts—the more acute the newly formed cells in the first instance remain in the marrow and gradually fill up all the space, and it is only when that process is completed that the excess appears in the blood, though the proportions are altered from the first.

But in the chronic cases of both types, especially the granular, the count may drop to normal, or near it, either as the result of such an intercurrent affection as influenza or without any apparent cause. One can understand this in the case of influenza or chronic tuberculosis, which are both diseases of negative chemotaxis, but the causeless remissions are so far unexplained. They may be related to the occasional remissions that one sees in the growth of true tumours.

There are other problems, such as the fever which always occurs in the acute cases, and often in the chronic, with which time will not let me deal, but which will I hope, be discussed by others.

The subject of our debate is to be "leukaemia and allied conditions." As I see it, there are no conditions which are allied to leukaemia in the strict sense; myeloma is the nearest relation, and from the clinician's point of view it does not give rise to difficulty in diagnosis, as the blood is not leukaemic. Chloroma is a true leukaemia, and presents no difficulty in diagnosis, provided that the blood is examined, and that there are tumours visible or palpable, especially if the green colour can be distinguished through the skin. It is perhaps worth noting that I have seen two cases of hypernephroma with orbital metastases producing proptosis which suggested chloroma, and not leukaemia. A year ago I published a paper in the *Journal of this Association* on "Difficulties in the diagnosis of leukaemia," and I do not propose to go into that subject fully now.

The only general diseases which are likely to give rise to real difficulty in diagnosis are whooping-cough and glandular fever. The former may show a high leucocyte count with a high percentage of lymphocytes, and I have seen reports of cases in which what was obviously whooping-cough with a catarrhal pneumonia was described as acute lymphatic leukaemia. I am not aware that any proper study of the bone marrow in fatal cases of whooping-cough has been made. Glandular fever, when it occurs sporadically, may give rise to real difficulty: when it occurs as a school epidemic it is not likely to give trouble. There is apparently one form in which the leucocyte increase is polymorphonuclear neutrophil; I have seen only one case of this. In the majority there is a true lymphocytosis, sometimes with high count and high lymphocyte percentage, and the enlargement of glands and of spleen, with the fever, make it possible to imagine a leukaemia. But in acute leukaemias the glands do not enlarge so rapidly, there is more rapid and severe anaemia; and, further, I have never seen a myeloblast in the blood of any of these cases. They sometimes give rise to anxiety later for the blood change may take weeks or months to disappear, but it will always return to normal in the

long run. The patients may be very ill, but I have never seen or heard of a death, so that the marrow has probably never been investigated.

The splenic anaemia of infants is a condition which is now so well recognized that it is not likely to be confused with the true leukaemias, though I have seen cases in which the diagnosis was for some time in doubt. Indeed, the blood in children, because of its high lymphocyte percentage and its tendency to revert to megaloblastic formation in any severe anaemia, is constantly giving rise to difficulty.

But I find that my own greatest difficulty with aberrant leukaemias is their aleukaemic stage, of the type which has been described as leukaemia. It happens that I have two cases of the kind under observation at the moment, and I may describe them briefly.

The first was a man who had been getting pale and out of health for a couple of years, but had never gone to a doctor. The spleen came 1½ in. below the umbilicus and 1 in. to the right of the middle line, the liver 1½ in. below the rib margin. The blood count was: red cells 1,780,000 per c.mm., haemoglobin 43 per cent., colour index 1.2, white cells 1,200 per c.mm.; a fair number of megaloblasts, and no abnormal cells among the leucocytes. This was, of course, a typical picture of pernicious anaemia, with an unusually large spleen, and probably liver also. A second count a month later was: red cells 2,610,000, haemoglobin 50 per cent., colour index just below 1, white cells 2,800, very few megaloblasts, no abnormal leucocytes. The spleen was a little smaller, especially in the transverse direction. Two months later the liver extended to the umbilicus, the spleen 2½ in. below it; red cells 1,950,000, haemoglobin 35 per cent., colour index just below 1, more megaloblasts; white cells 4,000—of these at least half were abnormal cells, the majority myelocytes, the remainder myeloblasts.

The second case came to me with a history from a very competent observer. He also had been pale and out of health for some years, but had only recently come under observation. The spleen came to the umbilicus, the liver was 1½ in. down. Some time before I saw him the count was: red cells 4,000,000 per c.mm., haemoglobin 70 per cent., white cells 15,500, of which about 25 per cent. were myelocytes and myeloblasts, fairly numerous nucleated red cells. My own count was: red cells 3,170,000, haemoglobin 68 per cent., colour index just over 1, white cells 4,900, fairly numerous megaloblasts, no definite myelocytes, but some myeloblasts. I made the note that I had never seen a pernicious anaemia, which the blood indicated pretty definitely, with so large a spleen, with a blood at that stage, or with so many myeloblasts. Later, at the same figure as my own, my count two months after the first one was: red cells 3,043,000, haemoglobin 48 per cent., colour index 0.8, white cells 5,000; only 1 nucleated red, a normoblast, was seen; about 20 per cent. of the leucocytes were abnormal, were both distinctly larger than before, although the patient's general condition had improved.

Now are these cases, and such as these, aberrant pernicious anaemias or aberrant leukaemias? I am inclined to think that both, especially the latter, are leukaemias. Time will very likely clear up the difficulty. It is always easy for the pathologist to say, "Respicie finem," but the unfortunate clinician has to make up his mind as to diagnosis and treatment on the evidence he can get at the time. We look for your sympathy, and in all our difficulties we do our best to avoid giving you an opportunity for making a final diagnosis.

REFERENCE.  
Gulland and Goodall: *The Blood*, third edition, p. 218.

II.—S. W. PATERSON, M.D., D.Sc., M.R.C.P., Physician, Ruthin Castle, North Wales.

The present communication consists of an analysis of a series of cases of diseases of the blood-forming organs. Most of the material was obtained in the pathological department of the Melbourne Hospital; some privately observed cases have been added.

## CLASSIFICATION.

Until more is known of the etiology of diseases of the blood-forming organs, no satisfactory classification from the point of view of causation can be offered. A pathological classification may be made according to the type of normal or abnormal cells predominating in the lesion.

Such a one, modified from that of Grüner, has been found useful in teaching and is given below.

*Disorders of Reticulo-endothelial System.*

1. Hyperplasia of normal cell elements:
  - (a) Lymphocytes. Lymphatic leukaemia, lympho-sarcoma.
  - (b) Early leucocytes. Spleno-medullary leukaemia.
  - (c) Reticulum. Hodgkin's disease; Gaucher's disease.
  - (d) Fibrous tissue. Passive congestion, syphilis, malaria.
2. Alteration of metabolism of normal cells. Chloroma.
3. New cells produced. Myeloma.
4. Excessive formation of stroma with dystrophy of specific tissue cells:
  - (a) Return of foetal blood cells, megaloblasts. Severe anaemia.
  - (b) Fragility of red blood corpuscles. Familial haemolytic spleno-megaly.
  - (c) Increased destruction of red corpuscles. Splenic anaemia.
  - (d) Relative leucocytopaenia. In glandular fever, intravenous injection of foreign protein.

**CLINICAL GROUPING.**

A more useful classification in practice is according to the predominant clinical sign, and I propose to analyse my cases in this way. The method, however, involves a certain amount of repetition. Taking tumour of glands, tumour of spleen, and mediastinal tumour as the most striking features on clinical examination, the cases fall into the following groups.

**1.—Primary Enlargement of Lymph Glands.**

By primary enlargement of lymph glands is meant tumour of lymph glands where known causes, such as syphilis, tubercle, or glandular enlargement secondary to neoplasm or pyogenic infection, are excluded.

(a) *Acute Primary Glandular Enlargement with Leukaemia (Acute Leukaemia).*—There were 12 cases in this group—1 female and 11 males. All ages were affected, and there were five patients over 55 years of age; the younger cases, however, showed a more rapid evolution. The symptoms were severe, with fever, loss of weight, and haemorrhages from mucous membranes and into the skin; enlargement of the lymph glands throughout the body and enlargement of the spleen occurred in most cases. The white corpuscles were always increased, often to a great extent, counts of many thousands to three-quarters of a million per cubic millimetre being met with. There was progressive secondary anaemia. The course was rapidly downhill, and invariably a fatal termination took place in a few weeks. The white cells found may be either lymphocytes or of myeloid origin (myeloblasts). From the clinical standpoint the differentiation is not of much importance, as these cases are fatal whatever the treatment.

(b) *Acute Primary Glandular Enlargement without Leukaemia (Glandular Fever).*—This occurs mostly in young people, the symptoms being malaise, fever, and a general enlargement of lymph glands in the neck, axillae, and groins. There is often sore throat, with a pseudo-diphtheritic membrane, and Vincent's bacilli and spirilla are found. The white blood cells are usually increased, and there is a relative lymphocytosis. The cells are normal in character; the symptoms are not severe, death being rare; there are no haemorrhages, and the prostration and anaemia of acute leukaemia do not occur. But the diagnosis from an early acute leukaemia may be difficult and give rise to great anxiety at the beginning.

(c) *General Glandular Enlargement without Leukaemia (Hodgkin's Disease).*—This group of 31 cases in my series showed a characteristic histological picture in the affected glands, which is typical of Hodgkin's disease. Males were affected more than twice as frequently as females. The age at onset varied from 11 to 69 years; in 10 the disease began before the age of 30, and in 4 after the age of 50; 17 first showed symptoms between the ages of 30 and 50, and of these 9 (50 per cent.) were between 30 and 40. The course of the disease was progressive in half the cases (16), relapsing in 7, and acute in 1, while 7 were diagnosed in the early stages on histological evidence. In 13 cases known

to have died the duration of the disease was four months to four years, with an average of two years. The symptoms were malaise and weakness, loss of weight, often night sweats; no haemorrhages occurred; cough was frequently noted, and hydrothorax supervened in 4 cases. The glands first affected were the cervical group of one or other side in 19 (60 per cent.). Later, the glands of the other side of the neck enlarged, then the axillary and inguinal groups. The mediastinal glands were affected in 9 (29 per cent.), and the mesenteric glands enlarged in 3 (10 per cent.). The liver was noted as increased in size in 3 cases. The spleen was greatly enlarged in 4, and palpable in 6 others. The blood usually showed a secondary type of anaemia; the red cell count may be as low as 1,500,000 per c.mm., with a corresponding reduction of the percentage of haemoglobin. The white cell count varied from 2,000 to 28,000 per c.mm., with an average of 10,000. Eosinophilia was noted in several cases. Abnormal types of cells are not present in the blood. The glands are usually painlessly enlarged, discrete, and not attached to the skin or fascia, and they may attain a large size. Microscopic examination of an excised gland gives a typical picture of hyperplasia of the reticulo-endothelial cells, agglomerations of multinucleated giant cells, and as well in the early stages, an increased number of eosinophilic cells. In the later stages degeneration of the cells takes place, and there may be increase of fibrous tissue and scarring. There has been much discussion as to the relation of Hodgkin's disease to tubercle in a more or less modified form, but generally it is allowed that the frequent association here, in Europe, and in America, is due to secondary accidental infection. Certainly it is rare in Australia, where tubercle is less common, to find the two conditions together. The course of Hodgkin's disease seems to be more or less rapidly fatal. Healing has been reported as the result of various procedures, but the experience of these hospital cases is depressing. Retrogression seems to be obtained by arsenic internally or treatment with x rays and radium, but relapse occurs, and the patient tends to go downhill more or less quickly.

**2. Chronic Enlargement of the Spleen.**

Chronic tumour of the spleen may be associated with malaria or hepatic portal cirrhosis, or may be caused by hydatid cyst in Australia. Enlarged spleen frequently accompanies Hodgkin's disease (one-third of the cases in the series quoted); the enlarged lymph glands associated with splenic tumour would assist the diagnosis, and microscopic section of one of the glands would clinch it. In the cases we are studying at present tumour of the spleen may be grouped according to the presence or absence of leukaemia.

(a) *Chronic Enlargement of the Spleen with Leukaemia (Spleno-medullary Leukaemia).*—There were 16 cases in this group—12 males and 4 females. The age at onset varied from 22 to 70, four patients being 60 years of age or older, while four were in the third decade of life. The duration of the illness varied from nine months to as many years; the rapidity of course and fatal ending seemed to be less a result of increase in white corpuscles than of diminution of red corpuscles, with consequent anaemia. The onset of the disease is usually gradual, and the patient's attention is first attracted to it by feeling a lump or pain in the side of the abdomen, due to enlargement of the spleen or perisplenitis, or by the symptoms of increasing anaemia, malaise, weakness, pallor, and loss of weight. Haemorrhages occur in the later stages of most cases. The blood picture is that of a secondary anaemia with great increase of the myeloid white cells; early forms not usually seen in the peripheral circulation predominate, pre-myelocytes, myeloblasts, and myelocytes. One of the difficulties in treatment of this condition seems to be that remedies directed to reducing the number of leucocytes (usually by inhibiting production at their source in the bone marrow, by benzol, x rays, or arsenic) at the same time lessen or destroy the red corpuscles which the bone marrow is producing. Antimony, arsenic, benzol, and applications of x rays to bone marrow and spleen all seem of at least temporary benefit, in some cases arresting the progress of the disease and allowing a return to normal health for months or years. Death occurs from progressive anaemia in the chronic cases; in others, there may be terminal irritability

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# LEUKAEMIA AND ALLIED CONDITIONS.

of the bone marrow with a crisis of production and dissemination in the blood of immature myeloid leucocytes—myeloblasts or mother cells.

(b) *Chronic Enlargement of the Spleen without Leukaemia.*—This includes a number of diseases of blood-forming organs, which are referred to above—splenic anaemia, Banti's disease, Gaucher's disease, acholuric jaundice of hereditary or sporadic occurrence, pernicious anaemia. Their discussion does not come within the scope of the present paper.

## 3. Mediastinal Tumour.

Excluding instances of aneurysm, hydatid, carcinoma of the bronchus, and secondary growths in the lungs from tumours elsewhere, there were 20 cases of mediastinal tumour, which fall into the following groups.

(a) *Hodgkin's Disease.*—In 9 cases of Hodgkin's disease involvement of the mediastinal glands caused symptoms of pressure in the chest. Even in the mild cases the cough may be enlarged to such an extent that an irritable cough occurs from pressure on trachea and bronchi. Hydrothorax on one or both sides is a frequent accompaniment, and calls for paracentesis. X-ray treatment may reduce the swelling of the glands, and the symptoms may abate temporarily.

(b) *Lymphosarcoma.*—Six fatal cases showed the logical picture of so-called lymphosarcoma. The course was rapid and fatal. The whole anterior mediastinum becomes more or less filled with a large firm fleshy mass, which surrounds the large vessels, and invades the pericardium and pleura, and may compress and invade the lung. The lymphoid cells may pass beyond the capsule, overflowing into the fibrous tissue, and may be found in sections passing between the muscle fibres of the myocardium. The blood often contains an increased number of white corpuscles, usually of the polymorphonuclear type. In some instances, besides the local collection of lymphoid deposit in the flooding of the retro-peritoneal space, there is a flooding of the local collection with embryonic white corpuscles. This is the condition described as leucosarcoma—that is, lymphadenoma associated with leukaemia. There is no real line of cleavage between these two conditions.

(c) *Fibrosarcoma.*—In four other cases of mediastinal tumour the type cell was fibroblastic, and the cases showed variations from a round-celled, through a spindle-celled, to a fibrosarcoma. The origin of the tumour was in three cases from the pericardium of the sternum, in one it appeared to arise in the fibrous tissue of the mediastinum. Its origin is not from blood-forming tissue, but from the fibrous tissue of supporting structures.

Reviewing this series of cases, we see that in the chronic cases improvement, often for a considerable time, may follow treatment with arsenic, benzol, tartar emetic, and x rays. In the acute cases, and in the long run in the chronic cases, death is due to the disease itself; and as the cause of leukaemia and allied conditions is unknown, specific treatment is not possible.

## GENERAL DISCUSSION.

Professor SHELTON DOUGLAS (Sheffield) inquired whether Professor GULLAND had found that cases of leukaemia could occur in almost epidemic form. Early experience as a medical student gave the impression that leukaemia was a rare condition in which the myelogenous type prevailed. This impression received some support from Osler, who, writing in 1901, had seen but 24 cases in his hospital practice, of which only 9 were of the lymphatic type. During the last eighteen months in Sheffield 13 cases (12 male and 1 female) of the lymphatic type had been under observation, and 9 cases (5 male and 4 female) of myelogenous type—large numbers for so short a period. In this series the ages of the patients ranged from 2 to 63 years, with half the cases under 20 years, in the lymphatic type and from 18 to 62 years in the myelogenous type. Professor Douglas also asked to what extent the oxidase reaction could be relied on in differentiating the granular and non-granular cell types, as in his own experience this reaction did not effect all that had been hoped of it.

Dr. R. DONALDSON (London) called attention to the fact that while the textbooks on medicine varied somewhat as regards their treatment of the subject of leukaemia they all made the mistake of giving too rigid a classification. It was only in actual practice that it was realized how utterly inadequate the usual classification was, and how difficult, almost impossible, it was sometimes to name with any degree of precision the type of leukaemia met with in many cases. He disagreed with the view that leukaemia was a sarcomatous tissue, it behaved differently from all other sarcomas. Either there was a primary sarcomatous focus with multiple secondary metastases or there was a universal and simultaneous sarcomatosis of the blood-forming tissue. On the other hand, primary sarcoma of the spleen was rare, while primary tumours of the haemopoietic tissue, unassociated with a leukaemic condition of the blood, were still more rare. An example of this was multiple myelomatosis of bones—a condition which seemed to differ essentially from leukaemia might run added that cases of chronic myelogenous leukaemia might last ten or more years—a thing practically unheard of in true sarcoma. On the other hand, leukaemia might run a fatal course in a very few weeks. Dr. Donaldson considered that there was more to be said for a possible virus or irritant, using the latter term in its broad sense. There might be transmitted by means of cell-free filtrates. On the clinical side, also, there were signs suggestive of an infective condition. For instance, there was the irregular fever, and the occurrence of night-sweats so frequently found in leukaemias—a point not referred to by the previous speakers, except in connexion with Hodgkin's disease. If any further progress was to be made in elucidating the cause or causes of leukaemia investigation must be directed, not so much to a study of the various types of cells met with in the bone marrow and in the blood in cases of leukaemia, but to the discovery of the mechanism which regulated the production of the leucocytes in general. He drew attention again to the well-known variations in the numbers of leucocytes in normal blood—for example, as a result of exercise, food, and metabolism—and to the increase that occurred in a leucocytosis. How exactly was this leucocytosis brought about? Might it not be that in leukaemia the primary change was one affecting the regulating mechanism, and that the varied and varying blood picture was merely the visible expression of this interference? The identification of this regulating mechanism might be the key to the solution of the problem. The mere typing of the blood cells seemed to him at the present juncture quite an unprofitable line of study and one which had hitherto led to nothing but confusion.

Dr. Donaldson agreed with Professor GULLAND that chloroma should be considered as leukaemia, but a special variety of that disease. It differed from the usual types in giving rise to tumours in various connective tissue structures, and it differed also in respect of the excessive amount of oxydase present in the cells. Dr. Donaldson pointed out that this latter could very easily be demonstrated by placing small pieces of tissue taken from the tumour organs post mortem, not merely from the tumour masses, into a solution containing 100 c.cm. of 85 per cent. alcohol, 0.5 gram of benzidine, and 0.2 c.cm. of hydrogen peroxide. Chloromatous tissue immersed in this fluid became instantaneously a deep blue colour—a reaction given by myelogenous leukaemias more slowly and not so intensely, but entirely absent in the case of normal tissue or tissue removed from a case of chronic lymphatic leukaemia. Dr. Donaldson had found this a valuable test, especially in cases diagnosed during life on the blood picture as lymphatic leukaemias, but really myeloblastic, for the tissues in the latter, in spite of the similarity of the blood cells to lymphocytes, gave a positive reaction. He considered that the oxydase reaction would ultimately come to be a very valuable means of distinguishing the lymphatic type of leukaemia from the myeloblastic. At present, perhaps, the reaction was not too reliable as there

were many points to be cleared up in relation to it—as, for instance, the type of reagent to be employed. With regard to Professor Douglas's remarks about the possible epidemicity of leukaemia and his suggestion that leukaemia was on the increase, Dr. Donaldson stated that from an analysis of cases of leukaemia admitted to St. George's Hospital during the last ten years there was no indication of any increase in the incidence of the disease. The classification of these cases was faulty owing to the confusion of myeloblastic with lymphatic types, but under the heading of "acute lymphatic leukaemia" there had been 9 cases—8 males and 1 female—the ages ranging from 5 to 54. Under the heading of "chronic lymphatic leukaemia" there were 7 patients, with ages ranging from 9 to 60, most of whom were females. Under the heading of "chronic myelogenous leukaemias" there were 10 patients, with ages ranging from 28 to 59, of whom 4 were females and 6 were males.

Professor LOVELL GULLAND, in replying to the discussion, said he would like in the first place to traverse very decidedly the statement in Dr. Patterson's paper that x rays or radium caused anaemia as well as a drop in leucocytes in the chronic leukaemias. They might do so if they were improperly used, especially if the dosage was too large, or application was carried on too long; with the proper use of either he had now many times seen the

anaemia improve or disappear without other treatment. Professor Douglas's question as to the value of the oxydase reaction in diagnosis might best be answered by the statement that it was generally useless in those cases in which it was most wanted—in the distinction between the acute myeloblastic and acute lymphocytic types. Some myeloblasts gave the reaction, others did not. He was inclined to think the older myeloblasts showed it, not the younger. He suggested that the acute leukaemias seemed to occur in epidemics. It was certainly true that they often came in runs, but every physician knew that this occurred with a kind of cases, even with aneurysms and locomotor ataxia. It was certain that many acute leukaemias were not diagnosed. Professor Gulland agreed with Dr. Donaldson in seeing difficulties in accepting absolutely the definition of leukaemia as a sarcomatosis, and had admitted the difficulties in discussing its nature. It was, however, the hypothesis which best explained the facts of the disease. In regard to the causeless remissions in the chronic form it must be remembered that these were often evidence only by the change in the blood; there might be no alteration in the spleen or other organs. They were sometimes merely a cessation of overflow into the blood, without real alteration in the marrow. It was possible to produce blood remission with benzol, for instance, and when the drug was stopped the leucocytes resumed their former figure a day or two.

## THE LIVING TISSUE CELL.

BY

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DR. STRANGEWAYS said that as a profession they were too apt to regard the human body as a mass of tissue essentially liable to disease and endowed with a consciousness liable to neuroses. It was sometimes wholesome to make an excursion into biological fundamentals, and to reflect for a moment upon what and why the body really is.

The cells of tissues cultivated *in vitro* by the usual method in plasma and embryo extract wandered out from the main fragment and formed a thin film of growing and dividing cells upon the surface of the coverslip. This thin film was very suitable for dark-ground illumination. The cells had amoeboid movement, and showed vividly the mitochondria, nucleus, nucleolus, metabolic granules, and fat. No cell wall, nuclear membrane, or Golgi apparatus could be seen, and in the mitotic cells no evidence of spindle fibres. On the warm stage all the structures in the cell and the cell itself were to be seen in more or less active movement. Anyone watching such a cell would be struck by its individuality and independent behaviour, and would realize, as perhaps never before, that the cell, properly speaking, was an organism complete in itself.

Man, like all other metazoa, consisted of a colony of organisms—the cells. To create a man or any other animal the fertilized ovum produced two lines of descendants—the somatic cells and the germ cells. The sole function of the former was to carry, nourish, protect, and propagate the latter, which constituted the essential part of the organism. In the creation of the somatic colony the fertilized ovum had evinced a far-reaching intelligence inconceivable to our cerebral soma. Researches on tissue culture had shown that all cells were potentially immortal, since tissue under cultivation could be maintained in a state of active growth and multiplication for an indefinite

period. In the body, however, the immortality of the somatic cells was sacrificed for the benefit of the germ cells.

The life of the cell was to a great extent independent of the life of the animal, and the death of the body in no way necessitated the immediate death of its component cells. As an illustration Dr. Strangeways mentioned that recently a colleague happened to need some kidney tissue for cultivation. Previously he had killed a rabbit for experimental purposes and thrown away the body in the dustbin, when owing to the slackness of the dustman, it laid for two days in hot weather. At the end of that period he exhumed it, dissected out one kidney, which he washed in a solution of iodine; he then removed fragments for cultivation, and the cultures grew perfectly.

The method of tissue culture also showed that the somatic cell did not require the control of the organism as a whole in order to build up the various special tissues for which they were set apart in early embryonic life. For example, the isolated eye and limb bud of an early embryonic chick would continue to grow and differentiate in a surprising normal manner when cultivated in a test-tube, although it would be considerably smaller than

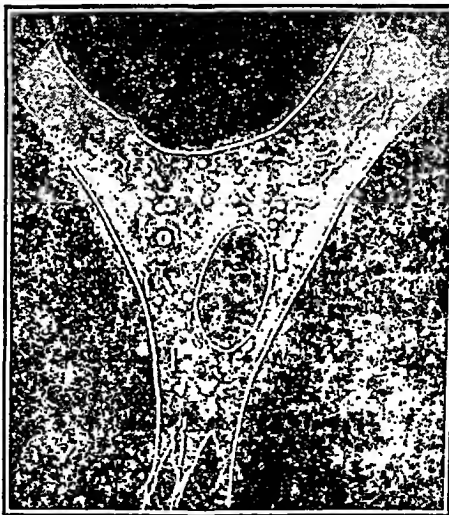
allowed to develop under the care of the hen.

Migration and division represented the response of the cell to changes in environment. The cell showed three conditions:

1. Vegetative state ... Environment stable.
2. Amoeboid state ... Environment somewhat changed.
3. Mitotic state ... Environment markedly changed.

In all these three conditions the environment must be favourable, or otherwise the cell would show injury, disease or death.

Vegetative cells might remain quiescent throughout adult life, yet at any moment they might be induced to migrate and multiply. The profession was very familiar with instances of such response.



Cell seen under dark-ground illumination.

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# MEMORANDA

The reactions of the cells to their environment might be tabulated thus:

1. Multiplication+differentiation+co-ordination+inhibition = animal.
2. Migration+inhibition=healing by first intention.
3. Migration+multiplication+inhibition=healing by second intention.
4. Multiplication + differentiation + inhibition = innocent tumour.
5. Multiplication+differentiation-co-ordination-inhibition = cancer.

It was extremely desirable to obtain further data concerning the inhibition of growth.  
In the afternoon a practical demonstration was given of the main points in the lecture.

## Memoranda: MEDICAL, SURGICAL, OBSTETRICAL.

**THREE "FOREIGN" USES OF OESOPHAGEAL CATHETERS.**  
SOMETIMES small points, not mentioned in textbooks, but nevertheless of real value, are worthy of being put on record.

The first use of an oesophageal catheter is to intubate the oesophagus. It is "foreign" to use it otherwise, but here are three uses to which I have put it, and doubtless others have done the same; they may, however, be novel to some.

1. In those distressing cases of an "artificial anus" in the caecal region in which it is highly desirable to short-circuit by an ileo-colostomy, it is occasionally difficult, even when the incision has been made, to be sure of the portion of the ileum which is passing to the caecostomy. If previous to or after the incision an assistant introduces an oesophageal catheter into the artificial anus, it will slip with a little manipulation into the ilcal loop, and can be felt and seen through the left-sided incision, thus clearly indicating the portion of intestine which should be anastomosed with the pelvic colon.

2. After the short-circuit has been made it is well to pass an oesophageal catheter through the natural anus, and up through the anastomotic opening into the ileum. This will enable at least flatus to be easily passed during the first twenty-four hours after the operation, and may save the patient a considerable amount of discomfort.

3. When the abdomen has been opened and a volvulus of the pelvic colon has been untwisted, the passage of two oesophageal catheters through the natural anus and up into that portion of the pelvic colon which has been the site of the twist and dilatation will drain the loop, and allow fluids to be injected through one catheter and a recurrence of the volvulus soon after the untwisting is almost certain to be prevented. It is important that the catheters in this instance should be sutured to the anal margin so that they do not slip out before they have completed their work.

W. McADAM ECCLES, M.S., F.R.C.S.,  
Surgeon, St. Bartholomew's Hospital.

## CARDIAC MASSAGE FOR POST-OPERATIVE COLLAPSE.

THE following case appears to be worthy of record in view of the temporary recovery of the action of the heart which followed the use of cardiac massage.

A plating operation was performed on a man, aged 26, who had a compound comminuted fracture of the tibia. There had been considerable haemorrhage, but no cause of anxiety appeared until the end of the operation, when the patient collapsed. Tilting the table improved his colour, but his breathing stopped almost immediately. Artificial respiration, the use of oxygen, and the injection of pituitrin were without effect. I then opened the epigastrum and massaged the heart with one hand under the diaphragm and the other pressing on the chest wall. After about two minutes the heart began to beat and the amount of air entering the lungs distinctly increased. The patient's colour became a healthy pink, but the pupils remained widely dilated,

and there was no voluntary respiration. After thirty-five minutes the heart stopped, and further massage failed to restart it. With one hand in the abdomen as a guide, I injected 10 drops of a 1 in 1,000 solution of adrenaline into the heart, using an ordinary hypodermic needle, well pressed home, and inserted close to the sternum in the fourth intercostal space. A few seconds later the heart began to beat again, and continued for half an hour. The patient was given an injection of camphor dissolved in oil, and also ammonia to inhale, but neither seemed to have any effect on the respiratory centre.

The patient died, I presume, of cerebral anæmia, his brain being too toxic or disorganized to respond when circulation of good blood was re-established. The question arises whether he would have lived if I had not lost time in performing artificial respiration, yet if it was customary to practise cardiac massage in every case of collapse on the operating table there would be quite a number of people with a scar in the epigastrium. I should be glad to receive suggestions or criticism.

W. STANFIELD, M.R.C.S., L.R.C.P. Lond.  
Wallasey.

## RETROBULBAR NEURITIS (TOXIC).

THE following case of a severe type of retrobulbar neuritis in a moderate smoker presents points of interest.

X.Y., aged 51, in the "trade," complained that his eyesight had been failing for two years. He had been a soldier in India for several years, and was invalided out of the army on account of injury to the spine. He was referred to me in March, 1926, by Messrs. Charnley and Sons, opticians, Bedford. His vision then was: right eye, 6/24 with difficulty; and left eye, less than 6/EJ. In each eye there was a large central scotoma for red, blue, and green, with contracted fields for white. The patient was a beer drinker, and a moderate smoker. He never smoked a pipe, and the centre of each disc, more marked in the left eye, was a small pale area, in which the lamina cribrosa was evident. The fundus was otherwise normal, as were the remaining structures of the eyes. There was no evidence of peri-orbital sinus infection. The teeth were good. It was suggested that the Wassermann reaction should be tested, but this was declined. The patient was a heavier tobacco smoker, but only a medium Virginia tobacco. As the diagnosis of retrobulbar neuritis of toxic origin was made, he thought he would become blind in any case he was with twelve months. He was referred to his own doctor for the usual treatment of tobacco amblyopia, with strychnine, suitable diet, and purgation, etc.

Four months later, Dr. F. Bolster, C.M.G., kindly sent the patient to me for further examination. I found that vision was now normal in the right eye—6/6 without correction, and colour vision was normal. In the left eye vision was 6/24 without correction; vision for red and blue had returned and there was a small central scotoma for green remaining. There was an old-standing external strabismus in the left eye.

In March he wore plus 7.0 D. sphs. and could only read large print even with these magnifying glasses. In July he could read J.1 with plus 2.0 D. sphs., his normal correction. At neither examination were there any associated signs of chronic disease of the central nervous system.

A diagnosis of progressive optic atrophy should be made with diffidence, even in a moderate smoker of medium Virginia tobacco, until toxic retrobulbar neuritis can be definitely put out of consideration. In this case the diagnosis was rendered more difficult by the fact that the visual acuity differed considerably in the two eyes. It would seem as though the deterioration of vision in the two eyes had proceeded at a uniform rate, as is usual in tobacco amblyopia, the resultant difference in visual acuity being due to the partial amblyopia in the left eye, which was present when the toxin commenced to affect vision.

C. G. KAY SHARR, M.D. Leeds.

## HERPES AND VARICELLA.

IN connexion with Dr. W. J. Meldrum's memorandum on herpes and varicella (August 14th, p. 362) the following case would appear to be of some interest.

On June 15th, a boy, aged 9 years, developed unilateral intercostal herpes, which gradually subsided. On July 2nd the remaining five children in the family, including a girl aged 12, showed definite chicken-pox, whilst the lad who suffered with herpes was unaffected. It will be noticed that the time between the herpes and chicken-pox is seventeen days. This seems too remarkable to be a mere coincidence.

HAROLD PRESTON, M.R.C.S. Eng.,  
L.R.C.P. Lond.

London, S.13.



## Reviews.

### A BIPOLAR THEORY OF LIFE.

STARTING more than thirty years ago on a research into the cause of death, the distinguished American surgeon GEORGE W. CRILE became convinced that it was essential first to understand the nature of life, and since then this great problem has continuously engaged his attention and that of his co-workers. The circulation and respiration, blood chemistry, cytology, and biophysics, were examined successively, and he has now brought out a volume on *A Bipolar Theory of Living Processes*.<sup>1</sup> The length and painstaking nature of the research on which it is founded entitle this monograph to serious consideration, especially as it is frankly admitted that the conclusions have not been finally proved. Evidence is brought together in favour of the view that man and animals are bipolar mechanisms and that the organism is not only driven by electricity, but that it was originally called into existence and constructed by electric forces.

Investigation of the cardio-vascular and respiratory phenomena satisfied the author that surgical shock was not due to primary change in these systems. Incidentally his researches led to certain practical conclusions as to the prevention of surgical shock by nerve blocking and as to the value of blood transfusion and its application. Another conclusion reached was that stimulants, so called, as a class increase fatigue and exhaustion, whereas morphine minimizes these effects. Work on the chemistry of the blood showed that the acid-alkali balance of the organism has a vital significance, and from cytological observations it was concluded that the nucleus of the cell is relatively acid and the cytoplasm relatively alkaline, the nucleus and the cell being surrounded by an extremely thin dielectric membrane. The two organs which most promptly succumb to lethal influences seemed to the investigators to be the brain and the liver. With the help of biophysical examination it was concluded that the cells of the body are electric cells in which the comparatively acid nucleus is the positive pole and the cytoplasm the negative pole, and that the maintenance of this acid-alkali balance between the nucleus and the cytoplasm—electric potential—is essential to life; this balance is both due to, and controls, oxidation. The conclusion that the individual cells, like the living organisms, in which the brain is the positive and the liver the negative pole, are bipolar electric mechanisms, would answer the question asked as long ago as 1835 by Becquerel and Breschet, "Are the vital forces of an electric or chemical nature?" As the liver, being the negative pole, accumulates waste products and so keeps clear the great circuit between it and the brain, any failure in this hepatic function will impair the circuit, and as a consequence the tissues of the body will no longer receive the electric discharges on which their structure, activity, and life depend, and death follows. The specific characteristic differentiating the living organism from the non-living materials composing it is regarded as the frequency and force of the electric discharges. Life is a dynamic not a static phenomenon.

This bipolar interpretation is applied to memory, intoxications, fever, and cancer. The cancer cell has a higher electric potential than normal cells, and therefore, it is concluded, multiplies at their expense. The higher incidence of malignant disease in advanced life is explained by the generally falling metabolism diminishing the low defence of the tissues of low capacity and causing an inequality in an already wavering balance between the electric capacity of neighbouring cells. The bipolar theory is also held to explain the usual incidence of sarcoma in early life. The appendixes, which occupy more than a third of the volume, contain the experimental data already published by the author and his collaborators in support of this thesis, quotations from literature bearing on the problem, and a consideration of the energy transforma-

tions in the body from an electrical standpoint by J. O. Perrine, Ph.D.

The book is a monument of patient research on a subject as difficult as it is important.

### NUTRITIONAL DISORDERS OF CHILDHOOD.

THE third volume of the series of clinical studies in children<sup>2</sup> published by Professor P. Nóbécourt treats of disorders of nutrition and growth, and contains some twenty clinical demonstrations; it deals with cases of cretinism and thyroid deficiency, gigantism, and other pituitary disorders, different types of obesity, diabetes, acetonaemia, chronic articular rheumatism and fragilitas ossium. Each chapter is the record of a lecture or demonstration; it begins with the presentation of a case or group of cases with their essential details and illustrated with photographs and clinical charts, and ends with a general discussion of the disease, giving references to the literature. The conditions he deals with are for the most part rare, but, in addition to the striking structural changes they exhibit, they raise points of great interest in physiology and medicine; and the method of presentation, beginning with a diseased individual, and proceeding to a discussion of the diseased process, is well suited to maintain the interest of the reader, laying before him the grounds of diagnosis, and from diagnosis passing naturally to treatment, prognosis, and pathology. French medical literature has given us many brilliant examples of this kind of medical writing, and Professor Nóbécourt takes a worthy place in that succession. Both by his great clinical experience and his extensive acquaintance with the literature, he is well equipped for the writing of such a book of clinical studies. This volume, dealing with disorders of growth, is up to the high standard of clarity, conciseness, and interest which was reached in his two previous volumes on diseases of the respiration and of the circulation. As a record with commentary of the rare conditions with which it deals it is of great interest and value.

*Nervous and Mental Disorders from Birth through Adolescence*,<sup>3</sup> by Dr. Sachs, is the mature presentation of his long clinical experience in this subject. It is much more than the revision of the last edition of his *Nervous Diseases of Children*, published in 1905, though it naturally incorporates much of its material. Since that date there has been much progress in neurology and a great accumulation of literature, and in the greater leisure secured by release from hospital practice Dr. SACHS, with the assistance of Dr. HAUSMAN, has written what is actually a new book on the subject. The arrangement of the subject is somewhat different. The first portion deals with anatomy, physiology, and the methods of clinical examination. The next and largest section is devoted to organic diseases of the nervous system as a whole, in which there is no definite separation of brain, spinal cord, and peripheral nerves; this is justified by the fact that such diseases as infantile paralysis and epidemic encephalitis may affect any part of the nervous system, central or peripheral. In this section will be found also a chapter devoted to chorea and choreiform diseases, an inclusion which represents a change of neurological opinion. The remaining sections deal with functional and toxic diseases, such as convulsions, epilepsy, headache, etc., with endocrine disorders and trophoneuroses, and with mental conditions, including the neuroses and psychoses, insanity, and the various forms of congenital mental defect.

Infancy and childhood is the period when infections of the nervous system prevail, and when congenital defects, in their multifarious variety are met with, and a treatise on nervous disease at this time of life must deal with a large number of conditions, some of which are common and therefore important, such as infantile paralysis and tuberculous meningitis, while others, such as the hereditary and familial affections, though rare, are not only of great

<sup>1</sup> *A Bipolar Theory of Living Processes*. By George W. Crile. Edited by Amy F. Rowland. New York: The Macmillan Company; London: Macmillan and Co., Ltd. 1925. (Demy 8vo, pp. xv + 405; 62 figures. 21s. net.)

<sup>2</sup> *Clinique Médicale des Enfants: Troubles de la Nutrition et de la Croissance*. Par P. Nóbécourt. Paris: Masson et Cie. 1925. (Med. 8vo, pp. 31 + 404; 104 figures. Fr. 35.)

<sup>3</sup> *Nervous and Mental Disorders from Birth through Adolescence*. By B. Sachs, M.D. and Louis Hausman, M.D. New York: F. B. Hoeber, Inc. 1926. (Med. 8vo, pp. xvi + 851; 107 figures; 3 plates. 10 dols.)

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clinical interest, but also throw light upon the physiology of the nervous system. In this book, assisted by a number of good clinical and pathological illustrations, Dr. Sachs has successfully presented a large and complicated subject in a very interesting way. On the subject of nervous disorders in childhood and adolescence, he speaks with the authority of long clinical experience, and with a wide knowledge of the literature; indeed, an appendix to each chapter gives a full bibliography of the subjects dealt with. In an interesting and valuable chapter he traces the development of the normal mind in infancy, childhood, and youth, and takes the opportunity of expressing forcibly his opposition to the Freudian doctrines of psycho-analysis. The book is an authoritative, a fairly full, and an interesting exposition of a large and important subject.

Sex diseases in children,\* by Dr. FISCHER-DEFOY of Frankfurt, and Drs. KRAMER and LANGER with congenital small volume of a hundred pages dealing with congenital syphilis and gonorrhoea in children. It gives a brief account of their clinical manifestations, and deals also and more fully with their train of consequences for the individual and their wider family and social effects. It is written partly for medical men, but more especially for the instruction of parents, social workers, and teachers, in the hope that with wider knowledge its curative and preventive treatment may become more effective.

## REASONED HISTOLOGICAL TECHNIQUE.

Of the two types of book dealing with histological technique, one consists mainly of rule-of-thumb prescriptions which will enable the student to prepare a presentable slide and pass his practical examination without discredit; the other explains the scientific principles of the subject and builds thereon a superstructure of directions which will enable him to become efficient in what is essentially an art, and equip him for its subsequent application in scientific research. Of the latter type CARLETON's *Histological Technique* is a good example. The general plan of the book does not differ from that usually adopted in such works. There is a chapter on type-methods of normal histology, including fixation, embedding, section-cutting, and staining. This is followed by a chapter on accessory methods—dark-ground illumination, histo-chemical tests, injection methods, and intravital staining. Then the various tissues and organs of the body are taken in order and the most suitable methods of preparation in each case described; and finally a chapter is devoted to the technique of morbid histology, including methods for the identification of micro-organisms and other parasites.

The book, however, embraces a wider view of the subject than is usually adopted in treatises on histological technique. Thus the author has thought well to make a departure from current practice by inserting chapters on the cell in relation to histological technique, emphasizing the conception of cells and tissues as complex colloidal entities which are only too readily altered by the treatment to which they are subjected. Further, an interesting chapter, contributed by Mr. F. HAYES, has been added, giving an elementary account of the theory of staining—a complex subject, but which lies at the very foundation of an adequate knowledge of the technique. While taking a broad view of the subject, the author has not overlooked the importance of attention to minute details. A knowledge of the importance of the technique depends largely on a knowledge of various small "tips," and many of these useful details have been added as notes appended to the descriptions of the various methods. Again, the success attendant on technical manipulations is to a considerable extent proportionate to the worker's knowledge of small hidden

difficulties, and it has been the author's aim to point out these and indicate the means of avoiding them. The book will prove a useful and reliable guide to the serious student, encouraging him to work by the understanding rather than by rule of thumb.

## GUY'S HOSPITAL REPORTS.

Of the ten articles in the third quarterly instalment of the *Guy's Hospital Reports*, the first four relate to Thomas Addison; Sir William Hale-White's account of this distinguished investigator, who in 1828 started systematic note-taking by the clinical clerks, is noticed elsewhere (p. 607). Dr. Arthur Hurst reports the results of his investigation of eighty-seven cases undertaken to determine the relative frequency of primary constitutional achylia and of achylia secondary to gastritis in Addisonian anaemia, subacute combined degeneration of the spinal cord, and the glossitis syndrome of William Hunter. Dr. Maurice Shaw records a case of apparent recovery from Addisonian anaemia and of return in the hydrochloric acid in the gastric juice, the only question being whether or not the three years should be regarded as an exceptionally long remission or as evidence of cure. The remaining member of these first four articles deals with a case of Addison's disease associated with hyperthyroidism and vitiligo; unfortunately, though the case terminated fatally, a necropsy was not obtained. Dr. Norman Burgess and Mr. E. C. Warner suggest that the hyperthyroidism was secondary—and possibly compensatory—to the adrenal disease. Dr. J. J. Conybeare supplements his experiences of American medicine previously summarized in these *Reports* by a description of the practice of radiology in the hospitals of the United States, and brings out the points of difference from practice in this country. Professor Pembrey and Mr. E. T. Conybeare bring forward experiments on animals, under controlled conditions as regard diet, dealing with the respiratory quotient—namely, the relationship of the volume of oxygen absorbed to the volume of carbon dioxide discharged. Dr. Hugh Barber of seventeen cases, and, after dwarfism from his experience of so-called late rickets, concludes discussing the nature of the cases so described have been that most, if not all, of the cases so described have been renal dwarfs. Drs. H. W. Barber and F. D. Howitt's observations on light sensitization of the skin are extremely interesting, and are prefaced by a good description of the literature; they divide all cases into (i) those in adults due to a bacterial toxin or possibly a bacterial product absorbed from the intestine, and (ii) the juvenile cases in which the sensitizing agent is often, if not invariably, a porphyrin. Drs. Arthur F. Hurst and Adrian Stokes describe with illustrations a case of hypertrophic gastritis (gastritis polyposa) in which gastrectomy was followed by recovery. Writing from the New Lodge Clinic on dental root infections, Dr. F. A. Knott and Mr. A. Ll. Spencer-Payne find that streptococci are constantly present in early infections of the roots, but that no specific strain of streptococci is associated with arthritis or peptic ulcer, and that the production of systemic and metastatic infections depends more on the presence of diminished local resistance than on specificity or selectivity of the streptococcal strain found in them.

## EVOLUTION, GENETICS, AND EUGENICS.

The second edition, after six impressions of the first, of the successful summary entitled *Evolution, Genetics, and Eugenics*, by HORATIO HACKETT NEWMAN, professor of zoology in the University of Chicago, will be welcomed both by general readers and by students as an unbiased textbook, which contains between two covers material otherwise obtainable only by consulting two or three separate works. It consists of five parts, the first three dealing with the history, evidence, and causal factors of

\* *Guy's Hospital Reports*, Vol. 76 (Vol. 6, Fourth Series), No. 3, July, 1925. Edited by Arthur F. Hurst, M.D. London: W. B. Saunders and Son (1925). 12s. 6d. (Med. 8vo, pp. 253-378; 3 plates, 20 figures, 7 charts. Annual subscription 12s.; single numbers 12s. 6d. each.)  
† *Evolution, Genetics, and Eugenics*. By Horatio Hackett Newman, Professor of Zoology in the University of Chicago. New edition. Chicago, Illinois: University of Chicago Press; London: Cambridge University Press. 1925. (Med. 8vo, pp. 22 + 629; 23 figures, 17s. 6d.)

\* *Geschlechtskrankheiten bei Kindern*. Herausgegeben von A. Buschke und M. Gumpert. Ein ärztlicher und sozialer Leitfaden für Ärzte und Jugendpfleger. Unter Mitarbeit von U. Fischer-Defoy, F. Kramer, E. Langer. Berlin: J. Springer. 1925. (Demy 8vo, pp. 108; 10 figures. R.M.S. 40.)  
† *Histological Technique*. By H. M. Carleton, M.A., B.Sc., D.Phil., F.R.S. London: Oxford University Press. 1925. (Demy 8vo, pp. 22 + 323; 17 figures. 16s. net.)

evolution, the fourth with genetics or the modern study of evolution by means of experimental breeding, cytology, and the statistical method, which is concerned with heredity and variation more or less to the exclusion of environment and training.

In the fifth and last part, on eugenics, the old but still interesting question of the relative importance of heredity on the one hand, and of environment and training on the other hand, is discussed. The author mentions certain fallacies which, he holds, are inherent in Galton's attempt to elucidate this problem by the collected data of identical and fraternal twins, and describes his own observations on more than two hundred quadruplets of the nine-banded armadillo of Texas, which lead him to the conclusion that the average potency of heredity is about 93 per cent., as compared with 7 per cent. for both environment and a third factor which, he suggests, might be called the distributional or developmental inaccuracy. The order of the presentation of the evidences of evolution has been altered in this edition as the result of further teaching experience that, for an appreciation of the palaeontological and geographical data, the student must first have a knowledge of the principles of morphology and comparative anatomy. In the section on genetics the Mendelian theory and the laws of sexual reproduction are clearly set out with many diagrams, as are the arguments for and against the inheritance of acquired characters, which bear on the controversy between the mutationists, and the Lamarckians. Accounts of the recent anti-evolution campaign and the Scopes trial in America are among the additions to this edition.

This handbook is based on more than twenty years' experience in teaching students, and contains numerous extracts, sometimes of considerable length, from authorities on the subject. The evidence thus collected is impartially presented to the reader, who is then left to form his own decision on disputed points.

### THORPE'S DICTIONARY OF CHEMISTRY.

VOLUME VI of THORPE'S *Dictionary of Applied Chemistry*\* covers the range of initial letters S and T (to tetra). In our comments on the preceding volumes of this edition we have remarked on the catholicity of the subjects treated. That now before us presents the same extensive variety, which we may illustrate by reference to the following instances: an article on the Japanese beverage sake describing its composition and mode of preparation, and adding incidentally the information that it is usually taken hot immediately before meals; a monograph on sewage, showing the applicability of various methods of treatment for purification, and a treatise on the subject of solution discussing its theoretical aspects. Perhaps the most striking example of the thoroughness of the work appears under the heading of sugar, where space is found for the botanical description of the sugar-cane and sugar-beet, of methods of production and refining, with illustrations of manufacturers' plant and of statistics of production and methods of analytical examination, including the description of several polarimeters; lastly, a full account is given of the several methods by which the percentage of sugar may be determined in blood. There follows a discussion on insulin as a means of controlling blood sugar in diabetes mellitus, written by Professor Barger.

Notwithstanding the great variety of matters that come under the heading of applied chemistry, it is remarkable to note the large number directly related to medical science. All these appear to contain the newest information contributed from authoritative sources. There is an article on synthetic drugs, also written by Professor Barger, in which production by synthesis is discussed in its relation to therapeutic and pharmacological needs, and a catalogue of synthetic drugs, reciting their uses, advantages, and imperfections, is provided. This volume is altogether a notable addition to a notable series.

\* *A Dictionary of Applied Chemistry*, Vol. VI. By Sir Edward Thorpe, C.B., LL.D., F.R.S., assisted by eminent contributors. Revised and enlarged edition. London and New York: Longmans, Green and Co. 1926. (Med. 8vo, pp. viii + 791; illustrated. £3 net.)

### BIRTH CONTROL.

It is a relief to read a book on birth control which is written in dignified and measured language and free from extravagance. The little book on *Birth Control and the State*,\* by Dr. C. P. BLACKER, is a plain statement of the arguments put forward by the protagonists and the antagonists, and he puts the assertions of the antagonists first; to them "it is a pernicious and unnatural practice leading to the degeneracy and, ultimately, to the extinction of the race." He gives the reasons underlying this sweeping statement and then the arguments on the other side. One difficulty he points out exists, "that from the technical point of view a really satisfactory contraceptive does not yet exist." Thereafter the author leads the reader up to the purpose of the book, which is to convince him that the great danger of civilization lies in unequal overpopulation. Dr. Blacker points to the past and present dangers due to the excessive fertility of the Japanese, the effects of ancestor worship, and to what we know happened in Germany. He maintains that only by an international adjustment of population that can be attained by biological effects can there be a cessation of these mad interludes. He believes that the Ministry of Health should take a hand in instructing the population. Cold official action in this regard would reduce the tension of the quarrel between the opponents and advocates. The practice is well known amongst the better educated of the people, but by all accounts scarcely known among the masses. Yet he adduces evidence, some of it novel, that the excessive fertility found amongst the less affluent sections of the people is not desired by them. But his great argument in favour of limitation is that thereby international relations may be improved: "In this way the medical profession, in whose hands the health of each community lies, would take the first step in the direction of an international control of population, and would thereby lay the basis for a genuine and permanent world-peace."

This is a book that could be read by the most delicately minded maiden lady; it would not bring a blush to her cheek, but it would certainly "put her wise" to the purpose of birth control.

### NOTES ON BOOKS.

A SIXTH edition, revised by Dr. ARNOLD CHAPLIN, has been issued of JOHNSON SMITH'S useful book *A Medical and Surgical Help for Shipmasters and Officers in the Merchant Navy*.<sup>10</sup> Its aim is to afford help in the treatment of injury and disease occurring at sea or under conditions in which there might be no possibility of professional assistance. The subject is treated in an interesting way, and in language easily understood by the layman. Preliminary chapters deal with the preservation of health and the treatment of illness on board ship. The medicine chest is then described, and there is a reasonably brief chapter on the construction of the body. The rest of the book deals with diseases and injuries of various parts of the body, and with poisons. A useful chapter on cooking on board ship, with recipes for invalids, concludes the volume. The book must be of the utmost value to the masters and officers of the mercantile marine when faced with the necessity of rendering first aid in cases of sickness or injury.

The textbook which Drs. FEINBLATT and EGGERTH have written, entitled *Clinical Laboratory Medicine*,<sup>11</sup> contains an account of all the ordinary laboratory tests which might be done by a physician with a little special training in laboratory methods. Other subjects are dealt with also which are perhaps better left to the pathologist—such, for instance, as the Wassermann test—but even these more technical subjects are handled from the clinical point of view. The descriptions are brief and supplemented by references (which, by the way, are most inconveniently placed so as to interrupt the text). But apart from this the book is well put together and adequately

<sup>10</sup> *Birth Control and the State: A Plea and a Forecast*. By C. P. Blacker, M.C., M.A., M.R.C.S., L.R.C.P. London: Kegan Paul, Trench, Trubner and Co., Ltd. New York: E. P. Dutton. 1926. (Fcap. 8vo, pp. 252s. 6d. net.)

<sup>11</sup> *A Medical and Surgical Help for Shipmasters and Officers in the Merchant Navy*. By William Johnson Smith, F.R.C.S., revised by Arnold Chaplin, M.D., F.R.C.P. Sixth edition, revised. London: C. Griffin and Co., Ltd. 1926. (Post 8vo, pp. xviii + 337; 82 figures. 6s. net.)

<sup>12</sup> *Clinical Laboratory Medicine*. By Henry M. Feinblatt, M.D., and Arnold H. Eggerth, A.B., A.M. London: Baillière, Tindall and Cox. 1926. (Roy. 8vo, pp. x + 424; 87 figures. 22s. 6d. net.)

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# THE BAD END OF A POLITICAL ANATOMIST.

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illustrated. Looking through the tests described, an English reader will be struck by the fact that the popularity of certain methods of analysis has a curious geographical distribution. In urine analysis, for instance, the American methods often differ from our own, and these again from French or German. In each country, no doubt, certain methods have been popularized by pathologists in authoritative positions. This book may be said to give an exposition of the American point of view.

In preparing the fifth edition of his textbook on *Diseases of Infants and Children*,<sup>12</sup> Dr. CHAPIN has found a new associate in Dr. ROYSTER, who replaces the late Dr. Pisek. The popularity indicated by the call in America for a new edition is probably due to the condensed, and yet complete, presentation of the subject. The plan and order of the chapters is that usually followed, general considerations, infant anatomy and physiology, and infant feeding being dealt with, and thereafter diseases under the various systems described. There are many illustrations, but their average standard is rather low. Brevity is the soul of wit, and it is far better to err in brevity than in tediousness, so long as a proper standard of clearness and accuracy is maintained. The chapters on the digestive disturbances, healthy infant are well done, but that on digestive disturbances in the infant is too short to be adequate. Important and common diseases, such as tuberculosis, rickets, end even pneumonia, deserve a fuller exposition than they receive; epidemic encephalitis is dealt with in a single page. The authors are not lacking either in knowledge or experience, but they do not select their material so as to achieve accuracy and clearness. The price of the book is high.

Miss DONOTHY MORTON has compiled a useful little book of recipes entitled *Invalid Diet*.<sup>13</sup> In it are found selections of dishes suitable for patients who are anaemic, constipated, dyspeptic, diabetic, or rheumatic. With the help of this book the practitioner need never be at a loss when asked to vary the diet of his patient; and the invalid's friends can be advised to keep within the ambit of the recipes recommended. Miss Morton gives some useful hints on cooking and the care of utensils. We disagree, however, with her statement that "60 fluid drops equal 4 oz.," which is sufficiently contradicted by the next statement that "1 tablespoonful of oil or liquid equals 4 oz." We are doubtful about the necessity of recommending by name a particular variety of bread and a particular brand of raisins. And the statement that the constipated must drink copiously of pure water needs the qualification that the water should not be too hard.

Dr. WITTELS, we gather, is a German-Austrian. Perhaps this accounts for the jaundiced view he takes of society in his book *An End to Poverty*,<sup>14</sup> and for his resuscitation of the scheme for universal civil service devised by the late Josef Popper Lynkeus. The lot of the professional man in Austria after the war was hard; instinctively he would turn to any theory which might promise an alleviation of his troubles. So it is that with violent diatribes against the pseudo-profound, the obscurantists, priests, and philosophers, noblemen, and the curantists of kings, generals, bishops, and the adoption of a bank directors, Dr. Wittels advocates the adoption of a system of universal peace conscription. Under it every individual would be enrolled in a "subsistence or minimum army," men serving from the ages of 18 to 30, women from 18 to 25. This subsistence army would be engaged in providing all the inhabitants of the country with food, clothing, and nursing for the whole of life, and with medical attendance and nursing when needed. For the purpose of providing medical attendance the doctors would be enrolled in a State service during the period of their conscription. A sample of the kind of ideas Dr. Wittels favours is his proposal that there should be one of these conscripted doctors for every three hundred persons. On the completion of service the men and women of the minimum army would be absolutely free, and could become capitalists or anything else they might choose. "They could spend their time in any way they pleased." As everyone will agree that the abolition of poverty is a desirable ideal, however Utopian, justly be given to any proposal to this end, however Utopian. But in the presentation of the case hysterical outbursts should be avoided. ENER and CRAN PATZ are diligent and, on the whole, very competent translators, but, as we have remarked before, it is a pity that they do not make a better selection of books to translate.

<sup>12</sup> *Diseases of Infants and Children*. By Henry Dwight Chapin, A.M., M.D., and Lawrence Thomas Royster, M.D. Fifth revised edition. London: Baillière, Tindall and Cox. 1925. (Roy. 8vo, pp. xv + 633; 262 figures. 30s. net.)  
<sup>13</sup> *Invalid Diet*. By Dorothy Morton. With a Foreword by J. Johnston Abraham, C.B.E., D.S.O., F.R.C.S. Eng. London: William Heinemann (Medical Books), Ltd. 1925. (Cr. 8vo, pp. ix + 93. 5s. net.)  
<sup>14</sup> *An End to Poverty*. By Fritz Wittels. Translated by Eden and Cedar Paul. London: G. Allen and Unwin, Ltd. 1925. (Cr. 8vo, pp. 223. 5s. net.)

## Nobis et Vetera.

### THE BAD END OF A POLITICAL ANATOMIST.

Or the valuable series of studies in the history of medicine which are being issued under the editorship of Professors Sudhoff and Sigerist, Part II, on Joh. Jessenius,<sup>1</sup> is the work of Professor Pick of Prague. Pick had been engaged for many years in collecting material for a history of the medical faculty of the University of Prague, and the present work was undertaken as a necessary preliminary, Jessenius having been one of the early chancellors. It is a sad reflection that Pick did not live to see his work given to the world.

Jessenius, who traced his descent from the old nobility of Hungary, was born in Leipzig in 1566, six years before the massacre of St. Bartholomew, an event which affords an indication of the spirit of the times. Religious cleavage and political upheaval were the prominent features of the period, and Jessenius, a Protestant but free from every trace of religious rancour, and totally lacking in the qualities of the political agitator, found himself, by the accidental circumstances of his position, drawn into the very vortex of the storm, with tragical consequences to himself. These troubles, however, did not come upon him until past middle life, and, for the rest, he was free to carry out the work that lay nearest to his heart. He obtained his early medical training in Wittenberg and his native town of Leipzig, where he wrote his first dissertation, "On the Immortality of the Soul."

Before taking his doctorate, however, he travelled into Italy to complete his education under the great teachers of the University of Padua. There he came under influences which fixed his ambitions; he conceived a desire to become instrumental in disseminating the learning of the Italians in his own country and, more particularly, to introduce into Germany the systematic teaching of anatomy by means of public dissections of the human body. The obstacle of religious tests prevented his receiving the doctorate, and although he had testimonials from many of the Paduan professors, showing him to be more than qualified for the diploma, these were of little service to him in the German universities. It was open to him to obtain the diploma of "doctor bullatus" from certain professors who were authorized to confer medical degrees, legitimize bastards, and the like, but the universities did not favour this cheap mode of graduation (the post-laureateship had on one occasion been conferred at the price of eight thalers). Jessenius, with much practical shrewdness in so young a man, adopted a course which was sometimes successful in those days, when dedications were somewhat susceptible to flattery. He obtained the good graces of the Emperor by dedicating to him a treatise on "Human and Divine Philosophy," and he was also fortunate enough to gain the ear of the Grand Almoner. In the sequel the Emperor, as a special favour, conferred on him the full doctorate, with the right to occupy professorial chairs in any part of the Holy Roman Empire, authorizing any obstruction met with in the exercise of the same to be countered by a fine of seventy gold marks. In like manner the dedication of two books on Aristotle to the celebrated and influential theologian Polyepyr Leyser is considered to have gained him the chairs of anatomy and surgery in the University of Wittenberg, at the early age of 29. Two years later he was appointed Rector of the University. His position being assured, he rapidly proved

<sup>1</sup> Joh. Jessenius de Magna Jessen: Arzt und Rektor in Wittenberg und Prag Hingerichtet am 21 Juni, 1621. Ein Lebensbild aus der Zeit des Dreissigjährigen Krieges von Prof. Dr. Friedel Pick. Studien zur Geschichte der Medizin. Heft 15. Leipzig: J. A. Barth. 1925. (8x11, pp. v + 315; illustrated. M.20.)

himself to be a man of learning and an author of distinction, not only in medicine and surgery, but in theology, history, and philosophy also; in his particular art he was soon recognized as one of the leading surgeons of the day. He acquired an extensive practice among the nobility and in the higher circles of society, and was appointed physician to the Court. In educational matters he lost no opportunity of holding his favourite public Anatomies or Dissections, and was indefatigable in encouraging disputations, as they were called, or public discussions on medical subjects, accounts of which in a great many instances were subsequently published, and remain as valuable records of the medical knowledge of the period. He attached great importance to *post-mortem* examinations, and an excellent scheme which he devised, of distributing notes of these with their clinical histories to a large circle of his fellow-practitioners, with the object of supplementing their limited experience, entitles him to be considered a pioneer in medical journalism. Although not himself an original thinker, he undoubtedly did much, by his numerous writings and his personal influence, to bring his countrymen abreast of the times in medical knowledge. His principal work was a treatise on surgery, written in Latin, and the fact that it was considered worthy of translation into German more than fifty years after his death is sufficient evidence of the high estimation in which it was held. He had a sound judgement in surgical matters, and is regarded as the founder of rational surgery in the German universities. He freed himself from many of the prejudices that were rife at the time, more particularly from the prevalent excessive use of drugs and the evils arising from the tendency to caste within the profession.

During his residence in Wittenberg the interest of Jessenius turned towards the University of Prague, the oldest foundation of the kind established on German soil (founded in 1348). The fame of the old university had greatly declined; its medical college was wellnigh extinct, and what remained was degraded to the lowest degree. Jessenius was moved to attempt its regeneration, obtaining, as a preliminary step, permission to hold a public Anatomy there, the first, as he was proud to think, that was ever held in the university. It was a notable function. The Dissection commenced on June 8th, 1600, before an audience of nearly a thousand persons, including a number of the most distinguished and learned men of the city, students, and gentry; and, being continued from day to day, terminated, with God's help and amid general applause, on the 12th, a gentle rain at nights ensuring the necessary coolness of the atmosphere, and clear skies by day permitting the dissections to be held in the open. The observations noted in this celebrated Dissection formed the basis of a "Treatise on Anatomy" which Jessenius wrote in praise of that science and which is considered to be one of his greatest works. He gave several similar Anatomies in Prague, but he was never a professor in the university; on the other hand, his influence gave a great impetus to medical studies. His Anatomies, more especially, were highly valued and often extolled in Latin verse by the poets of the time, and it is related that he received a poetical invitation to a dinner at the university on February 22nd, 1605, given in his honour and in recognition of his anatomical services in Prague.

In 1617 he was appointed to the Rectorship, but in the following year those political events occurred which brought his academical labours to an end and were to prove his ruin. The troubles had their origin in certain religious concessions which the Emperor had granted to the Protestants of Bohemia. The latter appear to have overstepped in some minor degree the limits of freedom conferred on them, with the result that two of their churches were ordered to be demolished. This ill advised measure aroused the indignation of the Praguers and, what was more serious, gave an opening for the activities of the extremists in the city. The Estates were convened; two of the Emperor's representatives, who were held responsible for the outrage, were denounced and sentenced to be "defenestrated"; a delegation was sent to the palace, and the obnoxious Statthalters and their secretary were un-

cereemoniously flung from the palace window into the courtyard, sixty feet below. This occurrence naturally gave offence and is generally regarded as the proximate cause of the Thirty Years War. The irritation and suspicion of the Bohemians were further increased by the recent succession of Ferdinand II, a determined champion of Catholicism, to the imperial throne and the thrones of Hungary and Bohemia. An embassy was immediately dispatched to the Hungarians, with the object of delaying the coronation, the intention being to gain their concurrence in forcing the king to dismiss his evil counsellors; such at least was the ostensible reason, though there seems little doubt that the real object was to draw the neighbouring countries into rebellion.

It was at this juncture that Jessenius entered the tortuous path of politics, by consenting to act as ambassador in the mission. He was coldly received in Hungary, and ultimately arrested and carried to Vienna, where he remained a prisoner for six months. But although in this affair he was treated as suspect, there is good evidence that he had no thoughts of rebellion at that time. In a prayer which he distributed to the schools in Bohemia shortly before the mission, he referred to the Emperor as "our gracious Lord and King"; when accused in Hungary of desiring to set that country in a blaze, he retorted that it was a sesquipedalian lie (a lie foot and a half long); when interrogated by the Imperial Chancery during his imprisonment in Vienna, he expressed the hope that of the three available measures applicable to the situation in Bohemia—namely, dictating, physic, and flogging—the Emperor would choose the mildest measures and not the latter. The Chancellor reminded him of the daily increasing excesses of the Bohemians; Jessenius, in fact, does not seem, at this time, to have possessed that political acumen which is required in order to detect the real beneath the ostensible. The rest of the story is soon told. The next prayer that he distributed to the schools contained no reference to the Emperor; second mission, headed by himself, had frankly for its object the drawing of the neighbouring countries into rebellion; the battle of the White Hill was fought and lost, and Jessenius and many of the citizens of Prague found themselves prisoners under sentence of death. The sentences varied in severity; that on Jessenius was, apparently, the most severe—to have his tongue cut out and to be quartered alive. This was so far mitigated that decapitation preceded quartering. Jessenius preserved his courage and his good humour throughout this ordeal. He regretted that his tongue, which had so often uttered words deemed worthy of approbation before emperors, kings, and princes, should be cut out; for the rest he cared little, and "by this time to-morrow, gentlemen," he said, addressing his friends, "I shall, unlike yourselves, have no need to trouble about the price of corn, or whether there is to be peace or war."

Very little is known of the private life of Jessenius. A description of his wife has been preserved, and is of interest as exhibiting, in contrast with our present conceptions, the feminine ideal of the time. We are told that "she was deeply read in the Word of God, and, having no children, spent the greater part of the day in hymn and prayer and in the study of the Scriptures. She honoured and was obedient to her husband at all times, was ever faithful to him, and, most important of all, forbearing and indulgent in the management of him, never taking anything amiss or opposing him, but regarding his will as law. She was circumspect and clean in her household economy, and sought refinement rather than luxury. She never shouted at the servants, but controlled them with a kindly eye. Discreet as Abigail, she seldom walked abroad, and then always with a serious and modest demeanour."

Beyond a few trifling cuts and bruises, the defenestrated Statthalters experienced no ill effects from their fall. This seemingly miraculous escape from the jaws of death was, of the evidence of eye-witnesses of the occurrence, ascribed to the direct intervention of saints and angels, aided, as some supposed, by the fact of their having fallen on a large dung-heap which lay at the foot of the castle.



# MALARIAL TREATMENT OF GENERAL PARALYSIS.

OCT. 2, 1926]

## THE VALUE OF MALARIAL THERAPY IN DEMENTIA PARALYTICA.

PRELIMINARY REPORT FROM THE LONDON COUNTY MENTAL HOSPITALS SERVICE.

The following preliminary report deals with the results of three years' malarial treatment of general paralysis in the various mental hospitals of the London County Council. In order to furnish comparable evidence as to the frequency of remissions in untreated cases figures have been obtained from four of the L.C.C. mental hospitals dealing with cases admitted during the three years from August 1st, 1920, to July 31st, 1923, who were diagnosed clinically as being general paralytics and who showed positive Wassermann reactions in the cerebro-spinal fluids. The fact that the period under review immediately precedes that in which malarial treatment was undertaken is in some degree a guarantee that changes of administrative policy as to the discharge of patients or any marked attenuation of the severity of the disease are not a factor for the results obtained during the period of malarial treatment.

TABLE I.

Period of Observation.	Number Admitted.	Number Discharged as Improved.	Number Died.
August 1st 1920, to July 31st, 1923.	227	6 (2.6%)*	141 (62.1%)

\* Of these one was readmitted as relapsed.

Since February 3rd, 1923, when the first paralytic to be treated with malaria in the London County Mental Hospitals Service was inoculated at Cane Hill Mental Hospital, malarial therapy has been carried out continuously in the London County service.

This report, however, deals with the first cases treated, the more recent inoculations being omitted. In Table II are shown the results of malarial therapy in all cases whose course of eight or more febrile paroxysms had been completed by August 31st, 1925. The shortest period during which any patient in this table has been watched since the termination of the malaria is six months, but the majority of the cases have been watched for a much longer period. The term "discharged" includes all patients who have been sufficiently well to be sent to their homes; transfers to other institutions are not included.

TABLE II.—Results obtained with Malarial Treatment.

Mental Hospital.	Number Treated.	Number Discharged.	Number Died.	Reported by
Bexley ...	35	14 (40%)	6 (17.1%)	Dr. D. R. Alexander.
Cane Hill ...	22	9 (40.9%)	3 (13.6%)	Dr. W. M. McGrath.
Claybury ...	73	28 (38.4%)	17 (23.3%)	Dr. G. de M. Rudolf.
Colney Hatch ...	25	2 (8%)	3 (12%)	Dr. F. G. L. Barnes.
Colney Hatch ...	25	9 (32.1%)	10 (34.3%)	Dr. G. A. Lilly.
Hanwell ...	23	9 (32.1%)	1 (2.5%)	Dr. W. D. Nicol.
Horton ...	8	2 (25%)		
Totals ...	191	64 (33.5%)	40 (20.9%)	

This table includes all cases who have been sufficiently well to be sent to their homes, transfers to other institutions are not included.

On comparing Table II with Table I it will be observed that the percentage of remissions is much greater in the treated than in the untreated cases. One-third of treated, unselected cases would appear to be the maximum number of good remissions that can be expected with malarial therapy. Gerstmann, in Austria, reports that of 400 treated cases who were watched for at least two years after treatment 33 per cent. underwent good remissions and 14.25 per cent. remained stationary or showed incomplete remissions. Nonne, in Germany, reporting on 450 treated cases, also found that about one-third of the patients with short histories of general paralysis are treated a higher percentage of remissions is obtained, as shown in Table III, which deals with the first 63 cases treated at Claybury

Mental Hospital. All cases were clinically advanced types, and were sufficiently severe to be legally certified as insane and to require detention.

TABLE III.—Relation of Duration of Dementia Paralytica to Prognosis.

Duration of Disease before Treatment.	Number Treated.	Number Discharged.
Two to eighteen months ...	33	23 (69.7%)
Nineteen to over thirty months ...	25	2 (8.0%)

### Salvarsan Treatment.

Wagner-Jauregg, the originator of malarial therapy, advises that salvarsan be given following the course of febrile paroxysms, but several writers have stated that equally good results have been obtained without the use of this preparation. With the object of endeavouring to determine whether it is advisable to follow the malarial with salvarsan Table IV has been constructed from the cases in Table II. In order to avoid the personal element as far as possible only those hospitals at which cases have been treated both with and without salvarsan are included. The total quantity of neosalvarsan given to each patient invariably exceeded 2 grams, the greatest quantity being given to the cases at Hanwell Mental Hospital, each patient receiving 3.6 grams.

TABLE IV.—Comparison of Malarial Treatment, with and without Salvarsan.

Mental Hospital.	Malaria alone.			Malaria + Salvarsan.		
	Number Treated.	Number Discharged.	Number Died.	Number Treated.	Number Discharged.	Number Died.
Cane Hill	5	2 (40%)	2 (40%)	17	7 (41.2%)	1 (5.9%)
Claybury	61	23 (37.7%)	17 (27.9%)	12	5 (41.7%)	0
Hanwell...	21	6 (28.7%)	9 (42.8%)	7	3 (42.9%)	1 (14.3%)
Totals...	87	31 (35.6%)	28 (32.2%)	36	15 (41.7%)	2 (5.5%)

The difference in the death rate of patients unfit for discharge in the two series of cases is very striking, but there is little difference in the discharge rate. Dattner reports that in Wagner-Jauregg's clinic 50 per cent. of the cases treated with malaria and salvarsan have been able to return to their occupations, whereas only 25 per cent. of cases treated with malaria alone have been able to do so. In Horton and Bexley Mental Hospitals malaria alone was used. In Colney Hatch Mental Hospital malaria and salvarsan were invariably combined.

### Summary.

Malarial therapy produces a greater number of remissions and a smaller death rate than occurs in untreated cases. Complete remissions occur in about one-third of the cases in a mixed series, but in a much greater proportion if only cases with histories of dementia paralytica of less than eighteen months are treated.

The addition of neosalvarsan to the febrile treatment decreases the death rate amongst the cases unfit for discharge, and perhaps increases the number of complete remissions that occur.

All the medical officers are agreed that in a majority of the cases treated by malarial therapy which proved to be unfit for discharge a marked improvement in general well-being, cleanliness, and conduct was observed.

The medical officers contributing to this report are Dr. D. R. Alexander, Bexley Mental Hospital; Dr. F. G. L. Barnes, Colney Hatch Mental Hospital; Dr. J. Brander, Bexley Mental Hospital; Dr. G. A. Lilly, Hanwell Mental Hospital; Dr. W. M. McGrath, Cane Hill Mental Hospital; Dr. W. D. Nicol, Horton Mental Hospital; Dr. G. de M. Rudolf, Claybury Mental Hospital.

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## COOMBE LYING-IN HOSPITAL, DUBLIN, 1826-1926.

A CENTENARY is sometimes more than a chronological excuse for congratulation, and the celebrations in Dublin during the third week in September point to something even more notable than the triumph of the Coombe Lying-in Hospital over the difficulties of 100 years. An important transformation of outlook has occurred since two poor women, dying in the snow, were responsible for the birth of a great life-saving institution. The comparative helplessness of medical science in 1826 has gradually given way to an increasing power to prevent, as well as to cure, disease, while the present-day impatience with the slow progress in the reduction of maternal mortality implies an approaching improvement in this respect also. The philanthropy which brought the Coombe Lying-in Hospital into existence has now been reinforced by the knowledge and skill so largely due to the patient research and educational work in such institutions throughout the world, and thus it is eminently fitting that a congress in Dublin, under the presidency of Sir William Smyly, should attract eminent visitors from the United States, France, Austria, Sweden, and Germany to indicate the lines of future progress.

### *History of the Coombe Hospital.*

In a previous reference on September 11th (p. 499) to the centenary celebrations we referred briefly to the dramatic circumstances attending the origin of the Coombe Lying-in Hospital, which was opened by Dr. John Kirby in 1826, with the assistance of Dr. Richard Reed Gregory, who became its first Master, in 1829. Gregory's early work was consolidated by the second Master, Dr. Thomas McKoeber (1832-1835). It is interesting to recall that the hospital drew its first support from an institution for medical education, and that the educational side of its curative work has never been overlooked in the years that followed. It is therefore fitting that the importance of education should have been assigned a prominent part in the programme of the centenary celebrations. Competition with the rival school at the Rotunda Hospital was at first acute, and even bitter, but after 1838 it was realized that there was need and room for both; public recognition followed, and in 1854 the annual sum of £200 was granted by Parliament for the assistance of the Coombe Hospital, which contribution has been received regularly since then.

The hospital was granted a Royal Charter in 1867, by which its regulations were confirmed and the certificates issued to its students were recognized as valid. The generosity of Benjamin Guinness, Lord Mayor of Dublin in 1851, and later of his son, Sir Arthur Guinness, enabled building operations on a large scale to be undertaken to meet the demand for increased accommodation. Although architectural difficulties and disasters delayed the completion of the work for many years the new hospital was eventually opened in 1877, too late, unfortunately, for the joint Masters, Drs. John Ringland (1841-1876) and James Hewitt Sawyer (1845-1875), who had toiled unsparingly through times of great difficulty and depression, to share in the joy of final achievement which opened a new and happier era in the history of the hospital. Their successor, Dr. George Hugh Kidd, who had been appointed Assistant Master to the hospital in 1847, and assistant obstetric surgeon in 1868, held the post of Master from 1876 to 1883; like his predecessors, his obstetrical and gynaecological skill was based on a wide general medical knowledge, and the breadth of his outlook contributed appreciably to his success as Master. The Coombe Hospital from his time has gained steadily increasing fame, both as a hospital and a teaching centre, and in the September issue of the *Irish Journal of Medical Science* Dr. T. P. C. Kirkpatrick, Registrar of the Royal College of Physicians in Ireland, describes in detail the steps by which the hospital has climbed to its present eminence.

### *Present-day Problems.*

The annual report of the hospital for 1925, which is published also in our contemporary, shows that 1,934 admissions were recorded, an increase of 186 as compared with the previous year. The Master, Dr. Louis Cassidy, states that the percentage maternal death rate was 0.85,

and the number of morbidity cases 42, representing a percentage of 4.5, or an average of 1 in 22 cases. This figure shows a large reduction as compared with the return for the previous year. In 24 cases of morbidity commencing during the puerperium no vaginal examinations were made, no perineal lacerations occurred, and no surgical intervention was employed. Dr. Cassidy suggests, therefore, that some very interesting questions are thus raised, and in particular, attention is invited to the possibility of puerperal sepsis being attributable to lowered bactericidal properties of the maternal serum before the onset of labour. It is announced that investigations are proceeding with a view to clearing up this particular problem.

### *Centenary Celebrations.*

On September 14th an inaugural reception was held in the Royal College of Surgeons by the governors of the Coombe Hospital, and on the following evening Alderman J. Hubbard Clark, chairman of the board of governors, gave a celebration dinner. The toast of the hospital was proposed by Professor Munro Kerr of Glasgow and acknowledged by the Master of the Coombe Hospital. The other toasts were "Prosperity to Ireland," proposed by Mr. Andrew Fullerton, C.B., C.M.G., President of the Royal College of Surgeons in Ireland, and "The visiting gynaecologists," proposed by Mr. W. Doolin, editor of the *Irish Journal of Medical Science*; to the latter toast Mr. Comyns Berkeley of London, Professor J. P. Faure of Paris, and Professor P. Werner of Vienna responded. A special performance of *Juno and the Paycock* was given by the Abbey Theatre Company on September 16th; and the distinguished poet, Mr. W. B. Yeats, director of the Abbey Theatre, in welcoming the visitors, explained that it had seemed only right to select a play which dealt with the life of the poorer residents of Dublin, for whose benefit the work of the Coombe Hospital was being carried on. Since nearly half the audience had been students of the Coombe and Rotunda Hospitals, and were thus very familiar with the conditions of life portrayed in the play presented, its choice was very much appreciated. Other social festivities included a visit to the Coombe Hospital, a garden party, and a polo match.

### *The International Congress.*

The attractive nature of the scientific side of the centenary celebrations was clearly shown by the average daily attendance, which remained at about 200 until the end. The educational value of the cinematograph was emphasized practically by Professor J. P. Faure of Paris, who showed a film dealing with abdominal hysterectomy, and by Professor A. Couvelaire of Paris, who illustrated the low form of Caesarean section. Professor Essen Möller of Lund read a paper on the teaching of obstetrics in Sweden, and the conditions elsewhere were described by Professor A. Couvelaire (Paris), Professor Munro Kerr (Glasgow), Professor J. B. de Leo (Chicago), Professor Fletcher Shaw (Manchester), and Mr. Comyns Berkeley and Mr. J. S. Fairbairn (London). Mr. Eardley Holland (London) read a paper on the unnecessary induction of labour. Professor Munro Kerr of Glasgow opened a discussion, on the second day of the congress, on the lower uterine segment Caesarean section operation, and Professor Hinselmann of Altona, on the third day, introduced a discussion on eclampsia by suggesting that from the clinical point of view this disease was due to a kind of angiospasm of the peripheral circulation. Other subjects dealt with included the treatment of climacteric haemorrhages, by Professor Werner of Vienna, and the cause of menstrual pain, by Professor Beckwith Whitehouse of Birmingham. Professor A. Donald of Manchester gave a short account of the history of antiseptics and asepsis in obstetrics; Professor Louise McIlroy discussed the value of x-ray examinations in pregnancy; and Professor de Leo of Chicago raised the question whether parturition in modern civilization was not to be considered a pathological rather than a natural process. The success of the whole congress was largely due to its secretary, the Master of the Coombe Hospital.

It is announced that the proceedings of the congress will be published in book form as a supplement to the *Irish Journal of Medical Science*, and the volume is expected to appear before the end of November.

# British Medical Journal.

SATURDAY, OCTOBER 2ND, 1926.

## FACTORS LEADING TO THE NORMAL TERMINATION OF PREGNANCY.

EXPERIMENTS continue to be made for the purpose of determining the reason why at a particular point of time normal pregnancy terminates. In the *Journal of Physiology* (1924) there was a paper by Dr. W. H. Dixon and Mr. F. H. A. Marshall (readers in agricultural physiology at Cambridge) on the influence of the ovary on pituitary secretion as a probable factor in parturition. A further communication by these two authors to the Section of Therapeutics and Pharmacology of the Royal Society of Medicine was reported in the *BRITISH MEDICAL JOURNAL* of November 21st, 1925 (p. 947). They came to the conclusion that in the absence of fully formed corpora lutea the secretion of the ovary had a specific effect in stimulating pituitary secretion; but that when corpora lutea were present ovarian secretion had no effect on the pituitary gland. Consequently they were of opinion that during pregnancy the dominating influence of the corpora lutea hindered pituitary effect on the uterine muscle, whether by neutralizing or by inhibiting normal ovarian secretion was not clear. When the corpus luteum began to involute the uterus showed increased irritability, and with the re-establishment of normal ovarian endocrine mechanism the ovarian secretion, working through the pituitary gland, became an important factor in bringing about labour. Experiments by Dr. Dixon had already shown that normal ovarian secretion, unlike extracts of testis, epididymis, pancreas, and corpus luteum, had an exciting effect upon the secretory activity of the pituitary gland, but that this action, and the uterine contraction promoted by it, were inhibited during pregnancy, probably by the corpus luteum. The experiments in which Mr. Marshall took part showed that ovarian extract was without any direct specific action on the uterus; that in the presence of fully formed corpora lutea the pituitary gland ceased to be activated by ovarian secretion; but that at the close of pregnancy, when the corpora lutea were in an advanced stage of involution, the normal secretory activity was once more produced, and the pituitary was excited to secrete in greater quantity. When the threshold stimulus of the pituitary secretion upon the uterus was reached and passed labour pains set in. It was not suggested that the ovario-pituitary endocrine mechanism was the sole factor in producing labour, but some further exciting cause, apart from the foetus and the uterus, was needed to account for the onset of labour.

About the same time that Dixon and Marshall were conducting their experiments, Clark and Knaus had been studying the conduction of uterine contractions in the rat at different stages of the oestrus cycle. The conclusions they reached were that in the di-oestrus period there is a slow conduction between the ovarian and the middle part of the uterus, while the vaginal part contracts independently. Under the action of pituitary extract, however, all three parts of the muscle contract simultaneously, just as they do at oestrus or in early pregnancy. In comparing the two sets of observations the suggestion arose that the

changes in the behaviour of the uterine muscle are due to variation in pituitary secretion; that during pregnancy there is a steady increase in its amount; and that a sudden increase at the end of pregnancy brings about labour. It occurred to Knaus that, were this so, by injecting an appropriate quantity of pituitary gland it should be possible to induce parturition at any stage of pregnancy. It was found, however, that this was not the case.

The rabbit has a gestation period of thirty-one to thirty-two days, and for the same strain of rabbits this period is very constant. In Knaus's experiments the initial dose was that which would just cause visible uterine contractions. A continuous effect could be obtained by repeating the dose every hour for about ten doses. The investigation was begun on rabbits nearing the end of pregnancy. It was found that injection of the equivalent of 0.0075 mg. of moist posterior pituitary lobe on the thirty-second or thirty-first day of pregnancy resulted in the birth of one young rabbit within a few minutes. When the dose was repeated a few hours later a second young was born, and so on. If the dose was increased ten-fold all the young were born within ten minutes. Precautions were taken to ensure that the doe was not already in labour and that the pituitary injection was the actual cause of labour. The young were usually born before the placenta, whereas in the normal animal the foetus is born wrapped in the membranes and placenta. On the thirtieth day the dose had to be increased to 0.3 mg. to induce parturition, and the response was delayed. On the twenty-ninth day the dose had to be still further increased to 0.6 mg., and eight doses were required to bring about a response. In rabbits between the twenty-eighth and eighteenth days of pregnancy nine doses of 2 mg. were necessary, to induce a response, which was abortion of the young some days later. Investigation suggested that the cause of death was haemorrhage into the spongy, placental tissues. In rabbits between the seventeenth and first day of pregnancy no reasonable dose of pituitary had any effect on pregnancy. Amounts up to 15 mg. were used, and as the rabbit's pituitary gland weighs only 7.5 mg. this was far in excess of any quantity the animal could normally produce.

Knaus believes that his experiments show that during pregnancy there is no increase of irritability or sensitivity of the uterus, but a regular rise of contractility of the muscle. For the first three months it is said that the uterine muscle fibres increase in number, but after that there is only increase in the size of the fibres and their power of contraction. The larger the muscle cell the greater its ability to shorten itself. In consequence of this the effect of pituitary extract upon the muscle increases steadily as pregnancy advances. But Knaus finds that until near the end of pregnancy the uterine muscle cells have not grown enough to break down the tissues of the spongy layer of the placenta, even when they are stimulated by pituitary secretion. Near the end of pregnancy the muscle cells have grown so large that their maximum contraction, when caused by pituitary extract, will result in delivery. At full term the contractility of the enlarged muscle fibres is such that their spontaneous contractions alone finally cause birth, and no sudden influence or stimulus need be postulated. The contractions of labour are to be regarded as the final stage in an expanding series of events. In fact, according to Knaus, the actual process of birth is merely an affair of the uterine muscle. The growth of the muscle is due to a hormone influence, and, so far as present knowledge

goes, the corpus luteum is to be regarded as the main factor in causing this growth.

It will be seen that the two sets of experiments taken together have not cleared up the point at issue—namely, why normal pregnancy terminates. Knaus's experiments seem to indicate that normal labour is terminated by spontaneous contraction of muscle fibres which have reached a certain size; but that during the last third of pregnancy in rabbits labour can be brought on by the administration of pituitrin. The earlier in the last third of pregnancy that labour is produced the larger must be the dose of pituitrin. We are by no means clear what importance is to be attached to the pituitary secretion during pregnancy as a means whereby the three portions of the uterus are kept simultaneously contracted. But Knaus's conclusions seem to be in conflict with those of Dixon and Marshall, for their statement is that during pregnancy the secretion coming from the corpus luteum neutralizes or inhibits the ovarian secretion, which otherwise activates the pituitary gland. In both papers the authors admit certain difficulties that can be raised against their conclusions; in neither do the explanations given of these difficulties appear quite satisfactory. Thus Dixon and Marshall say that their theory does not account for abortion; they seek to attribute abortion to some extraneous cause, such as disease, drugs, or fright. They have difficulty also with cases in which pregnancy has continued after removal of the ovaries in the later stages. For this they invoke a hypothetical "compensatory mechanism." Finally, it may be asked, what prolongs the existence of the corpus luteum, and how does this body inhibit the ovario-pituitary endocrine mechanism? Knaus has been met with the objection that loosening of the placenta is indispensable for delivery. To this he has a valid reply in the fact that, while the rabbit under normal conditions casts the ovum whole, fetuses and membranes together, when pituitary extract is used the young can be cast without their membranes and placentas. Therefore, he says, the actual process of birth is merely a matter of uterine contractions. Knaus meets the suggestion that the size of the foetus is an important factor in starting parturition by recalling that the duration of human pregnancy remains constant with great variations in the size of the foetus, or with enormous extension of the uterus in cases of twins or hydramnios.

From these papers we gather that in Knaus's view the contraction-producing power of the pituitary gland, so far as labour is concerned, is merely an accidental coincidence, while to Dixon and Marshall this power is the actual cause of the onset of labour pains. In either case we are a long way from an answer to the problem why labour begins at a certain point in pregnancy.

### THE ANTIRACHITIC VITAMIN.

It is twenty years since Hopkins first suggested that rickets might be due to a deficiency of some accessory food factor, but it was not until 1918 that Mellanby brought forward definite evidence that rickets could be produced by a deficiency of fat-soluble vitamins. The history of the advance of knowledge during the past eight years is a good example of how an apparently simple problem may turn out to be unexpectedly complex. Paton and his co-workers at once disputed Mellanby's conclusions, because they found that confinement in the dark could produce rickets on a diet which was fully adequate for animals enjoying an open-air life. The question whether rickets was due to

deficient diet or to bad housing conditions was, of course, of immenso practical importance.

The supporters of the deficiency hypothesis very soon found themselves in difficulties, because it was discovered that animals might develop rickets on diets containing an adequate quantity of the fat-soluble growth-promoting vitamin, and that whereas cod-liver oil would supply an adequate amount of growth-promoting vitamin and also cure rickets, yet green vegetables would produce the first effect but had a very uncertain curative effect on rickets. These difficulties were solved in a few years by two fundamental discoveries. The first discovery was that there were two fat-soluble vitamins—namely, vitamin A, the growth-promoting vitamin, and vitamin D, the antirachitic vitamin. The second discovery was that vitamin D could be produced by the exposure of food or by the exposure of an animal itself to sunlight or to any other source of ultra-violet light, whilst vitamin A could not be produced in this manner. Independent workers in America and England showed almost simultaneously that vitamin D could be produced by exposure of pure cholesterol to ultra-violet light, and researches are now proceeding with the aim of obtaining chemically pure vitamin D. For example, Rosenheim and Webster<sup>1</sup> have obtained from irradiated cholesterol a fraction, of which a daily dose of 1/100 mg. prevents rickets in rats.

Deficient diet and lack of sunlight have therefore both been proved to be causes of rickets. Both the administration of cod-liver oil, which is the richest known natural source of vitamin D, and also exposure to sunlight or ultra-violet light, have been proved to be certain cures or preventives of the disease. It is, however, extremely important to know the relative importance of dietary deficiency and lack of sunlight in the production of rickets in children. Luce<sup>2</sup> investigated the content of vitamins A and D in cow's milk, and concluded that the vitamin A content was due entirely to the nature of the cow's food. She found that the vitamin A content of milk was rich when the cow was fed on fresh green food, but was poor when the cow was on winter feed of cereals and roots, and that the vitamin A content was the same when the cow was exposed to sunlight as it was in a cow kept in a dark stall provided that the feeding was the same. Luce also concluded that the vitamin D content was chiefly dependent on the diet. Since these experiments were done it has been shown that the technique employed was not entirely satisfactory, because a lack of vitamin D can cause arrest of growth in young rats as well as occurrence of rickets, and hence to determine the vitamin A content accurately it is necessary to supply the test animal with vitamin D. This can easily be done by giving a vegetable oil that has been irradiated with ultra-violet light. This supplies vitamin D but no vitamin A. Chick and Roscoe<sup>3</sup> have repeated Luce's experiments with various refinements of technique, and their results confirm the conclusion that the vitamin A content of cow's milk is determined entirely by the nature of the cow's food, but prove, on the other hand, that the vitamin D content depends chiefly or entirely on the degree of exposure of the cow to sunlight. A cow kept in a dark stall yielded a milk poor in vitamin D, even when fed on fresh grass. The cow, therefore, does not manufacture any vitamin A, but simply passes into the milk such supplies as she has received in the food. On the other hand, the vitamin D in

<sup>1</sup> Rosenheim and Webster: *Biochem. Journ.*, 20, 577, 1926.

<sup>2</sup> Luce: *Ibid.*, 18, 716, 1924.

<sup>3</sup> Chick and Roscoe: *Ibid.*, 20, 632, 1926.

the cow's milk is chiefly manufactured in the animal's body, and the quantities of this vitamin taken in normal food are not sufficient to produce a milk rich in vitamin D. Doubtless if the cow had been treated with cod-liver oil, and thus given an excess of vitamin D in the food, a milk rich in vitamin D could have been produced.

The practical importance of this conclusion is very great, for, as the authors point out, a large proportion of the cows that provide the milk of our urban population are stall-fed, and their milk must be assumed to be deficient in the antirachitic factor throughout the year. Moreover, these conclusions can be extended to nursing mothers, and it seems to follow that the milk taken by a breast-fed child will be deficient in the antirachitic factor unless the mother either gets a reasonable amount of exposure to sunlight or is given cod-liver oil. Children living in our smoke-covered cities must therefore receive very little vitamin D in their milk throughout the winter, even when they are breast-fed. This deficiency will be compensated for if the child itself gets a reasonable amount of exposure to sunlight, or if the child is given cod-liver oil.

The evidence as to the relative importance of diet or sunlight in the prevention of rickets has fluctuated from one side to the other during the past eight years; but these experiments definitely support the view that sunlight is the more important factor, since they suggest that in a cow in the open air on a normal fresh feed the quantity of antirachitic factor actually produced by the cow is greater than the quantity taken in the food. As regards the prevention or cure of rickets, the administration of cod-liver oil would appear to be the simplest remedy. Exposure to ultraviolet radiations is probably a still more active remedy, but is expensive to organize on a large scale. These experiments confirm the view that the incidence of rickets could be greatly reduced by the prevention of smoke and the improvement of housing in our cities, but these are remedies that involve a considerable reorganization of our social system.

#### TAILED CHILDREN AND TAILED RACES.

AMONGST the specimens added to the museum of the Royal College of Surgeons of England during the present year is a very good example of a human tail. It was removed by a surgeon from a child a few weeks after birth, and measures fully four inches in length. It is covered by skin, and contains striped muscular fibres embedded in fibrous tissue, but, as is usual in such cases, vertebrae and joints are absent. Such structures represent the persistence of the external tail which projects from the caudal end of every human embryo during the fifth and sixth weeks of development, but which should undergo retrograde changes in the seventh week and disappear in the eighth, the post-anal dimple being the only trace left in normal children. Occasionally retrogression fails, and the tail increases in length and in thickness with the growth of the body, and forms the structure which surgeons are called on to remove from newly born children. In a case recorded by Dr. Ross Harrison, the inventor of the modern technique of tissue culture, the child used its tail as a medium of expression when put to its mother's breast. Human tails containing vertebrae are rare, but the soft vermiform variety are not so uncommon as is usually thought. At a recent meeting of the Royal Anthropological Institute, when the specimen now added to the Hunterian Museum was exhibited, two medical men who took part in the discussion which followed the exhibition each said that they had seen several cases. As a rule

those who possess such a structure take some pains to keep their knowledge to themselves. From time immemorial accounts have been brought to Europe of tailed races of men who had their existence in various and distant parts of the world. Usually they were said to exist in the Far East, the Philippine Islands being often alleged to be their home, or they were said to live in some inaccessible region of Central Africa. Lately excellent photographs of a tailed man were submitted to anatomists in London; the photographs are said to have been taken from a native of a small island at the southern end of the Philippine archipelago. These photographs have been accepted as genuine by competent anthropologists, and were regarded by them as rehabilitating the old myth that there were tailed families in the Philippines. It so happened that these photographs reached Dr. W. W. Keen, the Nestor of American surgeons, when he was writing a book on evolution for the better education of Daytonites. He naturally did not question the authenticity of the photographs, and included them in his book. Afterwards he discovered, as he has just explained to the readers of *Science*, that the photographs had been faked, the tail having been added by a clever photographer who apparently had some knowledge of the form assumed by a tail when it appears as an appendage to the human body. Dr. Keen, pursuing the straight, honest course of a lifetime which has now passed its eighty-ninth milestone, immediately stopped the sale of his book, and substituted for the faked photographs two authentic illustrations taken from medical literature. Dr. Keen may take some consolation from the fact that the photographer had succeeded in taking in several of our leading anatomists, but, mercifully for them, no use had been made of the photographs. The incident has a moral. In spiritualistic circles photographic evidence is relied on to prove the occurrence of phenomena, and is accepted implicitly as authentic evidence by leading spiritualists such as Sir Arthur Conan Doyle. The scientific man, when making his inquiries, has to guard against self-deception, but has seldom or never to think of wilful deception on the part of others. The highly successful man of science is therefore ill suited to take part in any inquiry where fraud, conscious or unconscious, has to be guarded against, and it is clear from the present instance that photographic evidence has to be accepted with the utmost caution.

#### THOMAS ADDISON.

Our issue of June 26th last contained an account of a commemoration at Lancaster of Thomas Addison (1795-1860) by the Border Counties Branch of the British Medical Association, at which addresses were given by several authorities, including Sir William Hale-White, who has now published in the July number of the *Guy's Hospital Reports*<sup>1</sup> a full and interesting life of Addison, thus admirably completing his pious biographies of the three almost contemporary medical heroes, Bright, Hodgkin, and Addison, of the famous Borough hospital. His latest essay bears evidence of critical research into several points, such as the date of Addison's birth, which is shown to have been almost certainly 1795, not 1793 as stated in the *Dictionary of National Biography*, his entry at Guy's in 1817—not, as elsewhere stated, in 1820—and the question of priority of the recognition of true keloid, which Addison discovered for himself unconscious of a previous worker's observation. Intended for the legal profession, Thomas Addison went to Edinburgh as a medical student, and while there did not show any evidence of his future eminence, and was not, as has indeed been asserted, president of the Royal Medical Society. Coming to London, he was first house-surgeon to the Lock Hospital, then pupil and later physician, in

<sup>1</sup> Hale-White, W.: *Guy's Hosp. Rep.*, 1926, lxxvi, 233-253.



all for eight years, to the General Dispensary in Hatton Garden, where he learnt dermatology from Bateman, the successor of the great Willan. Elected assistant physician to Guy's in 1824 and physician in 1837, he resigned in 1860, moving from Berkeley Square to Brighton, where the end came on June 29th of the same year. So outstanding was his position as a teacher that a deputation of students begged him to withdraw his resignation, but "he, poor man, knowing that he had a threatening disease of the brain, was compelled to persist." Addison, as portrayed by Sir William Hale-White, was a strong, dogmatic, and at the same time retiring man, and his position at Guy's—where his personal power was much superior to that ever wielded by Bright, and equal to, if not greater than, that of Sir Astley Cooper—contrasted with his standing in the outside world, both medical and lay. At the Royal College of Physicians, where he had to wait nineteen years before being made a Fellow, he was never censor, nor did he hold any lectureship or office. When he died neither the *British Medical Journal* nor the *Lancet* published an obituary notice. No Court appointment or honorary degrees were conferred on him; and, most surprising perhaps of all, the Royal Medical and Chirurgical Society refused to publish some of his papers, even after he had been its president (1849-50). It is hard, and indeed sad, to realize that none of his discoveries brought him fame during his life; these, such as the suprarenal and blood diseases called after him, the morbid anatomy of pneumonia, the clinical signs of a fatty liver, the mixed infective character of the lesions in pulmonary tuberculosis; and the description of vitiligoidea, later more generally known as xanthelasma and now as xanthoma, are carefully annotated by Sir William, who, in addition, has collected much information about Addison's family, and reproduces photographs of their houses and a facsimile of his handwriting.

#### A POST-GRADUATE OPHTHALMIC COURSE.

Dr. A. HILL GRIFFITH, formerly lecturer in ophthalmology at the Victoria University, Manchester, and ophthalmic surgeon to the Royal Infirmary and to the Royal Eye Hospital, has sent us notes of a post-graduate class which he started in 1886 and carried on for twenty-five years. The proposal was highly approved by the late Alderman P. Goldschmidt, chairman of the board of management of the Royal Eye Hospital; and Dr. David Little, Dr. Griffith's senior colleague, placed the patients of his large clinic at the disposal of the class. Twenty-five medical men attended the first course, which consisted of twelve weekly demonstrations. The board of management of the hospital fitted up a complete system of lights; and Dr. Griffith took care that each member of the class had a light and a patient to himself, so that loss of interest and consequent general conversation might be avoided. The object kept in view was to eliminate all that could be got from textbooks, and to confine the class strictly to practical matters. The post-graduates were asked first to use the ophthalmoscope mirror alone, at a distance of 2 ft., and to note the red fundus reflex and the presence or absence of any opacities. They were trained in guiding the mirror by throwing the light on the palm of the left hand, carrying the hand in front of the patient's eye, and then withdrawing it. Dr. Griffith then explained how several opacities situated on the antero-posterior axis of the eye could be brought into view by directing the patient to look down a little, the opacities in front of the centre of rotation then moving downwards, and those behind moving upwards; although what appeared to take place was that the opacity on the anterior capsule of the lens remained stationary, those in front of this point moving downwards and all behind appearing to move upwards. The reason given was that the red fundus reflex at the level of the

pupil was taken as the point of observation. The class was instructed next in the use of the lens alone, focal illumination. Those who had a fair knowledge of the use both of mirror and lens were not taken through this elementary instruction, but were set at once to the examination of patients. When the post-graduate was sufficiently instructed he was shown cases of opacities in various situations, examples of persistent pupillary membrane, incipient senile cataract, lamellar cataract, persistent hyaloid artery, old-standing detachment of the retina, and, whenever possible, sarcoma of the choroid or glioma of the retina. Even if a man never got a proper view of the disc, said Dr. Griffith, he had learned a great deal, and was satisfied that he was getting "better and better every day." Dr. Griffith never showed those beautiful, highly finished, coloured drawings of the fundus; they were useless for the beginner. The student was next taught how to take the field of vision by means of his fingers or a piece of paper on the end of a pen, a well marked case of homonymous hemianopsia being used. A registering perimetric was never employed. Cases of bitemporal hemianopsia, central scotoma in retrobulbar neuritis, and central colour scotoma in tobacco amblyopia were then shown. The shadow test was demonstrated, and Dr. Griffith notes the difficulty he had with one man who always differed from him as to the direction of the shadow, until it was discovered that he was using a plane mirror. The next step was to test simple hypermetropia, myopia, and presbyopia, with a demonstration that subjective tests sufficed even for astigmatism with adults of average intelligence, and that only in children was a mydriatic necessary. Dr. Griffith sympathizes with those pupils who had difficulty in getting a proper view of the disc by the inverted image; but he thinks that the indirect method should be used as well as the direct in every case. The entries for the class on "The use of the ophthalmoscope and estimation of refraction" became so numerous that two classes had to be held each year. For many years also Dr. Griffith gave a summer course on "External diseases of the eye." Each patient was demonstrated before a semicircle of students. They were shown that redness of the eye might imply not merely conjunctivitis, but also iritis or corneal ulcer or a foreign body or some deeper affection; and that conjunctivitis itself might be due to chronic dacryocystitis. At each meeting one or more of the rarer diseases were shown in order to arrest the students' attention. Dr. Griffith notes that there was always one man in a class—he felt lucky if there was only one—who would rather talk and ask abstruse questions than try to follow directions. Generally he was an over-read man; the abstruse questions were put, apparently, to impress the teacher and the other members of the class. Dr. Griffith's method of dealing with this person was to tell him he would like to go into the matter fully with him—after the class. In the meanwhile he sat the man down at a lamp, if possible at a distance from the other students, and told him to report, after the class had gone, all that he could make out.

#### SET DEBATES.

THE medical symposium, or organized discussion of a single topic from various aspects, seems to be gaining favour. Concurrently the independent paper, followed by a few haphazard comments and compliments, is going rather out of fashion; though there will, of course, always be room for the individual record of new work and new ideas, as well as for the showing of good cases and specimens, which, while often wearisome to read about afterwards, are profitable to examine on the spot. This tendency towards prearranged joint discussions is, we think, a good one. It has been gathering strength for some years in the scientific Sections in the Annual Meetings of the British

Medical Association, and was a conspicuous feature at Nottingham last July. On such occasions general practitioner and specialist get closer together. The set debate has become also during recent times a fairly regular item in the diary cards of the larger metropolitan societies. The main ingredients for success are a good topic, well chosen speakers, and a capable chairman; as an adjunct the circulation beforehand of abstracts often helps to keep the proceedings in focus. At the end of last session a conference of the presidents of the various Sections of the Royal Society of Medicine decided to continue the holding of special discussions, and the Calendar of the Society for 1926-27 now gives a list of the subjects agreed upon; the dates will be settled later and announced in due course. One discussion, on blood-letting, is to be held by the whole Society, and ten others will be taken part in by the Sections immediately concerned. The subjects are as follows: Treatment of leprosy; treatment of chronic non-tuberculous infection of the lungs; uses and limitations of ultra-violet light therapy; value of recent methods of treatment in the late stages of ocular syphilis; relation of abnormalities of the blood pressure to diseases of the ear; trypanosomiasis in man and animals; diathermy; anti-toxin treatment of scarlet fever; anaesthetics in dental operations; oral manifestations of general disease in children. Here is a varied bill of fare, and some at least of these combined discussions at 1, Wimpole Street are likely to attract large audiences. Clinical debates, on the lines which have already proved so popular at 11, Chandos Street, will no doubt be held also during the forthcoming session of the Medical Society of London.

#### HEALTH AND THE LEAGUE OF NATIONS ASSEMBLY.

THE report on the work of the Health Organization (writes our correspondent at Geneva) was almost the last item of business to be presented to the Assembly of the League of Nations before its hurried close on September 25th. Along with other matters of equal importance it was rushed through almost without discussion, the delegates having booked their sleeping-car accommodation. The Assembly was compressed within the allotted three weeks only by having meetings which lasted beyond midnight. The task of bringing health matters before the Assembly was entrusted to M. Fernandez y Medina, the delegate of Uruguay, who spoke with particular gratification of the very close relations which had been established during the last twelve months between the various health administrations of the Far East. He stated that the Japanese Government had done a great deal to facilitate the detailed study of its excellent health administration by a group of health officers appointed by the administrations of other Far Eastern countries. It was believed that the personal contact which had been made between Japan and the health administrations of British India, Australasia, China, the Soviet Republic, the Philippines, and the Dutch East Indies would make possible a valuable system of collaboration in future in the solution of common problems. A co-ordination committee, which included representatives of the permanent Health Committee of the League and of the health administration of Japan, was engaged upon the task of drawing up monographs containing an account of recent Japanese research, so that medical men in the West would have an opportunity of becoming acquainted with Japanese progress. Another enterprise had been an interchange of medical officers in the colonial services of Senegal, Gambia, Portuguese and French Guiana, the Ivory and Gold Coasts, Togoland, Nigeria, Dahomey, and Sierra Leone. In Latin America, again, health officers had been taking part in various interchanges. One Brazilian specialist had been afforded the opportunity of investigating in Japan, for a period of nine months, the parasitic

diseases prevalent among the Japanese emigrants to Brazil. The Maharaja of Kapurthala, who represented India in the Assembly, laid stress on the part which the League could take in Asia in the struggle against plague, cholera, and other diseases, and on the value of the epidemiological intelligence bureau at Singapore, in whose work all the countries of the Far East are co-operating. The number of ports in telegraphic communication with the Singapore bureau is now above one hundred. The advisory committee of the Singapore bureau is presided over by the head of the health administration of British India, and the vice-chairmen represent the health administrations of French Indo-China, Japan, the Dutch East Indies, Siam, and China. The Health Committee of the League has already been enabled to initiate and co-ordinate investigations and research work bearing upon vaccination against malaria, the endemic distribution of that disease, and the measures to be taken to prevent the risk of an outbreak of epidemic pulmonary plague in Manchuria. The Assembly passed a resolution recording its gratification at the work accomplished, and referred certain proposals for enlargement of the work to the Health Committee for consideration.

#### THE STEGOMYIA IN GIBRALTAR.

THE chief feature of the report on the health of Gibraltar in 1925<sup>1</sup> is an appendix of thirty-five pages containing an account of a mosquito campaign undertaken during the summer of that year. The common mosquito of the colony is the *Stegomyia fasciata*, and there are no anophelines. It is remembered that there were serious epidemics of yellow fever there in 1804, 1813, and 1828, and the authorities observe that the opening of the Panama Canal brings the colony into direct communication with countries where yellow fever has been endemic. It is, however, pointed out that the conditions now are very different from what they were a hundred years ago, for the United States administration of the canal zone may be relied on to prevent infection being transmitted by way of the canal. In any case, until rainwater underground tanks, of which there are a vast number connected with the houses in Gibraltar, are abolished completely, it seems hopeless to expect that the *Stegomyia* will cease to flourish. Some comfort may be obtained from the measures described in the report, but they seem scarcely necessary because of any fear of yellow fever. There are several annexes to this appendix; they contain much useful and practical information, and models for the framing of regulations and for propaganda purposes. The report itself shows no falling off in the high standard which has been maintained for many years, notwithstanding the overcrowded state of the occupied area and the exceptionally large percentage of families living in one-room dwellings. The population, apart from the garrison, is stationary, and has been so ever since an official record has been kept. In 1925 it was 17,268; but 1,500 British subjects and 5,000 Spaniards entered the colony daily from the neighbouring Spanish town, La Linea. The birth rate, which was 23 per 1,000 of the fixed civil population, has varied but little during the last ten years. The death rate—14.8 per 1,000—also shows little variation, except during the influenza years towards the end of and immediately after the war. The infantile mortality—83.3 per 1,000 births—is lower than in 1924, when it was 91.6 per 1,000. The death rate from acute infectious diseases was 0.62 per 1,000 of population, and from pulmonary tuberculosis 1.7 per 1,000. Influenza and pneumonia together accounted for 1,022 of the 1,262 cases of notifiable disease; but influenza, of which 990 cases were notified, was removed from the list

<sup>1</sup> Annual Report on the Health of Gibraltar for the year 1925. By Lieut.-Colonel W. G. Smiles, D.S.O., R.A.M.C. Gibraltar: Garrison Library. (8vo, pp. ix + 72 and 35 pp. of appendix.)

of notifiable diseases in November of the year under review. There was no other outbreak of disease of any importance, but seventeen persons were subjected to anti-rabic treatment on account of bites from dogs or cats suffering from, or suspected of, rabies. The report, as a whole, is well prepared and arranged, and records, as in previous years, the facts connected with various infectious diseases, with general sanitary work, and the activities of institutions for maternity and child welfare and care of the tuberculous. There are also several statistical tables, charts, and a sanitary map of Gibraltar.

#### ANTIMALARIAL MEASURES.

OF the various enterprises usefully carried on under the auspices of the Rockefeller Foundation, none excels in practical value the work of the International Health Board in the study and control of malaria. In Palestine during 1924, as narrated in the annual report of the Foundation for that year, surveys were made which show that while the mosquito *Anopheles bifurcatus*, breeding in wells and cisterns, is the carrier of malaria in towns, the principal vector in rural areas is *Anopheles clutis*. In the towns much benefit has been derived from oiling the wells and cisterns: in the country districts hopes are fixed on prospective legislation requiring the tenants of land to check the breeding of mosquitos. Palestine, it is suggested, at the present time needs management of its water supplies rather than general drainage. Other regions, on the other hand, have been greatly the better for the draining of superfluous water. In the malarious parts of Porto Rico, for example, the disease is worst near cane fields where drainage is neglected: Fajardo, where drainage is efficient, appears to be free of infection. Promising results have been got in Brazil by antilarval measures alone without quinization of the inhabitants, and in Nicaragua an important gold-mine, which had been closed for some years owing to the high malaria rate among its labourers, has, after drainage, been reopened. Officers of the International Board, in response to an invitation received from the Government of Italy, made a general survey of the malaria position in that country. Control, especially in the South of Italy, has hitherto been largely confined to the free distribution of quinine, but now the Government provides in addition screened houses for its own employees, and offers premiums to private employers who follow its example. In order to throw light on the malaria problems of the southern United States, a special investigation has been made at Leesburg in Georgia. Of the three indigenous Georgian anophelines, it has been ascertained that *Anopheles quadrimaculatus* is for practical purposes the sole vector of malaria. It frequents level lands and impounded water. The imago when at rest does not assume the traditional anopheline posture, with its body elevated at an angle of 45 degrees: it adopts, on the contrary, a flat or eulicino attitude. Its range of flight was observed to be small; few specimens travelled a mile from their breeding place. The larvae of Georgian mosquitos during the winter months, when the temperature of the water ranges from 39° to 50°, spend most of their time at the bottom of pools. These studies and inquiries, made in various lands and under various conditions, exhibit the diverse character of the questions involved in the repression of malaria. The methods which help one district may be inapplicable to another. The habits of one mosquito may protect it from assaults which are lethal to allied species. Thus a Georgian larva at the bottom of the water is beyond the usual range of surface oiling. Without patient research there can be no clear understanding of the several problems and no sure guidance as to appropriate action. The report of the Rockefeller Foundation is at once a stimulus and a caution to all engaged in antimalarial campaigns.

#### AUTOPSY OF A "FAMILIAR."

IN a leading article on "A Harveian tercentenary," on August 14th last, we remarked that William Harvey in 1634 was appointed to examine four women known as the Lancashire witches. On September 18th we published an interesting letter from Dr. H. A. Clowes, in which the story of Harvey's association with Sergeant-Surgeon Clowes and others in the examination of the women was told in greater detail. This letter was made the subject of a humorous little leading article on "Harvey and the witches" in the *Times* of September 21st. This brought a letter from Dr. Letitia Fairfield, published in the *Times* two days later, quoting an account of another investigation into alleged sorcery which was made by Harvey. The story is told in Professor Notestein's *History of Witchcraft in England*, and is based on a letter in the *Gentleman's Magazine*, 1832, Part I, 405-410. It appears that about 1685 a justice of the peace in south-west England, whose name is unknown, wrote a letter in which he said that he once asked Harvey his opinion on witchcraft: Harvey replied that he believed there was no such thing, and related a story of a visit he made to a reputed witch when he was at Newmarket with King Charles I. The woman lived in a lonely house on the borders of the heath. Harvey told her that he was a wizard, and had come to converse with her on their common trade. The woman believed him, because, as Harvey said, "You know I have a very magical face." Harvey asked to see the witch's familiar; whereupon the woman brought out a dish of milk, made a chuckling noise, and a toad came out from under a chest and drank some of the milk. The witch was persuaded to go out to get some ale half a mile away; and while she was absent Harvey cut up the toad and found the milk inside. He came to the conclusion that the animal "no ways differed from other toades," but that the old woman, having tamed it, had come to believe it a spirit and her familiar. On her return the old woman "flew like a Tigris" at Harvey, and would not be pacified with money; so that Harvey was obliged to tell her that he was the King's physician, sent to discover if she were a witch, and in case she were to have her apprehended. Dr. Fairfield thinks that this is "the only scientific examination on record of that unique and mysterious feature of English witchcraft, the 'domestic familiar'"; and she agrees with Professor Notestein that the episode may have influenced Harvey in favour of the Lancashire women.

#### MEDICAL RESEARCH COUNCIL.

ORDERS of the Committee of Privy Council have been issued by which Dr. Charles J. Martin, F.R.S. (Director of the Lister Institute and Professor of Experimental Pathology in the University of London), and Sir Frederick Gowland Hopkins, D.Sc., M.B., F.R.S. (Professor of Biochemistry in the University of Cambridge), are appointed members of the Medical Research Council into the vacancies caused respectively by the death of the late Lieut.-General Sir William Leishman, F.R.S., and by the retirement of Professor T. R. Elliott, F.R.S.

THE Royal Society of Medicine will hold a reception at 1, Wimpole Street, W.1, on Monday, October 18th. At 8.30 p.m. Fellows and their guests will be received by the President, Sir James Berry, and Lady Berry. At 9.30 Sir Arthur Keith, M.D., F.R.S., will give a short address entitled "John Bull: a study in anthropology," with lantern illustrations. The library will be open, and various objects of interest will be exhibited. Music and light refreshments will be provided.

England and Wales.

**ENGLAND.**

**THE CARE OF WELSH CRIPPLES.**

Schemes for the systematic care and cure of cripples have of late years been put into operation in one county or group of counties after another; and it was not likely that Wales would long bear the reproach of lagging behind, especially when there was such a shining example at its very doors as that afforded by Shropshire—the pioneer in the movement. Following on a lecture delivered by Sir Robert Jones in July last to the representatives of the authorities which are responsible for the care of cripples in Wales, a movement has been started under influential leadership to provide the necessary organization by the inauguration of a Welsh branch of the Central Committee for the Care of Cripples, Cardiff. The secretary of this Prince of Wales' Hospital, Cardiff, points out the great importance of recognizing the fact that the county councils, county borough councils, local education and child welfare societies which are responsible for instituting and maintaining the after-care clinics under the scheme. Sir John Lynn-Thomas has consented to act as honorary organizer, and Dame Agnes Hunt has agreed to render all assistance in her power in the organizing of the after-care clinics. As tuberculous cripples over the whole of Wales and Monmouthshire are already being dealt with by the Welsh National Memorial Association, it will only be necessary to provide for the needs of the non-tuberculous cases. This circumstance reduces the scope of the scheme, but nevertheless the benefits of open-air treatment is needed. This, it is felt, for all and an open-air hospital is needed. This, it is felt, should be large enough to allow of cases being retained until their cure is complete or until efficient after-care is forthcoming. The needs of the adult cripple can be dealt with by the Prince of Wales' Hospital and by the Shropshire Orthopaedic Hospital. For the present it is considered that these hospitals—two of which, it is to be noted, is not in Wales—will suffice, but the question of the establishment of an open-air hospital in Wales will have to be dealt with ultimately. At present the most urgent task is the provision of the after-care clinics in suitable localities and of the trained surgical and nursing staff. The appeal, which we understand is being circulated in Wales, recapitulates the objects of the Central Committee for the Care of Cripples, and urges the desirability of co-operation with existing agencies, especially the Welsh National Memorial, and an advisory board is to be formed to settle matters of administration and sites for clinics, on which the Board of Health, medical officers of health, the consulting staff of the Prince of Wales' Hospital, and others will be represented. It is suggested that a lecture campaign on the care of cripples shall be carried on through Wales. The scheme starts with the advantage of the support of the Prince of Wales' Hospital at Cardiff and of its influential council and staff, and difficult as the present situation is, on account of the coal strike, we feel sure that the patriotism of the Welsh people will see to it that it is carried through.

**TRELOAR CRIPPLES' HOSPITAL.**

1926, the Lord Mayor

**LORD MAYOR TRELOAR CRIPPLES' HOSPITAL.**

During the year ending March 31st, 1926, the Lord Mayor Treloar Cripples' Hospital at Alton extended its work to include general orthopaedic cases, which had previously only been admitted exceptionally. One observation ward and two ordinary wards, containing in all forty beds, have now been set apart for non-tuberculous crippled children. In September, 1925, a new massage and medical gymnastic department was opened. Other extensions during the year include the enlargement of the nurses' home at a cost of £10,125, and the completion of the new isolation hospital. The whole hospital now contains 350 beds, and there is accommodation for the technical training of crippled lads from 14 to 18 in the college. The income during the year showed a "record" increase in annual subscriptions, and in spite of the expense of the new light department the

VOLUNTARY HOSPITALS IN SHEFFIELD.

A report of the work in 1925 of the City of Sheffield Voluntary Hospitals Committee, which was formed in 1921; its previous reports were incorporated in the publications of the Sheffield Voluntary Hospitals Advisory Council. Tables are provided of the income and expenditure under various heads of the Sheffield Royal Infirmary, the Sheffield Royal Hospital, the Jessop Hospital for Women, and the Children's Hospital, during 1925, and the totals are compared with those of the four previous years. Another table, by means of an aggregate balance sheet for each hospital in 1925, shows that a surplus was realized in each case, and supports the committee's recommendation of the maintenance of the voluntary system in hospital administration at all costs. Statistical tables are included of the number of patients treated, the work of the Sheffield Hospitals Council, and miscellaneous information about the number of patients contributing towards their maintenance, admitted free, and supporting the penny-in-the-pound scheme. It is stated that extension of the work of the committee is contemplated to include the surrounding areas from which the Sheffield hospitals draw a large percentage of their patients, and that negotiations are in progress with the boards of the county and cottage hospitals and the general practitioners concerned, with the view of utilizing the available beds in the district to their fullest extent.

CARE OF MENTALLY DEFECTIVE CHILDREN.  
GLAMORGAN.

A proposal to purchase Hensol Castle, Glamorganshire, for the treatment of mentally defective children has been approved by the Glamorganshire Education Committee. It is intended to provide in the whole scheme a residential school at Hensol Castle for the care of mental defectives, with provision for special classes in existing schools or schools in the county, and special day schools in the more thickly populated areas for backward children. In this way the residential school will be kept for children who cannot benefit from education elsewhere. The cost of the purchase is estimated at between £30,000 and £40,000; the estate covers 1,082 acres, of which 500 would be used for the purpose of a colony in connexion with the residential school. After the children have been educated in the residential school they will subsequently form the population of the colony, where suitable occupation can be provided for them, and their parents will be able to visit them from time to time. At present such children are being sent so far away as Lancashire, Yorkshire, and London.

SCOTTISH MEMORIAL TO DAVID LIVINGSTONE.  
LIVINGSTONE was born in 1813, in a house  
Blantyre, near Glasgow.  
of Physician

SCOTTISH MEMORIAL TO DAVID LIVINGSTONE.

DAVID LIVINGSTONE was born in 1813, in a house on the banks of the Clyde, at Blantyre, near Glasgow. He was admitted a licentiate of the Faculty of Physicians and Surgeons of Glasgow in 1840. His early home has now fallen into considerable disrepair, and is threatened with demolition. An influential committee has therefore been formed to purchase the house and grounds, and to restore them as a national memorial in which personal relics of Livingstone may be preserved, as has been possible in the case of Scott and Burns. An appeal is now issued for £12,000, of which it is believed £7,000 will be required for securing the property, making extensive repairs and internal adjustments, and enclosing and laying out the

grounds, while an endowment of at least £5,000 is considered necessary for maintenance. In connexion with this appeal an illustrated pamphlet has been issued, which may be obtained from the organizing secretary, Mr. J. G. Harley, 36, Chalmers Street, Edinburgh. Subscriptions should be sent to Mr. J. Macgregor Hart, the honorary treasurer, 142, St. Vincent Street, Glasgow. Livingstone died at Chitambo on May 1st, 1873. His remains were brought home and the burial in Westminster Abbey was on April 18th, 1874.

#### GLASGOW SLUM CLEARANCE.

A Board of Health inquiry has been sitting during the past week to investigate the question of slum areas which the Glasgow Corporation propose to clear, and also to investigate an improved housing scheme which has been approved by the corporation. The corporation desires to clear away some 1,000 houses and to erect accommodation, chiefly of the nature of tenements, in other parts of the city. The previous slum clearance scheme introduced in 1923 involved 2,000 slum dwellings, and is now almost complete. Mr. Archibald Crawford, K.C., on behalf of the corporation, explained that the scheme related to five of the public health areas of the city, in some instances clearance of a considerable congested district, and in other cases of isolated houses here and there. The medical officer had chosen what he regarded as the worst dwellings to be cleared out. The number of persons to be displaced was 4,532, and this scheme was a second instalment of a series of slum clearances which the city had in view. Within recent years the corporation had determined upon slum clearances which would involve about 50,000 persons, or between 13,000 and 14,000 houses. Many of the properties were houses of a past age, in a dilapidated state; they had a very unhealthy effect, and were productive of early death, particularly among children. Dr. A. S. M. McGregor, medical officer of health for the city of Glasgow, giving evidence as to conditions prevailing in the slum areas, said that for some years prior to 1909 a survey had been made of the city, from the slum area point of view, and at that time 13,000 houses had been placed in the category of insanitary dwellings. Examples were given by Dr. McGregor to show the crowded character of the slum areas in the Water Street district of the northern area; 633 inhabitants lived in 48 houses in an area of 1.5 acre; this meant 433 persons to the acre, as compared with 57 for the city generally. The death rate was 25 per 1,000, compared with the general city death rate of 14; and the infantile mortality was 148, as compared with 107 for the city. In an area about Adelphi and Crown Streets the population was 943 to the acre, the death rate 42, and infantile mortality very high; and the death rate from respiratory causes was 10.1, as compared with 2.7 for the city generally. In contrast to this, 271 new houses were to be erected at Germiston, in the north-eastern district, with a density of 17 houses to the acre; in the east end at Duke Street 130, with a density of 28 houses per acre; 180 new houses at McNeil Street, with a density of 33.5 houses to the acre; and 288 new houses at Govanhill, with a density of 31.3 houses to the acre. All these houses would be well lighted and ventilated, and would consist of two and three apartments. Mr. A. C. McMillan, city chamberlain, in giving evidence, said that the outlay required further for the slum clearance involved an expenditure of about £500,000, or a loss of £17,000 for the next sixty years; half of this sum, however, was to be paid by the Government, so that £8,500 per annum would be the share of the Glasgow corporation. Mr. John Bryce, director of housing, spoke of the new schemes. The sites, he said, were within easy reach of the places where the persons to be displaced were now living. The reason for differences in density of population was that in the older districts streets were already formed, while in districts now to be laid out for the first time, like Germiston, the streets were to be planned as seemed best, and this was being done in a generous manner, while good health conditions would be kept in view. In forming plans the principle now followed was to build 50 per cent. of two-room houses and 50 per cent. of three-room apartment houses.

#### SCOTTISH ASYLUMS' PATHOLOGICAL SCHEME.

The twenty-ninth annual report of the Board of the Scottish Asylums' Pathological Scheme contains an account by the pathologist, Dr. F. E. Reynolds, of his research and routine work during 1925. In collaboration with Dr. Logan Turner, Dr. Reynolds has made a special study of the paths of infection to the brain, meninges, and venous blood sinuses from neighbouring peripheral foci of inflammation. Two reports have been published in the *Journal of Laryngology and Otolaryngology* for February and July of the present year; it is proposed to publish a third report towards the end of the year. In addition to routine pathological investigations performed in the laboratory in Edinburgh, visits are being paid to various mental hospitals with a view to assisting pathological investigations, and a course of demonstrations and lectures for the diploma in psychiatry was given in the first quarter of 1926. Post-graduate teaching in pathology has also been carried on, and lectures and demonstrations have been delivered to undergraduates studying pathology in Edinburgh. A collection is being made of pathological and microscopical preparations for teaching purposes, and these are available for use by medical superintendents of the mental hospitals contributing to the scheme. Dr. Reynolds is anxious to obtain material for demonstrating degenerative changes in the central nervous system, especially in cases of tabes dorsalis, disseminated sclerosis, and hemiplegia.

#### CALEDONIAN MEDICAL SOCIETY.

The annual meeting of the Caledonian Medical Society was held at Storrs Hall Hotel, Windermere, on September 24th. The president, Dr. W. E. Henderson, medical officer of health for Westmorland, delivered an address on "The historical and literary associations of Westmorland" to a large audience. Sir Robert Jones, Bt., K.B.E., F.R.C.S., and Sir Samuel Scott, Bt., High Sheriff of Westmorland, were elected honorary members. The annual dinner was held in the evening. The 1927 meeting will take place in Dundee under the presidency of Dr. Angus McGillivray, and in 1928 the society will celebrate its jubilee at Edinburgh under the joint presidency of its founders, Dr. S. Rutherford Macphail and Dr. W. MacNaughton.

## Ireland.

#### TREATMENT OF TUBERCULOSIS IN THE FREE STATE.

IMPORTANT questions relating to public health were discussed at the summer meeting of the National Association of Insurance Committees. It was stated that on the question of the treatment by Insurance Committees of tuberculous insured persons in excess of the number contracted for under agreements with local authorities, a deputation was received by Dr. Stephenson, chief medical officer of the Department of Local Government and Public Health. The deputation pointed out that the insufficiency of the sanatorium benefit fund was largely caused by widespread non-compliance with the Act, and that it was the duty of the Government to make arrangements for meeting its moral obligations to the insured persons who had complied with the Act. Dr. Stephenson admitted that the position created a hardship for insured contributors, and said that his department was concerned with safeguarding the ratepayers. If the deputation could put their views in the form of a memorandum he would place it before the Minister. It was suggested that a letter of protest should be sent to the Commission, and that it should be requested to negotiate with the Government with a view to ensuring that adequate funds were made available for the treatment of sanatorium applicants throughout the Saerstat. Dr. King explained the report of the medical committee for Dublin County, which was adopted. It dealt with a more rigid form of notification and disinfection, power to compel removals of tuberculous patients, suitable homes to segregate advanced patients, medical inspection of school children, inquiry into milk supply, overcrowded dwellings, profiteering



CORRESPONDENCE.

Correspondence.

CHOLECYSTOGRAPHY.

SM.—The opinion expressed at Nottingham that cholecystography should become a standard method of investigation is not only the opinion of Professor Graham, who devised the test, but of the leading radiologists in America, Germany, France, and this country, who have tested and proved its value in several thousands of cases.

At the Queen's and St. Chad's Hospitals, Birmingham, we have made over 120 cholecystographic investigations, and the diagnoses given have proved correct at operation in over 90 per cent. of the cases.

In a very large proportion of the patients not the slightest toxic reaction was experienced. A few patients have complained of nausea, sickness, and headache. In only ten patients has the reaction been of the severity of the "bilious attacks" previously experienced by the patients, and only two in our series had the symptoms of severe surgical shock. The skin of one of these was of a pale yellow tint before the injection; throughout the day after receiving the injection the skin became deeper in colour. Her gall bladder was normal in shape, position, and density. It was normal in the normal time.

A number of patients have had very marked jaundice due to complete obstruction of the common bile duct; none of these had a reaction which was noticeable. Age apparently does not influence reaction, as many of our patients were over 60 years of age. The type of patient who gets a severe reaction is the patient who has had what we believe to be a toxic haemolytic jaundice, as the gall bladders of such patients fill and empty normally.

The dye used in all these tests is sodium tetraiodophenolphthalein made by the British Drug Houses and Kodak Limited. The technique advised by Graham is strictly adhered to on all occasions. The percentage of accurate diagnoses and the percentage of patients who had the reaction in our series are very similar to those recorded by the Mayo Clinic and other large clinics in America and Germany.

Naturally we shall all welcome a dye which is absolutely non-toxic. In the meantime we, personally, will be reluctant to abandon a method of investigation which is proving of immense use in the diagnosis of diseases of the bile passages, at any rate until we have full details of the single fatal case recorded so briefly by Mr. Raison in your issue of September 18th (p. 542).—We are, etc.,

JAMES F. BRILLSTON.  
A. W. NUTTALL.

Birmingham, Sept. 24th.

THE ABDOMINAL CRISES OF PERNICIOUS ANAEMIA.

SIR.—Mr. Hamilton Bailey's article in your issue of September 25th (p. 554) illustrates very forcibly the truth that now and again severe abdominal pain may find its interpretation in the existence of pernicious anaemia. The lesson has been read before, but as such experiences appear to be unusual its restatement is more than justified. In one of his well known studies of pernicious anaemia Dr. William Hunter speaks both of "acute gastric distress," and of "attacks of tearing, gripping pain in the abdomen," and in a case recorded by Dr. J. George Taylor the description runs of abdominal pain which "came on rather suddenly, lasted for several hours, and appeared to cause intense agony."

Some years ago I was asked to see a patient who was said to be the victim of recurring attacks of abdominal pain for which no explanation had been found, even though under their provocation the abdomen had been opened by a very experienced surgeon. The case was undoubtedly one of pernicious anaemia, as established in the end by post-mortem examination. A point of particular interest in this experience is that the diagnosis was very near at hand when once an ophthalmoscopic examination was made. There, plainly enough, were retinal haemorrhages, and necessarily a blood examination followed.

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in the necessities of life, medical benefit as an aid to early diagnosis, after-care committees, contributions for patients, and graduated work as an adjunct to treatment.

TUBERCULOSIS IN BELFAST.

Reporting on the work during 1925 of the tuberculosis department of the county borough of Belfast, Dr. Andrew Trimble, the chief tuberculosis officer, states that there has been a reduction of the death rate due to pulmonary tuberculosis in Belfast of 30 per cent. in the last ten years, 55 in the last twenty years, and 60 in the last thirty years. He refers to the vexed question of the effects of tuberculosis on pregnancy and vice versa, and concludes that this disease cannot be convicted of contributing in any marked degree to interruption of the normal course of pregnancy. He finds that if a tuberculous woman is not in an advanced stage of the disease, or acutely ill, is well nourished and living in hygienic surroundings, pregnancy may be the little apparent effect on the clinical course. He emphasizes, however, in advanced stages of tuberculosis, pregnancy has an acute type of tuberculosis. He emphasizes the value of x-rays in the diagnosis and prognosis of pulmonary and osseous tuberculosis. He has frequently found that even when a sinus has appeared to be firmly healed for months, or even years, the x-ray film may still show much rarefaction of the diseased bone, indicating the need for further rest and treatment. With regard to the diagnostic importance of the albumin test in sputum, he states that out of 850 sputums examined for albumin and no albumen, 14 were found to contain tubercle bacilli gave also a positive test for albumin. He adds that even if a negative albumin reaction is of uncertain value as indicating the absence of pulmonary tuberculosis, a positive examination provides a valuable indication for the repeated examination of the sputum for tubercle bacilli. Dr. Trimble gives a short account of the visit of the medical commission from Belfast last year to Paris, Geneva, Frankfurt, Hamburg, and Copenhagen. We referred to the report of this commission on August 8th, 1925 (p. 270). Dr. Trimble also gives a report on the work of the Belfast committee which has been investigating the value of sanocrysin, and concludes that, while the method seems to represent a distinct therapeutical advance in definitely selected cases, yet further observation for at least a year of the results obtained will be necessary in order to estimate the degree of permanence.

FERMANAGH ASYLUM, TYRONE.

The resident medical superintendent (Dr. Patrick) of Tyrone and Fermanagh Asylum in the course of his annual report states that on January 1st, 1925, there were 429 males and 347 females in the institution; 95 males and 74 females were admitted during the year, and 97 males and 76 females discharged. There appeared to be little difference in the forms of mental disorder and their relative proportions during recent years. A considerable number of mania entered the institution. The number of cases of mania was 42, and of melancholia 71. As in previous years, a considerable number of the newly admitted patients were in poor health, suffering from malnutrition from one cause or another, which necessitated hospital treatment. In 73 cases there were only two cases in which over-indulgence in alcohol was given as the principal, and in 5 it appeared as a contributory cause. This suggests that the inhabitants of Tyrone and Fermanagh are very temperate, or that insanity is not so potent a cause in some reformers. The view of Tyrone and Fermanagh as a cause for mental breakdown that over-indulgence is to be regarded more as a sign of nervous instability than as the more correct. In any case, he adds, the reforms so vehemently advocated would not materially lessen the number of admissions to that institution, where the experience of a considerable number of years was contrary to the belief that alcohol was one of the most powerful of the causes of insanity.

Mr. Hamilton Bailey usefully points out that the chance of mistaking the gastric crises of tabes dorsalis for an acute abdomen has been reduced to a minimum by routine examination of the pupils and the tendon jerks. Equally, let routine practice extend to the examination of the fundus oculi, and the confusion against which he now warns us would be in the highest degree improbable, for few indeed are the cases in which pernicious anaemia is not marked by the presence of retinal haemorrhages. Mr. Bailey tells us of one patient operated on for "perforated gastric ulcer," and of another in whom "a diagnosis of gall-stone colic was made." Yet the true interpretation in each case was pernicious anaemia. Personally I should entertain a very strong suspicion that the ophthalmoscope would have avoided conclusions which led to the operating theatre in the one instance and to its very threshold in the other.—I am, etc.,

London, W.I., Sept. 25th.

C. O. HAWTHORNE.

#### GOITRE IN CHILDHOOD.

SIR,—In your issue of September 25th (p. 577) Dr. Milligan states: "The theory put forward by Dr. Tarton, that excess of lime has something to do with goitre prevalence, may be correct, and Sir James Berry (BRITISH MEDICAL JOURNAL of December 5th, 1925, p. 1060) has supported this view . . ." To state it thus is putting the cart before the horse, and I desire, Sir, to disclaim, for my own part, any priority for the view which Dr. Milligan attributes to me. The reverse order is the correct one, but the statement of Dr. Milligan is not quite correct. If he will turn to the *Lancet* (February 6th, 1926, p. 269) he will find that Sir James Berry, in his lucid article on "Some clinical aspects of simple goitre with remarks on its causation," actually said:

"To my mind, there is abundant evidence that the cause of endemic goitre is to be found in drinking water, and though I fully admit that the actual nature of the poison is not definitely proved, I am inclined to think that in the minute particles of inorganic mineral matter (probably calcareous), suspended in the water, we find, even if not the actual poison, at any rate an essential accompanying factor."

And further, in his concluding remarks, he said:

"There is much evidence that practically all waters which produce goitre contain frequently, although not necessarily at all times and seasons, mineral matter in suspension, usually in an extremely fine state of subdivision."

That is very different from attributing the goitre-producing properties of a water to those mineral salts in solution which constitute either permanent or temporary hardness. In no part of his article does Sir James attribute the cause of goitre to hardness of water supplies. Calcium, whether present as carbonate or sulphate, is not the only substance which makes waters hard. Magnesia and iron contribute, and neither of these has been implicated either by Sir James Berry or myself, nor do I see in his article any impeachment of calcium sulphate.

Conclusions drawn as to the hardness of water supplies and the percentage incidences of goitre are faulty if no account be taken of these facts, though Dr. Milligan falls into the error of attributing to us the view that it is the hardness of a water which determines the amount of goitre.

The water supply of the Hcanor Urban District is, at its source, clear and sparkling. It is softened by Clark's process, and at the consumer's end the water is frequently turbid, the turbidity varying from a slight milkiness to occasionally resembling a bismuth mixture. This turbidity is due to the presence of particles of calcium carbonate, in a very fine state of subdivision. After softening the water is run into settling tanks and carbonated. A portion of the softened and carbonated water is filtered. At the present time there are not nearly enough filters to deal with the total volume of water consumed.

The latest analysis of the raw water shows that the temporary hardness is 18.16, and the permanent 15.42. The appearance in the 2-foot tube was clear and bluish. After softening and carbonating the temporary hardness was reduced to 8.15 and the permanent to 9.71, and after softening and filtering the respective hardnesses were 2.15 and 8.14. The total hardness was thus 10.3, but the results of analysis showed that in the softened and filtered water calcium carbonate amounted to 2.10,

calcium hydrate to 1.11, and magnesium carbonate to 4.6 parts per 100,000. In appearance the softened water was turbid and opaque by reason of the presence of white suspended matter consisting mainly of  $\text{CaCO}_3$ . The appearance of the softened and carbonated water was turbid and yellowish, whilst the appearance of the filtered water was clear.

Yet this district is one which has been a seat of endemic goitre for many years, but although the disease exists to a considerable extent at the present day, its endemicity is not so severe as in former years, prior to the introduction of the present water supply. I have published elsewhere statistics of goitre, both in children and adults. Goitre is still endemic in this district, and in all probability the reason for its existence is the present state of the water. A typical example of a well water used for drinking purposes in this district in 1906 revealed the following: Total solids 140.6, free ammonia 0.045, albuminoid ammonia 0.050, chlorine 19.8, nitrogen as nitrates and nitrites 1.0 per 100,000 parts. This is a grossly polluted drinking water. There are no records available to show whether at any time, though it is probable enough, the well waters used for drinking were turbid from inorganic matter in suspension. They were in all cases surface wells, sometimes in clay, more often in a calcareous sandstone, locally termed "ratchel."

I agree entirely with Dr. Milligan that the whole question of the etiology of endemic goitre needs further inquiry; it appears reasonably certain that the condition is by no means to be explained as a simple iodine deficiency. Much of the work hitherto done in that respect is faulty and unreliable. I recently had sent to me a specimen of virgin soil from Tacna in Chile. It was a light brown sandy soil. I sent it to a firm of manufacturing and analytical chemists for the determination of its iodine content. They examined it repeatedly by the method of Hercus, Benson, and Carter<sup>2</sup> in the exact manner as described by them. No iodine whatever could be detected, but on re-examination by a different method, much more accurate for determining minute quantities of iodine, 8 parts of iodine per 10,000,000 parts of soil were found to be present. The method used by Hercus, Benson, and Carter is both cumbersome and inaccurate, and the conclusions drawn by them as to the cause of endemic goitre in New Zealand, based on their examination of soils for iodine content by that method, are totally unreliable.—I am, etc.,

Hcanor, Derbyshire, Sept. 25th.

PHILIP H. J. TUNTON.

#### TREATMENT OF VARICOSE VEINS BY INJECTION.

SIR,—In the *JOURNAL* for September 25th (p. 554) you publish a short article by Dr. A. H. Douthwaite on the treatment of varicose veins by injection, and since, as he points out, this method is not much practised in England, I am emboldened to record my limited experience on these lines.

Dr. Douthwaite employed in his series the method suggested and practised by Genévrier, who for this purpose made use of various salts of quinine, notably the hydrochloride, to produce a local thrombosis.

Whilst in Paris, during the early part of 1925, I made use of this method on several occasions with considerable success, although the patients, unlike those of Dr. Douthwaite, almost invariably complained of considerable pain following the injections. Later, however, Professor Sicaud kindly instructed me in the technique of the method suggested by himself and Professor Paraf.

I immediately adopted this in preference to the older system, since the patients, with one exception, preferred it on the score of its greater freedom from pain; whilst the sodium salicylate solution employed would appear to be less toxic than quinine.

An account of this method was recently published by Sir Sidney Alexander,<sup>3</sup> who stated that he had employed it in a hundred cases with uniform success. A point which he did not, however, emphasize is that it is unwise to

<sup>1</sup> *Journ. Royal Sanitary Institute*, Vol. xvi, No. 12, 1926.

<sup>2</sup> *Journ. of Hygiene*, 1925.

<sup>3</sup> *Lancet*, July 25th, 1926.

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inject more than 5 c.cm. of the 40 per cent. solution at a time, although as much as 10 c.cm. of the weaker dilution may be given initially, if it be thought desirable. It is an advantage to make the injections in a sitting position, owing to the temporary giddiness which often follows. I never saw a recurrence during nine months.

As Dr. Douthwaite points out, the disability produced by varicose veins is so enormous that any method which can be employed safely and without interfering with the occupation of the sufferer is entitled to consideration.—

W. S. C. COPEMAN, M.B., M.R.C.P.

London, W., Sept. 25th.

SIR,—With reference to my article in the JOURNAL of September 25th (p. 554) may I encroach on your space to answer certain recurring questions in the numerous letters I have received?

1. The object of applying the tourniquet is to keep the veins distended even when the leg is raised rather than to delay the passage of the quinine-urethane solution into the general circulation. Alternatively the patient may sit on the edge of the couch with the legs hanging down; veins on the posterior aspect are then, however, inaccessible. Without the aid of a tourniquet for dealing with such sites the patient must stand on a table, or else the operator must grovel on the floor.
2. It is, as a rule, unnecessary to inject veins higher than the middle of the thigh, because above this they rarely produce symptoms. I have, however, been as high as the saphenous opening without untoward result. Herein lies the great advantage of the quinine solution over the salicylate follow sodium by other workers. I have seen a thrombosis follow sodium salicylate treatment, which ascended with alarming rapidity, and had to be controlled by two weeks' immobilization.
3. The persistent ulcers of faulty salicylate injections do not occur if quinine solution enters the subcutaneous tissue.
4. Rest in bed is not required after artificial thrombosis, because it is not associated with infection and the clot is, therefore, not friable.
5. The injections should obviously be made from below upwards to prevent interference with the next puncture by blood.

—I am, etc.,

Worthing, Sept. 27th.

A. H. DOUTHWAITE, M.D.Lond.

SIR,—The article by Dr. A. H. Douthwaite on the treatment of varicose veins by injection suggests the cure of a very common ailment by means well within the scope of the general practitioner, and looks on the face of it well worth his serious attention.

May I point out one simple omission from his note, which may or may not be of importance? Dr. Douthwaite, after describing his process, makes no mention of the length of time the tourniquet should remain in position after the injections have been given, and as thrombosis is the natural cure it might be helpful to know how long the tourniquet should remain above the injected parts.—I am, etc.,

BENJAMIN WAINMAN, M.R.C.S.Eng.,  
L.R.C.P.Lond.

Leeds, Sept. 27th.

## THE PERIOD OF INFECTIVITY OF WHOOPING-COUGH.

SIR,—Two years' experience as resident medical superintendent at a large hospital for children in London encourages me to answer Dr. Devereux's question (September 18th, p. 542).

If a child has had whooping-cough for six weeks it is non-infectious. The first "whoop" does not occur for several days after the onset of the disease, and it is during this time that infection of others most often occurs. There is no question whatever that many patients will occasionally "whoop" for months and, rarely, years after an attack, but in this stage they are clinically non-infectious.

I doubt if the bacteriological evidence is sufficiently strong to pronounce dogmatically on the subject, but experience suggests that six weeks from the onset is probably erring on the side of over-caution, and is hence a perfectly safe time limit to adopt.—I am, etc.,

London, Sept. 23rd.

ERIC I. LLOYD.

## MINER'S NYSTAGMUS.

SIR,—I have read with interest Dr. Percival's letter in the JOURNAL of July 31st (p. 224), which has just reached me. Though I quite agree with him that light has very little to do with the causation of miner's nystagmus, I must take exception to his statement that twenty-five years ago the percentage of nystagmus cases at the South Moor Colliery was notoriously high. I was surgeon to that particular colliery both before and after the time he mentions, and though I have not the actual figures before me, I can say with confidence that, of cases receiving compensation, or being "off work," the percentage due to nystagmus was practically negligible.

I am particularly interested in nystagmus, as I was resident at the Sheffield General Infirmary, and working chiefly under the late Mr. Simeon Snell at the time when he brought forward the theory that it was nearly entirely the position of the hewer when at work that caused the disease, which theory was combated by, I believe, Dr. Court of Barnsley.

I have in my possession a pamphlet in book form by Mr. Snell, which to my mind, taken together with observations made on patients attending the eye department of the Sheffield Infirmary at that time, proves position at work and consequent strain of the extrinsic muscles of the eyeball to be the chief, if not the only, outside factor in the causation of the disease.—I am, etc.,

R. E. INGRAM-JOHNSON.

Banting, Federated Malay States,  
Aug. 27th.

## CONTINENTAL MEDICAL GRADUATES.

SIR,—So far as I have been able to ascertain no attempt has been made up to the present time to form a roll or association of practitioners in the United Kingdom who hold the M.D. degree of a Continental university.

Apart from the associations of Brussels and Lausanne medical graduates, which between them number nearly 450, there are about 220 graduates of other universities, so far as my present researches have revealed. The numbers are made up approximately as under: Malta 40, Germany 56, Italy 38, Switzerland 31, Holland 22, France 21, Greece 4, others 9. These men, scattered far and wide, for the most part out of touch with each other, represent such famous universities as Freiburg, Vienna, Zürich, Naples, Rome, Padua, Bologna, Florence, Bern, Zürich, Geneva, Louvain, Ghent, Liège, and Paris, and contain some of the most eminent men in the profession.

Beyond the many advantages which would accrue to the graduates themselves from the formation of an association and a roll, which could be done for a very small initial subscription, there would be advantages and greater facilities arising for the rest of the profession, as, for example, information could be made more readily available with regard to post-graduate study in foreign clinics, conditions abroad, etc.

I should be very glad to hear from any medical practitioners holding Continental doctorates in medicine interested in the formation of such a roll and association, with a view to holding a meeting at an early date, and I should myself be only too glad to place at their disposal the MSS. roll which I have at present compiled.—I am, etc.,

CHARLES A. H. FRANKLIN, M.D.Laus.,  
M.B., D.S.Lond.

Bickley, Kent, Sept. 25th.

## POST-GRADUATE COURSES IN CANADA.

SIR,—In a recent issue of the BRITISH MEDICAL JOURNAL you note the fact that post-graduate courses lasting about one month have been given this year at the McGill University Medical College at Montreal. The tone of the note led me to believe that you were somewhat surprised as well as gratified at the fact.

I felt that you would be interested to know that such courses, although of shorter duration, have been given at other Canadian medical schools before this year: notably at the Dalhousie University Medical School at Halifax. I believe I am correct in stating that these were first introduced in 1922 with a view to benefiting the general practitioner in the nearby towns and country who felt he could

not afford the time or money to leave his practice for a longer trip. Since then they have been held regularly and have proved highly satisfactory and most interesting.

It seems unfortunate, although inevitable to some degree, that so little should be known in the mother country regarding the higher educational centres of the various dominions.—I am, etc.,

September 10th.

E. COSMAN DAVIS, M.D., C.M.

### THE MEDICAL PROFESSION AND LIFE INSURANCE COMPANIES.

SIR,—The last paragraph of Dr. W. A. Murray's letter in the *JOURNAL* of September 25th (p. 579) is of considerable interest. For some years past I have refused life insurance work on account of the smallness of the fee.

Quite recently I received the proposal forms of a well known company with a request to examine a certain gentleman, the fee being one guinea. I returned the forms with an intimation that my fee for the work was two guineas. I received a polite letter in return from the actuary regretting that he could not pay me a larger fee, as that was the fee arranged between the British Medical Association and the life offices.

I wrote to the Medical Secretary of the British Medical Association for information on this point. He informed me that the agreement for a one-guinea fee was arrived at six years ago. "This agreement was only reached with the insurance companies after protracted negotiations, and there was a distinct danger at one time that the companies would give up medical examinations save in exceptional circumstances."

This rather surprised me. Are the insurance companies indulging in an eleemosynary act in offering a fee at all to medical practitioners?

The minimum fee adopted by the Buckinghamshire Division of the British Medical Association for a visit to a patient's house is 3s. 6d. and mileage. Buckinghamshire is an agricultural county, and the wage of the farm labourer is 31s. 6d. per week. Is it not time that wealthy clients should be made to pay a reasonable fee for a written opinion of a highly skilled nature?—I am, etc.,

Haddenham, Bucks, Sept. 25th.

T. W. S. PATERSON.

SIR,—I agree with Dr. W. A. Murray that it is time to review the relations existing between the medical profession and life insurance companies.

I have an idea that many years ago a guinea was considered to be the correct fee that one should receive from any recognized insurance company for medical examination, and when the British Medical Association agreed with insurance companies that the minimum fees should be half a guinea for cases up to and including £100, and one guinea for cases over £100, I do not think that the wholesale introduction of non-medical policies was anticipated.

Now, as some of the companies, who do an enormous business in policies in the region of £100, only use us in their doubtful cases, our insurance work is but a fraction of what it was thirty years ago, and certainly more difficult when we are dealing only with cases which the companies themselves are doubtful about. It is my opinion that in these cases the minimum fee should be raised to one guinea.—I am, etc.,

London, N., Sept. 27th.

JOHN PAXTON.

### INFLUENZA ANTIGEN IN THE TREATMENT OF ENCEPHALITIS LETHARGICA.

SIR,—I am naturally gratified that Dr. Keith (September 18th, p. 525) has had such success with his influenza antigen in the treatment of his two cases of encephalitis lethargica. These patients may fairly be taken as test cases, for they were many weeks ill and steadily degenerating when this antigen was used, and the first had had three doses of a commercial influenza antigen, the influence of which was apparently nil, while a one million dose of my antigen had an immediate result.

This emphasizes a most important point in the quality of antigens: to be effective they must be made from

recently isolated virulent microbes unspoiled by any detoxicating influence, such as overheating, in their manufacture. In the case of the influenza bacillus and such easily killed microbes no heat is necessary for killing them. Moreover, the microbes are grown on agar containing 10 per cent. of unheated defibrinated human blood, virtually a human tissue, so that as little virulence as possible is lost.

It is very difficult now to obtain influenza bacilli isolated from a case of typical influenza, or, still better, from a case of encephalitis lethargica. In the latter cases blood cultures should be made, the blood being transferred to broth at blood-heat and kept at this temperature on the way to the laboratory. In the former case the sputum must not be allowed to get cold on the way to the laboratory, and the cultures should be made on blood-agar slopes warmed to blood-heat. A thermos flask is invaluable for the conveyance of such specimens to the laboratory.

I should be much obliged to any laboratory which would supply me with an antigen isolated from such cases and made as I suggest, since cases of the kind are now few and far between in Ireland.—I am, etc.,

University College, Dublin, Sept. 21st.

W. M. CROFTON.

### APPENDICITIS AND VEGETARIANISM.

SIR,—Referring to Mr. Hamilton Bailey's letter which appeared under the above heading in your issue of September 18th, he will find abundant testimony that appendicitis (and also cancer) are of very rare occurrence in non-flesh eating peoples in the utterances of many Indian practitioners—R.A.M.C. and otherwise. Again, some little time ago I saw it recorded of a number of hospitals in Northern India that "of 50,000 in-patients treated in them for the past ten years only fourteen were cases of appendicitis." The Surgeon-General of Egypt has also pointed out (and returned) that while the percentage incidence of enteric and appendicitis among the Moslem population is <sup>considerably</sup> <sup>greater than</sup> that of Europe, that of the Copts, who are vegetarians, is very small indeed.

I may add that I am connected with several vegetarian societies in England and know a fairly large number of their members. I have never yet known of appendicitis occurring in any who had followed a flesh-free diet for twelve months. I therefore consider Mr. Bailey's case an exceptional one.—I am, etc.,

Torquay, Sept. 27th.

ROBERT H. PERKS, F.R.C.S. Eng.

### CANCER MORTALITY AND AGE RATES.

SIR,—Dr. E. Hudson asks (September 25th, p. 579) for evidence that cancer is more prevalent among the well-to-do than the poor. If he will refer to my "Note on cancer occurrence in Hampstead and Shoreditch," published in *Public Health* (March, 1924), he will find what he seeks.

With the kind assistance of Dr. Stevenson, superintendent of statistics, I worked out the death rates from cancer for each sex, between the ages of 45 and 65 and over 65, for the eight years 1913 to 1920. The death rates for males were almost the same in the two boroughs, but for females more than 25 per cent. higher in Hampstead than in Shoreditch. Quoting from *Public Health*:

"The men are usually the best fed members of working class families, and consequently there would not be so much difference in nutrition between men in Hampstead and Shoreditch. But smoking is recognized to be the chief cause of cancer of the mouth, and alcoholism is an important cause of cancer of the mouth, throat, and stomach (see Sir A. Pearce Gould, Bradshaw Lecture, 1910, quoting a paper by Sir Arthur Newsholme, and Annual Reports on the Health of Woolwich, 1913-18). . . . There is considerably more alcoholism in Shoreditch than in Hampstead, and there is probably at least as much smoking. This perhaps accounts for the nearly equal occurrence of cancer among men in the two boroughs."

Over the age of 65 cancer was nearly twice as prevalent in Hampstead women, and much more prevalent in Hampstead men, and it is at this age that we should expect to find most overnutrition among the well-to-do and least among the poor.—I am, etc.,

SIDNEY DAVIES,  
Late M.O.H. Woolwich.

Worthing, September 23th.

*Practitioner*, March, 1926

OCT. 2, 1926]

# MEDICAL NOTES IN PARLIAMENT.

THE BRITISH MEDICAL JOURNAL 617

Sm.—In reply to Dr. E. Hudson (September 25th, p. 579) I may state that the mortality rates were obtained from the Registrar-General's death returns. I had worked out the variation in the ages of the two classes. I accept the figures which Dr. Hudson has given for the towns named, and freely admit that the death rates are materially altered. I still maintain that the conditions of their labour, dietary, etc., are factors that favour less cancer, less appendicitis, less constipation, and less of the toxins that produce other ill effects. From over fifty years' experience of medical work I am confident that cancer has increased. We know the chief causal factors; much can be done by free clinics to educate the people on this question, and early diagnosis can be made of growths in the precancerous stage.

During the past thirteen years in Blackpool the majority of the patients were women; in cases of cancer of the breast they were florid, obese, and weighed too much. Only yesterday this was confirmed by one of the hospital surgeons. I may say that all the patients were in fairly good circumstances. In my early student days cancer patients were usually thin.—I am, etc.,

JOHN BROWN.

## A DISCLAIMER.

Sm.—Our attention has been drawn to a book called *Microbe Hunters*, recently published by Harcourt, Bruce and Company, New York, and alleged to have been written by one Paul de Kruif—a gentleman whose name is quite unknown to us. The work evidently aims at being a kind of popular history or rather romance regarding medical discovery, and mentions us among others. We should like an opportunity to say, for the information of your readers, that the author's statements about ourselves and our researches are almost entirely apocryphal; that they are not supported by reference to the original literature; and that his knowledge of the subjects with which we have been concerned is obviously incomplete.

We have been legally advised that some of his assertions regarding ourselves are libellous according to British laws; but in America we have no means of protection except a public denial of the truth of his allegations, and we therefore trust that you will allow us to publish such a denial, as emphatically as we may, in your columns.

Dr. Cuthbert Christy's signature does not appear on this letter as he is in Africa; before sailing, however, he left us the following statement:

"With regard to Paul de Kruif's book *Microbe Hunters* I beg to emphatically state that it contains statements which are totally erroneous, misleading, and some of them libellous. As an example I will quote paragraph 2, page 264, which reads: 'The third member (viz., myself) became disgusted with the ignorance and failures of his two colleagues and went off prospecting for rubber.' This paragraph is absolutely untrue and libellous. It suffices to say that I have always given credit to the *Morning Post*, August 22nd, 1925. As regards my abandoning my colleagues for his discovery of the trypanosome as the etiological agent of sleeping sickness—see, for instance, my letter to the *Morning Post*, August 22nd, 1925. As regards my abandoning my colleagues and going off prospecting for rubber, this is entirely libellous. I never abandoned my colleagues and, as a matter of fact, I did not get interested in rubber until 1906, which was three years after the labours of the First Sleeping Sickness Commission were completed."

—We are, etc.,

ALDO CASTELLANI,  
GEORGE C. LOW,  
DAVID NAVARRO,  
RONALD ROSS.

September 27th.

## Obituary.

THE tragic death of Dr. L. B. PERRY on July 18th, whilst on a holiday at Mundesley, deprives the profession of one of those outstanding men who can ill be spared, and his loss will be acutely felt by a wide circle of patients and friends, both in this country and in that part of Mesopotamia where much of his time was spent. Lionel Banks Perry was born on December 31st, 1884, at Cherterton Vicarage, Cambridge; his father was the Rev. S. E. Perry. From Tonbridge School he went to Queen's College, Cambridge, and after taking his B.A. degree in the Natural Sciences Tripos of 1906 he entered St. Thomas's Hospital.

In 1909 he graduated M.B., B.Ch. Cantab., and obtained the M.R.C.S. and L.R.C.P. diplomas. Whilst at St. Thomas's he served as house-physician, obstetric house-physician, casualty officer, and clinical assistant in the children's department; subsequently he was resident medical officer at the Queen's Hospital for Children. From 1913 to 1920 he was in partnership with Dr. Wilson Tyson at Lowestoft, with the appointment of assistant surgeon to the Lowestoft Hospital. During part of this time Perry held a temporary commission in the R.A.M.C., and saw service in the Near East, being invalided home in 1918 from Salonika with malaria. From 1922 to 1925 he served as surgical specialist in Mesopotamia, the first part of the time being passed at Mosul, and later at Hillah. There he showed great surgical ability and earned a high reputation amongst the Arab population. The uncertainty prevailing in Iraq decided him against renewing his contract for a longer period and he returned to England. A short trip to Canada preceded a course of post-graduate study in London. In February of this year he married, and a few weeks before his death he had entered into a partnership at Royston, near Cambridge. As a colleague he was the essence of loyalty, possessed of a strong sense of duty and high ideals, having a judicial regard for the rights of others and a charm of manner which endeared him to all. His kindness of heart and sympathetic understanding made his presence welcome wherever he went. Combined with these sterling qualities as a man, Perry possessed a fine degree of professional skill and courage, and a keen appreciation of human nature. No matter whether his patient was rich or poor, English or Arab, he was accorded that great respect and affection which comes only to the true and upright man whose single purpose is the welfare of others in time of sickness. To those who were privileged to know him well his death came as a very great shock; and at a time when great happiness and much good work lay ahead.

J. M. H.

The deaths are announced of Dr. JOSEPH TRISSIER, honorary professor of the Lyons Faculty of Medicine, and Dr. E. BADAÏ, professor of physiology in the Masaryk University at Brno, known for his work on regulation of respiratory movements and on the influence of the endocrine glands on amphibian metamorphosis.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

PARLIAMENT met on September 27th to approve the renewal of the Emergency Regulations for the month of October. The House of Lords rose the same night, but the Commons sat again on September 28th to debate the Regulations in detail. On both days speeches were delivered from the Government and Opposition Front Benches, which were meant to discover possible methods of compromising the coal dispute, but nothing appeared to be effected.

**Hours of Workers in Poor Law Institutions.**  
On the motion for the adjournment of the House, on September 27th, Miss Susan Lawrence made allegations as to the way in which the nominees of the Minister of Health were administering relief. She said that the first thing they did in the West Ham Union was to increase the hours of labour in the infirmary from forty-eight to fifty-six a week. The people affected were sick nurses, eight attendants, and other officials of the hospital. The Union approached the nominee Guardians, who admitted that some of the staff should be dismissed as a consequence of the increase in hours. Eleven sick-room attendants had already been dismissed, and it was anticipated if this action were taken dismissed. It would be bad enough if this action were taken in London infirmaries, but it was very much worse in East Ham. In London infirmaries the cancer and venereal cases were removed to the Metropolitan Asylums Board, which had a forty-eight hour week. In fixing a forty-eight hour week the Asylums Board had borne in mind the notorious fact that no kind of nursing was so great a claim on the attention or physical strength of the nurses as that of the last stages of cancer or venereal disease cases. The first-fruit of the policy of the Ministry of Health was that the dying should have less alleviation of their pain. These nurses and attendants were only human; they could not put as much work into a twelve-hour shift as they could into a shorter one. With longer hours it was impossible that the sick could be



adequately looked after. She asked if it was proposed to lay down any rules on the hours to be worked by nurses. Mr. J. J. Lawson referred to the administration of relief in the Chester-le-Street Union. He said that the Minister of Health should have sent down doctors from his own department to examine young men in order to settle whether or not they were destitute. Mr. Chamberlain said Miss Lawrence was under a misapprehension about the relations between the West Ham guardians and the Ministry. Under the recent Act of Parliament the West Ham guardians and those at Chester-le-Street were not special commissioners. They were boards of guardians, and the relations between them and the Ministry were exactly the same as with any other board. They had the same powers, and he had no more powers over them. All he could do when he had complaints, therefore, was to draw their attention to the matter and ask for their observations. That had been done in regard to the increase of hours in certain institutions in West Ham, but he had not yet received a reply from the guardians. It was quite untrue to suggest that the dismissal of these attendants was subject to his discretion.

Mr. Chamberlain, replying to Mr. W. Thorne, who asked if he was aware that the West Ham Union Poor Law Commissioners had decided to abolish the forty-eight-hour working week and the eight-hour day of a number of their employees, said that he had received certain representations on the matter and was in communication with the board of guardians.

#### *Boards of Guardians and Outdoor Relief.*

In the House of Commons on September 28th Mr. Chamberlain, replying to further questions about boards of guardians, said that it was not the duty or the practice of boards of guardians to report changes in their administration or scale of relief which they might use for their guidance, but he had been informed of reductions in scales made since May 1st in forty-two instances. He knew of no case where a board of guardians had ceased to grant any relief to the dependants of those involved in the present coal stoppage, but six boards were reported to have decided that only indoor relief should be granted in these cases. Such a decision was within the discretion of the guardians so far as regarded applications considered by them, but nothing could interfere with the duty of a relieving officer to deal as might be required with any case of sudden or urgent necessity. It was obvious that a dispute of this magnitude and duration must involve hardship and even distress. He had no reason to suppose that boards of guardians were not fully discharging their duties in the matter.

## Universities and Colleges.

### UNIVERSITY OF LONDON.

#### SEMON LECTURE.

The Semon Lecture will be given by Dr. A. Brown Kelly in the Barnes Hall of the Royal Society of Medicine, 1, Wimpole Street, W.1, on Thursday, December 2nd, at 5 p.m., the subject selected being nervous affections of the oesophagus.

#### UNIVERSITY COLLEGE.

The following appointments for the session 1926-27 have been made with the Faculty of Medical Sciences at University College:—*Demonstrators in Anatomy:* L. Reuviv, M.B., B.Ch., and E. R. P. Williams, M.B., B.Ch. *Sharpey Scholar in Physiology:* L. E. Rayless, B.A.

## The Services.

### DEATHS IN THE SERVICES.

Brigade Surgeon Charles Edward Wikeley, R.A.M.C.(ret.), died at Blackpool on July 24th, at the great age of 93. He was born at Leeds on April 26th, 1833, and took the L.S.A. in 1854, and the M.R.C.S. in 1858. Entering the army as assistant surgeon on January 12th, 1859, he became surgeon major on April 1st, 1874, and retired, with an honorary step, on February 2nd, 1884. In the old regimental days he served as assistant surgeon in the 19th Foot, or Green Howards, also known as Alexandra Princess of Wales's Own Yorkshire Regiment.

Major Arthur Ormsby Fitzgerald, R.A.M.C.(ret.), died on July 30th, aged 64. He was born on September 26th, 1861, and after taking the L.R.C.S.I. and L.K.Q.C.P. in 1883, entered the army as surgeon on May 30th, 1885, becoming surgeon major after twelve years' service, and retiring on May 30th, 1905. He served in the Burma war in 1885-87, receiving the frontier medal with a clasp; and in South Africa in 1899-1900, when he took part in operations in Natal, including the action at Laing's Nek, the relief of Ladysmith, and the actions of Spion Kop, Vaal Kraai, the Tugela Heights, and Pieter's Hill, was mentioned in dispatches in the *London Gazette* of February 8th, 1901, and received the Queen's medal with four clasps.

Colonel William O'Hara, Madras Medical Services (ret.), died at Boscombe, Hants, on August 6th. He was born at Saugon, on January 30th, 1852, the son of George O'Hara, I.M.D., and educated at the Madras Medical College. After taking the L.R.C.P. and S.F.A. in 1874, he entered the I.M.S. as surgeon in September, 1874, attained the rank of colonel in May, 1906, and retired in June, 1911. His younger brother, Lieut.-Colonel A. J. O'Hara, also of the Madras Medical Service, retired in 1902, and died in 1915.

## Medical News.

THE prizes will be distributed at Charing Cross Hospital Medical School on Wednesday, October 6th, at 3.30 p.m., by Field-Marshal Sir William Robertson. The ceremony will take place in the out-patients' hall; tea and coffee will be served afterwards, and a reception will be held in the school. The annual dinner of past and present students will be held that evening at the Hotel Victoria, Northumberland Avenue, at 7.30.

THE annual dinner of past and present students of St. Mary's Hospital Medical School will be held at the Councilla Rooms, Great Queen Street, on Monday, October 4th, at 7.30 p.m. The chair will be taken by Dr. G. W. H. French.

DR. LOGAN TURNER, P.R.C.S.Ed., consulting surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh, will deliver an address on "Some aspects of intracranial infection of nasal origin" at the opening of the winter session of the Central London Throat, Nose, and Ear Hospital, on Friday, October 15th, at 4 p.m.

AT the opening of the winter session 1926-27 of the University of Durham College of Medicine, Newcastle-on-Tyne, an introductory address, on the freedom of medicine, will be given by Dr. O. O. Hawthorne, F.R.C.P., in the Examination Hall of the College, on Friday, October 8th, at 4.30 p.m.

THE Lord Mayor has issued invitations to a festival dinner in support of St. Mark's Hospital, City Road, to be held at the Mansion House, London, on Tuesday, October 26th, at 7.30 p.m.

THE annual dinner of the Chelsea Clinical Society will be held at the Café Royal on Tuesday, October 26th, at 7.30 p.m.

THE opening meeting of the session 1926-27 of the Hunterian Society will take place at Simpson's Restaurant, Chancery Lane, E.C.2, on Monday, October 18th, at 7.30 p.m. On Monday November 15th, the society will meet in the Cutlers' Hall, E.C.4, at 9 p.m., when there will be a discussion on medicine and the press. At the dinner meeting at Simpson's Restaurant on Monday, December 6th, at 7.30 p.m., there will be a discussion on the nervous child.

A SHORT post-graduate course is being held at St. Mary's Hospital Medical School, Paddington, on Saturday, Sunday, and Monday, October 2nd, 3rd, and 4th. The lectures are given in the library of the Medical School and are open to all medical practitioners without fee.

THE first of the special demonstrations arranged by the Fellowship of Medicine for the winter session will be given by Mr. W. H. McMullen, on common injuries of the eye, at the Royal Westminster Ophthalmic Hospital, Charing Cross, on October 8th, at 5 p.m. This demonstration is open to all members of the medical profession, without fee. A series of lectures on emergencies in medicine and surgery will begin on October 14th, at 5 p.m., in the lecture room of the Medical Society of London, 11, Chandos Street, W. The Central London Throat, Nose, and Ear Hospital will hold a comprehensive intensive course in laryngology, rhinology, and otology from October 4th to 23rd; the clinical part of the course may be taken in conjunction with the operative or separately, but early application is requested for the latter as the entry is limited. From October 18th to 30th there will be a combined whole-day course in diseases of children, arranged by the Paddington Green Children's Hospital, the Victoria Hospital for Children, and the Children's Clinic. On October 18th also two fortnight courses begin—one in gynaecology at the Chelsea Hospital for Women, and the other in genito-urinary diseases at St. Peter's Hospital. A series of eight clinical demonstrations on tropical disease will be held twice a week at 2 p.m., beginning October 5th, at the London School of Hygiene and Tropical Medicine. Copies of all syllabuses, the general course programme of the Fellowship, and its journal may be obtained from the Secretary, 1, Wimpole Street, W.1.

THE Infants Hospital and the National Association for the Prevention of Infant Mortality and for the Welfare of Infancy have jointly arranged a course of lectures on infant care for health visitors, nurses, midwives, and superintendents of infant welfare centres. It will be given in the Lecture Hall of the Infants Hospital, Vincent Square, Westminster, S.W., on Mondays, at 6.30 p.m., from October 4th to December 6th. The association has also arranged a refresher course of lectures on child welfare for health visitors, nurses, midwives, etc., to be held at the City Hall, Cardiff, from October 2nd to 30th, inclusive. Information as to fees may be had from the honorary secretary, Miss Halford, 117, Piccadilly, W.1.

HEALTH week will be observed in numerous towns from October 3rd to 9th. The practice of devoting one week in the year to propaganda work on behalf of the prevention of disease was instituted in 1912; a central organization under the Royal Sanitary Institute was formed in 1914.

THE Home Office has issued draft regulations with reference to the weight of various materials which may be lifted by workers in factories and workshops dealing with woollen and worsted textiles. Copies of the regulations may be obtained from the Factory Department of the Home Office, and any objection to them must be sent to the Secretary of State within thirty days from September 21st.

THE following new appointments in the Tropical Division of the London School of Hygiene and Tropical Medicine are notified: Dr. V. B. Wigglesworth, to be assistant in the Department of Entomology; Dr. Leslie J. Davis, to be research student and demonstrator in the Department of Tropical Pathology and Bacteriology; and Miss Joyee Leishman, B.Sc., to be research student and demonstrator in the Department of Helminthology.

A CONGRESS arranged by the International Society of Sexology will take place in Berlin from October 11th to 15th. Information regarding the society and the congress may be obtained from Dr. Moll, Berlin W. Kurfürstendamm 45, or Dr. Stutzin, Berlin W. Kurfürstendamm 44.

A PRACTICAL and theoretical course in microbiology and immunology for public health students will be held at Amsterdam University, beginning on October 4th. Further information can be obtained from Dr. A. C. Ruys, Mauritskade 57, Amsterdam.

PROFESSOR E. W. SCRIPTURE, of the University of Vienna, announces a course for the winter semester, entitled "Introduction to speech neurology, including the theory of aphasia according to Henry Head."

THE Queen Alexandra Sanatorium Fund, which gives grants to enable tuberculous patients with limited means to receive sanatorium treatment at Davos, assisted nine patients in the summer of 1925, and twenty-six during the following winter. Before October, 1925, such patients were accommodated in a pension under the control of the fund; the new arrangement is stated in the annual report of the fund for 1925-26 to have been more satisfactory than the old, both financially and medically.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

THE TELEPHONE NUMBERS of the British Medical Association and the *British Medical Journal* are *MUSEUM 9561, 9562, 9563, and 9564* (internal exchange, four lines).

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The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Racillus, Dublin*; telephone: 4751 Dublin), and of the Scottish Office, 6, Drumshugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

## QUERIES AND ANSWERS.

### MEDICAL HISTORY.

DR. L. A. PARRY (Hove) writes: I shall be grateful if any of your readers can help me with the following information: (1) Any book on the history of medical jurisprudence, especially as regards the date of the discovery of the various tests for arsenic, strychnine, etc. (2) The volume of the *Lancet* in which a letter on tooth extraction by Dr. Smethurst, the poisoner, appears. (3) Any book dealing with the methods of medical qualification three to four hundred years ago. (4) Any information of Basil Valentine the alchemist.

### ERYTHEMA NODOSUM.

DR. ARTHUR FINEGAN (Highgate) asks for suggestions regarding the etiology and treatment of the following case: A hospital nurse, aged 35, has suffered at intervals during the past twenty years from periodic attacks of unmistakable erythema nodosum.

About two onsets supervene almost every year, irrespective of season or apparent cause. She sustained attacks of both malaria and dysentery in East Africa during the war. At present there is a suspicion of left ovarian inflammation, and she runs a temperature if overtired by work. In other respects she enjoys good health.

### MUCOUS COLITIS.

"R. P." asks for suggestions in the treatment of a female patient, aged 39, who suffers from mucous colitis. The condition is of several years' duration, but lately has been more severe; there is much pain, especially at night, the pain being relieved by passage of mucus in "balls" and at times in "casts." The patient had scarlet fever about 20 years of age, followed by an otitis media, which eventually cleared up. About two and a half years ago she began to suffer great pain at her periods, menorrhagia being very marked; pil. ergotina and curettage had little or no effect. Lately hysterectomy had to be performed. At the operation there were vast adhesions all round the pelvic organs, and the uterus and ovaries were removed. The patient is now getting hormotone (one tablet three a day before food). After the operation the mucous colitis seemed to light up and the pain in the abdomen there is well marked. Rectal treatment has been tried: hyaline injections in the morning, making sure of daily action of bowels; charcoal has been given in large quantities; dimol has been used without any effect. The bulky diet as advocated by the German authorities has been tried, and also the French plan of mining all animal food and passing vegetables through a sieve. Lately the potassium permanganate and thyroid treatment has been tried, but has failed to give relief.

### WATERY EYES.

"A. G. F." writes to ask if any reader of the *BRITISH MEDICAL JOURNAL* can say what is the cause of watery eyes. For weeks and months his eyes are normal and give no trouble, then suddenly they produce a redundancy of tears, which overflow and require the constant application of his handkerchief. Is there any literature on the subject?

### ARSENIC AND TAR AND CANCER.

DR. VINCENT MOXEY writes from Rio de Janeiro to ask if the administration of arsenic for moderate periods or the prolonged use of tar externally predispose the recipient in the slightest way to cancer. He states that in the tropics, both east and in the Atlantic, there is in the crews of ships much skin trouble, such as eczema, erythema intertrigo, pruritic conditions, tinea circinata (Dhobie Itch), staphylococcal boils, axillary abscesses, and pityriasis. Tinea circinata occurs in epidemic form voyage after voyage in the same ship among the stokers—an exceptionally clean class. Perhaps the two agents most useful and usable under shipboard conditions are tar—either as liquor or picis carbonis—and, to a less extent, according to the late Sir Jonathan Davis in his book, *Skin Diseases in General Practice*, several writers have recorded cases of arsenical hyperkeratosis becoming malignant; workers in tar have long been known to be prone to cancer. He asks whether, this being so, the prolonged use of these remedies in chronic conditions is justifiable. In certain cases of the tinea class, affecting the groins, axerotum, and the parts between the toes, tar lotions are used voyage after voyage on the same person, both for cure and prophylaxis. How far can one go safely with the use of these bodies?

### POISONS IN INSTITUTIONS.

A CORRESPONDENT inquires as to the current regulations which govern the keeping and dispensing of poisons in a private sanatorium. The answer is that the full requirements of the various regulations made under the Dangerous Drugs Acts must be strictly observed. No person in such a place may be in possession of or administer the drugs unless he is a registered medical practitioner or dentist or other person authorized by the Regulations, or unless he is administering the drug under the direct personal supervision of a doctor or dentist, or unless the drug has been supplied on a prescription or dispensed by the doctor for the use of a patient. Doctors and dentists are advised to keep any dangerous drugs when not in use under lock and key as far as possible. This is not actually required by the Regulations, but is obviously a desirable precaution. Copies of the various regulations may be obtained from H.M. Stationery Office, Imperial House, King's-way, London, W.C.2.

### CAN BATHING BE MADE SAFER?

DR. M. W. BROWDY (London, W.) writes: "Neptune's" letter (September 18th, p. 544) raises a very important problem and is of special interest to me, for my effort to overcome the tragedies he mentions I have invented a bathing costume which I think will to some extent make bathing safer. The various contrivances, such as collars, wings, belts, etc., do not find favour with the public, though being either cumbersome or unsightly. I have suggested a bathing costume which has an extra layer of material encircling the thorax, thus forming a sleeve for a depth of six inches. Within this sleeve there is an inflating chamber made of thin rubber or oiled silk, terminating at one axilla and attenuated at the other, to give freedom of arm movements; over the sternal portion there is attached a small rubber tube with valve for inflation by blowing. One can inflate before or after

entering the water. On deflation the appearance is that of a normal costume. Thus, in an emergency, if inflated, there will be sufficient buoyancy to keep the bather afloat until rescued. "Neptune's" suggestion is rather impracticable and probably dangerous, as a swimmer might become entangled in the ropes.

#### PRURITUS.

DR. ALFRED EDDOWES (London) writes in reply to the request by "W. A." (September 25th, p. 582) for suggestions as to treatment of a case of general pruritus: I advise him to try superfatted boric acid soap, sponging with boric acid lotion, and the application of cold cream (old formula) containing a little boric acid. For severely itching spots try creolin 5ss, mucilage of starch 3iv, water to a pint. The case is probably a *dielion* (a sweat rash) aggravated by hot and changeable weather. Lichen tropicus (prickly heat) has been common during the recent spell of hot weather.

"V. G. E." writes in answer to the same query: Probably one of the causes of pruritus in middle and old age is thyroid deficiency; and this should suggest the administration of iodine in some form, such as colossal iodine, or tinct. iodi mitis mlij-v in milk 3j, twice a day.

#### INCOME TAX.

##### *Deduction of Tax from Rent.*

"J. S." explains that in 1922 he paid £4 16s. 9d. property tax (that is, income tax under Schedule A) and the landlord allowed the amount to be deducted from the rent. The authorities have now asked the landlord for payment of £4 16s. 9d. direct, stating that the amount paid and deducted by "J. S." was on a personal assessment under Schedule D.

\* \* The authorities are clearly not entitled to receive more tax from "J. S." and his landlord together than would have been obtained if the question of the tax deductible from the rent had been kept out of the Schedule D assessment—as, in fact, it should have been. "J. S." should ask the authorities to let him have a statement setting out clearly what tax they consider to be due to him (1) under Schedule A as tenant of the property, and (2) under Schedule D as a medical practitioner. If this statement does not enable him to dispose of the matter perhaps he will forward it to us for further comment. On the facts stated the authorities appear to have no legal claim on the landlord direct in respect of the rent assessable under Schedule A.

#### Assessment.

"A. G." holds an appointment under a local authority at a salary of £725, plus emoluments—namely, free house, coal, and light, estimated at £90 for superannuation purposes. He pays superannuation contributions on £815, and has been assessed on that amount for income tax.

\* \* On the facts stated he is assessable in the sum of £725 only; the allowances estimated at £90 are not convertible into money, and therefore, under the well known case of *Tennant v. Smith*, are not chargeable to income tax. It should be added that if "A. G." were in receipt of a salary of £815, of which £90 is estimated to be covered by allowances, the result, as far as tax is concerned, would be different.

#### Motor Car Allowances.

"L. D. T." states that the local inspector of taxes will allow only 15 per cent. depreciation in respect of a motor car, and that he says that if in the future the motor is renewed, no allowance on that account will be made if depreciation allowance has been granted year by year.

\* \* The ratio of the allowance is a matter within the jurisdiction of the District (or Special) Commissioners, and "L. D. T." can appeal to them from the inspector's decision. In our opinion, 20 per cent. is not at all excessive for a car undergoing the sort of wear and tear that a practitioner's car usually suffers, and when the car is discarded and a new one purchased for the reason that the old car is no longer suitable, a claim under the head of obsolescence can be made for the replacement cost, less the depreciation allowance given on that car.

"A. M. J." states that he replaced his car in 1924 at a cost of £240, and that amount has been allowed as a professional expense of the year 1924. The result under the three years' average system is that the assessments for 1925-26 and 1926-27 are affected to the extent of £80 each year, but, as he points out, a change to the previous year's basis for 1927-28 will result in his losing the remaining £80, as 1924 will no longer affect the assessment.

\* \* The statutory rules which it is proposed to bring into force for 1927-28 are too complicated to explain here; it may be said, however, that there is no provision for carrying the balance of £80 into the calculation of the assessment for 1927-28. Failing the application of any of the modifications introduced to soften the change from the average basis—and it may be possible to find space at an early date to explain the position more fully in the JOURNAL—"A. M. J." has no remedy.

#### LETTERS, NOTES, ETC.

##### SODIUM TETRAIODOPHENOLPHTHALEIN IN CHOLECYSTOGRAPHY.

MR. W. HARRISON MARTINDALE, Ph.D. (London, W.), writes: Mr. Cyril A. Raisou, in your issue of September 18th (p. 572) was good enough to mention my name in connexion with the above matter. I am now in possession of a large amount of information concerning the compound, both on the chemical side and on the subject of its use as a diagnostic procedure. I do not think it can be too strongly enforced, or too widely known, that its intravenous use, or that of the bromine analogue, may prove dangerous and is hence undesirable. To take a very rough simile, one might employ a strong solution of sodium carbonate, or phenol, with impunity in ninety-nine cases and in the hundredth case the result would be disastrous. While writing on the subject I may mention that there is a slight confusion in vol. ii of the *Extra Pharmacopoeia* in the nomenclature, which should be put right. The impression when writing the book was that the American workers had preference for phenoltetraiodophthalein and the analogous bromine compound. The names, where occurring, should therefore be transposed, together with the formulae, so as to read tetraiodophenolphthalein. The American papers were a little voluminous and difficult to follow. It is of interest that Graham and his co-workers propose now to revert to the phenoltetraiodo compound, which they originally had in view, but personally I do not anticipate that this compound will be any more safe. Administration of the tetraiodophenol compound by the mouth has, up to the present, proved satisfactory, and I shall be pleased to answer inquiries which medical men may send me.

##### TRANSLUCENT TISSUES.

DR. S. G. MOORE, M.O.H. Huddersfield, writes: No doubt many of my colleagues have seen the wonderful specimens prepared by Professor Spalteholz. For my present purpose this essential thing is that in the specimens the tissues are rendered so translucent that, for example, injected arteries are readily seen in relief in transmitted light. I understand that the process of Professor Spalteholz is a secret. It has occurred to me that if, by any possibility, the process could be applied to living tissues it might restore sight in those cases of blindness due to opacity of the cornea, at least partially. I write in the hope that if the process be not secret some of my colleagues who have the opportunity will make the attempt, and if, on the other hand, it be secret, Professor Spalteholz will either make the attempt himself or disclose such information as may be useful.

##### COITUS INTERRUPTUS.

DR. G. F. GUBBIN (Twickenham, Middlesex) writes: In the past belief in family limitation has been considered to apply only, or for the most part, to the upper and middle classes. But is this true of the present time? For some years I have been attached to a southern London dispensary, with the care of outpatients, and was at first puzzled to account for the number of women of child-bearing age who attended for nervous affections without any discoverable lesion to account for them, and who were in consequence diagnosed as "neurasthenia." Later I discovered that most of these cases, other than those at or near the menopause, had very small families, mostly one or at most two children, the youngest of these 5 to 10 years of age, or even older. The question of "Why no more children had been born?" almost always produced the answer, "Because my husband and I do not wish any more children." The final question, "How do you prevent conception?" resulted in the answer, "By withdrawal." I have now the records of many patients who have given me the answers noted above. The usual bottle of nerve tonic is given, but is accompanied with the advice that "those who act contrary to nature must expect to suffer from upset of the bodily machinery." I am convinced that the limitation of families, as above noted, has become general amongst the better educated members of the working classes, but unfortunately education has not yet taught them that actions contrary to nature are dangerous to health. I have been much interested in the literature which has been published in the last few years on the subject of contraception, but have seldom noticed any allusion to the dangers to the health of mothers as the result of its practice. I hope that the publication of this note may produce the experiences of other practitioners about the prevalence of the above-noted method of contraception and its results.

##### JOHN HILTON.

DR. NUEL R. RAWSON (Whitley Bay) writes: No doubt many correspondents will write to remind Dr. Richard Gilliland (September 25th, p. 582) that in *Members of the Deceased* Sir Arthur Keith devotes the second chapter to an admirable description of John Hilton the man, and of his work as surgeon and pioneer. He will, moreover, find at the head of this chapter a portrait of the robust, energetic Hilton at the age of 65.

##### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 36, 37, 40, and 41 of the columns, and advertisements as to positions at hospitals and locumtenencies at pages 38 and 39.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 160.

THE SCIENCE OF CLINICAL MEDICINE.

OCT. 9, 1926]

An Address  
ON  
THE SCIENCE OF CLINICAL  
MEDICINE.

GIVEN AT THE WESTMINSTER HOSPITAL, OCTOBER 1st, 1926,  
BY  
SIR ARCHIBALD GARROD, K.C.M.G., D.M.,  
LL.D., F.R.S.,

REGIUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF OXFORD;  
CONSULTING PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL,  
AND TO THE HOSPITAL FOR SICK CHILDREN, LONDON.

A VOYAGE down the Thames from its upper reaches to London gives a mental picture of the river, and of its significance, wholly different from that obtained by looking at it from the Tower Bridge. So also it seemed to me, when I was asked to speak to you on this opening day of a new session, that one who has lived through such a period of unrivalled progress in medicine and surgery as the last half-century should have a message to deliver to those who see before them the fruits of that progress, but only as accomplished facts.

It is obvious that the medicine which you are learning to-day is very different from the medicine which we set out to learn fifty years ago. In the interval the work of the bacteriologist and protozoologist has changed our conceptions of the nature of disease, and has revealed exquisite mechanisms by which the organism protects itself against the assaults of the agents of disease. The Listerian methods have revolutionized surgery, and have widened its scope immensely. By combating the insect carriers of those maladies vast tracts have been freed from malaria and yellow fever. From the biochemical side also there have been great advances, and terms such as "hormone" and "vitamin," which embody conceptions of which we in student days had no inkling, have become household words. New and far more delicate methods of diagnosis have been devised; the range of therapeutic measures has been greatly widened, and even dietetics is being placed upon a scientific footing.

All this has entailed profound changes in the curriculum, and has added much to what you have to learn. Even the longer curriculum is becoming seriously overladen, and the student's burden is causing much concern to his teachers, who look round to see what can be jettisoned. The student himself, I am bound to say, appears much less perturbed thereby.

But not only is the subject which you study, and the curriculum laid down for you, greatly changed; you yourselves have a very different outlook from that of the students of the past. The change of ideals and standards of the student of to-day—the schoolboy of the war time—is not easy to define in words, but is very evident to those engaged in teaching in our schools and universities.

DEMANDS ON THE MEDICAL STUDENT.

I would begin by pointing out to those of you who are just entering upon a medical career that two separate demands are made upon you. The first is that you shall acquire a working knowledge of the sciences upon which medicine—and I use the word in its widest sense—rests. You need to study at the bedside and in the laboratories the signs and symptoms of maladies; to acquire the technique of the therapeutic measures at our disposal, and to become skilled in their application. Without such knowledge and skill no man can expect to practise our profession to any good purpose; and to impart them is the function of the medical school. The student learns from his teachers at the bedside, from lectures and demonstrations, from practical experience under guidance, and from his fellow students. Lastly, what may be called the atmosphere of his school, that mass of floating knowledge which forms its tradition, and is handed down from generation to generation of teachers and students, plays no small part in his education.

But, apart from his professional competence, the medical man, who is brought into peculiarly intimate contact with his fellow men, must have other qualifications for his task.

He needs to be equipped with tact, resourcefulness, courage, and prudence. He must have patience with fads, consideration for his patients and their friends, sympathy with suffering, and gentleness of touch and voice. Much indeed is asked of him, but without these qualities, he can never so able, he will make but a poor practitioner. Of this side of the medical profession I do not propose to speak further, seeing that its scientific side is my theme to-day; but I am anxious to emphasize, at the outset, the importance of the human aspects, which each student must learn for himself, aided by the example of his elders.

FIFTY YEARS AGO AND NOW.

The student of fifty years ago almost always entered upon his studies with the intention of taking up some branch of practice, or of entering one of the public services. Few alternatives were open to him. There were no bacteriologists, pathology was synonymous with morbid anatomy; and the men who, from the end of the eighteenth century onward, had laid the foundations of biochemistry in this country were all practising physicians. They, and others of scientific bent, pursued their researches in the period of waiting for practice and in its intervals, but nevertheless they were pioneers, not only of the medical, but of other sciences also.

Nowadays the position is very different. In addition to the physiologists, most of whom still go through the medical curriculum, not a few qualified men turn aside from the path of practice and devote their lives to teaching and research in the various branches of pathology or in pharmacology.

This has its advantages and its disadvantages. On the one hand, some men of scientific tastes and interests—for whom the work of the laboratory has great attractions, whereas the practice of medicine has none—enter the profession, and by their researches contribute greatly to the advance of our science and art. In that way medicine is the gainer. But, on the other hand, there is real danger that the great majority of men of scientific bent will turn aside and desert clinical work, in order to devote themselves to work in the laboratory. This tendency is increased by the attitude of some of the laboratory workers, who regard clinical medicine as a subject hardly worthy to attract men of scientific ability. So there has been a drift apart of the ward and the laboratory, which is far more pronounced in this country than elsewhere, since it is only recently that complete clinical units, with wards and laboratories under a single head, with trained assistants, have been established amongst us.

THE SCIENTIFIC SPIRIT AND CLINICAL MEDICINE.

It will be my endeavour to convince you that there is abundance of work to be done on clinical subjects by strictly scientific methods; and seeing that much of the information to be sought can only be got by clinical research, it would be nothing short of a disaster if all, or nearly all, those qualified by tastes, training, and opportunities to pursue clinical investigations on such lines should desert the wards for the laboratories.

The study of pure pathology and of the problems of immunity entails experimental investigations by men highly trained in the subjects and the methods employed, in bacteriological technique, and chemical manipulation; and those who devote their lives to such work are most valuable members of the profession. But, on the other hand, the mere fact that a piece of work is done in a laboratory does not make it a scientific research; and the routine of clinical pathology is not more scientific than the examination of a chest, the diagnosis of a lesion of the brain, nor even than the careful taking of notes at the bedside.

It is not to be expected that everyone who enters upon the practice of medicine will approach his work in a strictly scientific spirit, and with zeal to contribute to the advancement of knowledge. Although he must employ scientific methods. It must needs be that the bulk of the members of our calling will, owing to the incessant demands upon them, have little time or opportunity for investigation on broad lines. They must be content, willy-nilly, to carry out the day's work with practical skill and

common sense, making good use of what they have learnt from their teachers and from their own experience. Yet not a few of those so circumstanced make important contributions to medical knowledge.

On the other hand, it must not be forgotten that the knowledge upon which the art of medicine is based has been gained by work done on scientific lines, by methods of observation and experiment. All the great therapeutic advances of recent times have been the outcome of scientific investigation; and in medicine, as in other sciences, investigations carried out with no practical aim have proved very fruitful in practical results. It is to scientific research that we owe aseptic surgery and all that it has rendered possible, the conquest of insect-borne diseases, the banishment of the typhoid terror from campaigns, the discovery of the vitamins, and the utilization of hormones. No better example can be quoted than the history of insulin, from the experiments upon dogs of von Mering and Minkowski to its widespread benefits in the present day.

Now that the curriculum is becoming so crowded there is being put forward a view that in the medical training unnecessary stress is being laid upon the earlier stages, and that the student learns much more than he needs of the details of anatomy, and even of physiology. Believe me, this is a dangerous doctrine. Anyone engaged in clinical teaching knows that the clinical clerk or dresser who has been well trained in those subjects has a quite different grasp of medicine or surgery from that of a student who has only acquired the minimal amount of knowledge needful. However good a practitioner he may make, the man whose knowledge of physiology is slight is little likely to advance the science of medicine; for pathology is anatomy and physiology gone wrong.

I know well that there is a limit to what a student can do in the time allowed, but in building a house it is a bad plan to skip the foundations. Given solid foundations the upper stories may be added at discretion. The great majority of us learn what anatomy and physiology we acquire during our student days, but medicine and surgery we are teaching ourselves each day of our active lives.

#### BRANCHES OF CLINICAL SCIENCE.

The science of clinical medicine has several distinct branches, in which different means are employed and different results are aimed at, and these it will be desirable to consider in turn.

In the first place, the clinician seeks to know the nature and seat of the patient's illness, and without such a diagnosis his treatment must needs be perfunctory. His next aim is to do what he can for the relief of the patient's symptoms, and, if possible, for the arrest of his malady. These are the direct and immediate aims of the practitioner, but behind and beyond them is the study of disease, as it manifests itself in the living human subject, the gaining of new knowledge, the advancement of our science and enlargement of our art.

#### THE SCIENCE OF DIAGNOSIS.

The science of diagnosis is, in the main, a science of observation, the aim of which is to detect in the living patient processes and lesions which are beyond our reach, but which would, in most instances, be revealed at a *post-mortem* examination. Yet it rests largely upon *post-mortem* teachings, and all who aim at becoming capable diagnosticians should take advantage of every opportunity afforded to them of seeing, and whenever possible conducting, such examinations. Such opportunities are most common during student days, and only too many of us regret in after life the neglect of such opportunities; for morbid anatomy, one of the most important subjects in the medical curriculum, can only be learnt by personal observation. Do not forget that there is an immense difference between facts which we *know* and facts with which we are merely acquainted. Facts which we know are not those about which we have read, or have heard in lectures, but those which we have observed, apprehended, and confirmed for ourselves. We need no *memoria technica* to recall a fact which we *know*.

Some diagnostic methods are simple and involve merely

the use of our senses—of our eyes, ears, nose, and fingers; others require the use of instruments of more or less complexity; and others, again, involve chemical or bacteriological examination of the blood or excreta, by methods usually carried out in the laboratory. It is hard to realize how recent most of our diagnostic methods are. Auscultation and percussion were only brought into use at the end of the eighteenth century; the clinical thermometer came into general use in our hospitals as recently as the seventies of last century. Blood counts began in the same decade, and the importance of leucocyte counts was only recognized in the nineties. Since then our diagnostic resources have been largely increased. The discovery of the tubercle bacillus, and its ready detection in the sputum of many sufferers from pulmonary tuberculosis, opened the way for wide applications of clinical bacteriology—the detection of various bacteria on the one hand, and the agglutination tests on the other. More elaborate means, such as the Roentgen rays and the electrocardiograph, have rendered our findings far more precise, and we now have methods of testing the functional efficiency of such organs as the liver, kidney, and pancreas.

As long ago as the middle of the last century uric acid was detected, and estimated, in the blood of the gouty, but in recent years methods have been devised which render possible the estimation, not only of uric acid, but also of glucose and urea, in a few cubic centimetres of blood.

All these refinements and advances have not superseded the older and simpler methods. It is as necessary as it ever was that the medical man shall be trained to make use of all his senses, supplemented by the stethoscope and thermometer. A laboratory is not always within reach, and it is often necessary to act before a bacteriological report can be had. Moreover, the older methods have been improved, and pulmonary tuberculosis is now usually diagnosed by auscultation and percussion at a stage at which it would have escaped recognition fifty years ago.

Auscultation and percussion are strictly scientific methods. Consider for a moment how by such means it is possible in very many instances to ascertain beyond a doubt that a patient's lung is consolidated, or that the pleural cavity contains fluid; that his heart is hypertrophied or dilated, or that there is narrowing of valvular orifice or leaking of a valve. Such diagnoses involve accurate observation and sound interpretation of the signs observed, and the confidence with which we make them is due to confirmation of such diagnoses in many *post-mortem* examinations.

Lesions of the nervous system often present difficult problems of localization, for the brain and spinal cord are wholly out of reach of direct examination. Yet by making use of the findings of experimental physiology, and the teachings of morbid anatomy, it is usually possible to make a correct diagnosis of the seat and nature of a cerebral spinal lesion—just as a man who is thoroughly conversant with the telephone system may, by comparison of observations made in several branch offices, diagnose accurately the place, and form a shrewd notion of the cause, of an interruption in a central office which he cannot visit.

A diagnosis often involves replies to two questions, namely, Where is the lesion? and What is its nature?—the answers often hang together. For example, the signs and symptoms, in a particular case, point to a lesion of head of the pancreas, and experience teaches that such a lesion is almost certainly a carcinoma. Yet a diagnosis may be right in one respect and wrong in the other.

There are some people who possess a natural diagnostic insight, and others who acquire such an insight by experience. The accumulated impressions, derived from cases seen at various times, may point to a right solution. Just as a child spells out the letters of words, and a beginner translates laboriously what he reads in a foreign tongue, so the medical student runs over in his mind possible causes of an observed sign or symptom. But experience allows such conscious effort to be dispensed with; the foreign words come to convey their meaning direct; the clinical picture suggests a correct diagnosis.

One of the dangers which beset the medical student to-day is that he may be tempted to neglect that thorough grounding in auscultation and percussion and the simi-



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chemical and microscopic tests which can be made at the bedside, and may come to rely upon reports from the laboratory of examinations which he has not himself carried out. To this danger all examiners in medicine and surgery are keenly alive.

## SCIENTIFIC THERAPY.

The treatment of disease, also, is developing along scientific lines, and in no part of the field of medicine has more conspicuous progress been made during the last fifty years. The advances of surgery, which have been rendered possible by Lister's researches, are obvious and generally recognized. It is the privilege of the surgeon to obtain more definite results; he removes the inflamed appendix and the danger to the patient is at an end; by the sacrifice of a limb the whole body may be saved. The physician, on the other hand, has usually to help the patient to hold his own whilst Nature works a cure. It is one of the most important lessons learned during the last half-century that the physician is not the protagonist in the fight with disease, and the patient's body the battlefield, but that Nature has provided the patient with power to produce drugs far more potent than any which we were wont to use, and so discriminating that they can destroy the particular attacking bacteria or neutralize the toxic substances which they produce. The extensive use of sera and vaccines in the present day represents our attempts to utilize Nature's own remedies; and we may hope that, in due course, we shall be able to give them as pure products, free from undesirable admixtures.

Many of the old drugs, introduced at the dictates of fantastic theories, of astrology or of magic, are falling into disuse, and others, of proved value, are being investigated on pharmacological lines, and their mode of action and the limits of their utility are being determined. But we are bound to admit that amongst the old drugs, introduced on no scientific grounds, there are not a few which are of great value, and have for centuries contributed greatly to the healing of the peoples. Now that we know better how and when to use them their utility is greater still.

Dietetics, for long the most backward and empirical branch of medical treatment, is coming within the scope of scientific therapeutics. The discovery of the vitamins, and the appreciation of the importance of caloric value of foods, are signs of the times, but we still give advice on diet for which we can give no scientific reasons and the utility of which rests upon no firm basis of experience.

The advance of science is furnishing us with new methods of treatment, with most of which we are still feeling our way. I need only to mention Roentgen rays, radium and its emanations, light and ultra-violet rays, the recent developments of electrical treatment, of massage and manipulative measures. Lastly, a tribute must be paid to the nursing methods of the present day, which strengthen our hands so greatly in the fight against disease.

## THE PURSUIT OF CLINICAL RESEARCH.

So far I have spoken of scientific knowledge and method, as applied to the recognition, control, and treatment of disease, but what I particularly wish to emphasize is the fact that the clinical observer has abundant opportunities for the study of disease as seen in the human subject—in other words, for the pursuit of clinical research. Much of the knowledge so obtained is not to be had from experiments on animals; for a human patient can describe his sensations with greater or less accuracy, and can tell us of the medical history of himself and his family. Such work as that on the sensory nerves which we associate with the name of that great observer Henry Head could not be done in any other way.

Although it is established that, in the majority of instances, illness results from the invasion of the body by micro-organisms, vegetable or animal, or by poisons of inorganic origin, and although such immense help has been got from the culture and study of such organisms and of their effects upon lower animals, and by the experimental study of the phenomena of immunity, we cannot learn in the laboratory all that we need to know about disease.

What we call disease is the response of the organism to

the invasion of the agents of disease, and, seeing that no two individuals are exactly alike either in structure or in chemistry, sickness does not conform to any single model; each individual case calls for careful observation. Owing, as I believe, to their chemical individuality different human beings differ widely in their liability to individual maladies, and to some extent in the signs and symptoms which they exhibit. Hence it will be found a useful maxim that there is no such word as "never" in medicine. Rules which appear to be immutable turn out to have their exceptions.

Many idiosyncrasies are obvious and notorious, such as the sensitivity of individuals to special drugs, or particular articles of diet, which have no ill effects upon others. As examples may be quoted the manifestations of urticaria, in hay fever, and in varieties of asthma. Light also is an agent which affects various individuals in very different ways. Usually beneficent, it produces unpleasant effects upon the skin of some individuals, and to a very few who are victims of congenital porphyria it is a veritable poison.

Again, the minor injuries which are necessary accidents of the wear and tear of life vary greatly in their effects. In the bleeder a trifling knock may produce grave trouble in a joint; in victims of that strange anomaly fragilitas ossium it may cause a fracture; in a gouty subject it may induce an attack. So do our idiosyncrasies and our circumstances contribute to the moulding of our maladies. All this is the true basis of the doctrine of diatheses now unduly neglected.

## PIONEERS IN CLINICAL RESEARCH.

It is by clinical observation, controlled by morbid anatomy, that almost all the maladies with which we are familiar have been differentiated. By the study of groups of allied cases, of the signs and symptoms met with during life, and of the lesions found after death in fatal cases, the door has sometimes been opened to wide extensions of physiological and pathological knowledge.

One of Nature's experiments, the placing of a lesion in some particular spot, may serve to reveal the functions of the part affected. Let me illustrate this point by a particular instance.

In the year 1855 Thomas Addison, one of the greatest clinical observers which this country has produced, published a description of *The Constitutional and Local Effects of Disease of the Suprarenal Capsules*. In the preface to his pamphlet—one of the classics of medical literature—he pointed out that the pathologist may sometimes be able to throw much light upon the functions of diseased organs, and that we are apt to forget how much of our physiological knowledge has been revealed by casual observations of the effects of disease, how goes on to speak of the adrenals, and adds: "It is as a first and feeble step towards inquiry into the functions and influence of these organs, suggested by pathology, that I now put forth the following pages." Yet that "feeble step" was destined to be epoch-making; for Addison's description of the disease which goes by his name was the starting-point of our present knowledge of the functions of the endocrine glands; and the recognition of the hormone action of their secretions, and of their mutual interdependence, constitutes one of the most conspicuous advances of physiology and pathology during the last half-century.

It is true that the malady which we call exophthalmic goitre was described by Caleb Parry, Graves, and Basedow at a much earlier date. Those observers recognized the association of the cardiac and ocular symptoms with enlargement of the thyroid gland, but it was not until much later that it was realized that the affection of that gland was the pivot of the clinical picture, and that to derangement of its functions the other phenomena were due.

Since Addison's day clinical observation has continued to play a conspicuous part in this field of pathology, as witness Gull's work on myxoedema, the recognition of acromegaly by Marie, of Brown-Séquard, the recognition of anæmia by Harvey Cushing and others.

Let us pause, then, to consider how Addison set to work. He noticed that a certain group of symptoms was apt to occur in association—namely, anæmia, debility, remarkable feebleness of the heart

action, irritability of the stomach, and a peculiar dingy or smoky discoloration of the skin—and that in every case in which this syndrome was met with extensive disease of the adrenals was found *post mortem*. So constant was this association that, in the later cases of the series, the disease of the adrenals was predicted during the lifetime of the sufferer. Addison's disease is decidedly uncommon, but, as it is uniformly fatal, he was in a position to verify his conclusions in the majority of the cases.

For my next example I will go to the remarkable series of papers by William Jenner on the differentiation of typhoid and typhus fevers, in which also we may admire the workings of a great clinical talent. Jenner's conclusions were based upon a series of sixty-six fatal cases of continued fever, all of which had come under his own observations in the London Fever Hospital, and in all of which autopsies had been made. The first of these papers was published in 1849, and at that time, although various observers, in this country and abroad, had maintained that typhoid and typhus fevers were specifically distinct, the trend of current opinion was towards their inclusion as varieties of the same disease. To quote his own words, Jenner

"considered that it was necessary to begin *de novo*, and consult only the voice of Nature—convinced that although the most intellectual might fail at first to comprehend her often ambiguous language, yet her most humble votaries might, by patience and daily watching, by keeping honest record of every sound she uttered—by joining letter to letter, adding word to word and line to line—at last spell out her meaning, and so reach that rank which the great master of induction tells us man may legitimately hope to attain—namely, that of her interpreter."

This is the true scientific spirit, and following its guidance Jenner was able to settle the point at issue once and for all, on evidence which carried conviction.

He investigated the place of origin, age, and circumstances of each patient in his series, collated the observations relating to each symptom in turn, and showed that the outcome of clinical observation accorded with that of *post-mortem* examinations, and that from the character of the rash alone it was possible to predict the presence or absence of intestinal lesions.

Jenner's monograph is one of the foundation stones of the statistical method in medicine, which he defended warmly against those who prefer to rely upon general impressions. "Who," he asks, "can tell what general statements are worth, without knowing on what evidence they rest? One man's many is another man's few; one man's frequent is another man's seldom."

In the histology of neurology examples abound of the employment of clinical methods in scientific research. Of one who may justly be styled a clinical genius, Hughlings Jackson, it has been said with truth that "his advent infused a new spirit into neurology, and was the beginning of that systematic orderliness which now characterizes neurology, more perhaps than any other branch of medical science." Both physiology and pathology owe to him a great debt; and I believe that I am right in saying that his contributions to science, from the discovery of the association of convulsive attacks with lesions of the cerebral cortex, to the wide and important generalizations upon which his fame largely rests, were the outcome of bedside observation controlled by morbid anatomy.

The brilliant researches of James Mackenzie, begun, and largely carried out, in the intervals of a busy general practice in a northern town, lend further support to my thesis; for that work has opened a new era of cardiac investigation, and has changed the aspect of the physiology and pathology of the heart.

I have chosen a very few examples from the past—some of them from days when the clinical thermometer was still unknown, and the bacterial origin of disease was not dreamt of—of researches which conform to every canon of science, and which were carried out at the bedside and in the *post-mortem* room by British clinicians who have obtained places in the medical Valhalla. It would be easy to enlarge the list so as to embrace such men as James Paget, Jonathan Hutchinson, W. B. Cheadle, and that great physician whose death we have so recently deplored, John Thomson of Edinburgh. The inclusion of workers in other countries would greatly swell the roll, and I might equally well have taken my examples from men now living. But,

for my purpose, and for the support of my thesis, the examples quoted will suffice.

If, with the far scantier means at their disposal, the clinicians of the past were able to accomplish so much, how much more may be expected from those of the present and future, who are so far better equipped? Although it is true that the nuggets lying upon the surface have been picked up, mining operations, for which this generation is well equipped, should reveal much that is still hid.

In my young days the maps of Africa showed a border of the known around vast areas of the unknown; and in the medicine of to-day there are still large blank spaces to be filled. What do we really know of the true nature of the leukaemias, despite the many differential blood counts of recent years? These carry us to a point, and seem to be unable to take us further. A new road needs to be blazed out, by the collaboration of the laboratory and the ward.

#### SCOPE FOR SCIENTIFIC WORK IN CLINICAL MEDICINE.

If, as I have tried to convince you, there is abundant scope for scientific work in clinical medicine, why is it necessary to point this out, and why do we so often hear the contrary opinion maintained, especially by laboratory workers? Is it not because medical men too often do not realize the requirements of scientific method? If we are to hold our own as members of the army of research, we need to see that our work is up to the required standard; that our observations are sufficiently precise, and are confirmed by the method of control; that our statistics will bear examination by statisticians, people whom it is not easy to satisfy, and that our hypotheses are legitimate inductions from facts which are clearly established.

There are, however, obvious difficulties which make it hard and often impossible for the clinician to be as exact in his methods as he would wish. Medicine is always in a hurry. The patient and his friends are only too apt to mistake scientific caution for incompetence; to demand a cut-and-dried diagnosis in an impossibly short time; and to estimate a ready dogmatism above a reasoned uncertainty. Time is often pressing, and the doctor is obliged to act upon very incomplete evidence, lest, whilst he waits for certainty, valuable hours must be lost. He cannot always put his treatment to the test by trying one measure at a time; and, again, he is bound to forego any diagnostic test, or even a thorough examination, if it appears to him that it might in any way be harmful to the patient. These are only a few of the hindering factors which are familiar to all practitioners.

You will have to realize that to a large section of the public all science is under suspicion, and scientific medicine is distrusted. A profession which makes a free gift to mankind of all its discoveries is widely regarded as a close corporation of people who look askance at men cleverer than themselves, merely because they have not had a medical education, or because they base their treatment upon heterodox theories. This phase of thought is by no means helpful to him who would advance the knowledge of disease, and, through knowledge, its treatment.

In conclusion, let me repeat that for the clinician, as for the laboratory worker, and especially for both working in co-operation, there is abundant scope for original investigation—that highest product of the scientific spirit. We are not all built to do such work, and there are excellent investigators for whom an obvious practical aim is a necessary stimulus to research; but for those who are content to seek knowledge for its own sake there are great rewards; for the discovery of a new fact, however small a one, or the framing of a conception which throws a beam of light into some dark corner, brings a satisfaction which is without alloy.

Yet the way of the investigator is rough, and there are many disappointments to be faced. In the words of Ecclesiasticus:

"For at the first Wisdom will walk with him by crooked ways and bring fear and dread upon him, and torment him with her discipline, until she may trust his soul and try him by her laws. Then will she return the straight way unto him, and comfort him, and show him her secrets."

May she show her secrets to those of you who shall elect to tread her path.

## An Address

ON

## PROFESSIONAL CAREERS.

DELIVERED AT

KING'S COLLEGE HOSPITAL, OCTOBER 1ST, 1926,

BY

SIR HUMPHRY ROLLESTON, BART., K.C.B., M.D.,  
REGIUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF CAMBRIDGE.

Your presence here to-day proves that you have entered on a profession with a choice of fields of activity probably unequalled in any other, and presenting great contrasts in the circumstances and positions of its members. To take up the wrong branch, to be a misfit, may be a tragedy, and it is therefore essential to consider carefully this momentous decision. Some of you may have already settled on your future, and there may be compelling reasons for this; but otherwise it is wiser to wait and to do the day's work, which is exacting enough; to attempt now any decision as to the particular line you will eventually follow may be premature—namely, before you have seen enough to be able to know what really appeals most forcibly to you, what you are best suited for, and how far this is possible. The data may not be available until after qualification, when unexpected opportunities may arise, or circumstances show what is your true bent. There is much wisdom in the advice "Do not specialize too early," for the important point is to get a good general grounding in the vast subject which you propose to profess. In the meanwhile there are some general considerations on the careers open to you.

In some respects the medical profession, especially at the present time, compares favourably with other professions. In the first place, with the expansion and rapid development of medicine there are more opportunities and varied openings than ever before. Secondly, apart from accidents, illness, and grave misconduct, a competence or living wage is within the reach of practically all qualified medical men who choose to work. The panel system has, in spite of the initial forebodings and opposition, really improved conditions for the rank and file of the profession. As a profession medicine does not bring wealth or a great position to more than a few, but it has an immense amount of gratuitous work to its credit, and is exposed to the frequent danger of infection from attendance on the sick, and the occasional risk of vexatious legal actions for supposed malpraxis and improper certification of the insane. To enter on "the physic line" as a means of livelihood is justified by the results, but as a path to great material prosperity the way is long, treacherous, and may land the traveller in a slough of disappointment. In spite of Sir Robert Peel's dictum that "Nothing is so misleading as facts except figures," it may be a comfort to remember that statistics got out at various dates by Sir James Paget,\* Sir Squire Sprigge (1906), and Mr. E. M. Corner (1920) show that on an average over 75 per cent. of medical students obtain a qualification, and that according to the first two authorities 66 per cent. of those qualified have reason to be satisfied with their professional success.

It may be interesting to contrast the financial rewards of the medical and legal professions. As medicine is an almost universally essential profession, practically all qualified men can earn a living; inquiry from men of acknowledged experience shows that before the war the average professional income was about £500 a year, and that now it is about £750, in both instances gross, so that with the present high income tax it is not much more than formerly. On the other hand, the number of barristers briefless, whether voluntarily or of necessity, is comparatively large, whereas the prizes are much greater and more numerous among barristers than among medical men. This might seem to be contrary to the usual relation between supply and demand. But according to Adam Smith the

wages of labour in different employments vary according to the probability or improbability of success in them, and he instances the almost uniform success attained by apprentices to shoemakers, with the twenty to one chance of earning a living in the law, and adds that "in a perfectly fair lottery those who draw the prizes ought to gain all that is lost by those who draw blanks, and that in a profession in which twenty fail for one who succeeds, that one ought to gain all that should have been gained by the unsuccessful twenty." Now in accordance with this axiom it would appear that as the vast majority of medical men succeed in earning a living the winners of great prizes should be exceptional, and so it works out.

So far reference has been made only to the popular, material, or even sordid standards of success, and it should be unnecessary to proclaim the higher motives that may make the pursuit of medicine a satisfying career—the intellectual interest in the attempt to solve the innumerable problems presented by the sick; the opportunities for studying the nobilities and frailties of human nature; and last, the personal and almost sacred call of the service of our fellows. After all there is much truth, if a little exaggeration, in the forcible dictum that "Medicine is a noble profession, but a damned bad trade."

## GENERAL PRACTICE.

General practice is still, in spite of increasing specialism, the future field of activity for the largest number—probably three-quarters—of qualified medical men, and there is plenty of scope and opportunity. Any medical man or woman can be on the panel for the fifteen million insured persons in England and Wales, and the financial and other conditions on the panel are superior to those of its predecessors the clubs and friendly societies. In England there are at present 12,696 men on the panel, or nearly half (46 per cent.) the estimated 27,600 men practising in England; but there are only 434 women on the panel, or one-fifth (19 per cent.) of the 2,209 women in practice. For these figures I am indebted to Dr. Smith Whitaker of the Ministry of Health. This rather striking difference in the sex personnel of panel practice may be in part due to women preferring to confine their work to their own sex and to children. But this is not the whole story, for unfortunately at present the public as a whole have not become accustomed to women doctors, and as a rule the panels of women doctors are not crowded. Time no doubt will cure this, as other inequalities, but in the meanwhile women doctors are not finding it so easy to earn a livelihood in general practice as their brothers. The profession received a large influx of women during, and of both men and women after, the war, and the peak of the wave in qualifications has only recently been reached, so that there is some reason to fear a temporary overcrowding in the profession. A number of official posts in public health, infant welfare, and so forth in this country, in India, in the Zenana Mission, and elsewhere in the mission field, are available, in which women doctors can find congenial occupation and a living.

It is sometimes thought that the public medical services encroach on the general practitioners' preserves, and in time will lead to their exclusion. But Sir George Newman, who is in the best possible position to know, points out that in reality the reverse is true:

"For the Poor Law medical service has 4,000 medical officers for outdoor medical relief, practically all of whom are private practitioners; the Post Office list of 3,500 medical men are all practitioners; out of 1,450 medical officers of health, 1,100 are private practitioners, and only 350 are whole-time officers; of the 1,600 medical men engaged by local education authorities in the inspection and treatment of school children, 1,000 are in private practice; of 1,770 certifying factory surgeons, all, hardly with exception, are private practitioners; and the whole of the national insurance service is in the hands of private practitioners."

Some other lines of work allied to general practice may be briefly mentioned. Examining for life insurance is usually a small item in a general practitioner's life, but some men by holding appointments under several offices spend most or even all of their time in this work. It is, of course, true that the chief medical officeships of large insurance companies are usually held by consultants and hospital physicians.

\*At one of his introductory lectures Abernethy looked round at the crowd of students and exclaimed as if in painful doubt, "God help you all! What will become of you?" His successor, Sir James Paget (1829), attempted to answer this question by analysing what became of a thousand of his pupils within fifteen years of their entrance to St. Bartholomew's Hospital.

With the progress of medicine to a preventive standpoint the logical importance of establishing periodic overhauls of the adult population may be expected to be more widely recognized and acted on, as in this way the causes of early disorders may be removed and so the sequence of serious results prevented. If and when periodic overhauls, twice or three times a year, become recognized in much the same light as a visit to the dentist is now, a fresh line of work allied to insurance practice will be opened up. Police surgeons and appointments to big business firms, to look after their staff, again are nearly always part-time occupations; but in the future it is probable that industrial medicine will bulk more largely than it does at present, and provide more berths for medical men who will devote their whole time to this branch of work, which provides much opportunity for interesting investigation. A good example of this is the recent recognition of squamous-celled carcinoma, usually of the scrotum, among the "mule spinners" or cotton operatives, who during their work lubricate with a mineral oil the spindles of the spinning mules. The Home Office's Departmental Committee Report (1926) records 539 cases (450 of the scrotum).

Temperament or circumstance will no doubt largely determine the choice of general practice in preference to entrance into the fighting or other service or taking up consulting or some special line of practice. Many men are individualistic, and prefer to be their own masters rather than to be under official control. A love of country life, and the human interest in getting to know their patients from the cradle to the grave, may make a man decide to devote his life to a labour bringing with it more love and respect than wealth or professional reputation. Heredity in the form of a father's practice awaiting him may make it a natural means of following the line of least resistance to tread in the paternal footsteps. I know medical families of seven generations in England and in Scotland; Georges Clemenceau, ex-Premier of France, was the seventh medical member in lineal descent of a family which practised the healing art for three hundred years without a break; and America can boast of the Porter family of eight generations of doctors from 1654 (Browning). There are other reasons, and among them desire to be married is not an unknown factor, for starting in general practice. The mention of marriage, in which haste is not essential to ensure happiness, recalls the business marriage or partnership, which also has its pitfalls as well as its advantages. It should not be entered into without due consideration and careful inquiry, and, as Mr. W. E. Hempton (out of the fullness of his experience of many partnership disputes referred to him) has said, a preliminary courtship, such as an assistantship with this further relationship in view, is eminently desirable.

With the changes time has brought about, men in general practice, who become the guide, philosopher, and ultimately familiar friend of their patients whom they bring into and see out of the world, have also changed, for their medical education and general equipment have greatly improved. They have thus become less dependent on the help of specialists and consultants, with whom to some extent they therefore compete. It has been thought by some that eventually general practitioners will become squeezed out by specialists and consultants on the one hand, and on the other hand by preventive and social medicine—such as school, tuberculosis, and venereal clinics, and maternity and child welfare centres. But the general practitioner is the essential element in the medical service, and his elimination would be a most serious loss. Just as they have altered in the past, so should they accommodate themselves to changing conditions, to a larger measure of team work, to a greater share in preventive medicine, and to a responsible part in public health organization.

A general practitioner has to possess a knowledge of every branch of medicine, in fact to be in miniature an all-round specialist, with the proviso that he also knows his limitations—what he can safely do and what he should leave to others; for in these days, with the great and ever-increasing complexity of medicine a real all-round specialist is of course impossible. This difficulty has to some extent been met by team work; firms of general practitioners so

constitute themselves as to cover the ground of the various branches of medicine, surgery, and gynaecology more or less completely, each partner devoting himself to some particular line of work. Thus, in choosing a new partner, consideration is given to applicants with such qualifications as a special surgical or even radiological bent, and the existing partners may from time to time take post-graduate courses so as to become recognized locally as experts in diseases of the throat or eye, urology, and so forth. It is thus possible for a general practitioner to develop into an expert specialist and eventually to set up in a big centre; indeed, his all-round knowledge of the whole art of medicine is a very valuable asset to him as a specialist.

#### LAY MEDICINE AND MEDICAL CULTS.

In the sphere of everyday medicine, especially in that conducted by general practitioners, the competition of amateur doctors and numerous cults or stunts has always played and, unless human nature alters in an unexampled manner, always will take a prominent part, which must be accepted in a philosophic spirit. A fundamental principle of preventive medicine is education of the public in personal hygiene, and this may lead to the acquisition of that small amount of knowledge which is proverbially dangerous, and may encourage treatment not only of self but of dependants and friends. As many persons, acting on the assumption that forty years of life make an individual either a physician or a fool, are convinced that they are as good as, or better than, doctors, a considerable amount of rather irresponsible treatment—in other words, a more advanced grade of domestic medicine—is likely to result. It must be remembered that such lay medicine is largely the outcome of past medical opinion or advice, and so up to a certain point is often sound. From such domestic medical practice it is but a step to an addiction to patent proprietary potions and pills, with which, as proved by their widespread advertisements, so many people dose themselves and others so freely and sometimes not too wisely. But just as the lay public are not justified in believing that a patent medicine taken under their own direction is necessarily an infallible panacea for what they think they are suffering from, so it would be unwise for the medical profession to jump to the opposite conclusion that they are all useless or worse. Proprietary medicines are sometimes derived from physicians' prescriptions for combinations of drugs proved by experience to be specially effective; some, indeed, such as chlorodyne and James's fever powder, have been copied in the *British Pharmacopoeia*. When the composition of a patent medicine is known—and it will be advantageous when a note of their composition on the label is legally enforced—there is ground to show whether or not it should be prescribed.

The cults of medicine, such as homoeopathy, Christian science, osteopathy, and chiropractic, are fashions, and the successors of others that have had their day and ceased to be remembered, such as Perkins's "metallic tractors," which had a great vogue at the beginning of the last century for drawing out disease from the body. But orthodox medicine also has its fashions, such as indiscriminate bleeding, salivation, and setons; it is always wise to find out if there is any germ of good in every new thing, however much it may be boomed and advertised. What in one generation is regarded as the obsession of a crank, such as the open-air treatment of tuberculosis by Dr. G. Boddington of Sutton Coldfield, Warwickshire, in 1840, may subsequently become recognized as a valuable form of treatment; in the past useful hints have been obtained from bone-setters, and manipulative surgery, which is part of orthopaedics, may embody some of the methods of osteopaths. The success which sometimes follows much-vaunted cures, especially when attended by great pomp and circumstance, such as touching for the king's evil, the séances of Count A. Cagliostro (1745-1795), and those of F. A. Mesmer (1733-1815) with his magnetic cabinet, which seems to have been reincarnated in Albert Abrams's box, and many modern fashions, is chiefly due to the impression made on the imagination or to "suggestion"; as Oliver Wendell Holmes said, "So long as the body is affected through the mind no audacious device, even of the most manifestly dishonest character, can fail of producing

occasional good to those who yield it an implicit or even partial faith." But every successful doctor, by kindly and firm encouragement, is consciously or unconsciously practising suggestion.

It has been thought that education of the masses, and of the classes, is the only way of getting rid of quackery; but with all the modern improvements and spread of education there is as much, or more, irregular practice as in the past. That great ability and learning do not prevent such infatuation is shown by many examples. In the past as in the present—for example, Sir Kenelm Digby and the "sympathetic powder" (1658), and George Berkeley, Bishop of Cloyne, universally acknowledged to have been one of the most accomplished of men, who, in *Philosophical Reflections and Inquiries concerning the Virtues of Tar Water* (1744), advocated tar water as a panacea. The encroachments of irregular practitioners on orthodox medicine are annoying, but, as already said, they will last in some form or another as long as human nature is what it is.

#### CAREERS IN THE SERVICES.

In the past men sometimes entered our profession because, being debarred by bodily defect or failure in negotiating examinations from the executive branches of the army or navy, their ambitions were to some extent met by being medical officers in the services. The call of adventure and the itch to travel attracted some entrants into the fighting and colonial services; a life of varied interests, an assured rate of pay, and the prospect of a pension to provide for retirement also weighed in the choice of the services; but the shortage in the services at the present time, possibly an aftermath and revulsion from the war, shows that these factors are somewhat in abeyance, and accordingly short commissions of four years or so with a gratuity on leaving, which helps in starting a practice, have been established. The opportunities for research and investigation have much increased in the naval and military medical services, and that devotion to scientific work is compatible with gaining the highest offices in the medical department of the army was shown by the appointment of the late Lieutenant-General Sir William Leishman as Medical Director-General. The new problems in connexion with aviation attract keen men of the kind wanted in the Royal Air Force. Tropical research, with its great potentialities, is specially open to those in the colonial service.

The increasingly active health services provide a large number of official positions, not only part-time, which, as already mentioned, are chiefly occupied by general practitioners, but whole-time appointments, and these posts are likely to increase in number and importance. Appointments in fever and mental hospitals and sanatoriums are, of course, whole-time, and provide opportunities for research and openings for men who are attracted to these special branches of medicine.

#### CAREERS AS SPECIALISTS.

The development and ever-expanding scope of the healing art have long made it impossible for one man to be encyclopaedic, much less to attain the technical skill to be competent in all its branches, and specialism has, after the necessary period of probation and some disapproval, become fully justified and recognized. But it is of comparatively recent growth; Sir Benjamin Brodie (1783-1862), President of the Royal Society and of the Royal College of Surgeons, is made responsible for the dictum "A specialist is half a quack." Special hospitals, such as the Royal Ophthalmic (1804), Royal Hospital for Diseases of the Chest (1814), and the Royal Ear Hospital (1816), have been in existence for more than a century, but forty years ago or less specialism was not more than tolerated by the leaders of the profession. It is important that medical men should not specialize too early, before they have obtained a broad view of medicine as a whole, otherwise they will not be able to see the wood for their intense focusing on the constituent trees. It is unwise to build a complex structure of unseasoned material, for it may subsequently shrink into a useless or not harmful article. Wise specialism is of the greatest advantage for the progress of medicine, but its followers should know something about everything medical as well as everything about their own branch.

Without taking a reactionary view, there is a danger that specialism may be exaggerated and that parts of medicine which should be within the reach of every competent medical man may be prematurely elevated into a specialty; in ancient Egypt there was a phase (B.C. 500) when each disease had its practitioner, who confined his activities to that one condition. To be a clinical specialist has mercenary advantages, for practice comes earlier and the lucrative rewards may be considerable.

The pathologist, bacteriologist, serologist, and biochemist belong to a special branch of medical practice which has a progressively increasing scope of activity, as is shown by the overwhelming flood of new work on these fundamental sciences; from a material aspect, the recommendations of the Royal Commission on Health Insurance, if carried into effect, will increase the number of official posts available for those whose abilities and temperament render them better suited for laboratory investigations than for clinical practice, and who therefore prefer the quiet pursuit of truth in the laboratory to that of wealth in a limousine or a Ford. Intellectually, laboratory research—with the possibility of making a permanent addition to knowledge, which will advance scientific medicine and so benefit suffering humanity—has an appeal of the highest order, and all honour to those who are able and willing, for we are not all so gifted, to follow the call. It can hardly be too often emphasized that, in the best interests of all concerned, the clinician and the laboratory worker should be in constant and close touch, and indeed in the whole-time directors of professional units they are combined. The laboratory worker should, for his own sake, have a full and experienced training in clinical medicine.

Radiology is one of the newest specialties, and from the amount of technique necessary is fully justified in being so regarded. The interpretation of the appearances seen on the screen and in films demands an extensive acquaintance with anatomy and physiology, and above all with clinical medicine. The action of x rays and of the rays of radium provides great opportunities for research, both biological and physical; the influence of radiation on the tissue cells, in destroying and in stimulating them, and on the blood, and the therapeutic effects on malignant disease, have raised problems which await further investigation and are therefore attractive to men keen on research.

Anaesthetics is a branch of therapeutics, and has become a specialty in large centres where there is sufficient demand for men who devote their whole time to this work. On the other hand, it is hardly marked off so sharply as are the other specialties, and is often adopted as a part-time occupation by men in general practice or while waiting for some post on the surgical side of the hospital. The subject is allied in practice more with surgery than with medicine, and offers considerable opportunities for research into the various new methods that have recently been employed.

#### CAREERS IN CONSULTING PRACTICE.

Consulting physicians and surgeons, though often dubbed "specialists" by the public, are not usually regarded by their professional brethren in the same category as those who practise ophthalmology, gynaecology, laryngology, otology, psychiatry, orthopaedics, and other legitimate specialties. The general consulting physician and surgeon have had their wings somewhat clipped by the growth of specialism, and indeed hospital physicians now commonly pay more particular attention to some branch of their subject, such as diseases of the heart, lungs, nervous system, or alimentary canal. It is more especially the general consulting physician who has suffered, and the wait for monetary success may be so long that without private means the struggle is disheartening. Few consulting physicians were more successful than Sir Andrew Clark (1826-1893), who said that he had to work ten years for bread, ten years for bread-and-butter, and twenty years for cakes and ale; it is not given to all to practise for forty years, or if they do, to reach the material rewards of the last stage. Money may be a mark of success, but there are other conceptions of success, and it has been written "What shall it profit a man if he gain the whole world and lose his own soul?"

With surgeons the outlook is very different, for their



technical skill in operating has been enabled, by the discoveries of anaesthesia and antiseptic and aseptic methods, to become most successful in combating disease in all parts of the body, especially cancer and acute inflammation in the abdominal organs. But in populous centres surgeons are largely concentrating their activities in some special direction, such as the abdomen, malignant disease of the breast, or surgery of the brain. Of the two great, if artificial, divisions of the healing art, pure medicine and surgery, the second is naturally the more attractive, for the benefits wrought by operation are much more obvious and spectacular than those in a physician's practice. The operating surgeon has invaded, and with good justification, realms of disease formerly regarded as sacrosanct to the physician, and the rewards are much greater; thus gynaecology in its advance has become surgical, and much of the treatment of digestive disorders is on operative lines. A budding surgeon should now be a Fellow of the Royal Society.

Time was when the physician was paramount, but now there are not wanting definitions of a surgeon which point to his supremacy, such as "A surgeon is a physician who can use his hands"; "A surgeon is a physician and something more"; and perhaps the arresting, if somewhat intriguing, auto-definition of the distinguished President of the Royal College of Surgeons, "A physician doomed to the practice of surgery." The financial rewards are much greater and begin earlier than in the physician's earthly course; but, on the other hand, a surgeon's flood of activity ebbs sooner, and the wear and tear of a surgeon's exacting life are much greater than in the case of his medical brother. Writing last year about this subject, as illustrated by the staff of the Manchester Royal Infirmary in 1900, Mr. A. H. Burgess pointed out that the death rate on the surgical side was nearly five times higher than among the physicians. This may be an exceptional instance, but the risks run by a surgeon from infection and overstrain cannot be doubted by anyone who follows Mr. Burgess's example of analysing now the composition of hospital staffs as existing a quarter of a century ago. Forty or fifty years ago the best men flocked to the medical side of a teaching hospital, and I remember a waiting list of twenty possible candidates for the post of assistant physician at St. Bartholomew's Hospital. It is very different now.

But before a decision is made on the question to be or not to be a surgeon, it may not be unwise to consider the possibility of another swing of the pendulum. Since the war general practitioners, as a result of their experience abroad, have done much more of their own surgery than before; and, as already mentioned, team work or group organization in which one partner in a firm of practitioners devotes himself to surgery has come in, and is likely to increase. The future of the general surgeon is a matter for careful consideration by those who are thinking of reaping a harvest twenty years hence. The various specialties—laryngology and otology, and proctology (which tend to spread from the orifices further into the alimentary canal), orthopaedics, genito-urinary and venereal diseases—have narrowed the former vista of the general surgeon. Further, if, as is within the bounds of imagination, discoveries, such as that of Gye and Barnard, lead to the prevention and cure of cancer, and the immunology of the future to the prevention of inflammation of the vermiform appendix, gall bladder, and other forms of inflammatory abdominal disease, the activities of the operating surgeon would be greatly curtailed, and little more than accidents and deformities would remain.

The distinction between physicians and surgeons is artificial in principle, for it depends on the possession of the technique to carry out one kind of the proper (surgical) treatment completely. It would be in the patient's and the medical man's interest and to their advantage if the diagnosis and treatment—whatever it might be, drug or operation—were carried out by the same person. Thus a neurologist should be equally capable both to diagnose and to remove a cerebral tumour, as indeed some now classed as surgeons are; there would thus be analogous thoracic and abdominal experts, following, indeed, the practice of the already fully recognized specialties, such as ophthalmologists, laryngologists and otologists, and gynaecologists.

There is a last piece of advice that I would venture to give to the young consultant in the early stage when he has to "learn to labour and to wait," and, being anxious about his future, is naturally afraid of missing any step on the ladder. It is to utilize a year or so at the beginning of the waiting period, when the mind is elastic and fertile in ideas, to do some work of permanent value. So often a man seizes the opportunity of gaining an assistant physicianship or assistant surgeonship at a hospital without a medical school and becomes a slave to seeing out-patients in an unprofitable race against the clock, when by spending the same time in experimental research he would establish a claim to a better appointment, even though he may appear to be somewhat later in the start of the race with his peers.

## British Medical Association.

### PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

#### SECTION OF SURGERY.

Sir D'ARCY POWER, K.B.E., M.B., F.R.C.S., President.

#### DISCUSSION ON CEREBRAL TUMOURS.

##### OPENING PAPERS.

I.—PERCY SARGENT, C.M.G., D.S.O., F.R.C.S.,  
Surgeon to St. Thomas's Hospital.

TWENTY years ago Victor Horsley addressed the seventy-fourth Annual Meeting of the British Medical Association upon the technique of operations on the central nervous system. This address is remarkable chiefly for the fact that much of it, if read to-day, would, except perhaps to those who happen to be brought frequently into contact with cases of cerebral tumour, appear fresh and novel; not because the surgery of the brain has stood still, but because Horsley was so far ahead of his time in this field.

Horsley constantly insisted that surgery must not be regarded, as even to-day it is in some measure regarded, as a *dernier ressort*. He condemned what was known as "expectant treatment" in terms so characteristic that I cannot refrain from making a brief quotation from an address which he delivered in Berlin in 1910.

"A few years ago," he said, "all, and even now most, cases of intracranial tumour died without really receiving any treatment at all, for, since no drug is known to have any influence on neoplastic tissues, the classical administration of potassium iodide is merely a ritual. . . . By a singular cynicism, the origin of which I cannot trace further, the unfortunate sufferer from intracranial tumour is commonly said to receive 'expectant treatment.' Considering that in the absence of any active surgical treatment the only thing to be expected is death, the term 'expectant treatment' has always to my mind carried with it its own condemnation for inhumanity."

In opening this discussion may I express a hope that it may not be wholly or even chiefly devoted to the mere technique of craniotomy, but that it may bear upon the question of our responsibility towards patients with intracranial tumour, and how far our attitude may have been modified by the experiences and advances of the past twenty years. Starting from the fact that a cerebral tumour will, if left alone, ultimately prove fatal, and that no drug and no method of actinotherapy has as yet been found to have any curative effect, it follows that at the present time the patient can look to surgery alone for a possibility of cure, or even of relief from his sufferings. There are, of course, cases of intracranial disease, the symptoms of which may closely resemble those of cerebral tumour, but the diagnostic methods of to-day are such that errors but rarely arise. Further, it is in most cases possible to predict, not only the exact situation, but also the probable nature of the tumour. In this respect some, but not too much, importance is to be attached to the length of history as distinguishing benign from malignant tumours. A history extending over several years naturally suggests that the tumour is an innocent one, but it is surprising

how long a history is occasionally elicited in cases of glioma. On the other hand, a benign tumour may for years cause no symptoms which attract attention, and then rapidly make its presence manifest by causing some vascular or other change in its neighbourhood.

The situation of the tumour affords some help towards predicting its nature. Thus, tumours of the cerebral hemispheres are rarely any but gliomata or endotheliomata. In the frontal and post-central regions gliomata are twice as common as endotheliomata, in the occipital lobe six times as common, and in the temporal lobe thirteen times as common. Cerebellar tumours, on the other hand, are almost invariably gliomata; cerebello-pontine tumours are mostly neuro-fibromata; and pituitary tumours are most commonly adenomata.

Lesions other than true neoplasms which cause symptoms indistinguishable from those of tumour, such as localized syphilitic and tuberculous masses, chronic abscesses, and hydatid cysts, are all rare, and when they do occur there is usually some point in the history, or in the state of the cerebro-spinal fluid, to afford a clue as to their nature.

Let me now briefly consider the four groups of intracranial tumour which are most commonly met with.

### 1. The Gliomata.

Unfortunately the great majority of cerebral tumours are of a malignant character—malignant, that is to say, by reason of their progressive and infiltrating growth. They never produce metastatic deposits, nor do they ever spread beyond the limits of the brain itself. In my own experience, leaving aside cerebello-pontine and pituitary neoplasms, the gliomata constitute nearly 80 per cent. of the total number of intracranial tumours.

It has long been recognized that these growths vary greatly in their degree of malignancy, and that they can be grouped according to their gross structure and clinical course. There are, for example, those which undergo complete cystic degeneration, leaving little if any recognizable tumour tissue, and with no infiltration of the surrounding brain. Others are firm, solid, circumscribed, though not encapsulated tumours, sometimes capable of complete removal. These are cases eminently suitable for radical surgical treatment, and are to be clearly distinguished from the more common rapidly growing and infiltrating kinds for which palliative measures alone are available.

Recently Bailey, working in Cushing's clinic, has made a most valuable contribution to our knowledge of these tumours from the histological aspect, recognizing some fifteen different varieties with histological features corresponding in a suggestive manner with their clinical behaviour. It is, however, only by exploratory operation that the various kinds can be differentiated, so that anyone who refrains from giving his patient such chance as surgery affords may deprive him of his sole hope of relief. I cannot give here detailed statistics, but will summarize as briefly as possible the results of some 300 operations for glioma, so as to give a general idea of what my own experience leads me to expect from surgical intervention. In most cases the operation was that of simple decompression, but in many instances it included also partial or seemingly complete removal of solid tumours, or emptying of gliomatous cysts. In about twenty cases radium also was employed—50 to 100 mg. for twenty-four hours. About 25 per cent. of patients with cerebral gliomata die shortly after operation, and about 50 per cent. die within eight months. About 25 per cent., however, make good recoveries, and some have been able for several years to lead useful lives, and to earn their living.

With cerebellar gliomata the results are somewhat better. The operative mortality is less than half that of the cerebral gliomata—28 per cent. are alive and well at an average period of three years after the operation, whilst the average survival period of the remainder is thirteen months. To show how well worth while it may be to give these unfortunate patients the chance of benefit which operation offers, I would like very briefly to mention three cases.

1. A man, aged 47. Partial removal of a cerebellar glioma five years ago, recrudescence of symptoms four months later; removal of a further mass of growth, and insertion for twenty-four hours of 60 mg. of radium. To-day he is well and able to work, with no bulge and very little sign of cerebellar disturbance.

2. A man, aged 27. Evacuation of cerebellar gliomatous cyst sixteen years ago. To-day he is well, at work, and married.

3. A man, aged 19, with severe cerebellar symptoms. Evacuation of a gliomatous cyst containing 2 ounces of fluid. Six years later he writes: "I feel fit in every way. The swelling at the back of my head has completely gone. My occupation keeps me out of doors most of the day in all weathers. I often go for ten or fifteen-mile tramps, and have recently returned from a cycling tour of 250 miles, so I think I must be pretty fair."

### 2. The Endotheliomata.

These are benign, encapsulated tumours of remarkably slow growth, arising from the cells of the arachnoidal tufts which are concerned with the absorption of cerebro-spinal fluid. They never invade the brain, but occupy cup-like depressions from which they can easily be enucleated. Complete removal, however, entails the excision of the overlying dura mater to which the tumour is attached, and this cannot always be done with safety on account of the proximity of the great venous sinuses in the immediate neighbourhood of which these tumours are most commonly found. They are, unfortunately, far less common than gliomata; in my own experience of some 400 operations for tumour of the cerebral hemispheres the proportion was as two to seven. Of this number only 75 per cent. could be completely removed, and of these nearly 50 per cent. made good recoveries and are alive and well at the present time. The patients who recovered fall into two classes: first, those who are restored to their normal lives and occupations without any neurological defect (22 per cent.); secondly, those who remain to a greater or lesser extent neurologically imperfect owing to various degrees of palsy or fits (38 per cent.). Of those patients in this series who are still alive and well, two were operated upon seventeen years ago, three eleven years ago, and the rest between four and seven years ago. The operative mortality is high, and compares unfavourably, in my own experience, with that of the gliomata. This is partly due to the fact that the operation is necessarily more severe, and partly because I have included all my earliest cases, when the operative technique was comparatively crude and ill developed, when localization was less accurate, and when enucleations were often mistakenly carried out in the presence of a greatly raised intracranial pressure.

### 3. Cerebello-pontine or Extra-cerebellar Tumours.

Of these tumours 90 per cent. are neuro-fibromata. They are usually firm, solid, encapsulated tumours, but are sometimes quite soft and may even be completely cystic. Arising from the eighth nerve just within the internal auditory meatus, they enlarge that orifice, sometimes to a remarkable degree, and on complete specimens of such tumours there can usually be seen a nipple-like projection which has occupied the meatus. For a long while, perhaps for many years, deafness and noises in the head may have been the only symptoms complained of, and sometimes the deafness is only discovered accidentally when it is already complete. By Bárány's tests the functional state of the vestibular nerve can be ascertained with precision, and these tests are positive at an early stage in the course of growth of an auditory nerve tumour. Very often the corneal reflex of the same side is diminished or absent, and this is so frequently the case that the corneal reflex, as well as the vestibular functions, should be tested in all cases of nerve deafness, as the coexistence of these signs would, even in the absence of all other symptoms, be sufficient to suggest the presence of one of these tumours. As the growth enlarges other cranial nerves become involved, and symptoms of disturbance of cerebellar function appear. Sooner or later the tumour compressing the pons and medulla blocks the aqueduct of Sylvius, and ventricular distension results. Then appear the classical symptoms of cerebral tumour—the headache, vomiting, and papilloedema. When this stage of general increase of intracranial pressure is reached operation becomes at once more difficult and more dangerous, and the outlook more grave.

It would naturally be expected that these tumours—benign, encapsulated, capable of early and accurate diagnosis, and easily accessible to the surgeon—would constitute the most favourable form of intracranial tumour for complete removal. This, however, is not, in practice, the case, for their position in relation to the medulla and its blood

vessels renders their removal exceedingly hazardous. A series of lamentable disasters (only one survival out of nine) led me to abandon the operation of enucleation and to adopt the method of removing as much as possible of the tumour tissue from within the capsule by fragmentation and suction. The operative mortality has fallen to 14 per cent., and the results in the remainder have for the most part been very satisfactory.

#### 4. Pituitary Tumours.

These cases have to be divided into two groups. (1) Pituitary tumours proper, mostly adenomata, arising in the sella turcica and invading the cranial cavity. Of these there have been thirty-four cases with nine deaths, the majority of the fatalities having naturally occurred amongst the earlier operations. This series includes four transphenoidal operations with one death, and thirty transfrontal operations with eight deaths. I was at one time fortunate enough to have a run of fifteen cases without a fatality. (2) Suprapituitary tumours, arising above or in close relation with the sella, including infundibular, interpeduncular, and frontal lobe tumours and cysts of various kinds. Amongst these there have been six temporal operations with one death and twenty-nine transfrontal operations with three deaths.

While it is a comparatively simple matter to indicate statistically the results of this or any other operation as regards immediate mortality, it is not easy to set out in any such precise manner the far more important results which concern the condition of those who emerge successfully from such operations. Judged first from the point of view of visual disturbance—the outstanding symptom for which, at present, pituitary operations are generally performed—the gain has in practice proved to be such as greatly to outweigh the operative risks, and it is quite certain that when these cases are submitted to operation at an earlier period, before the power of recovery of the visual paths has been seriously impaired, the results as regards vision will be still more gratifying. It is for the ophthalmic surgeon, more than anyone else, to make himself acquainted with the progress and possibilities of pituitary surgery, for it is chiefly to him that these patients entrust themselves for advice and treatment. Judged from the point of view of comfort, the relief of pressure afforded by these operations results in freedom from headache and often an improved mentality. The patients become brighter, more alert, and better able to carry on their occupations. It is too early to say anything as to the effects from a standpoint of endocrine function. There have in a few instances been rapid and definite alterations in the metabolic and other disturbances, but how far these may be but transitory is not at present known. They are, however, such as to suggest that, with the increasing safety of the operation, it may come within the scope of legitimate surgery to operate for the arrest of acromegaly in its early stages.

The further improvement in outlook for the sufferers from cerebral tumour which is so greatly to be desired lies partly, of course, in perfection of surgical technique, but even more in earlier diagnosis and more accurate localization. The onset of the classical symptoms of cerebral tumour—headache, vomiting, and papilloedema—should be regarded as marking the commencement of the terminal stage, and it is of vital importance that surgical intervention should take place before the general intracranial pressure has become conspicuously raised for there is no single factor which so dominates the situation, and upon which success or failure so definitely depends. Although it is true that symptoms may develop rapidly in some cases owing to changes such as haemorrhage and oedema in and around a tumour, the growth of the tumour itself, even with most cases of glioma, is remarkably slow. This is amply proved by a minute inquiry into the history of a large number of cases. Any disturbance of cerebral function, whether in the direction of overaction or defect, especially when of a persistent and progressive character, should stimulate a most searching investigation into the history and lead to the minutest and most thorough neurological examination. It is surprising to find in how many cases the history shows that some slight disorder of cerebral function has been present for many months or years, and

this is true even with some of the gliomata. The largest tumour which I have yet removed, an endothelioma weighing 6½ ounces, came from the brain of a man who had been known to have hemianopia for two years, whose discs were normal, and who had never had a headache.

Horsley went so far, sixteen years ago, as to lay down two propositions: first, that "every case of focalized epilepsy not definitely proved to be idiopathic in origin must be treated by exploratory operation"; and secondly, that "every case of progressive motor or sensory paralysis of intracranial origin must be treated by exploratory operation." Since that time so much has been learnt regarding localization of function, the significance of slight departures from the normal, especially as regards sensation and the special senses, and also as regards the meaning of changes in the pressure and constitution of the cerebro-spinal fluid, that operations upon the brain are becoming less frequently exploratory, and are more often planned with the definite object of carrying out the appropriate attack upon a tumour the situation and nature of which have been confidently diagnosed beforehand. But in the main the propositions which Horsley laid down stand, and should at least occasion serious thought.

#### II.—H. S. SOUTTAR, C.B.E., M.Ch., F.R.C.S., Surgeon to the London Hospital.

**A NEW FORM OF CRANIOTOME FOR OPENING THE SKULL.**  
IN the surgical treatment of cerebral tumours the first problem presented to the surgeon is that of opening the skull, and it cannot be denied that the methods at present available for this purpose leave much to be desired. In general terms three methods are in common use. In the first a series of trephine holes are made through the skull along the intended line of section, and these are joined by means of some variety of cutting forceps; in the second Gigli saw is substituted for the forceps; for the third method a powerful electric motor is necessary, and the procedure consists in drilling a series of holes and joining these either by means of a circular saw or some form of lathe electrically driven. The first two methods are certainly primitive, and they demand a degree of exertion on the part of the surgeon which is detrimental to his manual skill when he comes to deal with the brain itself. The third method is effective, but it involves very serious trauma to the patient, and the cumbersome appliances involved limit its use to large institutions where these can be provided and kept in working order.

I am venturing to place before you a method of an entirely different nature, by means of which the skull can be divided by the exclusive use of hand tools with great facility, and with so little violence as to be easily accomplished in the conscious patient under local anaesthesia. The method is specially designed for the formation of large osteoplastic flaps, and it enables the surgeon to form these with a facility, a rapidity, and a precision unattainable by any other method.

The instrument consists essentially of a stud and a lever. By means of a locking device the stud is securely fixed in a trephine hole previously cut at the centre of the proposed bone flap. Around this can turn a long lever on which slides an adjustable carriage carrying a cutting chisel, which closely resembles the parting tool used in turning. This tool can be advanced from a socket, which supports it, by means of a screw, so that the depth of the cut can be adjusted with the nicest accuracy. The method of procedure is as follows:

A very large flap consisting of scalp only is turned down. It must be so large as to overlap by fully half an inch the furthest limits of the bone flap which is to be formed. As there is no anastomosis whatever between the vessels of the scalp and of the bone, the turning down of the scalp does not interfere in the slightest with the vitality of the bone, whilst it greatly facilitates access to the latter. At the centre of the projected bone flap the muscle and pericranium are divided and drawn aside, and a trephine hole is cut with a special brace. Into this trephine hole is inserted a split stud resembling an expanding mandrel.

and into the centre of this is screwed a pin which forces it open and locks it into place. The lever is now dropped over the pin and held in place by a nut, the carriage is adjusted to the correct radius, and the cutting tool is advanced until it just projects from its housing. It will now be found that on swinging the lever round its fixed fulcrum the skull can be cut with astonishing facility and without the slightest suspicion of violence. The cuts are taken in long sweeps, omitting the base of the flap, which is always so arranged that the skull at this point is thin. After each cut the tool is advanced a fraction of a millimetre, and another cut is taken. In a remarkably short space of time it will be found that the thinner parts of the skull have been penetrated, and the cutting is now limited to the thicker part, where hard bone can still be felt at the bottom of the slot. The form of the tool precludes any possibility of injuring the dura, but as soon as the seeker shows that the dura has been reached, these parts of the incision will naturally be left alone. The bone is by this means completely divided over three-quarters of a circle, and two flat steel levers are now inserted into the slot which has been formed. Very slight pressure on these levers is required to crack the thin base of the bony flap, which is now turned down still attached to the soft parts, usually formed by the temporal muscle. The tool is set at such an angle that the margin of the bone flap is bevelled, and therefore when the latter is replaced it lies snugly in position against the corresponding level of the skull itself. I know of no other method by means of which such accurate and firm coaptation can be obtained.

There is no instrumental limit to the size of the bone flap which may be formed, and a bony disc six inches in diameter can quite easily be turned down in the temporal region. For most operative work, however, a flap of from three to four inches in diameter will be sufficient. One of the most remarkable features of the instrument is the rapidity with which these large flaps may be formed; the average time taken for cutting the bone has in my own experience varied from two to two and a half minutes. The tendency of modern cerebral surgery is to explore the brain through very large openings, usually situated either in the temporal or the occipital region. It is for the first of these that the instrument has been devised, and although it may be applied to other regions, it is in the temporal region that its peculiar value appears.

There is one point in the use of the appliance to which I ought to refer—namely, the cutting of the trephine hole. This has to be done with great accuracy, and I employ for the purpose a special form of trephine which differs in many respects from that in common use. In the first place it is mounted in a large brace so that it can be operated rapidly and without fatigue. In the second place, the centre on which it turns screws down; it is never removed, but is gradually withdrawn by means of a screw as the trephine advances through the bone. As the trephine is cylindrical the possibility of plunging has to be guarded against, and it is therefore surrounded by a collar running on a screw thread on its outer surface. The collar is always so adjusted as not quite to touch the bone. Quite apart from its use in connexion with the craniotome, this form of trephine with the receding centre presents very great advantages over the old-fashioned instrument, for, turning as it does upon a firmly planted centre, it can be so applied as to cut obliquely through the outer table of the skull and to arrive absolutely flush at the inner surface, even where the inner and outer surfaces are not parallel.

### III.—A. P. BERTWISTLE, M.B., CH.B. LEEDS, F.R.C.S. Ed.

#### LOCALIZATION BY X RAYS.

THE purposes of this paper are to give a brief outline of the researches on which our knowledge of the functions of the cerebral cortex is founded, and to describe a method which renders it possible to determine the position of a cranial defect and to trephine more nearly over the centre of a tumour when its position has been determined by the symptoms present.

#### PREVIOUS RESEARCHES.

Our knowledge of cortical functions rests on the following:

##### 1. Anatomical Considerations.

Gennari's discovery on February 2nd, 1776, of the "lineola albidior admodum eleganter"—the line which still bears his name—marked the dawn of research on these lines. Work has been done on cells and tracts.

**Cells.**—For the lower functions of the cortex, such as sensation and motion, this method stands without rival. Campbell has shown that the histology of the precentral gyrus was in accordance with pathological finding, and that the visuo-sensory area and post-central gyrus were sharply demarcated. He made equally important observations on the intermediate precentral and superior temporal gyri.

**Tracts.**—These may be studied by serial sections of the white matter or by the myelination method of Flechsig, who grouped the fibres into primordial, intermediate, and terminal, the last being characteristically human. Campbell found this method very useful for the visuo-sensory area, but even its originator found it subject to modifications and reservations.

##### 2. Post-mortem Evidence.

At times this has yielded valuable results. The symptoms have been recorded and the position of the lesion in the cortex discovered at autopsy. Material falls under the following headings:

(a) **Trauma.**—Whilst eminently suitable for study during life traumatic cases are of doubtful value after death, as the injury is so severe that the white matter, or even the basal ganglia, may have suffered.

(b) **Cerebral Haemorrhage.**—This includes softening, which usually results from the haemorrhage. Here again the injury is too extensive for accurate investigation. Campbell investigated 200 of these cases, and came to the conclusion that destruction of the cortex without injury to the underlying fibres must be of extreme rarity, so that safe judgement can seldom be given.

(c) **Post-amputation Changes.**—The microscopic examination of the brains of patients who have undergone removal of a limb is in a different category. Campbell writes:

"As a result, either of section of the fibres with which they are connected, or of suppression of the energy they elaborate, the cortical motor cells controlling muscles in the amputated limb undergo a change described by Marinesco as 'réaction à distance,' and from a careful examination of the distribution of these changes, important results are forthcoming."

The cells become globose and faintly staining before disappearing. This alteration is best seen about two years after the operation, since changes are then limited to the cells presiding over the amputated muscles. Later, atrophy is seen in the cells presiding over muscles immediately proximal to the amputation. The change is akin to Wallerian degeneration, but occurs much later, as would be expected from the greater number of neurones to be traversed. Among this group must be placed an instructive case reported by Shaw Bolton, in which he examined the calcarine region in a man who had had optic atrophy for many years.

(d) **Tumours.**—Autopsies on cases of cortical tumours are of very doubtful value. Cortical tumours cause death by interfering with the intracranial tension and circulation of the cerebro-spinal fluid, which only occurs at the terminal stage. The interference with intracranial tension may have been in itself responsible for the symptoms, especially if the higher functions were involved. The same can be said of abscess, the effect of which is too diffuse for accurate work. Cysts and granulomata, when single, are comparatively rare, but are of considerable value, especially when small.

(e) **Meningitis.**—On rare occasions meningitis has yielded information.

(f) **Localized degeneration** by amyotrophic lateral sclerosis, when presenting symptoms during life, has at death been found to show, histologically, localized degeneration of areas of the brain. Campbell writes:

"Natural lesions such as cerebral softening, tumour, and trauma, which form the basis of most of the clinical observations, are only in rare instances limited in their effects to allow of safe judgement."

### 3. Animal Experiments.

The experimental researches of Sherrington and Grünbaum and Horsley are classical, as are those of the pioneers in this method—Hitzig and Fritsch (1870). The devices employed were ablation and faradic stimulation, Sherrington using the more accurate unipolar method. It is largely on these experiments that our knowledge of the human cortex has been founded. While invaluable in the study of such coarse functions as motion and sensation, they are quite unsuited to the investigation of the higher developments, such as thought and speech, which have no counterpart in animals. Even in the case of the motor area Horsley shows that its extent diminishes the higher we ascend in the animal scale. The analogy between the human brain and that of animals, even the ape's, has been pushed too far.

### 4. Operation Findings.

The case is one either of fracture, possibly depressed, or of tumour. Certain symptoms being manifest, a trephine opening is made and the area of brain exposed is identified. The extreme difficulty of identifying any gyri through a small opening of perhaps four square inches is at once obvious.

### 5. Electrical Stimulation.

This has been tried by faradic current in the conscious individual by Horsley and Cushing, Alfred Gordon, who used unipolar stimulation in two cases, writes:

"The facts prove, I believe conclusively, that the results of faradization of the cortex cannot be considered as an absolutely reliable means for an exact and precise delimitation of the motor centre; the motor region is more extensive than faradization seems to prove."

Head expresses dissatisfaction thus:

"Results of electrical stimulation of the cortex, more especially the motor area, no longer appeal to the more thoughtful investigators."

### 6. Post-operation Findings.

These must of necessity furnish us with our best results; the cases can be examined under the best possible conditions and at regular intervals; yet it is here that we find least work has been done. In certain selected cases Head adopted the following method:

"The head of a male body was selected which corresponded as nearly as possible in its measurement with that of the patient whose wound we intended to localize. The exact extent of the loss of bone was marked out on the scalp and holes were drilled through the skull to mark its dimensions. Through these a coloured fluid was passed with a small brush, to fix the relation of the bony opening to the surface of the brain. Then the skull cap was removed and a cast taken of its inner surface. This gave us a solid reproduction of the brain covered by its membranes, on which were indicated the limits of the external wound. The situation and course of the principal fissures was determined by careful dissection and drawn in the cast. Thus we finally obtained a record of the area occupied by the wound on the surface of the brain in relation to the main landmarks of cerebral topography."

The chief objections to this method are its tediousness and costliness, one cadaver being required for every two patients investigated. The second is the difficulty of fixing the interaural and nasion-inion lines—which are over the hairiest part of the scalp—for the purpose of taking measurements from them.

### AUTHOR'S METHOD.

The method to be described involves the use of a key radiogram, and a simple inexpensive instrument called a gyrometer.

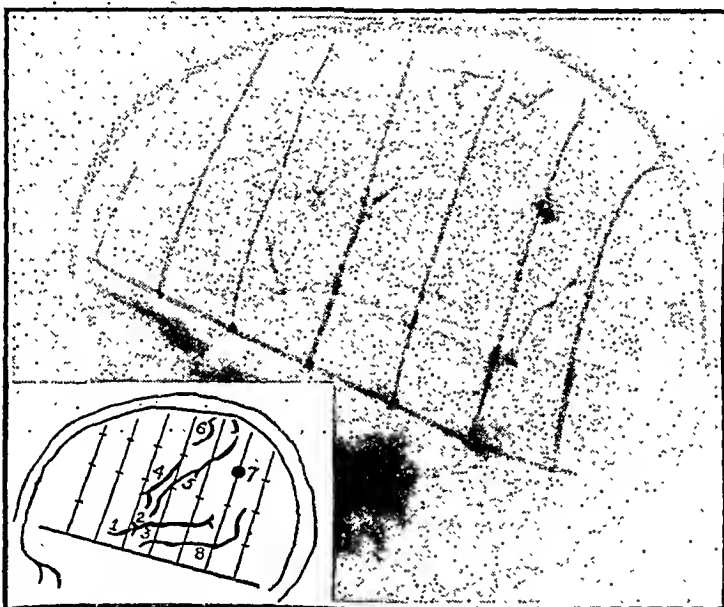
#### Base-line.

The line chosen is almost horizontal, running from the glabella to the external occipital protuberance and passing just above the point where the pinna joins the scalp. While its origin and termination are not ideal, it possesses the unique advantage of being available for both clinical and radiological purposes. The line is much more readily fixed than a sagittal one, which would be quite unsuitable here, as it would be calibrated from the periphery, where the inches are least dependable. It is of importance that three-quarters of it in males is hairless, and they furnish the majority of depressed fractures. With the exception of the occipital pole, the rays are centred on the most important functional parts of the cortex. Should any shrinkage occur in the cadaver's brain it is minimal at the centre of this line. A small advantage is that ear-cones may be dispensed with, the line of rivets serving to determine whether the radiograph is a pure lateral one or not.

#### Preparation of the Key Radiogram.

A scale was prepared consisting of a strip of watch-spring, 7 in. (17.5 cm.) long, the ends of which were connected together by a piece of elastic. At intervals of an inch, seven strips of spring, 4 in. (10 cm.) long, were fastened at right angles to it, the central one being marked 00 inch. Holes an inch apart were made in the verticals, through which were threaded silver wires.

The head of a dissecting-room subject (aged 39) having been radiographed to make certain that there was no great brain shrinkage, the cerebrum was removed in the usual way and its membrano stripped off. A photograph was taken to indicate



1, Anterior limb, Sylvian fissure. 2, Ascending limb. 3, Posterior limb. 4, Inferior precentral fissure. 5, Rolandic fissure. 6, Superior precentral fissure. 7, Inter- parietal fissure. 8, Superior temporal fissure.

the type of brain being dealt with; fortunately, it proved to be particularly well hardened; the cerebral hemispheres weighed 41 oz. (1½ kilos). A mixture of red lead and warm vaseline was now painted on the more important sulci and a second photograph obtained. The brain—covered with tissue paper to prevent dissemination of the opaque material—was replaced, the skull cap and scalp adjusted into position, and the scale fitted on the unshaven head. It passed from the glabella to the external occipital protuberance, lying just above the junction of the pinna and scalp. The circumference of the head in this line, which is known as the base-line, was 22½ in. (56.2 cm.). The scale having been adjusted until its central point 00 lay midway between the glabella and external occipital protuberance, the upright wires were placed at right angles to it and fixed by means of thread wound round the head. The breadth across the head along each vertical from base-line to base-line was measured. Only the central five gave a precise reading.

A pure lateral radiograph was now taken; that this lateral position was obtained is shown by the base-line being straight—any deviation causing a curve to appear convex upwards or downwards, as the case may be. The following precautions were taken: the tube was 2½ ft.



(0.75 metre) from the head, and the rays were centred on the point 00.

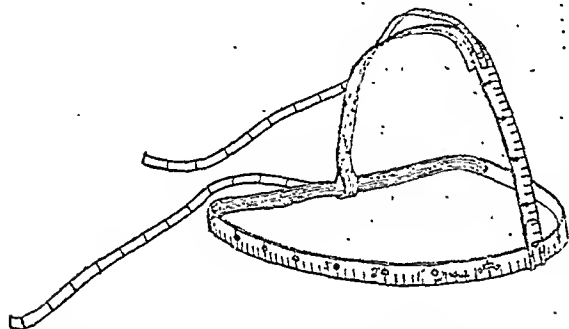
The curvature of the head renders only the central area available for accurate localization; it represents an area of about 16 sq. in. (100 sq. cm.). This limitation precludes study on the occipital region. The key is of the greatest value for the supramarginal, angular, superior temporal, and pre- and post-Rolandic convolutions, all of which have been insufficiently charted in man.

#### The Gyrometer.

To localize the brain underlying a cranial gap the following measurements are necessary:

1. The point at which a vertical dropped from the centre of the gap cuts the base-line.
2. The vertical height of this line.
3. Dimensions of gap.
4. Circumference of the head on a line drawn through the glabella and external occipital protuberance. This will be referred to as the G.O. or base-line.
5. Breadth of head in the line of the above vertical.

For routine work 1, 2, and 3 are all that are required, the distances being transferred directly to a dolichencephalic or brachycephalic key, whichever type of skull the patient possesses. Messrs. Arnold have made a simple, inexpensive instrument for measuring these distances and for preserving a radiographic record; it may be called a gyrometer, in that it indirectly measures gyri. The instrument is composed of a thin strip of celluloid half an inch wide with inch gradations and 0.2 inch subdivisions (0.5 cm.). The central point was marked zero. The



ends of the strip are united by a piece of elastic which serves to keep the celluloid in close apposition to the head. The celluloid and elastic form the base-line on the patient's head. The celluloid strip is provided with a cursor of similar material marked from 0 to 4 in. (10 cm.), which slides along it at right angles. A piece of elastic connects the free end of the cursor with the elastic part of the base-line in such a way that it can move with the former. The elastics are provided with tapes whose inches continue those of the celluloid strips; by this means the circumference of the head in the G.O. line, and its breadth at any point, can be easily read off. For radiographic purposes the strips are studded with lead rivets at intervals of an inch, the central one being square to distinguish it from the others.

After combing the hair suitably and possibly wetting it, the gyrometer is applied to the patient's head in such a way that the main strip passes from the glabella above the root of the pinna to the external occipital protuberance with its centre midway between these points; this strip and its elastic thus form the base-line. The cursor is adjusted to pass over the centre of the defect. The distance of the cursor from the central point 00 is read off, and the height of the centre of the depression above the base-line. The circumference of the head and the breadth along the line of the cursor are recorded on the tapes, and the diameter of the gap is measured. To preserve a record, a radiograph is now taken with the following precautions to prevent distortion: (1) The tube is at least 2½ ft. (0.75 metre) from the patient's head; (2) the rays are centred on the central rivet; (3) a purely lateral radiograph is taken as shown by the line of dots being straight. If such measures are not taken the strangest effects are produced.

Since heads vary greatly in length and breadth these must be allowed for. Length is much the more important,

and must be corrected for, before the breadth. There is only one horizontal constant for length, and that is:

1. 
$$\frac{\text{Circumference of head in G.O. line of key}}{\text{Circumference of head in G.O. line of patient}}$$

When the distance of the cursor from the centre has been multiplied by this constant the corrected length (a) is marked on the key. The breadth of the skull varies at different points along the G.O. line, and is found by measuring the distance between the elastic and celluloid parts of the base-line along the line of the cursor. The breadth constant is:

2. 
$$\frac{\text{Breadth of skull at point (a) on key}}{\text{Breadth of skull at point (a) on patient}}$$

After determining this constant the height of the centre of the gap above the point (a) is recorded on the key and the area of the defect plotted out. (Mr. Mason has had prepared a number of prints of the key radiograph so that the corrected measurements can be transferred direct to it without the need of radiographing the patient's skull.)

The accuracy of the method was tested on cadavers as follows:

First, a number of match-sticks were sharpened and dyed. The centres of six important gyri were chosen—namely, the parietal, lower part and junction of lower third and upper two-thirds of pre-Rolandic gyrus, superior temporal, marginal, and angular gyri. The gyrometer having been placed in position on the cadaver's head, the constants for the breadth and length were determined. The heights of each of these gyri and the distance from the zero point at which their perpendiculars cut the base-line were measured on the key and corrected by multiplying by the constants. The points thus determined by the skull were marked on the scalp of the cadaver, and in these positions the skull was drilled with a gimlet and a coloured match-stick inserted until it entered the brain. The process was repeated on the other side. The brain was removed with the matches *in situ* and each was identified.

Thus in one case the circumference of the head was 24 in. As that of the key radiogram was 22.5 in, the constant for length was  $24:22.5 = 1.075$ , or practically 1.1. The breadth of the head opposite the angular gyrus was 11.5 in, and the corresponding breadth on the head used for the key radiogram was 11 in. This gives a vertical constant at this point of 1.05, which can be taken as unity for practical purposes. The angular gyrus on the key is 2.8 in. behind the central point and 2.5 in. above the base-line.

Multiplying these figures by their respective constants one obtains a point 3.1 in. behind the zero point and 2.5 above the base-line. This point should be over the angular gyrus of the cadaver. In no case was the discrepancy more than a quarter of an inch, and this could easily be accounted for by the variation in the pattern of the convolutions.

#### Superimposition of Defects.

Whilst a single craniotomy opening is too large for accurate localization, by this method superimposition of several areas in cases presenting identical symptoms will enable us to narrow down the supposed lesion.

#### Special Features.

1. Applicability to investigation on the unshaven head, the elastic serving to keep the gyrometer in close apposition to the head. Moreover, as has been stated, three-fourths of the base-line is hairless.
2. Ease with which the base-line is fixed.
3. The sharp picture of the cranial gap as shown by a radiogram as compared with the unconvincing results of a photograph.
4. Its suitability for the study of the much debated problem of the speech mechanism, since all the areas concerned—namely, the intermediate, precentral, supramarginal, and superior temporal convolutions—come within its limits.
5. Possibility of narrowing down the area affected by superimposition of several cases.

#### Clinical Material.

(a) Undoubtedly the best material for this method will be cases of depressed fractures. In the first place, the patients, whether civil or military, are healthy labourers or soldiers who have been injured at work or in the field. Their brains are not the nervous derelicts that Broca's cases were. Secondly, the injury is usually maximal on the surface, and therefore affects chiefly the grey matter and tends to be fairly localized. The war provided us with a mass of material; the men, as Head says, were intelligent and took great interest in their progress, unlike the nervous breakdowns one usually has to examine.

(b) Trephining for simple tumours, including cysts and granulomata, vary in value inversely as their size. If a note were made of the position of the tumour in relation to the gap, these cases would be of much greater use from the point of view of research.

#### Fallacies.

It must not be supposed that localization of function will be easy by this method; there are many pitfalls:

(a) The *bête noire* of this and all other methods save the anatomical ones is the presence or absence of subcortical injury. Broca's failure to recognize this has led to much confusion and provoked the classical argument of Pierre Marie.

(b) *Diasehisis*.—A small disturbance at one point is capable of producing widespread functional effects.

(c) The gyrus underlying the centre of a cranial defect may be a silent one or have been destroyed; or, again, the margins may have contracted adhesions to the bony rim, and this may be responsible for the symptoms.

(d) The decompression resulting from the trephining may have in itself caused the disappearance of symptoms regardless of the position of the injury or tumour.

(e) The absence of cortical injury does not exclude a subcortical one; even the opposite side of the brain may be affected by *contre-coup*.

To sum up, each case must be carefully weighed on its merits, and only after most careful sifting of the evidence is one justified in assuming that the brain underlying a cranial gap is the part responsible for the symptoms.

#### Localization of Tumours.

The first essential is to determine by a careful study of the signs and symptoms the probable position of the tumour in the cortex, since only these are capable of localization by the method here described. Mark the supposed site on the key radiogram, note its distance along the base-line from the point 00, and its height above that line. Note the circumference of the head and the breadth along the line of the supposed growth. However, except for children and individuals with particularly large or small heads, it is not necessary to correct by constants, since the accurate localization of tumours to less than half an inch is at present impossible. Apply the gyrometer to the head, and slide the cursor to the position marked on the key; then measure height up and mark with a scratch. This will form the centre of the subsequent trephining. It will always be advisable for the opening to be large, but it is very advisable for the tumour to be in the centre of it, so that should removal be impossible decompression is maximal over the site of greatest disturbance. Whilst a neurological surgeon can visualize the brain beneath the cranium with a fair degree of accuracy, this faculty only comes from long experience. This method when applied to tumours should be of service, first in giving us a better idea of cortical function, and secondly in enabling us to trephine more nearly over the site of the disturbance.

#### SUMMARY.

A. A method has been described of determining the gyrus underlying a cranial defect by means of clinical measurements and a key radiogram.

B. Aphasia can be satisfactorily studied, since the parts presiding over the speech mechanism are within its range.

C. Trephining for tumours may be done more nearly over their position once they have been localized clinically.

D. With a long series of cases of trephining accompanied by pre- or post-operative symptoms it is hoped to confirm and revise our knowledge of cortical function, especially as regards aphasia, so that tumours may be explored with greater certainty.

The author's best thanks are due to Professor Elliot Smith, Mr. Harris, and Mr. Melville, of University College, for their generous assistance in the preparation of the key radiogram.

#### GENERAL DISCUSSION.

Mr. GEOFFREY JEFFERSON (Manchester) said that he proposed to confine himself to generalities rather than to particularize on any single aspect of this wide problem. It was extraordinary how interested surgeons in general

were in operations upon the nervous system. Yet he would point out that while it was not very difficult to attain proficiency in skull surgery, in the removal of bone, or in cutting flaps, when it came to brain surgery the matter was not so simple. There were many good bone surgeons, but in all the world there were very few who excelled in dealing with brain tumours. In some degree this was a remediable state of affairs, as the cure lay in more intensive work in that field. He was not convinced that pure specialization was practicable, for though it was the ideal theoretically, the work was physically so tiring, and mentally so exacting, that a holiday, as it were, in other fields was desirable. Here, as elsewhere, it was essential that the neurological surgeon should graduate through general work. One of the chief interests in brain surgery came from the fact that it was so far from perfection. In tumours of the breast the precise site of the growth and its pathology were usually known, the type of operation could be easily determined, and the future course of the case could be estimated with some confidence. How different was the picture in brain tumours! No rapid advance was to be expected, save by working on large masses of material and this material was there if it could be recognized early and brought to the surgeon. In the past there had been a too widespread belief, first, that cerebral tumours scarcely ever occurred; secondly, that they could not be recognized if they did occur; and thirdly, that nothing could be done for them if they were recognized. They were, as a profession beginning to realize that brain tumours in their various forms were common. His personal experience during 51 years amounted to 55 cases, of which for various reasons 38 had been operated upon. Some of the patients had been refused operation: among these were one patient with pituitary tumour who was blind, and several comatose patients with gliomatous tumours. The purely decompressive operation had lost the pre-eminent position it had held as an end in itself. At the present time an attempt was almost invariably made to deal primarily with the tumour, the decompressive part having become subsidiary. No good was likely to be done in the last stages of compression. The pressure rendered an attack on the tumour difficult and most hazardous, and the case did not react favourably to decompression. In these conditions hypertonic intravenous saline was the method of choice; it sometimes acted almost miraculously in withdrawing patients from danger.

Mr. J. P. Ross (London) said that only an early diagnosis brought the patient under surgical treatment at a period in the disease when that treatment was most likely to have a good effect. At the onset, and in the early stages of the disease, the symptoms and signs were frequently indefinite, and there was often little to arouse suspicion. Yet it was only by remembering that cerebral tumours were not as rare as was frequently supposed, and by suspecting the possibility in every case of repeated severe headache, of palsy, or involuntary movement, and of sensory disturbance or mental alteration, that an early diagnosis could be made. He instanced the case of a boy of 16 who complained only of his left knee; a complete examination of his central nervous system led to surgical operation and the discovery of a cerebral tumour. Familiarity with the ophthalmoscope and a certain degree of skill in its use should be the possession of every practitioner, because ophthalmoscopic examination would often prevent further loss of time in cases which had passed the earliest stage of disease. He thought that the surgeon interested in the treatment of brain tumour should have a training in neurology sufficient to enable him to localize the lesion when possible, though it would usually be desirable to collaborate with a neurological colleague in this investigation. While ventriculography might prove of the utmost value in many cases it should only be used when all the possibilities of physical examination had been exhausted. The surgeon should also be familiar with the pathology and the natural history of the various tumours, so as to be able to give a fairly accurate guess as to the nature of the neoplasm with which he was dealing; for his operative procedure might be considerably modified by his opinion on this aspect of the problem. The surgeon should hold himself

responsible for the diagnosis of the lesion and the decision as to its treatment.

With regard to the operation, he believed that an attempt at surgical relief with the possibility of cure should always be made, however desperate the case might at first appear, with the exception of certain tumours which could be accurately localized in inaccessible situations and cases of metastases in the brain. It was known that over 40 per cent. of cerebral tumours were gliomatous in nature, and of these comparatively few could be extirpated, even at the earliest period at which they could be diagnosed; it was clear that a very large proportion of advanced cases would prove to be hopeless whatever treatment was adopted. Nevertheless operative treatment was justified. When there was great intracranial tension an attempt should be made to lower the pressure within the skull before opening the dura, either by withdrawing the fluid from the lateral ventricle or from a cyst if present; by infusion of hypertonic saline solution; or, if these failed, by lumbar puncture, everything being in readiness to open the dura should untoward symptoms appear. When the tumour was beneath the tentorium it was necessary, and usually easy, to tap the lateral ventricle to relieve pressure, but when the tumour lay in the substance of one of the hemispheres the ventricle might be much diminished in size, greatly displaced, or completely obliterated, and it might be impossible to use this method. He believed it of great importance, when fluid was obtained by puncture of the brain, that it should be allowed to escape very slowly, for if it escaped rapidly and the tension were quickly reduced, the oedema which always resulted from this reduction in pressure was correspondingly greater in degree and extent. The cerebral oedema which followed decompression was believed to account for an appreciable post-operative mortality, and any measures which tended to prevent its occurrence should be carefully considered and practised. He instanced the case of a woman admitted to St. Bartholomew's Hospital in a semiconscious condition, where the diagnosis was only made exactly by skiagrams showing the shadow of the calcified pineal body displaced to the right side. The left side of the skull was explored, and an attempt was made to tap the lateral ventricle. This failed, but a gliomatous cyst was discovered in the region of the motor cortex and the fluid was evacuated. The dura was then opened with safety, but the tumour was irretrievable. Some hours after operation the patient showed signs of cerebral compression, but these disappeared after an intravenous injection of 70 c.cm. of 15 per cent. sodium chloride. Her condition greatly improved, and she was later given a course of x-ray treatment, focused on the growth; the improvement was only temporary, however. The speaker hoped that advance might be made in the future towards more radical treatment of gliomas, and that the tumour might be removed without causing so much damage that, though the patient's life was saved, yet it was scarcely worth living. The control of haemorrhage presented great difficulty, and the operative procedures would often have to be divided up into several stages. Local anaesthesia could often be used with advantage, especially for the preliminary stages; rectal and subcutaneous saline infusion and blood transfusion during the operation would enable the patient to stand surgical treatment, which could not be attempted without such aid. A record of the blood pressure and pulse rate throughout the operation was taken. He had repeatedly seen the pulse become steadier and the blood pressure rise when the patient, during the course of an operation, was given a rest for a few minutes. Two important causes of death after operation were oedema and haemorrhage. Oedema was to be combated by minimizing the amount of trauma to which the cerebral tissue was exposed, and by making the process of reduction of intracranial tension as gradual as possible. Hypertonic saline solution was used to control symptoms of cerebral compression appearing after operation, but when this failed, and further decompression was called for without delay, he had seen good results follow enlargement of the decompression opening left in the base of the flap of osteoplastic resections, or, in the worst cases, complete removal of the bone from the flap. Haemorrhage was not a frequent cause of post-operative trouble when care had been taken to arrest

all bleeding before closing the wound, but when, despite all precautions, signs of bleeding appeared, the wound should be reopened without hesitation, the clot removed, bleeding points dealt with, and the wound closed once more. Sometimes post-operative rise in intracranial tension was due to the refilling of a cyst tapped at operation, and in cerebellar operations there might still be hydrocephalus present. Before reopening the wound an attempt should be made to reduce the intracranial pressure by tapping either the cyst or the ventricle, by introducing a lumbar puncture needle through the hole made in the bone at operation.

Very little was known of the value of radium and x rays in the treatment of intracranial tumours. He had seen several cases of inoperable glioma benefit by x-ray treatment, while others appeared to be unaffected. In one case where a portion of the tumour was removed for histological proof, subsequent x-ray treatment enabled the patient to return to work. She did well for a year, when she was knocked down in the street and died as the result of the accident. At the necropsy it was found that almost the entire tumour had been converted into a structureless mass, which was infiltrated with leucocytes and was apparently undergoing absorption, although there was still some active growth at one point. He attributed the various results obtained by radiation of the gliomata to the several varieties of this tumour which were believed to exist.

Professor R. E. KELLY (Liverpool) called attention to the slight changes in the inner table of the skull sometimes caused by eudotheliomata. There was a curious roughening of the inner table, exactly corresponding with the underlying tumour, which might be a determining factor in its localization.

Dr. A. GURNEY YATES (Sheffield) wished to reinforce what had already been said about the importance of early diagnosis, but thought that it should be remembered that slight localizing signs might occur in the early stages and be masked ultimately by the increasing intracranial pressure. It was therefore, in many cases, not desirable to wait for the development of further localizing signs. He illustrated his point by reference to a recent case of cerebellar tumour under his care.

Mr. PERCY SARGENT, in reply, said that x rays were sometimes useful in the diagnosis of a tumour of the brain, therefore it was a method of diagnosis which should be used. Calcified gliomata might be revealed in this way. Very often there was a history of trauma in tumour of the brain, but if careful inquiry was made, almost anybody, at some time or other, would be found to have had a blow on the skull, and therefore too much importance should not be attributed to the injury, and its importance as the causative agent could not be accurately estimated. He agreed that the effect of increasing general pressure might be to mask localizing signs. He also referred to false localizing signs, first called attention to by Victor Horsley.

## PERFORATION AND RUPTURE OF THE GALL BLADDER.

BY

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THIS paper is based on 28 cases of perforation or rupture of the gall bladder which have occurred during the last twenty-five years at the London Hospital. In that period there have been in the surgical wards 520 cases of cholecystitis with gall stones (80 acute, 65 chronic, and 374 unclassified) and 546 (73 acute, 87 chronic, and 386 unclassified) without them—1,066 cases in all.

Rupture of the gall bladder may result from violence, such as a blow on the abdomen or a run-over accident, but is a very uncommon occurrence and less frequent than rupture of the bile ducts. One only of the present series of cases was due to this cause.

A youth, aged 22, was run over by a cart. He was treated expectantly and apparently completely recovered from the accident. Two months later he visited his doctor, complaining of a

gradual increase in the size of his abdomen. He was not jaundiced. Laparotomy was performed by Mr. Hutchinson and an enormous collection of bile found in the subhepatic pouch, the right anterior subphrenic space, and the right lumbar fossa. In the remaining part of the peritoneal cavity (which was shut off by adhesions) was a large quantity of serous fluid. The hole in the gall bladder was sutured and the subhepatic fossa and pouch of Douglas drained. The patient made an uninterrupted recovery.

Perforation or rupture results much more frequently from ulcerative cholecystitis, generally associated with the presence of gall stones. In this series 27 cases were due to ulcerative cholecystitis, and in 26 of them gall stones were present. The remaining case, was, perhaps, sufficiently interesting to be recorded in more detail.

A man, aged 38, was suddenly seized with severe upper abdominal pain, fell down and could not move. He vomited twice; the abdomen was "board-like." The diagnosis of perforation of a gastric ulcer was made (he had a two months' history of indigestion of the gastric ulcer type). Laparotomy was performed and a perforated gangrenous gall bladder found. No gall stones were present. Drainage of the gall bladder and subhepatic pouch was provided for, and the patient made an uninterrupted recovery.

Mitman reported a case of chronic pancreatitis with rupture of the gall bladder following ulceration near Hartmann's pouch, and thought that straining at stool precipitated the catastrophe. No history of strain or injury, however, could be obtained in the great majority of the present series of cases. Nordentoft recorded a case of perforation in a paratyphoid carrier with acute cholecystitis (no calculi), and cases of perforative cholecystitis during typhoid fever have been placed on record.

#### AGE INCIDENCE.

One patient, the traumatic case already reported, was 22 years of age; 4 were between 30 and 39; 5 were between 40 and 49; 6 between 50 and 59; 6 between 60 and 69; and 6 between 70 and 79. Sixteen of the patients were women, and 12 (including the traumatic case) were men.

#### DIAGNOSIS.

Diagnosis was often very difficult. In 4 cases the diagnosis of acute intestinal obstruction was made, there being absolute constipation, colicky abdominal pain and vomiting, and some distension; 3 patients were thought to be suffering from perforation of a gastric or duodenal ulcer (2 gastric, 1 duodenal); they were suddenly seized with agonizing upper abdominal pain, vomited, and were in a condition of shock when seen, the abdomen being board-like in its rigidity. One of these patients actually fell down in the street, so sudden in onset and severe was the pain. The diagnosis of a high appendix abscess was made in 2 cases in which an abscess had resulted from perforation of the gall bladder. In just over a third of the cases acute cholecystitis was diagnosed, and in the remainder (which included the very late and moribund) diffuse peritonitis of unknown origin. Slight jaundice was present in 5 cases, of which 4 were suffering from diffuse peritonitis and one from abscess formation. From only 8 of the patients could a history of flatulent dyspepsia or biliary colic, with or without jaundice, be obtained.

#### CONDITION FOUND AT OPERATION.

In early cases (4) bile and sometimes calculi were present within the peritoneal cavity; in later cases (15) diffuse peritonitis was present, while in others a localized abscess had resulted in the subhepatic pouch (10 cases, 2 of which are also included in the 15 cases of diffuse peritonitis). Diffuse peritonitis, therefore, was found in the majority of the cases—15 out of 28. The gall bladder was in a condition of suppurative or gangrenous cholecystitis and a perforation present, most commonly near the fundus. Almost as frequently it was situated at Hartmann's pouch or midway between the two. The perforation varied in length from a quarter of an inch to an inch and a half, and bile or pus and calculi were generally to be seen escaping through it. In 2 cases the gall bladder was found only with the greatest difficulty, and in 2 others was not seen at all, dense adhesions and the poor condition of the patient contra-indicating further search. Extensive fat necrosis was

present in 2 cases, but in one of these the patient also had acute pancreatitis. One case of subhepatic abscess resulting from perforation of the gall bladder was complicated by fistulae leading from the abscess cavity into the colon and duodenum.

In Gjellerup's case there was a haemoperitonium of 2 pints. Sussig and Hörnhannner reported 2 cases of extraperitoneal perforation; Wendel recorded an extremely interesting case of torsion of the gall bladder with perforation and calculi lying free in the resulting abscess cavity. The gall bladder was not gangrenous, although the cystic duct and vessels had rotated completely several times. Schweizer reported a case of perforation of the gall bladder with fat necrosis.

#### TREATMENT.

Treatment depended on several factors, especially the condition of the patient and the condition found at operation. Cholecystectomy was performed in 5 cases—one with diffuse peritonitis, 2 with abscess formation, and 2 soon after perforation. The first died, the second two recovered, and one of the last two died. The remainder were treated by drainage of the gall bladder and subhepatic pouch; suprapubic drainage was added if diffuse peritonitis were present. Summarized, the treatment is generally drainage of the gall bladder by a tube inserted through the perforation and drainage of the subhepatic pouch. Suprapubic drainage is sometimes necessary. Cholecystectomy may be performed if the patient's general condition and the local condition of the gall bladder and surrounding tissues do not contraindicate it.

#### PROGNOSIS.

Of the 4 patients operated upon soon after perforation 3 recovered and one died of shock; 7 of the 8 cases in which an abscess had formed recovered, one died. Fifteen patients were suffering from diffuse peritonitis; 10 died (2 had localized abscesses in addition) and 5 recovered.

It will be seen, therefore, that when operation was performed soon after rupture, or when an abscess had formed, prognosis was good, 10 out of 12 recovering. On the other hand, when diffuse peritonitis was present the prognosis was poor, 10 out of 15 dying.

In cases of rupture due to violence the prognosis depends upon concomitant injury to other viscera, the presence of infection in the gall bladder, and the time elapsing between the accident and operation. If the bile be sterile the last factor is of less importance.

In the present series only one was the result of violence, and he recovered, although operation was performed two months after the rupture had occurred.

I wish to thank the surgical staff of the London Hospital for permission to include in this series cases which were under their supervision, and especially Mr. Hugh Lett for some helpful suggestions.

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## A CASE OF SARCOMA OF THE LUNG.

BY

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PANAMA.

The case here reported is no exception to the rule that tumours of the lungs are difficult to diagnose; had it not been for the metastases it would have been impossible to be dogmatic about it.

A woman, aged 47, had been out of sorts for two months, with no symptoms except shortness of breath on slight exertion. She had been operated upon twenty years before for tuberculous glands in the neck, and her family history was tainted with tubercle on both sides. She looked ill, but repeated examinations revealed no abnormal signs of any sort. The blood count gave 4,800,000 red cells, 11,000 white cells, and the differential count was normal. No diagnosis was made.

A fortnight later she woke in the night with great dyspnoea; the whole of the right chest behind was found to be dull and the breath sounds were absent, while in front there was an area, extending from the apex of the lung to the level of the fourth rib, where the note was tympanitic, the vesicular murmur absent, and the voice sounds were loud and close to the ear. Below this there was dullness and the breath sounds were absent. Vocal fremitus was absent over the whole side, back and front. The apex beat was not displaced; the heart sounds were feeble and the pulse varied from 90 to 110. A needle withdrew clear coloured fluid, and on aspirating the chest 16 ounces were removed, blood-stained towards the last.

The removal of this fluid made no difference to the physical signs, and did nothing to relieve the dyspnoea of the patient, which was now severe, and threatened to be fatal. After some hours the symptoms abated, and on the following day the patient was little the worse for her experience, though any movement brought on distressing shortness of breath. Examination of the fluid then and subsequently removed from the chest showed a small predominance of mononuclear leucocytes, and injection on two occasions into guinea-pigs did not affect the animals.

The temperature did not rise above 100° for the first three days, but on the fourth there was a rigor, and for the rest of the illness there was a daily variation of several degrees (97° to 104°), without much sweating. In spite of this the patient improved, and by the end of the second week she could move about with comfort. There was no cough, the physical signs did not alter, the blood count was the same, and it was thought then that the condition was a pneumothorax of tuberculous origin.

On the twenty-eighth day the patient, lying quiet in bed, cried out that she was suffocating, and an attack followed, very like that already described. This time it seemed impossible that she could rally, but in the course of four hours the symptoms subsided and she was in comparative comfort.

Not until 12 ounces of blood-stained fluid had been withdrawn from the chest was there any change in the physical signs. There was then over the whole of the right lower lobe behind a tympanitic note, with distant loud bronchial breathing, like that heard over the trachea when compressed. This sound, to which the name "coarse" was given by Behier fifty years ago, is said to be pathognomonic of bronchial obstruction, and if heard over the root of the lung and accompanied by dullness, of tumour. Though the sign in this case did not fulfil these two conditions, it was a striking phenomenon, occurring so suddenly over a wide area previously silent, and its appearance threw the first doubt upon the diagnosis already made. The condition of the patient during the next three weeks became steadily worse; the dyspnoea increased, and though the chest was aspirated twice only 9 ounces of fluid were taken away on each occasion, and the removal did not alter the physical signs. The blood examination showed an increasing anaemia: the red cells at the end of the fifth week of the illness numbered 3,980,000, the white cells kept between ten and twelve thousand, and the differential count remained normal. The temperature was hectic. There was little cough and no expectoration.

On the fifty-eighth day the patient complained of pain over the front of the chest, and a nodule the size of a pea was found at the junction of the fifth right costal cartilage and the sternum. It was extremely tender, movable under the skin, and apparently fibrous. It was excised, and the report on its structure cleared up any doubt as to the nature of the disease; it was described as a small round-cell, deeply pigmented sarcoma. Other nodules appeared at intervals in the skin of the right chest, and added greatly to the misery of the patient; they were all tender, and some of them were the starting-points of acute neuralgic pains, which spread over wide areas of skin.

Two more attacks of acute dyspnoea occurred—one on the seventieth, the other on the seventy-fourth day—with no change in the physical signs. On the eighty-seventh day, three months from the date of the first examination, the patient had an enormous haemoptysis and died at once. A *post-mortem* examination was not allowed.

In the discussions that arose over the differential diagnosis the question of primary malignant disease of the lung and pleura arose more than once, but it did not seem to those who listened to the chest that there was any justification for abandoning the diagnosis already made. It might

be said that the persistence of blood in the aspirated fluid should have been allowed more weight in the decision, but there are simpler explanations of this than malignant disease of the lung, and it was possible to point to one positive sign only—the predominance of the mononuclear leucocytes. An x-ray examination of the chest, which might have given the diagnosis earlier, was impossible, as the patient lived in a remote district of West Africa, seventy miles from an apparatus.

I have found in the literature only one example of sarcoma of the lung with secondary deposits in the skin—a case published by Peritz of Berlin in 1896, where metastases occurred in the mediastinal and cervical glands, the spleen, the liver, and both kidneys.

## PERSISTENCE OF TUBERCLE BACILLI IN BUTTER FROM TUBERCULOUS MILK.

BY

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The danger arising from the presence of tubercle bacilli in butter has not attracted in this country the attention it deserves, though probably fresh butter containing these bacilli is not infrequently on sale. With a view to determining their persistence in butter made from milk known to contain them, specimens of milk were collected from five tuberculous cows; three of these cows were afterwards shown to have extensive tuberculous lesions, and in all five cases the presence of tubercle bacilli in the milk was demonstrated by inoculation into guinea-pigs.

From these five milks butter was made by naturally ripening them without heat, other specimens being pasteurized at 55°, 60°, and 70° C.; after this heating butter was made by using a "starter" to produce artificial ripening. The various specimens of butter were melted and kept at 40° C., sedimentation being allowed; the difficulty of satisfactorily centrifugalizing butter samples was to some extent overcome in this way. From the melted samples in cylindrical containers 4 c.cm. was taken from the surface and another 4 c.cm. from the bottom, guinea-pigs being inoculated with the total 8 c.cm. When the milk was pasteurized it was heated in a container at one of three temperatures—55°, 60°, and 70° C.—the samples of milk being maintained at the selected temperature for thirty minutes, and continuously stirred while the thermometer readings were carefully watched.

The proof that tubercle bacilli caused the lesions found in the guinea-pigs was afforded by histological examination of the affected glands. Smears of the gland pulp were stained for tubercle bacilli, prolonged treatment with sulphuric acid being followed by the application of alcohol for ten minutes. To ensure the elimination of error due to the presence of acid-fast butter bacilli cultures were made; the rate of growth of the colonies and morphological considerations gave further confirmation of their identity.

The five specimens of milk were all shown to contain tubercle bacilli. One sample of butter made from naturally ripened milk was found to contain tubercle bacilli; the butter produced in other ways from this milk was also found to be similarly infected. The other four samples of milk, whether unheated or heated, produced butter which was free from tubercle bacilli. For the various examinations twenty-five guinea-pigs were used.

It would therefore appear that even the most careful pasteurization is not always a sufficient protection against the survival of tubercle bacilli. Work is now proceeding to determine the time of persistence of live and virulent tubercle bacilli in butter after it has been stored in the ice-chest, both salted and unsalted preparations being used. The present series of experiments is too small to allow definite conclusions to be drawn, but the importance of the point at issue seems to justify the publication of this preliminary report.



## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### AN UNUSUAL OBTURATOR HERNIA.

An obturator hernia is comparatively rare, and it is seldom possible to diagnose it before operation, which is generally undertaken on account of acute intestinal obstruction. The following case is of interest in that there was a palpable swelling which enabled a correct diagnosis to be made. This swelling was the result of spread of inflammation beyond the sac wall, due to the nature of the contents of the sac.

Mrs. D., aged 51, a patient of Dr. Kempson Brown of Ludham, was seized with severe pain in the right groin on April 17th, 1926. For a week the pain remained severe and it spread down the thigh and into the knee. During this time her bowels were opened two or three times. She vomited once after taking salts.

I saw her on April 24th. She was a stout woman, difficult to examine. Her general condition was good. There was nothing abnormal to be made out in the abdomen. Deep in the upper and inner part of the right thigh, 2 inches below the pubic spine, was a fixed tender swelling about the size of a pigeon's egg. It could be palpated more easily with the hip flexed.

Per vaginam a tense swelling could be felt, fixed to the right wall of the pelvis at the level of the upper border of the obturator foramen. She was admitted into the Norfolk and Norwich Hospital, and the operation was performed on April 25th. A vertical incision was made below the right pubic spine. There was brawny induration of the adductor longus and pectineus. A small thickened sac over the obturator canal was exposed. The sac was incised and pus escaped. (The pus was negative on being cultured.)

Right paramedial coeliotomy was then performed. The right Fallopian tube was found entering the obturator canal. The tube was withdrawn from the canal after freeing adhesions between it and the sac wall. The tube was thickened and distended with pus, and was excised. The right ovary was not involved in the hernia and was not removed.

The abdominal wound was closed and a cigarette drain inserted into the wound in the thigh. The latter suppurated freely, but except for this she made an uneventful recovery and left the hospital on May 27th.

It may be of interest to add that the patient's husband has suffered also from an unusual form of hernia. I operated on him five years ago for acute intestinal obstruction of twenty-four hours' duration. He had worn a left inguinal truss, but there was no swelling to be felt in either inguinal canal. A laparotomy was performed and a loop of small bowel was found strangulated in a diverticulum of a left inguinal hernia which extended upwards between the left rectus musculo and the peritoneum of the anterior abdominal wall—the properitoneal variety of an interstitial hernia. I may say that at the present time he has a hernia which is only too evident when he removes his truss.

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#### CARDIAC PAIN IN PERNICIOUS ANAEMIA.

DR. CAREY COOMBS's note on cardiac pain in pernicious anaemia (July 31st, p. 185) recalled to my mind an instance in which the symptoms of precordial pain and shortness of breath overshadowed for a time the underlying condition of anaemia.

A man, aged 48, came to see me in regard to attacks of pain over the heart, which occurred frequently after he had finished his day's work; on resting after his evening meal the pain lessened in severity. His only other symptom was slight shortness of breath on exertion. He was a healthy looking man, and had suffered his pain for nearly a year before seeking advice. No cardiac murmur was heard, but the heart was slightly hypertrophied. After about a month's treatment he improved in health, and I did not see him again for three months. The shortness of breath had then returned, and he looked paler than on his former visits to me. On this occasion no further signs were evident in the heart, but his right foot was rather puffy about the ankle. I now tested his blood, and found that the red cell count was down to three and a half millions. His colour index was 1.2, and the blood film showed the typical picture of pernicious anaemia. His blood pressure was normal for a man of his age.

He was now put on prolonged treatment and lived for four years. During this period, however, he had a number of attacks of severe precordial pain, some of which closely resembled angina pectoris.

This case resembles some of those Dr. Carey Coombs cites in his article, but the evidence of cardio-sclerosis was

only slight. My object, however, in recording the case is to show that, as in his series of cases, the evidence of cardiac disease overshadowed the true nature of the condition.

Fochriw, Glam.

T. STENNER EVANS, M.B., B.S. Lond.

#### SUDDEN DEATH DUE TO ACUTE HAEMORRHAGIC PANCREATITIS.

THE following details of a somewhat unusual case—namely, the sudden death of a man aged 29 from acute haemorrhagic pancreatitis, may be of sufficient interest to merit publication.

The patient had been in his usual health until the day of his death, when he suffered from slight diarrhoea, which did not prevent him from playing cricket during the greater part of the afternoon. He was suddenly attacked by faintness and severe epigastric pain without vomiting or cyanosis. He recovered sufficiently to enter a car, but a few minutes later he died suddenly.

At the necropsy the pancreas was found to be densely infiltrated with blood throughout its whole extent. There was no free fluid in the peritoneum, and no evidence of fat necrosis. The gall bladder and biliary passages were normal, with no signs of calculi or of inflammation. The lower end of the ileum, however, was inflamed, although the caecum and appendix were not affected. The heart, kidneys, brain, and other organs were all normal.

This case appears to be one of the rare group described by Mayo-Robson as "ultra-acute," or "pancreatic apoplexy," the characteristic points being the violent and sudden onset, accompanied by collapse, and ending fatally, with extreme rapidity. In view of the work of Deaver and Ashurst on the spread of infection to the pancreas via the lymphatics, the inflamed condition of the lower end of the ileum may have had some etiological association with the fatal pancreatitis.

A. C. MACONIE, M.B. Lond., F.R.C.S. Eng.

Shanghai.

#### A LOCAL ANAESTHETIC FOR THE EAR.

AFTER many years of disappointing experiment I have found a local anaesthetic mixture which is of real service to the otologist. It consists of equal parts of cocaine hydrochloride, menthol, crystallized carbolic acid, rectified spirits, and oil of cloves. I claim no originality for the prescription, because I read of it, or something very like it, in a foreign journal, either French or American, a year or more ago.

A cotton mop wet with the fluid is placed against the drumhead and left for ten minutes. At the end of that time anaesthesia is satisfactory. I have many times performed paracentesis in cases with acute trouble, and the anaesthesia has been perfect. I have several times cut away the post-malleolar drumhead to get attic drainage. Recently I removed the whole of a retracted drum, adherent to the promontory, from a nervous female patient. She felt no pain whatever. The one disadvantage of this otherwise perfect solution is its liability to set up otitis externa if it is permitted to touch the walls of the external meatus. To get over this difficulty I have tried leaving out the oil of cloves, but without this ingredient it has proved useless. I explain its great efficiency on the supposition that the oil of cloves penetrates the tympanic membrane and carries the anaesthetic drugs deep into the middle ear.

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#### ADRENALINE IN CARDIAC ARREST.

WITH reference to Dr. Livingston's case of resuscitation in an infant during anaesthetic collapse (August 28th, p. 388), I also have tried the same treatment on four different occasions on infants apparently stillborn and who did not respond to the ordinary methods of restoring animation. In three cases the infants responded at once and have since remained healthy. In the fourth case there was no attempt to breathe.

Oldham.

MARY G. CARDWELL, M.D.

## Reichert.

### INTRACRANIAL PHYSIOLOGY AND SURGERY.

Dr. HARVEY's CUSHING's Cameron Lectures have lately appeared in one volume under the title of *Studies in Intracranial Physiology and Surgery*,<sup>1</sup> the three lectures being devoted to the third circulation and its channels, to the pituitary gland, and to intracranial tumours. On such subjects the author can write as a distinguished authority whose opinions will receive careful consideration.

The first lecture deals with the cerebro-spinal fluid and its circulation. Here the author has wisely adopted the historical method of approach to problems which he himself and his fellow workers have done so much to elucidate. Beginning with the study of hydrocephalus, he traces the various investigations, clinical and experimental, which have yielded us our present knowledge. The now well known work of Weed on the absorption of the cerebro-spinal fluid by the arachnoid villi is clearly described, and full recognition is given to the same worker's valuable researches on the changes in the volume of the brain which follow the intravenous injection of hypertonic and hypotonic fluids.

An interesting discussion is that on the phagocytic properties of what the author terms the meningoocytes, certain cells of the arachnoid membrane which, besides their phagocytic powers, possess very active regenerative properties, well seen in the formation of new membranes after surgical interventions. To these cells also is attributed the power of forming bile pigments from blood, a character which seems to place them amongst those belonging to the system known as the reticulo-endothelial. A further practical importance is attached to these cells by the suggestion that it is from them that the tumours now widely known as the meningiomas (after the author's terminology) arise.

The advantages of the historical method are again well seen in the second lecture on the pituitary gland. A brief but masterly sketch of the earlier work of the author and others prepares the reader for a more detailed description of the various points of interest and importance in the histology, the physiology, and the clinical disorders of the pituitary body. The last section of this lecture is devoted to the more purely surgical aspects of the subject, where much of great practical value appears. In this short lecture Dr. Cushing has succeeded in giving a fascinating account of a subject whose literature is now enormous; the reader may congratulate himself that the subject is presented by one who has an unrivalled right to speak with authority and who can assist him to separate truth from mere hypothesis.

The final lecture, headed "Intracranial tumours and the surgeon," is less academic perhaps but none the less valuable. Its scientific interest lies principally in the account of the very elaborate and careful histological studies of the gliomata which have been undertaken by the author and his co-workers.

### A THEORY OF BONE.

THE multifarious lesions of bone constitute one of the obscure regions of pathology, and in view of the complicated nature of the subject we have become accustomed to accept the present orthodox and stereotyped teaching for better or worse, with a full consciousness of its insufficiency and in the hope of future enlightenment. There are few books that give much promise of realizing our expectations in this respect, but among these one, the normal and pathological physiology of bone,<sup>2</sup> by Professors LEICHE of Strasbourg and POLICARD of Lyons, undoubtedly gives the impression of having lightened our darkness to some extent.

The authors have divested themselves of preconceived ideas and started with a clean slate; they have made a ten years' study of every available bone lesion; have faced every difficulty of interpretation fairly and squarely; and have built up a new theory of the development, evolution, disease and degeneration of osseous tissue; which, they claim, is of universal application in the interpretation of the pathology of bone. Their theory is thus the product of their own observations and deductions, while they are careful to give full credit to previous observers for facts that are consistent with their teaching. The theory is based on the original conception of Reichert that bone is merely one of the various forms of connective tissue, of which other familiar forms are areolar tissue, tendinous tissue, mucous tissue, and cartilage, and can under varying chemical and mechanical influences pass from one form to another by a process which is usually designated "metaplasia." The authors point out that there is no essential difference between ossification in cartilage and ossification in membrane; the former is complicated by a preliminary process of absorption of cartilage, and ossification in membrane, being the simpler process, forms the basis of their research.

Their theory of osteogenesis is as follows: The connective tissue that is to undergo conversion becomes oedematous and exhibits a differentiation into an embryonic form by the proliferation of its fibrillae or fibroglia; the inter-fibrillar oedema is next replaced by or transformed into a viscid, semisolid substance, and to the altered tissue in this stage the authors have given the name of "pre-osseous," otherwise called "osteoid." Finally, a deposit of lime salts in the pre-osseous tissue completes the process, the deposit resulting probably from an alteration in the equilibrium of the calcium and phosphate ions in the fluids of the part, in the presence of a surcharge of calcium salts in the area of ossification. To produce such a surcharge, however, there must be a supply of calcium salts in the neighbourhood to be drawn upon; if the ossification is taking place in the neighbourhood of pre-existing bone the excess of calcium is derived from this, for the authors hold that the process of ossification is always accompanied by rarefaction and partial absorption of the surrounding osseous tissue; heterotopic ossification, on the other hand, they consider only occurs in association with lesions which themselves lead to a deposit of lime salts. With regard to the osteoblasts, the authors consider that they are not bone-producers, but have the same function as osteoclasts—that is, they absorb bone, and in this respect play an important part in rendering the locally existing lime salts soluble and producing the surcharge requisite in osteogenesis. The authors show how readily their theory explains many of the phenomena of bone disease, and if it is true it will prove an undoubted boon to pathologists.

### MUSCLE PHYSIOLOGY.

THE encyclopaedic scale of the textbook of normal and pathological physiology<sup>3</sup> is indicated by the fact that the first portion of the first half of the eighth volume consists of a large octavo book of 654 pages. It deals with protoplasmic movement and muscle physiology, and the articles it contains have been contributed by nearly twenty different authors.

We may state at once that the work is of quite exceptional interest and quality, for the subject of muscle physiology is one in which many important advances have recently been made, and the contributors to this volume include many of the persons chiefly responsible for these advances.

The advance of any science is not a continuous process; there are usually one or two fields in which it is particularly rapid. The physiology of muscle is a subject in which a rapid advance has been achieved in the last decade, and for this reason a series of authoritative monographs such as are contained in the volume under review is of particular value.

<sup>1</sup> *Handbuch der Normalen und pathologischen Physiologie*, herausgegeben von A. Berthel, G. Acher, Band, Erster Hälfte, *Energie*. Berlin: J. Springer, 1926. G.M. 45; bound, 1926.

<sup>2</sup> *Physiologie der Muskulatur*, von A. Ellinger. Berlin: J. Springer, 1926. G.M. 45; bound, 1926.

<sup>1</sup> *Studies in Intracranial Physiology and Surgery*. By Harvey Cushing, M.D. The Edinburgh Cameron Prize Lectures. Oxford Medical Publications. London: H. Milford, Oxford University Press, 1926. (6 x 9 1/2 in.) 146; 16 figures. Paper cover. 8s. 6d. net; cloth, 10s. 6d. net.

<sup>2</sup> *Les Fonctions de la Physiologie Normale et Pathologique de l'Os*. Par R. Leiche et A. Policard. Paris: Masson et Cie. 1926. (Med. 8vo, pp. 230; 33 figures. 28 fr.)

An inherent disadvantage of a rapid advance in any subject is that most of the literature becomes out of date soon after it is written. A highly specialized and difficult technique usually is developed and the subject attracts a large number of investigators whose work is often of very unequal value. Consequently only those persons who have a first-hand knowledge of the most recent methods of research can appraise the value of the work done.

The names of the authors contributing to the volume under review are indeed sufficient to indicate the high quality of their contributions. Professor O. Meyerhof, the Nobel prizeman, contributes three chapters on the respiration of muscles, the thermodynamics of muscle, and the theory of muscular activity. As he observes, these three subjects are really parts of a single big problem. The evidence available has been provided by means of extraordinary refinements in chemical and physical methods. The author discusses the oxygen consumption of muscles *in situ*, and this portion of his essay deals especially with metabolism experiments upon animals and men at rest and at work. He next discusses the oxygen consumption of excised muscles, and finally the theories of cell oxidations. In the section on the thermodynamics of muscle the evidence is detailed that has been obtained from the refined methods of calorimetry, by means of which it has been possible to analyse the various stages of heat production in muscle.

The article by Professor G. Embden on the chemistry of muscular contraction is another contribution of outstanding interest. He gives a full account of the complex process by which glycogen is converted to lactic acid, and this substance then partly oxidized and partly reconverted to glycogen. Other noteworthy articles are those by Professor W. O. Fenn on the mechanical properties of muscle and the time relations of muscular contraction, and those by Professor O. Riesser on the tonus of muscle.

The chief impression gained by reading the volume is the extraordinary amount of attention that has recently been devoted to muscle physiology. The articles deal with a dozen different aspects of the subject, and in all cases the majority of the references are to work done during the last decade, and in every article there are numerous allusions to work that is still unpublished.

Another remarkable fact is that nearly all this work has been done on skeletal muscle, and in only a few instances is any account given of the application of the newer and more refined methods of investigation to cardiac and plain muscle. Knowledge of the fundamental properties of skeletal muscle is still very incomplete, but it is incomparably greater than our knowledge of these properties in other forms of muscle. This is particularly regrettable because in the treatment of disease a knowledge of the properties of cardiac and plain muscle is of far greater importance than a knowledge of the properties of skeletal muscle. It can only be hoped that the investigators who have obtained such brilliant results with skeletal muscle will seek new fields to conquer and will lighten our darkness in these other fields.

The volume under review is of more interest to the physiologist than to the clinician, but past experience assures us that every advance in the knowledge of the fundamental properties of living matter sooner or later produces results capable of direct clinical application, very often in quite unexpected directions. It is impossible to prophesy the results of research, but it appears probable that as soon as the properties of cardiac and plain muscle are analysed with the same care as has been applied to skeletal muscle, results of the greatest importance to clinical medicine will be forthcoming.

#### THE CONTINUITY OF LIFE.

In his foreword to *The Physiology of the Continuity of Human Life*,<sup>4</sup> which is based on lectures given at the University of Glasgow during the last five years, Professor D. NOËL PATON protests against *ex cathedra* teaching as soul-destroying, alike for the teacher and the taught,

<sup>4</sup> *The Physiology of the Continuity of Human Life*. By D. Noël Paton, M.D., D.Sc., LL.D., F.R.S., Regius Professor of Physiology, University of Glasgow. London: Macmillan and Co., Ltd. 1926. (Demy 8vo, pp. x + 226; 79 figures. 12s. net.)

and instances as examples on which a decision may have been prematurely made the Mendelian laws of inheritance, the part played by chromatin in inheritance and in the determination of sex, and the impossibility of the transmission of acquired characters. The broad-minded, though to some it may seem iconoclastic, atmosphere of these lectures may be illustrated by his treatment of the last much discussed question; the evidence is summed up to the effect that while a large number of acquired modifications cannot be transmitted, there is evidence that in certain somal changes the germ cells are affected, and that this modification is transmitted. Thus a number of examples are quoted to support the opinion that in parthenogenesis environmental conditions may play a part in the determination of sex; in a special chapter on the influence of the soma on the gonads, it is said that the interstitial cells of the gonads, the adrenal cortex, the thymus, thyreoid (the Galenic spelling of which is deliberately adopted), all seem to exert an influence on the germ as well as on the somal cells; again, the interstitial cells of the gonads and the cells of the adrenal cortex are held to be ancillary to, and have a similar origin to, the germ cells, and may indeed be considered as germ cells; and that hence these two should not be regarded as proving the influence of true somal cells on the germ cells. The eugenists who follow Weismann regard education or cultivation of characters in the individual as futile for the race, whereas those who accept Professor Noël Paton's examples of the influences of acquired modifications on the gametes can believe in the beneficial effects of education, in the broadest sense of the term, on future generations. As regards the correlation between chromosome distribution and sex determination, the conclusion reached is that it is not causal, the chromosome arrangement being perhaps merely the morphological expression of a particular line of metabolism, and the determination of sex depending upon the nutritional state of the soma or other external factor.

The influence of the gonads on the soma is successfully illustrated by figures of the interstitial cells, and attention is drawn to Boring and Morgan's description of two forms in the Sebright bantam cock, one small, the other large and resembling the luteal cells, thus suggesting that in every individual there may be two kinds of sex-determining cells, one predominating over the other. Steinach's various experiments receive due attention, and Professor Noël Paton considers that while the sex of the germ is determined by the metabolic activities of the parental gametes—whether the result of hereditary inertia or of the influence of extrinsic factors—the development of the secondary sex characters of the soma depends on the germ cells or on their ancillary cells.

In conclusion we may say that these pleasantly written lectures contain not only much information but much stimulating food for thought.

#### MALARIA.

The volume on *Malaria*,<sup>5</sup> by Professor MARCHOUX of the Pasteur Institute, is the fifth of the treatise on medicine and therapeutics, edited by Professors Gilbert and Carnot; it is an admirable textbook of the subject, bringing together in one handy volume practically all the facts known at the present time; it will consequently be a welcome addition to the library of malariologists. It is divided into four main parts. The first, parasitological, gives an account of the different parasites, their discovery and life-history, and of the anopheline hosts, and discusses the question of the unity or multiplicity of the parasites, a subject on which the author read a paper at the First International Malarial Congress held at Rome last October. The parasite of subtertian malaria is denominated *Plasmodium praecox* in this first part, but *P. falciparum* thereafter, while the parasite of avian malaria (to which the name *praecox* is usually assigned) is called *P. relictum*.

The second part, which is devoted to the pathology of the disease, includes the clinical aspect, the pathological anatomy, diagnosis, and prognosis. It contains a most

<sup>5</sup> *Nouveau Traité de Médecine et de Thérapeutique*. V. Paludisme. Par Marchoux, Professeur à l'Institut Pasteur. Paris: J. B. Baillière et Fils. 1926. (Roy. 8vo, pp. 366; 138 figures.)

useful table, the like of which we do not remember seeing in any previous work, giving the points by which the variety of parasite and the stage of its development can be determined from examination of blood smears. The third part is concerned with treatment, and is adequate, while the fourth and last takes up the question of prophylaxis in its general and special aspects, discussing the different measures suitable to different circumstances deduced from information gained in various parts of the globe where the matter has been scientifically undertaken.

The illustrations are not in all cases up to the high standard of the text; misprints are very few, but we note that Sir Arthur Shipley, who, with Professor Nuttall, is mentioned fairly frequently, has the misfortune of having his name wrongly spelt throughout the book, and the name Wellcome contains one mistake in each syllable. These are errors which could easily have been avoided.

There is one subject the omission of which is somewhat surprising in a book so up to date in other respects—namely, the use of the parasite in the treatment of general paralysis. The only reference to this that we have seen is a brief line in which it is stated that "malaria is credited with having a retrogressive effect on the symptoms of general paralysis." The work, however, is a mine of information, imparted with the lucidity and charm which characterize all that comes from the pen of its author.

#### DIAGNOSIS AND TREATMENT IN HEART AFFECTIONS.

WHEN Sir JAMES MACKENZIE prepared the lectures ten years ago which form the basis of the *Principles of Diagnosis and Treatment in Heart Affections*\* he had in view two main objects. One was to place the essentials of heart failure within the grasp of the general practitioner; the other was to stimulate research along lines previously neglected. With the former of these objects still in view the editing of the second edition was placed in the hands of his colleague, Dr. JAMES ORR, at the St. Andrews Institute, and for any alterations in the present edition he is also responsible. He has aimed at making only such changes as would bring it into line with the newer views enunciated by Mackenzie in his later years. The arrangement of the matter has also undergone some slight modification, and the book is divided into four parts, dealing with heart failure, affections of the regulating mechanism, other affections of the heart, and prognosis and treatment.

Insistence on making facts fit a hypothesis is always a risky undertaking, and we feel that in some cases the principles of logic are strained in the attempt. This is perhaps most noticeable in the paragraphs dealing with the nature of auricular fibrillation and auricular flutter. Apart from points such as these, which are quite subsidiary as far as the general practitioner is concerned, the book will continue to fill a valuable place in dealing with cases of heart disease.

#### NOTES ON BOOKS.

*Experimental Pharmacology as a Basis for Therapeutics*† is an English translation of the seventh edition of the well known textbook by Professor HANS H. MEYER and the late Professor R. GOTTLIEB. The first German edition was published in 1910, and a translation into English appeared in 1914. The present volume, by Professor V. E. HENDERSON of Toronto, is thus the second English translation. The textbook itself has passed through seven editions in fifteen years. Professor Gottlieb died before the appearance of the last edition, but Professor Hans Meyer, the doyen of European pharmacologists, has continued the work alone, and the book still bears the stamp of his wide knowledge and philosophic insight. As the title indicates, it aims at presenting pharmacology as an introduction to therapeutics; the subject, therefore, is arranged with reference to the actions which it is desired to produce, and the chapters bear such headings as pharmacology of digestion, circulation, respiration, etc. A clear exposition is given of the scientific

basis for the art of therapeutics, and will attract all who are interested in the general principles underlying the choice or use of drugs. The translation has been carefully made, and certain minor alterations in arrangement and nomenclature have been made which render it more easily intelligible. As it is twelve years since the earlier English translation appeared, the new volume will be practically a new book to English readers.

The first edition of Dr. H. E. STEWART'S *Diathermy, and its Application to Pneumonia*, which was favourably reviewed in our columns (1925, vol. ii, p. 849), has been exhausted, and the second edition, with the modified title *Diathermy with Special Reference to Pneumonia*\*, which is in accord with the broader contents of both editions, shows the continued success of this method of treating lobar pneumonia by the expanded experience of 248 cases, as compared with 67 in the former edition. The author's claims are that the treatment is harmless provided the technique is properly carried out, and that it relieves the symptoms and reduces the mortality, though it does not prevent relapses nor shorten the period of illness. In 96 per cent. of the cases thus treated, however, the temperature at once began to fall by lysis. Stress is laid on the importance of starting the treatment as early as possible, and the author states that, as far as he knows, in cases in which the treatment was started before the third day death has occurred in two only. The method is said to be valuable also in bronchopneumonia and in influenzal, post-etherization, and hypostatic lung lesions, though the results are not so striking as in lobar pneumonia. The question whether or not diathermy of the unaffected lobes in lobar pneumonia will prevent extension of the consolidation and relapses is raised, but has not yet been investigated. It is confidently asserted that diathermy through the heart improves the coronary circulation and minimizes the effect of toxins on the myocardium.

We have recently received the fifth and final instalment of the lexicon of nutrition† by Professors E. MAYERHOFFER and CLEMENS PIQUET; the last two parts of it were noticed a few months ago (April 3rd, 1926, p. 622). Among the subjects discussed are Count Rumford, author of "An essay on food," edible snails, Schroth's cure, regulation of the diet of the healthy child, the feeding of pigs, asparagus, subcutaneous nutrition, soup, tobacco, dried milk, nourishment in prehistoric times, vegetarianism, vitamins, game, and sugar. The editors are to be congratulated on the completion of this lexicon, which, as we surmised in our notice of the first instalment (February 9th, 1924, p. 242), has fulfilled the promise of being a truly monumental work.

Believing that a book on the *Non-Surgical Treatment of Diseases of the Mouth, Throat, Nose, Ear and Eye* would be of material assistance to the young specialist and the general practitioner, Dr. ODENEAL has produced a volume‡ with that title. He does not keep strictly within the limits he has imposed upon himself in the title, and frequently breaks out into descriptions of treatment essentially surgical. He has, for example, something to say about operations on the nasal septum, much about operations for glaucoma and cataract, and about the extraction of intraocular foreign bodies. It is indeed doubtful, when dealing with special regions, if there is much to be gained by attempting to define any particular method of treatment as surgical or otherwise. In this manner two-thirds of the book is occupied. The second part is entitled "Desiderata," and describes in several chapters vaccines and serums, the vegetative nervous system, the endocrine glands, reactions, signs and symptoms, focal infections, hypersensitiveness, headaches and neuralgias, the cerebro-spinal fluid and blood, x-ray diagnosis, and encephalitis lethargica. The author deals with these matters and some few more in relation to the special regions indicated. All through he refers freely to his own experiences and the opinions he has formed, so that the stamp of his own individuality raises the book above the level of a mere compilation. He has, moreover, by approaching his subject from an unusual standpoint, presented in a systematic manner a somewhat diverse collection of useful information. There are only four illustrations, which are figures of instruments designed by the author.

It is because Dr. GRAHAM'S temperament is as genial as the climate of his island home that he has been able to make readable what is in essence little more than a catalogue of

\* *Diathermy, with Special Reference to Pneumonia*. By Harry Eaton Stewart, M.D. Second edition, revised. New York: Paul B. Hoeber, Inc. 1926. (Gr. 8vo, pp. xx + 223; 45 figures, 15 charts. 3 dollars net.)

† *Lexikon der Ernährungskunde*. Herausgegeben von Dr. E. Mayerhofer und Dr. C. Piquet. 5 Lieferungen. Wien: Julius Springer. 1926. (Sup. 8vo, pp. 313. R.M. 16.50.)

‡ *Non-Surgical Treatment of Diseases of the Mouth, Throat, Nose, Ear and Eye*. By Thomas H. Odeneal, M.D. London: H. K. Lewis and Co., Ltd. 1926. (Demy 8vo, pp. xi + 428; four illustrations. 17s. net.)

\* *Principles of Diagnosis and Treatment in Heart Affections*. By Sir James Mackenzie, M.D., F.R.S., etc., and James Orr, M.B., Ch.B. Third edition. Oxford Medical Publications. London: Humphry Milford, Oxford University Press. 1926. (Demy 8vo, pp. viii + 242; 37 figures. 10s. 6d. net.)

† *Experimental Pharmacology as a Basis for Therapeutics*. By Dr. Hans H. Meyer and Dr. R. Gottlieb. Second edition in English translated by Velylen E. Henderson from the seventh revised German edition. London: J. B. Lippincott Company. 1926. (Med. 8vo, pp. xi + 656; 87 figures. 30s. net.)

plants, shrubs, and trees. It is a volume less for the conscientious reader than for the judicious skipper; and it will move almost to tears those gardeners amongst us who just now are looking out every morning expecting to see dahlias and geraniums cut down by frost, for there is no winter in Madeira. Dr. Graham's book, which is called *The Garden Interests of Madeira*,<sup>11</sup> is illustrated by several pictures, including a portrait of the author, who was born in 1840.

The third edition of *Gould and Pyle's Pocket Cyclopaedia of Medicine and Surgery*<sup>12</sup> has been revised and brought up to date by Dr. R. J. E. Scott of New York. It is a handy little volume in which the information given is arranged alphabetically, so that reference is easy. Naturally much of what it contains is matter of common knowledge; but in cases of doubt as to the meaning of a term, or the latest treatment of a disease, information in a concise form may be rapidly gained. It is curious, however, that while "hoarhound" and "holocaine" occur in the cyclopaedia, insulin fails to get individual mention and must be searched for under diabetes. The number of cross-references in the book has been largely increased.

<sup>11</sup> *The Garden Interests of Madeira*. By Michael Comport Graham, M.D., LL.D. London: William Clowes and Sons, Ltd. 1926. (Cr. 8vo, pp. xi + 103; illustrated. 5s. net.)

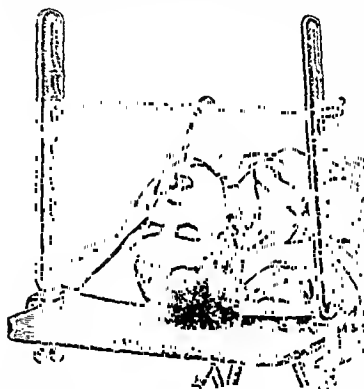
<sup>12</sup> *Gould and Pyle's Pocket Cyclopaedia of Medicine and Surgery*. Third edition, revised, enlarged, and edited by R. J. E. Scott, M.A., B.C.L., M.D. New York. London: H. K. Lewis and Co., Ltd. 1926. (Fcap. 8vo, pp. 922; illustrated. 12s. net.)

## PREPARATIONS AND APPLIANCES.

### A Suspension Apparatus for Crowe's Mouth Gag.

Dr. W. S. THACKER-NEVILLE (Darlington) has designed a suspension apparatus for the mouth gag in tonsillectomy. He writes:

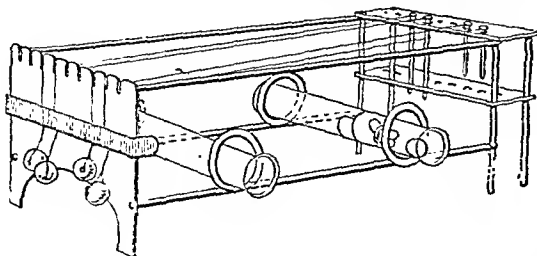
The mouth gag employed in tonsillectomy by Professor Crowe in the Johns Hopkins Hospital, like the Davis mouth gag in this country, requires an assistant or a support. In order to save an assistant this tiring task, and in order to avoid the pressure on the chest caused by another apparatus employed for the same purpose, I have had made the simple apparatus illustrated here. Formerly I used a table to support the hook, but this apparatus is more easily carried about for operations in different places. The



apparatus is made by the Medical Supply Association, Gray's Inn Road, London, W.C.1.

### A Radium-Needle Stand.

Drs. Arthur B. Smith and Sydney M. Smith (London, W.) write: This stand, which is 8½ inches long, 4 inches broad, and 2½ inches high, is designed to facilitate the use of radium by the surgeon in operations of access and insertion. The illustration shows the stand with radium needles and tubes in position, together with their attached threads and identification beads. Sterilization may be effected by boiling the stand with the needles and tubes *in situ*, or the needles and tubes may be sterilized separately in spirit and then placed in position. If the former method is



employed the threads are anchored by means of a metal band with an aseptic hinge, which secures them against the end of the apparatus, while the radium tubes remain safely in test tubes passed through the wire loops provided on the lower horizontal support of the frame. At operation the band is swung back to liberate the threads, and the stand is placed on a table close to the operator ready for use. The stand has been made for us by Messrs. J. Gardner and Son, 35, Forrest Road, Edinburgh.

## MEDICAL DEFENCE UNION.

### ANNUAL GENERAL MEETING.

THE annual general meeting of the Medical Defence Union was held on September 23rd, with Sir HERBERT WATERHOUSE, the president, in the chair. A total membership of 13,480, a net gain of just over one thousand on the year, was reported by the council.

The annual report laid stress on the additional benefits which the Union has lately provided by assuming responsibility; at the council's discretion, in claims made against a member in respect of the act or omission of a locum tenent not himself a member of a defence society. The employment of an assistant, whose engagement is of a more or less permanent character, is on a rather different footing, and a reciprocal arrangement has been arrived at between the two English defence societies whereby, if the principal is a member of one of them, and his assistant a member of the other, either society will defend its member in an action against the principal arising out of the acts or omissions of the assistant. This arrangement has been extended to the protection of a member of the honorary staff of a hospital in the event of proceedings against him in consequence of the act or failure of a subordinate medical officer who is himself a member of one of the societies.

The report records many instances of assistance given in resisting unjust claims or allegations. In eight cases legal assistance was afforded to members in appeals against decisions of Insurance Committees, with wholly successful results in six, and a reduction of the suggested penalty in the other two. The Union also successfully defended four members summoned to appear before the General Medical Council, and was successful in one of two cases in which it appeared as or in support of the complainant. It has also been in correspondence with the Registrar of the Council with regard to the appearance in a newspaper of signed articles on public health questions by a whole-time medical officer of health. The Union, believing it to be in the interest of the public that such officers should not be debarred from publishing signed articles on public health questions, elicited from the General Medical Council, which had sent a warning letter in one such case, that what it disapproved was only the abuse of this practice, and that each case would be dealt with according to the special circumstances.

An interesting report by the solicitors to the Union (Messrs. Hempton) was also laid before the members. With regard to appeals to the Ministry of Health from the decisions of Insurance Committees, the solicitors state that in their experience such appeals were heard with the utmost fairness, and a full and impartial inquiry was ensured. But the award of costs was seldom nearly sufficient to defray the expense in which the practitioner was involved, and often even such costs as were awarded were irrecoverable owing to the lack of means of the unsuccessful party. They also lay stress upon the expense in ordinary law cases to which practitioners would be subject were it not for the defence society which, in addition to undertaking the defence, indemnified against the costs of the other side and against damages of an unlimited amount. During the last fifteen years, in sixty-seven of the heaviest cases which the Union has been called upon to undertake, the average cost of each case to the society has been £270. In addition to the personal security afforded by membership, the solicitors point out that it is in the interests of the profession that medical men should be members of a defence society; otherwise they are likely to be frightened into settlements, which will encourage the unscrupulous litigious speculator. The solicitors express regret that in the legal profession there is no body corresponding to the Union, and that to obtain adequate cover it is necessary for the lawyer to take out an insurance policy costing many times the amount of the Union's annual subscription.

Sir HERBERT WATERHOUSE, in commending the report of the meeting, expressed regret that the British Medical Association (having regard to the position of its members who were on the General Medical Council when cases in which the Union was concerned came forward) had been unable to accept the invitation to nominate two members for appointment as vice-presidents of the Union; he added that the Union was fortunate in having already on its council three members of the Council of the British Medical Association. He welcomed the recommendations in the report of the Royal Commission on Lunacy as holding out the prospect of early legislation to afford a larger measure of protection for doctors certifying mental cases. He also paid a high tribute to the services rendered to the Union by its general secretary (Dr. James Neal) and its solicitors.

The report of the council and the financial statement (which showed assets to the amount of £24,000) were adopted unanimously, and Dr. W. T. Lydall, Mr. R. F. Jowers, and Dr. Seymour Taylor, the retiring members of council, were re-elected.



## THE INNOCUITY OF SCARLET FEVER.

## INTERNATIONAL STATISTICS.

In May, 1924, the Office International d'Hygiène Publique, at the suggestion apparently of the British delegate, decided to collect information on the incidence and control of scarlet fever from the various countries represented in the office. Some of the matters disclosed in the replies to the questionnaire were enumerated in the *Bulletin* which reported the session of the Office International in October, 1924. It has now been thought advisable to analyse all the information so far collected; and the analysis has been published by the Office International d'Hygiène Publique (*Bulletin*, tome xviii, 1926, fasc. Nos. 6 and 7).

The first part of the publication consists of a report by Dr. Allan C. Parsons, with an introduction by Sir George Buchanan, who presented it, on the comparative prevalence of scarlet fever, its characters, and the methods adopted for combating it in various parts of the world. This is followed by notes from Drs. Cantacuzène, Amiot, Frey, and Madsen on scarlet fever in Rumania, Canada, Germany, and Denmark respectively. We do not propose to enter into a detailed account of Dr. Parsons's lengthy analysis of the information received from some thirty countries, or to follow necessarily the order in which he deals with his subject; but rather, after some preliminary remarks on the distribution and character of the disease, to indicate the position with regard to infectivity, notification, the value of hospital treatment, disinfection, and quarantine before return of the patient to school.

*Historical.*

However old a disease scarlet fever may be, Dr. Parsons notes that the first definite record of its occurrence dates from the middle of the sixteenth century, and that the confusion that existed between scarlet fever, measles, erysipelas, and probably diphtheria, was not cleared up until the time of Sydenham (1676). After 1740 the disease assumed a graver form, and towards the end of the eighteenth century there was an unmistakable increase in its malignancy. After the beginning of the nineteenth century there was a general lull, until the wave of malignancy again rose in the British Isles in 1831, and the disease contributed seriously to the death rate among children. About 1875, however, there was a sudden and remarkable drop in mortality and fatality rates; this drop has continued progressively, and recently complications have become less frequent. The attack rate, though less, has not shown a parallel declension; with a curious very large drop during the war, it has since gone up again. Dr. Parsons observes that the drop in mortality and fatality rates occurred before the introduction of compulsory notification and before the common use of hospitals for infectious diseases. It may, however, be suggested that both these provisions for the control of infection were based largely on recollections of the malignancy of scarlet fever before 1875, and on a fear of this disease which those who were students in the eighties and nineties can well remember.

Throughout all the epidemics from the sixteenth to the nineteenth century the chief incidence of scarlet fever was in North-West Europe and North America. It did not appear in South America until 1830, nor in Australia until about 1850. Little has been heard of its presence in tropical or semi-tropical countries; but in more recent times it has become a matter of some concern in south-eastern Europe.

*Infectivity.*

Down to the end of the last century scarlet fever was still regarded as a highly infectious and dangerous disease. The case mortality, it was said, might rise to 30 or 40 per cent. Though it was most common in children, it occurred, or was believed to occur, in a particularly malignant form in puerperal women. The source of infection, apart from contact with the patient, was supposed to exist chiefly in the peeling of the skin, so that fomites and even letters from scarlet fever patients could communicate the disease.

It was a common cause of nephritis, and sometimes of endocarditis. Patients were not allowed to mix with other people until desquamation was complete; and one of the great difficulties in the return to normal existence was the length of time before the soles of the feet ceased to desquamate. In any event the period of isolation could not be less than six weeks. This was the recognized routine in England, though in neighbouring countries ideas were often not so strict. During the illness bedside disinfection was practised, wet sheets were hung over the door, and overalls were worn by the attendants. After an attack the patient, his nurses, his room and its contents had to be disinfected as a final step. The disinfection was undertaken by the public authorities, who ruined much material in the process. It was because of its seriousness and danger that scarlet fever was among the diseases made compulsorily notifiable in 1899. It was largely to accommodate cases of scarlet fever that the hospitals of the Metropolitan Asylums Board and other public bodies were built.

*Recent Behaviour of the Disease.*

The information at the disposal of Dr. Parsons is to the effect that scarlet fever is a notifiable disease in the great majority of countries where it is known to exist. His information, however, is not complete, probably because in countries where the disease is practically unknown it has been found difficult to answer the questionnaire. Comparison of the statistics of different countries is also difficult, because census figures are not always accurate and the methods of notification and death registration are not uniform. But from the information collected by the Office International d'Hygiène Publique it has been possible to review the description we have given of scarlet fever in England at the end of the last century in the light of knowledge of its behaviour to-day. In the first place, scarlet fever is no longer the dangerous disease it used to be. It is true that in Bulgaria, in 1924, a mortality of 2.66 per 10,000 population was recorded; among the Serbs, Croats, and Slovenes a mortality of 1.68, in Rumania 1.01, and in Danzig 1.15. But the English rate has sunk from 10 or 12 in the sixties to 0.22 in 1924. A similar fall has occurred in all the countries in Western Europe, so that since 1900 very few of these countries have shown a mortality rate over 1 per 10,000 of population.

Fatality rates are more difficult to compare, because the completeness of notification varies in different countries. The Bulgarian delegate, Dr. Colosimianoff, admitted that this might be true of his country. In London, where the majority of patients (over 90 per cent.) are treated in the hospitals of the Metropolitan Asylums Board, the fatality figures are much more exact. Consequently, whatever may be said of a rate of 14 per cent. in Italy, 17 in Bulgaria, 22 in Jugo-Slavia, or 13 in Poland, there can be little doubt about the 1 per cent. in England and Wales. In Scotland this rate is doubled; but this may be due to less thorough notification of the disease. This English rate of 1 per cent. compares with one of 12.6 per cent. in the quinquennium 1877 to 1881.

The morbidity rate in England and Wales has not shown any marked decline, except during the war, when the decline in this country, as well as many others, may perhaps be explained by the fact that the machinery for control was considerably disorganized. In 1911 the rate per 1,000 of population was 2.9; in 1925 it was 2.35. These figures, as Dr. Parsons says, "show no substantial submission of the disease to the highly organized measures of control used against it. . . . They compare unfavourably with those of some countries where the measures of control are seemingly less comprehensive." In noting a similar failure of the morbidity rate to keep pace with the decline in the mortality rate in Switzerland, Dr. Carrière suggests that too much attention is perhaps paid to scarlet fever and diphtheria, and that measles is a more important disease than either. In Australia there has been "increased incidence" of scarlet fever "without increased mortality of late years." Yet there is no sign, notwithstanding this unsatisfactory morbidity rate, of any tendency to reversion to a severe type in England and Wales,

though there is evidence that in some countries, especially in South-East Europe, scarlet fever remains a severe disease.

#### *Spread of the Disease.*

The majority of the reporters are of opinion that the spread of scarlet fever is almost entirely a matter of personal contact, often contact with slight abortive cases. Much importance is attached to the mild or "missed" case. Opinion differs greatly on the subject of "carriers"; and Dr. Scholes of Melbourne, who lays particular stress on "missed" cases as a source of infection, and on patients with post-nasal or pharyngeal catarrh, or otorrhoea following an attack, submits that there is no evidence of the existence of "healthy carriers," which he regards as merely "a pleasant and easy hypothesis." Dr. Scholes and the Norwegian reporter regard the influence of schools in spreading the infection as very slight; but in Bulgaria it is thought that schools play an important role. Milk is still an occasional, though rare, medium of infection in England; but Dr. Grain of Norway says that no great explosions of epidemicity, as in milk- or water-borne typhoid outbreaks, occur.

#### *Isolation.*

The extent of hospital provision for the treatment of scarlet fever varies greatly in different countries. In England and several other countries the majority of patients are so treated, and apparently parents prefer that it should be so. In Italy two-thirds of the patients are treated at home. In Bulgaria hospital isolation is not considered essential. In Greece lack of transport facilities makes it almost impossible. In countries where scarlet fever has not caused much concern it may be assumed that no special hospital arrangements are necessary. It is interesting to remember that during the war, when there was shortage of hospital accommodation, the Ministry of Health asked medical practitioners to send only severe cases into the Metropolitan Asylums Board hospitals; it is interesting also to note that in Holland, during epidemic times, only grave cases are admitted to hospital. In Norway slight cases, both in towns and villages, are now treated at home.

#### *Disinfection.*

Disinfection in scarlet fever may be considered under two headings. In the first place, there is "bedside" disinfection, the object in view being the destruction of germs as they are produced by the patient. This system is based on the view that only the patient and his recently soiled clothes, food vessels, etc., are infectious. In some countries the opinion is gaining ground that this is the only form of disinfection which need be carried out. The efficacy of "terminal" disinfection is gradually coming to be held in doubt. Thus in Norway fumigation is not officially recommended, but is carried out if desired; and although bedclothes and underclothing are boiled, and steaming is carried on in most cities, Dr. Karlstroen remarks that "if the disease steadily declines in malignancy, and if ear and secondary complications cease altogether, we must weigh earnestly the possibility of dispensing with isolation and disinfection." In the United States particular attention is given to mechanical cleansing and laundering, boiling and burning. Surface disinfection of the sick-room with formaldehyde is regarded as relatively unimportant and, indeed, unnecessary. In Denmark disinfection is gradually being given up in many places, especially when the patient has been removed to hospital. In Holland opinions differ: in some cities it is only carried out by request and in order not to shake the public belief in the infectiousness of scarlet fever.

The quarantine period for patients in the United States is from four to six weeks, but differs in different States. Four weeks is the minimum period in Australia and Italy; five weeks in Holland, and six weeks in Stockholm. In several countries desquamation is still taken as a guide to freedom from infection; but in Norway peeling of the feet is disregarded. In Sweden any peeling is disregarded after

six weeks. In Holland there is an opinion that late peeling is innocuous. In Melbourne patients are only passed for discharge when they are free from haemolytic streptococci in the nose and throat, and from any streptococci which prove very fatal to guinea-pigs. The date of return to school varies in different countries from seven to twenty-one days after discharge from hospital or "after all danger is considered to be over." Dr. Parsons's report embodies a long review of the "Dick" test, concluding with the opinion of Dr. King in America that, while many American physicians consider that the antitoxic serum should always be used in severe cases for curative purposes, the time has not yet arrived to report definitely about the value of the toxin for diagnostic and prophylactic purposes.

#### *Conclusions.*

The report of Dr. Parsons and the other matter contained in the *Bulletin* of the Office International d'Hygiène Publique are of great interest, and serve to show the value of Governmental inquiry in some forms of research. For it is doubtful whether any private scientist could have succeeded in obtaining from thirty countries such answers as the Office has received to its questionnaire. At the same time, whatever may be the theoretical value of the accumulation of such data, the Governments concerned ought to bear in mind the more practical point—whether the information gained can be used to lighten the burdens imposed on their subjects and to economize their countries' resources. Such, we gather, was to some extent the object of the Ministry of Health when its representative, Sir George Buchanan, proposed the inquiry. Dr. Parsons, in the course of his report, states that the chief reason for the inquiry by the Ministry of Health into the present position of scarlet fever in England and Wales was the fact that the morbidity rate shows little sign of decline, although in many great cities the proportion of children of susceptible age is getting less and less. Sir George Buchanan, on the other hand, in his introduction to the report, states that in Great Britain it is felt necessary to revise the traditional system of hospital isolation in the treatment of scarlet fever, in order to set free beds for other diseases, such as measles. For this reason he regards the evidence from other countries as to isolation as being of the greatest value.

The facts seem to be as follows. Before 1875 scarlet fever was a grave disease, with a heavy mortality among children and a tendency to permanent sequelae among the survivors. Partly owing to the mental impression made by the former gravity of scarlet fever an elaborate and costly system of control was developed. This system involved the country in the cost of notification, of health inspectors, of disinfection, and of hospitals mainly for scarlet fever cases; but the evidence that these measures have controlled the disease is inconclusive. The gravity of scarlet fever had already begun to decrease, though the number of cases remained, and still remains, at much the same proportion to the population. Experience during the war showed that not much harm was done by leaving milder cases to be treated in their own homes. Finally, the experience of various countries throws doubt on the value of many of the original ideas for controlling the disease, brings in question the necessity of disinfecting the patient's room and the importance of desquamation, and casts doubt on the doctrine that infection could be spread by packing up portions of the patient's scales in his letters.

Unfortunately it does not seem to have been a part of the functions of the Office International d'Hygiène Publique to formulate any conclusions from the facts and opinions which it has collected. We look forward, however, to hearing more on the matter from the Ministry of Health. We may remind our readers that there are at present about thirty diseases on the notifiable list. The report before us is evidence of the value of the inclusion of scarlet fever in the original list of nine notifiable diseases. We hardly like to suggest that possibly that inclusion has served its turn; but the report does suggest that perhaps an occasional overhaul of the list of notifiable diseases might lead to some revision.

## Nova et Vetera.

## BILLS OF MORTALITY.

For three hundred years the only official statistics of life and death in the metropolis were to be found in the Bills of Mortality of the City of London. The Plague was probably the cause of their institution. There had been severe epidemics of this disease in the years 1513, 1516, and 1518, and in 1528 there were not wanting signs of its return, which induced King Henry VIII and his advisers to require of the Lord Mayor from time to time a statement of the weekly mortality in and around the city.

Dr. Creighton, in his *History of Epidemics in Britain*, states that "on the 20th" (October, 1532) "Audely the Lord Chancellor writes that many die of the plague, the sergeants in Fleet Street have left in consequence, the Inner Temple has broken commons, the lawyers being in great fear. The Council have commanded the mayor to certify how many have died of the plague. That is the first known reference to the London Bills of Mortality." But Dr. Creighton has brought to notice from the Record Office a return made by the Lord Mayor in 1528. This consists of a bald list of burials, parish by parish, under two headings, one being "of the plague" and the other "not of the plague." It is probable that at first these Bills were only returned in years of epidemic disease, but a hundred years later they had become established as weekly and annual records. Parish registers of births, marriages, and deaths were instituted throughout England in 1539, but at first they were very irregularly kept, although there were and are remarkable exceptions.

From the bald statement of plague and not-plague deaths in 1528 the weekly and annual Bills of Mortality had grown into rather elaborate documents a hundred years later and were rendered in a form which was kept up until a more accurate method of recording vital statistics was introduced less than a century ago. In the *London Medical Gazette* for February 20th, 1836, there appeared the "Weekly account of Burials," dated February 16th. The last of the Annual Bills appears in this volume of the *Gazette*, for the Act of Parliament enacting the registration of births and deaths was passed in 1836, and the Registrar-General's functions began in 1837. So well established had the term "Bills of Mortality" become that it was used as a topographical term signifying London and suburbs. Thus Thackeray in the *Newcomes* (1854) wrote of Barnes Newcome: "In a word, he was as scrupulously whited as any sepulchre in the whole bills of mortality."

There is no complete series extant of the early Bills of Mortality, but a good many specimens are preserved in the Guildhall Library, and facsimiles were printed by the father of vital statistics, John Graunt, F.R.S., Captain of Trainbands and Haberdasher, in his book "Natural and Political Observations mentioned in a following Index, and made upon the Bills of Mortality, etc., etc.," of which the *Epistle Dedicatory* is dated 1662, although it was not published until 1665. His account of the way in which the statistics were made and collected is worth quoting:

"We have hitherto described the several steps whereby the bills of mortality are come up to their present state: we come next to show how they are made and composed, which is in this manner, viz., when anyone dies, then either by tolling or ringing of a bell, or by bespeaking of a grave of the sexion, the same is known to the searchers, corresponding with the said sexion. The searchers hereupon (who are ancient matrons, sworn to their office) repair to the place where the dead corps lies, and by view of the same, and by other enquiries, they examine by what disease or casualty the corps died.

"Hereupon they make their report to the Parish Clerk and he, every Tuesday night, carries in an account of all the burials and christenings happening that week to the clerk of the hall. On Wednesday the general account is made up and printed, and on Thursday published and dispersed to the several families who will pay four shillings per annum for them."

Speaking of venereal disease, he says:

"In the next place, it shall be examined under what name or casualty such as die of these diseases are brought in: I say, under the consumption; for as much as all dying thereof die so emaciated and lean (their ulcers disappearing upon death) that the old women searchers, after the mist of a cup of ale, and the bribe of a two groat fee, instead of one, given them, cannot tell whether this

emaciation or leanness were from a phthisis, or from an hectic fever, atrophy, etc., or from an infection of the spermatic parts, etc."

It is evident that statistics thus compiled were hardly likely to be accurate, even if they were honest, of which there must be a grave doubt, for the searchers, who were only allowed a fee of one groat (fourpence) per corpse, must often have been tempted, as Graunt says, to conceal the real cause of death when it was known; while their ignorance and the fact that they did not see the patients alive prevented their making a satisfactory diagnosis. No doubt many deaths from epidemic and contagious disease were concealed by such means.

From December, 1624, to December, 1625, the Bills dealt with 97 parishes within the walls, 16 parishes without the walls, standing part in the liberties and part without in Middlesex and Surrey; and at the Pest House and 9 out parishes (including St. Giles-in-the-Fields, Whitechapel, St. Martin's-in-the-Fields, etc.). In the year 1625 the city of Westminster was added, and in the year 1660, just before Graunt's book appeared, Islington, Lambeth, Stepney, Newington, Hackney, and Redriff (that is, Rotherhithe) were included in the Bills. Graunt refers to the crowded state of the city, and his complaint about the traffic has a very modern ring.

"But now both these Gates" (Newgate and Ludgate), he wrote, "are not sufficient for the communication between the Walled City, and its enlarged Western Suburbs, as daily appears by the intolerable stops and embarras of Coaches near both these gates, especially Ludgate."

The complete Bill for the year 1629 is headed as follows: "A General Bill for the present yeere, ending the 17th of December, 1628, according to the report made to the King's most excellent Ma<sup>ty</sup> by the Company of Parish Clerks of London," etc. The total burials were 8,771, being 4,663 males and 4,103 females. "Whereof of the Plague 0." This was not a plague year.

The causes of death were set forth under sixty headings as follows:

## The Diseases and Casualties.

Abortire	33	Jawfalne	10
Aged	509	Killed by severall acci-	54
Ague	22	dents	16
Appoplexy and Meagrome	32	King's Evil	2
Blasted and Plannet	13	Leprosia	1
Bloody Flux and Scow-		Lethargie	24
ring Flux	449	Livergrowne	6
Burst	2	Lunaticke	8
Cancer and Wolfe	3	Made away themselves	42
Canker	6	Measles	1
Childbed	150	Mother	17
Chrissome and Infants	2,596	Palsie	16
Collicke Stone and		Plurisie and Spleene	32
Strangury	48	Purples and Spotted	1
Consumption and Cough	1,827	Feaver	41
Convulsion	52	Quinsie	3
Could	10	Rising of the Lights	12
Dead in the streete and		Scalded	63
fields	18	Scurvey	23
Dropsie and Swelling	227	Sores, Broke and Bruised	23
Drowned	43	Limbs	15
Executed	19	Sore Mouth and Thrush	4
Falling Sickness	3	Starved at Nurse	450
Fistula	924	Stillborne	63
Fevers	11	Suddenly	63
Flocks and Smallpox	72	Surfet	5
French Pox	17	Swine Pox	440
Frets	1	Teeth	8
Gangrene	6	Timpanie	1
Goutte	2	Tissicke	1
Griefe	18	Vomiting	19
Imposthume	58	Wormes	
Jaundis	47		
Buried:			
Males	4,663		
Females	4,103		
In all	8,771		

Whereof of the Plague 0.

This list of diseases hardly corresponds with the *Nomenclature of Diseases* of the Royal College of Physicians, and some of the headings may require explanation. For instance, "Meagrome," which is bracketed with "Appoplexy," is, no doubt a form of meningitis, a corruption of migraine. "The Meagrimis" was loosely used for various affections of the nervous system. "Blast" is defined by Halliwell (*A Dictionary of Archaic and Provincial Words*, tenth edition, 1887) as an inflammation or wound, an ailment attributed to the action of witchcraft (Somerset); also, to

cast the eyes up in astonishment (Devon); and planet-struck, paralytic (Linc.); "a blasting, or planetstreaking" (Florio). The same authority thus explains "Chrissome": "Chrissoms in the Bills of Mortality are such children as die within the month of birth, because during that time they are to wear the chrissom-cloth," which is "the white cloth which is set by the minister of baptism upon the head of the child newly anointed with chrism after his baptism." Burst is inexplicable. Wolfe is of course the English of lupus. The meaning of "Frets" is obscure.

"Jawfalne" or Jawfallen is not to be found in any of the dictionaries consulted, but Dr. John E. Morgan<sup>2</sup> of Manchester, writing in 1862, quoted Dr. Morrison, who practised for eight years in Demerara, as stating that trismus nascentium was there called "jawfall." This name seems at first sight to be chosen on the principle of *lucus a non lucendo*, but some writers describe an obvious relaxation and dropping of the jaw as characteristic of the last stage of trismus.

"Livergrowne," which Captain Graunt connected with rickets, means enlargement of the liver. "Mother" is of course hysteria. "Tissicke" is phthisis. In the Bills for some other years we find as causes of death Headmouldshot, Horseshoehead, Mouldfallen, and Flocks-and-smallpox. The first is explained in the *Lexicon Physico-Medicum* of Dr. John Quincy (tenth edition, 1787) thus: "This is when the sutures of the skull, generally the coronal, ride; that is, have their edges shot over one another; which is frequent in infants, and occasions convulsions and death." A similar pathological theory seems to have survived for many years, for Dr. Marion Sims<sup>3</sup> in 1846 and 1848 attributed trismus nascentium to displacement of the occipital bone, and in 1884 Dr. Hartigan<sup>4</sup> of Washington, D.C., strongly supported him, quoting many authorities and cases.

Quincy gives "Horseshoehead" as "a disease in infants, in which the sutures of the skull are too open, the opposite to Headmouldshot." According to Nares's *Glossary* of 1859 "Flocks" means sediment. The relation of this word to small-pox is obscure.

"Mouldfallen" seems to mean depression of the fontanelles. "Rising of the Lights" is still used in some places for emphysema, but it is difficult to say why cases of this condition should in some Bills be bracketed with "Mother." The two together were credited with 84 burials in 1634, in which year rickets first appears as a cause of death (14 cases). "Overlaid and starved at Nurse" and "Greco sickness" need no explanation. "Greefe" and "Frighted" are less obvious as causes of death. There were 43 burials of drowned persons in 1629, and in 1653 fifteen persons hanged themselves. What shares religion, politics, and poverty had in causing these suicides the Bills say not.

It is evident that these records are in general very untrustworthy as indications of the diseases which caused death, but one startling inference can be drawn from them—namely, the enormous infantile mortality in London in those days. We may safely conclude that the following headings can only refer to children: Abortive, Convulsions, Starved at Nurse, Teeth, Chrissoms and Infants, and Sore Mouth and Thrush. By adding these together for the year 1629, the total of 3,600 infantile deaths is obtained, out of a total at all ages of 8,771. Probably even this is too low, for there were 449 deaths from "Bloody flux, scowring and flux," of which some surely should belong properly to the category of infantile diarrhoea. Moreover, there are no deaths from respiratory diseases among the 3,600.

Pepys has several references to Graunt or Graunt in his *Diary*. He notes that on March 24th, 1662, while his wife was shopping, he went "To Westminster Hall, and there bought Mr. Grant's book of Observations upon the weekly bills of mortality, which appears to me, upon first sight, to be very pretty." On July 25th, 1665: "This day my Lord Brunker did give me Mr. Grant's book upon the Bills of Mortality, new printed and enlarged." Pepys was not consistent in the spelling of names, but the accepted form is Brouncker. He was William, second Viscount, "a respectable mathematician," who was made M.D. at Oxford in 1647, and was the first President of the Royal Society, of which Pepys was elected a Fellow on February 15th, 1665.

Graunt had been elected three years before, and Whentley, in his edition of the *Diary*, recalls in a footnote that he was recommended by the King (Charles II), and quotes from Sprat's history of the Society that "his Majesty gave this particular charge to his Society, that if they found any more such tradesmen, they should be sure to admit them all, without any more ado." Graunt was a haberdasher in Birch Lane in the City of London, where he was born in 1620 and where he died in 1674. Pepys, on April 20th, 1663, called on Graunt and "there saw his prints, which he showed me, and indeed are the best collection of any things almost that ever I saw, there being the prints of most of the greatest houses, churches, and antiquities in Italy and France and brave cuts."

The Company of Parish Clerks, which was for so long responsible for the preparation and printing of the Bills of Mortality, still exists and has its Hall in Silver Street, near Wood Street, in the City. Originally the clerks were singers, whose functions were rather like those of vicars choral in a cathedral. The company was licensed as a guild in the year 1233 as the Fraternity of St. Nicholas. Their latest charter, granted by James I in 1611, directs that only such shall be admitted to be clerks as are "able to sing the psalms of David and to write." Charles I granted the company leave to have and use a printing press for the production of copies of those Bills of Mortality which have been the subject of this paper.

## REFERENCES.

- <sup>1</sup> *A History of Epidemics in Britain from A.D. 664 to the Extinction of the Plague*. Cambridge, 1891.
- <sup>2</sup> *The Diseases of St. Kilda*, by John E. Morgan, M.A., M.B., *British and Foreign Medical Review*, January, 1862, p. 176.
- <sup>3</sup> *Trismus Nascentium, its Pathology and Treatment*, by J. Marion Sims, M.D. *Amer. Journ. Med. Sci.*, 1884, vol. xi, p. 263, 1886; also vol. xvi, pp. 59 and 354, 1848.
- <sup>4</sup> *Trismus Nascentium*, by J. F. Hartigan, M.D., *ibid.*, vol. lxxxvii, p. 84, 1884.

E. M. L.

## ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the Committee sixty-four cases were considered and £765 15s. 6d. voted to fifty-one applicants. The following is a summary of some of the cases relieved.

L.R.C.P.Ed., aged 73, who practised until 1924. Since lived with aged mother until her death last year. Has been offered a home with a married daughter, but must contribute towards his maintenance. Only income old age pension. Voted £40 in twelve monthly instalments.

Daughter, aged 64, of M.R.C.S. who died in 1859. Now lives in an almshouse with an allowance of £13 a year; only other income £25. Friends gave £2. Voted £20 in twelve monthly instalments.

Widow, aged 62, of M.R.C.S. who died in 1923. Owing to ill health quite unable to earn her own living and is entirely dependent on her mother, aged 83, whose only income is a small army pension. Voted £30 in twelve monthly instalments.

Widow, aged 59, of M.B.Glas. who died this year. Only income £50 per annum. Son, aged 22, is apprenticed to engineering and has two and a half years to serve; he receives a guinea a week and she has to supplement this to pay his board and lodging. Premises have been secured to enable her to set up a tea-shop, and on the strong recommendation of the Fund's visitor a grant was made of £20 in twelve monthly instalments, also £10 to help furnish the premises.

Widow, aged 58, of M.R.C.S. who died suddenly this year. Dependent on two daughters, bank clerks. Only income £34 per annum. Rent of flat taken on lease £125 per annum. Asks for help for boy, aged 15, who has a scholarship at a public school. Voted £10 in two instalments.

Widow, aged 68, of M.D. who died in 1919. Has a great difficulty in obtaining work on account of a mentally deficient daughter, aged 26, who needs care. They are now dependent on a married son and his wife, but the son is now out of work and his wife's earnings are their only support. Arrangements are in hand to secure a home for the daughter and £26 in twelve monthly instalments was voted to the applicant.

Widow, aged 38, of M.R.C.S.Ed. who died last year. When estate is realized there will be an income of about £45 per annum. Applicant asks help with daughter's school outfit and expenses. Voted £20.

Three children of M.D.Ed. who died in 1916. Only income £15 per annum, and uncles contribute £100 per annum. They live with a grandmother and an aunt. The Fund has helped with the maintenance to the extent of £93 during the last eight years, and voted a further £18.

Daughter, aged 67, of M.R.C.S. who died in 1885. Applicant is one of a family of eleven children and supported herself until 1919, when, owing to the war, her employers closed down. Unable to obtain another post she now lives with a married sister and helps her in the house, but the sister can ill afford to keep her. Relieved three times. Total £54, and now voted £26 in twelve instalments.

M.D.Ed., aged 72, is bedridden and supported by his brothers, but they are unable to do more, and the Fund was approached for a grant for pocket money. In 1925 the Fund voted £17, and now a grant of £18 in twelve instalments has been made.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., M.S., at 11, Chandos Street, London, W.1.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 58, Great Marlborough Street, W.1.

# British Medical Journal.

SATURDAY, OCTOBER 9TH, 1926.

## APHASIA AND KINDRED DISORDERS OF SPEECH.

ANOTHER chapter of profound interest and importance has been added to the long history of the study of aphasia by the publication in complete form of the record of Dr. Henry Head's researches. The work is published in two handsome volumes of small quarto containing together about 1,000 pages, under the title of *Aphasia and Kindred Disorders of Speech*.<sup>1</sup> The substance of Dr. Head's views has already been made known in his *Linacre and Hughlings Jackson Lectures* in 1920 (published in *Brain*) and in the issue of *Brain* for November, 1923. In the present volumes his observations and conclusions are described in fuller detail, and are brought into sequence with the views of his many predecessors in this complex field of study.

As an introduction to the description of his own work, Dr. Head devotes a considerable proportion of his first volume to an historical review of great interest. He relates how Gall was the first to attempt to subdivide the brain into a number of separate "organs," and to place, though on fantastic grounds, the "faculty" for verbal memory in the frontal lobes. The same hypothesis was maintained by Bouillard, though he studied the phenomena of speech not so much as an intellectual "faculty," but as a form of co-ordinated movement, and he set out to prove from clinical and post-mortem observations that the tongue and other correlated organs can be paralysed for the act of speech while capable of all movements not associated with speech. Bouillard recognized that speech might be lost either from loss of control over the movements of speech or from loss of the memory of words, and he believed that both these aspects of speech were dependent on the frontal lobes of the brain for their fulfilment. He was followed by Broca, whose brilliant clinical and anatomical researches led him to implicate the third frontal convolution as the seat of the faculty of articulated speech. Broca divided clearly affections of speech of central origin into "aphemia" and "amnesia verbalis." The aphemic patient is speechless except for a few monosyllables, or for exclamations uttered under the stress of emotion; he can, however, understand what is said to him, while unable to repeat words. Such a patient is the motor aphasic of later writers. The sufferer from verbal amnesia, on the other hand, though he can pronounce words, cannot appreciate the meaning of words—that is, he has lost the special memory of both spoken and written words, and consequently cannot use words to express his ideas; he is suffering from what others have called "sensory aphasia." Broca realized that many cases did not fall clearly into the category of either "aphemia" or "amnesia verbalis," but he was emphatic that pure aphemia was dependent on destruction of the third frontal convolution on the left side. Wernicke carried the conception of sensory

aphasia further, and postulated the presence of an auditory centre for word memories in the first temporal convolution. A lesion of this centre would produce loss of "sound-images" and so lead to inability to understand spoken words. Bastian was the first to divide sensory aphasia into two forms, subsequently called "word-deafness" and "word-blindness."

Then in 1906 Pierre Marie attacked the whole doctrine of motor and sensory aphasia, denying to the third frontal convolution any direct bearing on speech. In his view there was only one form of true aphasia—namely, sensory aphasia produced by a lesion of Wernicke's zone. Broca's aphasia he regarded as sensory aphasia plus "anarthria," which was a defect of the higher articulatory aspects of speech and was dependent on a lesion of the "lenticular zone," a wide area including the internal capsule and the lenticular and caudate nuclei. Further, sensory aphasia for him consisted essentially in a loss of intellectual capacity of which the defect of speech was but a part. Perhaps the most notable contribution to the whole subject in recent years is the laborious and accurate analysis by Henschen of 1,337 cases of speech disorder, some observed personally, but for the most part carefully abstracted from the literature. His conclusions form the most advanced argument for the anatomical localization of the mechanisms underlying normal speech.

Dr. Head approached the study of the subject primarily from the psychological aspect—that is, he set out to study the forms assumed clinically by aphasia and kindred disorders of speech without reference in the first instance to anatomical and physiological considerations. He was much influenced in the course of his work by the teachings of Hughlings Jackson, with whose views he found his own conclusions to be closely in accordance. He devised a new series of tests designed to reveal the nature of the disorders of speech, and these tests he gradually formulated during the years preceding the great war. The war presented an unexampled opportunity for the observation of cases of head injury in otherwise healthy young men, a group of cases obviously superior as subjects of study to the elderly arterio-sclerotic patients more commonly suffering from these disorders in civil life.

Following this historical review comes a detailed account of his investigation of the cases and the conclusions to which he was led. The tests are designed to demonstrate, not only defects of comprehension or execution of speech, but also—and here they differ from most previous tests—degrees of such defects. For this reason the series of tests is graduated in relation to the complexity of the task which the patient is called upon to perform, and some of them extend beyond the boundaries of what is ordinarily understood by speech. To understand them it is essential to study Dr. Head's book in detail, and we can here only indicate briefly his main conclusions. They are very destructive to the older theories with which clinicians are familiar, and to which we have referred above.

For Dr. Head such terms as "aphasia" and "amnesia" are descriptive merely of abnormal forms of behaviour, and there are no "centres" for the use of language. Disorders of speech, he says, cannot be classified as affections of speaking, reading, and writing—a conclusion which will receive general assent. Further, "these disorders of language cannot be classified as motor or sensory," even in the widest sense of executive and receptive. It is here that Dr. Head is chiefly in conflict with the more conventional

<sup>1</sup> *Aphasia and Kindred Disorders of Speech*. By Henry Head, M.D., LL.D., F.R.S. In two volumes. Cambridge: The University Press, 1926. (Ct. 4s.; Vol. I, pp. xiv + 519; Vol. II, pp. xxiii + 430. 6s. net the two volumes.)



conceptions, and his view does not seem to have found general acceptance by neurologists since it was first put forward in 1920. The clinician is prepared to realize that, as Dr. Head's work shows, the defects manifested as a result of disease do not necessarily indicate the elements of which normal speech is composed; also that pure forms of "motor," "auditory," or "visual" aphasia are rare or possibly non-existent. But he will be reluctant to abandon these terms as indicating broadly certain clinical types of speech affection which have a localizing value in cerebral disease. Dr. Head classifies these affections on a psychological basis into verbal, syntactical, nominal, and semantic aphasia; for the full meaning of these terms his work must be consulted. He insists that in disease speech is affected as a whole and is not divided up into the elements of which it is composed. Further, in a patient suffering from aphasia in any form, the capacity to carry out a task varies directly with its complexity, or what Hughlings Jackson calls its "propositional" value.

As a pure study of speech affections Dr. Head's work is of the deepest interest and value, and the publication of these volumes marks an important event in the evolution of our knowledge of cerebral function. Dr. Head says the results he has obtained "are of little direct practical value to the physician." This may be true, and it seems unlikely that his nomenclature of aphasia will become common currency; but everyone interested in cerebral function must study these volumes, and cannot fail to obtain much fresh light and stimulus. In particular the clinician will be led to avoid the mechanistic conceptions which have prevailed too much in the past.

### THE SCIENCE OF CLINICAL MEDICINE.

THE custom of delivering addresses to the newly entered students of the medical schools at the beginning of each winter session is at least as old as the days of Abernethy, whose discouraging greeting has been so often quoted. Of late years the custom has been discontinued at some schools, but as long as distinguished members of the profession are prepared to deliver such addresses as we print in this issue, so long will the custom survive. The occasion affords an opportunity, not only for the offer of good advice to the student, but also of placing before the lay public some facts concerning the profession, its difficulties and its aspirations, of which the public are for the most part woefully ignorant. This year we are able to congratulate ourselves on the circumstance that those two great twin brethren of medicine, the Regius Professors in the two ancient English universities, have given us the benefit of their wisdom and their experience.

In the address on "The science of clinical medicine" which Sir Archibald Garrod delivered at the Westminster Hospital he did not seek refuge in side issues, or attempt to evade the difficulties of his task under cover of a cloud of smooth generalities, but boldly faced one of the most important problems in the conduct of medical practice nowadays. In claiming that clinical medicine is as much a science as bacteriology or biochemistry he will doubtless have the approval of most, if not all, of our readers, as well as of a recent President of the Royal Society. In recommending the student to turn his attention to the laboratory Sir Archibald Garrod gave advice which should be valued and acted upon. The student cannot know too much of the ancillary sciences and studies upon which medical practice rests, but all the know-

ledge he may acquire will be of little use to him in the absence of that clinical experience which is required for successful diagnosis and treatment.

The highly technical skill needed in many laboratory tests and the time these occupy render a certain division of labour necessary in medicine, and some students are tempted by the precision and definition of the processes of investigation by means of the microscope, the test tube, and the culture medium to devote their whole attention to these instead of entering practice and coming into contact with what has been said to be the proper study of mankind. Though it must be admitted that some of the work of a busy practitioner may be tiresome, yet the bacteriologist in his laboratory also finds the repeated routine of examinations of blood and swabs and secretions dull and uninspiring, and his boredom is unrelieved by the contact with the humours, the weaknesses, and the heroism of his fellow creatures, which are continually displayed before the clinician.

It would be a great calamity if the view were to prevail that only the work of the laboratory and the study were worthy of the best intellects. Some time ago certain enthusiasts loudly proclaimed that there was no longer any need of the clinician, except as a humble collector of specimens, upon which the pathologist was to pronounce a diagnosis and prescribe the appropriate serum, antitoxin, or what not. In short, medicine was to be conducted on the principle of "You press the button and we do the rest." As Sir Archibald said, "the mere fact that a piece of work is done in a laboratory does not make it a scientific research," and, on the other hand, many of the processes by which an exact diagnosis is reached at the bedside are truly scientific.

Sir Humphry Rolleston, in his address at King's College Hospital, devoted himself more to the consideration of the careers open to qualified men, and of the course of study necessary to fit them for each, but, like his colleague and friend, he referred to the temptations to confine themselves to experimental and research work which are offered to those suitably gifted. Not only does the laboratory exercise a potent attraction on the lover of research, but the public health service also calls to those who would prefer to serve a public body and keep regular hours than be at the beck and call of all who seek their services and on duty all round the clock. To such as these Sir Humphry Rolleston pointed out how large a part is taken by general practitioners in the performance of public health duties, and stated, on the authority of Sir George Newman, that of the 1,450 medical officers of health 1,100, or over 75 per cent., are engaged in general practice. Whatever department of medicine, surgery, or pathology may be the ultimate destination of the student, he will do well when qualified to gain full experience of clinical work, especially if he aims at the public health service, in which intimate knowledge of the duties and difficulties of the practitioner, and a sympathetic consideration of them, are so important in the interest of the smooth working of hygienic regulations and their consequent efficiency. A common training as far as possible, and common experience among the sick, give the best guarantee of mutual understanding and help between the clinician, the medical officer of health, and the research worker or pathologist.

To those who think that the day of fruitful research by the practitioner outside the laboratory is past, the examples quoted by Sir Archibald Garrod should give cause for reflection. Probably the colleagues of Addison had thought that there was little more to be

found out about exhausting disease or pigmentation of the skin. Yet the connexion between symptoms and post-mortem appearances was apparent to him, and when pointed out was recognized by all. William Jenner's work on typhoid fever was equally remarkable and convincing. Both these investigators made their discoveries in the course of medical practice, and there seems no reason to despair of future discoveries at the bedside, as was shown by the late Sir James Mackenzie, who while engaged in busy practice in an industrial town found time and opportunity to use his clinical acumen in the study of heart disease, and almost revolutionized our outlook on these maladies, and especially on their prognosis, a knowledge of which is of such vital importance to the patient and his relations. Such opportunities will no doubt be less frequent than in the past, but, as the Regius Professor at Oxford reminds us in a striking simile, while it is true that the alluvial gold may have been washed out by the primitive methods of the past, yet the modern clinician is much better equipped for research than his medical forefathers, and may yet discover deep-lying deposits of precious metals. He concluded his address with a most apposite quotation from Ecclesiasticus. May we offer him in return a quotation from the same ancient fountain of wisdom? "For of the most High cometh healing, and he shall receive honour of the king. The skill of the physician shall lift up his head: and in the sight of great men he shall be in admiration" (Ecclesiasticus, xxxviii, 2-3).

#### TAXATION OF SCIENTIFIC INSTITUTIONS.

In a paper on the taxation of scientific institutions contributed to the August issue of the *Journal of the British Science Guild*, Colonel W. A. J. O'Meara has collected together many judicial decisions in a manner which throws much light on this important but little known subject. He points out that not only income tax, but also local rates and corporation duty (the tax levied on nuddying corporations as a set-off to their escape from death duties) may be affected. At the present level of rates and taxes the title to exemption is one of great value. Unfortunately, as the list of cases which have been before the courts shows only too well, that title is hedged about by stringent conditions, and the central and local administrations are not likely to acquiesce in any claim unless it is technically flawless. The local rating exemption clause, in the statute of 1843, is too discursive for citation, but the income-tax clause will serve as typical. Rule VI, Schedule A, provides for an allowance of "the amount of the tax charged on any building being the property of any literary or scientific institution and used solely for the purposes of that institution, in which no payment is made or demanded for any instruction there afforded by lectures or otherwise. . . ." The stringent nature of the conditions attaching to the exemption are fairly apparent, but as an illustration the case of the Royal College of Surgeons of Edinburgh may be quoted. On an appeal in 1892 the court held that, as the main objects were professional, although it promoted the advancement of science incidentally, the college was not a "scientific institution" for the purpose of the rule. In that case Lord McLaren suggested that the objects and practices of such an institution would include meeting for the discussion of subjects of science, publication of papers, and the making of grants to individuals who undertake scientific research, but he distinguished such a hypothetical institution from the one with which he was dealing. The claim in 1857 of the Royal Medical and Chirurgical

Society for exemption from rates met with a like fate, though for a different reason; in that case "the court held that the society was one established for the purposes of science exclusively, but as part of its premises were not exclusively occupied for the purposes of the society the exemption as claimed could not be supported." In 1899 the Royal College of Surgeons of England claimed exemption from corporation duty, but was unsuccessful. The fact is that exempting legislation is too frequently designed on what we may perhaps call the neck-or-nothing basis. If premises are used "solely" as scientific institutions, or if income is held on trust and is applicable to charitable purposes "only," certain allowances are given in respect of the entire premises or the whole of the income so applied; but if, say, 10 per cent. of the premises or income is applied to other purposes, however praiseworthy, the remaining 90 per cent. has to bear its full burden of taxation. We can find no justification for such a distinction other than that founded on the administrative simplicity of the present system. Scientific research and discussion must surely be more beneficial to the community when linked with practice by being organized and diffused through the agency of a professional association; and yet it is precisely this living connexion of theory with practice which seems to lead to the refusal of claims to relief from taxation. Colonel O'Meara fears that a definition of the expression "charitable purposes" by statute, as proposed by the Chancellor of the Exchequer, may curtail the existing allowances. It is surely not too much to hope that, however narrow the gate of exemption may be made, all institutional income devoted to scientific or charitable purposes will be allowed to pass through, whether it represents the whole or only a part of the total income of the society. If that change were made any possible tightening up of the statutory definition might be viewed with equanimity.

#### THROUGH OTHER EYES.

A TRIBUTE to the success of the Annual Meeting at Nottingham, and an appreciation of the present standing and aims of the British Medical Association appeared in the issue of the *Journal de Médecine de Bordeaux* dated September 10th-25th. It is by Dr. René Cruchet, professor of pathology and general therapeutics in the University of Bordeaux, who made a communication to the Section of Medicine at Nottingham on his experimental study of blood transfusion in man and animals; this paper we shall publish in a later issue with the proceedings of the second day of the Section. He took advantage of his brief stay in England to pay a visit to the house of the Association in Tavistock Square, and his abiding interest in research led him to investigate also what might have been called the circulatory system of the Association, were it not that the title of his article in our *Bordeaux* contemporary is "*Affaire de mentalité*." He recalls with a touch of sadness the fact that societies for medical defence and co-operation were in existence in France at the time when the British Medical Association was born, but, though these French societies united in 1841, the resulting organization has been gradually failing in strength and in its representative character. This decline he attributes to its fixation to a tradition, and the consequent failure to develop conformably with its changing environment: a failure especially regrettable now that individualism in medicine is in danger of being lost in syndicalism. Viewed through his eyes the happier lot of the British Medical Association is due to our recognizing that what we may lack individually, as compared with our French colleagues, has been more than compensated by our greater genius for developing *esprit de corps* and *esprit de suite*. So, while in France readjustment of

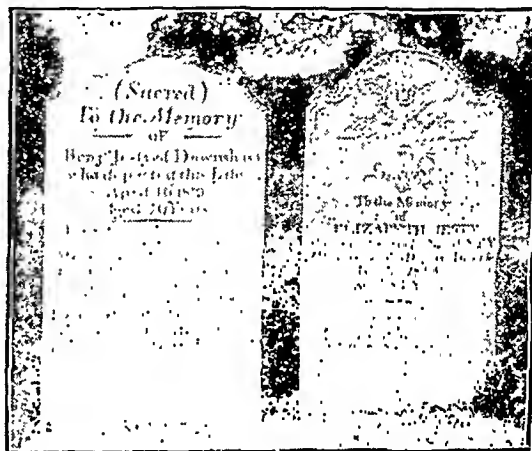
the profession to new demands takes the form of short jumps, there is, he finds, in England a gradual daily adaptation and a patient unwearying struggle, due (to use his own metaphor) to the existence of a frame which remains the same, while the picture it contains is retouched according to the needs of the time. To its service in this important respect he attributes the growth of the British Medical Association. Elsewhere in the same issue of our contemporary Professor Cruchet discourses at length upon the Nottingham meeting, and indicates the evidence for his belief that the Association truly represents the medical body in its relations to the community and to Parliament. Mr. Hogarth's Presidential Address particularly appealed to him, as did the way in which medico-political problems were considered. In acknowledging Professor Cruchet's warm congratulations it may be added that, besides the privilege of welcoming him personally in Nottingham and in London, we were also, as he suggests, conscious of the honour of receiving a representative of the renowned University of Bordeaux, whose past fame is being augmented in our day by the researches of its living members.

#### THE CHINA MEDICAL ASSOCIATION.

THE eighteenth biennial conference of the China Medical Association was held at Peking from August 31st to September 8th. This association, previously well known as the China Medical Missionary Association, has now widened its basis, and the reports of the various councils and committees submitted to the general meeting indicate the extent of the organizing and administrative work that is being undertaken. The previous conference in Hong-Kong, in the early part of 1925, adopted a new constitution which accompanied the alteration of name; it is stated that the changes then made have proved to be satisfactory, despite the fact that in the short period of rather over one year the association has been deprived of the services of Dr. S. Cochran, the president; Dr. W. C. Grosvenor, the vice-president; and Dr. E. M. Merrins, the editor of the *China Medical Journal*, which is the monthly periodical of the association. One committee has been engaged upon the proposed registration and grading of hospitals, and has attempted to define the minimum requirements for registration, including regulations dealing with the professional and non-professional staffs, the provision of suitable wards, operating theatres, pathological laboratories, dispensaries, and residential accommodation, together with the use of the hospital records prescribed by the association, or of approved equivalents. During the last five years the work of the association has received substantial financial support from the China Medical Board of the Rockefeller Foundation. The clinical side of the conference was divided into eleven sections, and abstracts of numerous papers there read were combined and published in a small pamphlet. Malaria was discussed by Dr. E. C. Faust, who dealt with its general prevalence; by Dr. K. H. Li, who defined the part to be played by mission hospitals in research, prophylaxis, and treatment; and by Drs. H. E. Meleney, C. U. Lee, and K. L. Chang, who described a preliminary survey of the distribution of amophelines in the neighbourhood of Peking. Reports of amoebic abscesses of the liver were given by Drs. A. I. Ludlow and G. W. Van Gorder. The subjects for discussion in the obstetrical and gynaecological section included eclampsia, contraception, ectopic endometrial tissue, and the use of the blood sedimentation test in the puerperium. The section of hygiene and public health considered the maternity problem in China, venereal diseases, public health, nursing, and child mortality. In connexion with the conference numerous excursions and entertainments were arranged.

#### BENJAMIN JESTY'S GRAVE.

THE Jenner Centenary Number of the *BRITISH MEDICAL JOURNAL*, published on May 23rd, 1896, besides much other historical matter, included a note on the precursors of Jenner. The milkmaids in Gloucestershire and elsewhere had found out for themselves that cow-pox was a safeguard against small-pox before the insight and patient labour of Jenner transformed a piece of folklore into a scientific truth and made the medical profession all over the world receive it as such. Nor was he the first to inoculate cow-pox with the object of giving protection against small-pox. The first vaccinations of which there is any record were performed by Benjamin Jesty, a farmer of Yetminster in Dorset, who in 1774 inoculated his wife and two sons, aged respectively 3 and 2 years. He himself had had cow-pox before by contagion from the cow. His vaccinations were successful, and his family remained proof against small-pox inoculation and contagion. Again, in 1791 Peter Plett, of Schönwaide in Holstein, successfully vaccinated some children. Neither Jesty nor Plett, however, seems to have followed up the matter; hence nothing came of their



happy thought. They had a glimpse of the truth, but they passed away and left no trace. It was on May 14th, 1796, that Jenner carried out his first inoculation with cow-pox. We have lately received from Dr. C. H. F. Johnston of Frome an interesting photograph, taken during his holiday this summer, of the tombstones of Jesty and his wife at Worth Matravers in Dorset. The inscription on Benjamin Jesty's tombstone runs as follows: "Sacred to the memory of Benjm. Jesty of Downshay, who departed this life, April 16th, 1816, aged 79 years. He was born at Yetminster in this county, and was an upright honest man, particularly noted for having been the first person (known) that introduced the cow-pox by inoculation, and who from his great strength of mind made the experiment from the cow on his wife and two sons in the year 1774." The other tombstone says that his wife Elizabeth died on January 8th, 1824, aged 84 years.

#### DIETETIC TREATMENT OF PERNICIOUS ANAEMIA.

WHEN there are many forms of treatment for a disease the results of any one are usually disappointing. Pernicious or Addisonian anaemia (as the Guy's school, who, following tradition, have, under the wise leadership of Dr. A. F. Hurst, done so much lately to advance our knowledge of the disease, piously prefer to call it) has apparently become much commoner; whereas chlorosis, in which the treatment by iron was so eminently successful, has become a much sought after clinical curiosity. Of the methods of

treatment in Addisonian anaemia arsenic and hydrochloric acid are recognized as the most successful, splenectomy, after a comparatively brief period, has largely dropped out, and transfusion is losing ground. Recently two papers have drawn attention to the importance of dietetic treatment, and certainly deserve attention, for the basis on which the recommendations are made does not run counter to the present conception of the importance of the absence of hydrochloric acid in the gastric juice. Minot and Murphy,<sup>1</sup> after summarizing the various dietetic methods of treatment in the past, such as high protein content, a restricted fat content, and a vegetable and fruitarian diet rich in iron, give an account of the treatment of forty-five patients on a diet with an abundance of food rich in iron and purine derivatives, and proteins, particularly liver, much fruit and fresh vegetables, and relatively low in fat. The special diet consists of calf's or cow's liver 250 grams or more, beef or mutton 120 grams or more, vegetables at least 300 grams, fruit 250 to 500 grams, cream and butter 40 grams, if desired an egg, and milk 240 grams, and potatoes or cereals to make up 2,000 to 3,000 calories. The rationale of the diet is discussed at some length. The value of liver in regenerating the blood has been shown experimentally by Whipple and Robschelt-Robbins, and the nutritional value of liver is the same as that of red bone marrow, which has been used therapeutically in the past. There is some evidence that fats increase intestinal putrefaction, and so are undesirable; the vegetable ration is recommended on account of its iron content, and the good effect of strawberries in sprue, a disease in some respects resembling Addisonian anaemia, is noted, but the question of vitamins is only just mentioned. Patients placed on this diet rapidly improved both as regards symptoms, except those with subacute combined degeneration of the cord, and as regards the blood; thus patients with an average red count of 1,470,000 before the diet was commenced showed an average of 3,400,000 after a month, and in twenty-seven instances in which the diet was continued from four to six months the count averaged 4,500,000. The young reticulated cells in the blood are temporarily increased, and the icterus index of the blood serum falls. It remains to be seen whether or not the remissions in these forty-five cases will last longer than in a control series. In a research based on experimental observations Koessler, Maurer, and Loughlin,<sup>2</sup> while accepting the influence of achlorhydria in favouring the formation of haemolytic, myelotoxic, and neurotoxic bodies, believe that these are only able to pass through the intestinal wall and do damage when the cells of the intestinal mucosa and perhaps of the liver are altered by a long-standing deficiency in vitamin A (and perhaps also of B and C) due to improper feeding. A condition similar to Addisonian anaemia was induced in rats by a diet deficient in vitamin A. The diet recommended for the treatment of Addisonian and aplastic anaemia in man is especially rich in vitamins A, B, and C, and should be ample and of high caloric value: milk 1,500 grams, cod-liver oil 20 grams, cream 100 grams, butter 60 grams, two or three eggs, and 100 grams each of oranges, tomatoes, lettuce, spinach, meat (liver, kidney, sweetbread, or brain), and bread. Of the meats, liver and kidney contain the largest amount of vitamins A and B, and probably also some vitamin C. The authors insist on the administration of hydrochloric acid in increasingly large amounts, and also of yeast. Comparison of this diet with that recommended by Minot and Murphy shows a divergence as regards the fat intake, but it should be mentioned that Minot and Murphy considered that the low fat content of their diet was much less important than the character and amount of the protein. But though con-

structed on different logical grounds, the mode of action of Minot and Murphy's special diet—namely, liver, which is rich in vitamin A, and plenty of fresh fruit—may therefore merely be that it is a method of supplying the required quantity of vitamins.

#### INTERNATIONAL PORT SANITATION.

A PARTY of medical officers concerned with the sanitary administration of ports in the Baltic, North Sea, and English Channel are at present in this country. The visit is opportune in view of the fact that a new international sanitary convention was signed in Paris last May by over fifty nations, covering practically all the chief ports of the world. This convention is the final outcome of a series of international conferences dating from 1851, when an attempt was first made to unify the quarantine laws in Europe. A number of other conferences were held and conventions signed, and in 1907 a central international health office was established in Paris to study the various conventions and to prepare for their amendment to meet new knowledge, new conditions of commerce, and new political circumstances. The convention of this year was drafted by that office, and is a very thorough revision of the international measures needed to prevent, in particular, the spread of cholera, yellow fever, typhus fever, and small-pox. With this new basis of international understanding it has become necessary for all port health authorities to overhaul their methods, and the League of Nations has therefore done very well to take advantage of the financial assistance of the Rockefeller Foundation to extend to this subject the interchange system which, as our readers are aware, has been applied on many occasions during recent years to other aspects of public health administration. The party arrived at Southampton on Monday last; there they were received by the mayor and Dr. Lauder, medical officer of health for the borough and port. They were shown the disinfecting station, the V.D. clinic, the infectious disease hospital, and the docks. On Tuesday they passed through London, and were received at the Ministry of Health, where Sir George Newman delivered an address and Dr. H. A. MacEwen, one of the senior medical officers of the Ministry, gave an outline of the arrangements for port sanitation in this country. Afterwards the members of the party were entertained by the British Government at a luncheon, over which Sir H. Kingsley Wood, M.P., Parliamentary Secretary to the Ministry of Health, presided, and on the part of the Government extended a warm welcome to them. Dr. Jitta, president of the Health Council of the Netherlands, and one of the representatives of the Health Committee of the League of Nations, made a suitable reply. In the afternoon the party went to Liverpool, where they spent two days and were shown the general arrangements of the port. They made a trip up the River Mersey, and witnessed a demonstration of rat-catching and of various methods for the destruction of rats. Visits were also paid to the cold stores and warehouses, and to the isolation hospitals of the borough and port sanitary authority. On the following day the party visited the immigration hostel, the V.D. department of the Seamen's Hospital, and the School of Hygiene. After being entertained at lunch by the Lord Mayor they returned to London, where, according to arrangement, Dr. W. M. Willoughby, medical officer to the Port of London, was to act as guide in an inspection of the system of boarding vessels at Gravesend, and on visits to the Port Sanitary Hospital, and to the warehouses and cold stores at the Royal Albert Dock. On Saturday, before leaving for Geneva, the party were to see the museums of the School of Tropical Medicine and the Royal Sanitary Institute, and to be entertained at luncheon at the Guildhall. The countries represented were Belgium, Denmark, Finland, France, Germany, Latvia, Lithuania, the Netherlands, Norway, Sweden, Russia, and the Free City of Danzig.

<sup>1</sup> Minot, G. R., and Murphy, W. P.: *Journ. Amer. Med. Assoc.*, Chicago, 1926, lxxvii, 470-76.

<sup>2</sup> Koessler, K. E., Maurer, S., and Loughlin, R.: *Ibid.*, 1926, lxxvii, 476-82.

## SCANDINAVIAN NEUROLOGICAL CONGRESS.

THE third Scandinavian neurological congress was held in Oslo on September 17th and 18th, under the presidency of Professor G. H. Monrad-Krohn. The first day was entirely devoted to neuro-syphilis, a paper of considerable interest being contributed by Professor H. Dahlström of Stockholm, who stated that quaternary syphilis was exceedingly raro amongst patients treated without the use of mercury according to the principles of the late Professor Boeck of Oslo. Subjects dealt with on the second day included the relation of epidemic encephalitis to epidemic parotitis, ventriculography and cerebral operations, and the physiology of binocular vision. One speaker claimed that a disease apparently identical with Huntington's chorea had been observed and described by a local practitioner in Norway many years before Huntington. It was decided that the fourth Scandinavian neurological congress should be held in Helsingfors in 1929.

## SIR NEVILLE HOWSE, V.C., K.C.B., K.C.M.G.

Among the delegates to the British Imperial Conference is a distinguished member of the medical profession, Major-General Sir Neville Reginald Howse, who has been Minister of Defence and Health in the Australian Commonwealth for more than a year, and a member of the House of Representatives since 1922. Sir Neville Howse, who was born in Somersot in 1863, is the son of the late Dr. Alfred Howse; he received his medical education at the London Hospital, and obtained the M.R.C.S. diploma in 1896 and the F.R.C.S. in 1897. He served in the South African war from 1900 to 1902, receiving the Queen's medal with six clasps and the King's medal with two clasps. In 1901 he was awarded the Victoria Cross for conspicuous bravery during the action at Vrodefort on July 24th of the previous year, when he went out under a heavy cross-fire and picked up a wounded man and carried him to a place of shelter. During the late war he was principal medical officer to the Australian Naval and Military Expedition to German New Guinea and the Pacific Islands, and held the appointments of A.D.M.S. 1st Australian Division, D.M.S. Australian Imperial Force, and D.G.M.S. Australian Military Forces. He served with the Australian army during the Dardanelles operations, and received the C.B. in 1915; he was promoted K.C.B. in 1917, and appointed K.C.M.G. in 1919. He was an Australian representative at the League of Nations Assembly in 1923.

## MEDICAL SOCIETY OF LONDON.

THE programme for the first half of the 154th session of the Medical Society of London has now been issued. At the annual general meeting on Monday, October 11th, the Fothergillian Medal will be presented by the new President, Sir Humphry Rolleston, Bt., to Sir Frederick Gowland Hopkins, F.R.S., professor of biochemistry in the University of Cambridge, and at 9 o'clock the Annual Oration (postponed from May 10th owing to the general strike) will be delivered by Sir Berkeley Moynihan, Bt., President of the Royal College of Surgeons of England, whose subject is "Before and after operation." The Oration will be followed by a conversazione. A clinical evening will be held at 8 o'clock on October 25th, and the three following meetings will be devoted to general discussions, all beginning at half-past eight. On November 8th the subject of "Sternal pain" will be introduced by Dr. John Parkinson and Mr. A. J. Walton; on November 22nd "Recent advances in the treatment and diagnosis of bronchiectasis," by Dr. Clive Riviere and Mr. J. E. H. Roberts; and on December 13th "Recent advances in the otology, diagnosis, prophylaxis, and treatment of the exanthemata," by Dr. J. D. Rolleston and Dr. R. A. O'Brien. The Lettsomian Lectures, on "The surgery of the spinal cord and membranes," will be delivered by Mr. Donald Armour.

## THE TRICENTENARY OF FRANCIS BACON.

THE tricentenary of Francis Bacon (1561-1626) was celebrated at Cambridge on October 5th by a special degree congregation, a large garden party in the grounds of Trinity College, and a commemorative lecture in the Senate House by Dr. C. D. Broad, Fellow of Trinity, on the philosophy of Francis Bacon. The congregation was presided over by the Earl of Balfour, Chancellor of the University, who conferred the honorary degree of LL.D. on Dr. W. S. Holdsworth, K.C., Vinerian Professor of English Law at Oxford, and that of Sc.D. on Sir Ernest Rutherford, O.M., P.R.S., Cavendish Professor of Experimental Physics at Cambridge, thus commemorating Bacon's eminence in law and in natural philosophy. The guests at the garden party were received by the Master (Sir J. J. Thomson, O.M.) and the Vice-Master (Dr. St. John Parry) of Trinity and in the College Library rare first editions of Bacon's works were on view.

## A VETERAN OF LARYNGOLOGY.

PROFESSOR E. SCHMIEGELOW of Copenhagen celebrates his seventieth birthday on October 13th, and retires from active service as chief of the oto-laryngological clinic at the Rigshospital (University of Copenhagen). His friends in many countries are marking the occasion by presenting to the clinic a medallion portrait of the professor in bronze. The Royal Society of Medicine will be represented by Sir St. Clair Thomson, Past-President, who will make a contribution to the meeting of the Danish Oto-Laryngological Society to be held on October 12th. Addresses will also be given by Professor Burger (Amsterdam), Professor von Eicken (Berlin), and other European leaders, who will unite in doing honour to the doyen of Danish oto-laryngology. Professor Schmiegelow was a pioneer in his subject. He studied under Morell Mackenzie at the Throat Hospital in Golden Square, and he has been a frequent visitor to this country, where he has many admirers and friends.

THE Harveian Oration will be delivered before the Royal College of Physicians of London by the President, Sir John Rose Bradford, K.C.M.G., F.R.S., on Monday, October 18th, at 4 o'clock. The annual sermon at the Church of St. Mary-le-Bow, re-established under the scheme of the Charity Commissioners for the administration of the Sadleir Trust, will be preached at 11 a.m. on the same day.

THE Lloyd Roberts Lecture will be delivered this year on Friday, November 19th, at 5 o'clock, at the Royal College of Physicians of London, by the Very Rev. W. R. Inge, D.D., Dean of St. Paul's.

THE museum demonstrations at the Royal College of Surgeons of England will begin on Friday, October 15th, when Sir Arthur Keith, F.R.S., will demonstrate specimens recently added to the museum. His second demonstration, on the following Friday (October 22nd), will be on the anatomy of the sacro-iliac region and its application to practice; and his third, on Friday, October 29th, on disorders in the growth of bone. Mr. C. E. Shattock's demonstrations, to be given on Mondays, October 18th and 25th, will deal with surgical conditions of the lymphatic gland, and of blood vessels; his third demonstration, on November 1st, will be on scrotal tumours. The demonstrations will be given at 5 p.m. on each day.



## Opening of the Winter Session.

### THE FUTURE OF WOMEN IN MEDICINE.

Address to the London School of Medicine for Women.

BY

SIR WALTER FLETCHER, K.B.E., M.D., D.Sc.,  
LL.D., F.R.S.,

Secretary of the Medical Research Council.

AFTER paying a warm tribute to the work and character of the late Dr. J. G. Adami, who was to have delivered the introductory address, Sir Walter Fletcher said:

Our chief object, I take it, to-day is to greet and cheer your members now beginning work here and to welcome them into the common fellowship of work and study in this place. To do that is both easy and agreeable, and, if I am to be spokesman, may I in your name congratulate your freshmen upon entering their apprenticeship to a profession which has so much to claim and so much to offer for any who join it with the right qualities of mind and heart.

But it is expected that our greeting should be coupled with some kind of friendly admonition or advice, and it is here I feel that the difficulty begins. I am not troubled by the general dubiety of giving advice. You will remember Lord Morley held that there were two kinds of fool in the world—those who give advice and those who take it. We can evade that condemnation by giving, not direct advice, but helpful information. Yet what accurate information about the coming years can we now give to inquiring beginners? What the freshman now seeks, surely, is information about the probable professional opportunities open to her in the early and distant future, so that she may take the best way to making the most of her powers. The difficulty of helping her is the difficulty of forecasting the future, and I think that the problems here are more pressing and more puzzling at the present time than ever in the past. We are faced by two sets of problems: those which belong to all medical education, and those special problems which belong to women as such.

#### General Problems of Medical Education.

The very rapid development of science in the past generation and its growing application to medical practice are making it year by year more difficult to predict the course which medical practice is likely to follow in its next progress and to direct the lines of medical education more fitly to their ends. Great changes are taking place, and the rate of change is likely to become more rapid rather than more slow. The progress of surgery, of which the development in the last generation has been so phenomenal, seems likely now to follow the law of diminishing returns and to be approaching something like stability. If science indeed could give us preventive control over cancer, the volume of surgery would at once be immensely reduced. It is not very bold, again, to think that the physician is likely to find his powers and scope changing rapidly in many ways as we lay hold of the elements of a scientific knowledge of nutrition and begin to use its enormous latent powers. The work of preventive medicine in all its branches is in a period of great expansion, and many new forces are now at work which will open up the possibilities of extending this throughout the Empire and of removing the long-standing waste and disgrace of preventable but unprevented disease under the British flag. The growth of biochemistry holds obviously untold possibilities, some almost within our grasp, which, when applied to human affairs, may deeply affect the future of medicine, and indeed may bring startling changes to the whole of our social structure. In large and in detail the problems of the kind thus briefly indicated must be in the minds of all those who are serious about medical education.

#### Problems of Women's Medical Education.

All these general considerations, of course, are relevant to women's education no less than to that of men. But

I would venture to urge now that there are problems of women's education in medicine which are not the same problems as those for men, and that women should resist the present assumption that their medical education should follow exactly the lines laid down for men, and that their outlook towards their future practical work should be the same. Hitherto the medical education of women has followed in almost every detail the traditions and practice evolved for men. This has been an historical necessity. The early pioneers of women's medical education had no choice. I need not in this place touch on the history of this great movement, so well known to all here. It was a movement some of whose great leaders have their names enshrined for ever in this school. "*Si monumentum requiris circumspecte.*"

The battle now, however, has been fought and won, and almost complete freedom has been gained for the future development of women's medical education. The time seems to have come when close parallelism at every stage of the medical education of men and women should no longer be assumed. Better reasons at least must be found for it than custom and convenience, which sprang from older necessity. It may be that to maintain too close a parallelism is wasteful and even disastrous. As biologists we cannot fail to be awake to this. "Male and female created He them." We should be slow to think that the very best powers of a woman can be developed and employed by following exactly the same course and by working in just the same fields as those in which the best powers of a man may be brought out. We must believe that the highest service of each will be given in differentiation of function, and that co-operation between man and woman, each working in the best sphere, is to be far preferred over rivalry. Closer adaptation of the nature of the work to the qualities of the workers by no means involves any inequality or any lowering of intellectual standards. On the contrary, it is likely to call for higher standards on each side and to give room for effort which will be more effective because it will be more intensive.

I touch upon these problems here with the greatest diffidence. I am much more certain of their existence and importance than I am of the right way to their solution. When I speak of divergence or differentiation in the educational courses to be followed by men and by women, I am thinking, of course, of the whole period of training, and more especially of the post-graduate training. How far, at what points, or if at all, there should be a difference in the minimum courses for qualification are problems not now considered. I am thinking rather of what a woman student should be inclined or recommended to select than of what she should be made to do by regulation.

#### Fields of Work for Women.

In this matter we should think first of the fields of work specially appropriate to either sex, and, without looking at all closely now, to see where the exact boundaries of the fields may lie. It seems to me obvious that the rough and tumble, if I may use those words, of general practice make it much less suitable as a general rule for women than for men. It seems evident, too, that only exceptional women are likely to join with men on equal terms in specialized surgery. It will be long, to give another instance, before medical work in the tropical and many other parts of the Empire will be so suitable for women as for men.

On the other hand, there are large fields of service calling peculiarly for the special gifts of women, in which it seems to me that they could give far more abundant and more progressive service than is given now. I think here specially of the study of nutrition, of children's diseases, and of maternity in all its phases. Here are immense fields offering problems of the greatest interest, and giving opportunities for service of inestimable value both to the individual and to the nation. Closely linked with these are the possibilities of work in preventive

medicine, in the study and management of child welfare, whether in the city, in the school, or in the factory, and in all the applications of physiology and medicine to the lives of women and children engaged in industrial work.

I said earlier that the first beginnings of our knowledge of nutrition were already promising to affect deeply the practice of medicine. Is not this a direction in which women should strive to make themselves, so to speak, mistresses in their own house? It happens here that much of the basic knowledge we are beginning to collect has been gained in the laboratory by medical women and by non-medical women. Miss Chick and her colleagues at the Lister Institute has given invaluable service here by work, more particularly, upon the several vitamins. They gave help of the first importance to our naval and military forces during the war by their work upon the anti-scurvy vitamin (C) and the vitamin B. Miss Chick again and her colleagues, Miss Hume and Miss Henderson Smith, together with Dr. Dalyell and Dr. Helen Mackay of this school as clinicians, made valuable studies of rickets in Vienna from 1919-1922, and to this expedition we owe, among other things, the first experimental demonstration that ultraviolet light and the vitamin of cod-liver oil are interchangeable in the prevention or cure of rickets in babies. In the past year Miss Chick, with Miss Roscoe, has shown, by refined and laborious experiments, that the growth vitamin A, and the antirickets vitamin D, for their abundance or deficiency in cow's milk depend upon the diet of the cow and its access to sunlight. The growth vitamin depends solely upon the supply of vitamin in the cow's fodder. The cow can only transmit it. But the antirickets vitamin, though it may be supplied in the fodder and transmitted by the cow, may also be manufactured afresh in the cow's body under the influence of sunlight. When we think of the dependence of our industrial populations upon the milk of cows commonly stalled and kept in the dark, we can realize the inestimable practical value of new knowledge of this sort.

Another woman, again, and another non-medical woman, Mrs. Mellanby, in following up her husband's pioneer work upon rickets as a deficiency disease, has revealed a fundamental relation between the diet before and during dentition and the formation of teeth, the effects of vitamin deficiency being shown both in damage to their general structure and arrangement and in failure of their minute, invisible architecture—that prismatic architecture of the enamel which gives it hardness and its resistance to disease. It seems likely that this discovery will not only transform our outlook on the national problem of dental decay, but give us the true key to its practical solution.

All these studies and others like them give ground for confident hope of an immense increase in our practical powers of repelling disease and of increasing the happiness and the beauty of our people. Research here is costly, painful, and slow, yet the due application in effective practice even of the little we already know seems often to be slower still.

The new knowledge of the vitamins of milk which we owe to Miss Chick and her colleagues has immediate relevance to the problems of human lactation, to the treatment of the expectant and nursing mother, and the management of breast-feeding. This seems to be a field crying aloud for the better attention of women. If the truth were known, I venture to think that my sex has done far too little in the proper advocacy of breast-feeding; men have tended, I am afraid, to throw their influence in fact, if not on paper, rather on the other and the wrong side. But even with the better knowledge and the better weapons that research has given, a man, after all, can only know and apply the physiology of lactation. A woman may know both its physiology and its psychology, and without a knowledge of both the physician is incomplete.

The application of nutritional study to medical practice, whether curative or preventive, surely offers a field of work peculiarly fitted for women. It is not a soft option. It calls for arduous work and highly technical study; it offers problems of great intellectual interest, and at the same time promises high rewards in practical usefulness. In spite of this, however, it does not seem that any signifi-

cant body of medical women are turning their special attention in this direction.

This seems in itself to be a phenomenon worth examining. I would ask you to allow me to touch here upon a point which may possibly have some relevant connexion with it. I will put a bold question, and hope that you may forgive my candour. Why is it that women following a communal intellectual life are so prone to neglect both the quantity and the quality of their own food? It is notorious that, speaking generally, women's colleges and other institutions governed by women provide food which is often inadequate in amount, badly chosen, badly cooked, and badly served! All men who have sisters or daughters at college or some similar place become aware of this. It is not enough to say that women are less greedy than men. The deficiencies I have in mind often take the diet below the minimum for due nourishment, while bad cooking is at least as wasteful and indefensible as greed itself. I venture myself to think that the phenomenon I describe, now perhaps beginning to disappear, was originally due to the intellectual fervour of the movement for women's higher education, and that in the pursuit of high thinking plain living was allowed to become bad living. Here has been a great opportunity for medical women, and I believe that enlightened action from your professional side has still immense potency for helping the nation by improving the food and the health of the very girls and women upon whom our best hopes for the national future depends.

#### *The Factor of Marriage.*

May I finally touch upon one consideration which must be borne in mind in all discussions of divergence between the medical courses of men and women? The high function of marriage rarely takes a man out of the profession; it must, on the other hand, in most or many instances remove a woman from practice. This elementary difference is inevitably a large factor in decisions that have to be made when men and women students stand together in competition for educational facilities within hospitals or elsewhere. Time and money spent upon, say, ten men will go to make nearly ten future doctors. The same effort spent upon ten women must give a far smaller future effective output. I hold myself that few, if any, schemes of education are better than a sound medical education as a preparation and equipment for marriage. It should guide and strengthen a woman to perform "justly and skilfully and magnanimously" all the high and all the lowly tasks of married life. I think a wise student will see to it that in the absence of special reasons she will try to emphasize in her professional training and work those parts of the subject not only best fitted for a woman if she remains in professional practice, but most likely to be serviceable if and when marriage comes to her afterwards.

I know well that I have touched upon several points still the subject of high controversy. Yet it is those who are most in earnest about the future of women in medicine who will be the most desirous that these problems should be raised fearlessly, and that they should find their discussion and their right solution at a place like this, so rich already in the highest traditions of work and service.

### THE MEDICAL PROFESSION AND THE PUBLIC.

#### ADDRESS BY DR. GRAHAM LITTLE AT ST. GEORGE'S HOSPITAL.

AFTER distributing the prizes at St. George's Hospital Medical School on October 1st, Dr. E. GRAHAM LITTLE, M.P., gave some reminiscences of the institution which he left thirty years ago, and in particular of Howship Dickinson, whose clerk he was. One of the useful lessons taught him by Dickinson was that redundancy did not mean emphasis. If he wrote that the extremities were cyanosed and blue, Dickinson insisted on the deletion of one or other of the adjectives.

For the main theme of his address Dr. Graham Little took as his text some comments on medical education and ethics which appeared in a letter addressed to the *Times* in October last by Mr. Bernard Shaw. Mr. Shaw was

handicapped—but, of course, not deterred—by a complete ignorance of the subject he criticized, and perhaps for that reason he was typical of a great mass of public opinion which the profession would do well to recognize as dissatisfied with many of the circumstances attending the practice of medicine to-day. Mr. Shaw wrote that the General Medical Council had become a trade union of the worst type, deliberately addressing itself to the antisocial task of preventing the public from calling in an unregistered practitioner who was in competition with those on the *Register*; he also condemned as obsolete the training maintained by the General Medical Council, and implied that it was ill designed to meet the needs of the public and compared unfavorably with the training—if that word could be used—in some branches of unqualified practice.

#### *The Medical Curriculum.*

In rebutting these criticisms, Dr. Little pointed out that the period required for entrance into the medical profession was more than twice as long as that required for entrance into any other. Demands were constantly made for new additions to the curriculum. It was quite certain, whatever readjustments might be advisable, that the teaching in anatomy and physiology could not be shortened, for this was the basis of scientific medicine. Again, the General Medical Council had wisely placed in the very forefront of its resolutions of 1922 with regard to professional education that throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of medicine. The same resolutions recommended that a minimum period of three years—in practice more usually four—should be available for clinical studies. It was upon this clinical training that the great English school had founded its prestige. In a conversation he had had with the adviser to the Carnegie Foundation, that very astute gentleman declared that in the practical art of medicine the British medical contingent in the war far exceeded that of every other of the belligerent armies, including his own. — It was precisely in the preposterous neglect of clinical study and the lack of opportunities for pursuing it that the unqualified practitioners compared so very unfavorably with the graduates of the orthodox medical schools. In the United States the largest osteopathic college, with 1,000 students, was situated in a small frontier town in Missouri with a population, including the students, of 4,000. Presumably the students found their clinical material in each other! Compare this with Oxford and Cambridge. Each of these universities was in a town of some 60,000 inhabitants, and yet they regarded the local clinical material as inadequate, and the medical students were sent to London schools for their clinical work.

The curriculum was growing with every decade, and the minimum period of study to secure qualification was stretched well into seven years. Notwithstanding this, the public journals clamoured for more subjects to be included. The *Times* had gravely urged the inclusion of osteopathy and psychology. There was no finality visible in the burden to be laid on the coming student generation. Signs, however, were not wanting that in this matter of the curriculum the breaking point was being approached, and the encouragement given by an unthinking public to unqualified practice was hastening that consummation. If an osteopath, after a period of very imperfect education in the medical sciences, ranging from one to four years, was given, as some desired, the privileges now accorded to medical men with their seven years of rigorous professional study, who would be fool enough to take the severer course?

#### *Unqualified Practice.*

Great Britain stood nearly alone—the only other notable exception was Germany—in the encouragement which its Legislature gave to unqualified practice. In this country a man might pursue unqualified practice without penalty unless, indeed, he falsely laid claim to titles and qualifications and some person was public-spirited enough to take the matter up. And when to this was added the publicity to be derived from advertisement, denied to the qualified man, surely the dice were loaded against the latter. And all this time medical education tended to be more and more

extended. There had never been a period when the scientific preparation for the practice of medicine was so necessary. There was an ever-reaching public demand for new subjects of study. But if the public refused to differentiate the finished product of all this preparation from the shoddy result of a pretentious imitation thereof, the genuine product could not be maintained. The remarkable enlistment of new recruits to the profession following the war had passed its high-water mark. No doubt the incomparable human interest which the practice of medicine involved would, for some time at least, attract the best class of student, but it might be that a day would come when the supply of scientific doctors would give out, and their place would be taken by money-grubbing and imperfectly educated quacks ever seeking a back door of entry into the fold. It might be that orthodox—that is, scientific—medicine would be replaced by a system which had been euphemistically described as “drugless medicine and bloodless surgery.” Imagine the practitioner of such a system confronted with any one of the four great scourges of humanity—malaria, tuberculosis, cancer, syphilis!

Unfortunately, there was no indication of public support for the curtailment of the privileges of the unqualified. Nowhere had the quacks more friends than in the House of Commons, to judge from his personal experience when bringing forward his motion in February last for the regulation of unqualified practice. In that very interesting debate it was amazing to find it assumed in speech after speech that the advances in medicine had come invariably from extra-professional sources. The public, in fact, were unaware of the immense strides in medical science during the last thirty years, which Professor Starling had described, not as a renaissance, but as a new birth. The medical discoveries in that period had been far more often made by men in the medical profession than by men outside. True, Pasteur was constantly being cited, but it was Lister who saw the full meaning for surgery of Pasteur's discoveries, and without Lister Pasteur might very well have gone unheeded by medicine.

#### *Doctors and the Press.*

The press, Dr. Graham Little continued, had conducted a very insistent campaign for removing the restrictions which now prevented medical men from writing for newspapers under their own signatures. The General Medical Council was often unfairly saddled with censure for these restrictions. It was really bodies like the British Medical Association which exercised pressure to prevent covert advertising to which such communications might lead. The press could not be wholly disinterested in this matter. It was obviously to its interest to get hold of good “copy,” though it was difficult to think that the essays in the obvious or the sheer balderdash published under “Health Notes” could be acceptable to any intelligence, however feeble. The activities of the New Health Society did not convey the impression that the writers empaneled for its purposes were among the inspired prophets of our times. Not long ago one of the tearshops blossomed out with the announcement that the President of the New Health Society and his band of experts had contributed a scientific menu for the athlete. The menu was provided in the tearshops specified, but an examination by a medical writer of the items of this “food for heroes” disclosed no very great variation from the bills of fare provided by other tearshops. Sausages and buns figured largely. The printing of the photograph of the distinguished president added materially to the amusement of the public and the amazement of the profession. But it was obvious that this was not the way to approach a really serious problem—the problem, namely, of disseminating by the very potent influence of the press really sound and expert information which might be actually useful for uninstructed persons. This question was to be fully discussed at a meeting of the St. Paneras Division of the British Medical Association on October 12th, and he would leave it in far more capable hands than his own.

#### *The General Medical Council.*

With regard to the General Medical Council, a statutory body, it was evident that Mr. Bernard Shaw, like so many laymen, confused it with the British Medical Association.

The British Medical Association was a private body, with as much right to make rules for its members as the committee of a club, and those who did not like to obey had the opportunity of resigning from its membership.

Scientific medicine had advanced *pari passu* with the setting up of the General Medical Council, and as for the disciplinary functions of the Council, the profession and not the public was the best judge as to what degree of control medical men would and should accept. In the matter of advertisement the Stock Exchange exacted a self-denying ordinance against its members advertising—an ordinance which was clearly of public utility—and medical men should surely enjoy the same privilege of ordering their affairs in this respect. Open advertisement would probably be resented as much by the public as it would be disliked by the reputable medical man. In dealing with covert advertisement it was more difficult to differentiate what was legitimate from what was undesirable, but no doubt a *via media* could be found. The activities of the Council in restraining the association of registered practitioners with unqualified persons were also misunderstood. It should be emphasized that the offence known as "covering" might be actually dangerous to the public, and it was from this standpoint that the Council had made its ruling. The unfortunate phrase foisted upon the Council by the wording of an Act of Parliament, "infamous conduct in a professional respect," often created an unmerited sympathy with a person removed from the *Medical Register*, for his conduct might not appear at all infamous to the public. But if it were kept in mind that his removal meant little more than the omission of his name from a list of practitioners who preferred to be bound by the rule which he had preferred to break, the sympathy would not be so readily forthcoming.

In conclusion, Dr. Little spoke of the hostility to the medical profession in the House of Commons. The same hostility was not shown to the practitioners of law, perhaps because there were two hundred of them in the House, while there were only fourteen medical men. It was difficult to see why doctors should be so poorly represented, and he pleaded for a more general co-operation on the part of the profession in political problems. The students to whom he was speaking should from the first address themselves to questions of citizenship, especially as these affected, and were affected by, medicine, as well as to the practice of their profession.

## THE WORK OF THE MEDICAL STUDENT.

### ADDRESS BY PROFESSOR YEATES AT THE MIDDLESEX HOSPITAL.

THE opening of the ninety-second winter session took place on October 1st at Queen's Hall, Mr. S. G. Asher (chairman of the council of the Medical School) presiding, in the absence of H.R.H. Prince Arthur of Connaught, who was unable to be present owing to a prior engagement.

The introductory address was given by Dr. THOMAS YEATES (Courtauld professor of anatomy), whose subject was "*Ex nihilo nihil fit*." A large number of people, he said, were work-shy, and they constituted the great class of men workers or idlers. They found their way into the medical schools. But, fortunately, there was another class of men—the workers—who carried on the work of the world, a much smaller class. Just as in a colony of bees one found workers and drones, so in a medical school there were the industrious and the lazy, the active and the passive, the useful and the useless. Work and its results in a medical school he considered under several headings. Work—the overcoming of resistance—appeared to be a universal and natural law. The medical student could not escape; he must earn his bread by the sweat of his brow. Likewise the medical teacher and research worker must work, no matter how intense the longing to avoid it. Happiness and contentment were rewards of work, and success—attainment of the goal aimed at—was a direct result. The idle student or teacher also got his deserts—he was miserable.

### "Stuffing" the Student.

If work was essential for the successful study of medicine and for its research, the logical conclusion was that to serve up knowledge to a student in a pre-digested state must paralyse effort on the part of the student; mental dyspepsia resulted. Teaching (or rather cramming) in which the facts of the subject were presented to the student without any explanation how the knowledge had been gained, only attracted students devoid of ambition and whose only desire was to qualify and make a living. The process of stuffing the student was fatal to the evolution of his intellectual faculties, and teachers guilty of it were sinning against posterity. A medical man with inefficient training (in other words an incapable medical man) was a great danger to the community, and the hope was that the teacher producing such would sooner or later come under the care of one! The individual being taught must be an active and willing agent. To put this into practice: all medical study should be active, not passive. A student should attend regularly the courses prescribed, and try to gain a clear knowledge of the subject in hand. He should not simply aim at passing an examination on the minimum of knowledge. He came to a medical school to become an efficiently trained medical man, not to pass examinations. That work was essential, that it should be active not passive, that the struggle necessary to gain knowledge should be retained, and that the narrow road to knowledge must be trudged by all who wished to become educated—must be admitted by all. Hard, strenuous work on the part of the teacher and student was the method. The sooner those concerned admitted those contentions the better for the future of medicine, and the health, mental and physical, of the nations of the world. Work must be purposive and regular if definite results were to be gained. A definite object must be aimed at by the worker. In the laboratories of a school might be seen a group of youths looking quite exhausted. They were discussing a league football match, the winner of the Derby, or some entertainment to take place. They formed a large percentage of the community. They were workers that did not work—idlers, and of little interest. Then there were pale, pasty, anaemic, astigmatic, unshorn youths, worn out and exhausted by foolishly trying to memorize a book by heart, so that when an examiner—a greater fool than the student—touched the button, the record would be produced with painful accuracy. Such a student had surrendered his freedom and had become a slave to the word knowledge.

### The Art of Observation.

Then there was the keen, earnest, determined-looking youth, carefully modelling, freehand, the parts of a dissection; building up the parts to form a concrete solid model. Now he attempted to draw the original from nature, and, after an hour's work, deliberately destroyed his model and put the original away, and again attempted to model in freehand the specimen. He was aiming at establishing an image of the object—an accurate presentation—in his brain. A few days later he tried to model the same part without the original in front of him. He was slowly developing a solid, concrete, stereoscopic, x-ray image of the human body. In time that would become permanent, and, like his shadow, accompany him everywhere. In the wards, and, later, in his consulting room, it would be beside him, at once becoming visible at his command. He needed no textbook of the healthy man, as the image was ready to appear when he wished. The clinician trained him to gain a concrete stereoscopic picture of the structure of his patients so that the keen student could have, at his wish, transparent images of a healthy man, on the one hand, and beside that a transparent image of his patient on the other, for contrast. Diagnosis became a simple matter; that thoroughness of work led to the result aimed at—a full appreciation of the structure and working of healthy and diseased bodies. To see the organs, muscles, and so forth in their right relative positions to each other; to watch them working and undergoing chemical and physical changes—in fact, to observe life—was the aim of the student of medicine.

*Co-ordination of the Student's Training.*

Each stage in the education of a medical student (Professor Yeates went on) should interlock or dovetail with the previous and succeeding stages. Knowledge should be based on great general principles, and students should learn to reason from principles to the special study in hand. A student should not make the mistake of reasoning from the special to the general. He should refrain from depending on his memory. The medical man was a thinking animal, and the practice of medicine depended upon the application of great general principles, based upon observation, experience, and research. The sooner a student was set free from his teachers so as to allow experience to be his sole teacher the better for the growth of his real knowledge. Unfortunately, for evident reasons, it was extremely difficult, or almost impossible, to let a student have a direct experience in the treatment of diseases previous to qualification. It was evident, therefore, that study and work were essential after medical birth, and this should continue throughout life. A medical man ceasing to gain experience from his work should consider whether the community would not be better served by his giving up practice. Lack of co-ordination in the various stages of the student's training was in part due to the fact that the subjects were taught by men who had little experience of the work of later years. That referred to every stage of the student's career, not excepting the final year, for how many clinical teachers in hospitals had any experience of general practice? How many of them were acquainted with the early phenomena of disease by first-hand experience? Were the clinicians not training men to perform duties as general practitioners, duties of which many were more or less ignorant? Would it be too much to demand that every teacher in a medical school should start life as a general practitioner? Should a general practitioner, an ordinary doctor, not be a member of the staff of every teaching hospital? Should ordinary catarrhal conditions in children be passed by as of little account, whilst rare and inenarrable diseases, such as acromegaly, were carefully and minutely studied? Was it not better for the future of national health that a student should be thoroughly taught how to recognize and treat a suppurating finger or a common cold, or should a prospective medical man have no knowledge of those mild ailments? Should much of his time be taken up watching, from a distance, obscure and difficult operations which would only be undertaken by highly trained specialists? The medical student should, as an undergraduate, work to get a sound knowledge of the very earliest signs of disease, in addition to studying the pronounced cases which were so common in all hospitals. No attempt should be made at specialism until after graduation. To become a specialist appeared to be easy, but gaining the experience and knowledge necessary to be a great doctor was only possible to a few men. Students might believe that on becoming qualified all their troubles would cease, but work was now even more important, for, being freed from the influence of the medical school and the financial assistance of his home, he found life hard and difficult. Patients wisely avoided him; they did not want to be experimented on. He had thus little chance of studying disease in private. He had his chance now, if he would only take it. Let him become a keen student of disease. He should practically live in the hospitals. He could not afford to wait for cases at home. A stray case might call on him—a non-paying patient of a colleague—let him study that case with great care, for there was very little chance of his seeing it a second time!

A young practitioner should look forward to a hard life, with little remuneration. The practical doctor had greater opportunities to carry on investigations bearing directly on the treatment of disease than the laboratory worker. Large unexplored fields were open to all workers, and if the harvest was to be gathered there must be no strikers, no idlers, no dole-receivers in the profession. An eight-hour day was an absurdity.

*The Work of the Teacher.*

Time would not permit (said Professor Yeates in conclusion) the consideration of the work of the teacher, but

what had already been stated about the student's work applied equally to that of his teacher. Any observer, no matter how casual or careless his observations, could group teachers into two classes. The first type of teacher was the man who professed to be a teacher until he was appointed to be one. On appointment he treated his students like the Duke of Plaza Torro—"He leads his regiment from behind—he finds it less exciting." He now looked down on teaching as a profession, and retired to the privacy of his room to carry out his life-work—a work, no doubt, of the greatest importance to the welfare of the world. The second type of teacher was the one who attempted to teach, and, as a consequence, was forced to make a continual series of original investigations. It was that type of man that was needed to perform the work of a medical school. If *ex nihilo nihil fit* was true, work was the best and only means of acquiring the knowledge necessary to gain the mastery over disease, and the hope was expressed that, as a direct result of that knowledge, there would be a spread of health, industry, and contentment among the peoples and nations of the world.

The DEAN (Mr. Eric Pearce Gould) presented the report for the past year, and in the course of doing so said that the extension of medical knowledge was, and must remain, dependent upon the labours of duly qualified workers with a zest for research; but the supply of such men would fail, and their zeal be quenched, unless funds were available for their training and support, and for the equipment and upkeep of laboratories. Gifts like those mentioned in the report encouraged the belief that that statement was to-day almost a platitude. To parody the well known slogan, "You provide the money and they (the men of science) will do the rest."

The prizes were presented by the ARCHBISHOP OF CANTERBURY, who, after the presentation, said that as he listened to the Dean's report there arose before him visions of those who had passed away. Three of those mentioned in the report were personal friends of his: the late Sir Richard Douglas Powell, whose grace and courtesy were an asset of enormous value to all his friends; Sir Henry Morris, whose vigorous personality was infectious, and who made one feel keen to do the things he was keen about himself; and Mr. Stephen Paget, whose wisdom and wit were such as to endear him, not only to medical men, but to people outside the medical profession. He wished success and God-speed to the splendid effort which was being made on behalf of the Middlesex Hospital to overcome difficulties which to most people would seem insurmountable, but which were being steadily overcome.

**ST. BARTHOLOMEW'S HOSPITAL.****OLD STUDENTS' DINNER.**

In accordance with long-standing custom, the new winter session at St. Bartholomew's Hospital began without formal ceremony, other than the annual old students' dinner, which was held on the evening of October 1st in the Great Hall of the hospital. The chairman, Mr. W. T. Holmes Spicer, F.R.C.S., consulting ophthalmic surgeon, was supported by Lord Stanmore, treasurer of the hospital, Sir Anthony Bowlby, Sir Archibald Garrod, Sir William Beveridge, Vice-Chancellor of the University of London, Sir Holburt Waring, Dr. H. Morley Fletcher, and Sir Matthew Fell, Director-General, A.M.S.; the City of London was represented by Sir Charles Wakefield, formerly Lord Mayor, and Sir Wilfrid Atlay, formerly chairman of the Stock Exchange Committee.

The chairman, in proposing prosperity to St. Bartholomew's Hospital and Medical College, touched upon some of the outstanding events of the past year. One of the most important of these was the completion of the Queen Mary block of buildings for the housing of the nursing staff. Another was the decision to provide an operating theatre block in connexion with the new surgical block, which would enable in-patients to be taken straight to bed after operations without passing through the open Square. A third matter of great importance which



concerned the welfare of the whole community was the decision to provide a block for paying patients. Mr. Holmes Spicer believed that in the future all operations and a large part of the medical treatment of non-charitable patients would be carried out in the paying departments of the great hospitals, because no one, even the most wealthy, would be able to command the best treatment elsewhere. In any scheme of hospital reconstruction the needs of paying patients must be regarded. Turning to the work of the medical college, he said that the staff were to be congratulated on a very successful year's work; 120 students had obtained their qualifications to practise, and new students to about the same number had joined during the year. In its endeavour to keep the school in the front rank in all matters concerning education and research, a whole-time resident physician-accoucheur, Dr. Wilfred Shaw, had been appointed, and a laboratory in memory of the late Dr. Herbert Williamson had been attached to this department. A new and far-reaching scheme for the transfer of all the college buildings to the other side of Giltspur Street was already in the air, but a very large sum of money, perhaps £140,000, would be needed to bring this about. Such a school with the finest equipment in the country would attract more and more of the best students; for unless it gave the best, and something better than the best, something that anticipated the needs of future generations, Bart's would not keep its great place in the world.

Lord Stanmore, in responding to the toast, added to what the chairman had said about the completion of the second wing of the nurses' home; the getting out of plans for new surgical and operation blocks, with accommodation for 250 patients, and a paying block; and the unveiling of the war memorial on July 8th last by the Prince of Wales, President of the Hospital. In regard to finance, the hospital had been fortunate in securing a number of legacies during the past few years, thus enabling it to pay its way and to put by something substantial for emergencies. He recognized that one of the real needs of the future was a residential college for students.

The health of the guests was proposed by Sir Percival Horton-Smith Hartley, who welcomed these distinguished pilgrims to St. Bartholomew's, and not least old friends like Sir Archibald Garrod and Sir Matthew Fell, whose distinctions elsewhere reflected honour on their school. Sir William Beveridge, in replying, had to confess himself a Vice-Chancellor of London University but not a medical man—a thing that scarcely ever happened, even though some of the Senators ate an apple a day! London, he said, although its schools were known far and wide, scarcely knew its own university. The problem was whether besides its constituent colleges there should be anything in the nature of a real central university for the metropolis. This question, whether London University should have an independent life as a whole, arose on many issues.

The chairman's health was proposed with warmth and wit by his old friend and fellow student Dr. Owen Lankester, whose praises of "Tom Spicer" were received with cheers. A most successful dinner ended with congratulations to the organizers, Sir Charles Gordon-Watson and Mr. Reginald Vick, who each, like the chairman, made very brief acknowledgements.

### ST. MARY'S HOSPITAL.

#### ANNUAL DINNER.

THE annual dinner of St. Mary's Hospital Medical School took place at the Connaught Rooms on Monday, October 4th, when Dr. G. W. H. French was in the chair. There was a large attendance.

The customary loyal toasts having been honoured the chairman proposed the toast of prosperity to St. Mary's Hospital and Medical School. He said that the outstanding event of the year was the appeal for the proposed scheme of new buildings, which would provide two modern operating theatres, many more beds, and increased accommodation for the nursing staff. The existing theatres were not up to date, and there was also a great need for additional beds, many of which it was proposed to use for casualty

cases in view of the alarming increase in the number of street accidents. When the hospital got its new theatres and additional beds there need be no fear about the future; the hospital and school were bound to increase their present high reputation in the world. In referring to the deaths among members of the staff of the hospital during the past year, the chairman mentioned in particular the names of Mr. Herbert Page, Mr. Clayton-Greene, and Dr. R. H. Cole. In looking through the annual report of the school he was struck with the extraordinarily high percentage of passes of men who had worked at St. Mary's Hospital for the Primary Fellowship examination of the Royal College of Surgeons in December last; it was no less than 55 per cent.

In responding to the toast, Mr. A. R. Pridcaux, chairman of the hospital board, said that the King Edward's Hospital Fund for London thoroughly approved the proposed additions to the hospital and offered a contribution of £4,000 on condition that the work was commenced before December 31st, and providing that the sum of £20,000 was raised before that date towards the expense of the scheme. He was glad to say that this sum was raised within five weeks of the opening of the appeal which was carried out by the administrative staff of the hospital, and the extra cost entailed did not exceed £150. Negotiations had been opened for obtaining additional land adjoining the hospital, and he hoped they would be successful. Dr. C. M. Wilson, dean of the medical school, also replied and gave interesting figures with regard to the growth of the school. The toast of the chairman, proposed by Sir William Willcox, K.C.I.E., was received with musical honours, and was duly acknowledged by Dr. French.

### WESTMINSTER HOSPITAL.

THE opening ceremony of the new session at the Westminster Hospital Medical School took place on October 1st in the Board Room, under the chairmanship of Mr. Austin Taylor. Sir Archibald Garrod's introductory address on the science of clinical medicine is published in full in this issue (p. 621). The Dean of the Medical School, Dr. A. S. Woodward, in reporting on the work of the past session, said that the number in attendance had surpassed that of any year since 1900, and that the standard of work attained and the successes won were most satisfactory.

The annual old students' dinner was held on the same evening at the Royal Adelaide Gallery, under the chairmanship of Mr. William Turner, senior surgeon to the hospital. There was a large attendance, and, as usual, formality was replaced to a large extent by the spirit of a happy family gathering. The speeches were short and to the point. The toast of "The School" was proposed by the chairman, and in reply Dr. Woodward gave a brief account of the favourable prospects, including the increasing recognition accorded to the school by the War Office for the post-graduate training of medical officers. The toast of the "Past and Present Students" was also proposed by the chairman, and, in reply, Dr. H. R. Coombes, in reminiscent vein, referred discreetly to adventures of the past, and Mr. R. Greene expressed the aspirations of the present students. The toast of "The Chairman" was proposed by Dr. G. Brittan Gill in an appreciative speech. A good musical programme added to the enjoyment of the evening.

### CHARING CROSS HOSPITAL.

FIELD-MARSHAL SIR WILLIAM ROBERTSON, after presenting, on October 6th, the medals, prizes, and certificates at the Charing Cross Hospital Medical School, reminded the students that, though during the last half-century or so science had made great strides, there were many defects in the field of medicine and in the field of surgery which needed remedying. Some of them were sufficiently grave to leave ample scope for ambition. Exactly how they should be tackled scientifically it would be presumptuous for him to say, but they existed, and they would not be solved except by dint of much hard work and research. The responsibility for their solution rested mainly upon

the younger generation. Coming down to what he might call the ordinary day's work of a member of the medical profession, he would suggest to the students that, although good technical skill and good theoretical knowledge were essential preliminaries to success, they were not of themselves sufficient. They needed to be reinforced by qualifications of more or less the same kind as were common to other professions and in business. The medical man must train himself to come to decisions and act promptly and not be afraid to take a certain amount of risk. It was necessary for him to have a good sound knowledge of human nature and to possess a high standard of character. Science had gone far, and with its progress there had been a great spreading of education among the public in general. The patient to-day was quite a different person from the patient of, say, fifty years ago. He was not to be fobbed off by a mysterious shako of the head or by some high-sounding medical phrase. There was a tendency at the present time to call in the specialist in substitution for the general practitioner. In some cases the services of the specialist were necessary; but it was not infrequently stated that nowadays the supplementing of the general practitioner by the specialist was being carried to limits which could not always be justified. If that was so, the more closely the training of the medical student could be brought into line with the requirements of the general practitioner the better it would be.

## Union of South Africa.

[FROM OUR CORRESPONDENT IN JOHANNESBURG.]

### THE SOUTH AFRICAN INSTITUTE FOR MEDICAL RESEARCH.

FOLLOWING the announcement of the resignation owing to ill health of Dr. Wilfred Watkins-Pitchford from the Directorship of the South African Institute for Medical Research, Johannesburg, comes the announcement of the appointment of Sir Spencer Lister to that post. Both men have rendered signal service to South Africa by assisting the development of medical research. In 1911 the Witwatersrand Native Labour Association launched the scheme for establishing an institution to be devoted to the purposes of medical research, and a joint committee, representing the Government and the association, was formed to carry out the project. This committee invited Sir Almroth Wright to visit Johannesburg and investigate the problem of lobar pneumonia, which was then a formidable scourge to the natives in the mines. Wright introduced the method of protecting against pneumonia by means of inoculation with a pneumococcus vaccine. This method was later considerably elaborated by Spencer Lister after he had joined the staff of the institute. His researches led to the devising of the immunizing vaccine with which the mine natives have been inoculated as a routine procedure during the last ten years. In 1912, on the recommendation of Sir Almroth Wright and General Smuts, Dr. Watkins-Pitchford was appointed first director of the institute. Since that date the work undertaken there has increased to such an extent that in 1923 it was found necessary to enlarge the building very considerably. The growth in the routine work has been very great: in 1919 the number of specimens examined was 17,000, but in 1925 the total had increased to 52,800. In addition to this diagnostic service the institute has for several years past issued considerably more than one million doses of various vaccines and serums annually. The work of the research division, which was inaugurated by Sir Almroth Wright, has expanded with the increasing accommodation and funds, and has earned for the institute a wide reputation. Besides lobar pneumonia the subjects which have been fruitfully investigated include miner's phthisis, schistosomiasis, helminthiasis, dysentery, scurvy, and cerebro-spinal meningitis. It is a striking fact that the annual death rate from disease among the 200,000 natives employed on the Rand mines has fallen from 28.3 per 1,000 in 1911 to 9.3 in 1925.

### Farewell Lunch to Dr. Watkins-Pitchford.

The many farewell functions accorded to Dr. Watkins-Pitchford included a luncheon by the Mayor of Johannes-

burg. In replying to the toast of his health, he thanked the mayor for the opportunity of bidding farewell to some of the leading citizens of the town, and said it was a grave crisis in the life of a worker when he was called upon to relinquish his labour and to put away his tools finally. The most noxious disease with which an intelligent man could be afflicted was chronic unemployment. In their vigorous and restless community, containing numerous representatives of all the principal races and creeds of the world, there were but few ideals common to all, perhaps only one—the welfare of humanity. The South African Institute for Medical Research had been established by the gold mining industry of the Transvaal as an expression of this common ideal of the people. The work of this institution was not performed for the monetary gain of any individuals, nor for the advantage of any section of society, but was carried on against the common enemies of mankind—disease and death. This had been symbolically expressed in the bronze frieze which surmounts the dome of the building. Dr. Watkins-Pitchford believed the time was not far distant when the maintenance of medical research in our midst would be raised above the chances and changes of party politics and the fluctuations of local industry. When the conscience of the people had been fully awakened the future of the work would be secured.

### Sir Spencer Lister.

Sir Frederiek Spencer Lister, who has been appointed Director of the South African Institute for Medical Research, received his medical education at St. Bartholomew's Hospital. After coming to South Africa he was for some years assistant medical officer at the Premier Diamond Mine near Pretoria. From 1912 until 1917 he was medical officer of the Durban-Roodepoort Deep and Bantjes Mines on the West Rand. At first temporarily attached to the South African Institute for Medical Research, his services having been lent by the mines, he joined the institute permanently in 1917, and was appointed research bacteriologist. Sir Spencer is best known in the scientific world in connexion with his researches on pneumonia prevention amongst the mine native employees on the Rand by means of prophylactic inoculation. This work extended over many years, but the main portion of it was finished in 1918. Since then he has tackled several bacteriological problems, more especially those of influenza and the filterable viruses. He has been chairman of the Witwatersrand Branch of the British Medical Association, and also of the Associated Scientific and Technical Societies of South Africa. In 1921 he received the South African medal and grant of the Association for the Advancement of Science. He recently returned to South Africa after a six months' tour of research institutions in Europe and America.

### UNIVERSITY OF THE WITWATERSRAND.

Sir Spencer Lister has been appointed honorary professor of pathology in succession to Dr. W. Watkins-Pitchford. The following candidates have been successful in Part I of the examination for the diploma in public health: J. M. B. de Wet, G. D. Laing, D. Ordman, F. H. Welsh. Part II of the examination will be held in March, 1927. Regulations are being drafted for two new diplomas in the Faculty of Medicine: D.P.M. and D.T.M. The course for the diploma in psychological medicine will commence next year. It will extend over twelve months, six of which are to be spent in an appointment as resident medical officer in a mental hospital approved by the university. The examination will be divided into two parts: Part I to include psychology and the anatomy and physiology of the nervous system; Part II pathology, neurology, and psychiatry. The need for a post-graduate course in tropical medicine in this country has long been felt, but there have been many practical difficulties in the past. It now appears that the proposed diploma course will be made available in the reasonably near future. The Otto Beit Chair of Physiology has become vacant owing to the resignation of Professor E. H. Cluver, who leaves the university to take up the appointment of assistant health officer for the Union.

## THE LATE DR. JAMES ERLANK.

The sudden death of Dr. James Erlank, at the age of 38, has caused very deep regret amongst his colleagues in Johannesburg. One of the younger school of surgeons, he was recognized as a coming man in the profession on the Rand. He had for several years been treasurer to the Witwatersrand Branch of the British Medical Association, and last March was appointed secretary to the South African Committee, in which capacity he did a great deal of work in connexion with the recent visit to South Africa of Dr. Cox. Dr. Erlank graduated M.B., Ch.B. Edin. in 1910, and obtained the diplomas D.P.H. Lond. in 1914 and F.R.C.S.E. in 1919. He held the post of senior house-surgeon at the Cancer Hospital, Fulham, London. He went on active service with the British Red Cross in 1914, and was appointed an honorary captain in the R.A.M.C. He was attached to the Meerut Stationary Hospital, and subsequently was surgeon at the Duchess of Westminster's Hospital in France. He was mentioned in dispatches for meritorious war service. He was a member of the Rand Club and also of the Wanderers Club, and was held in high esteem for his surgical skill and his engaging personality.

## England and Wales.

## SMALL-POX IN WILLEDSEN.

On September 29th Dr. G. F. Buchan, medical officer of health for Willesden, was called to see two cases (man and wife) by the medical practitioner in attendance. He found the man to be suffering from small-pox in a modified form and the woman from haemorrhagic small-pox. The cases were removed to the Willesden Small-pox Hospital the same day. The clinical features of these cases are described by Dr. Troup, the medical superintendent, as follows:

*Husband, aged 43 years.*—Vaccinated in infancy, revaccinated in or about 1900.

*Condition on Admission to Hospital.*—There were a few dry scabs on the hands, wrists, and feet, but the large majority of the lesions had completely healed, leaving no scar. It was not possible to differentiate accurately the site of all the pustules, but as far as could be ascertained these were as follows: Three on face, a few on scalp, three on shoulders and neck, three on abdomen, two on flanks, four on arms, four on hands, one on right thigh, two on feet (dorsal surface). The patient walked into the hospital, and had nothing to complain of. On October 2nd all scabs had completely disappeared, leaving a small scar in some instances.

*Wife, aged 44 years.*—Vaccinated in infancy.

*Condition on Admission to Hospital.*—Temperature 97° F., pulse 64. A haemorrhagic rash was present on the trunk, arms, fore-arms, thighs, and legs, being most marked in the axillae, groins, and wrists. The haemorrhages took the form of petechiae and ecchymoses, the latter form being chiefly present in the axillae and groins. A diffuse erythema was present on the trunk and extremities, most marked on the shoulders posteriorly. The face was slightly bloated, and there were no haemorrhages present in this region. The patient had a characteristic fetor, and was quite conscious. The conjunctivae were injected only. The tongue was thickly furred and the mouth dry. Metrorrhagia was present. There were excruciating pains in the back, and the patient was in great distress. There were no papules, vesicles, or pustules present. A hypodermic of morphine was given, and the patient remained quiet for about five hours. She was seen again at 11 p.m. The haemorrhages on the trunk and extremities had increased in size and number. The face and lips were a livid hue, and the former was more markedly bloated. The pulse could not be felt. The patient was very restless and in a semi-conscious condition; she died at 11.45 p.m.

Inquiries into the history showed that the patients had arrived in London from Paris on September 5th and had gone to a west central hotel, from which they moved to a West End hotel on September 7th. On September 8th the husband became ill with pains in the back, headache, severe prostration, and a temperature of 105° F. This was followed two days later by a rash which appeared first on the scalp and face and subsequently on the arms and legs as described above. On September 19th both patients were moved to a nursing home in Brondesbury, Kilburn. On September 24th the wife became ill with severe pains in the back, followed by headache, vomiting, extreme restlessness, and sleeplessness. On September 26th an erythematous rash appeared in the axillae and groins, subsequently becoming punctate, and on September 29th it was as above described.

Both patients were in Paris during the last fortnight in

August, and apparently it was during the last week of that month that the husband was infected. It is reported that there is small-pox in Paris. The husband had been vaccinated and revaccinated and took the disease in a modified form. He apparently infected his wife, who developed small-pox of the virulent type; she had not been vaccinated since infancy.

The medical officers of health of surrounding districts in which the patients had resided or from which they had been visited were communicated with. Contacts were traced as far as possible and vaccination advised, and the necessary disinfection was carried out. At the West End hotel the medical officer of health of the metropolitan borough concerned, Dr. Charles Porter, ascertained that one of the staff had been ill for about thirty-six hours with suspicious symptoms, and that another of the staff was ill in Lambeth. Both of these cases have subsequently been notified as small-pox. The usual period of two days which elapses between the onset of the disease and the appearance of the rash gives an opportunity for preventive measures to be taken, as it enables the patients, who are not infectious during this period, to be isolated. All medical practitioners in Willesden have been notified of the circumstances of the occurrence of the disease and are actively co-operating with Dr. Buchan to prevent, as far as may be, any spread. Should no further cases arise Willesden will be free from danger of spread from the patients imported into the district probably about October 13th and certainly by October 20th.

It is reported in the press that a middle-aged woman has died in South Shields from small-pox. The medical officer states that four fresh cases occurred last week and that the disease is taking a virulent form.

## LIVERPOOL ROYAL INFIRMARY: NEW MATERNITY DEPARTMENT.

A new maternity department, the gift of Mr. Domingo de Larrinaga, a Liverpool shipowner, was formally opened by the Lady Mayoress, Mrs. E. W. Hope, on September 28th. Sir James Barr, president of the Royal Infirmary, said that such a department was an innovation so far as Liverpool was concerned, but it was long overdue, for there was a general impression throughout the country that midwifery was not as well cared for in the matter of medical education as was medicine and surgery. There was a great need for such training, not only for the future medical students, but also for obstetric nurses. In this country 3,000 women died every year in childbirth, and sepsis in some form or another claimed 1,000. Professor Blair Bell, in seconding a vote of thanks to the generous donor, said he had always felt that a gynaecological clinic was incomplete unless a properly equipped obstetric department was also instituted, for diseases of women and the accidents of childbirth were inseparably interwoven. From a teaching point of view he rejoiced that the medical students would now have the opportunity of acquiring a sound practical knowledge of obstetrics in a general hospital and gain clinical experience, under signal advantages, of the complications that might arise in childbirth. Further, the nurses trained at the Royal Infirmary would now be able to gain their obstetric experience necessary for the C.M.B. certificate. An extension of the x-ray department has been made for the express purpose of obstetric cases requiring such examination, and suitable delivery theatres have been added.

## LIVERPOOL MATERNITY HOSPITAL.

The first section of the new building of the Liverpool Maternity Hospital was informally opened for the reception of patients on April 26th. The formal opening took place on September 29th, when Miss Hartley, ex-mayor of Southport and daughter of the late benefactor, who gave £50,000 to the building fund, unlocked the door. She expressed the fervent hope that the hospital would in turn open up a roadway for a healthier race, on whom depended the happiness and prosperity of the country. Sir George Newman gave an interesting address dealing with the importance of maternity and child welfare, which lay at the very root of national health. Incidentally he said that in the year between 25,000 and 30,000 children were stillborn, and that of those born alive 50,000 would not live

to see their first anniversary. In this new hospital he felt sure that every endeavour would be made to reduce these distressing figures. He rejoiced to see that the Government and the General Medical Council had made arrangements for perfecting the medical curriculum and imposing upon every medical student a new and enlarged kind of training in obstetrics. Dame Mary Scharlieb touched on the history of the Liverpool institutions, of which the present new building was the result. She made an appeal to the citizens of Liverpool, which had been a pioneer in everything that was good and noble, to support and complete this beneficent undertaking. At present fifty-four patients can be accommodated. In the main section, in which are also the nurseries, there are four eight-bed wards and eight single beds. The extension contains two five-bed wards and two double-bed wards. When the hospital is completed 100 mothers will be provided for. There is a well equipped pre-natal out-patient department, and an infant clinic in which special attention is given to infant dietetics. The labour wards, operating theatres, and recovery rooms represent the latest improvements in obstetric science. There is a roof garden readily accessible by a bed lift.

#### NEW SCHOOL CLINIC AT BIRMINGHAM.

A second school clinic in Birmingham was opened on September 30th to deal with a limited sphere of minor operations, including those in connexion with defects of the teeth, eyes, tonsils, adenoids, and ear discharges. The departments in the building are conveniently arranged and very well equipped. In addition to a central assembly room there is accommodation for a staff of two medical practitioners and three dentists, including consulting rooms and dental operating rooms. For the treatment of muscled defects and deformities a remedial exercises department has been established. The scabies block contains special baths and sterilizing plants for dealing with skin diseases. One room is provided for the treatment of minor ailments, and another for testing vision. Good accommodation is available for stores, heating appliances, and other administrative essentials. At the opening ceremony Sir Humphry Rolleston gave a comprehensive survey of the functions of a school clinic, with special reference to its preventive aspect. He commended the pioneer work of the Birmingham Education Committee in arranging for the treatment and supervision of rheumatic, cardiac, and choreic children, and emphasized the importance of preventive treatment in infancy and childhood. He mentioned that the total gross cost of the school medical services in 1923-24 was £1,220,268, or only about one-fiftieth of the total amount spent on public elementary education; this was a very small premium for rendering education a useful asset and for improving the physical and financial health of the nation.

#### EXTENSIONS AT STOCKTON AND THORNABY HOSPITAL.

H.R.H. Princess Mary Viscountess Lascelles opened on September 23rd the new extensions of the Stockton and Thornaby Hospital, which serves the two Teesside boroughs of Stockton and Thornaby and the surrounding district. The original hospital was opened in 1862 with accommodation for six patients; fourteen years later it was transferred to its present site, and then provided for 31 in-patients. In 1890 a new wing was added, which practically doubled the accommodation, and seven years later, with the erection of another wing and the addition of a story to the central block, the total number of beds rose to 72. The demand for its services is illustrated by a waiting list of about 200, and it is hoped that the present extensions, which were begun two years ago, and increased the number of beds to 133, will substantially reduce the period of delay before admission. The new buildings include a nursing home, additional wards for children and adults, an out-patients' department and dispensary, an orthopaedic and electro-therapeutic department, including provision for heliotherapy, a skin clinic, improved operating facilities, an additional electric lift, new quarters for the resident medical officers, and an enlarged and remodelled kitchen. During the year which ended on June 30th, 1,535 in-patients were admitted and 1,083 operations performed. Sir Frank Brown, the president of the hospital, welcoming Her Royal Highness,

described the success which had attended the efforts of the mayors of the two boroughs to raise the necessary funds for the extensions, as the result of which all the expenses had been met. It was stated also that for some years past the workmen of the two boroughs had contributed by their subscriptions no less than four-fifths of the cost of maintenance of the hospital, and that for the last forty-three years no financial year had closed with the hospital in debt.

## Scotland.

#### THE GENERAL BOARD OF CONTROL FOR SCOTLAND.

THE annual report by the Commissioners of the General Board of Control for Scotland includes a review of fifteen years' lunacy and mental deficiency statistics—from 1910 to 1924. The figures reveal an apparent decrease in lunacy, as the proportion of registered lunatics to each 100,000 of the population was 390 before the war, 374 during the war years, and 369 since the war. The total number of persons suffering from mental disorders is, however, really increasing, when the operations of the Mental Deficiency Act are considered over the same period of fifteen years. During the first period the operation of the Mental Deficiency and Lunacy (Scotland) Act of 1913 had not taken effect. In the second quinquennium—that is, the war period—the Mental Deficiency Act was in operation, and the number of mentally defective persons on the register steadily increased. This increase has gone on during the third quinquennium. From 1910 to 1914 the average annual number of mentally defective pupils in training at institutions was 546, while from 1915 to 1919 the average number of mentally defective persons certified under the Act was 1,236. By the end of 1924 the numbers had increased to 2,308. These statistical data of mental deficiency must be added to those of mental disorder to give a proper conception of the incidence of mental affections in the community. In the first five years under review many mental defectives who could not be certified under the Lunacy Acts were left unrecorded for and drifted into habits often tending to crime. The certification, under the Mental Deficiency Act, of mental defectives who had formerly been sent to asylums more than accounts for the diminished numbers of cases of lunacy now entering asylums.

#### Early Treatment of Mental Disorders.

The report deals with the early treatment of mental disorders, which has engaged the attention of the Board for many years. Voluntary admission is stated to be freely and increasingly resorted to by private patients entering royal and district asylums. The parish council of Glasgow inaugurated hospital wards for the treatment of incipient forms of mental disease in 1880, and the success of these special wards was so marked that two special wards, each containing twenty-five beds, were set aside as mental and observation wards in the new hospital opened in Duke Street. This example was followed by the parish councils of Govan, Paisley, and Dundee, and in 1924 observation wards accommodating eighty patients had been set aside for the treatment of cases of incipient, temporary, and unconfirmed mental disorders in the general hospital at Stobhill. The report states that in consequence of the institution of these observation wards the erection of a third asylum for the Glasgow district has been avoided, and that the advantages gained by hundreds of patients who, as the result of treatment in observation wards, have not required to enter asylums is immense. Into these observation wards, which have in all 160 beds, were admitted in the course of the year under review 1,176 patients, of whom 611 were discharged, while 383, or less than 33 per cent., required to be certified and sent to asylums.

#### Forms of Treatment.

Sanatoriums and reception houses for the treatment of tuberculous patients were erected in the Glasgow asylums over a quarter of a century ago. So much success has attended them that similar sanatoriums or spacious verandahs for open-air treatment have been erected in all the institutions under the Board. The necessity for these

sanatoriums is evident from the fact that tuberculous affections were found to be four times more prevalent among asylum patients than among patients in general hospitals. The extensive use of outdoor and sanatorium treatment for all classes of patients has brought the number of tuberculous cases down to the level obtaining in ordinary hospitals. Many other patients in frail physical health have been placed in these special buildings, and the treatment found beneficial in tuberculous affections has proved beneficial in other cases also. The advantages of occupational therapy are fully recognized by the Board. Farms are attached to twenty-two of the district asylums. The Board, in encouraging the acquisition of farm and garden ground for the therapeutic occupation of patients, has suggested that all institutions provided for mental affections should have a minimum of one acre of ground for each male patient. Many interests in farming and occupations in gardening can also be found for women. Other methods of occupational therapy have proved of benefit in the case of patients whose mental state is such that they cannot be employed on farm or garden work in a regular manner. The Board commends the appointment, in many institutions, of consulting dentists who have at their disposal adequately appointed dental rooms. The value of ultra-violet light treatment has been experienced in a number of institutions, and it is suggested that in the care of mental affections of a temporary and curable nature the treatment of nervous and mental affections by light, electrical means, and hydrotherapy might be carried out in dispensaries and clinics.

#### *Encephalitis Lethargica.*

In the Board's last report reference was made to the fact of lethargic encephalitis in producing mental affections, and it was suggested that it would be desirable to group such cases, if possible, in one institution. By an arrangement with the Board of Health, public authorities throughout Scotland have now been enabled to send cases of encephalitis lethargica to Stobhill General Hospital.

#### *Lunacy Statistics.*

On January 1st, 1926, there were in Scotland 18,537 insane persons, exclusive of those maintained at home by their natural guardians. The number at January 1st, 1925, was 18,398, so that an increase of 139 had taken place during the past year. The total number of patients admitted to establishments during 1925 under a sheriff's order was 3,180, or 52 less than in the previous year. Of these, 481 were private patients, or 44 less than in the previous year, while the number of pauper patients was 2,699, or 8 less than in the preceding year. Voluntary patients, it is pointed out, enter asylums voluntarily for treatment of mental disorder, with the sanction of the Board granted on a simple application by the patient. They cannot be detained for more than three days after giving notice of their intention or desire to leave, and they are not certified as insane nor registered as lunatics, although a record is made of their names and other particulars regarding them. The whole number of such persons admitted into asylums in 1925 was 482, and the number resident on January 1st, 1926, was 597. During 1925 the number of private patients discharged recovered was 201, while 951 pauper patients were discharged recovered. The number of private patients who died in establishments during 1925 was 243, while the number of pauper patients dying was 1,183. The death rate for patients in establishments was 8.6 per cent. of the average number resident for the year, as compared with 9.6 for the previous year. The whole number of escapes during 1925 was 144. Of these, 57 were brought back within twenty-four hours, 39 within a week, and 21 after a week. There were still 27 absent on the expiry of twenty-eight days from the date of escape. Of these, 2 were removed from the asylum registers as recovered, 15 as relieved, and 8 as not improved; 2 died.

#### *Working of the Mental Deficiency Act.*

Since the passing of the Mental Deficiency (Scotland) Act in 1913 the Board has made every effort to carry out its provisions, although difficulties, largely of an economic nature, have been encountered. The Treasury instructions of 1921 limit the numbers of defectives in

institutions who would be entitled to participate in the imperial grant to 1,477. The privileges were, however, extended by a further sum of £5,000 towards the cost of providing for 200 additional mentally defective persons. During the coming year it is expected to utilize this for 100 beds in the institution at Birkwood (belonging to the Lanark District Board of Control), for 50 beds in the Broadfield institution (belonging to the Paisley District Board), and for 50 beds in the institution belonging to the Edinburgh District Board at Gogarburn. An application of the Edinburgh District Board of Control for authority to provide institutional accommodation for 500 defectives has received the sanction of the Treasury. Various other smaller institutions have also obtained Treasury grants. In addition to these, 1,009 rate-aided mentally defective persons are provided for in private dwellings, and there are fourteen institutions with accommodation for 1,790 certified defectives. The urgent needs for mental defectives are stated to be accommodation, educational facilities for the young, and extended means for the care and supervision of persons over 16 years of age. The returns show that there are 12,969 mental defectives throughout Scotland, of whom 1,709 are certified under the Lunacy Acts and placed in asylums. The total number returned by education authorities—who are responsible for defectives between the ages of 5 and 16—as capable of receiving education was 5,145. The number of mental defectives reported by parish councils to be incapable of education was 742. The parish council is the authority which deals with all mental defectives over 16 years of age, and the number of these returned by the parish councils was 3,384.

#### *ABERDEEN CITY HOSPITAL EXTENSION.*

The public health committee of Aberdeen Town Council has approved a report proposing extensions and additions to the Aberdeen City Hospital. It makes provision for additions to the nurses' home at a cost of £27,000 for one sixty-bed ward and two forty-bed wards at a cost of £22,500, and for a venereal disease ward and centre at a cost of £11,000. The total cost of the scheme is estimated at £60,500, of which, deducting Government grants, £40,150 is to be borne by the town council.

#### *INCREASED INSURANCE BENEFITS IN SCOTLAND.*

The report presented to the annual meeting of the Scottish members of the National Amalgamated Approved Society, held in Edinburgh, when Mr. G. Tilley, F.F.I., was in the chair, showed that during the year 1925 the sum of £135,086 had been paid to Scottish members of the society in respect of sickness, disablement, and maternity benefit. This was an increase of £3,852 over that of the previous year. The surplus disclosed by the annual valuation would, as the chairman stated, enable the committee of management to announce an increase of benefits during the next five years. This would include additional treatment benefits—dental, optical, and convalescent home—and the provision of medical and surgical appliances, nursing, and contributions in respect of members receiving in-patient treatment at hospitals. During the year 1925 free legal assistance had been given by the society in cases of accident and industrial disease, and compensation had been secured for 29,157 members, involving various sums up to, in one case, £1,227. The total funds now invested on behalf of insurance members of the society amounted to £771,640.

## Ireland.

#### *PRIVATE PATIENTS IN COUNTY CLARE HOSPITALS.*

A CONTROVERSY as to whether, and under what conditions, doctors in charge of public hospitals maintained out of the rates may charge fees to paying patients led to a sworn inquiry at Rahoon (Scariff) District Hospital, held by Dr. A. D. Clinch, medical inspector of the Local Government Department. In Clare, patients admitted to such hospitals must pay for their maintenance if their valuation exceeds a certain figure. In addition, they must, according



to the contention of the doctors, pay fees for the treatment they receive. The argument of the medical profession is that the admission of such patients to public hospitals deprives the doctors in charge, and also deprives private practitioners, of the chance of private practice. On the other hand, members of the Clare Board of Health hold that the doctors are paid salaries for the treatment of all patients admitted, and that they cannot augment those salaries by charging fees for treatment given in a public institution. There were two specific cases before the inspector. In one of these cases the father of the patient admitted that he was accepted as a surety for £350; that he had a farm of thirty-nine acres, and hired out a threshing machine. In the second case it was admitted the patient recently sold a farm for £860. Dr. T. E. O'Connor, medical officer of the Scariff hospital, denied that treatment had been refused in either case because of non-payment of his fees; the patients had left the hospital without consulting him. Mr. Gaffney (solicitor) said Dr. O'Connor had the support of the whole profession in the county in his stand. The doctors, he added, objected to people well able to pay entering hospital in the guise of poor people, and so exploiting the doctors. The inspector gave it as his personal opinion that a doctor could accept a fee from a patient liable for the repayment of full maintenance charges.

#### SCHOOL INSPECTION IN COUNTY DERRY.

Dr. Mary A. Long, medical officer in connexion with the County Derry Regional Education Committee's health and well-being scheme, has issued her report on the first year's work, in which she states that, notwithstanding the distrust with which this new service was regarded, many of the school managers, and most of the teachers, were most helpful and interested, and assisted in every way in winning the sympathy of the parents and children. Owing to the number of schools (223) and the large number of children present at the inspections the primary visit and routine inspection were almost all that could be accomplished. Dr. Long refers to the large number of parents who attended the inspection, and who, by verbal and written inquiries, showed how interested they were in the health of the children. One striking feature of the report is the high percentage of children found to be suffering from (1) throat and nose ailments, (2) defective teeth, (3) eye affections, (4) anaemia. Of 13,088 children medically examined, 51 per cent. were physically deficient. The condition of the children's teeth is stated to be appalling; the number who washed their teeth or have any attention paid to them is small. In one or two of the schools where the necessity of personal hygiene is taught the results are very creditable. Few children were found to be badly nurtured; many, however, were poorly nourished, and, although not suffering from any definite ailment, their power of resistance to disease was diminished. It was discovered that this was due not to want of food, but to improper feeding. Many of the families have tea four or five times a day, and in very few houses is porridge used. In such cases an amended dietary was recommended. In the Magherafelt area there were 151 verminous cases, 647 cases of defective teeth, 552 cases of tonsils or adenoids, 315 cases of eye disease, 287 cases of anaemia, 59 cases of skin disease, and 162 cases of ear trouble; other cases included tuberculosis, nervous diseases, deformity, heart disease, gastritis, nephritis, bronchitis, 4 mentally defective, and 21 unclassified cases. In the Coleraine area there were 95 verminous cases, 468 of defective teeth, 360 cases of tonsils and adenoids, 142 of anaemia, 301 of eye trouble, 53 of skin disease, 72 of aural disease, 54 of bronchitis, and a number of other unclassified diseases. In the Derry-Limavady area there were 228 verminous cases, 752 cases of defective teeth, 620 cases of tonsils and adenoids, 240 cases of anaemia, 263 cases of eye trouble, 88 cases of skin disease, 91 cases of aural disease, 54 cases of bronchitis, 100 cases of phthisis, 49 cases of non-pulmonary tuberculosis, 2 mentally defective cases, and a number of other unclassified diseases. Attention is also drawn to defects of sanitation, of seating, of heating, and to overcrowding in many schools.

## Correspondence.

### THE PERIOD OF INFECTIVITY OF WHOOPING-COUGH.

Sir,—With reference to Dr. Devereux's inquiry (September 18th, p. 542) the following details may be of interest.

At the State Serum Institute in Copenhagen the examination for Bordet's bacillus has been made as a routine since 1916, and the method has been used regularly both by hospitals and by practitioners.

The cases of whooping-cough which during the years 1916-20 have been diagnosed either clinically or by the finding of Bordet's bacillus, and for which sufficient information has been available, behaved as follows as to the finding of Bordet's bacillus on a single examination:

	A.	B.
Catarrhal phase ...	134	75 per cent.
Spasmodic phase, 1st week ...	277	57
" " 2nd " ...	201	61
" " 3rd " ...	121	45
" " 4th " ...	74	41
" " 5-6th " ...	107	9

A = Number of samples from whooping-cough patients.

B = Percentage of positive findings.

The frequency of positive findings thus diminishes considerably after the end of the fourth week of the spasmodic phase. The experience of the last six years has given similar results. Later than six weeks only a small number of examinations has been made. In very few cases Bordet's bacillus has been found seven to nine weeks after the beginning of the spasmodic phase.

In Denmark children are kept away from the school only until four weeks have passed since the beginning of the spasmodic phase, as there seems to be but little danger of contagion after that point of time.—I am, etc.,

MARTIN KIRSTENSEN,  
Chief of Department at the State Serum  
Institute, Copenhagen.

September 25th.

Sir,—I am glad the question of the duration of infectivity of whooping-cough has met with a response (BRITISH MEDICAL JOURNAL, September 18th, p. 542, and October 2nd, p. 615). It is surely high time that the mere presence of a "whoop" should be eliminated as a factor in the question of duration of infectivity, since more cases than are usually acknowledged never whoop at all, while some may whoop for a very prolonged period for various reasons. I have a patient at present convalescent some months from whooping-cough who never whoops unless she is in a temper. Surely no one would suggest that on account of this the child should be excluded from school?

Several years ago Dr. Ritchie, the school medical officer in Manchester, in consultation with Dr. Niven, late medical officer of health, decided that children might be readmitted to school after four weeks' exclusion, even though the whoop had not disappeared. I think a regulation agreed upon by the two experts just mentioned could be taken as authoritative, especially since, when in close contact with the schools working under this regulation, no instance of ill effect was ever brought to my notice, in spite of the early antagonism of the teachers to the dreadful innovation, which antagonism soon disappeared.

It must not be considered that four weeks after the commencement of the whoop is the duration of infectivity of pertussis. It is probably much less. In many instances it does not extend beyond seven days from the commencement of the characteristic whoop, the main period of infectivity preceding this. Four weeks, whilst excessive as regards duration of infectivity, gave the child a satisfactory period of convalescence after what might have been a very debilitating illness.

To combat the lengthy duration of whooping which occurs in some cases, even when the original attack has been comparatively mild, we have commenced to use x-ray treatment. Dr. Bromley, the radiologist at the Booth Hall Infirmary, reports as follows:

"A dose equal to two Hampson units is given over the chest at intervals of a week for a fortnight or three weeks. The

interval is then extended to a fortnight for two more treatments, or more. The distance is 9 inches, antikatode to skin, the filter two or sometimes three millimetres of aluminium, the current three to five milliamperes, and the hardness of the tube equals five inches equivalent air-gap. The advantages claimed for this splitting of the dose is that the time factor for each treatment is shortened, an important point with very young children, and the more x-ray treatment is actually given in the whole time."

The results of this treatment, though variable, have been decidedly satisfactory, inasmuch as the number of whoops and the duration of whooping have diminished.

This matter of duration of infectivity and period of exclusion from school would afford a very valuable discussion, which might be suggested to either the Public Health or to the Diseases of Children Sections of the Annual Meeting at Edinburgh next year.—I am, etc.,

Booth Hall Infirmary, Blackley,  
Manchester, Oct. 4th.

JOHN D'EWART,  
Medical Superintendent.

### MINER'S NYSTAGMUS.

SIR,—In the very interesting correspondence on miner's nystagmus which has been published in the *JOURNAL* I note that the influence of posture is not given the primary place it would appear to merit in a consideration of the pathogenesis of the condition.

The mechanism of the phenomenon of nystagmus was formerly believed to be oculomotor, due to the removal of a higher influence, such as the cerebellum, from the control of the oculomotor nuclei. We now know that the vestibular nucleus is connected to each and all of the oculomotor nuclei by fibres of the medial longitudinal fasciculus, and that nystagmus is produced by some interference in the integrity or sensitiveness of these structures.

When a miner works in a strained or unnatural position and has to look sideways at the point where he is hewing coal, an intermittent or prolonged strain is then thrown upon all of these nuclei, and sooner or later, as in intermittent or prolonged strain elsewhere, a functional disturbance is set up which yields to rest or change of occupation.

Having been engaged for some time in an investigation of vestibular function, especially in epidemic encephalitis, I feel that the importance of the vestibular control over eye movement is not sufficiently acknowledged. I should like to emphasize this by quoting a case seen through the kindness of Professor A. J. Hall of Sheffield. The patient had an external ophthalmoplegia following an attack of epidemic encephalitis, which I was able to relieve temporarily by the simple expedient of syringing the ears with cold water. Not only was the patient able to move his eyes in a limited degree in every direction, but the diplopia of which he complained disappeared. This one case is, I think, sufficient to show what is, after all, the basis of the Bárány tests—namely, that abnormal vestibular stimulation is transmitted to the oculomotor system and expressed in abnormal ocular movements.

It is not my wish to minimize the effect of poor light, etc., on the condition, but rather to suggest to investigators who see more of these cases than I do, that they might review the possibilities of the causes of miner's nystagmus being primarily postural. The letter of Dr. Ingram-Johnson published in the *JOURNAL* of October 2nd (p. 615) has stimulated me to take part in this correspondence and to support Mr. Snell's theory which he refers to.—I am, etc.,

Manchester, Oct. 2nd.

RICHARD I. POSTON, M.D.

### A WARM ENVIRONMENT FOR RHEUMATIC PATIENTS.

SIR,—The heavy incidence of many forms of rheumatic disease in cold and variable climates, and the relief of pain and stiffness obtained by heat, are generally acknowledged facts. But it is not, I think, sufficiently realized that persons unfavourably affected by cold can be, and ought to be, as much as possible protected against chill. If this is true in general, it is, I am persuaded, especially true of rheumatic patients during the period occupied by physical treatment at spas, hydrotherapeutic institutions, or clinics.

Many times have I had the unfortunate experience that thermal baths have failed of their effect in England, on account of exposure to cold during the course of treatment. A frail and elderly lady, recently referred by me to one of our mineral water hospitals, delighted in the thermal baths, after which every day she felt immediate relief of stiffness and pain, but in her weak and crippled state she was unable to bear the coldness of the dressing rooms, corridors, and wards, and the treatment had to be abandoned. People who have lost their resistance to cold cannot safely be exposed to changes of temperature after leaving a thermal bath, and hence the immemorial use of the hot blanket on stepping out of the water and of the rest in bed or on the couch of a warm dressing room. Similar precautions are peculiarly necessary in our climate. The plea for warmth derives additional force from the fact that thermal treatment is available all the year round in England, and that experience shows that it is often beneficial for rheumatic persons in the colder months of the year. I am inclined to think that many cases fail to obtain optimum results at our spas from lack of a warm environment under treatment, and that, on the other hand, the good results of institutional treatment, such as that obtained at the best "hydropathics," are due to the fact that not only the treatment department but the whole building is maintained at all seasons at a constant temperature. A visit to these places is like a visit to a warm country.

At a recent congress of hydrology in Czechoslovakia interesting details were given of thermal treatment for rheumatism at certain vapour and mud baths which have been frequented since Roman times. It is unnecessary to go to Italy for evidence of the value of heat. The Celtic baths and hermetically sealed huts of Britain and the hot baths and warm houses of the Roman occupation are equally good evidence. In the Italian spas special provision is now being made for the poorer classes and for industrial workers, but Dr. Astori of Abano is careful to emphasize the lesson which I am sure we should do well to remember, that the avoidance of chill is in many cases the secret of success:

"It is of much importance in the colder months of the year, that the bath buildings, salons, and sleeping accommodation of the patient should be maintained at a constant temperature."

—I am, etc.,

London, W.1, Sept. 27th.

R. FORTESCUE FOX.

### APPENDICITIS AND VEGETARIANISM.

SIR,—A letter under this heading appeared in your issue of September 18th (p. 545) mentioning a case of acute gangrenous appendicitis in a boy of 10, whose parents and himself were life-long vegetarians.

I think your correspondent might certainly take this case as an exception, remembering, however, that, as far as our knowledge goes, there is no cult or craft which would dare to preach immunity from appendicitis to those who follow their tenets. Any person surely, by indiscretion in diet, is liable to produce a typhilitis which may go on to appendicitis.

Since December, 1918, I have been a lacto-vegetarian—that is, I allow myself dairy produce while abstaining from all flesh food. I have been brought into touch with most of our British and many Continental vegetarians, but have not heard of a case of appendicitis amongst them—although I have been on the alert for such. One case of gangrenous appendicitis occurred in a vigorous young married man four years ago. He was intimately associated with vegetarians and was largely a vegetarian himself, but he commonly partook of moderate quantities of fish and butcher's meat.

I should like to conclude by calling attention to what was to me a highly interesting letter in the same number of the *BRITISH MEDICAL JOURNAL* (p. 542), where the writer referred to the work of the Medical Research Council on "Growth and diet for boys and girls of school age." He points out that although there were great results from the added milk to the dietary, those results were outstripped in the case of girls on a dietary to which wholemeal bread, "sun-maid" raisins, and butter were added, the first and

last taking the place of white bread and margarine. This diet, or the addition, comes very near to a purely vegetarian one.—I am, etc.,

Fareham, Hants, Sept. 29th.

ARTHUR E. DROITT.

SIR,—In the letter on this subject which appeared in your issue of October 2nd (p. 616) it is stated that the Copts of Egypt are vegetarians. This is incorrect, on the testimony of Lane's *Modern Egyptians*, vol. ii, page 290, and according to the long experience in Egypt of the present writer.

I may add that there has been no surgeon-general with access to general health statistics in Egypt during the last twenty years, nor has any report on the incidence of non-contagious disease throughout the country been published by the Department of Public Health for many years.—I am, etc.,

London, W.1, Oct. 3rd.

A. F. MACCALLAN.

#### CANCER MORTALITY AND AGE RATES.

SIR,—I am obliged to Dr. Davies and Dr. Brown for their replies to my letter published in the *JOURNAL* of September 25th (p. 579). I had already read Dr. Davies's article in *Public Health* on the comparison of cancer mortality in Hampstead and Shoreditch. A provisional analysis on similar lines between other residential and industrial districts does not result in the discrepancy he finds. I understand from Dr. Davies's article that he suggests further investigation before arriving at a definite conclusion. The authors of "An investigation into the statistics of cancer in different trades and professions" (Medical Research Council Special Report No. 99) find that their figures "give no support worth mentioning to the idea that better living predisposes to a higher cancer death rate." A recent report on "Cancer of the Breast" (Ministry of Health No. 32) concludes that social status as judged by occupation has no bearing on the incidence of cancer of the breast. But if, as Dr. Davies assumes, cancer becomes more prevalent amongst the well-to-do as age advances, it would rather suggest that the onset of the disease was delayed owing to the better feeding producing a greater resistance.

The great disadvantage in drawing conclusions as to the incidence of cancer according to social position, trade, occupation, etc., is the considerable error that must necessarily be associated with such a method. The duration of the factors terminating in cancer are unknown and may extend over a long period. Hence the need for an exceptionally comprehensive investigation into the pre-cancerous life.

In the Medical Research Council's report quoted above the figures were compiled from cards relating to male deaths from malignant disease which included the trade, etc., of the deceased. Presumably this referred to the trade at the time of death. Now many men have taken part in several trades during their lifetime, and even in the same trade the nature of the occupation may vary considerably. Again, the period during which a man is engaged in his trade is only a part of his total occupation, and factors connected with his pursuits and pastimes cannot be dissociated from his working occupation. Under the heading "Civil Service," for example, a clerk, although following a sedentary occupation, may lead a very active life outside his work, and his total activity may be cumulatively greater than a man in an active occupation, or vice versa. Many other errors may appear in such an investigation and can only be eliminated by dealing with a vast number of cases. The authors recognize this in their summary.

A similar analysis of districts differing in economic environment will show the same liability to error. A person who dies from cancer whilst living in a residential district and is presumed to be in a prosperous economic condition may have been living in very different circumstances for the greater part of his life. In such districts a further source of error is the fact that in districts associated with well-to-do residents there is a preponderance of persons in attendant services, such as domestic servants, chauffeurs, gardeners, etc., and it would be necessary to

analyse each case and apportion it to the relative social status in order to ascertain the proportion actually occurring amongst the well-to-do. Furthermore, in order to confirm the view as to overfeeding as a causal factor in the disease, it would be necessary to ascertain if the increased incidence was in fact amongst those who were overfed. Many well-to-do people are very abstemious as regards diet. The etiology of cancer is still a very complex subject. Even the alleged increase is open to doubt. That more cancer is seen now is probably correct, but this is not synonymous with an increase of cancer.

Statistically the disease has shown an increase since the first report of the Registrar-General in 1838. The graph of cancer shows a steady decline from the present time to that date, and if it could be carried back, at the same rate, previous to 1838 it would reach the base line about the beginning of the nineteenth century. That is to say, the first case of cancer would have occurred in this country about 120 years ago. As a fact cancer was, I suppose, a familiar disease long before that period.

How much of the statistical increase is due to improved diagnosis and certification it is impossible to say. In this connexion, however, it is interesting to note that the deaths notified under senile decay have been falling for many years. Might not many of these have gone to swell the cancer statistics?—I am, etc.,

Streatham, S.W.16, Oct. 3rd.

E. HUDSON.

#### SANATORIUM TREATMENT.

SIR,—A small correction is needed in reference to the letter of mine which you published in the *BRITISH MEDICAL JOURNAL* of September 25th.

After quoting from Dr. Stocks's and M. Noel Kahn's "Memoir,"

"it was found impracticable to use the presence or absence of tubercle bacilli in the sputum as more than an adjuvant in diagnosis, since the number of cases in which bacilli were sought for and found was relatively small,"

I went on to say that the percentages were given as 19 for males and 11.9 for females.

I should have pointed out that these were the percentages for L3 cases only, in which the physical signs are most advanced. In L1 cases the percentages given are as low as 6.1 for males and 4.2 for females, as quoted in Dr. Gillespie's letter.—I am, etc.,

Cheshire, Sept. 30th.

E. WEATHERHEAD.

#### MEDICAL PRIVILEGE IN THE COURTS.

SIR,—The following extract from the trial of the Duchess of Kingston, charged with bigamy, in 1766, records, I believe, the first instance in which medical privilege was pleaded in an English court of law. The attitude of the judge on this occasion is exactly the same as that adopted by the authorities at the present time—namely, to refuse to recognize any such thing as medical privilege in connexion with the giving of evidence. A full account of the proceedings will be found in Howell's *State Trials*.

Mr. Caesar Hawkins, a medical practitioner, was called as a witness in the case, and the following questions were asked him.

Q. Mr. Hawkins, are you acquainted with the prisoner at the bar, and how long have you been so?

A. A great many years, I believe about thirty.

Q. Are you acquainted with the present Lord Bristol, and how long have you been so?

A. I have had the honour of knowing the Earl of Bristol nearly as many.

Q. Do you know of any intercourse between my Lord Bristol and the lady at the bar?

A. Of an intercourse certainly: of an acquaintance undoubtedly.

Q. Do you know from the parties of any marriage between them?

A. I do not know how far anything that has come before me in a confidential trust in my profession should be disclosed consistent with my professional honour.

The question was repeated.

Counsel. I trust your lordships will see nothing in my question that can betray confidential trust or dishonour Mr. Hawkins in giving it. My question is simply whether Mr. Hawkins knows from the parties of any marriage between them?

Lord High Steward. The question that was asked by counsel at the bar is whether the witness knew from any information of either of the two parties, that they were married. The witness objects to it whether he is to answer any questions that are inconsistent with his professional honour. Your lordships are to

determine whether the question put by counsel at the bar shall be asked.

*Lord Mansfield.* I suppose Mr. Hawkins means to demur to the question upon the ground that it comes to his knowledge some way from his being employed as a surgeon for one or both of the parties: and I take it for granted, if Mr. Hawkins understands that it is your lordship's opinion that he has no privilege on that account to excuse himself from giving the answer, that then under the authority of your lordship's judgement, he will submit to answer it: therefore to save your lordships the trouble of an adjournment, if no lord differs in opinion, but (thinks that a surgeon has no privilege to avoid giving evidence in a court of justice but is bound by the law of the land to do it: (if any of your lordships thinks he has such a privilege, it will be a matter to be debated elsewhere but) if all your lordships acquiesce, Mr. Hawkins will understand that it is your judgement and opinion that a surgeon has no privilege, where it is a material question in a civil or criminal cause, to know whether parties were married or whether a child was born, to say that his introduction to the parties was in the course of his profession, and in that way he came to the knowledge of it. I take it for granted that if Mr. Hawkins understands that, it is a satisfaction to him and a clear justification to all the world. If a surgeon was voluntarily to reveal these secrets, to be sure he would be guilty of a breach of honour, and of great indiscretion: but, to give the information in a court of justice which by the law of the land he is bound to do, will never be imputed to him as any indiscretion whatever. Mr. Hawkins then answered the question.

The ruling of Lord Mansfield was undoubtedly correct law, and is exactly the view held by the judges to-day. It is, in addition to being legal, sound common sense.—I am, etc.,

Hove, Sept. 23rd.

L. A. PARRY.

#### ANGINA PECTORIS.

SIR,—The question of the quantity of the "i" in angina was recently mooted in a correspondence in the *BRITISH MEDICAL JOURNAL*. Your first correspondent (June 12th, p. 1012) quoted a line—

"*Hæstum āngīnā tībī mīst|ūm sālē|pōscit ā|cētūm.*" in which the "i" was long. But he could not remember the author. It was pointed out that the author was Q. Serenus Sammonicus, who was writing circa A.D. 230, and that the line actually ran:

"*Anginā|pēō sī|bī . . .*"

The quantity of the "i" here is short. In reading Sammonicus lately I found this version of the same line:

"*Anginām rē|ro mīst|ūm sālē|pōscit ā|cētūm.*"

Here the "i" is long, and is so in the three texts I have seen. Are we to assume that the word had become vulgarised when Sammonicus wrote? For the quantity of the "i" is undoubtedly short in both Plautus and Lucilius. Or was my text corrupt? I seek enlightenment, and remain a devoted adherent to *āngīnā*.—I am, etc.,

London, S.E.1, Sept. 20th.

P. B. WILKINSON.

#### LATE RICKETS AND RENAL DWARFS.

SIR,—My attention has been called to the fact that in your review of the *Guy's Hospital Reports* in the *BRITISH MEDICAL JOURNAL* for October 2nd (p. 599) reference is made to a paper of mine on renal dwarfism. The reviewer says of my article: "after discussing the nature of so-called late rickets, concludes that most, if not all, of the cases so described have been renal dwarfs."

This is not quite the conclusion which I draw. I was discussing *post-mortem* findings and fatal cases, noting the fact that in some cases joints have been examined *post-mortem* but no record of the cause of death has been given. I wrote: "I think many, if not most, *fatal* cases of late rickets have been renal dwarfs."

In studying the clinical picture of late rickets and adolescent knock-knee cases, my own experience has been that rather more than half have been renal in origin, and the renal cases die from uræmia: I have notes of eight *post-mortem* examinations. The cases of late rickets of different etiology have not died, and I have no *post-mortem* experience from which to draw conclusions.

In trespassing on your valuable space with this letter I realize that it may appear to call attention to something which may never have been noticed: but, on the other hand, as your reviewer's words stand it leaves me open to the charge of having lost my sense of proportion because I happen to have followed the life-history of a number of renal dwarfs.—I am, etc.,

Derby, Oct. 4th.

HUGH BARNER.

#### Obituary.

DAVID EWART, O.B.E., M.D., F.R.C.S.Ed.,  
Honorary Surgeon and Ophthalmic Surgeon, Royal West Sussex  
Hospital.

We much regret to record the death of Dr. David Ewart of Chichester, in his 62nd year. He was born at Ecclefechan, Dumfriesshire, but owing to the ill health of his father moved, in 1880, to New Zealand. He only began his medical studies in 1893, completing one year at the Otago Medical School. He then returned to Scotland, and graduated with honours as Bachelor of Medicine and Surgery of Edinburgh University in 1899. In 1902 he became Fellow of the Royal College of Surgeons of Edinburgh, and took the degree of M.D.Ed. with honours in 1907. During his career at the University of Edinburgh he won the Grierson bursar scholarship in pathology and bacteriology, and was assistant demonstrator in anatomy, pathology, and physiology. After graduating, Dr. Ewart went to Chichester in 1899 as house-surgeon at the Royal West Sussex Hospital, then the Chichester General Infirmary. Two years later he joined the late Dr. Skafie in practice, and was shortly afterwards appointed honorary surgeon to the hospital. He was responsible for the formation of a department for diseases of the eye, ear, nose, and throat, became honorary ophthalmic surgeon, and continued to hold the two posts concurrently. He took a prominent part in the reconstruction work at the hospital in 1913, and recently was made chairman of the board of management of the hospital. Dr. Ewart also held appointments as honorary consulting surgeon to King Edward VII Sanatorium at Midhurst, to the Graylingwell Hospital, and to the Bognor War Memorial Hospital. He was an honorary life member of the St. John Ambulance Association, acting at one time as one of its honorary surgeons. For his services at the Graylingwell Hospital during the war he received the O.B.E. To members of the British Medical Association the refined, grey-haired figure of Dr. David Ewart was well known. From 1907 he was a member of the executive committee of the Chichester and Worthing Division. He became chairman of the Division in 1921. He was a member of the Sussex Branch Council from 1915 to 1920, and a vice-president of the Branch in 1915. Owing to his early connexion with New Zealand, he represented the New Zealand Branch on the Council from 1909 to 1916, and the New Zealand and Fiji Branches since 1919. He was a member of the Dominions Committee from 1909 to 1916, and from 1919 to this year, and at one time was chairman of the committee. In 1921-22 he was a member of the Finance Committee of the Association, and he served on the Colonial Medical Service Subcommittee 1920-21. Dr. Ewart was keenly interested in the work of the Association and loyal to its interests. His temperament being of the gentler type, he did not display the violence of the partisan. He was of greater value in a judicial capacity than as a leader of men, and this was recognized in the long service he gave to the committees on which he served. He was indeed a country surgeon of the best type; of charming manners, great ability, sound experience, and worthy of the wide respect in which he was held. He took little part in public life beyond his connexion with the Royal West Sussex Hospital and with the British Medical Association, but he was a member of the West Sussex Insurance Committee. He leaves a widow and six children. The funeral service, conducted by the Bishop of Lewes, was attended on behalf of the Council of the Association by Dr. Lockhart Stephens.

The following tribute is from the pen of a close friend and colleague:

On Saturday, October 2nd, the ancient city of Chichester wore an aspect of general mourning; the cathedral was packed, marvellous was the collection of lovely flowers, and from all parts of the district men and women, rich and poor, crowded in to pay their last tribute of respect and affection to one whose name had become a household word among them. After twenty-seven strenuous years of work Dr. Ewart was carried to his rest.

Up to the time of his election as surgeon to the infirmary it had been customary to send to larger centres many cases requiring special skill, and in particular those demanding experience of eye, throat, and ear work. Ewart recognized the magnificent opportunity afforded to a keen and able man by a county hospital of sixty beds, the large majority of which were at that time at the disposal of his partner and himself, and set to work steadily to make himself and the hospital competent to deal with all. After a special course of training he started departments for throat and ear and also for eye work, and undertook, with increasing success, major surgery of every kind, so that by 1913 the time was ripe for further developments. The death of King Edward, and the generosity of the late Mr. W. James, gave opening for a county subscription. A first-class operating theatre, new out-patient departments, and other improvements were constructed, and formally opened by the King, the name "Royal West Sussex Hospital" being given to the reconstructed institution. With ever-increasing private and consulting practice Ewart's skill and experience grew apace. The ear and throat department was handed over to a colleague, but for major surgery and for eye work Dr. Ewart easily took premier place, and his skill and experience were in frequent demand by his medical confreres in many parts of the district. This year being the centenary of the opening of the hospital, a special effort will be made to carry out further improvements. No one so suitable as Dr. Ewart could be found to guide the fortunes of the institution at this critical time, and he had been elected in April chairman of the board of management. Unhappily, the unwearied labours of twenty-seven years, and especially the extra strain during the war, when by conversion of the county mental asylum a military hospital of 1,200 beds, staffed partly by local practitioners, was in regular use, proved too much for a constitution never robust. Subject to headaches ever since he had typhoid fever in New Zealand, a lifelong martyr to dyspepsia, most seriously ill with gastric ulcer (for which operation was done in 1922), he had lately been making an heroic struggle to carry on, in spite of a return of his old symptoms in aggravated form. This time, alas! the trouble was beyond the aid of surgery, and he passed away on the festival of St. Michael and All Angels.

HOWELL DAVIES, M.R.C.S. Eng., L.R.C.P. Lond.,  
Honorary Surgeon, Pretoria Hospital, Transvaal.

VERY great regret was felt throughout the medical profession in South Africa at the announcement of the death, on September 2nd, of Dr. Howell Davies. He had contracted pneumonia a fortnight before, and was nursed at first in his own home in Arcadia, Pretoria, his colleagues in the town remaining with him by turn day and night. On September 1st removal to hospital became imperative, the condition having become complicated with septicaemia and meningitis.

Dr. Davies, who was 55 years of age, was born in Wales, and received his medical training at St. Bartholomew's Hospital. He went to South Africa during the Anglo-Boer war as a civil surgeon. In the latter part of that war he was in charge of the concentration camp at Irene, near Pretoria. At the conclusion of hostilities he returned to Wales, but after a few months at home he was back in the Transvaal, and commenced private practice in Pretoria. He married Miss Mabel Chatfield of Kimberley, and they had three sons and a daughter. Two of the sons are engaged in cotton-farming in the Northern Transvaal. Dr. Davies had been honorary surgeon to the Pretoria Hospital for the past eighteen years, and chairman of the House Committee for five years. He was on the board of the Leper Asylum, and at one time on the board of the Mental Hospital. He was a member also of the board of the Victoria Cottage Maternity Hospital. For many years he was district surgeon of Pretoria. Folk in the country round about greatly regretted the day when his private practice in Pretoria town became so heavy that he had to relinquish the district surgeoncy, and could no longer visit them on their outlying farms. He was president of the Pretoria Branch of the British Medical Association, and at the

twentieth South African Medical Congress last year was elected president for the ensuing year, and was to have presided next month at the congress which is to be held at Pretoria. A hard and conscientious worker, kind-hearted and generous to a fault, his loss will be felt far outside the bounds of the medical profession.

P. J. S. NICOLL, M.D., C.M.,

Physician, Queen Mary's Hospital for the East End.

DR. PATRICK JOHN SMITH NICOLL, who was for thirty-four years a well known medical practitioner in Stratford, London, died suddenly at Braemar, Aberdeenshire, on September 25th. He graduated M.B., C.M. at the University of Aberdeen in 1887, and in 1891 proceeded to the degree of M.D. After acting as assistant in various practices he joined in partnership the late Dr. Arthur Drake at Stratford. He held the appointments of medical officer to the Post Office, local medical officer to the London County Council, and medical officer to the West Ham education committee, and was also a certifying medical officer under the Mental Deficiency Act. He took an active interest in the work of the British Medical Association and was secretary of the Stratford Division for fourteen years. He was a Justice of the Peace for West Ham, and was a keen Rotarian, being the first vice-president of the West Ham Rotary Club. His greatest interest in life, however, was undoubtedly his work in connexion with the development of Queen Mary's Hospital. About thirty years ago he was elected a medical officer to what was then the West Ham Hospital, succeeding Dr. Sanders, who retired on being elected full-time medical officer of health for West Ham. At this time the hospital had about sixty beds. Dr. Nicoll from the first gave special attention to the administration of the hospital, which he recognized was totally inadequate for the requirements of a great and growing population, and spared no pains to further its extension. It was largely through his influence that funds were obtained for the building of an additional block containing forty beds, an operating theatre and casualty department, and residential accommodation for medical officers and nurses. When this extension was opened the staff was reconstituted and Dr. Nicoll was appointed the first physician, and became chairman of the honorary medical staff, which posts he held till his death. He was a member of the committee of management from the time of his appointment and had been vice-chairman for the last ten years.

A colleague writes: Dr. Nicoll's capacity for influencing any with whom he came in contact was much above that of most men. His friendships once made were kept to the end. The local esteem in which he was held was shown by the very large congregation who attended the memorial service held at St. John's Church on September 29th. His loss will be much mourned by a large circle of friends and patients, by whom he was respected and beloved.

DR. WILLIAM KERR PEDEN, who died suddenly while engaged in his professional work, was born at Galston sixty-eight years ago. He graduated M.B., C.M. Glas. with honours in 1879. After holding the posts of house-physician and house-surgeon to the Western Infirmary, Glasgow, he served for five years as surgeon to the Blantyre Mission in East Africa. On resigning his appointment to the Mission he spent some time in post-graduate medical study in Vienna. In 1886 he returned to Glasgow, and after a short period in partnership with the late Dr. James K. Kelly, he set up in practice on his own account. Dr. Peden, who was a member of the Glasgow Southern Division of the British Medical Association, is survived by a son and a daughter, the former being a member of the medical profession; his younger son was killed during the war.

DR. WALTER RICHARD HUGH SMITH of Shrewsbury died on September 19th. He was educated at Dublin University, where he graduated M.B. in 1902, and obtained the L.M. at the Rotunda Hospital, Dublin. He proceeded M.D. in



the following year. After serving for eleven years as second assistant medical officer to the Lancashire County Asylum, Whittingham, he was appointed senior assistant medical officer to the County Asylum, Shrewsbury, in February, 1914. On the outbreak of the war he joined the R.A.M.C. and served in India as specialist in mental disease, with the temporary rank of captain. He was a member of the Shropshire and Mid-Wales Branch of the British Medical Association and of the Royal Medico-Psychological Association.

## Universities and Colleges.

### UNIVERSITY OF OXFORD.

THE degree days in the coming academic year are as follows: *Michaelmas Term, 1926:* Thursday, October 21st; Saturday, November 27th; Friday, December 17th. *Hilary Term, 1927:* Thursday, January 27th; Saturday, February 19th; Saturday, April 9th. *Trinity Term, 1927:* Thursday, May 5th; Saturday, June 11th; Friday, July 1st; Saturday, July 23rd; Saturday, August 6th.

#### University Scholarships in the School of Medicine.

The following awards of scholarships in medicine were announced at the close of the last session:—*Theodore Williams Scholarship in Anatomy:* G. H. Bateman, University College, and J. H. B. Beal, University College (equal). *Theodore Williams Scholarship in Physiology:* P. B. Cokes, University College, and J. H. Hunt, University College. *Theodore Williams Scholarship in Pathology:* H. M. Maussell, B.A., Pembroke College; *proximo accessit*, J. A. Ferguson, B.A., Queen's College. *Radcliffe Scholarship in Pharmacology:* F. Hawking, University College.

### VICTORIA UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examination indicated:

D.P.H. (Part D).—Mary Evans. (Part ID).—J. Rigby, H. M. Turner.

### UNIVERSITY OF GLASGOW.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—W. Allan, D. F. Anderson, G. Arnour, J. C. Baird, P. M. I. Baird, B. R. Barr, H. Barton, J. Rianio, J. Black, A. M. Brown, D. W. Buchanan, J. Burns, D. Chisholm, D. D. Clarke, Martha Cleland, W. Clement, E. A. M. Connal, A. Cumming, D. M. Cunningham, J. C. Cutlbert, J. Dunn, A. C. Ewing, Jessie A. C. Flett, Dorothy M. Forsyth, G. Gemmill, C. Gilmore, Margaret A. Glass, M. Goránkel, Mary G. Gorrie, Charlotte A. Guison, J. Hamilton, J. A. Kemp, H. R. Kidd, J. E. W. Lee, D. P. Leiner, S. R. Lipchinsky, R. Logan, S. Lurie, C. E. B. Lynch, R. H. B. McCine, Mary I. McGregor, M. MacGregor, W. G. McKay, C. C. McKenzie, W. G. MacLennan, T. H. McOwat, M. Manderson, J. Marayles, A. G. Mearns, Isabella A. Milne, L. Morrison, G. M. Muirhead, J. G. Murdoch, M. Naftalin, J. O'Hara, T. M. Orr, H. H. Pinkerton, W. T. Rankin, D. M. Reid, G. Rossion, J. P. Seemple, G. Shearer, A. Shepherd, J. W. Shepherd, G. S. Sinclair, A. B. Smith, J. L. Smith, R. B. Smith, W. C. Smith, Eliza M. K. Stevenson, A. R. S. Stewart, M. G. Tallach, G. R. Taylor, A. Thomson, Margaret T. Tindal, H. Vost, L. A. Watson, W. Wilson, J. Wyllie, H. B. Young, W. A. Burnett, R. A. Campbell, A. Esterman, D. MacCallum.

Distinction in surgery.

## The Services.

### DEATHS IN THE SERVICES.

Lieut.-Colonel Charles Barromeo Jennings, R.A.M.C.(rel.), died on May 30th, aged 79. He was born on November 4th, 1846, and took the L.R.C.S.I. in 1867, and the L.K.Q.C.P. in 1868. Entering the army as assistant surgeon on March 31st, 1868, he became surgeon lieutenant-colonel after twenty years' service, was placed on half-pay on August 10th, 1892, and retired on April 26th, 1895.

Fleet Surgeon Christopher Harvey, R.N.(rel.), died at Rickmansworth on September 12th. He was educated at Westminster Hospital, and after taking the Edinburgh double qualification in 1879, entered the navy, attaining the rank of fleet surgeon on November 28th, 1890.

Lieut.-Colonel Patrick Mullane, Bengal Medical Service(ret.), died on June 13th, aged 72. He was born on March 12th, 1854, at Ballynora, co. Cork, and was educated at Queen's College, Cork, graduating as M.D. and M.Ch. in the Royal University, Ireland, in 1880. Entering the I.M.S. as surgeon on April 2nd, 1881, he became lieutenant-colonel after twenty years' service, and retired on November 1st, 1901. Except for a brief period acting in civil employ in Lower Bengal, his whole service was spent in military employ. He served in the Burma war in 1885-87, taking part in the operations of the second and sixth brigades, and received the frontier medal with two clasps. He also served on the North-West Frontier in the first Miranzai expedition of 1891; in the Chitral campaign of 1895, at the relief of Chitral (medal with clasp), and in the Tirah campaign of 1897-98, including the actions of Dargai and of the Sompahs and Arhanga Passes (two clasps). His elder brother, Jeremiah Mullane, entered the I.M.S. in 1877, and died at Dibruguth on November 10th, 1897.

## Medical News.

THE annual service of the Guild of St. Luke will be held in Westminster Abbey on Sunday, October 17th, at 6.30 p.m., when the sermon will be preached by the Rev. Canon Sopwith. Members who propose to attend are invited to wear academic dress and to robe in the Jerusalem Chamber. They are requested to notify the secretary, c/o Miss J. S. Moore, King's College, Strand, before October 11th, from whom also a limited number of tickets for other members and friends may be obtained. On October 18th (St. Luke's Day) the annual corporate communion will be held at Grosvenor Chapel, South Andley Street, W.1, at 8.15 a.m., the celebrant being the Rev. Francis Underhill, Acting Warden of the Guild; a private room will be reserved at Lipton's Café, 484, Oxford Street, for a communal breakfast (price 1s. 6d.) if sufficient members signify to Miss Moore their desire to attend. On the evening of the same day the Provost will be at home to members of the Guild at 5 o'clock, and the annual general Chapter will be held at King's College at 5.30 p.m. Chapters will be held on November 16th, when Mr. E. B. Turner will give an address on spiritual healing, and on December 21st, when the Rev. L. C. Downing, of the Industrial Christian Fellowship, will speak on problems connected with religion and industry; both these chapters will commence at 5.30 p.m., at King's College. A special service of thanksgiving for health and of prayer for the sick and suffering will be held in St. Martin's Church, Trafalgar Square, London, on October 18th, at 7.45 p.m. The sermon will be preached by Dr. Arthur Lankester, who has been engaged in missionary work in India, and members of the medical and nursing professions are specially invited.

THE annual medical service in Liverpool will be held in the Cathedral on Sunday, October 17th, at 3 p.m. The sermon will be preached by the Bishop of Oxford (Dr. T. B. Strong), and the offertory will be on behalf of the Royal Medical Benevolent Fund. The honorary treasurer, Mr. J. Ernest Nevins, 32, Prince's Avenue, Liverpool, will be pleased to receive donations to this deserving fund from those who may not be able to be present at the service. Seats will be reserved for medical men, who are asked to wear academic costume, and their friends. Application for these seats should be made not later than October 11th to Dr. John Owen, 11, Rodney Street, Liverpool.

THE Fellowship of Medicine has arranged a series of lectures on emergencies in medicine and surgery, the first of which will be delivered by Sir Thomas Horder at 5 p.m. on October 14th, at 11, Chandos Street, Cavendish Square, W. On October 15th, at 5 p.m., Mr. M. L. Hine will give a lecture-demonstration on the red eye and the significance of circumcorneal injection, at the Royal Westminster Ophthalmic Hospital. Both the lecture and demonstration are open to members of the medical profession, without fee. A three weeks' course in laryngology, rhinology, and otology is in progress at the Central London Throat, Nose and Ear Hospital. Three courses, lasting a fortnight, begin on October 18th. These are a combined whole-day course in diseases of children in which the Paddington Green, the Victoria Hospital, and the Children's Clinic are participating; a course in gynaecology at the Chelsea Hospital for Women; and an afternoon course in urology at St. Peter's Hospital, where there will be clinical work in the out-patient department, including cysto-scopies and a daily lecture on various phases of disease of the urinary tract. A course of eight lecture-demonstrations is being given at the London School of Tropical Syllabuses, the General Course Program, and its Journal, may be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

AT a special meeting of the Andover Town Council on October 1st, the honorary freedom of the borough was conferred upon Councillor E. A. Farr, J.P., in recognition of his services as mayor for three successive years and the great part he has taken in bringing to a successful issue the new war memorial hospital of which he is senior medical officer. An illustrated account of the hospital was published in the JOURNAL of July 10th, 1926 (p. 74).

THE medical conference from November 3rd to 7th inclusive termed "Journées Médicales de Montpellier" will include the commemoration of the centenary of the discovery of bromine by Balard. Discussions will be held about military hygiene and the organization of medical societies; numerous excursions have been arranged. Full information may be obtained from the secretary, Dr. Desfour, 8, Rue Emile Zola, Montpellier.

DR. ALEXANDER JOE, on leaving the Edinburgh Public Health Department to take up the duties of medical superintendent of the North-Western Fever Hospital, Hampstead, has been presented by his colleagues with a silver cigarette box.

THE annual dinner of the Royal Society of Medicine has been fixed for Thursday, November 18th, at 8 p.m., at the Hotel Victoria, Northumberland Avenue. The Prime Minister has consented to be the society's guest of honour if his Governmental duties permit.

THE People's League of Health has arranged the following series of lectures to be delivered at the house of the Medical Society of London, 11, Chandos Street, Cavendish Square, at 6 p.m.: Eight lectures on the mind and what we ought to know about it, commencing on November 1st; seven lectures on "Diet: what we should eat and why," commencing on November 3rd. Application for tickets should be made to Miss Olga Nethersole, R.R.C., 12, Stratford Place, W.1.

DURING the third international congress for first aid, held at Amsterdam on September 8th, an international society for first aid was founded by the establishment of a permanent commission with its seat at Amsterdam.

At a sessional meeting of the Royal Sanitary Institute, on Friday, October 22nd, in the Town Hall, Dover, Dr. Joseph Cates, County M.O.H. Surrey, will open a discussion on "Experiences in diphtheria immunization," and Dr. A. B. McMaster, M.O.H. Dover, will open a discussion on "Port sanitary administration." The chair will be taken at 7.30 p.m. by Professor H. R. Konwood.

THE first meeting of the seventy-first session of the West Kent Medico-Chirurgical Society will take place at the Miller General Hospital to-day (Friday), at 8.45 p.m. After the business of the annual general meeting has been disposed of clinical cases will be shown and discussed. At the meeting on November 12th Mr. Harold Chapple will read a paper on abdominal pain in women, and on December 10th Dr. Robert Hutchison will deliver the Purvis Oration, his subject being "Prognosis."

TWO Chadwick lectures on the development and present state of public health in Germany will be given by Professor Dr. Abel, Director of the Institute of Hygiene, University of Jena, on Tuesday, October 19th, at 5 p.m., and Wednesday, October 20th, at 8 p.m., in the Barnes Hall, Royal Society of Medicine, 1, Wimpole Street, W.1. At the first lecture Sir William J. Collins, K.C.V.O., M.D., Chairman of the Chadwick Trustees, will preside, and at the second lecture Sir Arthur Newsome, K.C.B., M.D. Admission is free (without tickets).

THE Section of the Royal Society of Medicine for the Study of Disease in Children will hold a meeting, postponed from last session, at Birmingham on Saturday, October 30th. Clinical cases will be shown at the Children's Hospital, Ladywood Road, at 2 p.m., and biochemical and pathological demonstrations will be given at 4.30 p.m.

THE annual dinner of the Chelsea Clinical Society will take place at the Café Royal, Regent Street, under the chairmanship of Dr. Ernest Young, on Tuesday, October 26th, at 7.30 p.m. At the meeting of the society on November 16th there will be a discussion on encephalitis lethargica, and on December 21st a discussion on septicæmia.

THE annual dinner of the Brussels University Medical Graduates' Association will be held on Thursday, October 28th, at the Langham Hotel, Langham Place, W.1, at 7.30 p.m. Price of tickets 12s. 6d., exclusive of wine. Holders of the M.D.Brux. degree who have not received a circular and pamphlet are asked to communicate with the honorary secretary of the association, Dr. A. D. Woolf, 11, Chandos Street, Cavendish Square, W.1.

THE annual meeting of the Medical Sickness, Annuity, and Life Assurance Society will take place at the offices of the company, Lincoln House, 300, High Holborn, W.C., on Monday, October 11th, at 4 p.m.

A LECTURE on ultra-violet light, arranged by the Chartered Society of Massage and Medical Gymnastics, will be given in the library of the Royal Victoria Infirmary, Newcastle-on-Tyne, on Wednesday, October 13th, at 6 o'clock, by Dr. Justina Wilson. Members of the medical profession are invited to attend.

DR. HENRY VUILLET has succeeded Professor C. Ronx in the chair of clinical surgery and as head of the surgical department of the Cantonal Hospital at Lausanne.

IN Germany during 1925, 12,476 cases of enteric fever were notified, as compared with 14,439 in the previous year. The diphtheria incidence also fell, there being 35,296 notifications in 1925, as compared with 38,256 in 1924. Acute polyomyelitis diminished from 507 cases in the previous year to 387 cases in 1925; rubics from 48 to 20, and trichinosis from 13 to 9. Encephalitis lethargica was more prevalent, there being 217 cases reported in 1925, as compared with 156 in the previous year. A sharp increase in trachoma occurred, the figures being 2,777 in 1925, as compared with 1,800 in 1924 and 1,200 in 1923. This increase is attributed to a large influx of Polish workmen last year.

CONSEQUENT on the resignation of Sir Charles Ballance from the post of chief surgeon to the Metropolitan Police, Dr. Maurice A. Cassidy has been appointed physician and chief medical officer. Mr. C. Max Pajo has been appointed consulting surgeon and Dr. H. B. Russell deputy physician to the Metropolitan Police.

THE late Dr. Louis Ernest Desnos, whose death was announced in the JOURNAL (January 9th, p. 74), has left a legacy to the Académie de Médecine, of which he was a member, to found a triennial prize of 3,600 francs to enable a doctor or resident in a Paris hospital to undertake a scientific mission abroad.

A MEMORIAL was recently unrolled at Lebanon, Connecticut, to Dr. William Beaumont, the pioneer American physiologist, who studied gastric digestion through an accidental fistula on Alois St. Martin.

IN an annotation published on September 18th (p. 536) we referred to the work of the National Institute for the Deaf. We have now received the report of the conference of agencies engaged in the welfare of the deaf, held in London on June 10th last, and called together by the Institute. Copies, price 1s. post free, may be obtained from the Secretary, at the office, 67, Frith Street, Soho Square, W.1.

STATISTICS of births and deaths in the United States are incomplete owing to a defect which the efforts of the United States Census Bureau and of the American Medical Association have not yet been able to remedy. From a manifesto issued by the former and published by the JOURNAL of the latter it appears that of the forty-eight States all, with three exceptions, have adequate registration laws, but that in fifteen of them they are not properly enforced. It is hoped that by 1930 it will be possible to abolish the term "registration area" and to substitute for it "national registration."

MR. SAMUEL WILLIAM FARMER, J.P., of Little Bedwyn, Wilts, has left estate of the gross value of £404,330, with net personalty £381,341. Subject to certain legacies and some specific bequests, the residue of the property is bequeathed for the benefit of persons of either sex, particularly and especially, but not necessarily or exclusively, for the upper middle professional classes, who, through ill health or by reason of advancing years, are incapable of earning their own livelihood, or for such educational purposes or for the benefit of such hospitals, nursing or convalescent homes, or other similar charitable objects as his trustees may think fit.

THE office of the National Association for the Prevention of Tuberculosis has been removed from 20, Hanover Square, W.1, to 19, Tavistock Square, W.C.1 (Telephone: Museum 2577).

THE through express Calais-Vintimille (in connexion with the 11 o'clock service from Victoria) will be reintroduced on October 11th. Accommodation can be reserved at the P.L.M. Railway Offices, 173, Piccadilly, or through any tourist agency.

ON the completion of twenty-one years' service Dr. B. H. Slater, medical superintendent of St. Luke's Hospital, Bradford, has been presented with a silver tea service by the hospital staff.

THE late Lieut.-General Sir William Leishman, K.C.B., F.R.S., Director-General of the Army Medical Services, has left estate of the gross value of £7,898.

DR. HERMANN BREHMER, a well known writer on tuberculosis, celebrated his hundredth birthday on August 14th.

THE German Society for the History of Medicine and Natural Sciences, whose organ, *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, is well known to medical historians, celebrated the twenty-fifth anniversary of its foundation last month.

ELEVEN cases of trichinosis with one death occurred at Vienna and Innsbruck in the first six months of this year, as compared with seven cases and three deaths during the whole of 1925.

IN the Dutch Indies 894 fatal cases of plague occurred between March 21st and May 15th.

WE have received a copy of *Die Arzfrage in der Sozialversicherung*, which is a series of papers written, under the editorship of Dr. Hubert Kordisch of Prague, by seventeen prominent representatives of insurance societies and medical and scientific bodies in England, France, Germany, Austria, Switzerland, and Czecho-Slovakia, dealing with the question of national insurance in these countries.

THE Department of Justice at Washington has decided that the Wassermann test shall be performed on all the inmates in the Federal prisons.

A GREAT epidemic of trachoma has broken out in the region of Kharkov. Out of every 1,000 ophthalmological cases 200 are suffering from the disease.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **The Editor, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the **BRITISH MEDICAL JOURNAL** alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

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The **TELEPHONE NUMBERS** of the British Medical Association and the **BRITISH MEDICAL JOURNAL** are **MUSEUM 9361, 9362, 9363, and 9364** (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

EDITOR of the **BRITISH MEDICAL JOURNAL**, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

### QUERIES AND ANSWERS.

#### HYDROA.

"W. L." asks for advice in the treatment of a boy, aged 3½ years, who suffers from hydroa. The condition is of six weeks' duration, and recurring on the back, legs, and about the elbows. Arsenic, bismuth carbonate, calcium lactate, magnesium, have been tried internally without success, and an egg-free diet has had no effect.

#### PRURITUS.

DR. T. C. RUSTER (Newcastle-on-Tyne) writes in reply to "W. A." (September 25th, p. 532), who asked for suggestions in the treatment of pruritus, with thickening of the skin of the palms of the hands: I found an eruption of this character, which was probably psoriasis, disappear like magic by rubbing in equal parts of ung. picis, ung. hydrarg. ammon., chlor., ung. salicylic. This treatment was suggested by Dr. Wells Patterson. The eruption, which was extensive and on the instep of the foot, did not recur.

#### NERVOUS VOMITING.

"H. W. B." asks for suggestions for the treatment of a young woman, aged 23, of good physique and with no apparent disease of the alimentary tract, who suffers from vomiting after excitement. After an evening dance or an important golf match she sleeps soundly as usual, but awakes about 5 a.m. with a violent attack of vomiting and sickness, which continues for five or six hours, unaccompanied by pain or headache, and ending spontaneously, with no after-effects. The vomit is watery, and the attacks occur irrespective of whether she has had supper or not. The condition has lasted for about two years, in spite of various forms of treatment, including sodium bromide at bedtime.

#### X-RAY TREATMENT OF RINGWORM.

DR. CHRIS. J. McSWEENEY (Cardiff) writes in reply to "T. E. R." (September 11th, p. 511): The use of aluminium filters is theoretically an advantage in eliminating the dangerous soft rays and so minimizing the risks of resultant radio-dermatitis. If the Sahouraud pastille is at half skin distance it will probably be between the filter and the tube, and so will receive unfiltered rays. Its colour will therefore be no guide as to the quantity of rays which has reached the scalp. If the pastille is on the skin—the method originally employed by Hampson in 1911—it of course receives filtered rays, and its colour can be matched as usual with the Lovibond tintometer, against fractions of Teitel's Kienböck's strips, which are laid on the scalp, furnish probably the simplest method of calculating the dose of filtered rays. Whatever method is employed the time of exposure will be increased—even by 30 to 50 per cent., according to the thickness of aluminium used. As to whether filtered rays give more uniform epilation, I do not think this has ever been claimed for them. My own experience is that unfiltered rays, proceeding from a hard tube, and working with standard conditions of time, distance, voltage, and milliamperage, are more reliable.

#### WATERY EYES.

DR. L. J. GREEN (South Tottenham) writes: With reference to "A. G. F.'s" inquiry (October 2nd, p. 619) as to the origin of his watery eyes, the condition may be due to (1) a drainage fault in the lacrimal passages, perhaps associated with the presence of a mucocele of the lacrimal sac, or (2) a spasmodic hypersecretion through abnormal stimulation via the branch of the fifth nerve which supplies the lacrimal gland. Of these, the

first seems the more likely. The most common sites of obstruction to the flow of tears are at the lacrimal puncta, and in the course of the lacrimal duct—for example, in cases of intranasal disease. The condition could be brought about by repeated "colds." It can soon be determined whether the puncta are too small, and obstruction in the lacrimal duct is demonstrated by carefully passing a lacrimal probe. If a mucocele of the lacrimal sac is present the conjunctiva will be flooded with fluid every time the sac is pressed upon and thereby emptied. "A. G. F." should have the above points investigated.

#### INCOME TAX.

##### Sale of Investment.

"R. L. T." has been requested to state the date on which he sold a holding in War Loan, and how the money has been invested. Are these requests justified?

It has to be remembered that the inspector of taxes has very little legal ground for making inquiries direct of taxpayers. He is entitled to examine the returns, however, and the making of relevant inquiries enables him to agree with the assessments before they are formally authorized by the Commissioners, and thereby to avoid trouble at a later stage to all concerned. The first inquiry is evidently directed to ensuring that the assessment is technically correct and that any appropriate adjustment is made in the previous year's assessment; "R. L. T." may be entitled to some relief if he sold the War Loan in that year. The second inquiry rests on less obvious grounds. Presumably the inspector desires to ensure that no new income has been overlooked. Doubtless a general reply on that point will serve—for example, that it has been reinvested in such a way as to produce income taxed at its source.

##### Notifications to Panel Patients.

"J. R." explains that his Panel Committee deducted £2 14s. from his first cheque to cover the cost of the postage of notices sent to patients on his predecessor's panel intimating that he had taken over the practice. Can he deduct that amount from the full fees for income tax purposes?

No. The expense was incurred in the taking over of the practice—that is, it related, not to the working of it, but to the change in proprietorship, and as such is not allowable for income tax.

### LETTERS, NOTES, ETC.

#### HOUSE OF REST, MENTONE.

DR. D. W. SAWMYS (Topsam, Devon) writes to call attention to the fact that invalid professional men requiring a change, and whose means are limited, are received into the House of Rest at Mentone, Riviera, at a charge of 30s. a week, all found, on application to the matron, Miss Goldie, or to Dr. Stanley Kendall, or to Dr. Sawmays, Mentone, during the winter season.

The home, we believe, is a philanthropic undertaking (apart from the charge of 30s. weekly), and is meant to help professional men who break down temporarily. It is hence useful to medical men of small means or their professional patients in like case.

#### A DANGEROUS DRUGS REGISTER.

UNDER the Dangerous Drugs Regulations, 1926, non-dispensing doctors, who have hitherto been exempt from such a requirement, must now keep a record of all "dangerous drugs" purchased or otherwise obtained. The Register of Dangerous Drugs, published by Messrs. Woodrow and Co. (3, Cook Street, Liverpool), admirably serves this purpose in the simplest form consistent with the Regulations. Separate pages, provided with a thumb index, are set apart for the four groups of drugs, and their preparations which must be registered—namely, morphine, cocaine, heroin, medicinal opium. In addition there is an excellent summary of the various regulations, 1921 to 1926, so far as they relate to duly qualified medical practitioners. The size of the Register is 10 in. by 6 in. The prices are: Bound, 6s.; post free, 6s. 6d.; or in strong Manila boards, 4s.; post free, 4s. 3d.

#### TREATMENT OF PRURITUS ANI.

DR. ERNEST WARD (Paignton) writes: Two medical men who believe themselves to have been immediately and permanently cured by a simple line of treatment have asked me to make known the method I have long used to treat this troublesome affliction. Anal pruritus arises in the great majority of cases from a perianal dermatitis, due to repeated infection during the cleansing after defaecation. To cure the dermatitis it is only necessary to avoid soiling the parts concerned. If paper is used each piece should be passed in one sweep from behind forwards, then rejected. Wool or a sponge used similarly may prove more efficient among the many sufferers from haemorrhoids, but paper will serve equally well in most patients and is vastly more convenient.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 49, 52, 51, 54, and 55 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 52 and 53.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 163.

## British Medical Association.

PROCEEDINGS OF SECTIONS AT THE ANNUAL  
MEETING, NOTTINGHAM, 1926.

## SECTION OF MEDICINE.

F. H. JACOB, M.D., F.R.C.P., President.

DISCUSSION ON  
SOME RECENT DEVELOPMENTS IN OUR KNOW-  
LEDGE OF THE BILIARY TRACT.

## OPENING PAPERS.

## I.—EVARTS A. GRAHAM, M.D.,

Professor of Surgery, Washington University School of  
Medicine; and Surgeon-in-Chief to Barnes and  
St. Louis Children's Hospitals, U.S.A.

MINGLED with the appreciation of the high honour which you have bestowed on me in inviting me to speak before the British Medical Association is the sense that perhaps even a greater honour has been accorded to me, a mere surgeon, in being invited to appear before the section on internal medicine.

## FUNCTIONS OF THE GALL BLADDER.

The extraordinary interest which has been displayed in the gall bladder in recent years is associated with the ever-increasing evidence that disorders involving this small organ afflict a very large proportion of adult humanity, and that they probably constitute the most frequent organic cause of dyspeptic symptoms. Yet the known normal functions of this structure seem to be relatively insignificant—namely, the regulation of pressure in the biliary system and the concentration of bile by the absorption of water. Other functions are suggested perhaps by the fact that the blood from the gall bladder drains into the portal vein and is thus carried through the liver, as if something from it is useful in the normal metabolism of the liver. But about such possible functions nothing is known at present, although Boyd<sup>1</sup> has proposed that the gall bladder absorbs cholesterol, and Sweet<sup>2</sup> has made the suggestive hypothesis that the gall bladder forms something which acts to de-esterize cholesterol esters. Sweet has also shown that in some of the animals which do not normally possess gall bladders there are innumerable saccules, resembling diverticula, projecting from the walls of the intrahepatic bile ducts. He has found a large number of these saccules in animals from which the gall bladder has been experimentally removed, and he offers the opinion that they compensate for the removal of the organ, in that each sacculo may be a miniature gall bladder. Apparently, then, the serious consequences of cholecystic disease must be concerned with phenomena apart from the disturbance of the functions of the gall bladder.

## PATHOGENESIS OF CHOLECYSTITIS.

In 1918 observations<sup>3</sup> were published which indicated that inflammatory changes in the liver were a constant accompaniment of cholecystitis. During the course of operations on the gall bladder I had removed small pieces of liver tissue for microscopic examination. These had shown uniformly a type of inflammation which was essentially a pericholangitis, chiefly apparent in the interlobular tissue, but often extending upwards to involve even the smallest bile capillaries. Even in the less severe cases of cholecystitis this hepatitis could be demonstrated. This finding has been corroborated by others, notably by Judd<sup>4</sup> and by Heyd, Killian, and MacNeal.<sup>5</sup> In many cases of so-called cholangitis this type of hepatitis had been observed before, but the great frequency of it, amounting to an almost constant finding in cholecystitis, had apparently not been noted.

Later the microscopic examination of gall bladders removed at operation convinced me that, since often more

inflammatory change is found at the periphery than in the mucosa of the organ in what seemed to be the early and the less severe cases, too much emphasis had been placed by the

the importance of mucosal infection of cholecystitis. The clinical observations that patients with cholecystitis sometimes gave a history of having had typhoid fever had had an important influence in the development of the idea that infection of the gall bladder is due to bacteria brought to the liver by way of the portal vein, secreted in the bile, and thence carried into the gall bladder. Numerous difficulties, however, presented themselves with the acceptance of such a theory. In the first place, Cushing<sup>6</sup> and later others found that in experiments on animals it is extremely difficult to infect the gall bladder by the introduction of bacteria into its lumen unless at the same time the cystic duct or the cystic artery is tied or the mucosa injured by the introduction of foreign bodies. Moreover, both Rolleston<sup>7</sup> and Osler<sup>8</sup> showed that cholecystitis is rare during the acute course of typhoid fever, a time when supposedly the bile is teeming with typhoid bacilli. The possibility of a blood-borne infection directly to the gall bladder through the cystic artery was also suggested by many. In recent years Rosenow<sup>9</sup> has been the most enthusiastic exponent of this view.

The constancy of the finding of a hepatitis in association with cholecystitis, and the observation that in many cases the mucous membrane is less involved than the outer coats of the gall bladder, led to the thought that another pathway of infection might be important—namely, the lymphatics.<sup>10</sup> Sudler,<sup>11</sup> working in Mall's laboratory, had already in 1901 shown the very extensive anastomosis which exists between the lymphatics of the liver and of the gall bladder. The richest supply of lymphatic vessels in the gall bladder is situated immediately beneath the serosa. Therefore, cholecystitis which would occur secondarily to a hepatitis would be most likely to begin at the periphery of the gall bladder if a lymphatic extension of the infection should take place here as in other parts of the body. When this idea was put to the test of experimentation it was found possible not only to produce cholecystitis in animals by the injection of bacteria into a radicle of the portal vein, but also it was observed that the cholecystitis was most marked at the periphery of the gall bladder and that the liver showed changes similar to those already mentioned as having been found in the human. In 1921 Meyer, Neilson, and Fensier<sup>12</sup> published the results of their exhaustive experimental work on paratyphoid infections, in which they made the important observation that cholecystitis did not occur unless there were actual inflammatory lesions in the liver, in spite of the fact that in practically all of their animals the organisms could be found in the gall bladder bile regardless of whether hepatic lesions were present or not. This finding seemed to be additional corroboration of our view of the spreading of a pre-existing inflammation of the liver to the wall of the gall bladder through the lymphatic vessels. It would follow from this, then, that any condition which might induce an infection in the liver might also predispose to cholecystitis. Inflammatory lesions of the portal system would have an excellent opportunity to bombard the liver and to set up a hepatitis. It is not surprising, therefore, that clinicians have long known that cholecystitis is frequently found as a sequel of, or in association with, the most common inflammatory lesions of the portal system—such as appendicitis, peptic ulcer, and typhoid fever.

Other experiments have shown also that hepatitis will follow experimentally produced cholecystitis. The possibility of the establishment of a vicious circle between the liver and the gall bladder is therefore suggested, whereby each may reinfect the other. It is not to be inferred from these conclusions that the opinion is held that all cases of cholecystitis are due solely to a lymphatic spread from a hepatitis. Some are doubtless due to hematogenous infections of the gall bladder, and some are probably due to involvement of the mucosa first and are therefore contact infections.

In our article of 1922 on the lymphatic origin of cholecystitis we made the statement that our experiments indicated that interstitial pancreatitis is also the result of

a lymphatic spread of infection from the liver to the pancreas. This view had already been expressed by Maugeret<sup>13</sup> and by Deaver and Sweet.<sup>14</sup> It has been seriously questioned, however, by Archibald.<sup>15</sup> Recent unpublished work done in our laboratory by Kodama<sup>16</sup> supports strongly Archibald's contention that the lymphatics from the region of the gall bladder pass along anterior to the pancreas but do not actually enter it. It is probable, therefore, that the cases of interstitial pancreatitis which we obtained following experimental hepatitis and cholecystitis were not due to a lymphatic spread but might have been due to a haematogenous infection. Kodama has shown, however, that if the gall bladder becomes adherent to the surface of the pancreas, then injected fluid will pass through tissue spaces directly from the gall bladder to the parenchyma of the pancreas.

Other important results of Kodama's study of the extrahepatic biliary lymphatics are as follows:

When the superficial lymphatics of the first portion of the duodenum are injected with a solution of trypan blue and gelatin the coloured solution is found to enter the wall of the gall bladder through the lymphatic vessels which course along the common duct. If, however, the lymphatics of other portions of the duodenum—the second and third portions—are injected, the dye does not enter the wall of the gall bladder but enters the mesenteric lymph gland which is situated at the beginning of the portal vein after passing through the lymphatic vessels under the peritoneum between the duodenum and the portal vein. Conversely also, when the lymphatics of the gall bladder are injected some of the dye passes into the lymphatics of the first portion of the duodenum.

The possible bearing of these findings upon the association of cholecystitis and duodenal ulcer is obvious; and they suggest another method of pathogenesis of cholecystitis in addition to the one proposed above, which in turn has resulted from infection brought to the liver by the portal vein from a lesion in the portal system. This work of Kodama's would indicate that a duodenal ulcer might induce cholecystitis directly by means of lymphatic extension without the intervention of a hepatitis. The constancy of the finding of a hepatitis in association with cholecystitis might, then, be due in some cases to an infection of the liver secondarily to the gall bladder. Kodama has also found that the lymph which comes from the liver, gall bladder, pancreas, and first portion of the ascending colon all drains eventually into the lymph gland which is located at the beginning of the portal vein. On the other hand, the lymph from the rest of the intestine is discharged into the various other mesenteric lymph glands.

#### DIAGNOSIS OF CHOLECYSTITIS.

The diagnosis of typical cases of cholecystitis, either with or without calculi, is usually easy by means of the clinical history and ordinary physical examination. But the conditions which give rise to the typical signs and symptoms are usually late effects of disease. Obviously it would be desirable to have some means of recognizing the presence of disease before the late effects have occurred, and equally desirable would it be to have a means of recognizing the atypical and obscure cases. I shall not discuss here the use of the well known tests of hepatic function and similar methods, preferring to leave this question to those in this symposium who are better qualified than I to discuss them intelligently.

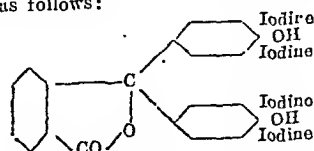
The remarkable advance in gastro-intestinal diagnosis made possible by the giving of a meal opaque to the Roentgen ray—a method first utilized by Cannon of Boston in physiological experiments—gave rise to the thought that similarly far-reaching results might be obtained if some method could be devised whereby the gall bladder could be visualized. The previous work of Abel and Rowntree,<sup>17</sup> which showed that the chlorinated phenolphthaleins are excreted largely through the liver into the bile, offered the suggestion that if atoms of bromine or iodine should be substituted for chlorine a substance might then be at hand which would not only be excreted into the bile but would also render the gall bladder opaque to the Roentgen ray.

With such ideas in mind, in the summer of 1923 W. H. Cole and I,<sup>18</sup> later in association with Copher and Moore,<sup>19</sup> undertook to investigate this problem. Because of the high atomic weight of iodine the first substance which we used

was tetraiodophenolphthalein, and we succeeded in demonstrating the fact that with this substance cholecystography is possible, at least in dogs. But because of some severe toxic reactions resulting from the use of our first preparations, which we felt might be inherent in the substance itself, we resorted to the use of tetrabromphenolphthalein, which happened to be accompanied by much less toxic disturbance than our first preparation of tetraiodophenolphthalein. Accordingly, therefore, we were exceedingly cautious about using the iodine compound in the human, and in our first publications we recommended the use of the bromine product. More careful preparation, however, showed that it was possible to manufacture tetraiodophenolphthalein free from toxic impurities; and we accordingly later recommended that instead of the bromine product. The toxic reactions are due chiefly to the phenolphthalein part of the molecule. Since the tetraiodo compound can be given in smaller doses with equally good results because of the higher atomic weight of iodine, obviously fewer toxic reactions would be expected than with the tetrabrom product. Such was found to be the case. Whitaker and Milliken<sup>20</sup> of Boston, in January, 1925, reported their good results obtained with tetraiodophenolphthalein, and recommended the substitution of that for the bromine product. Their article appeared practically simultaneously with one of ours, in which we reported the resumption of work with tetraiodophenolphthalein, but in which we exercised caution in recommending its use because of marked differences in toxicity which we had noted in samples from different manufacturers, and also because we were not certain of the stability of the substance on standing. These young men are entitled to credit for having gone ahead independently and on their own initiative in an attempt to improve the method of cholecystography, and they have helped much to popularize the procedure.

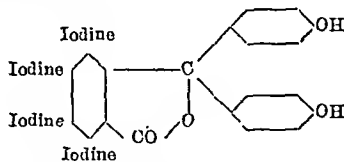
In the United States the iodine compound has almost entirely supplanted the bromine product. The use of the tetraiodophenolphthalein does not change in any way the standards of interpretation as worked out for the tetrabromphenolphthalein. Presumably the criteria of interpretation would be the same for any substance which would make the gall bladder opaque to the Roentgen ray. We have experimented with forty different substances, some of which have never been made before. These various substances have been mentioned in our publications. Of the forty different substances which we have used, eleven have been found to have the power of making the gall bladder visible. But of these eleven there seem to be only three which are suitable for clinical use; these are tetra-bromphenolphthalein, tetraiodophenolphthalein, and the isomeric compound of the latter, phenoltetraiodophthalein. Recently we have found another substance, tetraiodo-isophenolphthalein, which may prove to have advantages over any of the others. But we have not yet had sufficient experience with it to be sure of its possibilities.

All three of these substances are secreted almost entirely by the bile—approximately 98 per cent. as shown experimentally in the dog. Recently we have found that phenoltetraiodophthalein not only produces good shadows of the gall bladder, but also colours the serum sufficiently after alkalization of it to make it possible to employ it as a test of hepatic function in a manner similar to the Rosenthal test with phenoltetrachlorophthalein. Therefore, by those who place confidence in the diagnostic value of tests of hepatic function, this substance may be used simultaneously for cholecystography and for tests of hepatic function. It also colours the urine after alkalization, but since only about 2 per cent. of it is secreted in the urine it will probably not be of much value as a test of renal function. The structural formulae of these two isomeric iodine compounds are as follows:



Structural formula of tetraiodophenolphthalein.





Structural formula of phenoltetraiodophthalein.

A proper conception of the interpretation and value of cholecystography in diagnosis must be based on an understanding of some of the theoretical points involved in its use. The substance used must be excreted by the liver into the bile. It must pass with the bile into the gall bladder, where it must be concentrated by the absorption of water in order to give the densest shadows. It is obvious, therefore, that the densest shadows will be found in normal subjects. It is equally apparent that there may be no shadow at all, or only a faint one, if the liver is unable to excrete the substance normally, if the cystic duct is occluded, or if the gall bladder is unable to concentrate its contents because of a diseased wall. Moreover, as bile is poured out from the gall bladder into the common duct, it is obvious that the shadow will diminish in size and gradually disappear entirely. Since the presence of food in the duodenum is accompanied by an outpouring of bile, the necessity of fasting during the period of concentration of the substance in the gall bladder becomes evident. It is seen, therefore, that cholecystography is really a means of studying the function of the gall bladder rather than an indication of the exact pathological lesions present. This method of examination provides a means of determining the state of the only two functions of the gall bladder known—namely, the regulation of pressure within the biliary tract, and the concentration of the contained bile. The former function is shown cholecystographically by changes in the size of the gall bladder, indicating distensibility and contractility; and the latter is shown by an increasing density of the shadow. Since the days of *Galen functio laesa* has been recognized as one of the cardinal signs of inflammation. Presumably, therefore, any method which detects alterations of function would denote early and even mild cases of inflammation. Cholecystography seems to possess this property.

The enthusiasm with which this procedure has been almost universally received has been astonishing. However, the method of administration of these substances which we proposed in our first publications has been considerably modified by later workers. The chief reason for this modification has been a desire to get away from the intravenous administration both because of the more complicated technique necessary and the fear of toxic reactions. Mcnees and Robinson<sup>21</sup> were the first to recommend the oral administration. The method of oral administration requires the use of a protective coating of some kind to permit the substance to pass into the intestine unchanged, because the hydrochloric acid of the stomach will convert the soluble sodium salt into the insoluble free acid. If this change occurs, absorption will therefore not take place. Various capsules and other sorts of protective coverings have been advocated. I cannot here enter into a complete discussion of this phase of the subject. Excellent discussions of the various methods of oral administration will be found in the articles by Levern and Aaron,<sup>22</sup> who have carried on extensive experiments with different kinds of protective coatings, by Whitaker, Milliken, and Vogt,<sup>23</sup> by Stewart, Einhorn, and Ryan,<sup>24</sup> and by Larimore.<sup>25</sup> In general, in the intravenous method, a slightly larger dose is used than by the oral method; the capsules are given after the evening meal, and the patient presents himself before breakfast for his first film. A meal is then taken, preferably one rich in fats in order to empty the gall bladder quickly, and other films are made about four hours later, and at about the twenty-fourth, thirty-sixth, and forty-eighth hours afterwards if the shadow still persists.

There are two serious objections to the oral method: one is the uncertainty of the amount of the substance absorbed, and the other that many toxic disturbances, such as diarrhoea and vomiting, occur. For these reasons, at the

Barnes Hospital we have adhered rather closely to the intravenous method, almost as outlined in our early papers and as carried out in Great Britain by Cohen and Roberts<sup>26</sup> with tetrabromophenolphthalein. Improvement in manufacture of the tetraiodophenolphthalein has resulted in our hands in an almost complete absence of toxic reactions after the intravenous administration. Also greater dilution minimizes the reactions, although it is not necessary to use more than 30 c.cm. of fluid if the injection is made slowly and if the vein is washed out with physiological saline or with Ringer's solution immediately after the injection is made. The latter precaution is desirable to avoid thrombophlebitis at the site of injection. The use of the new isomeric compound, the sodium salt of phenoltetraiodophthalein, however, will almost completely obviate toxic reactions. In ninety-seven successive cases in which we have used it intravenously there have been no severe reactions. Of course, as in any intravenous injection, meticulous care should be exercised in the sterility of all materials used, in the use of freshly distilled water for the solutions, and in scrupulous cleanliness of glassware. In the last 150 cases in which we used sodium tetraiodophenolphthalein there was no case in which any alarming reaction occurred. We have personal knowledge of several thousand cases in which the intravenous method has been used, and we know of no death attributable to the substance.

Our own technique is as follows:

For the adult of average size 3 or 3½ grams of the sodium salt of tetraiodophenolphthalein, or 2½ grams of the sodium salt of phenoltetraiodophthalein, are dissolved in from 30 to 50 c.cm. of water, filtered, and sterilized in a boiling water bath for fifteen minutes. The solution is slowly injected with a syringe in the morning between 8 and 9 o'clock, preferably in two equal doses, half an hour apart. Dividing the dose tends to eliminate any risk of a toxic reaction. If given very slowly, however, over a period of ten or fifteen minutes, in one dose there is but little danger of a reaction. Case has recommended the prompt injection of 0.5 c.cm. of adrenaline if any symptoms of a severe reaction occur, such as fall in blood pressure. We have found this helpful in the few cases in which it seemed necessary. Breakfast is omitted in order that the duodenum may be empty during the period of concentration in the gall bladder. For lunch the patient may have a liquid diet, but it should contain little or no protein or fat. The evening meal may be taken as usual. We formerly employed large doses of sodium bicarbonate by mouth, because Cole<sup>27</sup> showed in some experimental work on animals that the reduction of the gastric acidity tended to reduce the amount of bile discharged into the duodenum. He was able to obtain this finding even when care was taken to exclude the passage of gastric contents into the duodenum. Lately, however, we have abandoned the use of the bicarbonate because it has seemed unnecessary. Roentgenograms are made four, eight, and twenty-four hours after the injection. Dr. Sherwood Moore, the director of our department of radiology, prefers not to use the Potter-Bucky diaphragm. A series of films is essential in order to gain information concerning the concentrating function and the changes in size of the gall bladder.

An important modification of this procedure has been made by Milliken and Whitaker,<sup>28</sup> who give a meal containing fat in order to determine the ability of the gall bladder to reduce its size promptly. This is based on important work by Boyden,<sup>29</sup> to which reference will be made later. Case<sup>30</sup> gives his injections at 5 p.m. in one dose, dissolved in 75 to 100 c.cm. of Ringer's solution. The patient takes his evening meal as usual. Films are taken before breakfast. The patient then eats a meal, including egg yolk or milk and cream, and he returns at about noon for more films, which conclude the examination. Wilkie and Mlingworth<sup>31</sup> prefer to make the injection between 8 and 10 p.m. after the omission of the evening meal. Efrim, Gruenberg, and Strauss<sup>32</sup> have recommended the use of a preliminary injection of pituitrin in an attempt to empty the gall bladder first.

Accuracy of interpretation of the cholecystograms, obviously, will improve as our experience increases. It is important also to realize that accuracy of interpretation depends very largely upon experience with the particular method of administration. One who is familiar with the results of the intravenous method will often be puzzled by those obtained by the oral method if his experience with the latter has been limited. Normally, after the intravenous method described above a faint shadow of the gall bladder will usually be visible in about four hours. At eight hours it will have increased in density and will often be somewhat smaller, probably because of reduction in volume by concentration. At twenty-four hours the shadow will usually be nearly or completely gone. If, however, no food at all has been taken since the injection the twenty-four-hour shadow may be the densest and smallest of all because of marked concentration. One possible objection to Case's modification of the intravenous method is that, since no films are taken

until fourteen or fifteen hours after the injection, the information obtained about the concentrating activity of the gall bladder is less complete than if a series is made during the phase of concentration.

The chief points in making the diagnosis of cholecystic disease are: (1) Failure to obtain a shadow when the technique has been properly carried out: We agree with Carman,<sup>33</sup> in his statement based on a study of 1,100 cases, that a failure to obtain a shadow is unexcelled in diagnostic value. (2) Filling defects. Soft calculi which are otherwise invisible frequently are seen in the cholecystograms as "negative" shadows, or filling defects. They occupy space in the gall bladder which would otherwise be filled with the opaque substance. Many small stones often produce a mottled appearance which is very characteristic. (3) Irregularities of contour, denoting adhesions, diverticula, etc. (4) Variations from the normal in density of shadow, in the time of appearance and disappearance of the shadow. These last criteria are more difficult points to interpret than the former, and they constitute most of the failures in diagnosis. Other difficulties of interpretation have been encountered in certain cases of hepatic enlargement of unknown etiology.

If the new substance, phenoltetraiodophthalein, is used the time of examination can perhaps be shortened. This substance seems to pass through the liver more quickly than the others, with the result that usually at the end of four hours a moderately dense shadow of the gall bladder is seen.

Up to May 20th, 1926, we had examined at the Barnes Hospital 1,041 patients with tetraiodophenolphthalein and 103 with phenoltetraiodophthalein, a total of 1,144 patients with one or the other of the iodine compounds. In this series there were 128 operations at which the gall bladder was removed and an opportunity provided for a microscopic examination of it. On this basis the operation confirmed the Roentgen-ray diagnosis in 124 cases. Thus, the cholecystographic diagnosis was corroborated in 96.9 per cent. of the cases in which there was an opportunity to control it accurately. The examinations were divided as follows:

<i>Tetraiodophenolphthalein.</i>			
Intravenous	...	...	750 cases (72.0 per cent.)
Oral	...	...	289 cases (27.8 per cent.)
Rectal	...	...	2 cases (0.2 per cent.)
Total ... 1,041			
<i>Phenoltetraiodophthalein.</i>			
Intravenous	...	...	97 cases (94.2 per cent.)
Oral	...	...	6 cases (5.8 per cent.)
Total ... 103			

Concerning toxic reactions, we have had no alarming symptoms in any of the last 500 cases. In seeking the data for the following tabulations it has been our custom to ask the patient to observe himself closely for the development of the slightest subjective symptoms. It is probable that often the alleged effects of the administration of the material have been imaginary, owing to the apprehensiveness of the patient. At most they have been transient. For convenience of classification the reactions have been divided into two kinds: In "1st degree" are included headache, dizziness, slight nausea, weakness, and "nervousness." In "2nd degree" are diarrhoea, vomiting, severe nausea, pain in back and abdomen, fever, "smothering," chills, and urticaria. The tabulated results are as follows:

<i>Reactions in the last 300 Cases of Tetraiodophenolphthalein.</i>			
<i>Intravenous method:</i>			
Total number of cases	...	...	205
Cases showing reaction:			
1st degree reaction	...	...	73 cases (35.6 per cent.)
2nd degree reaction	...	...	36 cases (17.5 per cent.)
Total	...	...	109 cases (53 per cent. of intravenous)
<i>Oral method:</i>			
Total number of cases	...	...	93
Cases showing reaction:			
1st degree reaction	...	...	17 cases (18.2 per cent.)
2nd degree reaction	...	...	45 cases (48.0 per cent.)
Total	...	...	62 cases (66 per cent. of oral)
<i>Rectal method:</i>			
Two cases. No reaction.			

<i>Reactions in 103 Cases of Phenoltetraiodophthalein.</i>			
<i>Intravenous method:</i>			
Total number of cases	...	...	97
Cases showing reaction:			
1st degree reaction	...	...	24 cases (24.7 per cent.)
2nd degree reaction	...	...	12 cases (12.4 per cent.)
Total	...	...	36 cases (37 per cent. of intravenous)
<i>Oral method:</i>			
Total number of cases	...	...	6
Cases showing reaction:			
1st degree reaction	...	...	2 cases
2nd degree reaction	...	...	1 case
Total	...	...	3 cases (50 per cent. of oral)

Two facts stand out prominently from these tabulations: (1) that fewer toxic reactions occur after the intravenous than after the oral method of administration, this fact being especially noticeable as regards the more severe or second degree reactions; and (2) that the use of phenoltetraiodophthalein is accompanied by fewer reactions than tetraiodophenolphthalein.

Occasionally criticisms have been raised against the diagnostic value of cholecystography on the ground that sometimes a normal series of shadows is obtained when at subsequent operation pathological changes are found in the gall bladder. Richter,<sup>31</sup> for example, in a recent article, calls attention to the recurrence of attacks of gall-bladder disease, and states that probably in the intervals and in the early stages of disease the cholecystographic examination would show a normal gall bladder and hence would be misleading. It is possible that this fear may be correct, but, so far as I know, there are no data to support it. Our own experience is all opposed to this possibility. Richter apparently falls into the common error of regarding "thick tar-like bile" in the gall bladder as pathological. On the contrary, of course, such bile is a normal finding, and it is a clear indication of the fact that the concentrating function of the gall bladder is not impaired. It is our belief also that cholecystography, when properly performed, will give evidence of disease before it is recognizable by any method short of microscopic examination of the gall bladder. This has been our experience repeatedly.

Questions such as these bring up for consideration the more important question of what criteria shall be taken for determining abnormality. Is an organ that is functioning normally to be considered as essentially normal in spite of old evidence of disease? Or are we to conclude that even old pathological lesions—as, for example, adhesions—are to be taken as evidence of active disease demanding treatment? If its function is normal we do not consider a finger diseased simply because it may present an old scar as evidence of a previous infection. It is possible, therefore, that a functional test of the gall bladder, such as is made possible by cholecystography, will really prove to be a more accurate index of the actual condition of the organ than gross pathological anatomical findings at operation. But diagnoses of normality in the presence of a clinical history and clinical findings suggestive of cholecystitis should be made with caution, and only after experience with the method.

#### THE MECHANISM OF EMPTYING OF THE GALL BLADDER.

Cholecystography, in addition to its clinical application, has been useful in studying the physiological problem of the mechanism of emptying of the gall bladder. In 1917 Meltzer<sup>35</sup> published his now famous hypothesis of the contrary innervation of the sphincter of Oddi and of the gall bladder, by which was meant that a relaxation or opening of the sphincter was accompanied by a simultaneous contraction of the gall bladder. This hypothesis was rather generally accepted, and upon it was based the well known Lyon<sup>36</sup> procedure of the so-called non-surgical drainage of the gall bladder by the use of instillations of magnesium sulphate into the duodenum. But as a matter of fact there is little experimental evidence to support Meltzer's conception.

If any contraction of the musculature of the gall bladder occurs it must be exceedingly slight and of little significance. My associates and I, as well as others, have

repeatedly watched the visualized gall bladder with the fluoroscope with the hope of detecting contraction waves, but we have never seen any. It is significant also that, so far as I have been able to discover, only one surgeon has claimed to have seen the gall bladder contract. Matsuo,<sup>31</sup> a Japanese surgeon, states that once he saw it contract during the course of an abdominal operation performed under local anaesthesia. When one considers the millions of abdominal operations which have been performed both on the human subject and on experimental animals, it seems strange that contractions have not been frequently observed if they occur. Moreover, it is a striking fact that stimuli which are well known to have the power of inducing vigorous contractions in the urinary bladder and in the stomach and intestine fail utterly to elicit any visible response when applied to the gall bladder. Thus one can stimulate it with an electric current, as was first shown by Boyden and Whitaker and later corroborated by us, pinch it with a clamp, incise it with a knife, or touch it with a cautery, without the least demonstrable contraction. Periodic contraction waves, however, have been described by Bainbridge and Dale,<sup>32</sup> and later by others. These have been noted by observing and registering periodic changes in pressure within the organ. But these waves are usually synchronous with respiratory movements, and they seem to be caused by such movements rather than by any inherent contraction of the muscle of the gall bladder itself. My associates Copher and Kodama<sup>33</sup> have found, for example, that if care is taken to prevent the pressure of neighbouring organs upon the gall bladder the periodic contraction waves are no longer apparent. Moreover, if a rubber bag be substituted for the gall bladder, periodic contraction waves, like those described by Bainbridge and Dale, can be recorded. They can scarcely, therefore, be considered as due to contractions of the muscle of the gall bladder. Boyden has called attention to the comparatively small amount of muscle tissue present, but, on the contrary, to the large amount of elastic tissue in the wall. One would expect also that if a muscular contraction occurs in a manner analogous to that of the urinary bladder or of the stomach the gall bladder would sometimes be found practically empty. Yet I know of no observation that a normal gall bladder has ever been found in this condition. Cholecystography should again be of help in elucidating this point. But, although the gall bladder is seen by this means to reduce its size, there is no evidence that this diminution has been accomplished by a contraction of its muscle. Copher<sup>34</sup> has shown that if one daily injection of tetraiodophenolphthalein is given to a dog over a period of several days, the gall bladder is always visible during the time of the experiment, despite the fact that the animal is permitted to carry out its normal activities as regards food, exercise, etc. The results of this experiment furnish a strong indication that the gall bladder can never be empty under normal conditions. All of these observations, therefore, suggest that contraction of the muscle of the gall bladder must play an insignificant part in its emptying. How, then, does it empty itself of its contents?

Without the aid of muscular contractions other possible mechanisms of emptying are: (1) abdominal pressure, either with or without the assistance of respiratory movements; (2) a gradual washing out of the gall bladder by the ingress of fresh liver bile; (3) elastic recoil of the over-distended viscous when the pressure in the common duct is suddenly reduced by the opening of the duodenal end of the duct; and (4) absorption of its contents through the wall. The last possibility needs hardly to be considered seriously, since the evidence is incontrovertible that, except for the absorption of water, the contents of the gall bladder normally pass down the cystic duct and into the intestine. The thick dark bile of the gall bladder can even be recovered with the duodenal tube. There is also much other evidence which I feel unnecessary to mention here.

Recently it has been possible to show that the gall bladder can empty itself by calling into play only the two mechanisms of a gradual washing out by the inflow of fresh liver bile and of elastic recoil. Most of the experimental work involved has been performed by my associates Copher and Kodama, and our report of it has not yet been published.<sup>35</sup> The most decisive experiment bearing on this

point has been as follows: The gall bladder of a normal dog was removed and for it a small rubber bag was substituted, establishing a connexion with the cystic duct by means of a glass cannula. The artificial gall bladder was then encased in a celluloid cylinder in order to obviate the effect of intra-abdominal pressure. After an intravenous injection of tetraiodophenolphthalein the artificial gall bladder became clearly visualized and gradually lost its visibility in a manner quite analogous to what we are accustomed to see in a series of normal cholecystograms. The chief differences from the normal series were that the shadow appeared more slowly and disappeared more slowly. These differences were probably due to an obvious inability on the part of the rubber gall bladder to concentrate its contents, the absence of the factor of intra-abdominal pressure, which probably plays a role of some importance in the normal emptying, and the fact that the distensibility and elastic recoil of the rubber bag were not identical with those of the normal gall bladder. Kodama<sup>32</sup> has devised an ingenious model to show how it may be possible for the gall bladder to empty itself without the aid of active contractions of its wall. His article will appear in a forthcoming number of the *American Journal of Physiology*.

These findings are opposed to the current conception that certain substances—as, for example, magnesium sulphate and pituitrin—empty the gall bladder by causing a contraction of its walls. How, then, do they act? To answer this question it is necessary to consider the duodenal end of the common duct. Since Oddi's description of the sphincter which bears his name it has generally been agreed that this structure is a factor of great importance in controlling the outflow of bile into the duodenum. Recent anatomical study, however, has shown that it is not always present. Again, as shown by the work of Copher and Kodama, it is unnecessary to assign to the sphincter the chief control of the outflow of bile. It will be recalled that the common duct passes obliquely through the duodenal wall for a considerable distance. According to Quain,<sup>36</sup> in human beings this distance amounts to 2 or 3 cm. Contractions of the duodenal wall would therefore tend to occlude the common duct independently of the sphincter at the end. Conversely, also, relaxations of it would permit bile to flow out unless the sphincter acted independently. Experimentally bile may be seen to spurt out of the ampulla with each peristaltic wave of the duodenum. The initial relaxation phase, followed by the contraction phase of each peristaltic wave, would have a "milking" effect on the duct. Each peristaltic wave of the duodenum, therefore, should result in some elastic recoil of the gall bladder itself, by which there would be a spurring out of a little of the gall-bladder bile. Likewise, these substances which induce most active duodenal peristalsis should be most powerful in their ability to empty the gall bladder. At any rate, the supposedly specific effect of pituitrin and magnesium sulphate in emptying the gall bladder seems to depend chiefly, if not entirely, on the production of duodenal peristalsis. Moreover, these substances are not nearly so powerful in this respect as certain fats—for example, egg-yolk and cream, as shown by Boyden, Sosman, Whitaker, and Edson<sup>37</sup> have found that a meal containing egg-yolk and cream can reduce the cholecystographic shadow of the gall bladder to about one-tenth of its former size within the brief time of one hour and forty-five minutes. Copher and Kodama have found that oleic acid is even more powerful in this respect. Burget<sup>38</sup> and Carlson<sup>39</sup> have also stressed the importance of the tonus of the duodenal muscle in the control of the outflow of bile, and they consider that undue importance has been attached to the supposed sphincter of Oddi.

My associates and I think, therefore, that the experimental evidence is all against Meltzer's hypothesis of the contrary innervation of the sphincter of Oddi and the gall bladder, by which it was supposed that the same stimulus which opens the sphincter induces an active contraction of the muscle of the gall bladder. On the contrary, we feel that the emptying of the gall bladder is largely a passive phenomenon in which occur: (1) the recoil of the elastic fibres in an effort to establish an equilibrium of pressure between the lumen of the gall bladder and that of the common duct when the intraductal pressure is suddenly lowered by the opening

of its duodenal end; (2) the washing out of the gall bladder by the inflow of fresh hepatic bile; and (3) increases in intra-abdominal pressure. Moreover, in the control of the outflow of bile from the common duct, the most important factors seem to be the tonus and the peristaltic movements of the duodenal muscle.

## SUMMARY.

1. The pathogenesis of cholecystitis is discussed and evidence is given to show that one neglected idea of its origin is by way of the lymphatics from a pre-existent hepatitis.
2. The frequent association of cholecystitis with other inflammatory lesions of the portal system is perhaps explained on this basis.
3. Cholecystography is a test of the only two functions of the gall bladder known at present. Partly because of this reason it will detect even early and comparatively mild cases of cholecystitis.
4. In our hands it has been the means of accurately diagnosing 96.9 per cent. of the cases controlled by operation in a series of 1,144 patients in which cholecystectomy was performed 128 times.
5. The severe toxic reactions have been practically eliminated.
6. Phenoltetraiodophthalein has many advantages over tetraiodophenolphthalein.
7. The mechanism of emptying of the gall bladder is discussed, and much doubt is cast upon Meltzer's hypothesis of a contrary or reciprocal innervation between the sphincter of Oddi and the gall bladder.
8. The muscle of the gall bladder seems to play at most a very minor role in its emptying.
9. The mechanism of emptying seems, on the contrary, to be largely passive, in which important factors are the elastic recoil of a distensible viscus, gradual washing out of the gall bladder by the ingress of fresh hepatic bile, and increases in intra-abdominal pressure.
10. A rubber bag substituted for the gall bladder in a living animal fills and empties in a manner very similar to the normal gall bladder.
11. The control of the outflow of bile from the common duct is dependent chiefly upon the tonus of the duodenal wall.
12. Those substances which are supposed to have a somewhat specific effect in emptying the gall bladder probably owe their action chiefly to their ability to induce peristalsis of the duodenum, with a resultant milking action of the common duct.

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## II.—ARTHUR F. HURST, M.A., M.D. OXON., F.R.C.P., Physician to Guy's Hospital.

### THE DIAGNOSIS AND TREATMENT OF CHOLECYSTITIS AND THE PREVENTION OF GALL STONES.

GALL STONES are found in about 10 per cent. of the bodies of all people dying after the age of 20. Since in most, if not all, cases their formation is preceded by cholecystitis, and as cholecystitis is often not followed by cholelithiasis, the former must occur at some period in the lives of a considerable proportion of all adults. It is, I am convinced, the most common of all abdominal diseases. In spite of this it is comparatively rarely diagnosed, largely owing to the fact that until quite recently textbooks of medicine gave most inadequate descriptions of the symptoms and diagnosis of the common mild form of chronic cholecystitis, attention being almost confined to the comparatively rare and consequently much less important suppurative and gangrenous forms of the disease.

Every general practitioner must constantly have numerous cases of cholecystitis among the chronic dyspeptics under his care, but how often does he make the diagnosis? He realizes that in most cases the presence of gall stones calls for the help of a surgeon; he should recognize that chronic dyspepsia, which does not quickly yield to treatment, calls just as loudly for the help of a diagnostic team, consisting of a clinician, a radiologist, and a pathologist, since it is only by the use of certain

modern methods of investigation, which require special experience for their performance and for the interpretation of the results, that cholecystitis can be diagnosed with a considerable degree of certainty, and a scientific basis can be obtained for the rational treatment of each individual patient. The investigation should be sufficiently complete to decide whether any other conditions, such as a gastric or duodenal ulcer, chronic appendicitis, caecal and ascending colon stasis, and achlorhydria or hyperchlorhydria, are associated with it.

A carefully taken history should in most cases arouse suspicion when cholecystitis is present. Everybody should be familiar with Sir Berkeley Moynihan's classical description of the "inaugural symptoms of gall stones," which are now recognized as the symptoms of cholecystitis, having no direct connexion with the presence of stones. The abdomen should, if possible, be examined at a time when the patient is actually suffering from discomfort; the gall bladder itself is then always found to be tender. In this connexion I was surprised that Dr. Graham did not mention what I have myself found the chief use in the milder forms of cholecystitis, as distinct from gall stones, of the wonderful new method of visualizing the gall bladder which we owe to him—I refer to the palpation of the visualized gall bladder under the x-ray screen. Just as tenderness in the right iliac fossa should never be regarded as due to a tender appendix until the visualized appendix has been palpated under the x-ray screen, so tenderness in the right hypochondrium should now never be regarded as certainly due to a tender gall bladder, and not to a tender liver or duodenal bulb, until an examination has been made with the aid of cholecystography. I believe that there are many cases of slight, non-surgical cholecystitis in which this is the only radiological sign of disease.

Areas of referred tenderness, for many of the details of which we are indebted to the recent investigations of J. A. Ryle, are of great importance, and in a large proportion of cases reflex rigidity of the right hypochondrium is also present.

The radiological investigation should not only comprise Dr. Graham's method, but also a preliminary search for biliary and renal calculi, and an examination after an opaque meal of the stomach, duodenum, appendix, and colon, for such complications as ulcer, chronic appendicitis, and stasis of the ascending colon.

I am not convinced by Dr. Graham's arguments that the gall bladder does not actively contract when magnesium sulphate is introduced into the duodenum. The sudden abundant flow of bile which follows could hardly be explained in any other way; and how is it possible to explain the occurrence of biliary colic when a stone is impacted in the mouth of the cystic duct except by active spasmodic contractions of the gall bladder?

By Lyon's method it is possible to recognize inflammatory exudates from the mucous membrane of the gall bladder, such as leucocytes, disintegrated columnar epithelial cells, and occasionally red blood corpuscles, and to determine the nature of any biliary infection which may be present. It is interesting to note that in the late stages, when cholecystitis has become complicated by the presence of gall stones, the bile generally becomes sterile, any persisting infection being then confined to the wall of the gall bladder and perhaps the stones, while crystals of cholesterol, which are never found in the bile of uncomplicated cholecystitis, often appear. We have quite failed to confirm Rosenow's theory of the streptococcal origin from the teeth and tonsils of most cases of cholecystitis, as the infection is almost always due to pathological types of coliform bacilli, and streptococci have only been found in a single case. In one woman with cholecystitis and gall stones Dr. Knott isolated the *B. typhosus* from the bile obtained through a duodenal tube twenty-three years after she had had typhoid fever. When Graham's method fails to give a shadow of the gall bladder, it is clear that the Meltzer-Lyon method will also fail to procure a specimen of bile from the gall bladder. This explains the occurrence before the introduction of cholecystography of cases in which normal bile was found, but in which the gall bladder was grossly diseased and perhaps filled with stones, the bile having

come from the healthy hepatic ducts and not from the gall bladder. It is therefore best always to let the cholecystography precede the examination by Lyon's method.

Lastly, a fractional test meal should always be given, as either hyperchlorhydria, or, more frequently, hypochlorhydria or achlorhydria, is present in a large proportion of cases. The discovery of this is often of considerable importance; thus, a patient with achlorhydria may continue to suffer from symptoms due to this cause after his gall-bladder disease has been cured either by medical or surgical means if he is not given acid.

#### Treatment.

The medical treatment of cholecystitis, in the stages in which the bile is infected but the wall of the gall bladder is either not infected at all or only superficially or slightly infected, often leads to complete recovery. As there are no means of recognizing which cases will respond to medical treatment, it should always be given a trial in uncomplicated cases. Even in cases of gall stones with infective cholangitis, unless the symptoms are very urgent, a few days' preliminary medical treatment will often convert a very dangerous septic operation into a comparatively safe one.

The treatment consists in attempting to sterilize the biliary passages by very large doses of urotropine and in promoting biliary drainage. The question of diet I will leave to Dr. McNea. Dr. Knott has shown that the urotropine acts as a biliary antiseptic in spite of the alkalinity of the bile, although it is inactive in alkaline urine and alkaline serum. Consequently its action on the bile is not impaired when sufficiently large doses of alkalis are given to keep the urine permanently alkaline in order to prevent the bladder from being irritated by formalin, which is set free in acid urine. A mixture is prepared containing 100 grains of urotropine to the ounce, and another containing 1 drachm each of sodium bicarbonate and potassium citrate to the ounce. Half an ounce of the former and one ounce of the latter are given after breakfast, after tea, and after a tumbler of milk or water last thing at night. The dose of the urotropine mixture is increased by 1 drachm each day until the full dose of 100 grains of urotropine is taken three times a day. This can often be continued for many weeks without unpleasant symptoms; if any bladder irritation occurs, the dose of urotropine is temporarily reduced, and, if the urine is found to be occasionally acid, more alkali is added to the second mixture. Dr. Knott has recovered urotropine from the bile obtained through a duodenal tube, and in several patients has actually demonstrated the sterilization of infected bile. In most cases we have also given the patient a course of vaccine made from the organism isolated from the bile.

Biliary drainage is promoted by giving magnesium sulphate in concentrated solution one hour before breakfast, in just sufficient quantity to get the bowels satisfactorily opened without the use of any other aperient. My colleague, Dr. J. F. Venables, has demonstrated that magnesium sulphate given in this way produces just as good a flow of bile as when it is introduced direct into the duodenum, so that the unpleasant method of non-surgical biliary drainage recommended by Lyon, in which a duodenal tube is passed every day, is quite unnecessary.

When achlorhydria is present one drachm or more of dilute hydrochloric acid should be given in about five ounces of sweetened water, to which the juice and pulp of an orange may be added, half an hour before breakfast, to help to sterilize the stomach and duodenum, and, with the addition of pepsin, as a beverage with lunch and dinner, in order to make gastric digestion possible. When hyperchlorhydria is present the pain, which is then often very similar to that of duodenal ulcer, can generally be relieved by taking half an ounce of olive oil before meals. This has the additional advantage of causing a flow of bile by a similar reflex to that produced by magnesium sulphate.

I hope I have succeeded in showing how recent advances in our knowledge of the gall bladder have made it possible to diagnose and treat cholecystitis with such success that we may hope that in the future the dissemination of this knowledge will result in a great reduction in the incidence of gall stones.



## GENERAL DISCUSSION.

Dr. F. A. KNOTT (London) said that during the past three years he had made, with Dr. J. F. Venables, slightly over three hundred examinations of specimens obtained by the Einhorn tube. They had particularly followed up those which were surgically proved or clinically almost certain cases of gall-bladder disease, and a few facts from an analysis of this short case series might therefore serve to illustrate the clinical value of this type of test.

It was not necessary to describe the various abnormal elements in duodenal specimens, such as leucocytes, crystals, pigment granules, detached epithelial fragments, and bacteria; but he emphasized the necessity for examining a series of upper alimentary specimens rather than the duodenal contents alone. This series should include the saliva, gastric resting juice, final gastric washings, and the duodenal contents before and after the administration of magnesium sulphate; in this way changes were more readily noted. The speaker thought that in practice it was essential that, after the resting juice had been obtained, the stomach should be thoroughly washed out with distilled water before the tube was passed into the duodenum. In the same way the duodenum should be washed out before obtaining the free flow of bile which was ultimately produced by the magnesium sulphate. This technique tended to reduce contamination and to make the individual specimens more definitely representative.

In routine work one other important point arose. It was not always practicable to confirm the exact position of the tube by x rays; they rarely had the chance to do so. But it was suggested that the results obtained had shown that much clinically useful information could be obtained without this x-ray confirmation. They had noted the following points when deciding the position of the tube. When the end was truly in the duodenum they found (1) a sudden change in reaction of the samples withdrawn; (2) their bulk was very much less; (3) swallowed water could not immediately be withdrawn via the tube; (4) the physical characters and appearance of the duodenal specimens generally differed markedly from the gastric samples; and (5) the typical flow of dark bile after magnesium sulphate was obtained only when the tube was in the duodenum. Admittedly the ideal procedure was to confirm the position by x rays, but if the above conditions were fulfilled the samples might be accepted as satisfactory. In all cases specimens containing food debris or any number of squamous epithelial cells were discarded. Taking these precautions, the speaker and Dr. Venables had examined samples from 71 cases of certain or very probable gall-bladder disease. These cases might be divided into two groups—the first contained 25 cases of gall stones, and the second 46 cases of cholecystitis. In the first, 20 cases were proved to be gall stones at operation, and 5 gave histories of typical gall-stone colic, and from radiological appearances and the van den Bergh reaction were judged to be certain cases of gall stones. In this series only 12 per cent. gave normal duodenal contents after magnesium sulphate. Otherwise 56 per cent. contained either cholesterol crystals or pigment granules, 36 per cent. contained leucocytes or abnormal epithelial debris, 40 per cent. produced pathogenic strains of coliform bacilli, one case the *B. typhosus*, and one *Streptococcus viridans*. In the second series of 46 cases which were considered to be cholecystitis, only 22 per cent. gave normal specimens after magnesium sulphate. In this case 13 per cent. showed crystals or pigment, 26 per cent. contained leucocytes or epithelial fragments, and from 42 per cent. they had obtained coliform bacilli. *B. typhosus* occurred once, streptococci once, and *Staphylococcus aureus* once.

These figures suggested that in practice clinically useful information might be obtained in the cases by the use of the Einhorn tube. With regard to the suggestion that the low gastric acidity predisposed to biliary tract infection, Dr. Knott had noticed that their series did not support this very strongly, as low values were recorded in less than 25 per cent. of these cases. Coliform infection appeared to be much more frequent than micrococcal. In fact, if no coliform bacilli appeared until the bile containing specimens were reached and the gastric acidity had been found to be

normal, then it seemed that serious consideration must be given to the possibility of biliary infection. In examining normal duodenal contents in persons with normal gastric acidity they had found that over 75 were not infected. Dr. Knott had found experimentally that it was possible to sterilize lightly infected bile with very small amounts of urotropine, provided that the tubes were kept at blood heat and that the organisms, continuing at first to multiply, tended to produce acid in their immediate vicinity. At the time it seemed possible that another factor must come into play in producing this sterility—namely, the lowered surface tension, which allowed more effective action by the small amounts of antiseptic present. He had noticed, therefore, with great interest that recently Frobisher in America had been testing the effect of lowered surface tensions upon living bacteria, and had observed that a reduced surface tension was definitely inimical to the growth of many organisms. This was in accord with Dr. Knott's own results, which suggested that antiseptics were somewhat more effective when acting in a medium such as that which bile provided. This did not explain why, experimentally, urotropine was found to be a more effective biliary antiseptic than salicylates. The difference here seemed to arise from the fact that sufficient concentration of salicylate could not be produced in the bile without the appearance of general toxic symptoms, whereas a sufficient concentration of urotropine could be obtained if it was given in the way that Dr. Hurst had already explained.

Professor D. P. D. WILKIE (Edinburgh) considered that cholecystography had already taken its place among the standard methods of diagnosis, but that no finality or perfection had yet been reached. The greater certainty of the intravenous method had led some to persevere in its use to the exclusion of the oral method. The necessity for freshly prepared solutions and meticulous care in injection could not be too strongly emphasized if unfortunate general and local reactions were to be avoided. The immunity of the male sex from symptoms following injection, compared with the female sex, was noteworthy, and possibly of some significance in relation to the comparative immunity of the male from biliary disease. There was no more striking indication of the importance of physiological research and the experimental method in relation to medical and surgical problems than the work in recent years on the biliary apparatus. The researches of Meltzer and Lyon on duodenal intubation; of Rous and McMaster on the functions of the gall bladder and ducts; of Rosenthal and of Rowntree on liver function tests; of Aschoff and McNeo on jaundice and the reticulo-endothelial system; and, finally, of Graham and his assistants on cholecystography, formed a remarkable record of scientific advance the full significance of which was not yet realized or appreciated.

The exact nature of the gall-bladder function was not yet fully known. The experiments of Dr. Kodama suggested that it played a more purely mechanical role than some had believed. When an organ possessed a muscular coat and was richly supplied with nerves there was strong presumptive evidence that it took more than a passive part in functional processes. The work of Dr. Graham and his associates had also cast doubt on the presumed predominance of the sphincter of Oddi in relation to the physiology and pathology of the biliary tract. They would await with keen interest further evidence on the question of whether they were to recognize for the pars duodenalis of the common bile duct a primary part—namely, a definite measure of independent action and initiative—or merely a secondary role dependent on the peristaltic activity of the duodenal wall. That it must work in harmony with duodenal peristalsis was but natural, and the proving of this did not *ipso facto* preclude the possibility of independent sphincteric function under nervous control.

In cholecystography they had the means of studying the function of the gall bladder and its behaviour under various conditions, as had never been the case before. As experience with the method increased they might be able to recognize kinetic changes in the early stages of biliary

disease and to establish or disprove the existence of the hyper- and hypo-kinetic types of biliary stasis described by Westphal. The gradual disappearance of the gall-bladder shadow, and its uninterrupted persistence when repeated doses of the drug were administered, gave further proofs that the gall bladder never emptied itself completely. This retention of a constant residuum of content might explain in some measure the liability of the gall bladder to calculous disease, as also the relatively silent course which gall-stone cases so often pursued. In Professor Wilkie's experience there was only one condition in which an empty gall bladder was found, and that was a complete obstruction of the common duct or of both hepatic ducts above the entrance of the cystic duct. Dr. Graham's visit to explain and demonstrate his methods and results was emblematic of the catholicity of medicine, of the close bond between the members of the profession in the two nations, and a compliment to the Association which was appreciated very heartily.

Dr. C. F. W. ILLINGWORTH (Edinburgh) stated that cholecystography was in fairly general use in Edinburgh and was becoming an almost routine diagnostic measure. The cases of which he had kept accurate records numbered 132, the great majority of these being under the care of Professor Wilkie. In all of them the intravenous method was used, 4 or 5½ grams of sodium tetraiodophenolphthalein being injected. They had given the drug by the mouth in only a few cases early in their series; the results were not satisfactory. They then commenced to give the dye intravenously, and as by this method the test had proved reliable and without danger, they had hesitated to change the technique. Dr. Illingworth believed, however, that if the oral method could be shown to be equally reliable it was obviously the method of choice. Until, however, complete absorption of the drug from the intestine could be ensured, accurate results could be hoped for only by intravenous injection.

Their technique differed in no essential respect from that of others, but recently they had introduced a slight modification. A few hours before the injection a large dose of magnesium sulphate was given, with the object of securing a partial emptying of the gall bladder and ducts, which were then refilled by the fresh dye-laden bile from the liver. With regard to the after-effects of the injection, their experience had, perhaps, been more fortunate than that of others; only once had any alarming sequel occurred. In this case there was a rather serious collapse before half the fluid had been injected, the collapse persisting for nearly half an hour. A rigor occurred once, but it was transitory and passed off without later ill effect. One patient had a severe headache and one complained of tingling in the limbs. Of the remainder, 61 per cent. suffered no discomfort; the others had varying degrees of nausea or vomiting, never alarming, and invariably passing off in a few hours.

In 111 cases Professor Wilkie had carefully examined the gall bladder at the operation. Dr. Illingworth had classified this series in various groups to illustrate the value of the test.

**Group 1.**—In 39 cases no gall-bladder shadow was present in the x-ray film (which was usually taken twelve to fifteen hours after the injection). Of these patients, 35 were found to present gross disease of the gall bladder or ducts, stones, neoplasm, or well marked cholecystitis, thus confirming the x-ray diagnosis. In the remaining four cases the gall bladder and ducts appeared quite healthy. The reason for this discrepancy was to be found, at one period only, some twelve or fifteen hours after the injection. If a whole series of exposures had been made at varying intervals after the injection a correct diagnosis might have been made.

**Group 2.**—This group included 53 cases in which a gall-bladder shadow of apparently normal appearance was obtained. The results of this group were rather less satisfactory. In 45 the diagnosis was confirmed, the gall bladder being healthy. In the remaining 8, however, the investigation was misleading. One gall bladder contained stones, few in number and too small to be visible on the x-ray film. In 4 a slight degree of cholecystitis was visible to the naked eye. The remaining 3 cases were of particular interest. At operation the gall bladders were of healthy appearance and no stones were present. The clinical histories had, however, been very typical, and it was thought advisable to carry out a bacteriological examination of the bile and the gall-bladder wall. In all 3 cases, culture of one or both tissues gave a growth of avirulent diplo-streptococci.

**Group 3.**—This group was a smaller one and required little description. It included those 8 cases where gall stones were visible within the shadow of the gall bladder. It was a point worth mentioning that the concentration of the dye around the stones might be of value as an index of the condition of the gall-bladder wall and as a guide to operative treatment.

**Group 4.**—In 9 cases the cholecystogram was poor and ill defined, and in these cases gross disease of the gall bladder was found to account for the appearance. Reliance could only be placed on the density of the gall-bladder shadow as an index of its functional capacity if the radiogram was a good one; in very stout patients this might be difficult to obtain.

**Group 5.**—There was only one case in this group. The cholecystogram showed a well marked hour-glass deformity, which was found later to be due to a very localized induration of the gall-bladder wall.

**Group 6.**—In patients suffering from obstructive jaundice the investigation had proved of no value. Whether the obstruction was complete or partial, the amount of dye excreted by the liver was insufficient to produce a shadow.

**Group 7.**—The last group included those cases in which a palpable swelling was present in the upper abdomen. In these cases cholecystography had proved of great value. The position of the lump in relation to the gall bladder could be accurately defined and the differential diagnosis was thereby narrowed down. Their series included 5 such cases, and in each the investigation had been of real value. One patient, previously operated upon for an endothelioma in the thigh, developed a swinging temperature and a palpable swelling in the right upper quadrant of the abdomen. Cholecystography revealed a well defined gall-bladder shadow below the level of the lump; a diagnosis was made of secondary metastasis in the liver, and the patient was saved a further operation. In another patient a large epigastric swelling was similarly diagnosed as situated above the gall bladder, and was found to be a large hydatid cyst in the liver. In a third patient the gall bladder was seen flattened and compressed upwards by a tumour which proved to be in the transverse colon. The fourth case was similar, the gall bladder being compressed upwards by a growth in the colon. In the last case a hydronephrosis was responsible for displacing the gall bladder and also rotating it into a horizontal position.

Their conclusions based on this experience were, therefore, that cholecystography was of distinct practical value. The absence of a gall-bladder shadow was strong evidence of gross disease. A good shadow excluded gross disease, but could not be expected to give evidence of minor pathological changes. In jaundiced patients the investigation was of no value, though in their experience it was devoid of risk. Lastly, cholecystography was of considerable assistance in the differential diagnosis of abdominal tumours.

Dr. J. W. McNEE (London) said he would first deal with recent advances in knowledge of the biliary secretion which normally passes along the bile passages, and with the changes met with in this secretion in disease. It would be remembered that the normal constituents of the bile were water, the pigment bilirubin, the bile acids and their salts, free cholesterol, and a small amount of mucin. In inflammatory disease of the bile passages other constituents, derived from the inflammatory exudate, were present and played an important role in certain end-results, such as the formation of gall stones. The most important of these constituents were, perhaps, the salts of calcium. In considering the biliary secretion in relation to disease it was necessary to remember the great differences between bile as secreted into the intrahepatic bile passages and bile as found in the gall bladder. Professor Graham had referred to the two main functions of the gall bladder—namely, the regulation of the pressure in the biliary passages and the absorption of water. Ross and McMaster had shown that, in the dog, the bile in the gall bladder was concentrated down to roughly one-tenth of its original bulk. The average power of concentration of the human gall bladder was not known, nor had the degree of concentration at which some of the constituents of abnormal bile were almost at the point of precipitation been discovered.

The gall bladder, as was well known to surgeons, could be done without; but it was ridiculous to describe it as a rudimentary organ on this account, or because certain animals had no gall bladder. It would be as logical to describe the spleen, the greater part of the stomach, the large intestine, or even an arm or leg, as rudimentary organs, on the basis of a similar argument. Since too little was known of the functions of the gall bladder, he would put in a word against its surgical removal in the absence of adequate proof that it was diseased and was not recovering.

At the Annual Meeting of this Association two years ago the newer views on the formation of bile pigment in the body had been discussed. This pigment was derived from haemoglobin, and it might be supposed that the amount of the pigment excreted in the bile was dependent on the amount of blood destruction, provided that the parts of the liver concerned with bile pigment metabolism (Kupffer cells and the glandular cells) were functionally intact. There was considerable indirect clinical and experimental support for this simple view—as, for example, the relative frequency of deeply pigmented gall stones in young patients with aehcluric jaundice, and the excessive excretion of thick dark bile (pleocholia) in animals after the injection of blood-destroying agents. But other experiments in animals were by no means conclusively in favour of such a simple mechanism. Whipple and Hooper had found very variable results, with no constant increase in the bile pigment, in dogs after injection of large amounts of haemoglobin. These investigators, studying healthy dogs with a biliary fistula, found that on a mixed diet the average daily excretion of pigment was very constant; a large dose of sugar, either by the mouth or intravenously, caused at once a very definitely increased output of pigment lasting for several hours; other carbohydrates acted in the same way. Raw meat, on the other hand, brought about a constant diminution in the amount of pigment excreted. From their experiments Whipple and Hooper had suggested that these facts might upset the accepted theory that bile pigment was only formed when blood was destroyed, but Dr. McNee did not agree with their view.

Numerous attempts had been made to evolve suitable methods of estimating bile acids in health and disease, but at present no satisfactory technique was known. It was inevitable that the presence of increased or of diminished amounts of bile salts would alter enormously the physical properties of the bile. It might even be that the key to many important biliary diseases would be obtained when suitable methods were available. From his own observations Dr. McNee had found that in obstruction of the biliary passages the earliest secretion of the liver to stop entirely was that of the bile acids. As a rule they soon disappeared from the blood and urine when biliary obstruction was complete, whereas bile pigment might pass out in the urine for many months without interruption.

Dr. McNee next dealt with the role of cholesterol in health and disease. There was one controversial point in connexion with the cholesterol content of the bile which was important. Naunyn still believed that cholesterol was actually secreted into the bile from the wall of the gall bladder and biliary passages, but most observers were now opposed to this view, and the speaker thought that from all the experimental evidence available it might safely be assumed that the cholesterol in the bile was derived from the blood plasma by transference through the liver cells. Recent work by Gardner and his associates, by Landau and the speaker himself, had shown that the cholesterol esters of the blood plasma were changed to free cholesterol during their passage through the liver, and that the free cholesterol, when it reached the intestine with the bile, was again absorbed as cholesterol esters. There appeared to be a very conservative metabolism of cholesterol, so that little escaped from the body; what loss occurred was easily made up by absorption from the food, as Gardner had shown. All animal experiments in which the cholesterol ester content of the blood was artificially raised showed at once an increased cholesterol output in the bile. The same fact could be demonstrated in man; and in 1913 Dr. McNee had shown that in pregnancy, during which an increase in cholesterol in the blood was the rule, the same occurred in the bile. He believed that the cholesterol esters in the blood plasma were derived by absorption from the food. French writers had suggested that the suprarenal cortex and the corpus luteum of the ovary were to be regarded as important producers of cholesterol esters for the body. Hurst appears to have accepted this second view without considering the many experimental facts against it. Landau and McNee, after much experimental work, had rejected the French view entirely, and concluded that the suprarenal cortex and corpus luteum were mere depots and not producers of cholesterol esters. Every

experimental increase or decrease in the cholesterol ester content of the plasma was at once reflected in the cholesterol content of these two organs.

With regard to disease of the biliary tract, it was generally agreed that infection of the gall-bladder wall with organisms, as in acute and chronic cholecystitis without calculi, was a common disease and one more often missed than recognized early. By infection was meant a condition associated with definite inflammatory changes in the walls of the gall bladder. The mere presence of organisms in the bile was quite insufficient for such a diagnosis. In all experimental blood infections in animals and in prolonged bacteraemias, such as infective endocarditis, the capillaries of the liver shared with the lung capillaries and the splenic pulp the chief role in removing micro-organisms, and no doubt many living organisms passed out through the bile without harming the biliary tract. It was evident that there were other important factors concerned in the etiology of real cholecystitis. Professor Graham had referred already to the probability of lymphatic infection, and he and his colleagues had done very interesting work in connexion with this and the resulting hepatitis. Stasis of the bile had been in the foreground as an etiological factor for many years, and the speaker thought its position was justified. Recently a new conception had been introduced by the work of the Swedish surgeon Berg of Stockholm, who, from a series of extensive observations on the extrinsic bile passages, had concluded that the form, position, and even the extent of development of certain valves, varied enormously in different biliary tracts and gall bladders, and that therefore certain types of gall bladder were far more prone to stasis and partial obstruction or imperfect emptying because of their anatomical peculiarities. This was a matter of particular interest to surgeons.

How were acute and chronic cholecystitis, without gall stones, to be recognized? The clinical picture might be difficult to interpret and might closely resemble duodenal ulcer, not only in the symptomatology but in the results of examination of the gastric contents. Duodenal drainage might help to some extent, but the speaker felt sure that the correct use of the dye technique introduced by Professor Graham would be recognized as of enormous aid to the clinician. What were the effects on the biliary secretion of cholecystitis, including with it cholangitis, and, as a result of Professor Graham's work, hepatitis also? The bile received, in addition to its usual constituents, all the products of the inflamed gall-bladder wall—an excess of mucin, dead cells and their debris, many of them containing myelin droplets of cholesterol, and last, but not least, calcium salts. The quantitative changes in the biliary constituents during cholecystitis were not known, but quite probably during the acute inflammatory period little new bile entered the gall bladder, and changes were mainly exerted on the bile already there. Precipitation certainly tended to occur, and in that way gall stones might have their beginning.

Many acute infections of the gall bladder must heal altogether. Others died out more slowly, as they could infer from the presence of aseptic bile in pathological gall bladders containing stones. What kept up the inflammatory reaction, and how it should be dealt with apart from surgery, were problems for the future. Dr. McNee could not believe that dietetic treatment was of great value in the prevention of gall stones. While giving an adequate although modified diet, he saw no way of cutting off the small amount of cholesterol that the body needed to replace wastage from the cholesterol metabolism. The metabolism of cholesterol in the body was as conservative as iron metabolism, and it would be almost as logical to try to cure erythraemia by removing the iron in the food required for haemoglobin. The only aim at present must be the prevention of additional damage to the bile passages in patients where this was believed to have occurred. Whether the use of urotropine in large doses, or non-surgical drainage by the Lyon technique, would yield good results in future, was not known. At present the only reliable curative method was surgery. It was important to give ample glucose when possible in diseases of the liver and bile passages. The effects of glucose, when stored as

glycogen, in protecting the liver cells from many poisons were already well known. Whipple and Hooper had shown that sugar also had a definite effect in assisting and increasing the excretion of bile pigment.

Dr. T. IZON BENNETT (London) dealt with the three great questions which presented themselves to the physician when confronted by signs suggestive of gall-bladder disease. The first of these was whether the evidence of gall-bladder disease was definite. Textbooks asserted that gall stones were chiefly found in fat fertile females of 55, but good aphorisms made bad diagnoses, and they all knew that gall stones were sometimes found in thin males and in quite young and seemingly healthy women, so that physical appearance was of little help. Further, it was known that the symptomatology of cholecystitis and of biliary calculus was immensely varied, ranging from sharp attacks of colic with jaundice to slight feelings of general malaise or even no symptoms at all. On rare occasions it was possible to see a swollen gall bladder through the abdominal wall, or to palpate it, or even to hear with a stethoscope the grating of the stones within it, but usually physical signs were conspicuously absent. While recognizing the value of right scapular pain, of pain below the costal margin together with flatulence, of pain at the right side of the lumbar vertebrae as suggesting gall-bladder disease, it must be realized that these were suggestive rather than decisive. Of the various physical signs, the one most constantly present and of the greatest diagnostic value was the presence of tenderness to pressure below the right costal margin when the patient was examined in the upright position.

The rather unsatisfactory state of the clinical methods of examining these cases had been completely changed by the introduction of cholecystography, and Dr. Bennett did not think it was yet generally recognized in the profession that it was now a comparatively simple matter to obtain precise information in nearly every case. Thanks to Dr. Graham and his colleagues, they had reached a new stage in their knowledge, and the speaker did not hesitate to say that no examination of the biliary tract could be looked upon to-day as complete unless it included x-ray films taken before and after the administration of a suitable dye. In his private practice and at the Middlesex Hospital he had, during the last eighteen months, had the opportunity of seeing a very large number of these cases, and the results of examination had been most satisfactory. They had employed the oral method almost exclusively; not from fear of toxic general symptoms so much as from the risk of occasional venous thrombosis following slight extravasations. Admittedly such should not occur, but, in routine hospital work, such accidents might occur if intravenous injections were given, and a purely diagnostic test which involved such risks was not without grave disadvantages. The difficulties of the oral method were purely those of obtaining a capsule which would be dissolved in the intestine after passing the pylorus unchanged. Variations in the strength of the gastric and pancreatic juices in different individuals were bound to cause trouble in some instances, but the speaker's last fifty cases had been almost uniformly successful, nor had general toxic symptoms ever been grave. Without for a moment doubting his personal results with the intravenous method, Dr. Bennett felt sure that Dr. Graham had not sufficiently stressed the risks of local damage due to extravasation, and he believed that the intravenous method would only become universally applicable when a substance was introduced which was both opaque to x-rays and devoid of risk when slight leakage occurred. The second question before the physician was whether the disorder in the biliary tract was permanent or only of a temporary nature. Here again cholecystography was proving of the greatest service, enabling them to watch the progress of cases under medical treatment. Dr. Bennett had seen cases in which the emptying capacity of the gall bladder seemed to improve considerably under treatment, but gross distortions and mottling of the shadow appeared to be always indicative of permanent damage. There was always the further question as to the severity of hepatic change which might have been produced. Here they must bear in mind the fact that

it was probably impossible for infection of the biliary apparatus to have occurred without the liver itself having been subjected to considerable strain during the excretion of bacterial or other poisons. Laboratory tests of hepatic efficiency were still somewhat elementary, or, rather, the immense reserve power of the liver prevented them from demonstrating hepatic damage by laboratory methods until the disease had assumed formidable proportions. The speaker had recently been working with bromsulphalein as introduced by Rosenthal and White. This dye appeared to be absolutely without dangers when given intravenously, and its retention in the blood plasma when a liver was seriously deranged was easily demonstrated and measured. Dr. Davies, in the Biochemical Department of the Bland-Sutton Institute of the Middlesex Hospital, had had promising results with the introduction of certain sugars as tests for hepatic efficiency, but it must be admitted that all these tests at present demonstrated liver disease later in its evolution than they could wish. In earlier cases more useful information could be got by bacteriological examination of bile recovered by means of a duodenal tube; and it was interesting to remember that this was the original application of duodenal tubeage. It was possibly its most useful application even to-day.

Turning to the last question before the practitioner, they came to the problem of treatment. Dr. Graham had probably done more to enable patients with biliary tract disease to escape operation than any other surgeon. That was one reason why they welcomed him so warmly. In the absence of stone and gross infection, cases of gall-bladder disease did exceedingly well with medical treatment. Dietetic treatment was very important, but if they thought that by diet they were going to alter the blood cholesterol they were falling into error. The work of Campbell, fully confirmed by unpublished researches in the biochemical laboratories at the Middlesex Hospital, showed that the supposed hypercholesterolaemia of most of these cases was largely a myth. Jaundice and chronic parenchymatous nephritis were the two states which commonly gave rise to an increased blood cholesterol content, and the relief of biliary obstruction would at once reduce the blood cholesterol to normal, independently of the diet. The important dietetic principles in biliary tract disorders were: (1) to give a diet of carbohydrates and vegetables which would improve bowel evacuation and throw a minimal strain on the liver, and which would also combat tendencies to obesity; (2) to give water in abundance; and (3) to utilize such foods as would promote biliary drainage. As regards water drinking, Dr. Bennett was sure that it was of the highest importance. Natural waters with a rather large salt content were usually better than purer waters; normal saline was, he believed, an excellent drink for these patients. The food which most readily provoked emptying of the gall bladder was egg-yolk, and he was trying the effect of giving beaten raw egg-yolk to his patients daily. As to drug treatment, he was convinced that magnesium sulphate in solution, taken on waking, when the stomach was quite empty, was very useful; he did not use Lyon's method of injecting it through a duodenal tube. He believed there was some risk in repeatedly applying such strong solutions to the duodenal mucosa, and he was sure that, given by the mouth, it was easier, devoid of all risk, and equally effective. Bile salts and urotropine were the other drugs which were useful, and these he prescribed in full doses. His experience was that by these methods most satisfactory results could be obtained in a very considerable proportion of cases.

Dr. J. H. ANDERSON (Ruthin) described the results obtained by the use of cholecystography at Ruthin Castle in about fifty cases. The method of administration had varied; at first the dye was given intravenously, but now the oral method was used almost exclusively, being given in salol-coated pills, though in three instances a simple solution was used, as the patients stated that they were unable to take pills of any kind. Comparing the oral and the intravenous method, his experience confirmed the results of previous observers, that at present the intravenous was perhaps more accurate as the dye was more under control; but the oral method was sufficiently

accurate for routine use, besides having certain definite advantages. The possibility of pills remaining unabsorbed or being vomited was checked by a screening of the abdomen and radiological examination of any vomit. The dyes used had been the sodium salt of tetrabromphenolphthalein and tetraiodophenolphthalein prepared by Mallinrodt of St. Louis, and in a few cases the sodium salt of tetraiodophenolphthalein prepared by Martindale of London; in all cases solutions were prepared a few hours before use and pills not more than ten days. Ill effects had been insufficient to cause any alarm, and in 20 per cent. of cases there was no reaction at all. In the oral cases the unfavourable sequelae were limited to nausea, vomiting, and diarrhoea. Nausea was transient as a rule, but had once lasted for ten hours in a case where the gall bladder did not fill, and where three stones were found at operation. Vomiting was never severe and never exceeded three times. The largest vomit was in a case where the dye had been dissolved in 60 c.cm. of water. In no case was the vomit stained with the dye. For some time all vomits were x-rayed as a routine, and their density was compared with an equal thickness of tap water as a control, but without detecting the presence of any dye. Diarrhoea was limited to two or three loose motions and was never severe. No indication could be found to show which patient would have a reaction and which not. The impression gained was that the reaction was more likely to occur when the dye was old and in patients whose liver function was impaired. In no case had the test been omitted because of the general condition of the patient, and their experience as to ill effects was contrary to that expressed recently at a discussion in London. In practically all cases a small barium meal had been given at twenty-four hours; one film was taken with the patient lying on the left side and the tube in front of the patient working horizontally. In this way information was obtained as to pressure effects of the gall bladder on neighbouring hollow viscera and the mobility of the gall bladder was ascertained. With cholecystography they could determine in at least 90 per cent. of cases whether the gall bladder was healthy or not. There were some border-line cases, and only time and experience would settle the group into which these cases would fall.

Dr. Anderson showed slides to illustrate some findings confirmed by operation; in all cases the dye was given by the mouth.

Sir BERKELEY MOYNIHAN (Leeds), in congratulating Professor Graham on the great advance that had been made by the introduction of cholecystography, said that in their hands examination by Graham's method had given accurate results in 92 per cent. of cases. He disagreed with some of the observations as to the value of estimating the cholesterol content of the blood. In their early experience they found that as a rule in cases of cholelithiasis there was an increased amount of cholesterol in the blood; 85 per cent. of cases showed an amount above the mean normal, 65 per cent. over the high normal, and 2 per cent. an amount below the low normal. The presence of hypercholesterolaemia, especially when cholesterol crystals were found in the bile extracted from the duodenum, appeared to have a certain diagnostic value. In the last series of 81 cases they had extended their inquiries. They had examined both the cholesterol and the calcium content of the bile, the blood, the gall-bladder wall, and the stones; they had taken into close consideration the stage which the associated pathological conditions in the gall-bladder wall and in the stones themselves had reached. A short interval only elapsed between the examination of the patient's blood before operation and the examination of the gall bladder and its contents.

There was a clear difference between the conditions found in the early stages of cholelithiasis and those found in the late stages. In the early stage an excess of cholesterol was found in the blood, in the bile, and in the gall-bladder wall; there appeared to be a cholesterol "flood" or "high tide." The gall bladder had the property of abstracting cholesterol from the bile, which was heavily charged with it. If the gall bladder was removed early it might present the "strawberry" appearance which he had described

twenty years ago. This appearance was due either to a deposit of cholesterol crystals on the mucosa or to an excess of lipid in the wall of the gall bladder. If this state continued, and if it was preceded or accompanied by infection, the formation of gall stones occurred. These consisted at first almost entirely of cholesterol, as both chemical and radiological examination would prove. In a later stage of the disease, when the stones had caused injury to the gall bladder, which showed evidences of thickening and fibrosis, the conditions were changed. The flood of cholesterol had passed; the high tide was then followed by a low tide. There was no longer an excess of cholesterol in the blood, for the gall bladder, because its mucosa was destroyed, had lost its power of abstracting it from the bile. The chronic irritation of stones had caused the appearance of calcium in the bile, in the gall-bladder wall, and in the blood. Hypercholesterolaemia was changed for hypercalcaemia; and the stones removed from the gall bladder contained calcium. It was interesting to note that a large proportion of private cases fell into the early group, whereas a large proportion of hospital cases occupied the later group. If this view was correct, that the gall bladder extracted cholesterol from the bile, then removal of the gall bladder in patients with hypercholesterolaemia should result in a considerable reduction of the amount of cholesterol in the blood. This they found, on examining cases of cholecystectomy at periods of six months or more after operation, was invariable.

Sir HUMPHRY ROLLESTON (Cambridge) referred to the possibility that although the normal gall bladder might have little, if any, function in the direction of contraction, it might so operate when it was the site of chronic inflammation and accompanying muscular hyperplasia of its walls. He suggested that the good clinical effects following the use of a diet in which cholesterol-producing foods had been reduced to a minimum might be due to some factor other than the cholesterol content. He was not optimistic enough to believe that medical treatment would be able, at any rate for a long time, to eliminate the need for cholecystectomy.

Professor EVARTS GRAHAM, in reply to a question as to the occurrence of "bad arms" at the site of injection, admitted that cases of thrombophlebitis were occasionally seen; he applied heat at once if pain was present. Such cases, however, were rare in skilled hands, and with a new preparation that he was now trying he hoped they might be rarer still.

### THREE CASES OF CHANGED REACTION TO TUBERCULIN FROM POSITIVE TO NEGATIVE.

BY

ROBERT CARSWELL, M.A., M.B., Ch.B.,  
WANDSWORTH.

In the literature of tuberculin comparative charts of the reaction before and after treatment are rare; indeed, specimens of negative charts alone are not common, owing no doubt to the widespread prevalence of latent tuberculosis making it comparatively uncommon to obtain negative reactions in practice. If it can be shown that a positive general reaction can be converted by specific treatment into a negative reaction, after a sufficient interval of time has been allowed to elapse to eliminate the immediate effect of tuberculin immunity, an important step will have been taken towards a valuation of the tuberculin test comparable to that of the Wassermann test in syphilis, and the diagnosis and treatment of tuberculosis will become practicable in the very earliest stage of all—that of infection with minimum pathological changes. The following three cases point in this direction. In the first case it seems fairly clear that the specific treatment was responsible for the conversion of positive to negative reaction. In the second, immunization was only carried to 0.4 c.cm. of the bacillary emulsion (2 mg. bacillary substance); and in the third, which was carried to 4 c.cm. (20 mg.), a long period



elapsed between the first positive test and the two subsequent negative tests. The tedious and laborious nature of these investigations, and the long intervals which must elapse in trials of this sort, will, I hope, justify the publication of only three cases in support of the above proposition.

Chart 1 was obtained in the case of a young man whose general health was reasonably good; the complaint for which he sought advice was a persistent, slightly painful,

obscure affection of the wrist, apparently of no great importance so far as his general health was concerned. The decided positive constitutional reaction unexpectedly obtained led on careful physical examination

to the discovery of slight but distinct physical signs at the right apex. Further importance was given to these facts by a history that the patient had suffered a few years previously from a run-down condition accompanied by a persistent cough, which was thought by his medical attendant to have "touched the lung," although a few months' residence in the country appeared to have re-established his health satisfactorily and cleared up the signs.

Acting on the assumption that this man harboured a tuberculous focus which for the time being was causing no disease in a clinical sense, a wide view was taken of the situation, and thorough treatment, specific and otherwise,

alterations in the living tissue at the time of the first chart had, by the time of the second, either been destroyed, or so encapsulated by fibrous or calcareous bounds as to be to all intents and purposes outside the body or out of organic relationship with it.

The same sequence of events is illustrated by Charts 3 and 4. The patient in this instance was a member of a family of which one sister was suffering from chronic pulmonary tuberculosis.

The patient herself had drifted into a run-down condition accompanied by persistent cough, which, especially owing to a knowledge of her sister's disease, was giving rise to some anxiety. The tuberculin test,

which gave hardly a trace of reaction to the first injection (0.001 mg. T.K.), gave a distinct reaction to the second (0.002 mg.), and a pronounced reaction to the third (0.005 mg.). No physical signs were discovered in the chest, but, as before, importance was attached to the test; constitutional and specific treatment was carried out, the maximum dose on this occasion being 0.4 c.cm. (2 mg.), and after an interval of fourteen months from the conclusion of specific treatment the test was repeated, with the negative result shown in Chart 4.

While the temperature record in Chart 4 is not entirely below 98.4°, it is to be noted that the time covered by the

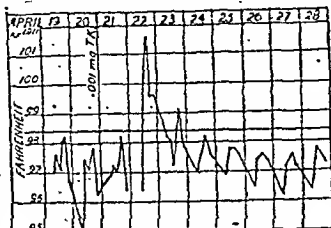


CHART 1.

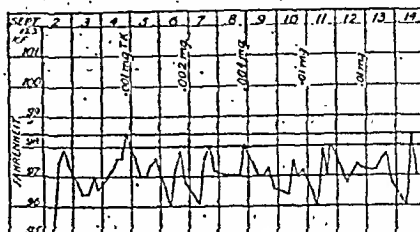


CHART 2.

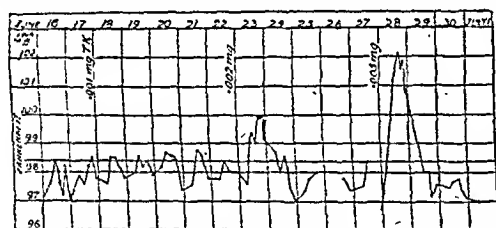


CHART 3.

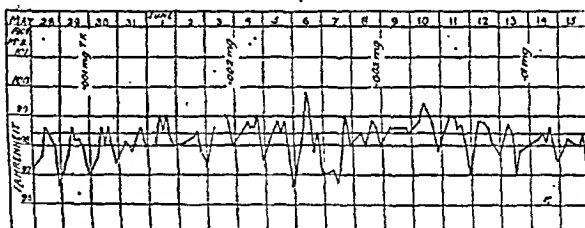


CHART 4.

was carried out for a period of twelve months. The specific treatment consisted in the subcutaneous injection of progressively increasing doses of Koch's bacillary emulsion, beginning with approximately 0.001 mg. and ending; in the course of about eleven months, with 4 c.cm. B.E. (= 20 mg. solid substance), and carried out more or less in accordance with Koch's final directions for this treatment. The remainder of the treatment was ordinary general care at home. A period of seventeen months from the conclusion of specific treatment having been allowed to elapse, the second test was undertaken for the purpose of comparison, when the completely negative Chart 2 was obtained.

Only when a complete explanation of the meaning of the tuberculin reaction is established will the full significance of these two charts in the medical history of this individual be appreciated. The view to which I adhere, but which for the time being I am not critically discussing, is that at the time of the first chart this patient was suffering from latent tuberculosis, probably at the site indicated by the physical signs, and possibly elsewhere, causing no distinct appearance of bodily ill health, but implying the presence of living tuberculous tissue in active relation with the body fluid, and capable of extension; while at the time of the second chart the negative result indicates that such living tuberculous tissue had been obliterated. That is to say, the tubercle bacilli formerly present and causing the usual

later part of the chart was pre-periodic, that event occurring on May 14th. Further, the record of 99° on June 1st was on the third day after the injection; the record of 99.8° on June 6th was also on the third day; that of 99.4° on June 10th was on the second day, and the full test dose of 0.01 mg. on June 13th was followed by still less appearance of disturbance.

Here again the assumption is that in June, 1906, this patient harboured tubercle bacilli in organic relation with the body tissues and fluids, capable of development, and entailing danger of the development of disease similar to that of her sister, while by May, 1908, this condition had

been obviated and no such danger remained.

One more example of the same sequence of events is presented. Chart 5 shows a sharp reaction to a medium test dose of 0.005 mg. In this case there were no distinct focal signs of disease,

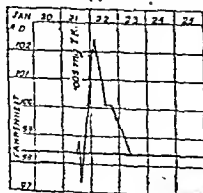


CHART 5.

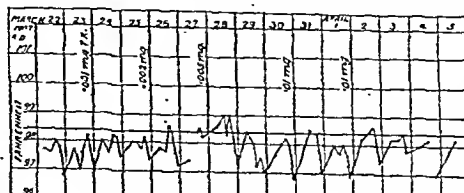


CHART 6.

although there was certainly a depressed general condition of health. As in the other cases, enough importance was attached to the result of the test to cause steps to be taken to eradicate the infection indicated, which steps consisted in the administration of B.E. up to a maximum of 4 c.cm.

Chart 6 shows the result of a test undertaken after a period of thirteen months from the conclusion of treatment. Here the dose, which had previously caused a sharp reaction with a temperature of 102.6°, resulted on March 28th in a

temperature of only 99°, without constitutional disturbance, in marked contrast to the previous result, while the other test doses of the series were followed by no temperature disturbance at all. This test was repeated twelve months later, with five-day intervals between the injections, instead of two as on the previous occasion (Chart 7).

On this occasion likewise there was nothing approaching a reaction; a temperature of 99.2° on June 3rd was on the fifth day after the first injection and previous to the administration of the second one. A temperature of 99° on June 10th was on the second day after the third injection, and neither of these, nor any of the other

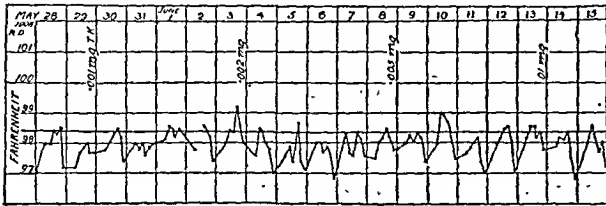


CHART 7.

injections, was accompanied by other than quite trivial symptoms.

The points intended to be brought out in this communication are the striking changes in reactivity to tuberculin in the above cases, together with the means whereby these changes were brought about, and the inferences to be drawn therefrom.

A positive general tuberculin test is a matter of very great practical importance as it is capable of revealing disease at a time when it can be comparatively easily dealt with, and when specific treatment with large doses of tuberculin is easy, safe, and effective.

## HEART DISEASE IN CHILDREN.

BY

G. ARBOUR STEPHENS, M.D., B.S., B.Sc.LOND.,  
CONSULTING CARDIOLOGIST, KING EDWARD VII WELSH NATIONAL  
MEMORIAL ASSOCIATION.

THE results of an investigation into one series of 30 cases of heart disease in children are given in the hope that they will be of some service to those who are interested in this important subject. The cases were sent to the clinic with the object of allowing me the opportunity of determining to what extent there were certain conditions common to those children who were suffering from carditis.

From the accompanying case notes it will be observed that there is a marked liking for acids, especially vinegar, amounting oftentimes to a perversion of appetite. Together with this partiality for acids there is in many cases a great dislike for milk. The aggravation of the choreic movements said to take place in Case 1 after partaking of acids is very strikingly direct. Puffiness of the gums is also a very common factor pointing to a constitutional disturbance closely associated with the alimentary canal. Many of the children are in the habit of biting their nails—a habit indicative of an irritable state of the nervous system, and one which might be said to be preliminary to a choreic condition.

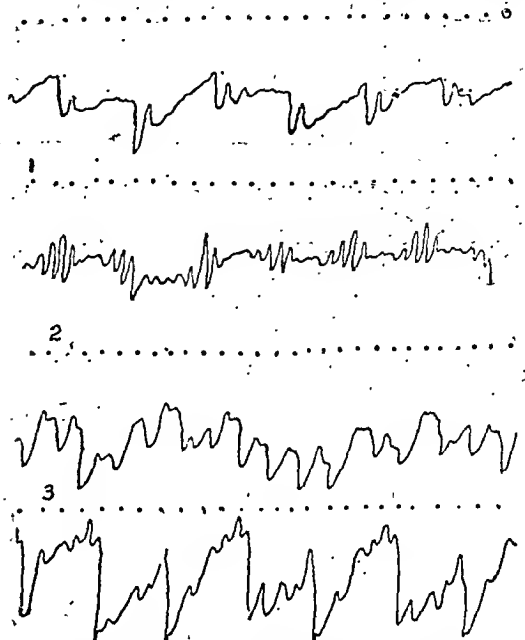
In connexion with these results it may be useful to draw attention to some statistics I collected from the schools under the Swansea Education Committee, of which I have the honour to be chairman.

No. of children examined	...	...	8,638
No. who disliked milk	...	...	944=10.9%
No. of nail-biters	...	...	3,154=36.5%
No. of acid takers	...	...	5,469=63.3%
No. of those whose gums bleed on cleaning	...	...	2,392=27.6%

Amount of milk available=0.34 of a pint per head of population.

It will be seen that the condition of a large number of these children can hardly be said to be satisfactory; in fact, such a large amount of nail-biting and gum-bleeding might be described as factors closely associated with a predisposition.

One item in the case notes—namely, "Cardioscope 1-1/2"—must be defined. The usual chest-piece of a stethoscope is barely an inch in diameter, and covers a limited part of the cardiac area. I use a chest-piece nearly 3 inches in diameter, and as a result I find the sounds in a healthy child almost of the same quantity, which I mark "1-1." When the second sound varies and the quantities are unequal, I mark them accordingly "1-1/2" or "1-3/4" as the case may be. Sound quantity is much easier to estimate than sound quality unless the observer has a musical gift. The assumption that medical students are gifted musically is responsible for a wrong conception of



1. Taken with 1-inch receiver from patient sitting up.
2. Taken with 1-inch receiver from patient lying down.
3. Taken with 3-inch receiver from patient sitting up.
4. Taken with 3-inch receiver from patient lying down.

heart sounds on the part of medical men generally. The instrument with this large chest-piece I call a "cardioscope." That such a variation in size of chest-pieces produces different results the accompanying cardiograph diagrams amply testify.

### Heart Cases Examined at the Clinic.

1. Aged 9. Had a fall in January, 1925, followed by a rash and six days later by chorea. She is fond of acids and every time she takes any the chorea is aggravated. She dislikes milk. Left tonsil enlarged and chest narrow. There is no diaphragmatic breathing, and the heart is displaced outwards; no murmur. Cardioscope 1-1/2.
2. Aged 5. Tonsils enlarged, adenoids present, and a discharge from both ears. Can take milk, but is very fond of orange. Heart thrill and mitral murmur present. Cardioscope 1-.
3. Aged 10 1/2. Is stated to have had chorea in November, 1922 when "the movements were slight and the heart sounds rough. Complaints of pain and aches in legs and feels tired. Is fond of vinegar, lemons, and salt. The gums are puffy; there is no heart murmur. Cardioscope 1-1/2.
4. Aged 13 1/2. In November, 1924, the first sound was stated to be "rough." Is fond of vinegar. Gums are puffy; he bites his nails; chest moves badly during respiration. After exercise the first sound is rough. Cardioscope 1-1/2.
5. Aged 8. When examined in July, 1924, and February, 1925, she is stated to have had a "loud systolic bruit." She gets no milk or proper food. Gums puffy; loud systolic murmur. Cardioscope 1-.
6. Aged 8. In 1922 had chorea and in 1923 had chorea and rheumatic fever. Takes no milk but is fond of vinegar. Complaints of pains in legs. Bites nails; gums puffy; systolic murmur. Cardioscope 1-.
7. Aged 10. Stated to have had chorea in 1922, when "the first sound was coarse." "In July, 1924, heart normal." Is fidget about her food. Gums puffy; tonsils and cervical glands enlarged no murmur. Cardioscope 1-1/2.
8. Aged 7. Stated to have had a "soft systolic murmur" in February, 1924, and March, 1925. Very fond of vinegar. Gum puffy; marked mitral murmur. Cardioscope 1-.

9. Aged 91. "In May, 1924, had chorea with a mitral murmur, and in October, 1924, the murmur was still present." Complains of pain over the heart. Dislikes milk, but is fond of vinegar. Tonsils and glands enlarged; nodule on right shin; slight mitral murmur. Cardioscope 1-4.

10. Aged 13. "In March, 1925, had a mitral murmur." Dislikes milk, but is fond of sour things. Gums puffy; marked mitral murmur. Cardioscope 1-4.

11. Aged 11. Stated to have "had anaemia in 1921 and chorea in 1924 with a coarse first heart sound. In February, 1925, heart normal." Takes no milk. Bites nails; gums puffy; no murmur. Cardioscope 1-4.

12. Aged 9. Had chorea in February, 1925. Dislikes milk; gets poor food. Wassermann reaction positive. Tonsils enlarged; adenoids present; keratitis; no murmur. Cardioscope 1-4.

13. Aged 12. Is stated to have had chorea in November, 1923, with enlarged tonsils and sinus arrhythmia, and in March, 1924, chorea with mitral murmur. In October, 1924, the murmur was still present. Takes no milk, but is fond of vinegar. The heart is enlarged with a mitral murmur. Cardioscope 1-4.

14. Aged 13. Is subject to colds; food bad; hopeless mother; another child has chorea. The thyroid is enlarged. Murmur all over the cardiac area. Cardioscope 1-4.

15. Aged 11. In April, 1925, had slight chorea. Dislikes milk. Is always restless; has growing pains; bites nails; gums puffy; no murmur. Cardioscope 1-4.

16. Aged 14. In December, 1923, had operation for right mastoid disease. Dislikes milk. Gets pallid when excited; gums bleed; fond of vinegar; no murmur. Cardioscope 1-4.

17. Aged 12. Does not like milk; fond of vinegar, and "will empty the bottle." Has slight tremors; gums puffy; marked mitral murmur. Cardioscope 1-4.

18. Aged 12. Takes no milk. Has chorea; gums inflamed; tonsils enlarged; bites nails; no murmur. Cardioscope 1-4.

19. Aged 15. Had otorrhoea in 1921 and rheumatic fever in 1924. Takes no milk, but is fond of pickles and vinegar. Bites nails; heart enlarged; mitral murmur. Cardioscope 1-4.

20. Aged 12. Easily fatigued. Dislikes milk, fond of pickles and vinegar. Heart impulse diffused. Cardioscope 1-4.

21. Aged 13. Has been "lackadaisical all her life." Does not like milk; is fond of pickles. Complains of pains over abdomen; bites nails; mitral murmur. Cardioscope 1-4.

22. Aged 11. Mother says "she always wants to sit over the fire and is a terror for vinegar." Gums puffy; poor pulse. Cardioscope 1-4.

23. Aged 11. Had rheumatic fever in 1923. Gets pains in joints when it rains. Takes no milk; is fond of sour things. Tonsils and thyroid enlarged. Gums puffy; bites nails; mitral murmur. Cardioscope 1-4.

24. Aged 13. Is weak and languid; faints when the hair is done. Takes no milk; is fond of vinegar. First heart sound rough. Cardioscope 1-4.

25. Aged 12. Had growing pains; very fond of meat. Gums puffy; bites nails; mitral murmur. Cardioscope 1-4.

26. Aged 13. Takes no milk. Has choreic movements. Gums pyorrhoeic; mitral murmur. Cardioscope 1-4.

27. Aged 12. Takes no milk; is fond of sauce and acid things. Has chorea; bites nails; tonsils enlarged; gums inflamed; marked mitral murmur. Cardioscope 1-4.

28. Aged 15. Had chorea two years ago. Takes no milk; is fond of vinegar. Bites nails; gums puffy; mitral murmur. Cardioscope 1-4.

29. Aged 13. Sister of Case 28. Takes no milk; is fond of vinegar. Has chorea; gums puffy; bites nails; mitral murmur. Cardioscope 1-4.

These two sisters (28 and 29) have one other sister who is very strong. She, however, is fond of milk and does not touch vinegar.

30. Aged 11. Had rheumatic fever six months ago. Takes no milk; is fond of vinegar. Bites nails; mitral murmur. Cardioscope 1-4.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### A CASE OF GAS GANGRENE IN LABOUR.

I was engaged to attend the confinement of a woman, aged 35, who had given birth seven years previously to a normal male child.

I examined the patient at seven months' gestation and found a vertex presentation and nothing abnormal. About two weeks before full term (December 3rd, 1925) I was sent for on account of pain in the right side of the abdomen. I was told that foetal movements had not been felt for about two weeks. The presentation was transverse. No foetal movements or heart sounds were obtained; there were no signs of labour. External version was tried, but failed. Quinine was given by the mouth, but no other attempt at induction of labour was thought advisable. On December 12th labour came on normally; the pains were slow.

Dr. Darwall Smith saw the patient with me and performed internal version and pulled down a leg. The foetal head was found to be soft, the skin was peeling off, and the smell of the child was very offensive.

On December 13th the baby was born after great difficulty, owing to the fact that its abdomen was very much distended with gas. Its general condition was very disorganized. There was some post-partum haemorrhage.

For the next few days the mother got on quite satisfactorily, but on December 16th she began to complain of pains in the left

buttock and a small red patch was found at mid-day. At 8 p.m. on the same day it had spread, and I opened where I expected to find pus, but gas was obtained; a drainage tube was put well into the buttock. The inflammation spread very rapidly. Dr. Darwall Smith ordered quiaiaie injections and suggested that the case had become one for a general surgeon. Mr. C. Frankau was called in on December 17th and removed the whole of the gluteal muscles on the right side. The patient died about two hours later.

The bacteriological report upon material from the buttock was: "Films showed large numbers of streptococci and Gram-positive spore-bearing bacilli. By aerobic cultivation both streptococci and the spore-bearing bacillus have been obtained. The later organism is highly pleomorphic; it has a marked tendency to variability on staining with Gram's method, and has a centrally placed spore. It gives rise to profuse gas formation in the cultures, and is strictly anaerobic. The organism is one of the gas gangrene type and is a member of either the *perfringens* or the malignant oedema group; its identity is not yet certain."

The question is: How did the patient become infected three to four weeks before full term? The only clue I can offer is that her husband had been badly wounded in France during the war and that some clothes had harboured the spores of these organisms.

Harrow.

HAROLD E. THORN, M.B., B.S.

### GENERAL PARALYSIS ASSOCIATED WITH BENIGN TERTIAN MALARIA.

The unusual combination of diseases in the following case would seem to render publication desirable.

A retired ship's carpenter, aged 39, was admitted to the Kent County Mental Hospital on January 18th, 1926, with the signs and symptoms of general paralysis, and a history of malaria and heat-stroke. The blood and cerebro-spinal fluid were both reported completely positive to the Wassermann test. The patient was confused, quite disorientated, dirty in habits, with pronounced hallucinations, and very restless. By the beginning of April he had quieted down sufficiently for a course of Stäkele treatment to be begun, but before the fourth injection could be given he had again become very restless and troublesome, and the treatment had to be abandoned. There was then little change in his condition until August 1st, when he had two bouts of fever of 103° with one day intervening, when his temperature was subnormal. The blood was examined and benign tertian malarial parasites were found to be present. Fifteen typical rigors followed, with one or two atypical ones, and, as there was no improvement in his mental condition, quinine treatment was commenced. On September 6th the patient died, having previously developed retention of urine and multiple syphilitic sores.

The interest in this case would appear to lie in the fact that the patient had malaria of long standing and that general paralysis developed in spite of this; a further severe relapse of malaria in no way hindered the progress of the cerebral condition to a fatal termination.

I am indebted to Dr. Abdy Collins, medical superintendent, Chatham, for permission to publish the notes of this case.

GEOFFREY T. BAKER, M.C.,  
L.M.S.S.A. and D.P.M.

Kent County Mental Hospital.

### FUNCTIONAL HAEMOGLOBINURIA.

In view of the interest recently taken in functional albuminuria, the following case appears to be worth recording.

An officer, aged 19, who had recently arrived in Malta and who was not in good training, took part in a cross-country race on April 9th. A short distance from the winning-post he collapsed, and remained unconscious for over an hour.

I saw him in hospital the following morning. Apart from a headache and a sense of general weariness, he stated that he felt quite fit. His pulse was regular and not increased in rate, and there was no evidence of enlargement of the heart, nor were any adventitious sounds or alterations of rhythm detected. The only physical signs of disease which he presented were a slight rise of temperature and well marked haemoglobinuria.

He was kept at rest, and by April 12th the urine was normal in colour, but still contained albumin. By April 15th the albuminuria had completely disappeared, and did not recur after he was allowed to leave his bed and walk about. He was readmitted to hospital in July for typhoid fever, but on this occasion repeated examinations of the urine failed to reveal albumin.

It seems reasonable to assume that the haemoglobinuria in this case was induced by the excessive exertion and was merely a more advanced stage of functional albuminuria. Probably the same fatigue products which so affected his blood and kidneys were also responsible for the unconsciousness which overcame him at the end of the race, rather than that the latter symptom was the result of cardiac overstrain.

Malta.

C. M. FINNY, F.R.C.S.,  
Major R.A.M.C.

## A CASE OF MIKULICZ'S DISEASE.

I was greatly interested in the account of two cases of Mikulicz's disease in the *BRITISH MEDICAL JOURNAL* (October 2nd, p. 586), and wish to report an instance of what appears to be the same disease, which came under my notice during the past six months.

A married woman, aged 28, came for advice on account of "her face swelling up." This, she said, commenced about three months after her third confinement which was normal in every way. At this time she presented the appearance of chronic Bright's disease, and was treated for this; at no time had she any albumin or casts in the urine. About fourteen days later she began to complain of swelling in the parotid area on the left side of the face; the swelling was uniform, more flattened than prominent, firm and hard, and extended from the middle of the cheek to the external auditory meatus. The temperature and pulse were normal, and in other respects she felt perfectly well. In three days a similar swelling in the corresponding area of the opposite side occurred. She later developed iritis in both eyes, for which she was treated in York County Hospital. No definite cause for this could be found. There was no history of venereal infection; the Wassermann reaction was negative. A week later, when seen at home, she complained of a hard lump under the chin and excessive dryness of the mouth. The left submaxillary gland was found to be enlarged to about the size of a pigeon's egg, was of dense consistency, and slightly movable; a day or two later the corresponding gland on the right side also began to swell in a similar way. The lacrimal glands were not affected, though there was some definite swelling about the lower eyelids; no other glands could be felt. She also lost considerably in weight. Several drugs were tried without any effect; she has latterly been having iodine, both by the mouth and as an external application. The parotids are now nearly normal in size, and the submaxillaries, especially that on the left side, somewhat smaller than they were; salivation is also returning, though slowly.

I think that this case, in spite of the fact that there was no definite swelling of the lacrimal glands, is very similar to the original one reported by Mikulicz in 1892.

I wish to thank Dr. J. C. Lyth of York for permission to publish this case.

York.

G. B. EGERTON, M.C., M.B., B.S.

## Reports of Societies.

## "BEFORE AND AFTER OPERATION."

ANNUAL ORATION OF THE MEDICAL SOCIETY OF LONDON BY  
SIR BERKELEY MOYNIHAN.

THE annual oration of the Medical Society of London (postponed from May on account of the general strike) was delivered by Sir Berkeley Moynihan, P.R.C.S., on October 11th. Sir HUMPHRY ROLLESTON, who on the same occasion was inducted into the chair of the society, presided.

The title of the oration, "Before and after operation," indicates not at all the breadth and eloquence of a deliverance which should long be remembered in the history of medicine. Sir Berkeley Moynihan began by declaring that the distinguishing feature of the intellectual life of the last half-century had been the advance of science. The progress in this respect had been revolutionary. New ideas were expressed in so new a language, and new methods had demanded so new a vocabulary that to the scientist of fifty years ago much of the literature of to-day would be almost unintelligible. The advance had taken place in every department of scientific activity. In some directions it had been stupendous, almost passing belief. Nor was the wonder of it lessened when compared or contrasted with what had been accomplished in other spheres of intellectual work. In painting, sculpture, architecture, and literature, the immediate interests had perhaps been altered, and the methods changed, but when the men who were engaged in these pursuits compared their own ideas and achievements with those of days gone by they were left in a condition of profound and reverent humility. In craftsmanship alone nothing more exquisite had ever been fashioned by human hands than the works which had been concealed for three thousand years in a tomb of Tutankhamen.

*The Pathology of the Living.*

In applied science nothing greater had been done than the progress of surgery since the days of Lister. Lister had been the greatest material benefactor the human race had ever known. He had said it once in Lister's lifetime—and he was interested to learn from Sir Rickman Godlee that nothing gave Lister greater pleasure than to hear it—that Lister had saved more lives than all the wars of all the ages had thrown away. Among the great adventures and the new enterprises which resulted from Lister's work were two things which changed the face of surgery. In the first place there was the possibility of recognizing in an earlier stage than had ever before been accessible the phases of disease at their very beginning. No relevant inquiry into the earliest conditions of disease had ever been possible before Lister's day. In consequence of Lister's work it was possible to see, during the lifetime of the patient, the stages of his disease, and to correlate those stages with structural alterations in a way that could not have been done before; and when operations were, occasionally, fatal it was possible to compare the conditions found on the *post-mortem* table with those which had been discovered during the conduct of the operation. This subjected the surgeon almost at once to a certain amount of derision because the conditions which he had described as being present during the lifetime of the individual did not seem to tally with the conditions found *post mortem*, and, as they all knew, it was only the *post-mortem* pathology which appeared then to have any validity. It was in consequence of a repetition of such criticisms from pathologists that L. coined as a measure of self-protection the title "Pathology of the living," to show that there was a condition present during the lifetime of the patient with which the surgeon was acquainted, and which to him was a matter of supreme importance, different from the condition which existed after death. The lineaments of a man's face changed when he died, and the conditions inside him changed at least to an equal degree. He thought it was a pity that their transatlantic friends should have twisted the phrase into "living pathology," which was not the same thing.

This study of the pathology of the living led not only to a complete revision of old knowledge, it added new knowledge day by day to that which had been accumulated in the past. Let them take, for example, the subject of gastric ulcer and read what Matthew Baillie and others had written, and it would be found that while their writings were perfectly accurate in pathology they had no clinical relevance at all. When the surgeon came along and pointed out that gastric ulcer was a rare disease, not at all the disease which had been described for generations in the textbooks by physicians, it was regarded as almost too good to be true. The first of the conditions, therefore, which resulted from this study of the pathology of the living was a recognition of the much earlier phases of disease, and following upon this was the recognition of the interaction of diseases and of organs one upon another. It was learned that all ulcers in the stomach and duodenum were secondary; that there was an interrelation between the appendix, the gall bladder, and the pancreas, probably through the lymphatic system; much also was learned about the action of the spleen, and so forth.

*Surgery the Instrument of Research.*

Surgery was still, in the orator's judgement, the strongest weapon in the hands of the physician. It was the greatest instrument of research. But it was so little regarded as an instrument of research that even to-day less homage than was due to the surgeon was paid to him. Clinical research, which was the most arduous of all, demanded infinite patience, insight, intellectual integrity, and the power of generalization from a number of observed facts. When experiments were conducted upon animals in the laboratory, with far less anxiety, with no really arduous responsibility, with no clinical responsibility at all at stake, those experiments, brought to fruition, were rewarded with the highest honour which a scientific body in this country could bestow; but when man in all his

bafling multitude of difficulties was subjected to an inquiry the work upon him was not rewarded in the only way in which scientific work could be adequately rewarded in this country—namely, by the bestowal of the Fellowship of the Royal Society. It was one of the saddest things to consider that all this work had been done, the whole face of medicine had been changed, and yet no surgeon in active practice to-day—and no physician—was a Fellow of the Royal Society.

The next point he wanted to make was that the mere craft of surgery was now hardly capable of any further advance. That was a difficult and might seem to be a rash thing to say, but he believed it to be true. If a series of operations were taken—for example, upon the Gasserian ganglion, or upon the stomach or gall bladder, or upon almost any of the organs inside the abdomen, it was really hardly possible for the operations to be much safer than they were now. It was certainly hardly conceivable that there should ever be seen in the whole history of the world greater skill than was shown by the most competent masters of the present time, or that there could be greater beauty of craftsmanship or more perfect execution. There was nothing more perfect in any craft or art than the work of the skilled surgeon. It was evident when one watched such a man that he exemplified, not only supreme devotion and infinite patience, but something like a complete dedication to a great ideal, which was finding expression in the labour of his hands at the moment.

A word of caution was necessary. There was a good deal of bad surgery done, not only in this country, but throughout the world. Men who had some natural gifts had not enjoyed the opportunity, or had refused the opportunity, of training themselves under a great master whose criticism and spiritual encouragement were necessary for the making of a great pupil. Surgery was not learned easily. It required devotion over a long period, and if a man was to be expert in his own day he must first watch the master work and learn from him. If, therefore, the orator was loud in his admiration of the expert surgeon he wanted also to be loud in his denunciation of some bad work practised in the name of surgery to-day. Every surgeon who had had much to do with the work of the last few years would bear out his criticism in that respect.

#### *Earlier Access to Patients.*

If the growth of surgery had advanced as far, or almost as far, as it was possible for it to go, as he thought it had, how could the science of surgery be improved? He believed that an enormous improvement was still possible if the surgeon had earlier access to patients, if he laboured to improve the condition of the patient before operation, and if he took pains to follow up the patient more carefully than was now the custom after the operation was concluded. Surgery was originally rescue work, and surgeons now were constantly doing rescue work, for instance, in connexion with gastric and duodenal ulcer. Was it really right, if they all knew their work and applied themselves properly to it, that there should be so many cases of perforation of gastric and duodenal ulcer in the hospitals to-day? When a series of these cases were examined, as they had been, by Mr. Sherren, or Mr. Walton, or himself, they found that the great majority of the patients who suffered perforation had been treated medically over and over again. There had been neglect somewhere, in the majority of cases, when the perforation of an ulcer occurred, and surgeons had the right—a right conferred upon them by successes extending now back for a great many years—for patients to be delivered to them for surgical treatment at a much earlier stage than was now the case.

The great plea one would make for earlier access would be in cases of cancer. Recently he had inaugurated a Yorkshire cancer campaign because he was rendered so miserable by the series of hopeless cases of cancer of the breast or cancer of the stomach which came along. In connexion with that campaign certain figures were got out under the auspices of the Ministry of Health relating to cases of cancer of the breast at Leeds General Infirmary examined over a long period of years, beginning about 1911. The cases were set out in three groups. The first group con-

sisted of cases in which the breast alone was involved; in the second, the breast and the axillary glands were involved, and in the third the skin was deeply undermined or little satellite nodules were scattered over the surface of the breast. Of those in the first of these groups, 28.2 per cent. were alive and well, and without recurrence three years after operation, and 77.7 per cent. ten years after operation. In the second group 39.5 per cent. were alive and well and without recurrence three years after operation, and 15.8 per cent. ten years after. In the third group, 25.9 per cent. were alive and well three years after, 3.45 per cent. five years after, and ten years after all were dead. He did not think it was possible to put into figures anything more conclusive as to the need for earlier access.

#### *Preparation for Operation.*

The next method by which the results of surgery could be improved was by getting control of the patient some time before operation and doing all that was humanly possible to improve his condition. Before a patient was operated upon certain questions must be answered: first, that the operation was really necessary; secondly, that the patient was in the best possible condition to have the operation performed; thirdly, that the operation thus performed was relevant to the condition for which the operation was called. Observing a smile on the faces of his audience, the orator said that there was a certain humour about it, but there was no humour from the patient's point of view when gastro-enterostomy was done for carcinoma of the colon or tabes dorsalis, or a number of other things, instances of every one of which he had himself witnessed.

Somehow it was always the risks of surgery that were spoken of, never the risks of medicine. In a paper giving the results of ten years' work on gastric and duodenal ulcer he had stated that in the hospital there had been 129 deaths from hæmorrhage or perforation with duodenal ulcer, almost every one of which had been treated medically not once or twice, but over and over again, whereas in the same period he had operated on 551 duodenal ulcers without a death. Which was the safer? Yet when the patient or his medical adviser was asked to consider medical or surgical treatment the view was taken that to enter upon operation was to enter upon a new risk. The fact was that it was much safer for the patient with any of these diseases to be on the operation table than to be on the hospital bed. In medicine lay the great danger—a danger so great in his judgement that much stronger arguments must be brought forward in favour of medical treatment before he at least considered it justifiable after the first attack.

#### *Blood Transfusion.*

In preparing the patient for surgery advantage was taken of a variety of different methods. There was no hurry unless malignant disease was present. The safety of surgery was really proportionate to the care with which the patient was prepared for operation, provided the hands were expert. If one was hurried and had to operate on the morrow, before there was time to examine the patient or make all preparations, a risk was being faced which in the present state of surgery he did not think they were entitled to run. One of the first things he found of use was blood transfusion. He learned this from Crile, and from 1908 onwards he had used it over and over again. In cases of splenic anaemia he could hardly get on without blood transfusion before and after operation. In all cases of splenic anaemia where the blood count came down to 3,000,000 or 3,500,000 blood transfusion was used, not once or twice, but repeatedly, and both before and after operation. In doing a blood transfusion it appeared as if the cholesterol of the recipient were mobilized far beyond the proportion which could be explained by the admission of new cholesterol. Patients were also given glucose intravenously. If the blood cholesterol of the patient was low and the blood urea high then a long time was taken in preparation of the patients, and sometimes there was difficulty with them under these circumstances, though by degrees their confidence was gained. The preparation of the patient who had jaundice had to be undertaken with great care. Years ago they learned the extraordinary



tendency of such patients to bleed after operation. There was a great deficiency in the calcium of the blood of the jaundiced patient. To give calcium orally, as Sir Almroth Wright had suggested, he found to be without value; it was now given intravenously and repeatedly. By the use of this and other methods, including the injection of alien serum, the jaundiced patient had been made much safer.

After operation blood transfusions were continued, as well as infusions of glucose. They might be confronted with acidosis, not uncommonly, or with alkalosis, more rarely. Patients with acidosis required glucose continuously, with or without bicarbonate of soda.

#### *The Surgeon's Training.*

The orator concluded with the remark that his thesis was one which, he was sure, would find general acceptance. It was, briefly, that surgery was no longer a question merely of operating. The work of the surgeon during the last generation or so had created new knowledge and had certainly revised old knowledge very considerably. During that time the surgeon had become a great craftsman, but something more than the finest craftsman was necessary, and he foresaw, in consequence of these changes that were occurring so insidiously in the work of the surgeon, a great change in the surgeon's training. In his own day he thought he had spent far too much time in the anatomy rooms, learning things which, having a rather tenacious memory, he had never been able successfully to forget. A man who was going to practise surgery must be a physiologist, a biochemist, and be steeped in the practice and religion of research. The surgeon could have any number of collaborators, but he himself must be chief. The patient's life was entrusted to him. There was no trust more sacred in the world than that which the patient placed in the surgeon. The operation table was really a high altar and the surgeon the priest. And the patient who had passed through the deep waters with the surgeon might have found them chill and bitter, but the thought of the surgeon's work with him, when the toilsome days were ended, would be like a glowing coal at his heart.

Mr. T. H. OPENSHAW proposed the vote of thanks, remarking that he had never heard more brilliant oratory in medicine. If there was one point in Sir Berkeley's discourse with which he was not in accord it was his reference to anatomy, which the speaker considered must be the absolute groundwork of the surgeon's knowledge, but he fully endorsed all that he had said about pathology and the need for close association between the biochemist and the surgeon.

Sir ARCHIBALD GANNON, in seconding, said that that was not the occasion on which the physician should try to get anything back, though various things might be said in defence of medicine. They had listened to a master of oratory on a subject on which equally he was a master.

Sir BERKELEY MOYNHAN said that he really deserved some recompense, for—although none of his friends believed him—the most dreadful task in the world to him was to deliver a speech! His heart was with the physicians, and he himself was a physician doomed to the practice of surgery. In connexion with a very large share of his work inside the abdomen he owed to Sir Humphry Rolleston more than to any man living or dead. He had never been able to let go of his book. Not that it was everything he would desire from the surgical point of view, but, then, controversy was the delight of scholarship if care were taken that it did not become coarsening.

#### *THE FOTHERGILLIAN MEDAL.*

Before these proceedings took place Sir HUMPHRY ROLLESTON presented the Fothergillian Medal of the society to Professor Sir F. Gowland Hopkins, F.R.S., who, he said, had combined the functions of a great researcher with those of a great instructor. Sir GOWLAND HOPKINS, on receiving the medal, said that he had spent the greater part of his active life in regions quite remote from those in which alone the value of true scientific work could be appraised—that is, the domain of clinical medicine—and it was very encouraging to an experimentalist to have his work recognized in this particular connexion by a society so well able to decide whether it had been of value or not.

### THE TREATMENT OF GOUT.

At the meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on October 12th Dr. GEORGE GRAHAM, the President, delivered his annual address from the chair. He took for his subject "The treatment of gout," but made some preliminary remarks on diagnosis.

Dr. Graham began by remarking that there was an impression abroad that gout had become a rare disease, whereas he believed that it still occurred very frequently. During the last two years, in the out-patients' department at St. Bartholomew's he had seen ten cases—four acute and six chronic. In obscure cases the family history was of great value in diagnosis. The actual history of the first joint symptoms when the condition was chronic was also useful. The first attack might be typical in the big toe-joint, though subsequent ones might affect hands or knees. The diagnosis of gout was easily made clinically when the big toe was affected, and also when the carpo-metacarpal joints of the index or ring finger were involved, but it was much more difficult when the affection was of the ankles, knees, wrists, or shoulders. The shape of the joints was nearly always asymmetrical, and this point was of use in making the diagnosis from subacute infective arthritis, where the joints were usually uniformly swollen. The presence of tophi in the ears or swellings of the bursae was significant, but often these did not occur. The changes which took place in the bones due to the deposit of sodium biurate made the skiagram of great value in diagnosis. Sodium biurate, unlike calcium salt, was not opaque to x rays, and when sufficient calcium had been displaced by sodium biurate a clear area would be seen. The changes were best seen in the small bones of the hands or feet, whereas it was rare to detect the changes in a knee-joint because of the thickness of the bone. The changes in the bones must be distinguished from those occurring in lupus pernio and in the arthritis which occurred in association with psoriasis, also from those due to long-standing subacute infective arthritis. The estimation of the uric acid in the blood was sometimes of great assistance in a doubtful case. A high figure for the blood uric acid—above 3 mg. per 100 c.cm.—was strongly in favour of gout, while a low one did not negative the diagnosis.

The first essential in the treatment of an acute attack was that the patient should rest the limb. If the lower limb was affected, bed was indicated; if the upper limb, a sling. In bed the patient should have a cradle to keep off the weight of the clothes. The drug which worked best was colchicum. Its mode of action was in no way understood. It had no effect at all on the excretion of uric acid, but it certainly relieved the pain and cut short the attack. It was of no value in prevention, and it had the disadvantage of sometimes causing unpleasant symptoms, such as dyspepsia, and occasionally severe diarrhoea.

In the prevention of an attack diet played a great part. Dietetic restrictions now, however, were less severe than formerly. The most important was abstinence from all foods containing large amounts of nucleoproteins, such as gland organs like sweetbreads, kidneys, and liver. Meat and fish contained purins, but in less quantity. If it was desired to make the diet very strict, beef might be avoided. The total protein should not exceed from 60 to 80 grams a day. Alcohol in certain forms was undeniably a contributory cause of gout, though its mode of action was unknown. Widal and his co-workers found that patients with gout would often give skin reactions when tested with different wines. Of nineteen cases, three gave very intense reactions, thirteen gave feeble reactions, and three no reactions at all. One lady who gave an intense skin reaction with burgundy always had an attack of gout after drinking any of it. Curiously enough, the wine which had the worst reputation in England—namely, port—did not give skin reactions in Widals' cases. Beer and champagne were considered to be very potent in this country; spirits did not affect patients.

The drug which was of most value was cinchophen, sold in this country under various proprietary names—atophan, agotan, phenoquin, quinophan. In the United States an analysis of the different preparations made by six firms had

been carried out in the laboratory of the American Medical Association, and all were found to be equally pure. In this country the preparations of different firms had not been tested by any central laboratory.

Dr. Graham here related observations made upon one patient—the worst case of gout he had ever seen—from the point of view of uric acid output following the administration of atophan. It was found that the drug only caused a large excretion of uric acid for the first two or three days of its administration, and that the excretion then fell to normal. It was suggested that it was only necessary to give the drug for three-day periods, and then to allow a period with no drugs before starting another course. He adopted this principle, and had treated all his gout cases since on those lines. The patient in this instance had now had the cinchophen preparation for the last six and a half years in 20-gr. doses three times a day for three consecutive days in each week; the total cost to the hospital was about £50. During this period his health had steadily improved. He had had only one attack of gout, on which occasion a mass of sodium biurate weighing about 35 grams was removed by the man himself from a sinus over his knee. He had never had any massage or radiant heat, as his hands were too badly damaged to recover, and the speaker had not thought about the other joints until, after some months, the man came back and said that his knees and ankles were recovering and he could walk much better. Unfortunately no plaster casts had been made of the hands, but the speaker felt sure that the swellings over the knuckles were very much smaller than formerly. Many other patients had been treated on these lines, and the great majority had no acute attacks of gout during the period of treatment and the local condition had improved immensely.

Cinchophen had other purposes in medicine. It was of use in the treatment of acute rheumatism, and relieved the pain just as effectively as sodium salicylate. It had a considerable effect on the liver, and had been used for the treatment of catarrhal jaundice. A certain number of unpleasant after-effects had been noted. Most of these were not serious; they included malaise, headache, intestinal discomfort, and urticaria. In July of this year Dr. Langdon Brown had reported that two patients, one of whom was taking cinchophen and the other the allyl ester of cinchophen, had developed jaundice and died. Other cases of jaundice were reported, and one case was shortly to be published by Dr. Clement Wells in which death occurred four days after the onset of the jaundice. After examining the notes of certain of these cases, Dr. Graham considered that the following facts had been made clear: that it was not the same proprietary preparation in every case which caused the symptoms (in each of the three fatal cases a different preparation was used); the symptoms followed very different doses; the drug in the fatal cases he had examined was given every day of the week without intermission, and in some of the cases there had been definite signs of disturbance caused by the drug, but no attention was paid to them.

Dr. Graham added that he had himself investigated three patients who had been taking cinchophen for long periods, but except in one case—and there the result of the test was doubtful—there were no signs of liver damage. He would suggest by way of precaution that cinchophen should be confined mainly to gout cases; that it should never be given for more than three or four days without an intermission of at least four days; that the blood uric acid should be estimated at intervals of, say, three to six months, and if the blood uric acid was normal the dose should be reduced to two days or only one day in the week. Finally, it was possible that testing the time which was taken for the drug to be excreted might furnish a guide as to whether there was any delay in excreting the drug.

Dr. GEORGE EVANS said that idiosyncrasy to cinchophen did occasionally occur, and he read a letter from the laboratories of one of the proprietary preparations in which this fact was acknowledged. The speaker then went on to give some good results of the treatment. One patient of his took colchicum for a considerable time; then a fresh doctor put him on sodium salicylate, and he was seriously ill. After this he was put on one of the cinchophen pre-

parations (atophan), forty tablets a week. This he took regularly, and gradually himself reduced the dose. He found he kept going best if he took ten tablets a week, and he took them scattered over the week rather than—as the speaker about a year ago suggested—taking them for two or three days in succession with four days clear. The speaker thought that sometimes a better result was obtained by giving atophan, when well tolerated, distributed through the week than by giving it for one-half of the week only.

Dr. W. LANGDON BROWN said that Dr. Graham had been very cautious in the expression of any view about the pathology of the condition. Would he consider that in addition to some definite error of metabolism an attack might be precipitated by some mild infection? An attack might be due, possibly, to some focal sepsis acting on a person who had this peculiar characteristic of his metabolism. If that was the case it would explain why there was so much confusion between gout and rheumatoid arthritis. He remembered how, in the earliest days when cinchophen was used, he employed it in the case of a man who was subject to what he (the patient) called chronic gout. The drug appeared to effect an improvement, and the man himself said that it had done him more good than anything else. Yet on calling for an x-ray examination to clinch the diagnosis the report showed that there were present the typical changes of rheumatoid arthritis. No doubt in that case it was the analgesic properties which enabled him to appreciate it so much. The toxic cases had, of course, produced a serious difficulty. Speaking generally, he had followed the plan of giving the drug for two or three days in the week, followed by a period of rest. The first fatal case he saw had had the drug continuously outside before coming into hospital. In another case the drug was stopped in the course of the illness, and the patient asked that it should be resumed because she felt better during the time she was taking it. It was important to realize that these dangers were more likely to ensue in those cases where the drug was being used for its analgesic properties rather than for its direct effect on the uric acid of the blood; and he would make it a rule not to use the drug for any length of time without having an estimation of the uric acid of the blood carried out. The drug also should not be continued where there was any disturbance, such as urticaria or gastro-intestinal upset.

Dr. E. P. POULTON said that in this condition it was important that all possible sources of sepsis, such as the teeth and tonsils, should be seen to. He thought it was brought out in Dr. Glover's analysis of the chronic joint infections, published by the Ministry of Health, that if one wanted to find cases where the teeth were simply abominable one must go to cases of gout. With regard to diet, Dr. Graham had mentioned that carbohydrates or an excessive quantity of protein were not regarded favourably. In some work which he and Dr. Graham had done together they found that the uric acid in the urine was diminished when either protein or carbohydrate was excluded from the diet. It seemed to him reasonable that there should be some sort of interaction between these two in the formation of these purin bodies.

Dr. F. PARKES WEBER said that he was under the impression that no other disease gave radiological signs really similar to gout, but it appeared from what Dr. Graham had shown that the changes in the bones in lupus perneus were identical with those which gout produced.

A MEMBER OF THE SECTION mentioned that he had been a patient for phlebitis recently at a French spa, and there he was ordered a cinchophen preparation, 15 grains a day, a course lasting three days. He noticed, about ten days after starting, a good deal of tenderness over his liver, and accordingly he dropped the use of the drug. He had taken no alcohol, but large quantities of mineral water.

Dr. GRAHAM, replying to Dr. Parkes Weber, said that many radiologists still needed to learn the x-ray appearances in gout. Another point of interest, suggested by Dr. Poulton's remarks, was that an attack of gout in a gonty subject often followed a trauma. In conclusion, he emphasized the importance of bearing in mind the possibility of any obscure joint lesion being due to gout, because this was one of the few types of chronic arthritis which could really be treated.

## Reviews.

### COMPARATIVE HAEMIC PATHOLOGY.

Dr. J. P. McGOWAN, pathologist to the Rowett Research Institute, Aberdeen, who has done much work on the diseases of animals, has, in a monograph entitled *Pernicious Anaemia, Leukaemia, and Aplastic Anaemia: An Investigation from the Comparative Pathology and Embryological Point of View*,<sup>1</sup> recorded and summarized the results of a research which has been in progress for three years. Beginning with an investigation of Ellermann's leucosis of fowls and iron deficiency in pigs, it has broadened out very considerably so as to lead to a comparison with pernicious anaemia and leukaemia in man and to an inquiry into the embryology of blood formation. From examination of nearly seventy cases of fowl leucosis conclusions different from those of Ellermann emerge; the process is regarded as a pathological entity, an irritative condition of the bone marrow, which may be caused by various factors and not by a specific filterable virus. From careful analysis of the facts, he argues that the leucosis of fowls is comparable to what he terms the "pernicious anaemia-myelogenous leukaemic syndrome" in man, there being the same gradation of morbid processes extending from pernicious anaemia at one extreme through intermediate stages to myeloid leukaemia at the other; some of the intermediate cases were formerly called leukanaemia. In pernicious anaemia the primary change is in the bone marrow. This change may be the direct result of a toxin actually present at the onset of the symptoms, or it may be a delayed sequel of the damage caused by a past infection. The haemolysis, which is generally considered to be due to a toxin of intestinal origin and to be responsible for compensatory hyperplasia of the red marrow, is regarded as the result, not the cause, of the marrow change; for it is argued that the embryonic red cells thrown into the blood are not suited for the adult circulation and so are destroyed by the reticulo-endothelial system, with resulting haemosiderosis and, from the liberated lipids, increased adiposity.

Aplastic anaemia is contrasted with the conditions due to irritation of the bone marrow, and in this connexion attention is drawn to iron deficiency in sucking-pigs, which is a common disease, and prone to be fatal unless ferrous oxide is added to their food. In this condition the bone marrow is aplastic, and the liver at first shows fatty change and then blood cells are found in the central zone of the lobules. The deficiency of iron is thought to prevent the liver from assisting in the formation of red cells, and accordingly those that are produced are unsuitable, and are destroyed, but from the lack of iron no haemosiderosis follows. The aplastic anaemia of trinitrotoluene poisoning, in which necrotic changes are prone to occur in the liver, is brought forward as evidence of the importance of the liver in preparing the precursor of haemoglobin, but it is rightly pointed out that in addition the bone marrow is directly damaged by poisons, such as benzol, which lead to aplastic anaemia.

The author's observations on the origin of blood formation also deserve consideration. His conclusions and arguments throughout the book must arrest attention both from the able manner in which they are presented and because of their differences from current doctrines.

### OBSTETRICS AND PUBLIC HEALTH.

*Obstetrics*,<sup>2</sup> by Dr. J. S. FAIRBAIRN, has recently been published as one of the Oxford Medical Handbook series. Those who already know the previous works of the author will be prepared for the manner in which this small

volume has been written. It is, admittedly, a task beset with difficulties to compress into so small a book the fundamentals of a large subject—and to lay clearly before the reader the practical applications of the principles involved. We venture to suggest that no writer could have more successfully achieved his object.

Dr. Fairbairn has for a long time taught the necessity of viewing obstetrics as being of prime importance in the consideration of the public health, and in this book he deals fully with this aspect of the subject. The student is to regard a labour, not as an isolated, troublesome occurrence, but one which has both an immediate and a remote important bearing on the life of the woman herself, and on that of the general community.

The author develops the theorem put forward in his book on *Gynaecology and Obstetrics*, published about two years ago, which was that the most useful maternity service should consist of fully trained midwives, acting under the supervision of medical practitioners who would be called on to intervene personally only in times of difficulty. Such a scheme, he believes, would lead to better after-results in both mother and child, and after-results form the test of good obstetrics. This idea is, of course, not new, but an impetus will be given to the proposal by the publication of this book. "The practitioner is between the upper millstone of not neglecting his other patients, and the nether millstone of satisfying and relieving his maternity patients, and it is only the obstetric forceps that saves him from being squeezed between the two"—thus writes Dr. Fairbairn in the last chapter of the book: to ease the lot of the unfortunate practitioner the midwives' services should be more freely employed.

The book makes no attempt to compete with the ordinary textbook. It is written to enlarge the outlook of the student in regard to this specialty, and to guide him in endeavouring to "correct a perspective that is liable to distortion from too close attention to detail." There is much that the student may fail to appreciate fully; but there also is a great deal that will be read with profit by those who are themselves practising only in this special department of medicine. To all interested the volume can be heartily commended.

### PHYSIOLOGICAL CHEMISTRY.

THE laboratory is becoming a little embarrassed with the number of textbooks of practical physiological chemistry offered to it in recent years. Few of these are justified either by their authority or their originality, for they do not stray far from the broad path of conventional teaching. From Dr. P. ROSA, however, we have the promise of a manual<sup>3</sup> which, if Part I is representative of the whole, will be both comprehensive and novel. This first part is devoted exclusively to methods for the study of enzyme action. Much foolishness has been spoken and written in the name of "enzymes." The charge is often made that when physiology encounters a phenomenon which it cannot comprehend it invents an enzyme, and there is some justice in the thrust, although we may be tempted to retort that the word is but a label, and as such is as convenient—and therefore equally justified by faith—as are the shibboleths of the physical sciences. The fullness of the role of the enzymes in the processes whose integration is life we cannot yet measure. From chemistry we are learning that there are few reactions free from any catalytic influence under the simplest experimental conditions, and, after all, enzymes are but catalysts. The living organism is essentially an event in time, and it is certain that its life is governed by a subtle control of rates of reaction. To demonstrate an effect in terms of the units of time conventional to human experience would seem to be an achievement of more immediate significance to the study of vital activity than it may be to cosmic or molecular changes of which the dimensions in time we can scarcely comprehend.

The study of enzymes, then, is essentially a problem in physical chemistry, as the school with which the author's

<sup>1</sup> *Pernicious Anaemia, Leukaemia, and Aplastic Anaemia: An Investigation from the Comparative Pathology and Embryological Point of View.* By J. P. McGowan, M.A., M.D., B.Sc. London: H. K. Lewis and Co., Ltd. 1926. (Demy 8vo, pp. vii + 116; 12 figures, 5 plates. 7s. 6d. net.)

<sup>2</sup> *Obstetrics.* By John S. Fairbairn, M.A., B.M., B.Ch.Oxon., F.R.C.P. Lond., F.R.C.S.Eng. Oxford Medical Publications. Oxford Medical Handbook. London: H. Milford, Oxford University Press. 1926. (Fcap. 8vo, pp. x + 221; 25 figures. 5s. net.)

<sup>3</sup> *Praktikum der Physiologischen Chemie. Erster Teil: Fermentmethoden.* Von Peter Rosa. Berlin: J. Springer. 1926. (5½ x 8½, pp. xi + 331; 73 figures. R.M.15.)

name will always be associated was among the first to realize. Dr. Rona deals first with the general methods in use for making, characterizing, and examining active enzyme preparations. The main portion of the book is then devoted to the special methods which have been developed to deal with the peculiarities of the main groups of enzymes and their action. The treatment is comprehensive yet critical, condensed but explicit, and is cemented with sufficient discussion to give coherence to the whole book, although there has been no attempt at integration in the wider sense. The book is designed for the laboratory, and there it is likely to be in frequent use, and should meet most demands made upon it. We know of no other which so satisfactorily covers this field.

The two further parts of the book which are promised will deal respectively with the body fluids and with metabolism. These will be awaited with interest, though it must be said that in these subjects we have already a number of excellent manuals whose authority will not be easily challenged.

Two years ago the fifth edition of Professor HÖBER's fundamental treatise on the physical chemistry of cells and tissues was commended in these columns. The sixth edition<sup>1</sup> is now in our hands, and comprises, as before, a first section dealing with the physical chemistry of homogeneous and heterogeneous systems, and a second wherein these principles are focused upon the phenomena observable in living cells. How deeply physical chemistry has penetrated physiological thought may be seen in the variety of subjects discussed in the second part. These include the osmotic, ionic, and colloidal characters of the body fluids, the osmotic behaviour of cells and the great question of permeability, the physiological and pharmacological action of electrolytes and non-electrolytes, the electrical properties of cells and tissues, secretion and absorption, and the physico-chemical principles of metabolism. No brief review can give the measure of this large volume. It shows that critical understanding which marks the author's own experimental work, and it remains the most comprehensive and authoritative treatise in what is a very perplexing and elusive field of physiological inquiry.

#### CLINICAL AND RADIOLOGICAL STUDIES OF DISEASES OF THE LUNGS.

It is the privilege of great men to have their works collected and edited after their death. This is of double advantage to the reader, giving him an easy access to the original contributions of the author, and so enabling him to follow the gradual evolution of the mind and abilities of one of the world's acknowledged masters. Dr. EMILE SERGENT, wishing no doubt to facilitate the task of his students, and hoping perhaps to have a foretaste of the posthumous fame that has so frequently been denied to great men, has adopted the habit of collecting his papers for himself. The present volume,<sup>2</sup> which contains clinical and radiological studies of tuberculosis, forms the third of his series. While not disparaging for a moment the laudable intentions of the author, it is easy to take exception to their concrete expression. This has resulted in the accumulation of a number of papers read before societies or conferences, or prepared for different medical journals, which in form and substance are almost identical. It is not to the repetition of ideas that we object—for this is inevitable in the case of anyone who wishes to make a point—but to the actual verbal repetition for which there is no necessity whatever. Had the author taken the trouble to write a book afresh, he could have compressed the same material into about half its present compass.

The range of studies is so wide that it is impossible here to touch on more than a few of them. On the subject of pregnancy and tuberculosis the author suggests that the reason why the disease remains comparatively latent until

term and flares up after parturition is the compression on the bases of the lungs exerted by the child *in utero*. During pregnancy the respiratory excursion is limited; as soon as the compression is relieved the lungs are free to expand fully again, and the lesion progresses. To prevent this he advises the induction of a partial simultaneous bilateral pneumothorax on the day of delivery or as soon after it as possible. Hitherto he has had the opportunity of trying it on only a few cases, and is therefore unable to express more than a tentative opinion. His results are, however, sufficiently encouraging to warrant a fair trial being given to the method.

The examination of the faeces for tubercle bacilli is regarded with increasing favour. When patients cough up their sputum there is, of course no advantage; but in the case of those who habitually swallow sputum, and especially in those very early stages where the diagnosis is doubtful, this method is of great value. In nineteen cases free from sputum the author has been able to prove the existence of pulmonary tuberculosis by the discovery of tubercle bacilli in the faeces. Incidentally he suggests that the bad prognosis of open pulmonary tuberculosis compared with that of the closed type results from a constant reinfection through the intestine by bacilli that have been inadvertently swallowed.

A considerable amount of space is devoted to the radiographical examination of the lungs after intratracheal injection of lipiodol. This compound, which is opaque to x rays, is introduced through the crico-thyroid membrane by means of a syringe, the patient being placed in such a position as will enable the solution to run by gravity into that part of the lung which it is desired to examine. Photographs are taken before and after the injection and carefully compared. The method is chiefly of value in showing up lesions of the bronchi and bronchioles. Such conditions as tracheal deviation, dilatation of the bronchi, bronchial cavitation, and bronchial and pleural fistulae can be diagnosed with a certainty unobtainable by other means. Needless to say, there are numerous errors of interpretation which have to be guarded against.

As to the host of other subjects, too numerous to mention, that are included in this volume, we can do no more than recommend the reader to judge for himself.

#### DIETETICS AND NUTRITION.

PROFESSOR MOURIQUAND's book on dietetics and diseases of nutrition<sup>3</sup> is one of the latest additions to the Collection Testut which is being published by Gaston Doin of Paris. The author's aim is to correlate the study of diseases of nutrition with modern ideas of food values and the physiology of digestion.

There is probably no subject of which the newly qualified student is more ignorant than that of dietetics, and there is perhaps no subject upon which the foundations of a successful medical practice can be more securely based. This is especially true in diseases of infants. Professor Mouriquand devotes almost a quarter of his book to the dietetics of children in health and disease. He writes attractively and clearly, and deals with children at every age from birth to adolescence. His discussion of the development of the healthy child is admirable, the directions he gives for breast-feeding and artificial foods for infants are sound and practical. The explanations of various causes of failure in the feeding of infants are likely to prove most helpful to doctors, nurses, and mothers.

In dealing with adult dietetics he divides his subject into four main headings: (1) general principles which underlie scientific feeding; (2) hygienic rules which should govern the dietary of healthy adults; (3) special dietaries adapted for a variety of pathological conditions, and feeding by artificial means, such as oesophageal and nasal tubes, nutrient enemata, gastrostomy or jejunostomy, intravenous and subcutaneous injections; and (4) the general subject of dietetics in disease.

<sup>1</sup> *Physikalische Chemie der Zelle und der Gewebe*. Von Dr. med. Rudolf Höber. Sechste, neu bearbeitete Auflage. Leipzig: W. Engelmann. 1925. (61 x 91, pp. xvi + 955; 125 figures. M.39; bound, M.42.)

<sup>2</sup> *Nouvelles Etudes Cliniques et Radiologiques sur la Tuberculose et les Maladies de l'Appareil Respiratoire*. Par Emile Sergent. Paris: A. Maloine. 1926. (6 x 8½, pp. 637; 69 figures on 31 plates. 65 fr.)

<sup>3</sup> *Précis de Diététique et des Maladies de la Nutrition chez l'enfant et chez l'adulte*. Par Georges Mouriquand. Collection Testut. Paris: G. Doin. 1926. (52 x 8½, pp. ii + 817; 60 figures, 3 plates. 60 fr.)

Professor Mouriquand arranges his material well. When he discusses the diet appropriate to a certain disease he begins with a short but thorough consideration of the pathology of the disease and the manner in which normal nutrition is interfered with, and then he applies sound physiological principles to overcoming so far as is possible the defects of digestion and assimilation. He does not omit to mention also those drugs which may act as correctives and adjuvants to the dietaries recommended. The chapter on diabetes mellitus is not equal to the general standard of the book. Possibly this may be explained by the difficulties that have stood in the way of a general use of insulin in France. Still the author deserves high praise for the comparatively novel way he has approached a vast and complicated problem.

Dietetics are entering more and more into everyday practice. In many hospitals in America it is customary now to have an official, often a woman, who is responsible for interpreting the directions of the physician and supervising the preparation of the special diets ordered. This plan was adopted in the Edinburgh Royal Infirmary some years ago, when a "Sister Dietitian" was appointed. This is an excellent example to follow, for it conduces to economy in housekeeping, assists in the cure of disease, and adds much to the comfort and enjoyment of the patients.

### IMHOTEP.

DR. JAMIESON B. HURRY, who is well known for his works on vicious circles in disease, and has also written the history of the Reading Pathological Society, has now struck out a new line in his readable and at the same time carefully documented account of *Imhotep, the Vizier and Physician of King Zoser, and afterwards the Egyptian God of Medicine*,<sup>7</sup> who, according to Sir William Osler, is "the first figure of a physician to stand out clearly from the mists of antiquity." Zoser was a Pharaoh of the third dynasty (circa 2980-2900 B.C.). He is commemorated in the step-pyramid of Sakkarah near Memphis, so familiar to visitors of the Nile, which was designed for his royal master by Imhotep, who was a notable architect, was chief lector priest or kheri-heh, was eminent as a writer and the "patron of scribes," as an astronomer, and had a high reputation as a magician and a physician. He has also been described as "the earliest philosopher and wise man known to the world's history." Magic and medicine, in the order of their seniority, were closely allied in early times, and although Imhotep was a famous magician it was his success as a healer of the sick that led eventually to his deification. This is the view generally accepted, but some doubt was cast upon it by Dr. Edith Guest in an article on ancient Egyptian physicians published in the *JOURNAL* on April 17th, 1926 (p. 706). The dates of Imhotep's birth and death are unknown; his father, or at least the husband of his mother, was a famous court architect, but by a double affiliation he was regarded as the son of the god Ptah. About the details of his medical practice history appears to be silent, but he became a medical demigod before 1580 B.C., and his upotheosis as a full God of Medicine occurred about 525 B.C., when Egypt, then conquered by Cambyses, became a Persian province.

Dr. Hurry devotes a special chapter to ancient Egyptian medicine in order to show the extraordinary development of the healing art that had been reached in that country as compared with other parts of the world in the remote time of Imhotep. The practice of mummification and embalming rendered visceral anatomy familiar, and according to the Edward Smith papyrus early Egyptian medical men dissected the human body. The excessive specialism described by Herodotus, one practitioner one disease, appears from recently discovered medical papyri to be an incorrect picture of what actually existed.

Throughout this beautifully illustrated and printed volume there is evidence of the accomplished author's literary research and scholarly taste.

<sup>7</sup> *Imhotep, the Vizier and Physician of King Zoser, and afterwards the Egyptian God of Medicine*. By Jamieson B. Hurry, M.A., M.D. London: Humphrey Milford, Oxford University Press, 1926. (Demy 8vo, pp. xvi + 118; 17 plates. 7s. 6d. net.)

### NOTES ON BOOKS.

MISS MARGARET A. SHUTTLEWORTH has written an excellent little manual on general physiology and hygiene for the use of senior scholars and students in training colleges, under the title *The Wonders of the Human Body*.<sup>8</sup> The general build of the body, the bones of the skeleton, the structure of bones and variations due to dietetic disease, the effects of movement and exercise, the nature of the blood, the circulation, respiration, ventilation, food and digestion, drink, diet and age, excretion, clothing, cleanliness, the nerves and sense organs, and finally infection and the prevention of disease are dealt with. The book is well written, the statements true and, so far as they go, sufficient; the breast-feeding of the infant, prevention of infection by cleanliness and by such measures as vaccination, are well treated. There are no sins of commission, but there is a glaring sin of omission. The mysteries of trypsin, amylase, and lipase are dealt with, but there is never a word that would suggest that mortals have to come into the world somehow. There is a babe at the breast in Chapter XVII, but as to how it got there nothing is said. It surely should not pass the wit of the lady who has written this book to add a chapter describing the growth of a fertilized human egg, and showing that this process is the same for plant, animal, and the human animal. Nothing would curb prurient curiosity better than such a wide generalization.

The perusal of a book by Mr. H. E. Cox on *The Chemical Analysis of Foods*<sup>9</sup> reminds us that methods of analytical examination of these substances have been developed in diverse forms by different experimenters. The experience of everyone who has explored the possible variations of practice is accordingly an acceptable addition to the literature on the subject. But this book, useful as it is in that sense, shares in the defects of other treatises. For the information most to be desired is not merely directions for procedure, but enlightenment on the causes that disturb precision and the ways in which their effects may be avoided or controlled. The treatment accorded to the subject of jams, cordials, and fruit products is sufficiently extensive to merit mention. The concise arrangement of subject-matter is commendable, and the many references to original publications render the work a handy laboratory companion.

In *Goiter and Other Diseases of the Thyroid Gland*<sup>10</sup> Dr. A. S. JACKSON gives a description of the anatomy of the thyroid gland, discusses the etiology and geographical distribution of goitre, and deals with the diagnosis, classification, and treatment of the condition. He recommends that iodine should be administered as a preventive to all persons between the ages of 8 and 20 who live in the large "goitre belt" of the United States, where the disease appears to be extending. He considers that both adenomatous and exophthalmic goitres should receive early surgical treatment. The book is copiously illustrated.

DR. REGINALD COCK does not believe in evolution, and explains his reasons in a small book, *Genesis v. Evolution*,<sup>11</sup> dedicated to the memory of William J. Bryan, the hero of the evolution trial at Dayton, Tennessee. He advances arguments to prove that man must be descended from a perfect human being, Adam; he seems to attach more importance to the analogy of a butterfly's wing to the wing of a bird than to the homology of the latter with the fore-limb of a squirrel; and he asks what right anyone has to assume a constant progress in the human race when the observation of thousands of years, within the historic period of mankind, furnishes no proof of advance. Progress by mankind, he says, is impossible except through recognition of the archetypal man. Dr. Cock explains where Cain got his wife, and how the whale was able to swallow Jonah. It appears also that Darwinism fosters war, and is the origin of socialism.

MRS. PEACOCK has compiled a useful little book of recipes, to which is prefixed a table of breakfasts, dinners, and suppers for each day of every month in the year.<sup>12</sup> The object of *The Practical Daily Menu* is to help the housewife in answering the question "What shall we have for breakfast, dinner, and supper?" Emphasis is laid on the facts that different seasons

<sup>8</sup> *The Wonders of the Human Body: A Health Reader for Schools*. By Margaret A. Shuttleworth. London: University of London Press, Ltd. 1926. (Cr. 8vo, pp. xi + 195; 41 figures. 2s. 6d.)

<sup>9</sup> *The Chemical Analysis of Foods*. By Henry Edward Cox, M.Sc., Ph.D., London, F.I.C. London: J. and A. Churchill, 1926. (Demy 8vo, pp. vii + 323; 38 figures. 18s. net.)

<sup>10</sup> *Goiter and Other Diseases of the Thyroid Gland*. By Arnold S. Jackson, M.D. New York: P. B. Hoeber, Inc. 1926. (Sup. roy. 8vo, pp. xv + 401; 151 figures. 10 dollars.)

<sup>11</sup> *Genesis v. Evolution*. By Reginald Cock, M.R.C.S. Eng. London: Elliot & St.

<sup>12</sup> *The Practical Daily Menu*. By Christina B. Peacock. London and Edinburgh: 1926. (Cr. 8vo, pp. 172. 2s. 6d. net.)



demand different fare, and that food not consumed at one meal can be palatably dished up later. The compilation seems to have been carefully made, but we demur to the statement that one pint weighs one pound. We seem to recollect a jingle stating that "A pint of water weighs a pound and a quarter."

Mr. HORNIBROOK and his wife, better known as Miss ETTIE A. ROUT, seem to be of opinion that the source of all ill health is chronic constipation. In *Physical Fitness in Middle Life*<sup>13</sup> Mr. Hornibrook maintains that the modern cult of athletics is incomplete, and is not followed by self-discipline and suitable exercises in later life. Mrs. Hornibrook, in *Sex and Exercise*,<sup>14</sup> thinks that prolonged constipation is the cause of many female troubles, including frigidity in marriage. Both authors advocate a system of exercises based on native dances as the cure for constipation and its attendant evils. Mr. Hornibrook describes the overloaded colon as the white man's burden, because it ought to be emptied at least thrice a day. He thinks, also, that the inventor of the modern water-closet seat ought to have been slaughtered with his own contraption, since it leads to a wrong posture in defaecation. Mrs. Hornibrook advocates continuous rotary motion, as in the *danse du ventre*, this being conducive to muscular development and organic health. The arguments in the book are supported by quotations from Dr. Leonard Williams, Sir William Arbuthnot Lane, and Dr. A. C. Jordan. To the ordinary person the insistence upon the defects of one portion of human anatomy may perhaps suggest some lack of perspective.

<sup>13</sup> *Physical Fitness in Middle Life*. By F. A. Hornibrook. With a Foreword by Leonard Williams, M.D. London and New York: Cassell and Co., Ltd. (Demy 8vo, pp. vi + 116; 4 plates. 6s. net.)

<sup>14</sup> *Sex and Exercise*. By Ettie A. Rout (Mrs. F. A. Hornibrook). Foreword by A. C. Haddon, M.A., Sc.D., F.R.S. London: W. Heinemann (Medical Books), Ltd. (Demy 8vo, pp. ix + 97; 15 figures. 6s. net.)

## PREPARATIONS AND APPLIANCES.

### Bone Skids.

Mr. ROBERT OLLERENSHAW, M.D., F.R.C.S. (Manchester), sends us a note regarding a simple instrument which seems likely to prove of use to surgeons in dealing with fractures of the long bones, more particularly, as the accompanying illustrations

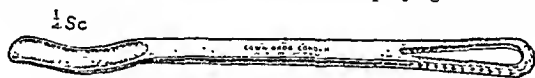


FIG. 1.

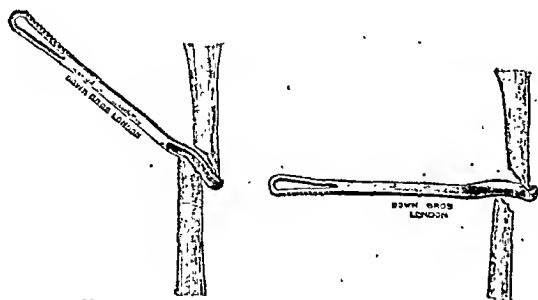


FIG. 2.

FIG. 3.

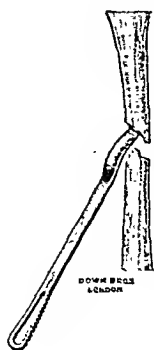


FIG. 4.

is a drawing of the instrument, while Figs. 2, 3, and 4 show the method of its use in skidding the fragments.

## MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY.

The annual general meeting of the Medical Sickness, Annuity, and Life Assurance Society, Limited, was held at the offices of the company, Lincoln House, 300, High Holborn, W.C.1, on October 11th, under the chairmanship of Dr. F. J. ALLAN.

### Chairman's Address.

The CHAIRMAN, in his opening remarks, referred to the satisfactory progress of the society. He said that though the number of new policies had not been quite so many in the last year as compared with the previous year, it would be remembered that in the preceding year a certain amount of business came to the society through the failure of another company. Allowing for this, a comparison of the figures showed a steady increase year by year. The benefits accruing to members under the sickness and accident policies were the best obtainable, and the directors had decided to give even greater benefits, to apply to both existing and new policies. Among other things, members going on holiday in certain countries for a period not exceeding three months would remain covered without payment of any extra premium. An interesting fact was that though the premium income had almost doubled since the incorporation of the society as a limited company, the claims had only increased from £20,539 to £26,449. The directors always took a sympathetic view of cases in which, perhaps, the requirements under the rules had not been strictly complied with, as, for instance, in a case of serious accident or illness a member might not be able to give notice within the specified time or be in a condition to instruct others to act for him. The directors were, however, careful to get the fullest information in each case, and in difficult and prolonged cases they had even paid specialists to examine the patients. The explanation why the amount paid out had not increased in the same proportion as the increased membership was chiefly due to the careful medical examination of proposers. The society had the great advantage of having a board of directors composed of medical men who were able to bring their knowledge of the various sides of medicine to bear on the problems as well as their long experience in dealing with sickness assurances. He regretted to say that Dr. David Forsyth, who had acted as the trusted medical adviser of the society since 1920, had found it impossible to continue to act for the society; they had, however, been fortunate to secure the services of Dr. A. Hope Gosse, whose work in connexion with cardiology was well known. The life assurance branch continued to advance slowly but surely. The expense ratio had fallen from 7 per cent. to 6.3 per cent., which was less than half the expenditure of most companies. Although the new proposals accepted during the last year showed an increase on previous years, the sums insured for were for lower amounts; this was attributable to the effect of the general depression caused through the coal strike, and nearly all large insurance companies chronicled the same condition of affairs. The quinquennial valuation of the assets of the society would take place on June 30th, 1927. Private valuations held by their consulting actuary, Mr. Warner, indicated a most satisfactory result, provided more normal conditions prevailed during the coming year. The net rate of interest earned had increased from 4.1 per cent. to 4.42 per cent. Every care was taken to ensure that the investments were of the highest grade.

### Election of Directors and Auditors.

The reception and adoption of the report, having been duly moved and seconded, was carried unanimously. Dr. J. Allan and Mr. W. H. Dolamore were re-elected directors, and Messrs. Harber, Sturges, and Fraser were reappointed auditors. A vote of thanks to the manager and the staff for their loyal co-operation in the work of the society was carried unanimously.

In reply to an inquiry from Dr. FAIRFIELD THOMAS, the CHAIRMAN stated that the sickness experienced during the past year had been rather higher than in the last few years; it was, however, still well within the expectation.

### Extraordinary General Meeting.

The business of the ordinary general meeting having been concluded, an extraordinary general meeting followed for the purpose of approving alterations in the articles of association. After hearing from the chairman the reasons for the proposed changes, the meeting approved them. The CHAIRMAN said that the proposed changes would come up for confirmation at a further extraordinary general meeting to be held on November 1st.

A vote of thanks to the chairman, proposed by Sir WILLIAM WILCOX and seconded by Dr. FAIRFIELD THOMAS, was carried unanimously.

## MOTOR CARS FOR MEDICAL MEN.

### NEXT WEEK'S MOTOR SHOW.

By H. MASSAC BUIST.

THE resumed series of motor car shows in the Grand Palais, Paris, closes to-morrow (Sunday) night, and the twentieth yearly International Passenger Car Show, organized by the Society of Motor Manufacturers and Traders, under the patronage of the King, will open at Olympia, Kensington, on Friday next, October 22nd. It will remain open daily, Sunday excluded, until 10 o'clock on Saturday night, October 30th, the prices for admission being 5s. each day, with the exception of the Fridays and Saturdays, when the charge will be reduced to 2s. 6d. The scale of accommodation afforded in the enlarged building may be judged from the fact that, set end-to-end, there will be nearly three and a half miles of exhibits, the cars ranging in cost from £100 to nearly £4,000 each.

#### CONSIDERATIONS OF COST.

From the point of view of the average medical man cost takes precedence of all other considerations in respect of his motoring commitments. By cost I mean expenditure not only upon the acquisition but upon the maintenance (that is, the wearing life) of a car, since this matter has to be considered as a whole if one is to aim at obtaining the best value for money. This consideration needs stressing, particularly on the occasion of the forthcoming exhibition, because probably many a young medical man, without capital, will be sorely tempted to consider £100 cars. Doubtless he will read in the general press that the £100 car has arrived at last. In point of fact, the £100 car was standardized and offered to the public by Rover more than twenty years ago; and some of those cars are running to-day. But I do not advise any medical man in general practice to buy any £100 car that will be offered to him at Olympia, notwithstanding the fact that the least of them will have two cylinders, against one in the car of twenty years ago. The prime reason is that reliability and wearing life are essential in a medical man's car. Moreover, even if he is without capital he is not in the awkward predicament in respect of car purchases that those in his case were before the war.

#### FINANCIAL FACILITIES.

To-day much over 50 per cent. of the business in selling new motor cars is financed on the principle of payment by instalments. Therefore the medical man can set out in quest of real as distinct from apparent motoring value for money. To that end he must buy a car that has long wearing life. It is not merely that that is the most economical way; incidentally, it is a way that assures him, to a greater degree than any other method of procedure, a machine which shall be reliable no matter what the country of its origin. A long-wearing car must be one every detail of which, including the electrical fittings and so forth, will endure; therefore there will be no rattling loose, perishing of insulations, giving trouble through short circuits, and so forth.

When it comes to a borrowing transaction, one need only pay over a longer period, or slightly more for the usual number of intervals. I notice that one firm in London transacting business in all classes of cars has instituted a new purchase system by payments extending over a period of three years instead of the usual year or eighteen months. I am informed that the management has found the scheme answer very well, alike from the point of view of their clients and from that of the financiers. Consequently the actual bill of the medical man for equipping himself with a car really suitable to such strenuous all-the-year-round day and night service as the general practitioner is dependent upon no longer renders it impracticable for those who for the time being are in straitened financial circumstances to buy really sound cars. Unsatisfactory

cheap cars are unsound, each proving a very expensive car in the long run. Further, the lapse of another year still fails to reveal to my experience a single case of a young medical man setting up in practice who has not found that, by acquiring a thoroughly sound car, he has doubled his income the first year of its use.

#### FACTORS FAVOURING THOSE OF MODERATE INCOME.

The medical man must look in other directions than the £100 car if he is in quest of economy in association with satisfactory service. Happily, circumstances favour him. In spite of the coal strike—the effects of which on the motor industry have been severe, leaving many firms with heavy stocks, and putting others in the predicament of a shortage of raw material with which to carry on the production of new car types—prices all round show no increase. In nearly every instance in which the price factor is stationary, nevertheless additional equipment, or something else in the shape of more value for the given sum, is offered. In a great number of cases, of course, prices are reduced notably. Some of these developments are merely occasioned by the necessity to liquidate stock, which would have been disposed of by July last, at the latest, had not a prolonged coal strike upset the car trade. But in many cases reduction of price has been accomplished in association with developing products for the new season, and presenting them more or less in an entirely new guise, because in these factories there has been no accumulation of cars to work off and the captains of the industry have the pluck to carry on. I may mention in passing that when the coal strike is settled it is expected by the British motor industry that it will be quite two months before the flow of raw materials from the steel and auxiliary industries will begin.

In all these circumstances it will be appreciated that the home industry, in particular, is highly to be praised for carrying on, and especially for introducing entirely new designs at prices which represent better value than has ever been offered in the history of the trade, since, obviously, when a firm offers an entirely new superior design the temptation must be great to ask for it as much as it will fetch instead of tempting the buyer by marketing it right away at the lowest price that can possibly be contrived. Another factor in favour of the buyer at this moment is that the tyre industry has just reduced its prices. In some cases these reductions represent the third cut below the maximum prices obtaining during the rubber boom.

#### REDUCING THE DEPRECIATION FACTOR.

I have striven to show that one of the most important factors to be considered by the medical man in respect of his expenditure on motoring is the depreciation of the car. The 1926 London Motor Car Show will present him with many examples of vehicles of various powers, so produced as very largely to eliminate the problem of depreciation. This does not concern him only in respect of determining the moment at which he feels he must dispose of his car. On the contrary, it also concerns him by eliminating the frequent necessity for sending his car periodically to the coachmakers for revarnishing, if not actually repainting, often to his great inconvenience as well as no small cost. I refer to the introduction of gun-cotton, or cellulose, finishes for coachwork, a development pioneered by the explosive manufacturers in America. The great transatlantic car builders, who had acquired many of these businesses, found such plant suitable for producing new style finishes for motor cars in the form of lacquers.

The British industry has investigated these developments for a long time. But this is the first season in which there has been any general movement on the part of our manufacturers to standardize lacquer-finished cars which, in any case, are immune from the effects of ordinary scratching, and which, treated as ordinary paint and varnish coachwork is treated, actually improve with use, instead of deteriorating. Further, lacquer finish does what no paint and varnish scheme can do: the former meets the needs of the medical man of moderate means who is called out in the middle of the night to drive through rain and mud, and who, on getting back fatigued, puts his car into the garage—which is ruinous

to ordinary paint and varnish. With lacquer finishes it is not so, though it is advisable to have the car washed as soon as possible after it has become dirtied or wet; but it is not essential. Neglect of this sort by the month can be remedied by very thorough washing and subsequent treatment with one or other of the different special polishes that have been produced. One of the best I have come across has been evolved by a well known maker of boot polishes. Certainly, it takes out any marks of rain-spots and so forth.

#### THE COMING OF LACQUER FINISHES.

The best of these gun-cotton finishes not only improves with use; it is, besides, impervious to the effects of sun, cold, damp, sleet, grit, snow, tar, oil, grease, the heat of the engine under the bonnet, chipping, fading, and so forth. I do not know any one finish used so far by the British industry which embodies all these virtues. Most of those employed embody quite sufficient merits, however, to render them valuable to the motorist, especially to him whose circumstances are those of an owner-driver more or less maintaining his vehicle. For instance, if a cellulose finish does get chipped, the manufacturers can generally fill it over until the lacquer appears as new, because most of these processes are applied by pistol spraying under air pressure. Therefore all that is necessary is to spray and spray until an amount equal to the material lost by the act of chipping has become superimposed on the damaged part.

Some of these lacquer colours, however, are not immune from fading; but even so they do not fade as badly as do some of the lighter tones in paint or varnish. Some manufacturers, too, find that one process of lacquer gives satisfactory results in a given series of colours but unsatisfactory results in other series of colours; therefore they employ different processes, according to the hue they need. This is not always practicable, however, because very elaborate plant has to be laid down to utilize some of the best of these lacquer treatments. By contrast, some varieties can be applied by brush, and will dry in half an hour. Suffice it, however, that the results produced are really worth while. In fact, just as to-day nobody thinks of a passenger car being properly equipped unless it has brakes to all four wheels—though readers of the JOURNAL will remember that only two years ago the matter was still regarded with considerable doubt, not by the public in general merely, but also by the car builders—so in two or three years' time nobody will think of having a cheap car standardized for all-round service the body of which is finished in anything except some form of gun-cotton lacquering. Cellulose lacquers are generally solutions of nitro-cellulose in a mixture of various solvents, such as butyl and amyl acetates, with the addition of suitable gums to toughen the film and give adhesiveness, and also a medium of plasticizer to make the whole easily workable.

#### NOVELTIES OF NOTE.

The coming of lacquer finishes is exercising another influence on the appearance of cars in general. It presents the opportunity for standardizing hues of a delicacy most pleasing to the eye, eminently suitable for appearance on the open road, but which were not practicable from the maintenance point of view where produced by ordinary coachwork and varnishing schemes. Thus we are on the verge of an era of motor cars of more pleasing and less clumsy appearance. This tendency has even been noted by those charged with designing bodies treated on the ordinary paint and varnish principle: consequently next week it will be evident that the main novelty in the outward appearance of cars finished in conventional fashion is the use of two hues of the main colour scheme, in addition to touches of black here and there on the roofing. This use of two colours in panel fashion represents a development of real note, in that the most expensive motor carriages can be finished more effectively this way than by a reversion to the old coachbuilder's system of fine lines. Of course, the tapestry, linen and silk body coverings that are a novelty at the present French show are a mere attempt to create a passing vogue, and are

not to be considered seriously by motorists in general. A motor car travels so much faster than a horse-drawn vehicle that floral decorative themes, tartan and haggis designs, and small square lines, are not suitable, since the details, attractive or ugly, are alike visible only when the vehicle and the observer are both stationary.

By contrast, the same new British body-colouring scheme is rendered possible by raising radiators. This is a very general practice this year. Thus from the top of the radiator along the saddle of the bonnet to and including the waistline of the car—which is also raised without prejudice to the interior lighting, since the windows reach just as high towards the roof—it is possible to paint a perfectly plain panel of colour. For example, by painting the boot, the waistline, saddle of the bonnet, the wings and the wheels in a darker hue of, say, green than the side panels of the car and the sides of the bonnet, which are a lighter tint, an effect is obtained that can be seen to equal advantage when the vehicle is stationary or in motion. The principle also offers the opportunity to bluff some body lines, which are perforce bulky, or of an awkward angularity or curvature; this is done in some of the bodies on the largest chassis in the world, the new Daimler. Incidentally, an announcement which is timed to be made at the moment these notes appear is to the effect that the oldest firm established in the British industry is introducing a "double six" cylinder engined chassis of nominal 50, actual 150 h.p., the car developing its power in such flexible and smooth fashion that it can be driven at from 2 to 82 miles an hour on top gear, being, therefore, a machine on which one starts on the direct drive and generally completes even a long-distance cross-country journey without coming off it, to judge from various experiments I have had. Such vehicles can be of interest only to the motorist with a very large income. But the reason behind such development should be noted. From the strictly engineering point of view, the whole tendency is to limit the size of the individual cylinder, since, if some of our largest six-cylinder engines were to be made to produce the power they should do for their volume, their performance would become coarse.

#### THE BATTLE OF THE CYLINDERS.

Whenever one speaks with motorists in terms of miles an hour of travel, those facilities should be translated only into increased possibilities of flexibility for hill-climbing, and so forth, since very few people want to travel at more than forty miles an hour in any circumstances. But they would like to be able to maintain such speeds up gradients, especially if that could be done without change of gear. Therefore, the idea is to obtain greater flexibility with refinement, which means greater efficiency with, nevertheless, enhanced as distinct from prejudiced refinement.

Hence we shall see not only the introduction of more eight-cylinder-in-line engine chassis, notably a 35-h.p. type by Sunbeam, and a new  $2\frac{1}{2}$ -litre type by Beverley-Barnes, also the introduction from America of a Stutz "straight-eight," but also a hint that the middle-size four-cylinder car engine is about to pass away as a type. In general, it may be stated that the builders of middle-size four-cylinder engined chassis tend to provide six-cylinder units instead, especially for vehicles coming within the 12 to 16-h.p. rating. This is merely to give a smoother and more flexible performance.

I foretell that in two years' time a general survey of the industry will reveal to anyone wanting a car of an engine size between our present 12 and 20-h.p. rating that it will be offered him in the form of a six-cylinder unit. Next week I shall deal more particularly with those new six-cylinder cars which come within the purse range of the average medical man, in which connexion I may say that notable fresh contributions are being offered by Clement-Talbot, Wolseley, Lagonda, and Standard in the smaller categories, and by Austin, Humber, and Sunbeam on the larger scale. As to four-cylinder engine practice of the very cheap sort, perhaps the most notable price contribution of the miniature-engined car is the £148 10s. overhead camshaft operated, overhead valve, 850 c.cm. Singer with quarter-elliptic springs fore and aft and rear-wheel brakes only.

## *Nova et Vetera.*

### THE "NARRATIVE" OF SIR WILLIAM BEATTY, M.D., LORD NELSON'S SURGEON.

As October 21st is the anniversary of the battle of Trafalgar and of the death of Lord Nelson, many patriotic Englishmen may be interested to read, about this date, a note on the "Narrative" of Sir William Beatty, M.D., Lord Nelson's surgeon.

William Beatty was born in 1773. He was educated as a surgeon, and entered the navy at an early age as a naval medical officer. He was surgeon to the *Victory*, Nelson's ship, at the battle of Trafalgar. Beatty was the author of a famous little book entitled *Authentic Narrative of the Death of Lord Nelson*. It was published in London in 1807.\*

In it Beatty describes the death of Nelson and the autopsy. He records Nelson's last words to himself and those around him. Beatty tells us that on the day of the battle of Trafalgar, October 21st, 1805, after viewing the fleet, Nelson retired to his cabin for a few minutes, and wrote a prayer and a codicil to his will. Beatty describes the meeting of the two hostile fleets and the hoisting of Nelson's famous signal, "*England expects every man will do his duty*," about half an hour before the enemy opened their fire; and he tells us it is impossible to describe "the lively emotions excited in the crew of the *Victory*." The battle commenced at 50 minutes past 11. Early in the engagement a shot passed between Lord Nelson and Captain Hardy, bruising the foot of the latter, and Nelson remarked, "This is too warm work, Hardy, to last long." In the heat of the battle, about 1.15, Lord Nelson "was walking the middle of the quarter-deck with Captain Hardy, and in the act of turning near the hatchway," when a bullet "from the enemy's mizzen-top" struck the epaulette on his left shoulder and penetrated his chest, and he fell with his face on the deck. When Captain Hardy expressed a hope that he was not severely wounded, Nelson replied, "They have done for me at last, Hardy. . . . My backbone is shot through."

When carried below to the cockpit Beatty was called, and Nelson remarked: "Ah, Mr. Beatty! you can do nothing for me. I have but a short time to live; my back is shot through." When examined by his surgeon Nelson said he was confident his back was shot through; that he felt a gush of blood every minute within his breast; and that there was loss of feeling and motion in the lower part of his body. His breathing was difficult, and he complained of acute pain about the sixth or seventh dorsal vertebra. Nelson frequently asked for drink, and to be fanned with paper, using the words "Fan, fan!" and "Drink, drink!" These words he continued to repeat until the end.

To Captain Hardy many messages were sent requesting him to come to Nelson. When Captain Hardy came, Lord Nelson said, "Well, Hardy, how goes the battle? How goes the day with us? I hope none of our ships have struck, Hardy." "No, my Lord, there is no fear of that," replied Captain Hardy. Then Nelson said: "I am a dead man, Hardy; I am going fast; it will be all over with me soon. Come nearer to me." When Captain Hardy said that he hoped Mr. Beatty could yet hold out some prospect of life, his Lordship answered: "Oh! no, it is impossible. My back is shot through. Beatty will tell you so." His Lordship then sent his surgeon away to attend to the other wounded, saying, "You can do nothing for me."

But shortly afterwards Lord Nelson recalled him, and said: "Ah, Mr. Beatty! I have sent for you to say, what I forgot to tell you before, that all power of motion and feeling below my breast are gone, and you very well know I can live but a short time."

The emphatic manner in which he pronounced these words left no doubt in Mr. Beatty's mind that Nelson was thinking of the ease of a man who had, some months before, received a mortal injury of the spine on board the *Victory* and had suffered from similar loss of sensation and paralysis. The ease had made a great impression on Lord Nelson, and the cause of the symptoms had been explained to him. Mr. Beatty replied, "My Lord, you told me so before," and when he examined the legs to ascertain the fact, Nelson remarked, "Ah, Beatty! I am too certain of it; Scott and Burke have tried it already. You know I am gone." Beatty replied, "My Lord, unhappily for our country, nothing can be done for you." Soon afterwards Nelson said, "I know it. I feel something rising in my breast, which tells me I am gone." He often exclaimed "God be praised, I have done my duty." When Mr. Beatty inquired if the pain was severe, Nelson replied it was so severe that he wished he was dead, and then he added, "Yet one would like to live a little longer, too." Hardy then came a second time, and congratulated Nelson on the brilliant victory, informing him that fourteen or fifteen of the enemy's ships had surrendered. Nelson answered, "That is well, but I bargained for twenty," and then he exclaimed "Anchor, Hardy, anchor!" Soon Nelson remarked that he felt in a few minutes he should be no more, and added in a low voice, "Don't throw me overboard, Hardy"; and then came his request, "Kiss me, Hardy." Captain Hardy now knelt down and kissed his cheek, when his Lordship said, "Now I am satisfied. Thank God, I have done my duty." In a few minutes Hardy again knelt down and kissed Nelson's forehead. "Who is that?" said Nelson. The Captain replied, "It is Hardy," to which Nelson replied, "God bless you, Hardy!" Hardy now returned to the quarter-deck, and Nelson said to his chaplain, Dr. Scott, "Doctor, I have not been a great sinner." As long as he was able to give utterance Nelson continued to repeat, "Thank God, I have done my duty." These were his last words. He then became speechless, and died at 4.30 p.m., about two hours and forty-five minutes after being wounded.

The day after the battle Nelson's remains were placed in "a cask called a leaguer," which was then filled with brandy. At Gibraltar spirit of wine was procured. The body was then conveyed to England. On arrival at Spithead a post-mortem examination was made, and Beatty gives a concise professional report. The bullet was discovered lodged in the muscles of the back, towards the right side, and a little below the shoulder-blade. It had passed through the spine. As regards the course of the ball, Beatty reports:

"The ball struck the forepart of his Lordship's epaulette, and entered the left shoulder immediately before the process acromion scapulae which it slightly fractured. It then descended obliquely into the thorax fracturing the 2nd and 3rd ribs; and after penetrating the left lobe of the lungs, and dividing its passage a large branch of the pulmonary artery, it entered the left side of the spine between the 6th and 7th dorsal vertebrae, fractured the left transverse process of the 6th dorsal vertebra, wounded the medulla spinalis, and fracturing the right transverse process of the 7th vertebra, made its way from the right side of the spine, directing its course through the muscles of the back; and lodged therein, about 2 inches below the inferior angle of the right scapula."

The immediate cause of death was a wound of the left pulmonary artery and the resulting haemorrhage. The injury to the spine must of itself have proved fatal, in Beatty's opinion, in two or three days.

After the battle of Trafalgar, Beatty was appointed, in 1806, physician to the Greenwich Hospital. In 1817 he obtained the degree of M.D. St. Andrews and the diploma of L.R.C.P. Lond. In 1818 he was elected F.R.S., and was knighted in 1831. He died in London in 1842.

R. T. WILLIAMSON.

\* In 1891 a neat edition of this book was published in Birmingham, under the title of *The Death of Lord Nelson*, by William Beatty, M.D., surgeon to H.M.S. *Victory*. The War Library Series, edited by Professor Ed. Arber.

## British Medical Journal.

SATURDAY, OCTOBER 16TH, 1926.

### RECENT WORK ON THE BILIARY SYSTEM.

THE discussions in the Section of Medicine at the Nottingham meeting of the British Medical Association were on broad lines, and wisely dealt with subjects on the borderland between medicine and surgery, such as diseases of the biliary tract, blood transfusion, and the nature and treatment of malignant neoplasms. The discussion on some recent developments of knowledge of the biliary tract (reported in full this week at page 671) was, indeed, opened by a distinguished surgeon, Professor Evarts A. Graham of Washington University, St. Louis, U.S.A., who has done pioneer work, not only in demonstrating the almost constant association of hepatitis with cholecystitis, but in originating cholecystography. A somewhat unusual but most welcome feature of a Medical Section of the Association was the presence of the President of the Royal College of Surgeons of England, Sir Berkeley Moynihan, who joined in the discussion of a subject which he has done so much to advance.

The summary of the functions of the gall bladder—namely, regulation of pressure in the biliary system, as shown by cholecystography, and concentration of the bile, as brought out by changes in the density of the shadow—was supplemented later by a discussion of the question whether or not the gall bladder has the power of muscular contraction. The opener's opinion, based on experimental work in his laboratory and on observations made during numerous laparotomies, is that the gall bladder has not any power of active muscular contraction, changes in its size being the result of a milking action induced by duodenal peristalsis. In this connexion reference may perhaps be made to Chiray and Pavel's<sup>1</sup> experiments on dogs, which show by tracings from the gall bladder that it undergoes two kinds of spontaneous contractions, which, however, are rarely manifest to the naked eye. The tracings of these apparent contractions can perhaps be explained in some other ways. It may be recalled that Bainbridge and Dale's periodic waves of contracture have since been regarded as resulting in fact from pressure of adjacent organs and respiratory movements, for Professor Graham's associates Copher and Kodama have obtained curves similar to those of Bainbridge and Dale when a rubber bag is substituted for the gall bladder, and experimental work from the opener's laboratory, just published,<sup>2</sup> indicates that the contents of the gall bladder are got rid of by a three-fold mechanism—a gradual washing out by the ingress of fresh bile from the liver, the elastic recoil of the gall bladder, and variations of the intra-abdominal pressure. This experimental evidence is much against the late S. J. Meltzer's hypothesis of contrary innervation of the gall bladder and Oddi's sphincter, on which the technique of Lyon's method of diagnosis and treatment by biliary drainage is based. Oddi's sphincter at the lower end of the common bile duct is stated not to be constantly present, and Professor Evarts Graham considers that the outflow of bile into the bowel is controlled by the tonus and peristalsis of the

duodenum. On the other hand, McMaster and Elman<sup>3</sup> of the Rockefeller Institute for Medical Research, in two papers published since the Nottingham meeting, bring forward strong evidence that the gall bladder of the healthy unanæsthetized dog contracts after a meal with sufficient force to expel part of its contents against a considerable resistance pressure, and that Meltzer's law of contrary innervation, which has been much disputed, holds good—namely, that the tonic contraction of Oddi's sphincter at the lower end of the common bile duct relaxes when the gall bladder contracts. In this research the objections raised against both the contracting power of the gall bladder and Meltzer's law are taken fully into account, and it is suggested that the effects of operations and anaesthesia may account for the negative evidence of gall-bladder contraction obtained by Professor Evarts Graham and others.

Inflammation of the gall bladder is regarded in America as the commonest cause of dyspepsia, and Dr. A. F. Hurst considers it the most frequent intra-abdominal lesion. Professor Graham showed that this might spread by the lymphatics both from and to the liver, and he admitted in addition the advent of infection by the blood stream, by the lymphatics from a duodenal ulcer without any hepatitis, and also direct infection of the mucosa from micro-organisms in the bile, this being about the order of their respective importance. Just as cholecystography throws light on the functional state of the gall bladder, so too it elucidates pathological changes by revealing failure of bile to enter the gall bladder, defects due to the presence of calculi, and irregularities of contour due to adhesions and diverticula; it shows also variations in the normal density of the shadow, though the bearings of these are still open to further interpretation.

The history of cholecystography, introduced so lately as 1923 by Professor Graham in conjunction with W. H. Cole, is most interesting. Of the forty-one substances tried, twelve were found to outline the gall bladder, but only three of these—tetrabromophenolphthalein; tetraiodophenolphthalein, and its isomeric phenoltetraiodophthalein—are suitable for clinical use, the other nine having markedly toxic effects. After due trials of the first two the tetraiodophenolphthalein was employed and given intravenously, as this method is more reliable than the oral administration, which Dr. Izod Bennett,<sup>4</sup> who raised the question of the drawbacks due to thrombophlebitis after intravenous injection, had found uniformly successful in his last fifty cases. In Professor Graham's more recent experience there were fewer reactions after the new isomeric compound, the sodium salt of phenoltetraiodophthalein, than after the tetraiodophenolphthalein salt, and, as there had not been any alarming symptoms after its use in the last 500 cases, he felt justified in concluding that this danger had been eliminated. Out of 1,144 patients examined cholecystographically with the tetraiodo salts, 128 were operated upon, and in 124, or 96.9 per cent., of these the diagnosis made by cholecystography was confirmed.

In the discussion Dr. A. F. Hurst insisted on the importance of early diagnosis and medical treatment, and advocated large doses, up to 100 grains three times a day, of hexamine, with sufficient sodium bicarbonate and potassium citrate to keep the urine alkaline, and so prevent irritation of the urinary

<sup>1</sup> Chiray, M., and Pavel, I.: *Amer. Journ. Med. Sci., Phila.*, 1926, clxxii, 11-21.

<sup>2</sup> Copher, G. H., Kodama, S., and Graham, E. A.: *Journ. Exper. Med.*, 1926, xlii, 65-72.

<sup>3</sup> McMaster, R. D., and Elman, R.: *Journ. Exper. Med.*, 1926, xlii, 151-171, 173-193.

<sup>4</sup> See also Bennett, I., Moncrieff, A., and Nicholas, F. G.: *Lancet*, 1925, ii, 19.



bladder. The mechanism of the antiseptic action of hexamine in the bile was further discussed by Dr. F. A. Knott, who suggested as one factor lowering of the surface tension of the bile. The cholesterol content of the blood was referred to by several speakers. Dr. Izod Bennett mentioned that his colleague Professor E. C. Dodds, in a paper in the press, had reached the same conclusion as Dr. J. M. H. Campbell—namely, that the supposed hypercholesterolaemia of cholelithiasis was largely a myth, and that an excess of cholesterol in the blood was mainly due to chronic parenchymatous nephritis and obstructive jaundice. Dr. J. W. McNee's opinion that, although cholesterol is derived from the food, a cholesterol-free diet is not of any real value in the prevention of gall stones, is obviously of much therapeutic importance, especially as yolk of egg and fats, which are rich sources of cholesterol, have a powerful effect in evacuating the gall bladder. Sir Berkeley Moynihan, who had found that Professor Graham's cholecystography gave a correct diagnosis in 92 per cent. of the cases, pointed out that the cholesterol content of the blood might be different in the early and in the later stages of gall-stone disease; at Leeds analyses had shown a high tide of cholesterol in the early stages, which more often came under observation in private practice, and that in the later stages, so frequently seen in hospital patients, there was hypocholesterolaemia. It would therefore appear that there is room for further information as to the cholesterol content of the blood in patients with gall stones.

### THE PROFESSION AND THE LAY PRESS.

For the last year or so the relations between the medical profession and its representative bodies on the one hand, and the newspaper press on the other, have been rather strained. There may have been faults on both sides. The newspapers want information and they want news. We do not recall the exact legal definition of "news" in relation to the Copyright Acts, but, at any rate in the view of the news editor, anything that did not happen yesterday is not news. That part of the matter we may leave aside. There remains the subject of information. We do not doubt that responsible members of the journalistic profession desire to obtain correct information about health, as about other matters. The medical profession has a great and, as we hold, well founded objection to anything that savours of self-advertisement; it therefore looks with a critical eye on signed articles on medical subjects in the newspapers. The journalists just now are making efforts to organize themselves as a profession, and are finding, like other professions, including the medical, that it has a tail. At present the tail has too much chance of wagging the dog. The medical profession, however, has got further in preventing its tail wagging the dog than have the journalists. None of us desire that the rift between the profession and the newspapers should continue, much less that it should widen. No doubt the competition among newspapers is very keen, but a good reputation can only be obtained by a journalist and by a newspaper if they contrive to present the public with trustworthy information. That, without question, is the object of all responsible journals and journalists. The differences with the medical profession have been caused by want of agreement as to how the information should be supplied. It cannot be by the method of a penny in the slot, and the greater part of what the medical profession has to say to the public can only

be issued after the substance and form have been carefully considered. We do not want our tail to wag us, and as things are there is a risk of this happening.

The question then is, how is authentic medical information to be supplied to the newspapers? The answer is not easy. The *Times*, in an anticipatory leader on Monday, said that "The last thing which any responsible newspaper desires is to serve the interests of a charlatan or a professional man who has so far forgotten his honour as to seek mere self-advertisement." But it tells us that the medical profession must not shut its eyes to the needs of the world in which it lives. We altogether reject the suggestion that the medical profession does shut its eyes to the needs of the world in which it lives, or, rather, of which it forms a part. It is very anxious to meet these needs and reform defects. To take the British Medical Association alone, we may remember how from its earliest days it took up the reform of the Poor Law and achieved much; but such work is long, and there is only now a hope that Mr. Neville Chamberlain will put the coping-stone on the edifice the foundations of which were laid by members of the medical profession. So, again, with public health, the Association has consistently and for more than half a century advocated reforms, some of which have been carried out with two results at least—namely, that disease has been diminished, and the everyday health of the people vastly improved. Incidentally, it encouraged and helped Parliament to pass Medical Acts to enable the public to distinguish between the trained and the untrained practitioner of medicine, with very great benefit to the public. By its efforts mainly came about the system of supervising the health of school children, and of curing and checking remediable defects. To it also is due in large measure the whole system now enforced by Parliament for the control of tuberculosis, and quite recently it has been concerned with the organization and extension of voluntary hospitals. All this work—and we have chosen only a few examples—has been altruistic, and has been done because the members of the profession, individually and collectively, are good citizens. Still, eaten bread is soon forgotten, and the question to-day is how to satisfy the legitimate demands of the press for trustworthy information.

Sir Thomas Horder, in his address to the St. Pancras Division of the British Medical Association (published in full elsewhere in this issue), has gallantly stepped into the breach, and though his solution is not complete it is evidence of goodwill. He takes care to enumerate some of the principal agencies for the dissemination of information already in existence; he mentions the Ministry of Health and the valuable essays specially addressed by Sir George Newman to the public. He might have said that excellent work of the same kind is being done throughout the country by the public health service, whose members are not slack in giving the public information whenever occasion serves. He might have mentioned also the medical press and its diligence in supplying trustworthy information which, through the public health service and through the clinical practitioner, finds its way to communities and to individual members of the public. But he recognizes that the newspaper cannot be expected always to wait for these considered pronouncements, and he suggests that the interests of the public would best be served by all articles and paragraphs on health subjects being controlled by experts whenever they deal with actual diseases and their treatment. He would have a committee of

experts and laymen to "vet" such articles before publication.

At the conclusion of the discussion which followed Sir Thomas Horder's paper the meeting, which was so large as nearly to fill the Great Hall in the Association's House, adopted without dissent the resolution moved by Sir Thomas Horder and set out in full at page 169 of the SUPPLEMENT. The resolution affirmed that the dissemination of news on health topics should be encouraged; that the actual medical instruction published might well be controlled by a representative body; and that editors of newspapers should not ask men in private practice to write articles under their own name. The difficulty arises with regard to the second clause, and we shall be glad to learn the opinion of those who control our lay contemporaries on it. It shows, at any rate, as we have said, evidence of goodwill, and ought to still the foolish accusation that the medical profession does not desire the public to get its information from the most reliable sources.

#### THE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

WHEN the Royal College of Surgeons arose upon the ruins of the Company of Surgeons of London its outlook was not much widened by the enlargement of its range of action. For a long time it remained, in practice if not in name, only a London institution, but after the establishment of the Fellowship in 1843 a gradual change came about. For the last fifty years or so the Council of the College has been strengthened by the presence of provincial Fellows among its members, who have generally been distinguished and progressive surgeons. Circumstances have greatly changed in surgical consulting practice in the last half-century, and it would be well if a greater proportion of the seats on the Council of the College were occupied by provincial Fellows, with the consequence of the chair being more often filled by one of their number, for a healthy decentralization of the practice of operative surgery, as well as of medicine, has followed on the foundation of the provincial universities and medical schools, so that the well-to-do need no longer come from the country to London for the best advice and the best operative skill. Up to the present time, however, we believe that no provincial surgeon has held the office of President, but now Sir John Bland-Sutton has been succeeded by one who is mature in reputation and can be trusted to do equal honour to the College and to his own University of Leeds. Sir Berkeley Moynihan's brilliant achievements in surgery are so well known as to need no particularization. Countless sufferers from dangerous abdominal disease owe him debts too great for payment, while his reputation in general surgery is only dimmed by the brilliance of his work in the hepatic region. If any proof were needed that there are exceptions from the scriptural saying that a prophet is not without honour save in his own country, the proceedings at Leeds on October 6th would furnish a striking example. Indeed, we think that, in these days and in this country at any rate, local patriotism and rivalry sees to it that the generous appreciation of the citizens of our great industrial centres should not be hindered in any way. The Corporation of Leeds did honour to itself, the University, and the medical profession in the person of Sir Berkeley Moynihan by presenting him with the freedom of the city. The ceremony was conducted with all the state and formality which befits such an occasion. The presentation of the freedom of the city to Sir Berkeley and six other living Leeds worthies marks the celebration of the trecentenary of the incorporation of the city. The casket in which was enclosed the illuminated scroll recording the gift of the freedom to the distinguished

surgeon appropriately bore a representation of a bust of that great Leeds surgeon, and father of the medical school, William Hey, whom Sir Arthur Keith, in his *Masters of the Maimed*, justly honours as the first to recognize the true nature of internal derangement of the knee-joint, and the first to treat it successfully by manipulation founded upon exact knowledge, in place of the haphazard methods of the bonesetters, to whose tender mercies the sufferers from this injury had heretofore been left. The new freeman of the city of Leeds is a worthy successor of Hey and of the other distinguished men who have adorned that Yorkshire medical school and infirmary. One of the other recipients of the same honour on the same day was Mr. Charles Lupton, who has been a member of the board of the Leeds General Infirmary throughout the whole of Sir Berkeley Moynihan's connexion with it, and was for over twenty years its chairman.

#### SERVICE MEDICAL OFFICERS IN PEACE TIME.

THE presidential address to the War Section of the Royal Society of Medicine was delivered on October 11th by Group-Captain Henry Cooper, D.S.O., R.A.F., who discussed some of the wider aspects of service medical work. The chief task of members of the War Section, he said, was to thrash out during peace time all questions open to debate which could affect the conduct of their affairs in future war, but to that end they had a double line of interests to follow. The first and more obvious was the observation of the health of the three fighting services and the maintenance of the highest degree of physical and mental efficiency. The second was a consideration of the forces which would be placed under their charge in the event of war, for the personnel now serving was but the nucleus of the forces which would be called into being in a great emergency. The discussions in the Section should have relevance to these future potential forces as well as to the stock—that is, the existing services—upon which those forces would be grafted. The general responsibility for the maintenance of national fitness was vested in the Ministry of Health, and whilst it was not possible or desirable for officers of the services to trespass upon the Ministry's sphere of activity, their interests were very closely bound up with the general question of national fitness. The consummation which they desired was to have a nation in which the principles of hygiene were thoroughly understood and universally practised, so that when vast numbers of men were mobilized for national service the rejections on account of unfitness, the necessity for hygienic instruction, and the dangers of epidemic disease, would all be reduced to a minimum. He thought it would be useful for members of the War Section to participate in discussions with other sections, and he suggested a number of subjects, such as preventable deformities, the early effects of middle-ear disease, the preparation of drugs and dressings in forms suitable for emergency and field work, the preservation of efficiency in tropical climates, and the early diagnosis of active service neuroses as a check on their development, all of which had an interest for other sections as well. He had frequently heard officers complain that in service life there was a lack of professional work and a consequent tendency to become rusty. But the service medical officer who thought that his whole work began and ended with the letter of the law as laid down in the King's Regulations was bound to sink into a narrow groove and to become almost mechanical in the execution of his duties. "The groove and how to keep out of it" would be a good theme for an appendix to a medical officer's handbook. Officers could do much in that sphere where service work bordered on the work of the civil profession. A closer liaison should be cultivated between men in the service and the men in civil practice. It should be

the desire of every medical officer, wherever stationed, to get into touch with the local civil medical men, and to attend, if his service duties permitted, the meetings of the local Branches or Divisions of the British Medical Association. He thought (and we are sure he is right) that if the point were put to them such Branches and Divisions would be glad to have an occasional paper by an officer of the service, and in the discussions following other papers of primary interest to civil practitioners the service officer could often take a useful part. A large number of civil practitioners had seen service, and they with others qualified later would flock to the service again in any great emergency, so that it should not be very difficult to enlist and retain their sympathy. They were all working for the same end—namely, an A1 population. Group-Captain Cooper went on to remark that the interests of the service officer followed the whole course of human life, from infancy up to military age. He, too, like his civil colleague, had an interest in the eradication of hereditary diseases and inherited susceptibilities; and one matter on which liaison with the civil medical authorities was very necessary was with regard to the reduction of the incidence of venereal and tuberculous diseases and the control of men suffering from these diseases when they passed out of the forces into civil life. The service officer was interested in questions of maternity and child welfare; it was well for him to follow also the measures adopted for the supervision of the health of school children and for ensuring the health of adults of service age. Movements for the provision of recreation grounds, for example, for the supply of good food, for better housing and sanitation, for the control of tuberculous disease in cattle, for the extermination of vermin, should all have his keen sympathy. The numbers of medical officers of the services were not very great, but the men were scattered all over the empire, and were moved frequently from one place to another. Wherever they went they should be eager to make and to retain the friendship of the civil practitioners. For the education of the service officer himself frequent association with members of the civil profession would be of inestimable value, and he desired to impress on the young officer particularly the need for greeting his civil brethren with the hand of friendship, and so to soften the necessary formalities of service correspondence.

#### PILING OSSA ON PELION.

On September 26th, 1925 (p. 581), we published a note on Memorandum 37/T of the Ministry of Health, which set forth the duties of chief administrative tuberculosis officers of local authorities in filling up four tables prescribed in the memorandum. On December 18th Circular 640 invited local authorities to make returns on these tables for the year 1925; but the duty was not to be made obligatory until the end of the present year. A number of returns for 1925 have been received by the Ministry, and from these it has become clear that misunderstandings have arisen as to the kind of matter to be entered in the four tables. Consequently the Ministry of Health has issued to county councils, county borough councils, and tuberculosis joint committees (England) Circular 726 and Memorandum 121/T. The latter is a memorandum on the preparation of annual returns under Memorandum 37/T. It appears that some tuberculosis officers began by mistaking a dato in Item 1, and then failed to appreciate that in Table I  $D = 1 + (A + B + 2) - (C + 3 + 4)$ . Further confusion arose between "new cases" and "contacts," which are intended to be mutually exclusive. Persons suspected to be suffering from tuberculosis, and attending the dispensary of their own accord or referred by a private medical practitioner, may give a history of previous contact with a known case of tuberculosis. They are not "contacts" for the purpose

of Table I, but should be regarded as "new cases" and recorded under A. Difficulties arose about directions given in footnotes to Table I; so that "observation cases" which were diagnosed definitely later in the year got into the wrong category, and "lost sight of" cases seem to have become confused with "observation cases." Sometimes also patients who returned after being "lost sight of" got into the wrong category as "new cases." The term "lost sight of" seems to have caused a great deal of trouble, perhaps because the memorandum admits that it includes cases to which "the expression may not be strictly appropriate." Thus persons seen only once in consultation, or admitted to an institution otherwise than under the tuberculosis scheme, or ceasing to avail themselves of public medical treatment, are officially "lost sight of," however insistently they may otherwise obtrude themselves on the official eye. At this point the new memorandum introduces what we cannot but think to be a dangerous precedent. If the tuberculosis officer finds that these categories of persons amongst the "lost sight of" are in high proportion, there is no objection to his showing such cases in a footnote as "Not requiring or desiring public medical treatment." But they must be included in the total under Item 3. We fear that footnotes will give the really earnest tuberculosis officer a vast field for his energy. In paragraph 10 of the new memorandum the word "consultation" is defined. It is not necessary for the general practitioner referring the case to be present at the examination; it suffices for the tuberculosis officer to give the practitioner a report in writing. In Table II the expression "beds available" has sometimes been taken as meaning those available in the authority's own institutions; whereas an average of the beds taken as required in outside institutions, but not definitely retained, must be included. From this table also patients sent to the institutions by other local authorities must be excluded. In Table III a patient multiplies himself. If he has been discharged from institutions three times in one year he becomes three patients. But if he has only been admitted for a short period, say, twenty-four hours, for some special purpose, such as x-ray examination or pneumothorax refill, he ceases to exist officially, but is allowed the grace of appearing in a footnote. An "observation case" in an institution has the privilege of being two patients during one course of treatment, and appearing in Table II both as an "observation case" and as a "patient." In drawing up Table III the Ministry unfortunately forgot the possibility of an "observation case" dying in an institution; but at this stage in the memorandum it has been discovered that a footnote solves all difficulties. Conundrums such as whether a Class T.B. minus patient who becomes a Class T.B. plus patient in an institution can be transferred from one class to the other in Table III, which asks for classification on the condition on admission to the institution; and whether a person admitted to public treatment as a child, and continuing as a child for Table IV, should be counted as an adult in Table III if admitted to the institution after reaching the age of 15—to these riddles the Ministry answers Yes. It appears that in some areas doubtful cases are kept under observation for long periods. However useful this may be from a clinical point of view, officially it is disturbing. Consequently the rule should be to complete the initial examination within a month, to watch for evidence of the disease for another two months, and then to enter a provisional diagnosis of "not tuberculous," cross the case off the register, and include it in heading C (b) of Table I. The patient should be told to present himself for re-examination if any suspicious symptom arises; but if he reappears during the same year he need not be counted as a new case unless evidence of the disease is found. The following year, however, he becomes a new case even if free from the disease

—an interesting settlement of the problem, "When is a 'new caso' not a 'new caso'?" After all these explanations it is not surprising to learn that the returns for 1925 show that in many areas the records of work done are altogether inadequate, while in others the methods of collating the information required for the returns is unnecessarily cumbersome. It is satisfactory, therefore, that the department has prepared a form of dispensary card register and a form of dispensary work sheet which, it is hoped, will provide all the information necessary for completing Tables I, II, III, and IV, and at the same time give other useful information to local authorities. A statement is issued to tuberculosis officers asking for samples, explaining the use of the card and work sheet; and with this at hand it is possible that tuberculosis officers will not require further memorandums explanatory of memorandums. There are several possible explanations of all this bother. Either the Ministry of Health has not clearly in its mind the objective at which it aims; or it is not clear about the methods it proposes for attaining that object; or the intellectual standard of the tuberculosis officer is not equal to the objective or the methods of the Ministry of Health. Although we shudder at the thought of inviting further memorandums, perhaps it might be well if the Ministry would from time to time state briefly what it hopes to achieve through this accumulation of data on tuberculosis. In the meantime we can, from experience, sympathize with the Ministry on the last paragraph of its Memorandum 121/T. "Many of the returns for 1925 show a failure to secure adequate checking of the figures and agreement of totals. In making statistical returns it is of course essential that proper attention should be given to these points." Tuberculosis officers are not the only persons who fail to give this attention.

#### EDUCATION IN ENTOMOLOGY.

At the International Congress of Entomologists held at Zürich last year Dr. H. S. Fremlin, of the Ministry of Health, presented a short paper pleading for a more widespread knowledge of entomology.<sup>1</sup> He urged the inclusion of this subject as part of the regular school curriculum and as a separate subject for those who may offer themselves as candidates for degrees in science. The paper is interesting in bringing forward examples of the ravages which insect pests may effect in agriculture and other industries, and also as agents in the causation of disease. Among the examples he adduces of the former are the wholesale destruction of forests in Europe and America by the nun moth and the gypsy moth; the former is so numerous that, after being blown out to sea by a hurricane, "when washed up by the tide, their dead bodies formed a wall six and a half feet broad and six feet high which stretched for many miles along the shore." Again, the winter moth may destroy whole crops of fruit trees in one year and so enfeeble them that the succeeding year's crop is negligible; finally, as a sea pest is mentioned the larva of *Collidium*, which is so voracious that it may seriously damage underground cables covered with creosoted cedar and lead plate. The author is not quite so happy in the examples he gives in the realm of medicine. Thus, he speaks of mosquitos as "carriers" of malaria and yellow fever, and the house-fly as a "carrier" of typhoid fever. The latter is not a carrier in the accepted sense of the former, but a more mechanical transmitter. Further, the man in the street reading this paper would be led to think that Sambou had solved once and for all the problem of the etiology of malignant tumours by incriminating the *Gongylonema*. It is essential that a paper written for such a definite purpose as this should be as free as possible from mistakes

and should avoid hyperbole. To state that "nearly all tropical diseases are due to parasites," and that recurrent fever is due to fleas, are errors of fact. Speaking of education in entomology, the author mentions collections of insects by pupils of Bordeaux schools, and the international corporation in Holland for combating plant diseases and insect pests, but no mention is made of the Imperial College of Entomology and the Imperial College of Science, nor of the fact that all British practitioners intending to work in the tropics are advised to take the course and pass the examination for the Diploma in Tropical Medicine and Hygiene (candidates for Government medical appointments are compelled to take it), and that special courses in entomology, theoretical and practical, comprise an integral part of the curriculum. It is suggested that there should be established an entomological council, with an expert in each order of insects, to whom reference could be made for information and advice, and on the council there should be "a chemist, a botanist, a medical man, a veterinary surgeon, and a zoologist." Most people are aware now that the staff of the British Museum (Natural History) are always ready to do all in their power to identify specimens and to give advice to those who ask. The paper, however, will have done good service if it stimulates the laity to regard insects, not as mere nuisances, but as actual menaces to the health and prosperity of the people, dangers which can, in part at least, be averted by attention to measures of hygiene and cleanliness, assisted by knowledge of the life-history of these insect pests.

#### WITCHCRAFT.

In a leading article (August 14th, p. 311) on the celebration in 1928 at the Royal College of Physicians of the three hundredth anniversary of the publication of William Harvey's great treatise *De Motu Cordis et Sanguinis*, we referred to the part which he took in securing the acquittal of the survivors of the Lancashire witches who were brought up to London for examination. From the evidence quoted by Dr. H. A. Clowes in an interesting letter which appeared in our columns on September 18th (p. 543), it seems that Harvey's part in the matter was probably only that of an *amicus curiae*, for he did not sign the report, and the actual physical examination was carried out by well known surgeons. But the note by Dr. Letitia Fairfield, which was quoted in our annotation "Autopsy of a 'familiar'" (October 2nd, p. 610), gives reason to suppose that he had previously shown excellent common sense in his dealings with another so-called witch. The subject of witchcraft has been dealt with in a popular manner in a book by Mr. J. W. Wickwar which appeared last year<sup>1</sup>; in it he has collected records of many epidemics of witch hunting and judicial murder in our own and other countries, including those in New England in the seventeenth century. The story is a terrible record of credulity and of the awful ferocity which may be bred by fear, especially when it is helped by fanaticism. In this country the last trial for witchcraft was held in 1720, and the Act of James I under which proceedings were taken was repealed in 1735; the last serious outbreak of wizard hunting had, however, ended in 1677, when Matthew Hopkins, the self-styled "Witchfinder General," was responsible for 260 indictments in the counties of Essex and Suffolk, the greater number of which, according to Mr. Wickwar, terminated in executions, including that of the vicar of Brandeston in Suffolk, a blameless old man. Hopkins at last was hoist with his own petard, and was himself hanged in 1647 as a wizard. *O si sic omnes!* but such poetical justice was by no means common. Cotton Mather, the Congregational minister of Boston, Massachusetts, died quietly in his bed, and probably

<sup>1</sup> *The Necessity for More General Education in Entomology.*

<sup>1</sup> *Witchcraft and the Black Art.* By J. W. Wickwar. London: Herbert Jenkins, Ltd. (Cr. 8vo, pp. 320. 8s. 6d. net.)

never had a qualm of conscience on account of the many innocent people he had hounded to a painful death. Terrible as the British and New England record is, it is nothing to the holocaust of victims on the continent of Europe. Mr. Wickwar tells us that in Lorraine alone in the sixteenth century there were nine hundred convictions and executions for sorcery in fifteen years, and that in Germany between 1610 and 1660 there were over 100,000 convictions. The late French Academician Maurice Barrés stated that at one time certain villages of the Eifel district of the Rhine valley were depopulated by executions, so that not more than two living persons were left in each.<sup>1</sup> One remarkable fact which appears in all these persecutions is the tendency among certain accused to plead guilty, and to be proud of their supposed evil-doing. We could wish that Mr. Wickwar had given some of the authorities for his statements, for it is difficult to accept one or two of them.

#### EQUINE EPIZOÖTIC LYMPHANGITIS AND HUMAN HISTOPLASMOSIS.

Epizootic lymphangitis is a highly contagious disease of horses which runs a chronic course, attacking principally the superficial lymph vessels and the mucous membranes, where it causes purulent inflammation. It spreads to the associated lymph glands and produces a characteristic bead-like thickening of the lymph cords. As a rule the internal organs are not affected, although occasionally lesions are found in the lungs and intestines. The cause of the disease is the *Cryptococcus farciminosus*, which seems to gain entry through open wounds and abrasions. The disease is usually confined to the horse and his relations, but at least three cases have been reported in man, one of the victims being a French veterinary surgeon and another a farmer, both of whom had received the infection from affected horses by inoculation. The disease in man is not very serious, though the abscesses which form heal with difficulty and recurrences are common and may be accompanied by fever and general weakness. The cryptococci, which are found in the pus, are round or oval bodies with a double contoured membrane. They reproduce by budding, and are generally classified with the yeasts. They superficially resemble Leishman-Donovan bodies, which, it is interesting to note, were recorded for the first time from the horse by Richardson only last year.<sup>2</sup> It has recently been pointed out by Ota<sup>3</sup> that the organism is not a true yeast, but one of the fungi imperfecti, and should be transferred to the genus *Grubyella* among the *Hypomyces*. Its main interest to medical men, however, does not lie in the possibility of its transference to man—although it is probably more frequently transferred than the published records indicate—but rather in its close relationship to the *Histoplasma capsulatum* of Darling, who, in 1906, found in three human cases in Central America a new parasite which he described under this name; a fourth case has recently been reported by Riley and Watson.<sup>4</sup> The organism was at first regarded as a protozoon somewhat resembling leishmaniasis, but differing sufficiently to merit being placed in a new genus, and the disease was termed "histoplasmosis." It has recently been shown that the organism is really a cryptococcus, but it has not yet been conclusively proved that it is the same species as causes epizootic lymphangitis. In none of the four cases previously recorded was there any history of contact with affected animals, and, indeed, there are no authentic cases of the disease occurring in horses in Central or North America; what was considered in the past to be epizootic lymphangitis in America has been shown to be really sporotrichosis, another equine disease which is

occasionally transmitted to human beings. Moreover, in histoplasmosis there are well defined internal lesions which are never found in the equine disease. On the other hand, the disease in man is so uncommon that there can be no doubt that some animal reservoir must exist. What this animal is is a problem which still awaits solution, and with it will be solved the mode of infection of human beings with an uncommon but serious disease.

#### ALCOHOLISM IN CLASSICAL ANTIQUITY.

At the first meeting of the session of the Society for the Study of Inebriety, held in the rooms of the Medical Society of London on October 12th, Dr. J. D. Rolleston delivered an address on alcoholism in ancient Greece and Rome. He remarked that as the scientific study of inebriety dated only from the middle of the nineteenth century, very little was to be gleaned from contemporary medical writers as to the prevalence and effects of alcoholism in classical antiquity. The chief sources of information are the poets, especially the gnomic writers, such as Theognis; the satirists, including Herace, Juvenal, Martial, Lucian, and the Greek Anthology; philosophers and moralists, such as Plato, Plutarch, and Seneca; and most of all the two encyclopaedic writers, Pliny the Elder and Athenaeus. Though there is some indication of the existence of chronic alcoholism, as is exemplified by passages in Pliny and Seneca and in the lives of certain individuals such as some of the Roman emperors, alcoholism in classical antiquity was mainly of a convivial character, and industrial alcoholism, apart from that associated with prostitution, was unknown. Dr. Rolleston quoted several passages from the classical writers dealing with the dysgenic influence of alcohol and other evil effects of drink on the community and the individual, especially the relation of inebriety to insanity, crime, and poverty, and the measures, often of a fanciful character, recommended by the ancients for the prevention and treatment of drunkenness. In conclusion, Dr. Rolleston showed that the alcoholism of classical antiquity differed from that of to-day by its predominance among the upper classes, the lack of legislative control, the absence of distilled liquors, which were not introduced until the fifteenth century, and the non-existence of syphilis, which in modern times was often contracted under the influence of alcohol, and was liable to run a severe course in alcoholic subjects.

#### DOSAGE OF ULTRA-VIOLET LIGHT.

For some time past the ever-increasing number of medical men actively engaged in radio-therapeutics have felt the need for a practical method of measuring the dosage of ultra-violet light. It must be remembered that not only has every patient a different susceptibility to the effect of these rays, but that the many varieties of lamp now on the market differ considerably both in the quality and quantity of the rays they emit. Not only that, but in course of use the output of all lamps falls off, in some cases slowly, in others more rapidly. To test the personal idiosyncrasy of the patient, which should be done in every case before beginning treatment, the only practical method is to expose a series of small areas of skin, each for a certain number of minutes varying from one to ten, and to note the result. This precaution will prevent a serious overdose being given at the outset of treatment. Fortunately, the consequences of an overdose of ultra-violet rays are not to be compared in seriousness with those of an overdose of x rays, but a painful sunburn is an unsatisfactory way of introducing a new treatment, and creates an unnecessary prejudice in the patient's mind. For testing the output of the lamp providing the rays many methods scientifically sound have been devised, but in general they are too

<sup>1</sup> Le Gentil du Rhin, *Revue des deux Mondes*, 1921, vol. 61, p. 20.

<sup>2</sup> *Trans. Soc. Trop. Med. and Hyg.*, xix, p. 411.

<sup>3</sup> *Ann. de Parasit.*, 1925, II., p. 51.

<sup>4</sup> *Amer. Journ. Trop. Med.*, 1925, p. 271.



cumbrous for use in practice. One is based on the power possessed by ultra-violet rays of killing infusoria which are exposed in a cell of standard thickness, and the dose is expressed as so many I.K. units. Another is based on the speed with which the rays decompose carbon tetrachloride with the liberation of free chlorine, but both these are unsuitable for medical men in practice. What is really needed is a pastille which will measure ultra-violet light by gradual change of tint in the same way that the well known Sabouraud pastille measures the dose of x rays. It is possible that this need has now been met by the Levy-West ultra-violet pastilles which have recently been introduced to the profession by Arnold and Sons. These are placed on the patient's skin, and gradually turn colour under the influence of ultra-violet light. They are said to be insensitive to visible radiation and to heat. A tint card is provided with them showing the tints indicating units of dosage from one to twelve units, and all that is necessary is to compare the tint of the exposed pastille with the standard tints on the card. One great advantage of using these pastilles is that accurate prescription is rendered easy. All that is necessary is to order so many units according to the Levy-West scale. These pastilles certainly deserve a trial.

#### LISTER CENTENARY CELEBRATION IN EDINBURGH.

A COMMITTEE has been formed in Edinburgh to celebrate the centenary of Lister's birth, and in view of the Annual Meeting of the British Medical Association in Edinburgh it has been decided to make the celebration coincide with it. Arrangements are being made to offer a prize of £25 and a gold medal for the best essay submitted on the subject, "The influence of Lister on the evolution of surgery." This prize will be open to medical students of any medical school in the British Empire and graduates of not more than one year's standing. A book dedicated to Lister's life and writings is being prepared, and will probably contain about two hundred pages of small quarto size. A public meeting will also be held, at which addresses will be given by Sir William Watson Cheyne, Professor Tuffier (Paris), Dr. Harvey Cushing (Boston, U.S.A.), Professor Caird (Edinburgh), and Mr. Hamilton Russell (Melbourne). A museum containing some of the more interesting relics of Lord Lister's life and work is being got together. This is as far as the plans have already gone. Further particulars will be published later.

#### ARSENIC IN MARINE CRUSTACEANS AND SHELL-FISH.

MR. A. CHISTON CHAPMAN, F.R.S., read a paper at the meeting of the Society of Public Analysts last week in which he produced evidence of the presence of compounds of arsenic in marine crustaceans and shell-fish. The amounts ranged from 10 to 174 parts of arsenic (as  $As_2O_3$ ) per million of the wet edible portions. Native oysters contained from 5 to 10 parts, and Portuguese oysters from 33 to 70 parts per million. In fresh-water fish, shell-fish, and crustaceans the amounts of arsenic ranged from only about 0.4 to 1.5 parts per million. The arsenic in the marine animals must therefore, it was concluded, be derived from the sea water, and Mr. Chapman has ascertained the amounts of arsenic in sea water from various localities. Potted and canned crustacea and shell-fish contained from 0.5 to 25 parts of arsenic per million. The arsenic in the urine of two experimental subjects was, after a meal of lobster, raised from the normal figure of about 1/200 grain per gallon to 1/2 grain in one case and 1/3 grain in the other. Mr. Chapman, with the help of Mr. H. Linden, extended his researches to copper and lead. With regard to copper, the results expressed in parts per million of the dried edible portion were that lobster contained 167, crab 130, and

whellks 115. The amounts of lead ranged from 5 (whellk) to 25.3 (lobster). Native oysters contained from 12 to 400 parts, and Portuguese oysters 10 to 307 parts of lead per million. Like the arsenic, these metallic impurities are probably derived from the sea water.

#### JOHNS HOPKINS SCHOOL OF HYGIENE.

THE new building of the School of Hygiene and Public Health of the Johns Hopkins University, which is to be formally opened next week, is an imposing fireproof structure occupying a dominant situation in North Wolfe Street, Baltimore, adjacent to the Johns Hopkins Hospital. It includes departments of bacteriology, immunology, chemical hygiene, medical zoology, physiological hygiene, vital statistics, epidemiology, and public health administration. The department of sanitary engineering is housed apart in the civil engineering laboratory of Johns Hopkins University in the Homewood quarter of the city. The new building has a basement and eight stories, one of which is mainly devoted to the administrative purposes of the school. The departments of epidemiology and public health administration are together on one floor. The remaining departments are self-contained, each on its own floor, with its own lecture rooms, laboratories, and animal house where appropriate. The laboratories, which are most completely equipped, offer special facilities for individual research. The animal houses, placed in a tier at the back of the main structure, are linked each to its own department by fireproof ventilated passages. Down to 1914 the teaching of public health in the United States was mainly carried on by the Massachusetts Institute of Technology and by various courses in medical schools. In that year a conference of leading authorities in public health was held to consider the question of the training of public health officials and other experts in sanitation. At the request of the conference Dr. W. H. Welch and Mr. Wickliffe Rose prepared a plan for an institute of public health, following on which the Rockefeller Foundation decided in favour of setting up such an institute at Johns Hopkins University. It was guided in this decision largely by reason of the facilities, organization, and ideals of the Johns Hopkins medical department. In June, 1916, the Foundation informed the university that it was prepared to co-operate in the establishment of a school of hygiene and public health "for the advancement of knowledge and the training of investigators, teachers, officials, and other workers in these fields." The university accepted the offer, and its board of trustees appointed Dr. W. H. Welch director. The school began its work in 1918. From 1918 to 1925 it occupied buildings on the site of the university, formerly used as physical and chemical laboratories. On the completion of the new building for the school in October, 1925, it came into occupation, but its ceremonial opening was postponed until now. The Johns Hopkins School of Hygiene draws its students from many lands, in both the new world and the old. The places of origin of those who were enrolled in its courses during the last completed academic year include England, Ireland, Ceylon, Brazil, Porto Rico, Panama, Siam, Germany, Italy, Holland, Hungary, Canada, Bulgaria, Jugo-Slavia, Spain, Japan, and China, as well as, of course, States of the Union.

THE Bradshaw Lecture will be delivered before the Royal College of Physicians of London on Thursday, November 4th, by Dr. F. G. Crookshank, his subject being "The theory of diagnosis." The FitzPatrick Lectures, on "Medicine in ancient Assyria," will be given by Dr. Arthur Shadwell on Tuesday, November 9th, and Thursday, November 11th. The subject of Dean Inge's David Lloyd Roberts Lecture, to be given on Friday, November 19th, is "Racial Degeneration."

## Opening of the Winter Session.

### THE PATHWAY OF OBSTETRICS.

*Inaugural Address at the University of Edinburgh.*

BY

R. W. JOHNSTONE, C.B.E., M.A., M.D., F.R.C.S.Ed.,  
Professor of Midwifery and the Diseases of Women.

[Abstract.]

PROFESSOR JOHNSTONE delivered his inaugural lecture, upon the "The pathway of obstetrics," on October 8th, in the music classroom of Edinburgh University. He began by saying that every student who exercised the gift of imagination must feel some peculiar quickening of interest when he approached the study of midwifery, for there was no sentient human heart that failed to respond to the thrill of this everyday miracle. The beginning and ending of things ever made a greater appeal than did the middle, just as sunrise and sunset inspired the poet to greater heights than did the glare of noonday. Birth and death, which formed the apparent beginning and the apparent end of life, excited a peculiar interest and a profound curiosity in everyone, no matter whether they were regarded from the spiritual, the philosophical, or the purely physical point of view. Students would feel that in midwifery they had a study which linked together all their medical and surgical studies in relation to the span of human life and gave them a coherence which elsewhere might be lacking. In this subject were interpreted in terms of medical practice the care of the infant, the prevention of diseases such as rickets, the hygiene of childhood, the proper supervision of the critical period of adolescence, all of which were directed to making the rising generation fit parents for their successors. These phases of practice were, indeed, in a very real sense, the earliest stages of the ante-natal supervision which was the crowning phase of modern obstetrics. Then came the actual obstetric attendance during the dangers of childbirth and the prudent guidance which restored the mother uninjured to her ordinary life, or, it might be, the gynaecological art which was called upon to repair inevitable damage. So this obstetric art went on from one generation to another in a cycle. Midwifery might be spoken of as consisting of a science and an art, the science being the collected knowledge of ascertained facts, while the art was the practical skill guided by that knowledge. In regard to midwifery, they had the curious paradox that while it must in the nature of things have been almost the earliest of all medical arts, yet so far as recorded medical history revealed, its science hardly began to grow until some two hundred years ago.

#### *The Dark Age of Midwifery.*

Midwifery was originally in the hands of the female sex, and the "medicene-man," priest, or physician, according to the state of culture reached, was never called in until matters were so grave that all help was practically useless. The effect of this almost exclusively female practice had been very far-reaching, and in the Dark Ages they found that the knowledge of midwifery had been almost totally extinguished. Accordingly, mediaeval midwifery formed a ghastly picture. William Clowes, the most distinguished English surgeon in the reign of Queen Elizabeth, had said that surgery was practised by: "tinkers, tooth-drawers, peddlers, ostlers, carters, horse gelders, and horse leeches, idiots, apple-squires, broom-men, bawds, witches, conjurers, sooth-sayers, and sow-gelders, rogues, rat-catchers, runagates, and proctors of spittle-houses." This was bad, but the worst phase of Renaissance medical practice had been that of obstetrics. In normal labour the woman had an even chance, but in difficult labour she was usually butchered to death if attended by one of the Sairer Gamps of the time or by one of the vagabond surgeons. In 1580 a law had been passed in Germany to prevent shepherds and herdsmen from attending obstetric cases, and the Renaissance pictures showed that the

lying-in rooms were crowded with people bustling in every direction and giving the general impression of all sorts of female fussiness.

In common with all other branches of knowledge, obstetric science had been stimulated by the invention of the printing press, although it did not keep pace with the growth of medical knowledge in general. There had been an actual prejudice against the learning and teaching of midwifery in these early days, and this must have persisted in a blatant form in Scotland as late as the end of the eighteenth century. Professor Hamilton, who occupied the chair at Edinburgh from 1780 to 1800, had spoken of the great service done by Professor Thomas Young, his predecessor, "by dissipating the prejudice which existed against the necessity of instructing midwives. Even they who pretended to the sacred name of philosophers joined in the prejudice. Dame Nature, they said, is the proper midwife, and nobody can be better qualified to attend to her dictates than Dame Ignorance."

#### *Advance of Obstetric Knowledge.*

Despite all handicaps, obstetric knowledge had slowly increased during the seventeenth and eighteenth centuries. Increased knowledge had tended to favour the handiwork of obstetric cases to the trained male physician, and the increased experience in practical midwifery so gained by the male physician had tended to foster the growth of real science. This had only been achieved after a hundred years of wordy and acrimonious warfare, of which a faint echo could be perceived in the amusing description given in *Tristram Shandy* of the circumstances surrounding Tristram's birth. Much of the credit for overcoming this prejudice belonged to a Lanarkshire Scot, William Smellie, who had gone to London and become the most prominent obstetrician of his day—indeed, one of the most prominent obstetricians of any day.

One special fact which had done much to hasten the transference of obstetric practice from the midwife to the trained obstetric physician was the invention of the midwifery forceps by Peter Chamberlen, a London physician of Huguenot origin, in the end of the sixteenth century. In most cases Nature had ordained that the child should be born head first, but up to his time no method had been discovered of expediting the birth of the child in cases of delayed or obstructed labour which did not lead directly to its death through injury, or involved its being turned in the womb and extracted feet first. The latter operation, podalic version, had been known to the Greek and Arabian physicians, and had been rediscovered by the great French surgeon Ambroise Paré in 1550. Although it was still performed in some cases with the best results, it was a formidable proceeding in comparison to the application to the child's head of the forceps, which was the modern successor to Chamberlen's instrument. The significance of the discovery of the forceps had been, first, that it was an enormously important forward step, and secondly, that it had become manifest that the use of this beneficial instrument could not be entrusted to the hands of an untrained attendant. It had been a reproach, however, of the Chamberlens that the discovery had been kept a secret in their family for four generations, as a means of increasing their professional reputation and as a source of private gain. Consequently, the nature and construction of midwifery forceps had not become generally known until the beginning of the eighteenth century. From this time the science had begun to grow under the cultivation of men like Mauriceau and Deventer, Smellie, Charles White, Fielding Ould, and others.

Scotland, at the beginning of the eighteenth century, had been a very poor country, and the conditions for the development of scientific obstetrics were less favourable than in wealthier England. The great majority of the cases of childbirth were attended by midwives only, who were called "howdies," and these apparently had been devoid of any training in the science of obstetrics, while in

the more remote villages and districts the matrons had earned an honest penny by attending each other in their confinements, very much as the inhabitants eked out their livelihood by taking in each other's washing. As a result, obstetric disasters had been common, and in 1726 the Incorporation of Chirurgians of Edinburgh had decided that an organized effort to train women for the office of midwives should be made without delay. An important minute of the Town Council of Edinburgh, dated February 9th, 1726, effected the foundation of the first chair of midwifery in the world. The minute ran as follows:

"The Council having considered the petition of Mr. Joseph Gibson, chirurgion in Edinburgh, with a declaration under the hands of four doctors of medicine, setting forth the usefulness and necessity of instituting a profession of midwifery; as also an extract of an act of the Incorporation of Chirurgians, shewing their approbation of the qualifications and capacity of Joseph Gibson, one of their number, for teaching the said art and science; they were fully convinced that it would be of great use and advantage to institute this profession; and being well satisfied with the ability and capacity of the said Joseph Gibson to discharge that office, they were of opinion that the Council should nominate and appoint him to be Professor of Midwifery in this city and privileges, with power to him to profess and teach the said art, in as large an extent as it is taught in any city or place where this profession is already instituted; and that he should be vested with the same privileges and immunities that are known to appertain to a professor of midwifery in any other well-regulated city or place; but that it should be expressly provided that he should have no fee or salary from this city out of its patrimony or revenue on account of his said profession. And having likewise considered that many fatal consequences have happened to women in childbirth and to their children through the ignorance and unskillfulness of midwives in this country and city, who enter upon that difficult sphere at their own hand, without the least trial taken of their knowledge of the principles upon which they are to practise that art, and that it would be a good service done to the community to put a stop to such practice, in order to prevent such mischiefs in time coming; they were of opinion that it should be enacted by the Council that no person hereafter should presume to enter on the practice of midwifery within this city and privileges till once they present to the magistrates a certificate under the hands of at least one doctor and one surgeon, who are at the time members of the College of Physicians or Incorporation of Chirurgians of this city, bearing that they have so much of the knowledge of the grounds and principles of this art as warrants their entering upon the practice of it. . . ."

The City Fathers had not realized what an original step they were taking, for there were, as a matter of fact, no other such appointments in existence. The duties of Joseph Gibson, the first professor of midwifery, had been the teaching, not of medical students, but midwives, thus showing that the practice of midwifery was still at that date predominantly in the hands of midwives. Some thirty years after the foundation of the chair, Professor Thomas Young had given an unofficial course of midwifery for medical students concurrently with the instruction of midwives. He had also been the first to institute clinical teaching of obstetrics in Edinburgh, and he was permitted, at his own expenso, by the managers of the infirmary, to fit up an attic room for four lying-in women or as many more as he could accommodate. This had been the origin of what ultimately, after many vicissitudes, developed into the Royal Maternity Hospital, erected in memory of Sir James Simpson. England had lagged far behind Scotland and the Continent, so that it could not boast a university professorship of midwifery, and, what was still more startling, until the Medical Act of 1866 it was unnecessary for the medical student to be qualified in midwifery before being registered as a practitioner. Gynaecology, as a separate branch of surgery, had been non-existent until about the time of Sir James Young Simpson, the sixth and most distinguished occupant of the Edinburgh chair. In 1809, however, thirty years before Simpson was appointed, an epoch-making operation had taken place in the backwoods of Kentucky. Edinburgh had a special godmotherly interest in it inasmuch as Ephraim McDowell, who performed this first ovariotomy, had studied at Edinburgh, and had been profoundly inspired while a student in this city by the great John Bell, who was then one of the most eminent surgeons of the day.

### Pioneers of Modern Times.

The additional factors which had been necessary to promote the growth of surgery and gynaecology to their modern dimensions had been provided respectively by Sir James Simpson when he discovered the anaesthetic properties of chloroform in his dining-room at 52, Queen Street, and by Pasteur and Lister in the discovery of bacteria and of the antiseptic method for combating their evil effects in surgery. A profoundly important step had been the discovery of the fact that what was known as puerperal fever was the same as the condition called surgical fever—namely, a condition of bacterial infection occurring in wounded tissues. Many names, such as those of Charles White of Manchester, Gordon of Aberdeen, and Oliver Wendell Holmes, had been associated with the idea of infectivity in puerperal fever, but its nature had been discovered and brought prominently before the notice of the profession by a Hungarian, Semmelweis, whose work had been supplemented by the discoveries of Pasteur and Lister. The lecturer referred to the activity in the chair of Sir Alexander Simpson, nephew of Sir James Simpson, and to Matthews Duncan, Milne Murray, and others of the Edinburgh obstetric school. With regard to Sir Halliday Croom, he said that no one he had ever known had shown such inspiring devotion to the teaching of his students. He mentioned especially the work of the late Dr. John William Ballantyne, who had been lecturer in midwifery to women students during Halliday Croom's tenure of the chair. Ballantyne had not been gifted with the talents which made a successful practitioner, but he had been endowed with what was more rare, the vision of the pioneer. He had founded what was practically a new branch of pathology—namely, ante-natal pathology—and for many years he had ploughed his lonely furrow through the arid wastes of this most obscure and difficult subject. Ultimately it had been given to him to recognize what might now be said to be obvious, but what perhaps for that very reason had not been observed until he pointed it out—namely, the possibility of preventing many of the accidents and complications of labour and of the diseases complicating pregnancy. He had been one of the small band who definitely started the new development of ante-natal supervision and thereby widened the whole conception of midwifery. Nowadays the ante-natal department was one of the most important parts of every maternity hospital, and there was no phase of obstetrics which had been more fruitful in good results in the preservation of both maternal and infant life. As a prophet, Ballantyne had been favoured by being allowed to advance some little distance into the promised land which his vision had described. But death claimed him while as yet the full fruits of his labours were still to come. It was a particular satisfaction that their own Royal Maternity Hospital, which was erected to the memory of Sir James Simpson, in gratitude for the immortal contribution which he had made to medical and obstetrical science, should now have, as a complementary part, a Ballantyne Memorial in an ante-natal department, which might confidently be stated to be second to none in the United Kingdom.

### THE FREEDOM OF MEDICINE.

Introductory Address at the University of Durham  
College of Medicine, Newcastle-on-Tyne.

BY

C. O. HAWTHORNE, M.D., F.R.C.P., F.R.F.P.S.

[Abridged.]

WHATEVER be the several stages you as individuals have reached in the undergraduate world, it is for all a common experience that your school days have ended; that you have entered as undergraduates in the life of a university; and that you are looking forward to the day when lecturers and examiners shall cease from troubling and, as you fondly imagine, weary graduates shall be at rest. Each of these three stages has, of course, certain features peculiar to itself, but, broadly speaking, it may be said that as you pass from one to the next you move into a widening area of personal freedom. You have now definitely reached the second stage.

*Freedom in Undergraduate Life.*

It is the youth who learns to obey that is the father of the man who is able to command. At the present moment you as medical students stand midway between these two terms. With the termination of school discipline you have stepped into the larger freedom of the undergraduate. Possibly, even yet, you may sometimes be more conscious of limitations than of liberties, and may complain of the irksome restraint of compulsory lectures and compulsory examinations. Nevertheless, the university gives you a wider freedom than the school, and this is true both of conduct and of opinion. The apprentice may now, as he will, be either industrious or idle, and this perhaps without any immediate reward or penalty, though sooner or later chickens come home to roost and acts carry their inevitable consequences. In the field of opinion, or at least in the expression of opinion, the undergraduate admittedly suffers some measure of restriction, more particularly in his contacts with examiners. The advantage of the last word in most questions rests with posterity; but this is not true of examinations. All the same, the atmosphere and influence of university life are towards the cultivation of a growing independence of judgement, the development of original views, and the assertion of personality. Especially valuable as educational agencies in these directions are the generous rivalries and loyal comradeships that you share with your fellows, the academic traditions that you inherit in common, and the activities and opportunities of your students' debating societies. In open controversy and criticism you are stimulated to think for yourselves, to advance arguments of your own, to contest the arguments of your fellows, and to cultivate ideas and the capacity of putting these into appealing and intelligible speech. The controversies may be fierce and the soft answer that turneth away wrath exceptional, but even in these asperities there is a training in the courtesies and proprieties of debate.

In short, the apparatus of a university has this purpose or end, to provide such a measure of freedom and such a degree of discipline that those who submit themselves to these opportunities shall be fitted for a still larger freedom and for a corresponding burden of responsibility. This ambition is not exhausted by mere technical efficiency, valuable and important as such efficiency necessarily is. To it must be added, by the deliberate cultivation of the faculties of observation and judgement, and by the voluntary practice of self-discipline, the development of a mental habit and outlook which applies its estimate of values to all departments of life. A university education is effected not merely, perhaps not mainly, by didactic instruction. Not less important is the agency which leaves the student a measure of freedom within which he may train himself and be trained by his fellows, and this in an atmosphere rich in the traditions of the past and keen with the questionings and the uncertainties of the present hour. My suggestion, therefore, is that in your university life, while there is still direction to which you must needs attend, and a series of tests to which you must needs submit, there is also an opportunity to train yourselves to use freedom both wisely and well, and thus to prove yourselves competent for a still larger liberty. More than ever before, your fates are in your own keeping, for the liberties you now enjoy as students of medicine and university graduates may be made, if you so will, an educational apparatus by which you may add to technical efficiency in your profession the virtues and advantages of the trained, the equal, and the philosophic mind.

*Freedom in the Practice of Medicine.*

And now, what is the larger freedom for which you are preparing? In what sense, and in what degree, will you enjoy individual freedom within the scope and function of medical practice? There is here, of course, a question of opinion and a question of action; and the proposition I wish to set up is that in both of these respects the medical practitioner is a free man. There are qualifications in fact, and to these I will allude in a moment, but in principle it is true, and we ought to be urgent to maintain it, that medicine offers a life where the individual judgement, the individual opinion, and the individual decision, are neither

enforced on the one hand, nor restrained on the other, by an arbitrary, or quasi-infallible, or executive authority. There is no voice to which you must needs give heed that can inscribe on tables of stone a series of medical commandments, or that can compel your subscription to thirty-nine or some other number of articles. Whether for good or for ill, the life offered by medicine is a life of intellectual liberty where every honest man may hold his own convictions, and express his own judgements, and follow his own policy; and this without fear either of authoritative censure or of official excommunication. However dignified and commanding certain professional organizations may be, none of them has the skill or competence to discharge thunderbolts against the practitioner who chooses to exercise his right of private judgement.

Now while this claim may confidently be made to-day, medicine is not without experience of a very different order. For centuries there was no liberty in medicine. On the contrary, there was a fixed and rigid orthodoxy from which any venturesome heretic dissented at his peril. Very substantial penalties fell on any innovator who ventured to question the medical scripture according to Galen as this was written in the second century of the Christian era. The doctors, in short, like the theologians, had a fixed and authorized code of doctrine and practice, and, again like the theologians, they were ready to "prove their doctrines orthodox by apostolic blows and knocks." But from this position, defined by authority, and from the sterile and stereotyped life and atmosphere which it produced, medicine has long since freed itself, though not without vigorous struggles and bitter controversies. To-day there are in medicine no orthodox opinions to which we must needs subscribe, and no compelling voice competent to define a creed or to enforce a method of practice. Over all this wide field it is for the individual to exercise his own judgement, to frame his own opinion, and to take his own decision. Such is the freedom, and, note also, such is the responsibility, to which you will be called.

*Restrictions on Liberty.*

It may, perhaps, be objected that this definition of individual freedom in medicine is an extravagant or exaggerated one. Can anyone reasonably say, it may be asked, that the individual medical practitioner is quite free from authoritative control, and is at full liberty to entertain any views that commend themselves to his judgement, and free also to apply these views in the conduct of his practice? The answer to these questions is decidedly in the affirmative, though this is not to say that such liberty ought to be exercised as a mere personal eccentricity, or as an expression of ignorant and obstinate self-will. On the contrary, in this field as in others, a man must be prepared to defend his judgement by reasons and to justify his actions by results. He is free but he is responsible. There are certain limitations, it is true, but these are imposed by reason and logic and common sense, and not by any artificial bond or arbitrary authority. The limitations are in the nature of things. Thus, manifestly, a medical man is not free to poison a patient with opium or arsenic and then successfully to plead that in his opinion this proceeding was in the interests of the community; or, alternatively, that though he had indeed administered the poison, the responsibility for dying must be placed upon the patient. Neither in law nor in morals can ignorance, or stupidity, or carelessness, exhibited in a responsible situation, escape its due penalty by an attempt to take sanctuary under the protecting plea of the right of private judgement. The civil or criminal courts of the realm would make short work of such simplicity.

Again, beyond the bonds and limits of the law there are certain conditions which exercise a common-sense, or, if you will, a moral influence on medical liberty. It is true that there are in medicine no orthodoxies to which the faithful must needs adhere. On the other hand, there exist naturally and inevitably a number of doctrines and practices widely or almost universally accepted, and built on a more or less prolonged experience. A general consent of this order is a fact of much moment, and especially for the younger members of the profession. What exists and seems to have been tested by time and by many observers

has surely a presumption in its favour. Beyond this admission, however, we must allow no restriction on liberty. No doctrine or practice in medicine, however ancient its lineage, however dignified its sponsor, or however favoured by the Fathers and Brethren, is or ought to be secure from critical or even destructive attack. The young practitioner may reasonably be expected to give some heed to the ancient ways, but the time may come when he refuses to walk therein and elects to challenge the accuracy or wisdom of the older guides. This is his heritage of freedom, and he can claim it without fear either of authoritative censure or of penal consequences.

#### *Independence and Authority.*

What I here claim, then, is that in medicine there is a free and open atmosphere for the man who has some new truth to teach, whether in the area of doctrine or in that of practice. Granted that he is of good faith, that his work is real and not pretence, and that he can give reasons for the faith that is in him, he will sooner or later command an audience and disciples. He may perhaps flatter the senior dovecots, not wholly to their disadvantage, for it is the duty, perhaps not always fulfilled, of those of us who feel in greater or less degree the chilling and numbing effects of years to keep an open mind; and indeed, an attitude of encouragement towards the independent enterprises of the younger, and, it may be, the wiser generation. There is no halfway house. Either men must be free to think and speak the thing they will, uncomfortable as this may be for established opinion, or they must be liable to control or suppression by authority. Medicine has had its experience of this latter discipline, and has definitely abandoned it as antagonistic, not merely to freedom, but also to truth. If your desire is for a life of mental calm, where "all things always seem the same"; or if you wish a path and conduct ever dictated by superior authority, you had better seek these spurious ambitions in some profession other than that of medicine. Do not indulge the vain hope that freedom and fixity may somehow be combined. But if, as I gather, your choice is for the open fields and the wide spaces of medicine, be not negligent of your heritage of freedom. It is well for you, even in early days, to recognize these liberties and to cultivate them, not merely with discretion but also with courage. Medicine does not desire disciples drilled to a mere mechanical response to the orders of the sergeant-major. On the contrary, individual initiative has here a full opportunity, and it is your duty and interest to take advantage of this position and to cultivate, as you may, independent thinking and personal originality.

To sum up my present point I would say: You are to succeed to a great heritage of freedom; in that freedom respect by all means the traditions of the elders; but let these neither overawe you nor dismay you, nor bind you to a mechanical and unthinking obedience. I add that the attainment of this personal capacity is not achieved except by unrelenting effort: he who would see with his own eyes must learn to look without the use of other people's spectacles. In medicine you have this freedom if you care to use it. Will it become me to preach from this place a revolt against constituted authorities. Within limits we must all submit. But let it be remembered that originality of view and independence of judgement are qualities which, apart from their interest to the individual who possesses them, have a high value to the community and to the race. There is a large field of opportunity for them in medicine.

#### *Freedom of Opinion.*

The claim, then, is for freedom of opinion. Let us be quite sure of the meaning of our terms. Opinion is a word in everybody's mouth, though often it means nothing more than a personal taste or prejudice or preference, or an echo from a printed page. Our friends and acquaintances for the most part have what they call their "opinions" on almost every topic. They may modestly confess that they know little or nothing about the subject, but they are more than ready to tell us what they think. Of these exercises the medical practitioner has indeed special experience. Now in medicine when we speak of "opinion" we mean

something precise. A medical or scientific opinion may be defined as a mental conviction resting upon an intelligible basis; it is a judgement, inference, or conclusion resulting from the consideration of evidence. This is the sense in which the practitioner forms and acts upon his opinion in any individual case, or in which he gives his assent to any general medical proposition. Hence, when we say that in medicine there is liberty of opinion, we mean a rational and ordered liberty, exercised not on mere inclination or whim or fancy, but exercised in accordance with the logic and teaching of evidence. Observe that this statement does not justify an opinion on the ground of its accuracy. So long as men are fallible they will make mistakes, due perhaps to incomplete knowledge, perhaps to inaccurate information, perhaps to imperfect reasoning. An opinion in the sense here defined is not always right, but it is reached by an orderly and reasonable route, and if it proves to be inaccurate the localization of the flaw can be determined when all the facts are known. On the other hand, a mere guess may be right, and this, indeed, is one of its particular dangers, for the arrival of the lucky chance is apt to lead the author of the guess, whether he professes a diagnosis or backs a winner, to imagine himself a very smart fellow, forgetful of the truth that "winning tricks" is not always proof of good play."

But with these irregular and illogical methods we are not concerned when we set up a plea for liberty of opinion within the province of medicine. What we mean by such liberty is the right of any practitioner, unhindered by authority, to scrutinize and cross-examine any proposition, to collect his own evidence, to form his own conclusions, and to push these if he will against current doctrines and practices. Truth unfettered, and spelt with a capital T, is the sole aim of medical inquiry, whether this is directed to an individual clinical problem or to a wide and general proposition. The lawyer seeks, for truth according to a pre-determined standard and after having decided in advance what shall, and what shall not, be accepted as evidence, while for the ecclesiastic truth is already known, and the formal statements of it must neither be questioned nor challenged. But the doctor knows no such restrictions. He has to suffer much uncertainty and doubt, and is continually aware how scanty is his knowledge and how limited are his powers. On the other side of the account he has this advantage, that he is never under an obligation to pretend to know what he knows he does not know, or to profess a conclusion on inadequate evidence. I am not questioning the advantage, or even the necessity, in certain spheres of life of the closing of issues by a final and conclusive voice to which all must give attention. But in medicine there is neither a House of Lords nor a College of Cardinals, and it would be an ill day for medical science and medical practitioners, and for the general public, were any such organization called into existence.

Such, then, is the liberty to which you will be elected. It is not a riotous and tumultuous liberty. But it is a full liberty for honest work and for honest men. Admittedly it may be abused, and indeed few ambitions are easier than to be a successful medical humbug. Medicine offers two large opportunities—the opportunity to observe and to work, and the opportunity to pretend and to prance and to pose, this latter not without its rewards in the lime-light. If the worker is to have the freedom that he needs, we must take our chance of the shams and simpletons. The good grain must be free to grow even though this means an opening for occasional tares. The claim therefore is, not that liberty carries no risks, but that it exists for those who have the courage to use it.

#### *Opinion and Action: The Human Factor.*

Perhaps it may be suggested that in a life where there is much liberty of prophesying, and where you may often be called upon to revise your conclusions and convictions, there cannot be much mental comfort. That is a perfectly fair comment, and for those for whom "there is no joy but calm" a medical career offers no inviting retreat. On the other hand, the consciousness of imperfect knowledge and of ignorance is a stimulus to initiative and enterprise and endeavour, and is it not largely in the



exercise of these activities that man gets in his life mental happiness and satisfaction? Again, there is room for the remark that to live among open questions and undecided issues is liable to weaken the power of decision and to paralyse the capacity for action. We must not deny that medicine is by no means free from issues on which a confident opinion in the present state of our knowledge is impossible. To halt between two conclusions is sometimes unavoidable, and when we don't know there is credit, and not discredit, in saying we don't know. But we must distinguish between academic reserve and practical action. The daily life of the doctor repeatedly presents situations in which decision and action are imperative, while a confident pathological interpretation of the facts is for the time being impossible. The doctor, in other words, has to meet emergencies which cannot await scientific discussion; his first charge (even more than the discovery of truth) is the welfare of his patient; and he may often have to act, and act strongly, on a mere balance of probabilities. Thus, while he learns that deliberate judgements and opinions must be based on considered evidence, he is taught equally that quick wits and resolve and courage and prompt action are essential in the practical business of life.

One other influence may be mentioned as tempering the mental questionings and debates of the medical atmosphere. It is that the doctor does his work not solely under the influence of the cold, dry light of scientific knowledge. Associated with this throughout is a consciousness of the mystery of pain and suffering and of the sense of tears in human affairs. There is a scientific problem to be contemplated at the bedside, and this has to be solved in accordance with the strict demands of evidence. But there is something more—the welfare, and even the fate, of one with whom we are conscious we share in greater or less degree a common lot. Human emotions and sympathies and hopes and fears and sufferings and endurance are facts not less certain than the branches of the femoral artery or the percussion limits of cardiac dullness, and the doctor has to study and weigh these agencies if he would be not merely a student of disease but also the stay and succour of the patient. While strict accuracy in observation and record are one influence in his life, not less real is the discipline which inculcates understanding and sympathy and helpfulness. Thus while the practitioner of medicine may, and indeed often must, in his quiet study dwell in the realm of philosophic doubt, equally in his active service he is stimulated to prove himself the prompt, the informed, and the sympathetic helper of those who in their sufferings and distress turn to him with confidence and hope.

What is the conclusion of the whole matter? That in the life offered by medicine there is freedom for honest work and honest thought; that this freedom necessarily implies a corresponding measure of personal responsibility; and that any undue tendency to mere academic debate is corrected by the demands of practical affairs and by the appeal and mystery of pain and the hazards of human life.

## RELATIONS OF MEDICINE AND DENTISTRY.

### SIR HUMPHRY ROLLESTON'S ADDRESS AT THE ROYAL DENTAL HOSPITAL.

At the Royal Dental Hospital of London School of Dental Surgery the scholarships, prizes, and certificates awarded during the winter and summer sessions, 1925-26, were distributed on October 4th by Sir Humphry Rolleston, Bart., K.C.B., Regius Professor of Physic in the University of Cambridge, who gave an address on the relations of medicine and dentistry.

Both medicine and dentistry, he said, had travelled far on their own lines during the last forty years, and had got into rather closer touch on their journey; but in the interests of each more intimate association was desirable. Not so long ago the bearing of dental disease and dental deficiencies on general medicine was regarded as mainly concerned with referred pain, dental headache, and the mechanical factor—namely, incomplete mastication and

the consequent swallowing of hard lumps of food. A great change was effected by the recognition of the etiological importance of dental sepsis in systemic disease. This advance was in the first instance the outcome of the patient investigations into the pathology of pernicious anaemia by William Hunter, who, in 1900, described oral sepsis; out of this grew the more expanded conception of focal infection, and its importance was certainly not underestimated now. The employment of x rays in examination of the teeth for apical disease had shown the close association of these lesions with rheumatoid arthritis, fibrositis, and allied conditions, which annually cost the nation three million weeks of lost work among the insured population. Not only had dental science done much for practical medicine, but advances in medical knowledge had thrown light on the causation of dental disease.

### Correlation of Dentistry and General Medicine.

Dentistry and its followers had a tendency, much more marked than in other branches of the healing art, to be isolated from general medicine and surgery. To some extent this might be excused by the contention that theoretically dentistry should be a prophylactic science and art, and if carried out in a perfect manner should prevent any medical or surgical complications. But it would be very long before this ideal could be realized, and its advent would be facilitated by a more intimate association with general medicine and surgery. While the dental out-patient departments of general hospitals nominally formed a connecting link, in ordinary hospitals they were almost purely treatment, not teaching, departments; and though the patients, of course, benefited, there had been little gain to the advancement of dental science and education. That there was a demand for dental schools in connexion with the general teaching hospitals had been proved by the success of the schools founded within the last forty years.

There were indeed good reasons for the close association of dental with medical schools. From the patient's point of view there was much to be gained by consultation, especially in cases on the border-line between dental and general medicine and surgery. The arrangements for treatment should be more intimately united. Beds should be provided for patients undergoing extensive extractions and operations on the jaws which might come within the province of the general surgeon, and could not be dealt with satisfactorily in the out-patient department; while patients suffering from complications requiring medical supervision should obviously be under the care of hospital physicians. The need for beds for dental patients had now been recognized by the Middlesex Hospital in the allotment of beds to its dental staff. In the interests of dental science dentistry must gain by correlation with other departments, and by the application of new knowledge primarily derived from workers in different lines of research, but nevertheless of far-reaching practical importance. Contact with physicians, surgeons, pathologists, bacteriologists, and biochemists should enable combined researches to be made into the influence of general disorders, such as those of infective, metabolic, deficiency, and endocrine origin, upon the teeth. Conversely there was still much to be done in critical investigation and accurate evaluation of the influence of dental disease and defects on the body as a whole. The Dental Board encouraged research and had recognized the principle of increasing the opportunities for correlation of dental with other branches of medical investigation by arranging for lectures on general anaesthesia during the past year. From the point of view of dental students, the opportunities of seeing the medical and surgical complications of dental disease and of becoming familiar with the general disorders which might cause dental changes were obviously provided in a general teaching hospital.

### Medical Qualifications for Dentists.

In other special branches of the healing art a good general knowledge of medicine and surgery, as shown by a qualification to practise, was a *sine qua non*. This was not held to be necessary in dentistry, and such a change might appear revolutionary. Revolutions, however, were often salutary, and were then called reforms. But a compulsory medical qualification for all dentists, however

advantageous theoretically, was undoubtedly open to serious objections. The practical objection of the increased expense and length of the curriculum necessary to obtain a qualification in medicine and surgery in addition to dentistry was difficult to meet without some modification in the medical and surgical requirements for this qualification by intending dentists; this, however, would be unsatisfactory, for any such concession would eventually defeat the aims of the change, and, indeed, would not be very different from the demands already made in some examinations for a dental degree. No doubt many dental students fully realized the great advantage of taking a medical qualification, and did so when this was financially possible. How those not so fortunate, though equally capable and deserving, could be assisted it was difficult to say. The objection that to require from those going in for a dental diploma an additional qualification in medicine and surgery would so diminish the number of qualified dentists as to be detrimental to the public interest was perhaps not quite so insuperable. Women had come into medicine, and after the war did so in such numbers that for the time being, at any rate, they were not so easily absorbed. In many respects they were well fitted for the dental profession, and by adopting it they might find a congenial career, and thus, to some extent, meet the demand for dental treatment.

It might be urged that dentistry was so special and so divorced from general medicine and surgery that it stood on a different footing from other specialties. But was it true that ophthalmology, laryngology, and otology

depended more closely on medicine and surgery than did dentistry? Ophthalmology also was a very special subject, and so much concerned with optics that opticians without any medical qualification abounded; but they were unquestionably handicapped thereby. It should be remembered that ophthalmology was evolved out of medicine and surgery, and so remained a member of the family, whereas, at any rate since the revival of learning in the sixteenth century, dentistry grew up independently, partly because of its own special technical demands, partly from the aloof attitude of medicine; it was therefore commonly assumed that they were essentially different. A break with this tradition would be in the best interests of dentistry; to go further, there could surely be no doubt that if and when a dental diploma or degree was made a post-graduate qualification, the status and the utility of dentistry would be much enhanced. At present (and the future might well see an increase in this direction) a number of dentists were also qualified in medicine with advantage to their profession and to themselves. At present this worked well, or without any manifest bad effect, but would it remain so? As time went on and fresh ideas and developments arose, especially in pathology, might there not be a more obviously and popularly recognized division of dentists into two grades—those with and those without a medical qualification? It would be an evil day for dentistry if this differentiation ever became analogous to that between ophthalmologists and opticians. This question of a combined medical and dental qualification would in time, no doubt, become one of practical politics.

## England and Wales.

### VITAL STATISTICS FOR 1925.

THE Registrar-General's *Statistical Review of England and Wales for 1925*, Part I, Medical, was issued on October 8th. It is an octavo volume containing 520 pages, and can be obtained from the Stationery Office in London, Manchester, Cardiff, and Edinburgh, or through any bookseller, price 15s. It is stated in the course of the review that the birth rate, which since 1920 has shown a continuous decline, was 18.3 per 1,000 persons living in the year 1925. This rate was 0.5 per 1,000 below that of 1924 and, excepting the war years 1917 and 1918, was the lowest recorded since the establishment of civil registration. The death rate was 12.2 per 1,000 and was equal to that recorded in the previous year, but was 0.6 per 1,000 above the rate of 1923, which was the lowest on record. The infantile mortality rate was 75 per 1,000 births and also equalled that of 1924, but was 6 per 1,000 above the lowest rate, recorded in 1923. The death rate from tuberculosis showed a further decline and was the lowest yet recorded; the mortality from cancer was the highest on record. The mortality from influenza showed a substantial decline compared with the previous year, while that from encephalitis lethargica was slightly below the high rate of 1924. The death rates from measles, scarlet fever, whooping-cough, and diphtheria were all above those of 1924. The mortality from enteric fever was the lowest on record, and for the first time the mortality of the two sexes was equal.

### RECONSTRUCTION OF THE LEAMINGTON PUMP ROOM.

Sir Kingsley Wood, Parliamentary Secretary to the Ministry of Health, formally opened, on October 9th, the Leamington Royal Pump Room, which has been reconstructed and modernized at a cost of about £15,000. In addition to natural saline baths, the special treatments offered by Continental centres can now be obtained at Leamington, including various electrical, galvanic, radiant heat, paraffin wax, and ultra-violet ray therapeutical procedures. Sir Kingsley Wood referred to the fact that spa treatment for rheumatism and allied complaints had been available at Leamington for more than six centuries, and he thought the time had come for British spa treatment to be made available for all classes of the community. He mentioned that at the recent annual gathering of the friendly societies it was decided to ask the Government

to include spa treatment as an additional national insurance benefit, and the Federation of British Spas had under consideration a scheme whereby they could treat about 30,000 people each year. He promised that careful and sympathetic consideration would be given to this scheme by the Ministry of Health. In supporting a vote of thanks to Sir Kingsley Wood, Dr. Fortescue Fox discussed the special characteristics of the saline content of the Leamington waters, and regretted the absence of facilities for systematic instruction in hydrotherapy in the universities and medical schools of Great Britain.

### PRESENTATION TO SIR JAMES BARR.

The annual inspection of the West Lancashire Voluntary Aid Detachment took place on October 2nd. Colonel Powell was the War Office inspector, and there was a good muster of V.A.D. nurses, who carried out various nursing operations in a V.A.D. hospital extemporized at the Liverpool Scottish headquarters. Sir James Barr, as county controller, was presented with a gold cigarette box inscribed: "Sir James Barr, C.B.E., D.L., M.D., for signal services in connexion with the V.A.D. of West Lancashire." Mrs. Tweedale of Roehdale, district lady superintendent, made a graceful speech, alluding to the untiring energy of Sir James Barr, and Mrs. Howard of Preston supported the resolution of thanks and appreciation accompanying the gift.

### SMALL-POX IN LONDON.

A woman resident in St. Pancras, who had been previously visiting Paris, was admitted to the Royal Northern Hospital in Islington, on October 7th, with an ill-defined rash. On the 9th she was isolated, and on the 11th she was diagnosed as suffering from small-pox by Dr. G. Clark Trotter, medical officer of health for Islington, and Dr. W. McC. Wanklyn of the London County Council Health Department. Her stay in Paris covered the period September 11th to the 24th, which was considerably later than that of the Willesden patients, of whom mention was made in our issue of October 9th (p. 660). The date of infection of the St. Pancras patient is believed to be between September 22nd and 24th. Inquiries are being made in Paris, but it has not yet been possible to trace the source of infection, which is presumably still active. It is, further, noteworthy that, although the type of small-pox at present prevalent in Paris is mild, this is not the case with the patients in Willesden and St. Pancras; in the last patient the rash is of the confluent variety.

## Scotland.

### OPENING OF NEW RADIOLOGICAL DEPARTMENT AT EDINBURGH.

H.R.H. THE DUKE OF YORK, on October 9th, paid a visit to Edinburgh, in the course of which he participated in various social functions, which included receiving the freedom of the city and the opening of a new department of the city gas works, which had cost a quarter of a million sterling. The visit commenced with the opening of the new radiological department in the Royal Infirmary of Edinburgh, which has just been completed. His Royal Highness and the Duchess of York were received at the Royal Infirmary by Lord Provost Sir William Sleigh, Sheriff Crole, convener of the Finance Committee, the Right Hon. Sir John Gilmour, Bt., Secretary of State for Scotland, and other members of the management and staff of the institution. The Lord Provost presided, and remarked that x-ray work had begun in the Royal Infirmary, Edinburgh, under Drs. Milne Murray and Dawson Turner in 1898. The first x-ray photograph had been taken on October 14th in that year, and in the course of the following year 600 x-ray examinations were made. The department then consisted of one room on the ground floor, and in these particulars a great contrast was presented by the present large department, and by the fact that over 23,000 examinations had been made during the past year. From 1909 the work had been carried on by Dr. Hope Fowler and Dr. Archibald McKendrick, until it had been decided to appoint for the present institution a whole-time radiologist, who would also conduct the teaching of radiology. Dr. Woodburn Morison had been appointed to this post, and at the same time had been made lecturer on radiology in the University of Edinburgh. Towards the construction of the building, the Edinburgh Committee of the Scottish Branch of the British Red Cross Society had contributed the very handsome sum of £15,000, the total cost being estimated at £52,000. He desired to express the gratitude of the managers to Dr. Robert Knox of London, who had acted as honorary expert adviser in connexion with the scheme from its inception, and also to Sir James Hodsdon, who, as the convener of the Medical Electrical Committee of the Board, had devoted much time to supervising the erection of the buildings and the installation of the plant. The Duke of York, in declaring the department open, paid a tribute of praise and gratitude to the pioneers in radiological research. He reminded his audience that the Royal Infirmary was maintained entirely by voluntary contributions, and expressed his gratification that the total ordinary income had amounted in the preceding year to nearly £110,000, with an extraordinary income, made up of legacies and donations, amounting to over £75,000. He hoped that the institution would never suffer for want of moral and financial support, and offered his warmest congratulations to those responsible for what he regarded as a great achievement. The Duke and Duchess of York then made a tour of inspection of the department under the guidance of Dr. Woodburn Morison and Sir James Hodsdon.

#### The Building.

The site for the new building is between the surgical and medical sections of the Royal Infirmary, and is entered off a covered corridor joining the two. Owing to the difference in level, there is a slight gradient on the various floors. The building is approximately 160 feet in length, with an average width of 60 feet; it consists of a sunk basement and two floors over with a flat roof designed to carry a third floor if extensions are found necessary at a later date. The basement contains the generating electrical plant and main control boards, with mechanics' workshop and general storage rooms. On the ground floor are situated several x-ray screening and treatment rooms, lecture and demonstrating hall, photographic and dark rooms, and the various private rooms for the staff, waiting and examination rooms. On the upper floor, accommodation is provided for electrical and massage treatment, with well lighted rooms for remedial exercises, radium treat-

ment, and artificial sunlight treatment. The structure of the building presents several novel features, designed especially with a view to furnishing the maximum of protection against the x rays. The construction is of steel framework with reinforced concrete floors and roof, and outer walls of stone with concrete dressings; the flat roof is covered with rock asphalt. For the protection of the operators and other members of the staff against constant exposure to the x rays, protective material has been incorporated in the walls of the x-ray rooms. Several experimental partition slabs were made and tested. Barium (barytes) was selected as giving the best results and being easily obtainable in sufficient quantity. The composition of the slabs finally selected as combining the greatest possible measure of strength and radiological protection was: 1 part rough sand, 2 parts engine ashes, 1 part Portland cement, 3 parts barytes. The slabs are of such a thickness as to weigh 37½ lb. per superficial foot, and each slab is adjusted by grooves to adjoining slabs. A further protection, the walls were plastered on each side with a 5/8 inch coat of barium plaster, and the same plaster has been used for the ceilings and floors. The amount of protection afforded by these walls is equivalent approximately to that given by sheets of lead 4 mm. thickness. The doors are of timber, covered with lead each side, and all hinges, handles, etc., are fully protected. Observation windows in the various cubicles have been provided with lead glass, equivalent in protection to 4 mm. of lead. Heating is provided by a vacuum steam system and ventilation is effected by extraction with high-speed electric fans. Fresh-air inlets are provided in all rooms the ground level.

#### Teaching Department.

Besides the various pieces of apparatus for screening in radiography and for deep penetration work, and apparatus for remedial exercises, ultra-violet light therapy and various forms of electrical application, special attention has been devoted to the teaching aspect of the institute. Radiology is to be taught as a definite special subject to the undergraduates, and a special diploma D.R.Edin., has been instituted. For this diploma a candidate will take a post-graduate course in physics at the university and carry out practical work in the infirmary, the course extending over a period of about a year. A large room is provided for lecture purposes suitably equipped with lantern viewing boxes, etc., and demonstrations can be given to small groups of students in smaller rooms. The staff of the department consists, in addition to Dr. Woodburn Morison (radiologist), of Dr. John O'Sullivan and Dr. W. Crichton Fothergill (assistant radiologists).

#### NEW CHILD WELFARE CENTRE IN GLASGOW.

A child welfare centre established by the Glasgow corporation was opened by Dr. Walter E. Elliot, M.L.A. Under Secretary of State for Scotland, on October 5th. The Lord Provost, Sir Matthew W. Montgomery, presided and said that one of the most important factors in improving the health of the people was to prevent disease. Although the death rate among infants had diminished considerably of late, he thought a great deal still required to be done. The Glasgow death rate of 102 per 1,000 compared very favourably with that of other large communities, but they hoped that the child welfare movement would produce a very large reduction even in this rate. Dr. Elliot, in declaring the centre open, said that while the infantile death rate was still falling, it was higher than it ought to be, and higher than the corresponding rate in England. Maternal mortality, however, was still high, and was not yet declining. In Scotland there were already 195 of these centres, and almost all large areas of population were now provided with them. The estimate for next year showed that about £218,000 was being spent on this work, of which about £120,000 was granted by the central authority. During last year about 20,000 children had attended these centres in Scotland, of whom about 14,000 were under 1 year of age. The aspect of the work which it was particularly desirable to develop was that for

children between the ages of 1 and 5 years. During this period cases of deafness, blindness, and other ailments often began and were later found to be permanent afflictions. Another aspect of the work which ought to be developed was maternal work, for at the various ante-natal clinics there had been only 8,000 cases in the past year, with some 21,000 attendances. Every encouragement and assistance should be available at this critical time. The speaker then dealt with the question of rickets, which, he said, was a reproach to Great Britain as a whole and peculiarly so to Scotland. They were only at the beginning of an investigation into this disease, but one or two very hopeful avenues of attack had recently been opened up. The question of feeding children was most important, and last year the Board of Health had devoted an important chapter in its report to the question of light treatment. They had decided that these two investigations must be followed up, and committees in Edinburgh, Glasgow, and Aberdeen would extend their investigations into these subjects as opportunity offered. He had hopes that this investigation in Scotland might make a definite contribution to medical science which would be of advantage to the whole world.

#### HOSPITAL SERVICES IN SCOTLAND.

Representatives of hospitals and public authorities in Dumfries and Galloway attended a conference at Dumfries on October 7th, arranged by the Dumfries and Galloway Division of the British Medical Association, to discuss the question of a hospital policy for Scotland. The opening address was given by Dr. J. R. Drever, the Scottish Medical Secretary, who was a member of the Hospital Services Committee, which held several meetings last year to investigate this matter; frequent references have been made to the meetings of this committee in the *JOURNAL*, and at Dumfries Dr. Drever outlined its general findings and invited the conference to make a careful study of them with reference to the local conditions in Dumfries and Galloway. The committee had reported that on the whole the institutional accommodation in Scotland for infectious diseases, including pulmonary tuberculosis, was approximately adequate, but that it was deficient in respect of non-pulmonary tuberculosis, measles, whooping-cough, and pneumonia. Only three or four authorities had so far provided maternity hospitals, the total number of beds being about seventy, but a similar number of beds in maternity homes for normal confinements had also been obtained. In view of the admitted fact that a very large number of the private dwellings in industrial areas were quite unsuitable for the conduct of confinements, a considerable increase in the provision of institutional beds was required. Passing to the consideration of the medical services afforded by the Poor Law authorities, Dr. Drever stated that, apart from Aberdeen and Glasgow, there were no beds provided by Poor Law authorities which were immediately available for general hospital purposes; it was generally agreed that the parish council was not the proper body to make further hospital provision, but that the health functions at present controlled by the parish councils should be transferred to the larger local authorities. Whereas in Glasgow in 1841 the hospitals were made use of by 17 per 1,000 of the population, in 1924 the figure had increased to 45 per 1,000. At the present time many thousand patients were unable to get, at the proper time, the hospital treatment they required, and the committee had concluded that a minimum of 3,600 beds ought to be added as soon as possible to the hospital provision of Scotland. This total covered the requirements of maternity and child welfare work, and 600 of these beds might reasonably be provided by the local authorities. For the establishment of 3,000 beds £1,800,000 would be required, exclusive of equipment charges and sites. The whole of this money could not be obtained under the present voluntary system, although the Scottish hospitals at present were perfectly solvent and had £4,000,000 of accumulated funds. The recommendation of the committee, therefore, was that a sum of £900,000 should be provided by the Government for capital purposes, the remaining £900,000, together with the cost of the sites

and equipment, being provided from present voluntary sources. Wards for paying patients were also required, and Dr. Drever emphasized the value of increasing the close co-operation between local authorities and voluntary agencies.

#### POST-GRADUATE MEDICAL TEACHING IN GLASGOW.

The following arrangements have been made for post-graduate teaching in Glasgow from November to May, under the auspices of the Glasgow Post-Graduate Medical Association: Weekly demonstrations will be held on Wednesday afternoons, beginning on November 3rd, in medicine, surgery, obstetrics, and special subjects; the fee for this course is three guineas. Special courses have been arranged in ophthalmology, at the Glasgow Eye Infirmary, including a slit-lamp course for ophthalmic surgeons, during October and November, and a course qualifying for the diploma in ophthalmic medicine and surgery of the Royal Colleges of Physicians and Surgeons of England, from January till May, 1927. A special course at the Royal Hospital for Sick Children and the Royal Maternity and Women's Hospital will be held twice a week, on Tuesdays and Fridays, from November 23rd to December 17th inclusive. Instruction will be given on the preservation of the health of the mother and the newborn infant, and the subjects dealt with include the diagnosis and treatment of disease in the newborn, the relation of ante-natal complications and abnormal labour to the condition of the infant, and certain aspects of the pathology of the foetus and of the newborn child. Clinical assistantships are available during the winter months in most of the institutions taking part in the work of the association. Further information may be obtained from Dr. James Carslaw, secretary of the Glasgow Post-Graduate Medical Association, 6, Woodside Crescent, Glasgow.

## Ireland.

#### TYRONE COUNTY HOSPITAL.

Mr. EDWARD THOMPSON, F.R.C.S.I., in the course of his annual report on the Tyrone County Hospital, states that during the year 1925 considerable progress was made, as 101 more patients were admitted to the hospital than ever before without adding to the expense of maintenance. The patients admitted were scattered over the county in very fair average proportion. Considering the size of the unions, complaint has often been made that a hospital situated in Omagh is of no use to Cookstown or Dungannon; a hospital must be settled permanently somewhere, and what position, it is asked, could fulfil the necessary conditions better than a central position such as Omagh, with a railway junction connecting the whole county? It is important also to remember that the class of patient seeking relief at the County Hospital differs materially from those in district and other hospitals, because the great majority of them are serious surgical cases requiring operation, or acute medical cases, generally of a very difficult and troublesome nature. During the year 865 patients were admitted to the hospital; 437 were refused admission as incurable or not suitable. The average number of patients daily in hospital was 56, and their average stay in hospital 19.7 days. The expenditure amounted to £5,129, and of this sum £2,477 was earned by the Hospital Committee, leaving a balance of £2,652 granted by the county council, the cheapest and most useful expenditure of public money it is possible to imagine. If to this expenditure is added interest at 6 per cent. on £10,000 subscribed by the public to build the new hospital, it will be apparent that the income of the hospital about equals the county grant. The average cost of each bed occupied was £23 17s., and of each patient £5 6s. 9d. In anticipation of the coal strike, about forty tons of coal were laid in as a reserve, and if the cost of this, along with the payment of over £120 for repainting the hospital, is credited to this year's expenditure, it will be found that the total cost of the hospital for 1925 is considerably less than in the previous year, notwithstanding an increase of 9.5 per cent. in the number of patients

admitted. This is the last year in which a reduced expenditure can be expected, because owing to the demand of the Northern Local Government Board as regards audit, and similar demands on the part of the Nursing Council, a number of new officials will be necessary, and the extra cost, it is estimated, cannot be less than £1,000 a year. The average cost for the year per patient is the lowest of any county hospital in Northern Ireland. The number of major operations performed during the year was 425; this included 47 operations for the removal of appendixes, with 42 successful results; 13 operations for the radical cure of hernia; 31 curettings of uterus; 25 laparotomies; and 4 operations for ruptured stomach.

#### GYNAECOLOGICAL AND OBSTETRICAL CONGRESS IN DUBLIN.

A fortnight ago we gave an account of the centenary celebrations of the Coombe Lying-in Hospital, Dublin, and mentioned the subjects and authors of papers read during the international gynaecological and obstetrical congress held in connexion with the celebrations. The proceedings of the congress are to be published as a special supplement to the *Irish Journal of Medical Science*, which, it is expected, will be ready for issue shortly. Copies (5s. 6d. post free) can be obtained on application to the Manager, at Parkgate Printing Works, Dublin. The September issue of the *Irish Journal of Medical Science* contained a special illustrated account of the congress. This will be sent also if the postal order is increased to 7s. 6d.

## Correspondence.

### DIAGNOSIS OF SMALL-POX.

SIR,—In view of recent happenings in the matter of small-pox, may I make a strong appeal to your readers to help to make known the elements of small-pox diagnosis to every one of our colleagues in the profession? In 1913 I wrote:

"It is essential to realize the mischief which may be done by unrecognized cases of small-pox. There is hardly any disease of which the prompt recognition is more important to the general community. Almost every outbreak in London in recent years has been started, or propagated and prolonged, by unrecognized cases." (*How to Diagnose Small-pox*, p. 1.)

Our profession has made a remarkable response to those indications. Missed cases are strikingly fewer than they used to be; but for that very reason they are now all the more conspicuous. Our principal duty, I submit, at a time like the present is to make sure that we have done all in our power to make the necessary knowledge known. Speaking for myself, although something has been done, there is much more that I should like to have been able to do. This is the point. Every qualified practitioner in the kingdom should have a knowledge of the simple groundwork of small-pox diagnosis in his hands and in his head. It is more imperative than a knowledge of the femoral artery.

We all know the anxiety and risk of being unprepared to meet a possible emergency—the risk of losing patient, reputation, and practice. That unpreparedness should never be allowed to continue if it can possibly be remedied. With this in view, I ask your permission again to mention two items especially. One a booklet termed *Small-pox Notes for Medical Practitioners, with Hints on Diagnosis*, price 8d.; the other a reprint of a post-graduate lecture, entitled *The Accurate Diagnosis of Small-pox*, price 6d. Both are obtainable from either the *Medical Officer*, 36, Whitefriars Street, E.C., or from George Wareham, 1, Budget Row, Cannon Street, E.C.4. To overcome the difficulty caused by an author having to mention his own works, and other difficulties in connexion with their distribution, their issue is being handed over to the Small-pox Clearance Voluntary Fund, of which for the time being I am honorary secretary. The main aim of this fund is the complete clearance of small-pox out of the country, that being a business-like and practical proposition.

Some 3,000 practitioners have been provided with one or the other of the above-mentioned booklets so far, principally owing to the fact that many public authorities, on the

recommendation of their responsible officers, have distributed copies to all the practitioners in their respective areas; an eminently reasonable proceeding, considering the value of the public service rendered by practitioners in this field of work. And in many cases this precaution has been wisely taken before the appearance of small-pox.

Reports show that such an issue is greatly appreciated. Practitioners are forewarned and forearmed. Their own confidence and standing are increased, the hands of the medical officers of health are strengthened, and, generally speaking, there is a heightening of the efficiency of the whole anti-small-pox line, which at the present time is the sole barrier standing between our people and the catastrophe of a small-pox epidemic.—I am, etc.,

London, W.5, Oct. 11th.

W. MCC. WANKLEY.

### INTESTINAL DIVERTICULA.

SIR,—Dr. A. H. Rutherford, in your issue of September 11th (p. 502), suggests that some of the multiple diverticula of the colon described by us (*BRITISH MEDICAL JOURNAL*, 1926, vol. i, p. 130) are potential "food pouches or crypto-saks" . . . "caused by the purse-string action of muscular fibres which, on their contraction, form a pouch or sac, into which semi-fluid faeces are drawn and where they become inspissated." We have delayed in replying in order to obtain and peruse the book to which he refers. We have now read the interesting account therein of observations made through a large artificial anus at the caecum. (*The Ileo-caecal Valve*, A. H. Rutherford, London, 1914). On page 50 it is stated that a

"pencil of firm faeces, 7.5 millimetres in diameter and 6 centimetres in length, was one day seen to be pressed out of an apparent round orifice in the wall of the caecum. This was pressed out with considerable force in a direction at right angles to the surface of the bowel, evidently moulded by the circular aperture through which it emerged. After the faecal mass had been extruded, no orifice, however, could be discovered, and the spot where it had come from had the same appearance as the rest of the intestine. The nurse in charge told me she frequently observed this appearance in different positions of the colon, and it had no relation to the site of the ileo-caecal orifice, but was noticeable in an area nearer the rectum."

Such a pencil of faeces might be discharged from one of the large multiple diverticula of the colon such as our paper dealt with. We have published a picture in which such pencils can be seen (*Quart. Journ. Med.*, 1925, xix, Fig. 26, Plate 4).

Dr. Rutherford states that potential food pouches "occur in numbers along the inner wall of the large intestine"; and suggests that these, if diseased, may give rise to established diverticula. In the radiological examination of about 3,000 large bowels during life we have not observed such pouches other than (1) the normal haustra, (2) the rare cases of traction or other single diverticula, or (3) the appearances we have described as diverticulosis.

If pockets such as the crypto-saks of Dr. Rutherford became diseased to form diverticula, the latter would from the beginning be of large size; whereas early diverticula are minute and can be seen to enlarge as time goes on. Tiny pockets are nearly always found near fully developed ones.

We should expect also that most, or all, of the large diverticula, if formed from "crypto-saks," would retain some muscular power, but this is not so. It was observed in serial pictures of our case, illustrated in Fig. 10, and referred to by Dr. Rutherford, that the small diverticula showed slight contraction of their bodies and necks, whilst the bigger pouches appeared inert, even during active contractions of the haustra from which they arose. It is true that in some cases comparatively large diverticula have been observed to empty, and sometimes to empty in groups; but we do not regard such an observation as showing that the pouches were part of the normal structure of the bowel.

As regards the wall of the bowel, which was "full of holes," as observed by the nurse, but usually appeared normal to the doctor, the orifices of diverticula which are not discharging are in life—for example, with the sigmoidoscope—or after death difficult to see. There is nothing in the account to exclude the possibility that the bowel of Dr. Rutherford's case was the seat of all stages of the disease.—We are, etc.,

J. I. SPRIGGS.

O. A. MARJER.

Ruthin Castle, North Wales, Oct. 8th



## MIDWIFERY IN GENERAL PRACTICE.

SIR,—I understand there is shortly to be in force a Regulation which lays down that every practitioner attending a midwifery case must notify such case to the medical officer of health if the temperature should be 100.4° for twenty-four hours; that he is to state what vaginal examinations he has made, also vaginal examinations made by others under him, and the names and addresses of such persons; and that he is to supply a kind of résumé of the health of the patient before and after confinement.

I am in a country practice, and my confinements amount to eighty or ninety a year, for which I receive £1 10s. each (when paid). There is no district nurse in the village and no qualified midwife. The people are poor working-class, and would be deeply insulted were I to demand a fee for ante-natal examination. After this Regulation comes into force my only course, as far as I can see; will be to drop midwifery work unless I can obtain the assistance of a qualified midwife.

Midwifery practice is slowly but surely slipping into the hands of certificated midwives. The majority of the doctors in this district, as in many others, have given up attending confinements among their poorer patients. This is partly, no doubt, because of the small fees, but largely, I believe, on account of the red tape now prevalent, and because the blame for whatever goes wrong is laid at the practitioner's door.

I may be old-fashioned, but I believe that midwifery should be in medical hands. In the first place, a midwife is to a very large extent precluded from using any means for alleviating pain; and secondly, in a great many abnormal cases the patient is kept much too long before the midwife calls in a doctor. In spite of the laudation of midwives which I have read, a curious fact remains unexplained. Why do better-class women invariably demand the services of a doctor in addition to those of the qualified nurse? Why are they not content to be attended by a midwife alone, like their poorer sisters? It is not wholly a matter of fees. To compare the services of a midwife, who only takes responsibility for normal or semi-normal cases, with those of the doctor, who is expected to undertake all cases, is absurd, for it is among the difficult cases that 90 per cent. of the trouble occurs.

It seems to me a very serious matter that working-class women should be deprived of the services of doctors, largely because we are so bound down by rules and regulations that midwifery practice has become a daily menace to our peace of mind, and medical men are refusing to have anything to do with it. It is time the general practitioner asserted himself to put an end to the unjust persecution he labours under; and the remedy does not consist in throwing overboard his responsibilities.—I am, etc.,

September 22nd.

INQUIRER.

## A WARM ENVIRONMENT FOR RHEUMATIC PATIENTS.

SIR,—Dr. Fortescue Fox has, under the above heading, drawn attention in the JOURNAL of October 9th (p. 664) to the importance of giving "spa treatment" to rheumatic patients only under suitable conditions, and also to the detrimental effect of chill after treatment.

Having myself suffered acutely, from time to time, from various conditions generally included under the term "rheumatic," and having had "spa treatment" in various forms at several spas, health resorts, and hydro-therapeutic institutions, and also having prescribed and watched the effects of "spa treatment" in a large number of rheumatic patients, I can fully endorse Dr. Fortescue Fox's contentions.

The rheumatic patient is peculiarly sensitive to sudden temperature changes, and is generally responsive to treatment by heat, whether by thermal baths, radiant energy, diathermy, or by other methods, provided that they are carefully prescribed and efficiently administered under suitable conditions. Rest after a thermal treatment is essential. It should be adequate in duration and be taken in a room heated to a suitable temperature. Cold resting rooms are detrimental as cooling is too rapid, whereas overheated rooms are injurious in preventing efficient

cooling. These and other points require careful consideration as "spa treatment" will probably be more popular in the future than it has been in the past, and also because it is possible that at no distant date it will be available for the large number of rheumatic cases which are entitled to medical benefit under the National Health Insurance scheme.—I am, etc.,

Torquay, Oct. 11th.

K. R. COLLIS HALLOWES, M.B.

## SANATORIUM TREATMENT.

SIR,—May I be permitted to make a few observations in reply to the letters which have appeared in the JOURNAL during the past few weeks in criticism of the recent paper on this subject in the *Annals of Eugenics*?

Dr. Walters (September 11th) says that "to arrive at reliable conclusions in such an inquiry it is essential to choose similar material in the two groups." It can never be possible in sociological investigations to secure exactly similar material, and hence much of the labour involved in the investigation was devoted to ensuring that such differences as existed between the groups compared owing to selection for sanatorium treatment should be adequately corrected for, and to this end the ten factors of age and sex, stage of disease and severity of symptoms, nutrition, financial resources, grade and cleanliness of house, degree of overcrowding, and home ties, were all examined in detail, and, where necessary, allowed for. Dr. Walters considers that these, though relevant, do not cover the whole ground, but he does not suggest what factors have been omitted, and I think it is a reasonable assumption that the indefinable factors could have, in comparison with those named, very little influence on the relative progress of the groups. His objection that the two groups were not mutually exclusive, because the sanatorium-treated received in addition other forms of treatment before or after their stay there, fails on the grounds of general logic. Thus, in comparing groups of patients under treatment of various kinds for a period of  $x$  years we found that those who had dispensary or home treatment for the whole  $x$  years fared slightly better if anything than those who had sanatorium treatment for  $s$  years plus dispensary or home treatment for the remaining  $(x-s)$  years; both these groups had in common non-sanatorium treatment for  $(x-s)$  years, hence it follows that the differences in progress arose from the remaining  $s$  years, and those who spent this period in sanatorium fared no better than those who spent it in the other forms of treatment. To put it in another way, if 1,000 patients treated with 10-grain powders consisting of drugs A and B in varying proportions fare no better than 1,000 patients treated with 10-grain powders of A alone, it must logically follow that B alone is no more effective than A alone. An obvious retort is that the dose of B was never large enough to accomplish anything; but I would point out that the average period spent at sanatorium in our material was six months, an average considerably higher than that for patients treated, for example, by the Lancashire County Council. Had we not better frankly admit that there are small hopes indeed that any large group of patients are ever likely to be persuaded to spend more than an average of six months in a municipal sanatorium, however excellent it may be?

Dr. Gillespie (September 18th) objects that a considerable proportion of the patients were lost sight of before six years had elapsed; that the limiting period for classing a patient as "sanatorium-treated" was taken as low as fourteen days; and that the presence or absence of tubercle bacilli in the sputum was not made the indispensable criterion for diagnosis. The correlation method, by which the time under observation was made constant by partial correlation, overcame the first of these objections entirely, and the results confirmed those arrived at by the other methods. The objection to a fortnight as limiting period has been already answered on logical grounds, and, moreover, since there was found to be no correlation between time spent at sanatorium and progress, the choice of this arbitrary point of division makes no difference to the conclusions. If it were possible to confirm every diagnosis by the finding of tubercle bacilli in the sputum, it would, of course, greatly simplify the problem both for the

tuberculosis officer and the medical statistician; but as the bacilli have often an unfortunate habit of not coming to light till the disease is well advanced, the absence of such confirmation in many early cases is a fact which has to be faced in any study of this kind. In cases where such a short cut to diagnosis fails, we may surely concede to the tuberculosis officers an ability to diagnose the disease from the other signs and symptoms with sufficient accuracy to render such diagnosis fit for statistical treatment. The failure to find bacilli neither precludes a patient from notification nor from sanatorium benefit, and it is therefore idle to speak of the finding of bacilli as a *sine qua non* in diagnosis. I note, for example, that only 29 per cent. of 1,521 female patients in the L1 stage who were sent to sanatoriums of the Lancashire County Council from 1914 to 1923 had the diagnosis confirmed in this way. If diagnosis apart from tubercle bacilli is liable to be faulty there is no reason to suppose that in our data such mistakes affected unequally the groups of patients compared, since they were all examined by the same medical officers, and all cases in which their diagnosis remained doubtful were rigorously excluded.

If, as Dr. Weatherhead (September 25th) seems to suggest, diagnosis without bacilli is valueless, then the inferences which must follow are not pleasant to contemplate. That all do not share this opinion, however, is shown by the letter of Dr. Prest (September 25th), who writes: "The diagnosis of tuberculosis should be made by a study of the history of the patient and a careful inquiry into symptoms, and not by the presence of physical signs and the finding of tubercle bacilli in the sputum." In order to show, however, that the sanatorium group did not contain an undue proportion of cases with positive sputum, we have taken out the following figures:

Percentage of patients in whom sputum was found positive:

Sanatorium-treated group	...	...	9.4
Non-sanatorium group	...	...	10.2

In this sanatorium sputum-positive group 31.0 per cent. were of class L3, as compared with 26.6 per cent. in the other group. Hence there is no evidence of the more "definite" cases being chosen for sanatorium.

Dealing only with sputum-positive cases, we have as comparative percentages dead or not improved:

	Males.	Females.
Non-sanatorium cases ...	83.9±3.3	92.1±1.8
Sanatorium-treated, less than 3 months	96.4±2.4	100.0±3.8
Sanatorium-treated, more than 3 months	91.9±3.0	88.9±5.0

These figures show no significant differences for females, but a significant advantage to the non-sanatorium group for males. For the sputum-negative cases the corresponding percentages dead or not improved were:

	Males.	Females.
Non-sanatorium cases ...	56.0±3.5	48.6±2.1
Sanatorium-treated, less than 3 months	58.6±6.2	47.4±7.7
Sanatorium-treated, more than 3 months	51.9±6.5	54.3±5.7

These show no significant differences for either sex. These figures are sufficient to indicate that subdivision on the ground of sputum findings would not have altered the conclusions reached in the paper.

The authors had no prior reason to doubt the efficacy of sanatorium treatment; they were only interested to get at the truth, whether unpalatable or not. Such a course can only benefit our profession and our patients alike in the long run. If an investigation of a similar nature can be undertaken on sound lines on the data of a tuberculosis unit with modern sanatorium in England, and if this yields results more satisfactory to us all, the authors will be only too pleased to know that their disappointing conclusions are not applicable to sanatoriums in general.—I am, etc.,

Galton Laboratory, University College,  
London, W.C.1, Oct. 1st.

PERCY STOCKS.

SIR,—Having now perused the memoir by Messrs. Stocks and Karn on "The influence of sanatorium and dispensary treatment and housing conditions on pulmonary tuberculosis." I may, perhaps, be allowed a word or two of criticism.

The fact that the presence or absence of the tubercle bacillus has not been taken into consideration by the authors in the grouping of the cases robs this investigation

of a great deal of its value. Indeed, it introduces a very serious fallacy.

Again, as your correspondent, Dr. Walters, has pointed out, sanatorium treatment—to be of any permanent value—must be of long duration, certainly of at least twelve months; and to regard as "sanatorium treated" patients who have been in an institution for fifteen days only seems to be rather absurd. These cases should have been classified as "otherwise treated."

But one must admit that sanatorium treatment, especially if it is of short duration, has little or no effect on the ultimate prognosis of cases discharged as improved or quiescent only. The mental factor comes into play, and the patient loses heart, and on the first setback he gets he goes down hill rapidly. That is the reason why we prefer to cure one case rather than "patch up" twenty, and when institutions are anxious to get "suitable cases" they have this in mind, and not mere statistical considerations, as the authors suggest.—I am, etc.,

Grampian Sanatorium, Kingussie, Oct. 4th.

FELIX SAVY.

#### APPENDICITIS AND VEGETARIANISM.

SIR,—During recent years I have seen many Oriental and relatively few European patients: I have removed many European appendices but never an Oriental one.

In Kurdistan I once operated on a native for what I thought was appendicitis, but found early tuberculosis of the caecum. Twice in natives of Burma I have found suggestive symptoms, but these cleared up in a day or two, did not recur, and did not justify operation. One man complained of a "nat" (devil) in the right iliac region, but the "devil" was located in the urethra and right seminal vesicle.

In Mesopotamia and Burma the natives eat meat, but it is well diluted with rice, split peas, coarse wholemeal unleavened bread, and such green vegetables as are obtainable; they do not eat potatoes. On making a sanitary inspection of Burmese or Indian lines one cannot help noticing that most of the faeces in the latrine tins are semi-solid. Most Orientals pass their motions regularly the early morning and squat while doing so.

Professor Wilkie has shown that gangrene rapidly occurs in an isolated segment of the small intestine of a cat on meat, but not in that of a cat fed on carbohydrate. Dr. Leonard Williams points out that owing to a large vegetarian uncooked diet, regular habits, and a squatting defaecation posture, the savage completely empties his lower bowel every day, and thereby escapes the large group of diseases due to intestinal stasis. It seems logic to suppose that if we were to adopt their habits we should not suffer from appendicitis.

I fear, however, that so long as eating and drinking hold their places among the chief pleasures of Western civilization we shall continue to suffer from alimentary sepsis.—I am, etc.,

H. WILLIAMSON, M.D., F.R.C.S.Ed.  
Captain I.M.S.

Ightham, Kent, Oct. 5th.

Surgical Specialist, Burma District.

#### POOR LAW MIDWIFERY FEES.

SIR,—I have read some correspondence in the JOURNAL as to the fees paid by life insurance companies for examination and report, and agree that the minimum fee should be one guinea, but irrespective of the amount of the policy I have insisted on this for many years.

What appears to me much more unsatisfactory is the case of the Poor Law medical officer, who receives from the board of guardians the wretched fee of half a guinea for a midwifery case, whether he has to deal with a neglected shoulder or a placenta praevia with locked twins. This was the fee when I held such an appointment thirty-five years ago, and it is still the same. If I resign the job and my partner refuses it (as he would), it would doubtless result in the introduction of an opposing practitioner into a village which will only support two men, so I am rather "up a tree." It is quite time that this state of affairs was altered. It is nothing less than a scandal that an experienced man should be offered, and obliged to accept, such a paltry fee.—I am, etc.,

Topsham, Devon, Oct. 7th

R. C. WONSLEY.

## Obituary.

**JAMES BARRY BALL, M.D., F.R.C.P.,**

Consulting Physician, Throat, Nose and Ear Department,  
West London Hospital.

DR. JAMES BARRY BALL, who died at his residence at Abingdon, Berks, on October 2nd, aged 77, was born in Ireland in 1849, and received his medical education at University College, London. He obtained the diplomas of M.R.C.S. Eng. in 1870, and M.R.C.P. Lond. in 1885, and was elected F.R.C.P. in 1907. He graduated M.B. Lond. in 1871, proceeding M.D. in the following year.

He first entered general practice in Brixton, but in 1885 was appointed assistant physician to the West London Hospital. Two years later he was given charge of the throat and nose department, and of the ear department when that was added later. In 1905 he was appointed consulting physician and a member of the board of management. His other appointments included those of consulting physician to the Hospital of St. John and Elizabeth, lecturer in diseases of the nose, throat, and ear to the West London Post-Graduate College, and examiner in laryngology and otology to the Royal Army Medical College. He was the author of a *Handbook of Diseases of the Nose and Pharynx*, and contributed articles to *Quain's Dictionary of Medicine* and to the *Transactions of the West London Medico-Chirurgical Society*. Dr. Ball was at one time a member of the British Medical Association, and in 1907 was a Vice-President of the Section of Laryngology, Otology, and Rhinology at the Annual Meeting of the Association at Exeter. He was much liked during his long period of practice in London, both by his brother specialists and by other members of the profession with whom he came in contact. Though his manner was always conciliatory, he held the opinions at which he arrived with tenacity and did not hesitate to express them when called upon. He leaves a widow and one daughter.

Dr. CHARLES GEORGE MACLAGAN, who died recently, was born in 1860, and was educated at Berwick Grammar School and Edinburgh University, where he graduated M.B., C.M. in 1883. Until his father's death he was associated with him in his practice in Berwick-on-Tweed, and later continued it by himself. He held the appointment of medical officer of health for Berwick, and was also an Admiralty surgeon. He had been surgeon captain in the Volunteers; during the late war he was chairman of the military tribunal; he was also chairman of the Berwick Infirmary during the whole war period. In addition to his medical work he took an active part in public life, being elected to the Berwick Town Council in 1897 and raised to the bench of aldermen in 1909. He held the post of sheriff in 1903, and was mayor in 1908, 1921, and 1922. He was appointed a justice of the peace in 1914, was chairman of the Berwick Education Board, and later a member of the Education Committee of Northumberland, serving also on the county Panel Committee. For many years he was an active supporter of the British Medical Association. He held the post of president of the North of England Branch in 1888 and in 1923; he was chairman of the North Northumberland Division in 1916, and representative on the Branch Council from 1905 to 1919.

Dr. LOUIS ESTEVAN GREEN DE WOOLFSON, who died on September 11th, received his medical education at St. Thomas's Hospital and in Paris, and obtained the L.S.A. in 1881, and L.R.F.P.S. Glas. and L.M. in 1883. After conducting a large practice in Shrewsbury he moved to Swansea, and later to London. At one time or another he held the appointments of assistant surgeon to the Shropshire Eye, Ear, and Throat Hospital, medical officer of health for Wednesfield, surgeon in charge of the ear, nose, and throat department in the Queen's Hospital for Children, and surgeon to the ear, nose, and throat clinic, Hockley. He was an examiner for the St. John Ambulance Association, and ambulance surgeon to the G.W. and L.N.W.

Railway services. Dr. de Woolfson was a member of the Royal Institute of Wales and the Royal Sanitary Institution of Great Britain. During the war he was medical officer in charge of a recruiting area in the Southern Command. He was also a casualty surgeon to St. Paul's Skin Hospital, London, and acted as consultant for candidates for the priesthood for the Roman Catholic Church in Spain. He was an accomplished linguist, and spoke fluently English, French, German, Italian, and Spanish.

Dr. JOSEPH PATRICK FRENGLEY, who died at Wellington, New Zealand, on August 1st, was born in Ireland in 1873, and received his medical education at the Catholic University, Dublin, where he graduated M.B., B.Ch., B.A.O., in 1895, proceeding M.D. in 1899. He obtained the diploma F.R.C.S.I. in 1899, and two years later the D.P.H. of both London and Dublin. In 1902 he was appointed district health officer at Nelson, and was thus one of the pioneers of the public health service in New Zealand. After holding similar posts at Auckland and Wellington, as well as being senior health officer for the combined districts of Wellington, Hawkes Bay, Marlborough, and Nelson, he became deputy chief health officer in 1913, and four years later received the additional appointment of deputy inspector-general of hospitals. After the passing of the Health Act in 1920, Dr. Frengley held the post of deputy director-general of health in New Zealand, but in consequence of prolonged ill health he subsequently undertook the less arduous duties of director of the division of food and drugs in the health department. He took an active interest in the scientific side of medicine, and was an examiner for Otago University. He was one of the first advocates of a municipal milk supply for the city of Wellington. He leaves a family of one daughter and three sons, two of whom are members of the medical profession in New Zealand.

The following well known foreign medical men have recently died: Dr. GEORGES THIBIERGE, the Paris dermatologist; Dr. O. W. MADELUNG, formerly professor of surgery at Strassbourg, aged 80; Dr. ADOLF LESSER, emeritus professor of medical jurisprudence at Breslau, aged 75; Dr. F. B. HORMANN, professor of physiology at Berlin University, aged 55; Dr. OSCAR BLOCH, emeritus professor of surgery at the University of Copenhagen, aged 79; Dr. EDWARD BRONSON, a New York dermatologist and author of an essay on the sensation of itching, published in the New Sydenham Society's publications, aged 83; and Dr. ALESSANDRO CAMUSSO, professor of obstetrics and gynaecology at Cordoba.

## The Services.

### DEATHS IN THE SERVICES.

MAJOR WILLIAM EDWARD MARSHALL, M.C., R.A.M.C., died on September 24th, of gastritis, at Khartoum, aged 45, within ten days of taking up the post of principal medical officer of the Sudan Defence Force. He was the second son of the late David Marshall, county clerk of Perthshire, and was educated at University College, Dundee, St. George's Hospital, and Edinburgh University, where he graduated M.B. and Ch.B. in 1902; he took the D.P.H. at St. Andrews in 1906. After filling the posts of house-surgeon of Perth Royal Infirmary, resident medical officer of Dundee District Asylum, and assistant bacteriologist at the Lister Institute of Preventive Medicine, he entered the R.A.M.C. as a Lieutenant on August 1st, 1908, received a brevet majority on June 3rd, 1918, and became major on August 1st, 1920. He had previously served in the Egyptian Army from October, 1909, to December, 1913, and from 1919 to 1922, and before his return to the Sudan was deputy assistant director of pathology at the Royal Victoria Hospital, Netley. He served throughout the recent great war, was twice mentioned in dispatches, in the *London Gazette* of November 14th, 1916, and September 17th, 1917, and received the Military Cross in November, 1916.

Major Ernest Cyril Phelan, D.S.O., M.C., R.A.M.C., died on August 17th, aged 45, while serving with the British force of occupation on the Rhine. He was born on February 16th, 1881, and was educated at Trinity College, Dublin, where he graduated as M.B., B.Ch., and B.A.O., in 1906. Entering the R.A.M.C. as Lieutenant on July 30th, 1906, he became major after twelve years' service. He served in the recent great war, when he was twice mentioned in dispatches, in the *London Gazette* of February

17th, 1915, and December 24th, 1917, and received two decorations—the Military Cross on February 18th, 1915 (when he was one of the earliest recipients of that order, founded on January 1st, 1915), and the D.S.O. on January 1st, 1918.

Major Harold Stewart Dickson, R.A.M.C., died of pneumonia in the nursing home at Srinagar, Kashmir, on August 31st, aged 46. He was born on April 16th, 1880, and was educated at Barst's, taking the M.R.C.S. and L.R.C.P. Lond. in 1905. He entered the R.A.M.C. in July, 1909, received a brevet majority in June, 1919, and became major less than two months afterwards—on July 27th, 1919. He was placed on temporary half-pay, on account of ill health, on January 7th, 1921, but rejoined within a year. He served in the war of 1914-18, gaining his brevet as major.

## Medico-Legal.

### A DANGEROUS DRUGS PROSECUTION.

At Marlborough Street Police Court, London, on October 8th, Mr. Cancellor, the stipendiary magistrate, heard summonses preferred by the Director of Public Prosecutions against John Kynaston, whose address was given as Langham House, Regent Street, W., for aiding, abetting, counselling, and procuring Rowland Pawsey to attempt to obtain possession of a dangerous drug—powdered opium—contrary to the provisions of the Dangerous Drugs Act, 1920, and, further, under the Medical Act, 1858, with falsely describing himself as a recognized licentiate in medicine and surgery by the use of the description "M.R.C.S., L.R.C.P. Lond."

Mr. Vincent Evans, for the Director of Public Prosecutions, said the defendant treated a Mr. Pawsey for catarrh, and, in furtherance of the treatment, handed him a prescription. At the top of the prescription were the words "Lato R.A.M.C., L.R.C.P., M.R.C.S.," and at the bottom the defendant had signed his name, adding, "Lieutenant-Colonel R.A.M.C., retired, M.R.C.S., L.R.C.P. Lond." As a matter of fact in 1922 his name was removed from the *Medical Register* by the General Medical Council, and his name was subsequently removed from the registers of the two Colleges in question.

The defendant objected to being referred to as "Mr. Kynaston," saying he was a retired lieutenant-colonel of the R.A.M.C.

Rowland Pawsey, registrar of marriages, Marylebone, cross-examined by the defendant, said he did not ask the defendant to give him a dangerous drug. The witness was aware that the defendant had had a dispute with the General Medical Council, and gathered further that the defendant was no longer on the *Medical Register*; witness inferred that he had been removed. The defendant had not entered into a conspiracy to "aid, abet, counsel, or procure" the witness to get the drug.

C. Siggers, a chemist of Abbeville Road, said that Mr. Pawsey handed him the prescription. Cross-examined by the defendant, witness said he had no reason to suppose that Mr. Pawsey required the drug for an improper purpose, but, after making inquiries, witness refused to make up the prescription because the defendant's name was not on the *Medical Register*.

The defendant urged that there was no case whatever to go before a jury. On the first summons he elected to go for trial. The hearing was adjourned for further argument.

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

THE third examination for medical and surgical degrees will be held from Tuesday, December 14th, to Thursday, December 17th. Part I (Surgery, Midwifery, and Anatomy) will be held on December 14th, and Part II (Principles of Medicine, Pathology, and Physiology) on December 15th and 16th. The examination will be held at the University of Cambridge, and for the M.Chir. examination should be sent to the Registry on or before October 26th.

### UNIVERSITY OF SHEFFIELD.

Dr. J. H. BLAKELOCK, M.Sc., M.B., Ch.B. Sheff., has been appointed to the post of assistant bacteriologist.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE annual meeting of Fellows and Members will take place at the College, Lincoln's Inn Fields, on Thursday, November 12th, at 3 p.m.

Copies of the report to be presented can be obtained by any Fellow and Member on application to the Secretary, from whom copies of the agenda (to be issued on or after November 12th) can also be obtained.

### ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE following, after examination, have been admitted as Fellows of the Royal Faculty of Physicians and Surgeons of Glasgow:

A. Barr, A. A. Bell, J. A. Douglas, D. N. Black, A. D. Blakely, J. M. Christie, T. H. J. Douglas, A. Garraway, E. B. Jaffi, W. D. MacFarlane, F. G. Mackie, T. K. MacLachlan, W. McWilliam, G. T. Mowat, W. A. Searc, H. L. Whittingham, J. M. Young, H. F. Young.

## Medical News.

THE minutes of the evidence taken before the Royal Commission on Lunacy and Mental Disorder have been published in three volumes. The first volume includes the evidence taken between October 7th, 1924, and February 10th, 1925, and the second that between February 24th and December 11th, 1925; these two parts are published at one guinea each net. The third volume contains the index and appendices and is published at 10s. 6d. net. The three volumes may be obtained from H.M. Stationery Office, Adastral House, Kingsway, W.C.2; York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 120, George Street, Edinburgh; or through any bookseller.

AT the quarterly meeting of the Grand Council of the British Empire Cancer Campaign, on October 12th, the chairman of the Finance Committee, Sir Richard Garton, urged the necessity for a sustained effort to obtain adequate funds to meet the increasing calls for assistance in researches into the cause of cancer. Mr. J. P. Lockhart-Mummery, chairman of the Executive Committee, announced that the visits of the members of the Intelligence Committee to the principal American and Continental cancer research laboratories would shortly terminate, and that reports on the most recent work on cancer outside the British Empire would be submitted to the Grand Council. Lieut.-General Sir John Goodwin reported that additional county committees were being formed in all, Durham, Hampshire, Sussex, and Surrey. Sir Jones were elected members of the Grand Council, and Professor Leiper was appointed a member of the Scientific Advisory Committee of the Campaign in place of the late Sir William Loishman.

TICKET holders for the annual service of the Guild of St. Luke, at Westminster Abbey, on October 17th, are requested to be at the West Cloister door not later than 6.15 p.m.

THE fiftieth anniversary dinner of the Cambridge Graduates' Club of St. Bartholomew's Hospital will be held at King Edward VII Rooms, Hotel Victoria, Northumberland Avenue, on Wednesday, November 10th, with Sir Humphry Rolleston, Bt., K.C.B., in the chair. The honorary secretaries are Dr. H. N. Burroughes and Mr. R. M. Vick.

THE annual dinner of past and present students of University College Hospital will be held at the Hotel Cecil, Strand, W.C., on Wednesday, October 27th. Dr. Philip D. Turner will take the chair at 7.30 p.m. Tickets, price 12s. 6d (not including wine), may be obtained from the honorary secretaries, Mr. Gwynno Williams, F.R.C.S., and Dr. F. M. R. Walshe, University College Hospital Medical School.

THE old students' dinner of St. Thomas's Hospital will be held at the Hotel Victoria, Northumberland Avenue, London, on Friday, October 29th. Dr. R. Percy Smith will take the chair at 7.30 p.m.

SIR ARTHUR STANLEY will deliver the presidential address at the meeting of the Incorporated Association of Hospital Officers to be held at 28, Bedford Square, W.C.1, on Wednesday, October 27th, at 7 p.m.

A NEW series of post-graduate classes arranged by the University of Sheffield commences to-day (Friday), October 15th, at 3.30 p.m., when Mr. Brockman lectures on conditions simulating the acute abdomen. The meetings, which take place at the Royal Infirmary, Sheffield, will be continued on succeeding Fridays up to and including Friday, December 17th, at the same hour.

AT the meeting of the Post-Graduate Hostel at the Imperial Hotel, Russell Square, W.C.1, on Tuesday, October 19th, at 9 p.m., Mr. Frank Kidd will open a discussion on pyelonephritis. On Wednesday, October 20th, at 9 p.m., Mr. J. P. Lockhart-Mummery will discuss the prognosis of rectal cancer. All medical practitioners are cordially invited.

THE second of the series of lectures on emergencies in medicine and surgery organized by the Fellowship of Medicine will be delivered by Mr. Joseph Adams on acute appendicitis on October 21st, at 5 p.m., in the lecture hall of the Medical Society, 11, Chandos Street, W., and on the same day a special lecture demonstration on catarrh will be given by Mr. A. Caddy at the Royal Westminster Ophthalmic Hospital at 5 p.m. Both lecture and demonstration are open to members of the medical profession without fee. From November 1st to 13th there will be a course for general practitioners at the Hampstead General Hospital in medicine, surgery, and the specialties; and from November 1st throughout the month a course in venereal diseases at the London Lock Hospital. From November 15th to December 4th a course in gynaecology will be held at the Royal Waterloo Hospital; from November 15th to December 11th a course in dermatology, including pathology if desired, at St. John's Hospital; from November 22nd to December 18th a late afternoon course in

neurology at the West End Hospital for Nervous Diseases; from November 29th to December 11th a course in diseases of the chest at the Victoria Park Hospital; from November 22nd to 27th a course in proctology at St. Mark's Hospital; and from November 22nd a course for practitioners at the London Temperance Hospital. Copies of all syllabuses, the General Course Programme of the Fellowship, and its Journal, may be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

PROFESSOR DR. C. RASCH of Copenhagen will give an address on the effect of light on the skin and skin diseases, at the meeting of the Dermatological Section of the Royal Society of Medicine, 1, Wimpole Street, at 5 p.m., on Thursday, October 21st.

THE annual meeting of the National Association of Insurance Committees will be held at the Hearts of Oak Buildings, Euston Road, N.W.1, on October 21st and 22nd and if necessary October 23rd.

A MATINÉE in aid of the funds of the Tavistock Clinic, the objects of which were described in the Educational Number of September 4th, 1926 (p. 453), will be given, by permission of the Co-optimists, at His Majesty's Theatre on Friday next (October 22nd), at 2.30 p.m. Particulars can be obtained from the Honorary Secretary of the Tavistock Clinic, 51, Tavistock Square, W.C.1.

THE Royal Sanitary Institute will hold its thirty-eighth congress at Hastings next July. The Home Secretary, Sir William Joynton-Hicks, Bt., M.P., will be president. In connexion with it there will be a health exhibition.

UNDER the housing schemes undertaken by the London County Council since the war the number of houses and tenements completed up to the end of September is 14,542 (more than half of them at Becontree), and 4,344 houses and tenements are at present under construction.

AT the September matriculation of the University of London there were 40 successful candidates in the first division and 380 in the second division; 40 took the supplementary certificate in Latin, 5 in mathematics, and one each in Greek, chemistry, mechanics, French, and music.

A PORTABLE x-ray equipment has been designed in the research department, Woolwich, for the examination of aeroplanes. The details and drawings are published in "R.D. Report No. 68" by H.M. Stationery Office, with illustrations and working drawings, and may be of interest to medical radiologists.

DR. A. J. MARTIN, on his departure from Bloxwich, where he practised for thirty-two years, has been presented by his friends and patients with a bookcase, a clock, and a gold cigarette case.

A TABLET to the memory of the late Dr. Claude B. Ker placed in the entrance hall of the Edinburgh City Hospital, Colinton, was unveiled recently by Lady Sleight. The memorial, which is of marble and bronze, bears in relief a portrait of Dr. Ker and an inscription recording that he was superintendent of the hospital from 1897 to 1925.

OWING to the further generosity of Mr. George Backston Browne, the sum of £1,000 has been added to the Memorial Prize Fund of the Harveian Society of London which bears his name. The council of the society will therefore be able to give more valuable prizes for successful essays.

THE fifth Rumanian Congress of Oto-rhino-laryngology will be held at Bucarest, under the presidency of Dr. A. Costiniu, on October 24th and 25th, when the following subjects will be discussed: adenoids in their endocrine aspects, introduced by Koleszar, Vasiliu, and Tataru; deaf-mutism in Rumania, introduced by Daraban. Further information can be obtained from the general secretary, Dr. Mayersohn, 81, Calea Musilov, Bucarest.

COURSES of lectures in German are arranged by the University of Vienna throughout the year in connexion with post-graduate medical instruction. Special international courses are to be held in February, June, September, and November, each lasting a fortnight, and dealing with the recent work in various specialties. Syllabuses of both these courses may be obtained, free of charge, from the Kirs Bureau of the Vienna Faculty of Medicine, Schlüsselgasse 22, Vienna VIII.

DR. CLAUD SCHILLING, professor at the Robert Koch Institute for Infectious Diseases, Berlin, has been appointed a member of the Malaria Commission of the League of Nations.

THE present epidemic of typhoid fever in Hanover is attributed to infection of one of the three waterworks supplying the town. Up to September 17th 1,504 patients, of whom 42 have died, have been admitted to hospitals, but the number of cases nursed at home is not yet known. A severe epidemic of typhoid fever has broken out also at Tokyo, 3,500 cases having been notified in a few days.

A MUNICIPAL institute of electro-radiology has been founded by the city of Paris at 37, Boulevard St. Marcel, with Dr. Zimmern as director. The indigent inhabitants of Paris and the Seine department will be treated free, and other patients will be required to pay fees according to the scale fixed by the municipal council.

A SYMPATHETIC obituary notice of the late Dr. John Thomson appears in the October issue of the *Archives de médecine des enfants* written by the editor, Dr. Jules Comby.

In the four weeks ending August 14th there were 497 deaths due to automobile accidents in 78 large cities in the United States.

DR. MAURICE ROCH, professor of clinical medicine, has been appointed dean of the medical faculty at Geneva.

THE École d'Anthropologie de Paris will celebrate the fiftieth anniversary of its foundation on November 3rd.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the **BRITISH MEDICAL JOURNAL** alone unless the contrary be stated. Contributors who wish notice to be taken of their communications should send them with their names not

Authors desiring REPRINTS of their articles published in the **BRITISH MEDICAL JOURNAL** must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager.

THE TELEPHONE NUMBERS of the British Medical Association and the British Medical Journal are **MUSEUM 9861, 9862, 9863, and 9864** (internal exchange, four lines).

THE TELEGRAPHIC ADDRESSES are:

EDITOR of the **BRITISH MEDICAL JOURNAL**, *Antiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulat Westcent, London.*

MEDICAL SECRETARY, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshengh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

## QUERIES AND ANSWERS.

### LEUCOPLAKIA.

"B. A." asks for suggestions for the treatment of leucoplakia, in a case with no suspicion of syphilitic origin.

### ADRENALINE AND GLYCOSURIA.

"I." asks: What is the nature of the glycosuria produced by the administration of adrenaline, and is its continued administration likely to produce or predispose to diabetes?

### RECURRENT BOILS.

"W. L.-C." (Torquay) asks for suggestions for the treatment of a woman, aged 32, who has been suffering from boils for the last eight years, never being free from them for more than two months. She is of good physique; catamenia and bowels regular; no sugar or albumin. The following remedies have been tried: Extraction of teeth for pyorrhoea, vaccines, calcium, yeast, injections of manganese, and stannoxyl—and in desperation, charlatan medicines.

### THE "STRANGE FEVER" OF 1558.

DR. W. JOHNSON SMYTH (Bournemouth) writes: In Dr. Sydney Carter's *History of the English Church and the Reformation* (Longmans, Green and Co.) it is recorded on page 185 that towards the close of Queen Mary's reign, in 1558, no fewer than thirteen bishops and numbers of clergy were carried off by a fever raging at the time. It would be interesting to know if our medical historians can enlighten us as to the nature of this fever—presumably it was a pandemic of some kind. Was it influenza or ague?

\* According to Creighton's *History of Epidemics in Britain*, 1558-59 was a deadly period for all Europe, the diseases being of the types of dysentery, typhus, and influenza. On the Continent 1557 was remarkable for a widely prevalent "pestiferous and contagious sickness." In England "strange agues and fevers" prevailed that year, and with greater severity in 1553, carrying off many of the wealthiest men. The widespread sickness of 1557-58 has been commonly grouped under "influenza," but in using this term Creighton adds that it is "at best a generic



name, and need not commit us to any nosological definition." Again, the term "agne," so often used at that time, is, he says, no more decisive for the nosological character than the term "influenza"; it meant originally a sharp fever (*febris acuta*). In regard to mortality among the clergy, he quotes Stow's statement that in the harvest of 1558 "quarant agnes continued in like manner, or more vehemently than they had done the last year passed, wherethrough died many old people and specially priests."

#### INCOME TAX. Cash Basis.

"W. R." purchased a practice many years ago and in the early years paid income tax on the full earning value of the practice, which was, of course, less than the cash value. He has now retired, "and is asked to pay on what he receives."

"\*." We agree that this is incorrect. As from the date he ceased to carry on the practice his income tax liability as a practitioner ceased and he is not liable to tax, in spite of the fact that he is still collecting book debts. If it is contended that these should be thrown back into the earlier years when he was practising, the answer is that receipts should also be thrown back out of those years, and so on, until the ultimate adjustment is reached in the years when he paid on more than his receipts.

#### LETTERS, NOTES, ETC.

##### SUNBURN AND MOSQUITOS.

MANY a summer holiday in the mountains has been spoilt by mosquitos and other biting flies, and by sunburn, which is apt to become a serious matter with some people, especially blondes. Professor J. A. NIXON of Bristol recently told us of some precautions which he had found effective in the Pyrenees this summer. He writes:

My colleague Dr. A. T. Todd suggested that quinine might prevent sunburn, and Mr. E. Lloyd (assistant pharmacist at the Bristol Royal Infirmary) told me that cod-liver oil would keep off mosquitos and other biting flies. The smell of the cod-liver oil may at first be disagreeable, but one gets used to it in a few minutes, and the comfort of being able to go through the Pyrenean forests unhitten and unattended by the usual host of flies is enough to outweigh the disadvantages. Freedom from sunburn added greatly to our enjoyment of the mountains. I had previously seen how quinine protected from the sun's rays in a case of pellagra under Dr. Todd's care. For travelling we packed the collapsible tube containing the ointment inside one of our climbing boots, where it could do no harm if it leaked. The formula is: Quinine acid hydrochloride, 5 parts (dissolved in 2 of water); anhydrous wool fat, 70 parts; cod-liver oil, 25 parts; "lanone," q.s. The quinine is dissolved in water and added to the wool fat, next the cod-liver oil is mixed with it, and finally "lanone" (a violet scent) is put in to disguise the smell of the cod-liver oil.

We have been informed by another friend that cod-liver oil is as effective for oiling the surface of small ponds, water-butts, and so on, to control the development of mosquito larvae as paraffin, and does not make the water distasteful to cattle.

##### JAMES GRAHAM.

DR. GEORGE PERNET (London, W.C.) writes: In the valuable and entertaining quack number published by the BRITISH MEDICAL JOURNAL in 1911 there is an illustration (page 1271) purporting to represent James Graham, the quack, on Adelphi Terrace. But in a little book with the title *Edinburgh Life in the Eighteenth Century* (selected and arranged from "Captain Topham's Letters"; a new edition, but without a date; William Brown, Edinburgh), the same picture appears as "Crossing the North Bridge in a high wind." The stove parapet of the bridge fits in with the North Bridge of And Reekie; Adelphi Terrace is guarded by railings. These are shown in an old print of Adelphi Terrace by Carey in the possession of the Savage Club.

##### JOHN GRAUNT.

"E. M. L." writes: In "Nova et Vetera" in the JOURNAL of October 9th, on "The Bills of Mortality," it was erroneously stated on p. 645 that Graunt's book on this subject was not published till 1665, yet on p. 646 it is correctly stated that Pepya bought a copy in 1662. There were four editions or impressions of the *Observations* published between 1662 and 1665, all of which seem to have contained the epistle dedicatory to Lord Truro (John Robartes, afterwards Viscount Bandon, Earl of Radnor), which was dated January 22, 1662. The first edition was published by Samuel Smith, and the second by John Graunt, yet there have not been wanting those who attributed the authorship to Graunt's friend, Sir William Petty. The whole question of the authorship has been exhaustively dealt with by Dr. C. H. Hull of Cornell University in his book, *The Economic Writings of Sir William Petty* (Cambridge University Press, 1899); he came to the conclusion that Graunt was the author of the *Observations*. A strange contradiction is to be found in the second epistle dedicatory to Graunt's book addressed to Sir Robert Moray, President of the Royal Society, in which Graunt states, referring to that society,

"altho I am none of your number, nor have the least ambition to be so, otherwise then (sic) to become able for your service." Yet, on the title page of the same edition (published in 1665), he is described as "John Graunt, Fellow of the Royal Society." Moreover, his name appears on the second page of signatures of the persons who, on December 5th, 1660, resolved to form a society for promoting experimental philosophy, together with those of John Driden (sic), Francis Glisson, the Duke of Buckingham, and other distinguished persons (see "The Signatures in the First Journal Book, etc., with a Preface by Sir Archibald Geikie"), and he was one of the original Fellows elected (May 20th, 1663).

##### ERADICATION OF FLEAS FROM ROOMS.

DR. RAWEL CHAND SURI (Rawalpindi), in reply to the inquiry "P. S. H." (July 31st, p. 235) about the extermination of fleas! old buildings, suggests that burning cresol in the rooms with all apertures closed would be effective. A quantity of 3 oz. required for a room 10 ft. in length, height, and width. As an alternative he advises spraying the room thrice a day for two or three days with "Flit," an insecticide prepared by the Standard Oil Company.

##### CALENDAR REFORM.

FOLLOWING the example of Julius Caesar and Pope Gregory XIII the League of Nations is setting about the reform of the calendar. The recent Assembly received a report on the subject from a committee of experts, chiefly representative of academies and observatories, which had been set up by the League's advisory commission on communications and transit. This committee has ignored the more ambitious schemes of reform suggested. It is desired in some quarters that the year should begin at what is now December 22nd, so that the astronomical and civil year may correspond. The committee felt, however, that this would produce a certain scientific satisfaction, it would involve very great disturbance, and seriously affect comparative economic and social statistics. The committee has therefore confined its attention to methods of securing as much equality as possible in the divisions of the year. The fact that a month may have anything from twenty-eight to thirty-one days is unfortunate from a statistical point of view, and makes constant adjustment necessary in insurance and interest calculations, I mention no others. One method which is favoured by many commercial concerns, including the British railway companies, is to have a year of thirteen months, each month having twenty-eight days; but this, while very convenient for monthly statistics, would interfere unduly with quarterly and half-yearly reckoning and, moreover, would make a comparison of past and future dates extremely difficult. The committee favours the plan of making each quarter consist of two months of thirty days and a third month of thirty-one days. This would make all the quarters correspond in respect to the days of the week. For example, if January 1st was on a Sunday, February 1st would be on a Tuesday, and March 1st on a Thursday, and all the ensuing months would follow the same order. All these systems, of course, leave out of account one odd day (in leap year two days) and the question where the odd day shall be intercalated is one on which there are many opinions. The majority of opinions would make the odd day the first day of the year, and place it outside the scheme of weeks and months. The committee has also addressed itself to the question of fixing the date of Easter. At present the date of Easter may vary within a period of thirty-five days, which is inconvenient in many respects, leading for instance, to inequality in university terms and in law sittings. It appears from the committee's investigations that no strong objection to change would be raised in any important ecclesiastical quarter, though the Roman Catholic hierarchy would need to be assured that there was a universal advantage before sanctioning such a departure from tradition. The date most convenient for a stabilized Easter is held by the committee to be the second Sunday of April or, better still, to avoid occasional clashing with other festivals, the Sunday following the second Saturday. The report of the committee was blessed in an absent-minded way by the Assembly, and was remitted to the various governments with a suggestion that national committees of inquiry should be set up, representing the various commercial and other interests concerned, and that public opinion should be elicited with a view to arriving at some generally acceptable policy, for which the recommendations of this committee may serve as a starting-point.

##### AN UNDELIVERED BOOK.

A CORRESPONDENT in Southport informs us that on August 23rd he paid 7s. 6d. for a book to a man who represented that he was selling books on behalf of the Oxford Press. The book has not been received and letters to the address given on the receipt (W. P. Varley, 54, Faleon Avenue, Edinburgh) have not been acknowledged. Our correspondent offers no defence for paying the money before receiving the book, but thinks that his experience may serve as a warning to others.

##### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 42, 43, 44, 45, 48, and 49 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 46 and 47.

A short summary of vacant posts notified in the advertisement column appears in the Supplement at page 175.

*The Harveian Oration*  
ON  
**THE DEBT OF MEDICINE TO THE  
EXPERIMENTAL METHOD  
OF HARVEY.**

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS  
ON OCTOBER 18TH, 1926,  
BY

SIR JOHN ROSE BRADFORD, K.C.M.G., F.R.C.P.,  
M.D., D.Sc., F.R.S.

SIR HUMPHRY ROLLESTON and Fellows of the College: I have, as a first duty, to tender to you, Sir, my thanks for entrusting to me the honourable office of delivering, in accordance with the wishes of Harvey, the annual oration commemorating the benefactors of this College. It is a striking tribute to the greatness of Harvey that notwithstanding the lapse of time and notwithstanding the great benefactions received by this College from other pious founders from remote to very recent times, this oration has become more and more a tribute to the unparalleled services rendered by William Harvey, not merely to this College, but to mankind. This result is, no doubt, in part dependent upon the greatness and brilliance of Harvey's discoveries as to the existence of the circulation, and the unravelling of some of the mystery surrounding the heart beat, but it is due still more to the great conceptions he formed as to the proper methods to follow in attempting to understand the facts of Nature. It is probable that it is no exaggeration to say that the most valuable benefaction this College has ever received is Harvey's exhortation to the Fellows and Members of the College to search and study out the secrets of Nature by way of experiment, coupled with the example afforded by his own life's work.

Harvey, like most great men, was of so modest a character that he had little idea of the great place he himself would occupy in the history of science, and this exhortation of his, together with his desire that the Fellows of his beloved College should continue in mutual love and affection amongst themselves, was doubtless only an expression of his wishes for the successful development of this College, and thus indirectly of medicine as a whole.

Successive Harveian orators during the last 200 years have striven to honour his memory and his services in a series of orations dealing with different aspects of his life and work, or with the progress of scientific knowledge since his day, and the influence of this on mankind and on civilization. Scholars have brought before us the state of medical knowledge in his time, and have also vividly portrayed the mode of his life and the conditions under which he worked. We know, thanks to their labours, what manner of man he was, and what was the influence on him of the disturbed time in which he lived. These are matters of perennial interest, and his example of philosophic calm under conditions of great national anxiety cannot fail to be an example to all for all time.

Harvey's life work illustrates, in a remarkable manner, the many-sided character of medicine when considered as a whole, and how the men who promote its advance are often men of wide attainments in many branches of knowledge. His greatness is shown by the fact that, notwithstanding the conditions prevalent in his time, he was able to so free himself from the traditions of the past and the influence of authority and dogma as to lay the foundations of modern science by his insistence on the fundamental importance of experiment and of accuracy of observation. Different sciences afford different opportunities for the use of experiment as a means of discovery, but the founder of the science of physiology had, in his field of study, unlimited scope for this method of advance, as prior to Harvey but little had really been effected by experiment, although it had been used by many, even in ancient times. We reverence Harvey, not only for the foundation of physiology as a science and for showing how its progress is

to be effected, but, as Fellows of this College of Physicians, for making plain the intimate relationship which must exist between medicine, both as a science and as an art, and physiology. Harvey combined in himself the physician and the physiologist. This, with the lapse of time and the progress of knowledge, has become increasingly difficult, and this difficulty is one common, to a greater or less extent, to all branches of knowledge, but more especially when a field of work includes a science and an art. There is some danger of a catastrophe akin to that of the Tower of Babel involving the more narrow specialists of these later days, owing to the rapid development of the new languages required to describe the results achieved in some departments of knowledge.

Although the great developments of knowledge make it more and more difficult for any one individual to have anything approaching complete and detailed information even in one branch, and still more so in more than one, yet there should be, on the other hand, less difficulty in acquiring a fuller grasp of fundamental principles. After all, the magnitude of any scientific discovery is to be measured rather by its influence on the genesis of these fundamental principles, often formulated as so-called laws, than on the mere solution of the particular problem investigated. The so-called physical sciences have had in the past an advantage in this respect over the biological; in that the mathematician, the astronomer, the physicist, and the chemist have had more in common than the morphologist, the physiologist, and the pathologist. But the progress of knowledge is gradually effecting a change in this respect, and it is becoming more and more easy for the followers of the different sides of biology to meet on common ground. It is not only becoming increasingly difficult to draw a hard and fast line between the problems investigated by the physiologist and those of the pathologist, but even the morphologist, whether zoological or botanical, is now pursuing with zeal, purely physiological methods in order to further his science, even on its morphological side. Harvey, as a physiologist, would have rejoiced at these developments if he had known that the colour of an animal and even its form and mass, to say nothing of its sex, were under the influence of, and capable of being modified by, the functional activity of certain glands.

Harvey was, as just stated, a physiologist and a physician who practised his profession, and was daily face to face with urgent and distressing problems, as we all are. We all agree that our improved methods of coping with these problems are ultimately dependent upon his great discovery; and it is a trite observation that medicine must be founded on physiology, and that the study of healthy processes must precede that of morbid ones.

But the debt of the art of medicine to the science of physiology is greater than this, and the value of physiology to medicine is not to be measured merely by the direct practical utility, great as it may be and has been, of individual physiological discoveries, even when these are, like Harvey's, of a truly epoch-making character. The art of medicine must of necessity be reared as a superstructure on the science of medicine unless it is to be indistinguishable from mere empiricism; and the science of medicine, like other sciences, can only be advanced by observation and by experiment. When we reflect on what has been done in the past by the observation of our predecessors, from the most remote to recent times, we cannot fail to record our admiration of the great intellectual qualities that these observers must have possessed to have enabled them to achieve the results obtained. The knowledge of the natural history of disease is a subject of vast importance to the art of medicine, and one that can only be acquired by observation. Nevertheless, as the late Lord Moulton has well said, when we are reduced to observation, science crawls. If we are to treat a disease successfully we must know a great deal more about it than its natural history—that is, its course when it is allowed to pursue its career unchecked. Experiment as a method of furthering the progress of any given science is capable of achieving great results, and—again to quote Lord Moulton—"As soon as you can bring experiment to bear upon a subject you are free, but as long as you can merely observe, your progress is slow. The reason is that experiment is like

cross-examination: you can put the question you want, and Nature always answers it."

Experiment, however, is not equally applicable to all sciences, and from the circumstances it is obvious that in medicine its scope must necessarily be limited. This is, doubtless, one of the reasons why the progress of the science of medicine has been slower than we could wish, but another is to be found in the profound complexity of the problems that have to be solved. This complexity is not only obvious in the consideration of broad general questions, such as the nature and causes of disease, or of individual diseases, but applies often to our daily work of the mere recognition of the nature of the malady in an individual patient. We are often baffled by the complexity of this, and nothing is more common in the experience of practitioners of our art than to find suddenly that what seems simple and obvious is by no means so. The complexity of the problems daily before us is apt to react on the mind of the physician and produce, even in this rather materialistic age, a tendency to regard the phenomena of life, and especially of disease, in an individual, as scarcely subject to the same rigid laws of cause and effect that we all recognize as binding in the physical world. If this belief, even in a modified and attenuated form, is once entertained, it causes a looseness of thought that is most inimical to the real progress of knowledge in medicine; and it is here that the study of physiology and the work of Harvey have rendered the greatest service to medicine. Harvey, by experimental work, by clear thinking, and by accurate observation, laid the foundations of physiology as a science, and those who have followed in his path have continually added to his foundations, so that now no one questions its right to rank as a science, and no one disputes the fundamental proposition that in physiology, as in physics, like causes produce like results. If the excitation of the vagus nerve causes stoppage of the beat of the heart in one case, and acceleration in another, or possibly in the same animal at another time, it is not, as Magendie thought, due to the variability of vital phenomena as such, but is due, as Bernard, the great exponent of "determinisme," taught, to the conditions not being really the same. It is perhaps superfluous to mention such an attitude of mind as regards physiology, but possibly, even now, we are not altogether free from such a way of looking at things in human medicine, and Magendie's way of thinking has, perhaps, some followers. It is, of course, much more simple to render the conditions the same in physiological observations than in medicine, although even in physiology it is often difficult, as the discordant results of many competent observers show. In human medicine the difficulties are infinitely greater, and hence we should regard the results already achieved as a most remarkable monument to the acumen of clinicians, who must, in order to have obtained the results we are familiar with, have been possessed of exceptionally sound scientific methods of observation.

The history of the progress of our knowledge of medicine affords countless instances of the extreme accuracy of observation possessed by the foremost clinicians of the day, but although their observations were often excellent and their descriptions leave little to be added to, their explanations of the observed facts were not of the same value. Variations observed in the course of maladies were often explained in an artificial and non-scientific manner, owing to the want of appreciation of this law that like causes produce like results, and that if the results are different in apparently similar cases, the real explanation is, not some variability on the part of Nature, but that in reality, although the cases seem similar, there is some hitherto undiscovered difference. One type of thinking closes the door to further work and real progress; the other is one of the most fertile causes of discovery. Shrewd clinicians observed, long ago, that some cases of typhoid fever lasted four weeks, others were said to abort in two weeks; hence it was inevitable that a certain vagueness and uncertainty of belief should be entertained with regard to the action of the virus of this disease; and it is difficult not to think that such beliefs react on the mind and influence profoundly our outlook on problems that beset us, and on our methods

of coping with them. The progress of inquiry shows that the differences in the duration of the febrile period of typhoid fever are, at any rate sometimes, due to the differences in the organisms causing the disease, and we now talk of the enteric group, including both typhoid and paratyphoid bacilli. It is quite true that this increase of knowledge does not settle the problem, as there still remains the question of the relation and origin of the paratyphoid group of organisms; but this progress of knowledge has had the effect of demonstrating that the duration of so-called typhoid fever is not a matter, so to speak, of chance, but depends—or may depend—on the specific nature of the organism causing the illness. The fact that one organism causes an illness of four weeks' duration, and another quite distinct but allied one causes an illness of two weeks' duration, is a very different matter, from the point of view of scientific medicine, from a statement that the illness of typhoid fever may last either four weeks or two weeks. The attitude of mind produced by one belief is calculated to cause a certain bewilderment of feeling, and one both of hopelessness and helplessness of arriving at any definite attainment; the other encourages the inquirer to hope that long-continued patient work may reveal, at any rate in part, the mystery, and show that the phenomena of disease, complex as they are, are nevertheless amenable to the same laws and conditions as those governing the biological and physical worlds. Further, the apparent variability of disease becomes, instead of an impediment, a spur to further inquiry and a stimulus to research, and such inquiries are often rewarded by discoveries that add a definiteness to our knowledge that is of the greatest possible value. It would not have been possible for this attitude of mind to be developed in relation to the problems of medicine unless the study of physiology, and of vital processes generally, had been placed on the surest foundations by Harvey by the use of the experimental method, as it is this method, in its many developments, that has enabled us to see that in living things like causes produce like results, and that the exceptions are apparent only, not real.

Further, in the past there has been much theorizing, both in physiology and in medicine, often on very insufficient data. The experimental method has afforded a very certain and conclusive test of the inaccuracy of much work of this nature, and such results, important as they are, are, nevertheless, of a negative character, and have sometimes led to the belief that there is some antagonism between experimental inquiry on the one hand, and the result of observational methods on the other. Doubtless much loose thinking and many erroneous deductions may occur as the result of the direct and immediate transference of experimental animal results to the explanation of the phenomena of human disease, but this, again, arises from neglect of the fundamental principle that the conditions in the two cases are not alike, and also that we constantly think the phenomena of disease to be much simpler than they really are, and are perpetually hankering after cut-and-dried explanations of what are, in reality, exceedingly complex phenomena. Far be it from me to minimize the direct and immediate gains to medical knowledge and to medical practice that have resulted from individual discoveries in experimental physiology, as, for example, the notable discoveries as to the functions of the thyroid and its secretion, and many others. Harveyian orators have dealt with these in such an able fashion that it is superfluous to dwell on them, and I would urge to-day that perhaps of even greater importance is what I may call the general effect on medicine of the development of physiology as an exact science, and the influence that this will have, in the course of time, in making the science of medicine as exact and as worthy to be deemed a science as any other branch of natural knowledge. Clinical observation, when carried out by a great mind and in strict accordance with scientific method, has achieved most striking results—results which are entitled to our highest admiration when, as already stated, we consider the extreme difficulty of the problems and the scanty means at our command to solve them. Often, however, the results, great as they are and accurate as they are, lack the precision of detail that sometimes the experimental method is capable of supplying, and then

the experimental method is responsible for the completion of that which has been truly founded by clinical observation.

A striking illustration of this is afforded by the history of the discovery of what is known, shortly, as localization of function in the cerebral cortex. Here the fundamental work was done by that great clinician and profound thinker Hughlings Jackson; and when we reflect that by the study of a very limited number of cases of hemiplegia and of a series of cases of fits, and by the careful correlation of the phenomena observed during life with the lesions found after death, he was able to arrive at the conclusion that voluntary movements were represented in a certain area of the cortex, we have a magnificent example of the accurate and far-reaching deductions that may be drawn by a master mind. Nevertheless, even in such a case as this, the subsequent experimental work was able to give a precision and supply a mass of detail that greatly enhanced the original fundamental discovery. So much is this the case that many came to think that cerebral localization had been discovered solely by the experimental method, whereas the fundamental facts were really the outcome of clinical observation.

The greatness of Jackson's conceptions is well seen in the fact that he recognized that cortical localization was concerned with the representation of movements, and not of muscles, and, indeed, with a special kind of movement—namely, voluntary movement. In the earlier days of experimental work on this subject some confusion was introduced by certain observers falling into the error of looking for so-called centres for the representation of muscles; and it was only later that inhibition of antagonistic muscles, as well as contraction of other muscles, was also recognized as a matter of cortical representation. Anyone who has actually seen the movements called forth by the electrical excitation of the cerebral cortex will experience quite different mental impressions from those he will have felt by watching an epileptiform seizure, perhaps confirmed subsequently by seeing the position and nature of the lesion responsible for it. In the one case there is a definiteness and certainty that in the other is apt to be replaced, at the best, by a feeling of high probability. And yet, if we are to succeed in our endeavours to cope with the facts of nature, we must aim at possessing certain, and not probable, knowledge. It may be that this is often, in our work at present, unattainable, but it is the great thing to aim for in all our work. Perhaps some of our mistakes in the practice of our art arise from not clearly differentiating between what we really know and what is only probable; and sometimes, perhaps, we speak with an apparent certainty about matters that are not, in our present state of knowledge, really as certain as we would like them to be. The touchstone of the experimental method of Harvey is a useful corrective whenever and wherever it may be applied to questions of this nature. The modern physiology of the central nervous system, investigated by the experimental method, affords a striking example of the extraordinary precision of knowledge that may be obtained by the use of this method, and, thanks to it, a flood of light has been thrown on the complex problems of the mechanisms involved in posture, equilibration, co-ordination of movement, and perhaps on the still more complex mechanisms associated with the highest functions of the brain. Nevertheless, in an oration associated with the name of Harvey it may perhaps be possible to illustrate the principles of the profound influence exerted by experimental physiology on medicine by seeking an example in that branch of physiology so closely associated with Harvey—namely, the beat of the heart.

I am not so much concerned to-day with giving a record of individually important discoveries that have been made from time to time whereby our knowledge has been increased and our power of recognizing, and treating with some success, individual diseases, has been extended, but rather with the nature of the conceptions we form of the phenomena of heart disease as we see them clinically in the light of the exact modern physiology of the heart, as revealed by the use of the experimental method of Harvey.

The beat of the heart, from the earliest times to the

present, has been looked upon as emblematic of life, by poets, philosophers, and thinkers, and has always had an element of mystery and awe attached to it. No physician will deny that in disease there is much of apparent mystery in what may be called the natural history, or, if you will, the clinical course, of heart disease; further, that the clinical picture presented by individual cases, even where relatively simple lesions are present, is one with much individual variety, that the phenomena are complex and difficult to analyse, and hence there has been much uncertainty of opinion, both in diagnosis and in treatment. Such differences of opinion existed, not only with reference to questions of interpretation or explanation, but even in reference to what we should now regard as mere questions of fact. There must be some present here to-day who will remember a controversy as to the actual time of occurrence of certain well known murmurs associated with a common valvular disease. When the methods available for clinical observation led to such remarkable differences of opinion among physicians of recognized skill and ability, it is not strange that many keen and able minds should have felt that the problems of medicine were so difficult and so complex that it was beyond their power to really solve them with the means at their disposal; and this attitude of mind is one very inimical to the progress of our science and our art. The method of Harvey of seeking the secrets of nature by way of experiment shed a flood of light on the problems that had baffled those who confined their methods to observation. Not only was this the case, but what is of supreme importance to recognize is the fact that many of the men who in recent times remodelled our conception of the nature of cardiac disease by the fundamental character of their discoveries of the nature of the cardiac beat were men who devoted their lives to the investigation of the facts of nature with no other object in view than that of adding to knowledge for its own sake. Great as their discoveries were, they had no idea of their practical bearing on heart disease, and some of them, indeed, were men who had no knowledge of heart disease as such, and never undertook their work with any idea of adding to our knowledge of heart disease. Further, the discoveries of the pure clinicians, remarkable as they were for the acuteness of their observation, were largely due to making use of the methods and apparatus of the laboratory in the investigation of clinical problems. The polygraph and the electro-cardiogram gave certain and accurate information where previously other methods of observation had led only to the dissemination of views, explanations, and theories of varying degrees of probability. It is one thing to be able to actually demonstrate beyond cavil that the auricle of the human heart in a living patient is in the state known to us as that of fibrillation, and another to talk of lack or failure of compensation, with no clear mental picture of the meaning of the words used. Anyone who has seen a fibrillating auricle in the living animal in the laboratory has a mental picture that is not easily forgotten—a picture of a singularly concrete and definite character, with an element of reality about it that cannot fail to be a useful reminder to him when he stands at the bedside of a patient suffering from the effects of this condition. It is, of course, quite true that the acute clinical observers of the past had recognized the clinical picture produced by this condition, and had described quite accurately some of its manifestations. We can but admire their acumen, but they were necessarily unable, owing to the lack of physiological knowledge and the want of accurate methods, to determine the true cause of the symptoms and to correlate the lesion with its results. Hence the inevitable temptation, to some minds, to speculate and theorize vaguely instead of confining themselves to mere observation, and hence the further elaboration of more and more speculation and ultimately much confusion as to what was speculation and what was firmly established by observation. This has often been most harmful to the real progress of medicine, owing to the development of loose methods of reasoning, and the frequent impossibility of bringing the matter in dispute to a decision by the crucial method of experiment.

The history of the development of our knowledge of fibrillation is singularly interesting as affording a striking example of the experimental method having substituted



17th, 1915, and December 24th, 1917, and received two decorations—the Military Cross on February 18th, 1915 (when he was one of the earliest recipients of that order, founded on January 1st, 1915), and the D.S.O. on January 1st, 1918.

Major Harold Stewart Dickson, R.A.M.C., died of pneumonia in the nursing home at Srinagar, Kashmir, on August 31st, aged 46. He was born on April 16th, 1880, and was educated at Bart's, taking the M.R.C.S. and L.R.C.P. Lond. in 1905. He entered the R.A.M.C. in July, 1909, received a brevet majority in June, 1919, and became major less than two months afterwards—on July 27th, 1919. He was placed on temporary half-pay, on account of ill health, on January 7th, 1921, but rejoined within a year. He served in the war of 1914-18, gaining his brevet as major.

## Medico-Legal.

### A DANGEROUS DRUGS PROSECUTION.

At Marlborough Street Police Court, London, on October 8th, Mr. Cancellor, the stipendiary magistrate, heard summonses preferred by the Director of Public Prosecutions against John Kynaston, whose address was given as Langham House, Regent Street, W., for aiding, abetting, counselling, and procuring Rowland Pawsey to attempt to obtain possession of a dangerous drug—powdered opium—contrary to the provisions of the Dangerous Drugs Act, 1920, and, further, under the Medical Act, 1858, with falsely describing himself as a recognized licentiate in medicine and surgery by the use of the description "M.R.C.S., L.R.C.P. Lond."

Mr. Vincent Evans, for the Director of Public Prosecutions, said the defendant treated a Mr. Pawsey for catarrh, and, in furtherance of the treatment, handed him a prescription. At the top of the prescription were the words "Late R.A.M.C., L.R.C.P., M.R.C.S.," and at the bottom the defendant had signed his name, adding, "Lieutenant-Colonel R.A.M.C., retired, M.R.C.S., L.R.C.P. Lond." As a matter of fact in 1922 his name was removed from the *Medical Register* by the General Medical Council, and his name was subsequently removed from the registers of the two Colleges in question.

The defendant objected to being referred to as "Mr. Kynaston," saying he was a retired Lieutenant-colonel of the R.A.M.C.

Rowland Pawsey, registrar of marriages, Marylebone, cross-examined by the defendant, said he did not ask the defendant to give him a dangerous drug. The witness was aware that the defendant had had a dispute with the General Medical Council, and gathered further that the defendant was no longer on the *Medical Register*; witness inferred that he had been removed. The defendant had not entered into a conspiracy to "aid, abet, counsel, or procure" the witness to get the drug.

C. Siggers, a chemist of Abbeville Road, said that Mr. Pawsey handed him the prescription. Cross-examined by the defendant, witness said he had no reason to suppose that Mr. Pawsey required the drug for an improper purpose, but, after making inquiries, witness refused to make up the prescription because the defendant's name was not on the *Medical Register*.

The defendant urged that there was no case whatever to go before a jury. On the first summons he elected to go for trial. The hearing was adjourned for further argument.

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

THE third examination for medical and surgical degrees will be held from Tuesday, December 14th, to Thursday, December 16th. Part I (Surgery, Midwifery, and Gynaecology) will be held on December 14th, and Part II (Principles and Practice of Pathology, and Pharmacology) on December 15th and 16th. The names of candidates for the third M.B. examination and for the M.Chir. examination should be sent to the Registry on or before October 26th.

### UNIVERSITY OF SHEFFIELD.

Dr. J. H. BLAKELOCK, M.Sc., M.B., Ch.B. (Sheff.), has been appointed to the post of assistant bacteriologist.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE annual meeting of Fellows and Members will take place at the College, Lincoln's Inn Fields, on Thursday, November 18th, at 3 p.m.

Copies of the report to be presented can be obtained by any Fellow and Member on application to the Secretary, from whom copies of the agenda (to be issued on or after November 12th) can also be obtained.

### ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE following, after examination, have been admitted as Fellows of the Royal Faculty of Physicians and Surgeons of Glasgow:

A. Barr, A. F. Christie	D. Blakely, J. M. D. MacFarlane
F. G. McSwell, H. L. Whittingham, J. M. Young, R. F. Young.	G. T. Mowat, W. A.

## Medical News.

THE minutes of the evidence taken before the Royal Commission on Lunacy and Mental Disorder have been published in three volumes. The first volume includes the evidence taken between October 7th, 1924, and February 10th, 1925, and the second that between February 24th and December 11th, 1925; these two parts are published at one guinea each net. The third volume contains the index and appendices and is published at 10s. 6d. net. The three volumes may be obtained from H.M. Stationery Office, Adastral House, Kingsway, W.C.2; York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 120, George Street, Edinburgh; or through any bookseller.

At the quarterly meeting of the Grand Council of the British Empire Cancer Campaign, on October 12th, the chairman of the Finance Committee, Sir Richard Garton, urged the necessity for a sustained effort to obtain adequate funds to meet the increasing calls for assistance in researches into the cause of cancer. Mr. J. P. Lockhart-Mummery, chairman of the Executive Committee, announced that the visits of the members of the Intelligence Committee to the principal American and Continental cancer research laboratories would shortly terminate, and that reports on the most recent work on cancer outside the British Empire would be submitted to the Grand Council. Lieut.-General Sir John Goodwin reported that additional county committees were being formed in Buckinghamshire, Berkshire, Cornwall, Durham, Hampshire, Lincoln, Norfolk, Nottingham, Sussex, and Surrey. Sir William Milligan and Sir Robert Jones were elected members of the Grand Council, and Professor Hesper was appointed a member of the Scientific Advisory Committee of the Campaign in place of the late Sir William Leishman.

TICKET holders for the annual service of the Guild of St. Luke, at Westminster Abbey, on October 17th, are requested to be at the West Cloister door not later than 6.15 p.m.

THE fiftieth anniversary dinner of the Cambridge Graduates' Club of St. Bartholomew's Hospital will be held at King Edward VII Rooms, Hotel Victoria, Northumberland Avenue, on Wednesday, November 10th, with Sir Humphry Rolleston, Bt., K.C.B., in the chair. The honorary secretaries are Dr. H. N. Burroughes and Mr. R. M. Vick.

THE annual dinner of past and present students of University College Hospital will be held at the Hotel Cecil, Strand, W.C., on Wednesday, October 27th. Dr. Philip D. Turner, will take the chair at 7.30 p.m. Tickets, price 12s. 6d. (not including wine), may be obtained from the honorary secretaries, Mr. Gwynne Williams, F.R.C.S., and Dr. F. M. R. Walshe, University College Hospital Medical School.

THE old students' dinner of St. Thomas's Hospital will be held at the Hotel Victoria, Northumberland Avenue, London, on Friday, October 29th. Dr. R. Percy Smith will take the chair at 7.30 p.m.

SIR ARTHUR STANLEY will deliver the presidential address at the meeting of the Incorporated Association of Hospital Officers to be held at 28, Bedford Square, W.C.1, on Wednesday, October 27th, at 7 p.m.

A NEW series of post-graduate clinics arranged by the University of Sheffield commences to-day (Friday), October 15th, at 3.30 p.m., when Mr. Brodman lectures on conditions simulating the acute abdomen. The meetings, which take place at the Royal Infirmary, Sheffield, will be continued on succeeding Fridays up to and including Friday, December 17th, at the same hour.

At the meeting of the Post-Graduate Hostel at the Imperial Hotel, Russell Square, W.C.1, on Tuesday, October 19th, at 9 p.m., Mr. Frank Kidd will open a discussion on pyelonephritis. On Wednesday, October 20th, at 9 p.m., Mr. J. P. Lockhart-Mummery will discuss the prognosis of rectal cancer. All medical practitioners are cordially invited.

THE second of the series of lectures on emergencies in medicine and surgery organized by the Fellowship of Medicine will be delivered by Mr. Joseph Adams on acute appendicitis on October 21st, at 5 p.m., in the lecture hall of the Medical Society, 11, Chandos Street, W., and on the same day a special lecture demonstration on cataract will be given by Mr. A. Caddy at the Royal Westminster Ophthalmic Hospital at 5 p.m. Both lecture and demonstration are open to members of the medical profession without fee. From November 1st to 13th there will be a course for general practitioners at the Hampstead General Hospital in medicine, surgery, and the specialties; and from November 1st throughout the month a course in venereal diseases at the London Lock Hospital. From November 15th to December 4th a course in gynaecology will be held at the Royal Waterloo Hospital; from November 15th to December 11th a course in dermatology, including pathology if desired, at St. John's Hospital; from November 22nd to December 18th a late afternoon course in



neurology at the West End Hospital for Nervous Diseases; from November 29th to December 11th a course in diseases of the chest at the Victoria Park Hospital; from November 22nd to 27th a course in proctology at St. Mark's Hospital; and from November 22nd a course for practitioners at the London Temperance Hospital. Copies of all syllabuses, the General Course Programme of the Fellowship, and its Journal, may be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

PROFESSOR DR. C. RASCH of Copenhagen will give an address on the effect of light on the skin and skin diseases, at the meeting of the Dermatological Section of the Royal Society of Medicine, 1, Wimpole Street, at 5 p.m., on Thursday, October 21st.

THE annual meeting of the National Association of Insurance Committees will be held at the Hearts of Oak Buildings, Euston Road, N.W.1, on October 21st and 22nd and if necessary October 23rd.

A MATINEE in aid of the funds of the Tavistock Clinic, the objects of which were described in the Educational Number of September 4th, 1926 (p. 453), will be given, by permission of the Co-optimists, at His Majesty's Theatre on Friday next (October 22nd), at 2.30 p.m. Particulars can be obtained from the Honorary Secretary of the Tavistock Clinic, 51, Tavistock Square, W.C.1.

THE Royal Sanitary Institute will hold its thirty-eighth congress at Hastings next July. The Hon. Secretary, Sir William Joynton-Hicks, Bt., M.P., will be president. In connexion with it there will be a health exhibition.

UNDER the housing schemes undertaken by the London County Council since the war the number of houses and tenements completed up to the end of September is 14,542 (more than half of them at Becontree), and 4,344 houses and tenements are at present under construction.

AT the September matriculation of the University of London there were 40 successful candidates in the first division and 380 in the second division; 40 took the supplementary certificate in Latin, 5 in mathematics, and one each in Greek, chemistry, mechanics, French, and music.

A PORTABLE x-ray equipment has been designed in the research department, Woolwich, for the examination of aeroplanes. The details and drawings are published in "R.D. Report No. 68" by H.M. Stationery Office, with illustrations and working drawings, and may be of interest to medical radiologists.

DR. A. J. MARTIN, on his departure from Bloxwich, where he practised for thirty-two years, has been presented by his friends and patients with a bookcase, a clock, and a gold cigarette case.

A TABLET to the memory of the late Dr. Clánde B. Ker placed in the entrance hall of the Edinburgh City Hospital, Colinton, was unveiled recently by Lady Sleigh. The memorial, which is of marble and bronze, bears in relief a portrait of Dr. Ker and an inscription recording that he was superintendent of the hospital from 1897 to 1925.

OWING to the further generosity of Mr. George Buckton Browne, the sum of £1,000 has been added to the Memorial Prize Fund of the Harveian Society of London which bears his name. The council of the society will therefore be able to give more valuable prizes for successful essays.

THE fifth Rumanian Congress of Oto-rhino-laryngology will be held at Bucarest, under the presidency of Dr. A. Costiniu, on October 24th and 25th, when the following subjects will be discussed: adenoids in their endocrine aspects, introduced by Koleszar, Vasiliu, and Tatarsky; deaf-mutism in Rumania, introduced by Daraban. Further information can be obtained from the general secretary, Dr. Mayersohn, 81, Calea Minsilor, Bucarest.

COURSES of lectures in German are arranged by the University of Vienna throughout the year in connexion with post-graduate medical instruction. Special international courses are to be held in February, June, September, and November, each lasting a fortnight, and dealing with the recent work in various specialties. Syllabuses of both these courses may be obtained, free of charge, from the Kurs Bureau of the Vienna Faculty of Medicine, Schloßergasse 22, Vienna VIII.

DR. CLAUD SCHILLING, professor at the Robert Koch Institute for Infectious Diseases, Berlin, has been appointed a member of the Malaria Commission of the League of Nations.

THE present epidemic of typhoid fever in Hanover is attributed to infection of one of the three waterworks supplying the town. Up to September 17th 1,504 patients, of whom 42 have died, have been admitted to hospitals, but the number of cases missed at home is not yet known. A severe epidemic of typhoid fever has broken out also at Tokyo, 3,500 cases having been notified in a few days.

A MUNICIPAL institute of electro-radiology has been founded by the city of Paris at 37, Boulevard St. Mareel, with Dr. Zimmern as director. The indigent inhabitants of Paris and the Seine department will be treated free, and other patients will be required to pay fees according to the scale fixed by the municipal council.

A SYMPATHETIC obituary notice of the late Dr. John Thomson appears in the October issue of the *Archives de médecine des enfants* written by the editor, Dr. Jules Comby.

IN the four weeks ending August 14th there were 497 deaths due to automobile accidents in 78 large cities in the United States.

DR. MAURICE ROCH, professor of clinical medicine, has been appointed dean of the medical faculty at Geneva.

THE Ecole d'Anthropologie de Paris will celebrate the fiftieth anniversary of its foundation on November 3rd.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager.

THE TELEPHONE NUMBERS of the British Medical Association and the *British Medical Journal* are MUSEUM 9861, 9862, 9863, and 9864 (internal exchange, four lines).

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The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Uniclin, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

## QUERIES AND ANSWERS.

### LEUCOPLAKIA.

"B. A." asks for suggestions for the treatment of leucoplakia, in a case with no suspicion of syphilitic origin.

### ADRENALINE AND GLYCOSURIA.

"I." asks: What is the nature of the glycosuria produced by the administration of adrenaline, and is its continued administration likely to produce or predispose to diabetes?

### RECURRENT BOILS.

"W. L. C." (Torquay) asks for suggestions for the treatment of a woman, aged 32, who has been suffering from boils for the last eight years, never being free from them for more than two months. She is of good physique; catamenia and bowels regular; no sugar or albumin. The following remedies have been tried: Extraction of teeth for pyorrhoecia, vaccines, calcium, yeast, injections of manganese, and stannoxyl—and in desperation, charlatan medicines.

### THE "STRANGE FEVER" OF 1558.

DR. W. JOHNSON SMYTH (Bournemouth) writes: In Dr. Sydney Carter's *History of the English Church and the Reformation* (Longmans, Green and Co.) it is recorded on page 185 that towards the close of Queen Mary's reign, in 1558, no fewer than thirteen bishops and numbers of clergy were carried off by a fever raging at the time. It would be interesting to know if our medical historians can enlighten us as to the nature of this fever—presumably it was a pandemic of some kind. Was it influenza or ague?

\* According to Creighton's *History of Epidemics in Britain*, 1555-58 was a deadly period for all Europe, the diseases being of the types of dysentery, typhus, and influenza. On the Continent 1557 was remarkable for a widely prevalent "pestiferous and contagious sickness." In England "strange agues and fevers" prevailed that year, and with greater severity in 1558, carrying off many of the wealthiest men. The widespread sickness of 1557-58 has been commonly grouped under "influenza," but in using this term Creighton adds that it is "at best a generic

nams, and need not commit us to any nosological definition." Again, the term "ague," so often used at that time, is, he says, no more decisive for the nosological character than the term "influenza"; it meant originally a sharp fever (*febris acuta*). In regard to mortality among the clergy, he quotes Stow's statement that in the harvest of 1558 "quartan agues continued in like manner, or more vehemently than they had done the last year passed, wherethrough died many old people and specially priests."

#### INCOME TAX.

##### Cash Basis.

"W. R." purchased a practice many years ago and in the early years paid income tax on the full earning value of the practice, which was, of course, less than the cash value. He has now retired, "and is asked to pay on what he receives."

"\* \* We agree that this is incorrect. As from the date he ceased to carry on the practice his income tax liability as a practitioner ceased and he is not liable to tax, in spite of the fact that he is still collecting book debts. If it is contended that these should be thrown back into the earlier years when he was practising, the answer is that receipts should also be thrown back out of those years, and so on, until the ultimate adjustment is reached in the years when he paid on more than his receipts."

#### LETTERS, NOTES, ETC.

##### SUNBURN AND MOSQUITOS.

MANY a summer holiday in the mountains has been spoiled by mosquitos and other biting flies, and by sunburn, which is apt to become a serious matter with some people, especially blondes. Professor J. A. NIXON of Bristol recently told us of some precautions which he had found effective in the Pyrenees this summer. He writes:

My colleague Dr. A. T. Todd suggested that quinine might be used, and Mr. E. Lloyd (assistant pharmacist at the time) told me that cod-liver oil would keep off the flies. The smell of the cod-liver oil is not pleasant, but one gets used to it in a few minutes, and the comfort of being able to go through the Pyrenean forests unhitten and unattended by the usual host of flies is enough to outweigh the disadvantages. Freedom from sunburn added greatly to our enjoyment of the mountains. I had previously seen how quinine protected from the sun's rays in a case of pellagra under Dr. Todd's care. For travelling we packed the collapsible tube containing the ointment inside one of our climbing boots, where it could do no harm if it leaked. The formula is: Quinine acid hydrochloride, 5 parts (dissolved in 2 of water); anhydrous wool fat, 70 parts; cod-liver oil, 25 parts; "ionone," q.s. The quinine is dissolved in water and added to the wool fat, next the cod-liver oil is mixed with it, and finally "ionone" (a violet scent) is put in to disguise the smell of the cod-liver oil.

We have been informed by another friend that cod-liver oil is as effective for oiling the surface of small ponds, water-butts, and so on, to control the development of mosquito larvae as paraffin, and does not make the water distasteful to cattle.

#### JAMES GRAHAM.

DR. GEORGE PERNET (London, W.C.) writes: In the valuable and entertaining quack number published by the BRITISH MEDICAL JOURNAL in 1911 there is an illustration (page 1271) purporting to represent James Graham, the quack, on Adelphi Terrace. But in a little book with the title *Edinburgh Life in the Eighteenth Century* (selected and arranged from "Captain Topham's Letters"; a new edition, but without a date; William Brown, Edinburgh), the same picture appears as "Crossing the North Bridge in a high wind." The stone parapet of the bridge fits in with the North Bridge of Auld Reekie; Adelphi Terrace is guarded by railings. These are shown in an old print of Adelphi Terrace by Carey in the possession of the Savage Club.

#### JOHN GRAUNT.

"E. M. L." writes: In "Nova et Vetera" in the JOURNAL of October 9th, on "The Bills of Mortality," it was erroneously stated on p. 645 that Graunt's book on this subject was not published till 1665, yet on p. 646 it is correctly stated that Pepys bought a copy in 1662. There were four editions or impressions of the book between 1662 and 1665, all of which were dedicated to Lord Truro (John Russell, Earl of Bedford).

The edition published by Samuel Pepys in 1665, also in 1665, was published as by John Graunt, yet there have not been wanting those who attributed the authorship to Graunt's friend, Sir William Petty. The whole question of the authorship has been exhaustively dealt with by Dr. C. H. Hull of Cornell University in his book, *The Economic Writings of Sir William Petty* (Cambridge University Press, 1899); he came to the conclusion that Graunt was the author of the *Observations*. A strange contradiction is to be found in the second epistle dedicatory to Graunt's book addressed to Sir Robert Moray, President of the Royal Society, in which Graunt states, referring to that society,

"altho I am none of your number, nor have the least ambition to be so, otherwise then (sic) to become ablo for your service." Yet, on the title page of the same edition (published in 1665), he is described as "John Graunt, Fellow of the Royal Society." Moreover, his name appears on the second page of signatures of the persons who, on December 5th, 1660, resolved to form a society for promoting experimental philosophy, together with those of John Driden (sic), Francis Glisson, the Duke of Buckingham, and other distinguished persons (see "The Signatures in the First Journal Book, etc., with a Preface by Sir Archibald Geikie"), and he was one of the original Fellows elected on May 20th, 1663.

#### DESTRUCTION OF FLEAS FROM ROOMS.

DR. RAWEL C. H. writes in reply to the inquiry by "P. S. H.": The extermination of fleas in old buildings, suggests that the use of cresol in the rooms with all apertures closed would be effective. A quantity of 3oz. is required for a room 10 ft. in length, height, and width. As an alternative he advises spraying the room thrice a day for two or three days with "Flit," an insecticide prepared by the Standard Oil Company.

#### CALENDAR REFORM.

FOLLOWING the example of Julius Caesar and Pope Gregory XIII, the League of Nations is setting about the reform of the calendar. The recent Assembly received a report on the subject from a committee of experts, chiefly representative of academies and observatories, which had been set up by the League's advisory commission on communications and transit. This committee has ignored the more ambitious schemes of reform suggested. It is desired in some quarters that the year should begin on what is now December 22nd, so that the astronomical and civil year may correspond. The committee felt, however, that while this would produce a certain scientific satisfaction, it would involve very great disturbance, and seriously affect comparative economic and social statistics. The committee has therefore confined its attention to methods of securing as much equality as possible in the divisions of the year. The fact that a month may have anything from twenty-eight to thirty-one days is unfortunate from a statistical point of view, and makes constant adjustment necessary in insurance and interest calculations, to mention no others. One method which is favoured by many commercial concerns, including the British railway companies, is to have a year of thirteen months, each month having twenty-eight days; but this, while very convenient for monthly statistics, would interfere unduly with quarterly and half-yearly reckonings, and, moreover, would make a comparison of past and future dates extremely difficult. The committee favours the plan of making each quarter consist of two months of thirty days and a third month of thirty-one days. This would make all the quarters correspond in respect to the days of the week. For example, if January 1st was on a Sunday, February 1st would be on a Tuesday, and March 1st on a Thursday, and all the ensuing months would follow the same order. All these systems, of course, would require a change of the day (in leap year two days), on which there are many opinions.

The majority of opinions would make the odd day the first day of the year, and place it outside the scheme of weeks and months. The committee has also addressed itself to the question of fixing the date of Easter. At present the date of Easter may vary within a period of thirty-five days, which is inconvenient in many respects, leading, for instance, to inequality in university terms and in law sittings. It appears from the committee's investigations that no strong objection to change would be raised in any important ecclesiastical quarter, though the Roman Catholic hierarchy would need to be assured that there was a universal advantage before sanctioning such a departure from tradition. The date most convenient for a stabilized Easter is held by the committee to be the second Sunday of April or, better still, to avoid occasional clashing with other festivals, the Sunday following the second Saturday. The report of the committee was blessed in an absent-minded way by the Assembly, and was remitted to the various governments with a suggestion that national committees of inquiry should be set up, representing the various commercial and other interests concerned, and that public opinion should be elicited with a view to arriving at some generally acceptable policy, for which the recommendations of this committee may serve as a starting-point.

#### AN UNDELIVERED BOOK.

A CORRESPONDENT in Southport informs us that on August 20th he paid 7s. 6d. for a book to a man who represented that he was selling books on behalf of the Oxford Press. The book has not been received and letters to the address given on the receipt (W. P. Varsie, 54, Falcon Avenue, Edinburgh) have not been acknowledged. Our correspondent offers no defence for paying the money before receiving the book, but thinks that his experience may serve as a warning to others.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 42, 43, 44, 45, 48, and 49 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 46 and 47. A short summary of vacant posts notified in the advertisement column appears in the Supplement at page 175.

**The Harveian Oration**  
ON  
**THE DEBT OF MEDICINE TO THE  
EXPERIMENTAL METHOD  
OF HARVEY.**

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS  
ON OCTOBER 18TH, 1926,  
BY

SIR JOHN ROSE BRADFORD, K.C.M.G., P.R.C.P.,  
M.D., D.Sc., F.R.S.

SIR HUMPHRY ROLLESTON and Fellows of the College: I have, as a first duty, to tender to you, Sir, my thanks for entrusting to me the honourable office of delivering, in accordance with the wishes of Harvey, the annual oration commemorating the benefactors of this College. It is a striking tribute to the greatness of Harvey that notwithstanding the lapse of time and notwithstanding the great benefactions received by this College from other pious founders from remote to very recent times, this oration has become more and more a tribute to the unparalleled services rendered by William Harvey, not merely to this College, but to mankind. This result is, no doubt, in part dependent upon the greatness and brilliance of Harvey's discoveries as to the existence of the circulation, and the unravelling of some of the mystery surrounding the heart beat, but it is due still more to the great conceptions he formed as to the proper methods to follow in attempting to understand the facts of Nature. It is probable that it is no exaggeration to say that the most valuable benefaction this College has ever received is Harvey's exhortation to the Fellows and Members of the College to search and study out the secrets of Nature by way of experiment, coupled with the example afforded by his own life's work.

Harvey, like most great men, was of so modest a character that he had little idea of the great place he himself would occupy in the history of science, and this exhortation of his, together with his desire that the Fellows of his beloved College should continue in mutual love and affection amongst themselves, was doubtless only an expression of his wishes for the successful development of this College, and thus indirectly of medicine as a whole.

Successive Harveian orators during the last 200 years have striven to honour his memory and his services in a series of orations dealing with different aspects of his life and work, or with the progress of scientific knowledge since his day, and the influence of this on mankind and on civilization. Scholars have brought before us the state of medical knowledge in his time, and have also vividly portrayed the mode of his life and the conditions under which he worked. We know, thanks to their labours, what manner of man he was, and what was the influence on him of the disturbed time in which he lived. These are matters of perennial interest, and his example of philosophic calm under conditions of great national anxiety cannot fail to be an example to all for all time.

Harvey's life work illustrates, in a remarkable manner, the many-sided character of medicine when considered as a whole, and how the men who promote its advance are often men of wide attainments in many branches of knowledge. His greatness is shown by the fact that, notwithstanding the conditions prevalent in his time, he was able to so free himself from the traditions of the past and the influence of authority and dogma as to lay the foundations of modern science by his insistence on the fundamental importance of experiment and of accuracy of observation. Different sciences afford different opportunities for the use of experiment as a means of discovery, but the founder of the science of physiology had, in his field of study, unlimited scope for this method of advance, as prior to Harvey but little had really been effected by experiment, although it had been used by many, even in ancient times. We reverence Harvey, not only for the foundation of physiology as a science and for showing how its progress is

to be effected, but, as Fellows of this College of Physicians, for making plain the intimate relationship which must exist between medicine, both as a science and as an art, and physiology. Harvey combined in himself the physician and the physiologist. This, with the lapse of time and the progress of knowledge, has become increasingly difficult, and this difficulty is one common, to a greater or less extent, to all branches of knowledge, but more especially when a field of work includes a science and an art. There is some danger of a catastrophe akin to that of the Tower of Babel involving the more narrow specialists of these later days, owing to the rapid development of the new languages required to describe the results achieved in some departments of knowledge.

Although the great developments of knowledge make it more and more difficult for any one individual to have anything approaching complete and detailed information even in one branch, and still more so in more than one, yet there should be, on the other hand, less difficulty in acquiring a fuller grasp of fundamental principles. After all, the magnitude of any scientific discovery is to be measured rather by its influence on the genesis of these fundamental principles, often formulated as so-called laws, than on the mere solution of the particular problem investigated. The so-called physical sciences have had in the past an advantage in this respect over the biological, in that the mathematician, the astronomer, the physicist, and the chemist have had more in common than the morphologist, the physiologist, and the pathologist. But the progress of knowledge is gradually effecting a change in this respect, and it is becoming more and more easy for the followers of the different sides of biology to meet on common ground. It is not only becoming increasingly difficult to draw a hard and fast line between the problems investigated by the physiologist and those of the pathologist, but even the morphologist, whether zoological or botanical, is now pursuing with zeal, purely physiological methods in order to further his science, even on its morphological side. Harvey, as a physiologist, would have rejoiced at these developments if he had known that the colour of an animal and even its form and mass, to say nothing of its sex, were under the influence of, and capable of being modified by, the functional activity of certain glands.

Harvey was, as just stated, a physiologist and a physician who practised his profession, and was daily face to face with urgent and distressing problems, as we all are. We all agree that our improved methods of coping with these problems are ultimately dependent upon his great discovery; and it is a trite observation that medicine must be founded on physiology, and that the study of healthy processes must precede that of morbid ones.

But the debt of the art of medicine to the science of physiology is greater than this, and the value of physiology to medicine is not to be measured merely by the direct practical utility, great as it may be and has been, of individual physiological discoveries, even when these are, like Harvey's, of a truly epoch-making character. The art of medicine must of necessity be reared as a superstructure on the science of medicine unless it is to be indistinguishable from mere empiricism; and the science of medicine, like other sciences, can only be advanced by observation and by experiment. When we reflect on what has been done in the past by the observation of our predecessors, from the most remote to recent times, we cannot fail to record our admiration of the great intellectual qualities that these observers must have possessed to have enabled them to achieve the results obtained. The knowledge of the natural history of disease is a subject of vast importance to the art of medicine, and one that can only be acquired by observation. Nevertheless, as the late Lord Moulton has well said, when we are reduced to observation, science crawls. If we are to treat a disease successfully we must know a great deal more about it than its natural history—that is, its course when it is allowed to pursue its career unchecked. Experiment as a method of furthering the progress of any given science is capable of achieving great results, and—again to quote Lord Moulton—"As soon as you can bring experiment to bear upon a subject you are free, but as long as you can merely observe, your progress is slow. The reason is that experiment is like

cross-examination: you can put the question you want, and Nature always answers it."

Experiment, however, is not equally applicable to all sciences, and from the circumstances it is obvious that in medicine its scope must necessarily be limited. This is, doubtless, one of the reasons why the progress of the science of medicine has been slower than we could wish, but another is to be found in the profound complexity of the problems that have to be solved. This complexity is not only obvious in the consideration of broad general questions, such as the nature and causes of disease, or of individual diseases, but applies often to our daily work of the mere recognition of the nature of the malady in an individual patient. We are often baffled by the complexity of this, and nothing is more common in the experience of practitioners of our art than to find suddenly that what seems simple and obvious is by no means so. The complexity of the problems daily before us is apt to react on the mind of the physician and produce, even in this rather materialistic age, a tendency to regard the phenomena of life, and especially of disease, in an individual, as scarcely subject to the same rigid laws of cause and effect that we all recognize as holding in the physical world. If this belief, even in a modified and attenuated form, is once entertained, it causes a looseness of thought that is most inimical to the real progress of knowledge in medicine; and it is here that the study of physiology and the work of Harvey have rendered the greatest service to medicine: Harvey, by experimental work, by clear thinking, and by accurate observation, laid the foundations of physiology as a science, and those who have followed in his path have continually added to his foundations, so that now no one questions its right to rank as a science, and no one disputes the fundamental proposition that in physiology, as in physics, like causes produce like results. If the excitation of the vagus nerve causes stoppage of the beat of the heart in one case, and acceleration in another, or possibly in the same animal at another time, it is not, as Magendie thought, due to the variability of vital phenomena as such, but is due, as Bernard, the great exponent of "determinisme," taught, to the conditions not being really the same. It is perhaps superfluous to mention such an attitude of mind as regards physiology, but possibly, even now, we are not altogether free from such a way of looking at things in human medicine, and Magendie's way of thinking has, perhaps, some followers. It is, of course, much more simple to round the conditions the same in physiological observations than in medicine, although even in physiology it is often difficult, as the discordant results of many competent observers show. In human medicine the difficulties are infinitely greater, and hence we should regard the results already achieved as a most remarkable monument to the acumen of clinicians, who must, in order to have obtained the results we are familiar with, have been possessed of exceptionally sound scientific methods of observation.

The history of the progress of our knowledge of medicine affords countless instances of the extreme accuracy of observation possessed by the foremost clinicians of the day, but although their observations were often excellent and their descriptions leave little to be added to, their explanations of the observed facts were not of the same value. Variations observed in the course of maladies were often explained in an artificial and non-scientific manner, owing to the want of appreciation of this law that like causes produce like results, and that if the results are different in apparently similar cases, the real explanation is, not some variability on the part of Nature, but that in reality, although the cases seem similar, there is some hitherto undiscovered difference. One type of thinking closes the door to further work and real progress; the other is one of the most fertile causes of discovery. Shrewd clinicians observed, long ago, that some cases of typhoid fever lasted four weeks, others were said to abort in two weeks; hence it was inevitable that a certain vagueness and uncertainty of belief should be entertained with regard to the action of the virus of this disease; and it is difficult not to think that such beliefs react on the mind and influence profoundly our outlook on problems that beset us, and on our methods

of coping with them. The progress of inquiry shows that the differences in the duration of the febrile period of typhoid fever are, at any rate sometimes, due to the differences in the organisms causing the disease, and we now talk of the enteric group, including both typhoid and paratyphoid bacilli. It is quite true that this increase of knowledge does not settle the problem, as there still remains the question of the relation and origin of the paratyphoid group of organisms; but this progress of knowledge has had the effect of demonstrating that the duration of so-called typhoid fever is not a matter, so to speak, of chance, but depends—or may depend—on the specific nature of the organism causing the illness. The fact that one organism causes an illness of four weeks' duration, and another quite distinct but allied one causes an illness of two weeks' duration, is a very different matter, from the point of view of scientific medicine, from a statement that the illness of typhoid fever may last either four weeks or two weeks. The attitude of mind produced by one belief is calculated to cause a certain bewilderment of feeling, and one both of hopelessness and helplessness of arriving at any definite attainment; the other encourages the inquirer to hope that long-continued patient work may reveal, at any rate in part, the mystery, and show that the phenomena of disease, complex as they are, are nevertheless amenable to the same laws and conditions as those governing the biological and physical worlds. Further, the apparent variability of disease becomes, instead of an impediment, a spur to further inquiry and a stimulus to research, and such inquiries are often rewarded by discoveries that add a definiteness to our knowledge that is of the greatest possible value. It would not have been possible for this attitude of mind to be developed in relation to the problems of medicine unless the study of physiology, and of vital processes generally, had been placed on the surest foundations by Harvey by the use of the experimental method, as it is this method, in its many developments, that has enabled us to see that in living things like causes produce like results, and that the exceptions are apparent only, not real.

Further, in the past there has been much theorizing, both in physiology and in medicine, often on very insufficient data. The experimental method has afforded a very certain and conclusive test of the inaccuracy of much work of this nature, and such results, important as they are, are, nevertheless, of a negative character, and have sometimes led to the belief that there is some antagonism between experimental inquiry on the one hand, and the result of observational methods on the other. Doubtless much loose thinking and many erroneous deductions may occur as the result of the direct and immediate transference of experimental animal results to the explanation of the phenomena of human disease, but this, again, arises from neglect of the fundamental principle that the conditions in the two cases are not alike, and also that we constantly think the phenomena of disease to be much simpler than they really are, and are perpetually hankering after ent-and-dried explanations of what are, in reality, exceedingly complex phenomena. Far be it from me to minimize the direct and immediate gains to medical knowledge and to medical practice that have resulted from individual discoveries in experimental physiology, as, for example, the notable discoveries as to the functions of the thyroid and its secretion, and many others. Harveian orators have dealt with these in such an able fashion that it is superfluous to dwell on them, and I would urge to-day that perhaps of even greater importance is what I may call the general effect on medicine of the development of physiology as an exact science, and the influence that this will have, in the course of time, in making the science of medicine as exact and as worthy to be deemed a science as any other branch of natural knowledge. Clinical observation, when carried out by a great mind and in strict accordance with scientific method, has achieved most striking results—results which are entitled to our highest admiration when, as already stated, we consider the extreme difficulty of the problems and the scanty means at our command to solve them. Often, however, the results, great as they are and accurate as they are, lack the precision of detail that sometimes the experimental method is capable of supplying, and then

the experimental method is responsible for the completion of that which has been truly founded by clinical observation.

A striking illustration of this is afforded by the history of the discovery of what is known, shortly, as localization of function in the cerebral cortex. Here the fundamental work was done by that great clinician and profound thinker Hughlings Jackson; and when we reflect that by the study of a very limited number of cases of hemiplegia and of a series of cases of fits, and by the careful correlation of the phenomena observed during life with the lesions found after death, he was able to arrive at the conclusion that voluntary movements were represented in a certain area of the cortex, we have a magnificent example of the accurate and far-reaching deductions that may be drawn by a master mind. Nevertheless, even in such a case as this, the subsequent experimental work was able to give a precision and supply a mass of detail that greatly enhanced the original fundamental discovery. So much is this the case that many came to think that cerebral localization had been discovered solely by the experimental method, whereas the fundamental facts were really the outcome of clinical observation.

The greatness of Jackson's conceptions is well seen in the fact that he recognized that cortical localization was concerned with the representation of movements, and not of muscles, and, indeed, with a special kind of movement—namely, voluntary movement. In the earlier days of experimental work on this subject some confusion was introduced by certain observers falling into the error of looking for so-called centres for the representation of muscles; and it was only later that inhibition of antagonistic muscles, as well as contraction of other muscles, was also recognized as a matter of cortical representation. Anyone who has actually seen the movements called forth by the electrical excitation of the cerebral cortex will experience quite different mental impressions from those he will have felt by watching an epileptiform seizure, perhaps confirmed subsequently by seeing the position and nature of the lesion responsible for it. In the one case there is a definiteness and certainty that in the other is apt to be replaced, at the best, by a feeling of high probability. And yet, if we are to succeed in our endeavours to cope with the facts of nature, we must aim at possessing certain, and not probable, knowledge. It may be that this is often, in our work at present, unattainable, but it is the great thing to aim for in all our work. Perhaps some of our mistakes in the practice of our art arise from not clearly differentiating between what we really know and what is only probable; and sometimes, perhaps, we speak with an apparent certainty about matters that are not, in our present state of knowledge, really as certain as we would like them to be. The touchstone of the experimental method of Harvey is a useful corrective whenever and wherever it may be applied to questions of this nature. The modern physiology of the central nervous system, investigated by the experimental method, affords a striking example of the extraordinary precision of knowledge that may be obtained by the use of this method, and, thanks to it, a flood of light has been thrown on the complex problems of the mechanisms involved in posture, equilibration, co-ordination of movement, and perhaps on the still more complex mechanisms associated with the highest functions of the brain. Nevertheless, in an oration associated with the name of Harvey it may perhaps be possible to illustrate the principles of the profound influence exerted by experimental physiology on medicine by seeking an example in that branch of physiology so closely associated with Harvey—namely, the beat of the heart.

I am not so much concerned to-day with giving a record of individually important discoveries that have been made from time to time whereby our knowledge has been increased and our power of recognizing, and treating with some success, individual diseases, has been extended, but rather with the nature of the conceptions we form of the phenomena of heart disease as we see them clinically in the light of the exact modern physiology of the heart, as revealed by the use of the experimental method of Harvey.

The beat of the heart, from the earliest times to the

present, has been looked upon as emblematic of life, by poets, philosophers, and thinkers, and has always had an element of mystery and awe attached to it. No physician will deny that in disease there is much of apparent mystery in what may be called the natural history, or, if you will, the clinical course, of heart disease; further, that the clinical picture presented by individual cases, even where relatively simple lesions are present, is one with much individual variety, that the phenomena are complex and difficult to analyse, and hence there has been much uncertainty of opinion, both in diagnosis and in treatment. Such differences of opinion existed, not only with reference to questions of interpretation or explanation, but even in reference to what we should now regard as mere questions of fact. There must be some present hero to-day who will remember a controversy as to the actual time of occurrence of certain well known murmurs associated with a common valvular disease. When the methods available for clinical observation led to such remarkable differences of opinion among physicians of recognized skill and ability, it is not strange that many keen and able minds should have felt that the problems of medicine were so difficult and so complex that it was beyond their power to really solve them with the means at their disposal; and this attitude of mind is one very inimical to the progress of our science and our art. The method of Harvey of seeking the secrets of nature by way of experiment shed a flood of light on the problems that had baffled those who confined their methods to observation. Not only was this the case, but what is of supreme importance to recognize is the fact that many of the men who in recent times remodelled our conception of the nature of cardiac disease by the fundamental character of their discoveries of the nature of the cardiac beat were men who devoted their lives to the investigation of the facts of nature with no other object in view than that of adding to knowledge for its own sake. Great as their discoveries were, they had no idea of their practical bearing on heart disease, and some of them, indeed, were men who had no knowledge of heart disease as such, and never undertook their work with any idea of adding to our knowledge of heart disease. Further, the discoveries of the pure clinicians, remarkable as they were for the acuteness of their observation, were largely due to making use of the methods and apparatus of the laboratory in the investigation of clinical problems. The polygraph and the electro-cardiogram gave certain and accurate information where previously other methods of observation had led only to the dissemination of views, explanations, and theories of varying degrees of probability. It is one thing to be able to actually demonstrate beyond cavil that the auricle of the human heart in a living patient is in the state known to us as that of fibrillation, and another to talk of lack of failure of compensation, with no clear mental picture of the meaning of the words used. Anyone who has seen a fibrillating auricle in the living animal in the laboratory has a mental picture that is not easily forgotten—a picture of a singularly concrete and definite character, with an element of reality about it that cannot fail to be a useful reminder to him when he stands at the bedside of a patient suffering from the effects of this condition. It is, of course, quite true that the acute clinical observers of the past had recognized the clinical picture produced by this condition, and had described quite accurately some of its manifestations. We can but admire their acumen, but they were necessarily unable, owing to the lack of physiological knowledge and the want of accurate methods, to determine the true cause of the symptoms and to correlate the lesion with its results. Hence the inevitable temptation, to some minds, to speculate and theorize vaguely instead of confining themselves to mere observation, and hence the further elaboration of more and more speculation and ultimately much confusion as to what was speculation and what was firmly established by observation. This has often been most harmful to the real progress of medicine, owing to the development of loose methods of reasoning, and the frequent impossibility of bringing the matter in dispute to a decision by the crucial method of experiment.

The history of the development of our knowledge of fibrillation is singularly interesting as affording a striking example of the experimental method having substituted



a clear, definite, and easily proved condition for what was previously a most vague, indefinite, and even intangible conception. But the history of the discovery of fibrillation is even more interesting and important from another point of view, and teaches a lesson of supreme importance to those who are always insistent on investigation being directed to some immediate practical aim. Fibrillation was discovered by a physiologist who was attempting to ascertain where the beat of the heart had its origin; in other words, whether the heart contained a so-called centre from which the beat arose. In the course of his inquiries he found that on stabbing the heart with a fine needle a condition of what we now call "fibrillation" ensued. Sometimes this followed a single puncture, sometimes many were required. Later it was found that faradization of the exposed heart with a current of moderate intensity produced the same result. Sometimes the condition of fibrillation was transitory, in other cases it was permanent; the heart did not recover, and death ensued.

It is unnecessary to-day to go into all the details of the many subsequent investigations on this interesting subject; all that it is necessary to point out here to-day is that this condition of fibrillation was a discovery of experiment produced by such crude and simple methods as repeatedly stabbing or faradizing the exposed heart. I can well remember that it was a common method, some forty years ago, to kill an animal at the end of a physiological experiment by faradizing its heart, and so producing heart delirium or fibrillation. No one who saw fibrillation would have suspected that it was a common condition in human heart disease, and that almost every hospital ward had cases suffering from it, either temporarily or even for long periods of time. It might, indeed, have been argued very plausibly that it was inconceivable that such crude experiments could have any possible use or bearing on vital processes, and still less on human heart disease; and yet we see that the exact opposite is the case, and that, crude as the experiment was and remote as was the connexion between the normal dog's heart and human mitral stenosis, and although the mind of the investigator had no thought of heart disease in his inquiry, nevertheless this crude and apparently idle experiment was of the utmost significance for the intelligent understanding of one of the commonest forms of heart disease.

Another lesson may also be learned from consideration of these results, and that is the reciprocal influence of physiology on pathology, and of pathology on physiology, and how extremely artificial is the boundary between these two departments of knowledge, and how, if we are to have an adequate conception of even relatively simple vital processes, it is necessary to study them with the broadest possible outlook. A pure and rigid physiologist, studying only the normal activity of the heart, would scarcely be prepared to admit that the circulation, in a highly organized mammal, could be maintained when the rhythmical activity of the heart was so disorganized that auricular fibrillation was present. Nevertheless, clinical medicine proves that, even in man, such is the case. Surely such facts as these are of the utmost value, not only in our immediate daily work and in our attempts to treat disease and relieve suffering, but still more so in our appreciation of the nature, the complexity, and, more especially, the adaptability of the activities of living matter. Marvellous as are the various methods by which a circulation sufficient for the needs of the normal animal is effected—and this is well shown by the study of comparative anatomy and comparative physiology—the marvels of the relative efficiency of the disordered circulations of heart diseases are not any less. Certainly the study of these conditions not only widens our conceptions, but is also a useful incentive to our therapeutic efforts when a more limited and narrow belief might lead us to be less hopeful as to the possibility of procuring relief or cure in these conditions.

The history of the study of the phenomena of fibrillation has been cited as an illustration of the very close relationship that exists between experimental science and the daily work of the physician, especially if we wish to found our art on a secure basis of science, and if we desire to eschew empiricism where this is possible. The same illus-

tration may be found equally well in the history of the development of our knowledge as to the nature of the normal beat of the heart and of its disordered action in disease. Here also we see the extraordinarily close connexion between pure physiology on the one hand, and the interpretation of the clinical symptoms of heart disease on the other. It may seem, at first, strange to assert that our present conceptions of the fundamental facts in the pathology of heart disease owe their origin to researches conducted by a physiologist on the nature of the muscular contractions in the umbrella of the jelly-fish, but it is really an unexaggerated and plain statement of fact. Romanes, in the seventies, carried out a series of very beautiful but very simple experiments on the nature of the rhythmical contractions of the umbrella of jelly-fish, being especially interested in the question whether the wave of contraction was transmitted via the nerve plexus—that is, intermingles with the sheet of muscle in these organisms—or whether it was of purely muscular origin. He had but little apparatus beyond a pair of scissors, and, for some purposes, a simple recording lever and a smoked surface. Romanes, in the course of his work, discovered the fundamental fact that what is known as a block was a phenomenon dependent purely upon muscular changes, and due sometimes to a mere narrowing by section of the width of the muscular bridge connecting the two portions of a contracting muscular sheet. In other words, a block might be produced by local alterations in the conducting properties of the muscle itself. Further, he showed that delay in conduction could also be effected by such alterations in the muscular bridge produced by narrowing of the connexion, and that delay in transmission of a muscular wave from one part to another was not in itself any evidence of the intervention of the nervous elements. The importance to us, as physicians, of Romanes's work was that it was the origin of the slightly later and epoch-making work of Gaskell on the nature of cardiac action. We owe to Gaskell a very large part of our modern conceptions of the physiology and pathology of the heart muscle, and the bulk of Gaskell's experimental work, like that of Romanes, is beautiful in its extreme simplicity. Gaskell developed and amplified in the heart of fishes, of amphibia, and of reptiles, and especially in the heart of the tortoise, the fundamental experiments of Romanes; and, like Romanes, some of his most striking results were obtained by the use of experiment, with little more apparatus than a pair of sharp scissors. His fundamental experiment of producing a block by section of the muscle of the auricle, so as to leave only a narrow bridge connecting the sinus portion of the auricle with the ventricular portion, was performed on the heart of a skate on the deck of a yacht whilst cruising off the West Coast of Scotland, not far from where Romanes worked in his seaside laboratory on his jelly-fish.

Gaskell was the protagonist of the doctrine of looking upon the heart as a muscle and of unravelling the properties of cardiac muscle, and of correlating them with those of other muscular tissue, voluntary and involuntary. Further, he correlated structure and function, as shown by the different physiological properties of auricular and ventricular muscle associated with their different structure, and he emphasized, as also did Roy, the great part played by the auricle in the physiology of the heart beat, and its intimate association with the nervous system.

Another of Gaskell's great conceptions was that of the independent rhythm of the separate cavities of the heart and the way in which, under certain abnormal conditions, the prepotency of the sinus end of the heart might be interfered with, and an independent rhythm initiated in some other portion of the heart, as, for example, the ventricles. We owe to him the conception of the heart as consisting of a number of muscular cavities each with an independent rhythm, but the whole dominated by a prepotency at the sinus end. Nevertheless, under certain conditions this might be disturbed by the manifestation of the independent rhythm of some other portion of the heart, more especially the ventricle.

Gaskell's work on the nervous system was of such a striking character, and led to such far-reaching conclusions, that sometimes we are apt to forget that his earlier work on cardiac muscle was certainly of equal importance, and

has had a very great influence on the progress of modern pathological knowledge, especially by clarifying our ideas as to the nature and mode of origin of the cardiac rhythm. We also owe to him and to Roy the conception that the main function of the auricle is to act as a regulator of cardiac activity. As has already been pointed out, all these fundamental facts were discovered by experiment, with very simple apparatus. But in another branch of physiology to which medicine is also greatly indebted the experimental methods necessary in order to elucidate the phenomena were of a more complex character. Forty years ago electro-physiology was looked upon by many as a recondite branch of investigation which might perhaps be of interest, but which could not possibly be of any practical use. Physiologists, like Burdon-Sanderson, were engaged in the investigation of the electrical phenomena associated with the activity of vital processes, simply and solely because it was the most delicate physical method available for the investigation of such phenomena. It is a striking comment on such views as these to reflect that the study of the electro-cardiogram in the human subject and in animals was the actual means by which the condition of fibrillation was verified to exist in the human subject. Furthermore, the electro-cardiogram gives us the most definite and accurate knowledge of the real state of the cardiac muscle, as shown by the nature of its activity.

One of the most striking everyday illustrations of this may perhaps be quoted. Every practitioner is aware that in mitral stenosis under some conditions the presystolic murmur is absent and in others it is present. I know of no more striking demonstration than to be able to show, by means of the electro-cardiogram, that in the one case the auricle is contracting rhythmically, and in the other it is not. The electro-cardiogram removes all doubts and difficulties as to the interpretation of this phenomenon, and gives an element of certainty that is not obtainable by any other method. It has thus led to a precision in the interpretation of some clinical phenomena that leaves little to be desired. On the other hand, it requires an elaborate installation and a considerable amount of technical and special knowledge, and thus is ill adapted for ordinary routine observation.

Although we owe to the electro-cardiogram the complete demonstration of the existence of fibrillation in the human heart, we can recognize the presence of fibrillation by other and simpler methods. It is a common thing in the history of science that the interpretation of facts may require difficult and elaborate experimentation, whilst their recognition can be effected by the use of simpler methods. The electro-cardiogram may be useful for both purposes, but it is perhaps more especially valuable as an instrument of research when attempts are being made to ascertain the fundamental causes of certain clinical phenomena.

Another striking illustration of the profound influence of a simple experimental method of inquiry in advancing our knowledge of the nature of the heart beat, and indirectly of all vital activities, is afforded by Ringer's work on the effect of minute quantities of calcium, potassium, etc., on the heart. His discovery that the activity of a living tissue was dependent upon the presence of calcium was a great discovery, and one the full effects of which are only now beginning to be realized. He, further, had the very remarkable foresight to anticipate, in some respects, the modern doctrine of ions. Ringer's work is perhaps especially noteworthy inasmuch as it was the work of a man trained as a clinical physician, who did not embark on experimental inquiries until he had reached middle life, and then devoted himself to the investigation of what might be regarded as abstract problems of pure physiology. These observations, like those of Gaskell, were what may be called fundamental, inasmuch as they altered our conceptions of the nature of vital processes, in that they replaced what was vague and indefinite by concrete physical and chemical facts. These observers certainly fulfilled Harvey's exhortation to the letter, by searching and studying out the secrets of nature by way of experiment.

I have attempted, in this oration, to show that the pursuit of knowledge by Harvey's experimental method is not to be regarded only as a means for the acquisition of results of great value in our daily work, but also that it

is of supreme importance in laying the foundations of our conceptions as to the nature of the processes we so often work in disease, and that, thanks largely to it, we may claim that medicine has a scientific status as a branch of natural knowledge.

Hence in medicine, as in biology generally, it is true that like causes produce like results, and the successful investigator must realize the profound truth of the lines:

And Nature, the old nurse, took  
The child upon her knee,  
Saying, "Here is a story book  
Thy father has written for thee.

"Come wander with me," she said,  
"Into regions yet untrod,  
And read what is still unread  
In the manuscripts of God."

And whenever the way seemed long,  
Or his heart began to fail,  
She would sing a more wonderful song  
Or tell a more marvellous tale.

### British Medical Association.

#### PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

#### SECTION OF OBSTETRICS AND GYNAECOLOGY.

COMYNS BEEBLEY, M.D., M.CHIR., F.R.C.P., President.

#### DISCUSSION ON CAUSES AND TREATMENT OF UTERINE HAEMORRHAGE WITHOUT GROSS PHYSICAL SIGNS.

##### OPENING PAPERS.

I.—BECKWITH WHITEHOUSE, M.S.LOND., F.R.C.S.,

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(With Special Plate.)

##### INTRODUCTION.

From the earliest times uterine haemorrhage has been the object of superstition, speculation, and theory. For almost five thousand years its discussion has occupied a prominent place both in medical and lay literature, and it appears perhaps somewhat strange in the twentieth century that so little is really known and accepted about the fundamental facts that control the function of menstruation. To review the past, with the strange myths and beliefs contained in the writings of the Sacred Law, the Ebers papyrus, Pliny, Hippocrates, Aristotle, and the Zend Avesta, is a fascinating study which, although foreign to the present discussion, serves to throw light upon some of the views and customs which even in the world of to-day are by no means obsolete. In modern times, with the sweeping away of superstition and the development of scientific investigation, our difficulties, however, have not lessened. Rather have they assumed a different aspect. During the last century a mass of heterogeneous material has been accumulating, and it is ever more and more difficult to sift the grain from the chaff. Conflicting statements and theories, many based upon insufficient data, have appeared which complicate the points at issue. Within the last few years, however, signs are apparent that at last we are nearing the edge of this morass and approaching more solid ground upon which to build a firmer edifice, based upon the truths of physiological and pathological research.

##### THE MENSTRUAL FUNCTION.

Any discussion upon the causation and treatment of pathological uterine haemorrhage must depend in the first place upon the views that are held with regard to the menstrual function. If we do not know the essential

factors concerned in the production of physiological bleeding, then no great advance may be expected from an incursion into the realms of pathology. A correct conception regarding menstruation is therefore the key which opens the door to a proper understanding of the phenomena associated with pathological haemorrhage. Recent research has done a great deal to dispel the haze which formerly surrounded our knowledge of the function, and during the last few years important advances have been made towards the solution of the complex problems involved in the sexual physiology of the human species. The work of Wilfred Shaw and Marshall and Dixon in this country, Novák, Allen, D'Oisy, and Frank in America, and Schroeder in Germany, is especially noteworthy. The investigations and conclusions of Novák are of special interest to me in that they confirm the views which I published in February, 1914, and which were noted also in that year by Schroeder. I then expressed the opinion that at each menstrual function there was a definite shedding of a portion or portions of the superficial endometrium, and that the menstrual discharge consists of the autolysed products of the result of this necrosis. I believed then, as I believe now, that the secretion of the glands of the uterine body is concerned in the breaking down of the menstrual clot composed of blood coagulum and tissue debris. W. Shaw has also demonstrated this clot in the uterine cavity of a young healthy woman killed by trauma upon the first day of menstruation, and I am able to-day to submit another specimen in the case of a uterus removed on the first day of the menses from a patient suffering from menstrual epilepsy (Figs. 1, 2, and 3), and the only modification which I think desirable in the light of recent work is that in most cases autolysis of the clot and tissue commences whilst the separating endometrium is actually in anatomic contact with the deeper layers, and whilst the extravasated blood is intimately associated with the epithelial debris.

That thrombolysis is generally by no means complete is evident to anyone who cares to examine daily the discharge from a series of cases of normal menstruation. It is not sufficient to accept the word of a patient that clots are not present in the discharge. Minute coagula in process of solution are not recognized as "clots" by the lay mind, and they can only be detected if a systematic search is made for them. For several months I have had the menstrual discharge investigated of patients not suffering from pelvic disease, admitted to the medical wards of the General Hospital, Birmingham, and I have been surprised at the frequency with which small coagula are present. It is the exception rather than the rule for no clots to be passed at some time during the menstrual function. When the menstrual discharge is centrifuged and the deposit examined microscopically, epithelial debris of endometrial origin can often be detected (Fig. 5). If the specimen is collected on the third or fourth day of the function, it is more difficult to demonstrate actual tissue, but a careful search will usually reveal "ghosts" of both uterine glands and stroma cells. Novák has described the actual desquamation of the mucosa as a "crumbling molecular process, small strips and bits of granular degenerated mucosa being cast off until only the 'basalis' and perhaps a few 'spongiosal' rests are left." This, I believe, accurately and definitely describes what takes place and is entirely in accordance with my own views.

What, then, is menstruation? In the light of recent researches upon ovulation and the development of the corpus luteum I think that we must regard it as an afertile abortion of the non-pregnant decidua. This is no new conception. It was combated by Teasler and others on work based upon the study of early ova. Most of their arguments, however, fall to the ground in the presence of the facts now available with reference to the life-history of the corpus luteum and the coexisting condition of the endometrium. Menstruation apparently follows death of the unfertilized ovum, and is synchronous with commencing retrogression of the corpus luteum. Rupture of the ovarian follicle with escape of the ovum and growth of the corpus luteum initiates development of the pre-menstrual hypertrophy of the endometrium, which correctly should be called the "menstrual decidua."

Once the ovum is discharged from the follicle it is probable that the duration of its life is a definite factor. To survive it must meet with the spermatozoon. If it is not fertilized it dies, and the result is retrogression of the corpus luteum and necrosis of the menstrual decidua; the products of decidual necrosis are then cast off as the menstrual discharge, for which I suggest the more appropriate name of "menstrual lochia." The possible inhibiting effect of the corpus luteum upon rupture of succeeding follicles is removed by menstruation, and the cycle is once more resumed. The old theory that the menstrual function is necessary for the reception of the ovum is, I am quite convinced, a pure myth. Its onset at puberty merely emphasizes the fact that ovulation has taken place before the opportunity for fertilization has occurred. In races such as certain tribes of Indians it is, indeed, difficult to arrive at the age of puberty, because marriage is consummated and pregnancy often occurs before any menstrual lochia has appeared. The explanation is the same, of course, in cases of fertility during lactation, after the so-called menopause, and during pathological states of amenorrhoea. Should an ovum mature long after its fellows, it will and must produce either an afertile abortion, noted clinically as a functional haemorrhage after the menopause, or else a post-menopausal pregnancy, if it has had the fortune to meet with a spermatozoon.

The analogy existing between the menstrual abortion and an abortion during the early months of pregnancy is very striking when the two processes are compared. In each there is softening and dilatation of the cervix; in each uterine contractions are present, and in each there is subsequent expulsion of necrosed decidua. Investigation of the discharge on the second or third day after an early complete abortion shows that it has much in common with the menstrual lochia. Menstruation is, in fact, nothing more than the disorderly action of a disappointed uterus; or, perhaps, shall we say a disappointed ovum.

#### PERIODICITY OF THE MENSTRUAL FUNCTION.

To understand the remarkable periodicity of the menstrual function in the human species we must remember that in the genus *Homo* we are concerned with the most highly specialized organism as yet evolved. Women has developed from her ancestors much as the domestic hen has evolved from the Indian jungle fowl. Just as breeding, environment, and feeding have been utilized by man to alter the sexual rhythm of the jungle fowl and the Indian runner duck for his own advantage, so evolution has altered the sexual rhythm in woman from that of her predecessors. In fact, intensive egg-laying production in the domestic fowl is a commercial scientific experiment upon artificial variation in sexual rhythm. It is the ovarian follicles to which we must look, both for the cause of the regular monthly abortion and for the irregularity so commonly associated with the beginning and end of sexual life. Factors which interfere adversely with the maturation and discharge of the ovum are reflected upon the rhythm of the menstrual function. Halban, by excising the corpus luteum in 40 cases, was able to induce menstruation. In 92.5 per cent. uterine haemorrhage occurred in from two to four days after operation. I have recently confirmed these findings of Halban in an experiment to which I shall subsequently refer.

There has been in the past, and there still exists, a tendency to compare the menstrual function in the human species with the phenomenon known as pro-oestrus in the mammalia. It is not necessary here to go into the matter at length, as it has been so fully considered by Hcapo and also by Novák. The arguments both for and against are probably known to most of us. The only observation it is necessary to make is that in the case of *Homo* we are dealing with a very highly specialized organism. In the lower animals also investigation has been mainly confined to the domestic types, which are artificial products, and in which the normal mon-oestrus or di-oestrus cycle has been converted into the poly-oestrus habit.

This artificial development of the poly-oestrus type is, I think, a most interesting and important aspect of comparative physiology to the gynaecologist, and one which deserves close investigation.

BECKWITH WHITEHOUSE: CAUSES AND TREATMENT OF UTERINE HAEMORRHAGE.



FIG. 1.—Transverse section through the cavity of the normal healthy uterus on the first day of menstruation. The menstrual decidua is well shown. Note the dilatation of the uterine glands in the "spongiosa" layer produced by constriction of the ducts in the "compact" layer. The uterine cavity is occupied by the menstrual clot consisting of menstrual decidua and fibrin.



FIG. 2.—The menstrual clot occupying the uterine cavity on the first day of menstruation. Note the compression of the ducts of the uterine glands in the adjacent decidua which is not necrosed. The sudden escape of the uterine secretion has in other glands produced separation of the gland epithelium from the basement membrane. (Magnification 24; 2 in. obj.)



FIG. 3.—The menstrual clot on the first day of menstruation, showing part of a necrosed uterine gland and decidual detritus. (Magnification 120; 1/3 in. obj.)



FIG. 4.—The menstrual decidua on the first day of menstruation, showing necrosis of the stratum compactum. A partially broken down gland duct is well shown. Note the separation of the epithelium from the basement membrane, which follows sudden escape of the pent-up secretion.



FIG. 5.—The menstrual abortion. Tissues obtained by centrifugalization of the menstrual lochia from the vagina. The material was obtained from the vagina fifty-five hours after excision of the corpus luteum. Note the necrosed uterine glands. Decidual cells are seen in close proximity to the gland epithelium. (Magnification 220, 1/6 in. obj.)



FIG. 6.—The menstrual clot, collected from the uterine cavity fifty-five hours after excision of the corpus luteum. Both uterine glands and stroma cells are present. The glands are active, but have not been dilated because at this stage there is no marked development of the decidua compacta.

## BECKWITH WHITEHOUSE: CAUSES AND TREATMENT OF UTERINE HAEMORRHAGE.



FIG. 7.



FIG. 8.



FIG. 9.

## DESCRIPTION OF FIGS. 7, 8, AND 9.

FIG. 7.—Another section of the intrauterine clot obtained after removal of the corpus luteum and showing both gland and stroma tissue. A few developing decidua cells are shown on the right of the section. (Magnification 280; 1/6 in. obj.)

FIG. 8.—Curetting from the anterior wall of the uterus, fifty-five hours after excision of the corpus luteum and sixteen hours after the clinical onset of the artificially produced menstrual abortion. Note the necrosing endometrium, especially in the superficial layers. There is no great dilatation of the uterine glands because the stratum compactum of the decidua is not fully developed, and there is but little constriction of the ducts.

FIG. 9.—Curetting from the anterior wall of the uterus fifty-five hours after excision of the corpus luteum, showing necrosis of the superficial layer of the endometrium. (Magnification 150; 1/3 in. obj.)

## R. MCCARRISON: A GOOD DIET AND A BAD ONE.



FIG. 1.—Medium sized rat from the colony fed for six months on the "good diet."



FIG. 2.—Medium sized rat from the colony fed for six months on the "bad diet." (Same scale as Fig. 1.)



FIG. 3.—Photomicrograph of part of a villiform papillomatous outgrowth in proximal portion of the stomach of a rat fed on the "good diet" referred to in the text. ( $\times 400$ .)



FIG. 4.—Photomicrograph of part of a villiform papillomatous outgrowth found in proximal portion of the stomach of a rat fed on the "bad diet" referred to in the text. ( $\times 400$ .)



In the human species confusion has arisen partly owing to the fact that possible fertilization is permitted at any time following the pre-ovulatory abortion. In other words, the oestral period is prolonged up to and including the next pre-gravid state of the endometrium. This variation of the sex instinct is important, and must not influence the consideration of, and comparison with, the sexual rhythm of lower types. The sexual instinct in Homo is independent of the uterus and ovaries, as is shown by its development before puberty and its persistence after the natural or artificial menopause.

Finally, the association of the ovary with the accessory genital glands, notably the thyroid and pituitary, appears to be of increasing importance. Although woman is primarily built around her ovaries, there is abundant and accumulating evidence to prove that these organs are but a single link in the mechanism responsible for the metabolic rhythm of the adult female from puberty to the menopause. It is, I think, probable that the thyroid initiates the maturation and rupture of the first ovarian follicle, and is therefore responsible for the first menstruation. Previously, as pointed out by Wilfred Shaw, follicles become oestric and are converted into corpora luteiformia. With the rupture of the first follicle and development of the first corpus luteum the sex cycle is instituted. This cycle is intimately associated with variations in the basal metabolic rate. It is too early to draw reliable inferences from the data as yet available, although Winkman's observations on the pre-menstrual rise in basal metabolism and the subsequent fall during or immediately after the function may point to a periodic thyroid activity. The researches of Heilig upon the sugar tolerance during menstruation, and of Bond upon the raised ammonia coefficient during the pre-menstrual phase, all point to the extreme complexity of the sexual cycle, and to the truth of Blair Bell's modification of van Helmont's dictum—namely, "propter secretiones internas totas, mulier est quod est."

#### THE UTERINE SECRETION.

Very little appears to be known, or at least published, with regard to the function of the glands of the corporeal endometrium. Schroeder has pointed out that the first signs of secreting activity appear in the uterine glands about the fourteenth or sixteenth day of the menstrual cycle; in other words, about the same time as the corpus luteum is approaching maturity.

In a series of experimental investigations upon rabbits I found in these animals that if the ovaries were present the secretion of the uterine glands, when injected into other animals, produced the signs of pro-oestrus. On the other hand, if the animal had been previously oophorectomized, the uterine secretion was inert, as well as being less in amount. It appears possible, therefore, that in some animals at least the uterine secretion is reabsorbed and is a factor in the production of oestrus. In the human species, although absorption from the vagina is possible, it is unlikely that the uterine secretion has any great part in the production of the sex instinct. It may be a stimulus, but it is not the only factor, since this instinct persists after the menopause, and even after removal of both the uterus and ovaries. It is possible, however, that the uterine secretion is responsible for the pelvic hyperaemia associated with menstrual abortion, and in fact with early pregnancy. When fertilization does not occur I also think that the uterine secretion is responsible for removing by autolysis the necrosed menstrual decidua and coagula. Uterine secretion can and does occur without menstruation, but is always associated with it. It appears more than probable that some of the confusion that exists in the conception as to what menstruation really is, is caused by the fact that two separate functions are concerned—the second in a sense complementary to the first:

- (a) The menstrual haemorrhage is an abortion, caused by death of the unfertilized ovum, and retrogression of the corpus luteum resulting in necrosis of the menstrual decidua.
- (b) The menstrual secretion from the uterine glands is an accessory factor, possibly stimulated by the liquor folliculi liberated from the ovarian follicle and absorbed

by the peritoneum. Its primary object in the lower animals appears to be to stimulate oestrus. In the human species it appears also to have an action upon the products of the menstrual abortion.

#### The Artificial Production of Menstrual Haemorrhage.

I propose to give details of an investigation recently conducted to prove the truth of Halban's assertions, and to ascertain the possibility of the artificial production of a menstrual abortion. On June 8th, 1926, during the course of an exploratory laparotomy performed at the request of a medical colleague, the opportunity occurred of excising the corpus luteum in a perfectly healthy young woman. The operation was timed to take place about the mid point of the menstrual cycle—namely, the sixteenth day.

The patient, M. L., aged 23, a 1-para, was admitted to the General Hospital, Birmingham, on June 6th, 1926. A careful menstrual history showed that the last period began on May 23rd and lasted until May 26th. The rhythm was of the normal twenty-eight day type, and the patient volunteered the fact that "she was never a day out." In fact, she had always been perfectly regular from the onset at the age of 14, except during her one pregnancy.

Laparotomy was performed at 10 a.m. on the morning of June 8th. The pelvic organs exhibited no signs of disease. Examination of the ovaria showed a well developed corpus luteum in the right organ. A few follicles were near the surface, and one appeared nearing the point of rupture. The left ovary presented a small corpus luteum in process of retrogression, the yellow colour being plainly visible; also a large, apparently mature, follicle was seen on the surface of the left ovary. The only trauma effected was excision of the large corpus luteum from the right ovary. Great care was taken during the operation not to puncture or excise a single follicle, so that the subsequent observations could not be influenced by the question of absorption of the liquor folliculi.

On the morning of June 9th, twenty-four hours after operation, the patient complained of backache, and said she "felt as though a period was coming on." At 1.30 on the morning of June 10th, thirty-nine hours after excision of the corpus luteum, and on the eighteenth day of her menstrual cycle, uterine haemorrhage commenced. At 9.30 the same morning the "period" was well established. At 5 p.m. on the same day—that is, sixteen hours after the clinical onset of the haemorrhage and fifty-five hours after excision of the corpus luteum—the patient was again taken to the theatre and the uterus curetted.

A sample of the discharge from the vagina was first collected and examined by Dr. Hillier. No clot was present in the sample, which appeared to consist of a mixture of blood and the mucous secretion of the cervical glands. The fluid was dark in colour, and had the typical appearance and consistence of menstrual blood. Marked activity of the cervical glands was present, and the cervical canal was partly dilated.

A glass tube was easily passed into the uterine cavity through the dilated canal, and a specimen of the contents of the uterine body was collected. This also showed the usual appearance of the contents of the uterus on the first day of menstruation, and consisted of breaking down clot and tissue detritus. The material was fixed and sectioned.

The uterus was then carefully curetted, the tissue from the anterior and posterior walls and fundus being fixed and sectioned separately.

The material obtained from this investigation will form the subject of a paper to be published in the *Journal of Obstetrics and Gynaecology of the British Empire*.

I take this opportunity of stating, however, that the endometrium presents the appearance of what I regard as being an abortion of the partially developed aconceptional pre-gravid decidua (Figs. 5, 6, 7, 8, and 9). The investigation, whilst confirming Halban's observations, has thrown light upon the cause of certain functional uterine haemorrhages, and shows the importance of the correlation between the corpus luteum and the endometrium.

#### FUNCTIONAL PATHOLOGICAL UTERINE HAEMORRHAGE.

The following remarks are based upon data obtained by the study and analysis of 200 consecutive cases of functional uterine haemorrhage, with no obvious physical signs, admitted to the gynaecological department of the General Hospital, Birmingham. The pathological work has been carried out with the help of Professor Haswell Wilson and Dr. Hillier, to whom I am much indebted for the care and time spent in the preparation of the sections and reports.

Pathological uterine haemorrhage falls naturally into one of four groups. Either the periods are too frequent, or they are too prolonged, or they are too severe as measured by the blood lost, or the bleeding is quite irregular. For

some years past I have grouped cases of haemorrhage on this basis, and I think that the classification has been of use both from the clinical and the pathological aspects. As knowledge has increased I have found the grouping still more valuable, as the terms "epimenorrhoea" (Blair Bell), "menostaxis," "menorrhagia," and "metrostaxis" respectively convey a definite pathological entity. With the conception of menstruation as being an unfertile abortion, I propose to consider pathological haemorrhage under these four headings.

#### *Epimenorrhoea (Blair Bell).*

Epimenorrhoea, or too frequent periods, is the clinical manifestation of a hyperactive state of the sex complex. It means that the ovaries are working at too high pressure and probably producing ova of low vitality, with the natural result of frequent abortion. Such ovaries as I have had the opportunity of investigating in this condition are hyperplastic and often polycystic. Corpora albicantia, as distinct from corpora atretica, are frequent, and the ovaries usually contain much retrogressive luteum tissue. The endometrium, when epimenorrhoea has been in existence for some time, becomes hyperplastic, but in the early stages shows very little that is abnormal. If viewed in conjunction with the altered menstrual rhythm and the state of development of the most recent corpus luteum. At the commencement and end of sexual life epimenorrhoea is common and may almost be regarded as physiological. Curettage for such a condition is of course useless. It merely serves to remove more thoroughly the products of the most recent menstrual abortion, but it does not influence the underlying cause—namely, the disordered sex rhythm and too frequent ovulation. Since the sex rhythm is not governed by the ovaries, but by the "sex complex," it is probable that therapy directed towards inhibition of the accessory sexual glands, especially the thyroid, will be attended by more success. Aleck Bourne has already shown the good results of treatment by the application of x rays to the thyroid in the irregular haemorrhages of puberty. I have recently similarly treated thirty cases of menopausal haemorrhage of the epimenorrhoea type, with very satisfactory results. A line of investigation upon which I am also at present engaged is the possible production of follicular inhibition by the injection of fresh corpus luteum extracts.

#### *Menostaxis (Whitehouse).*

Menostaxis, or a prolonged "period," is, I believe, analogous to an incomplete fertile uterine abortion. The menstrual lochia is normal in composition, but instead of ceasing in the usual four or five days continues for twelve days or longer. No clots as a rule are passed per vaginam. Occasionally a few small coagula in process of thrombolysis are found in the vaginal discharge. The endometrium presents an appearance which for a long time puzzled me, and to which I have previously drawn attention. If several preparations of the curettings are made from different parts of the uterus an entirely different picture is shown. One section shows the normal post-menstrual phase, another is in an active state of superficial necrosis, and another may show well marked pre-menstrual decidua. Whether this incomplete abortion is associated with slow or atypical retrogression of the corpus luteum I do not yet know, as I have not had the opportunity of investigating the ovaries in such cases. The symptoms do not occur with every period, but often there is a history of several prolonged periods in the same patient. Chronic inflammation of the endometrium predisposes to its occurrence, as "plasma" cells are frequently seen in the stroma. I am quite sure, however, that inflammation or true endometritis is not the only cause, as it definitely occurs with an apparently healthy endometrium. I strongly suspect that the corpus luteum is intimately associated with this type of haemorrhage, although it must be noted that a simple curettage frequently cures the condition.

#### *Menorrhagia.*

In the very limited sense in which I employ the term—namely, as a severe menstrual haemorrhage practically amounting to the popular word "flooding," but not over-

stepping the usual bounds of the "period" with regard to the limits of duration or time—menorrhagia has a very different pathology. It is, I think, comparable to the inertio type of post-partum haemorrhage, and is essentially due to what may be termed "uterine insufficiency." The endometrium, in cases of true menorrhagia, often shows very little that is abnormal if curettage is performed some days after the bleeding has ceased. If the curettings are obtained while the haemorrhage is still in progress—and I believe that this is the time when the operation can be most usefully performed—the tissue shows large "lakes" produced by extensive subepithelial haematomata. If the haemorrhage has been in progress for some time there is a corresponding extensive necrosis of the superficial decidua compacta. Regeneration is very rapid from the decidua spongiosa, and soon after the period the endometrium again presents the normal appearance. Curettage at this time fails to show any pathological lesion.

Uterine insufficiency may be the result of many diverse factors affecting both metrium and endometrium. It is associated with chronic subinvolution and the changes in the uterine wall related to chronic metritis as described by Professor Fletcher Shaw. It is also on occasion a temporary developmental attribute of adolescence. Sterility is frequently associated with uterine insufficiency owing to atrophy and fibrosis of the uterine wall. I have also investigated cases of true menorrhagia where the underlying cause appeared to be general debility, asthenia, or anaemia. In fact, any condition, general or local, which interferes with normal uterine contraction and leads to stagnation of the uterine circulation will predispose to the true menorrhagic type of haemorrhage.

Menorrhagia is infinitely more serious than menostaxis, and if the cause is not removed a severe degree of secondary anaemia is soon produced. The haemorrhage is always severe, and usually differs from the preceding group in that it is associated with the passage of large clots. In milder degrees it appears eventually to produce hyperplasia of the endometrium. Curettage temporarily relieves the haemorrhage, and this may be sufficient in the case of the menorrhagia of puberty. In other cases it is best to combine it with radiation of the thyroid, as previously noted. In the menorrhagia of the menopause, the intrauterine application of radium is the most useful therapeutic measure available, in that it destroys the tissue which aborts.

#### *Metrostaxis.*

This term is, I think, preferable to the older "metrorrhagia"; it includes all haemorrhages independent of the menstrual cycle. It must not be confused with irregularity of the menstrual abortion. Clinically the distinction may be made by investigation of the uterine discharge. In the case of irregularity of the menses the discharge has the typical characters of the menstrual lochia, which are now well known. In true metrostaxis the haemorrhage is frequently severe. It is bright red, and large clots are not infrequently present. Patients commonly note the distinction themselves when giving an account of their symptoms.

In my experience the most commonly noted pathological condition of the endometrium associated with metrostaxis is hyperplasia. Whether this is compensatory, or the result of chronic congestion of the endometrium, associated with pathological changes in the ovarian follicles or corpus luteum, remains still to be proved. The hypertrophy is usually diffuse, but may be localized as in the case of the simple adenomatous polypus of the endometrium. That a small single polypus may sometimes be the only recognized lesion associated with severe metrostaxis is strange; and appears to point to the existence of some deeper underlying and unknown cause. A polypus, in fact, may be but a local safety-valve, or an isolated point where tissue resistance of the endometrium to the underlying forces has broken down.

The problem of metrostaxis will not, I think, be completely understood until we know more about the innervation of the uterus, and the functions of the autonomic nervous system in so far as it controls the internal genital organs. That the uterine, and probably ovarian, functions are influenced by the nervous mechanism, either directly or indirectly through the thyroid, is shown by

many clinical instances. The onset of labour or the occurrence of abortion, whether it be fertile or unfertile (menstruation), as the result of mental shock may be cited. The following case illustrates this type of "uterine bleeding."

Mrs. J., aged 33, met with a motor accident whilst being driven by her husband. She was thrown out of the car, but was not injured beyond receiving a few contusions. Her husband, however, sustained a fractured limb and his wife assisted in conveying him home. Her menstrual period was "due" the day after the accident, but did not commence until three days later. It was then very severe and continued for a week. Two weeks later haemorrhage recurred and continued at irregular intervals for two months. The loss was bright red and was not controlled by rest or by any of the usual medicinal agents employed to check uterine bleeding.

On examination, the patient showed no thyroid enlargement. She was, however, somewhat nervous and excitable, and her basal metabolic ratio as estimated by Reid's formula was + 36 per cent. The pelvic organs presented no abnormality as regards ordinary physical signs.

The uterus was not curetted and the patient was treated by the application of x rays to her thyroid. After the second application the haemorrhage ceased and the normal regularity of her periods was resumed. A recent inquiry has shown that the patient, after some months, is still quite regular, and the bleeding is not excessive.

It is difficult in a case like this to say whether the uterine haemorrhage and the hyperthyroidism were both due to the mental shock, or whether the menstrual abortion was the result of the thyroid activity secondary to the nervous stimulus.

Metrorrhagia is in many respects comparable to gastrostaxis, which, as Hale-White pointed out, is practically confined to the female sex, and independent of any relation to the menstrual rhythm. The sympathetic vasomotor centres in the tractus intermedio-lateralis of the medulla demonstrated by Müller are probably intimately associated with these functional haemorrhages. The recent work of Mariano Castex has shown that these centres are also vasotrophic. Observations such as these point to the wide field of research that is as yet unexplored in its relation to the genital tract. It is not surprising that the endometrium should be particularly susceptible to outside influences when the embryonic nature of its structure is taken into consideration. It is constantly in a state of necrosis and repair, and in this respect differs from any other tissue in the body. Furthermore, I think that perhaps in the past we, as gynaecologists, have been a little short-sighted and narrow in our observations. We have been too inclined to look for and expect a local change in the endometrium, and to label any abnormal appearance—for example, hyperplasia—as being the possible cause, rather than the result, of continued bleeding. We must remember that the uterus and ovaries are but two links in the sexual chain, which are subservient to; and are probably governed by, the metabolic and nervous activities of the individual. It is for this reason that I have avoided detailed reference to endometrial changes—whether the change be hypertrophy or atrophy—in my remarks upon metrorrhagic haemorrhage. The uterus, as Challen wittily remarked, is "an organ upon which many tunes are played." Let us, therefore, in our discussion think not only of the instrument, whether it be good or bad, but direct our attention also to the technique of the artist, and remember that a woman may possibly blush with her uterus as well as with her skin! The conclusions, therefore, which I have reached and which I now submit for discussion, may be summarized as follows:

1. Menstruation is the monthly abortion of the decidua of an unfertilized ovum.
2. The menstrual discharge is the lochia of an unfertile abortion.
3. The pre-menstrual endometrium is the menstrual decidua, and its development and life are dependent upon the corpus luteum.
4. Menstrual abortion is initiated by death of the unfertilized ovum and retrogression of the corpus luteum.
5. Pathological uterine haemorrhage falls into one of four clinical groups: (a) epimenorrhoea, (b) menostaxis, (c) menorrhagia, (d) metrorrhagia.
6. Epimenorrhoea is the clinical manifestation of 'hyper-activity of the sex complex.'
7. Menostaxis is an incomplete unfertile menstrual abortion.

8. Menorrhagia is the result of uterine insufficiency, which may be (a) developmental, (b) inflammatory, or (c) degenerative. The insufficiency may be associated with lesions in (1) the metrium, or (2) the endometrium.

9. Metrorrhagia is commonly the reflection of outside influences upon the uterus. The accessory factors most commonly associated with irregular uterine bleeding are (1) functional hyperthyroidism, and (2) hypersensibility of the sympathetic nervous system.

10. Estimation of the blood tolerance of sugar and of the basal metabolic rate provides important data in the investigation of uterine haemorrhage at periods of unstable equilibrium, especially puberty and the menopause.

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#### II.—WILLIAM FLETCHER SHAW, M.D., CH.B.,

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UNTIL recent years the cause of uterine haemorrhage had been sought in some pathological change of the uterine wall or endometrium, but Professor Beckwith-Whitehouse has made us take a much wider view, and to-day, in making such an investigation, we have to bear in mind disorders of the endocrine glands, disordered physiological action of the uterus and endometrium, as well as pathological changes in these tissues. Of all these causes, changes in the endometrium present the greatest difficulty, and many conditions which were formerly considered to be due to pathological changes are merely part of the physiological monthly cycle, while others may be merely the manifestation of disordered physiological processes outside the endometrium.

The endometrium is one of the most interesting tissues in the body, and there are still many changes found in it which require explanation. Why, for instance, do we so frequently find mucous polypi as a cause of haemorrhage after the menopause? The endometrium is now atrophic, and should not undergo local hypertrophy, but it very frequently does so.

Professor Beckwith-Whitehouse has dealt particularly with haemorrhage due to disordered physiological processes in the uterus and endocrine glands, so my remarks to-day will be confined to the histological changes found in the uterine wall in three pathological conditions in which haemorrhage is the chief symptom. This type of uterus has interested the gynaecological profession for a very long period, and there is now a large literature on the subject. Unfortunately the earlier workers have each published their views without reference to the work of other investigators, and in many instances have coined titles founded on clinical symptoms or faulty pathology. This has caused great confusion of thought, as we find the same type of uterus described under so many different names, such as chronic metritis, fibrosis, climacteric haemorrhages, arterio-sclerosis, haemorrhagica myopatica, chronic areolar hyperplasia, etc. If these papers are carefully read it will be found that the authors are really describing the same type of case, and the time has now arrived when our knowledge is sufficiently well established to discard these old titles and group these

uteri under the three headings descriptive of the conditions which produce these changes: chronic metritis, subinvolution, and hypertrophy. All these conditions produce a uterus which is regular in shape, somewhat enlarged, rather denser than normal, and all are accompanied by increased haemorrhage. The clinical history alone is usually sufficient to determine into which class the uterus falls, whilst histological examination definitely settles the point, as the microscopical appearance in each group is quite characteristic, though the first two, chronic metritis and subinvolution, frequently appear in the same uterus, though in varying degrees. If all teachers will accept this classification the task for our students will be much simplified.

In the normal uterus there is always maintained a definite balance between the musculature and the flow of blood through the vessels, and this flow can be regulated by contraction of the muscle fibres. Anything which upsets this balance produces haemorrhage, and so we find this symptom well marked in all cases where the flow of blood is excessive, as in an inflammatory lesion, and also in those uteri in which some pathological change has damaged the musculature or placed a pad of inert tissue between the musculature and the vessel walls. There are two pathological changes which are specially liable to upset this balance—chronic metritis and subinvolution.

#### *Chronic Metritis.*

Chronic metritis, used in its true pathological sense, is always the result of inflammation. In the majority of instances the inflammation has occurred during the puerperium, though in a small percentage of cases the change is found in uteri which never have been pregnant but have been subjected to acute inflammation from some infection such as gonorrhoea. When the uterus is inflamed, much of its muscular tissue is destroyed and replaced by inflammatory exudation. In the process of repair this inflammatory exudation is converted into fibrous tissue, and so we find in such a uterus a diminished amount of muscular and an increased quantity of fibrous tissue. In the normal uterus the vessels are seen to be surrounded by muscle bundles with a very small quantity of interspersed fibrous tissue, whereas in chronic metritis the vessels are surrounded by large masses of fibrous tissue with only a small quantity of normal muscle fibres. In such a uterus not only is the muscular tissue diminished, but it has to act on the vessels through a mass of inert fibrous tissue placed between it and the vessels; hence excessive haemorrhage is produced. This is the condition which quite correctly can be called "fibrosis," but unfortunately this term has not been limited to the uterus showing this change, but has been applied to the more common condition of subinvolution where the chief changes are of an entirely different character, though there is usually some chronic metritis accompanying this change. It will be better, therefore, to discard this term entirely and substitute "chronic metritis."

This condition without any accompanying subinvolution is rare, but it does occur, and so the title must be retained in our classification.

#### *Subinvolution.*

Involution is one of the most interesting processes which occur in the body. A nulliparous uterus consists chiefly of muscular tissue plentifully supplied with blood vessels and with only a small amount of fibrous and elastic tissue. The fibrous tissue is interspersed between the muscle bundles, but the elastic tissue is chiefly confined to the inner coats of the blood vessels. During pregnancy all these tissues increase in amount, especially the blood vessels which have to convey the increased quantity of blood necessary for the enlarged uterus and for the growing ovum.

In the course of a few weeks a uterus which weighed 2 lb. at the end of labour diminishes in size to that of a normal uterus weighing about 2 ounces. As the main bulk of the uterus consists of muscular tissue the diminution in size chiefly takes place in this tissue. The individual muscle fibres diminish in size and many completely disappear. This is brought about by a change in the muscle which allows the superabundant tissue to be absorbed. Concurrently with the diminution of the muscular tissue

there is diminution of elastic and fibrous tissue and in the size of the blood vessels, but in these tissues this diminution is brought about by a different process, our knowledge of which we owe to the researches of Goodall. The fibrous and the elastic tissues early in the puerperium undergo what he calls "vitreous degeneration." These tissues swell, soften, and lose their physiological properties and their staining reaction. Elastic tissue which is normally stained blue-black with Weigert's stain at first becomes brick-red and later will only take a pale yellow stain. This state is necessary for involution, as it is only in this condition that these tissues can be absorbed, and if involution proceeds normally the extra bulk of these tissues disappears concurrently with that of the muscular tissue. During this stage the blood vessels, especially those supplying the placental site, also diminish in size as they now have to carry a very much smaller volume of blood. They do this, not by means of a simple contraction as one might expect, but by the formation of new vessels within the old ones. Goodall has shown that the first change in these vessels is thrombosis. In some of them the thrombosis is complete and these vessels eventually disappear. In others one, two, three, or more channels are left in the thrombus through which a diminished quantity of blood can circulate. Very soon these channels receive an endothelial lining and then are surrounded with a layer of elastic and muscular tissue derived from the old vessel walls, and in a little time we have one or more complete new vessels formed within the lumen of the old vessels, and at this stage we can see these new vessels surrounded by the old vessel wall. As involution proceeds the whole of this old vessel wall should be absorbed, and at the end of the process there should be merely this group of one or more new vessels with no trace of the old walls surrounding them, but I have never yet examined any parous uterus in which some traces of the old vessel wall could not be found surrounding the new group. At the end of the involution period the elastic and fibrous tissues undergo what Goodall calls "vitreous hypertrophy." The remains of these tissues all through the uterine wall retain their present bulk but regain their old physiological and staining properties.

If involution is complete, sections through the uterine wall will now be exactly the same as in the nulliparous state, but if involution has not been quite perfect there will be some remains of the old vessel walls surrounding the new ones. The muscular tissue of the old vessel becomes merely part of the muscular tissue of the uterine wall, but the elastic and fibrous tissue will remain unabsorbed outside these vessels, and any uterus which shows patches of elastic tissue outside the vessel walls must have been pregnant, as there is no other condition which allows of the development of elastic tissue in this situation. No matter how normal the involution may appear to have been, it is never quite complete, and I have never examined any parous uterus in which small amounts of elastic tissue could not be found outside some group of vessels. This tissue is in such small amount that it produces no physical signs, but its presence is a definite proof that the uterus has at some previous time been pregnant.

In subinvolution the whole process of involution is incomplete. The uterus remains large and bulky, because the muscular tissue has not been absorbed, and, in addition, there is an increased quantity of fibrous and elastic tissue, especially the latter; it is the collection of this tissue in large quantities around the blood vessels which gives the characteristic microscopical appearance in subinvolution and which accounts for the chief symptom of haemorrhage, as it is impossible for the muscular tissue of the uterus satisfactorily to control the flow through these new vessels if a fixed inert mass of elastic tissue is placed between the muscle and the vessel walls, and so these cases usually give a history of excessive haemorrhage dating from a confinement. In some of these uteri menstruation is normal after involution, but as the patient approaches the menopause the symptom of excessive haemorrhage appears. These are cases in which involution has proceeded to a medium degree and the excessive amount of muscular tissue is able to control the blood vessels, even though a considerable amount of elastic tissue is placed between them; but as the patient approaches the menopause and the muscle undergoes normal

atrophy, even though the flow of blood through these vessels is diminished, the balance between the two is lost, and so we find these patients complain of increased haemorrhage as they reach this physiological period.

Subinvolution and chronic metritis frequently occur in the same uterus, the inflammation which caused the replacement of muscular tissue by fibrous tissue being the cause of subinvolution, which, in its turn, prevented the absorption of the elastic tissue. In these cases there is a marked increase in the percentage of fibrous tissue. Subinvolution is the cause of haemorrhage in the majority of parous uteri which show no signs of fibromyomata or malignant growths.

#### *Hypertrophy.*

Occasionally we find a uterus regular in outline, somewhat enlarged, which produces haemorrhage in a nulliparous woman. In these uteri the endometrium is always much thickened, and I have always looked upon this change in the endometrium as the cause of the haemorrhage, though the thickening of this tissue and the haemorrhage may alike be the manifestation of disordered physiological processes outside the uterus. The uterine walls in these cases are greatly thickened, but there is no alteration in the distribution or amount of the muscular, elastic, or fibrous tissue, and a section taken from such a uterus is indistinguishable from that of a normal nulliparous uterus apart from its increase in size.

This increase in the uterine wall is due, I think, to a pure hypertrophy. All these patients suffer from dysmenorrhoea, which is a manifestation of excessive muscular contraction due to the uterus trying to expel this thickened endometrium, which swells to enormous proportions in each pre-menstrual period. This excessive muscular contraction each month carried on for many years gradually produces hypertrophy of the muscular wall. Patients of this type are brought to us in middle life with the symptoms of haemorrhage and dysmenorrhoea extending over many years, but the symptoms are due to changes in the endometrium, and the thickening of the wall is merely due to overwork.

#### GENERAL DISCUSSION.

Mr. W. W. KING (Sheffield) said that they had listened to a paper which was a very notable advance in the physiology of menstruation, and one which must be of great value in the solution of the problems of excessive menstrual bleeding. He was very glad to note that Professor Beckwith Whitehouse had, so to speak, "frozen out" the term "endometritis" from his address. The word had no exact meaning, either clinical or pathological, but it had been used as a scrap-heap for diagnosis and an excuse for curetting. Its use had kept back the proper conception of menstrual anomalies for years past. On the question of terminology to which Professor Fletcher Shaw had referred, might they not abandon the use of the phrase "chronic metritis," which was now used as a generic term for all cases of excessive bleeding with an approximately normal uterus? The evidence of chronic inflammation of the myometrium was only rarely found, and even then was often not very convincing, whereas the excess of elastic tissue which Professor Fletcher Shaw had shown to be diagnostic of chronic subinvolution was constantly present and easily demonstrable. It would seem better, therefore, to replace "chronic metritis" by "chronic subinvolution," and to restrict the use of the former term to those uncommon cases in which real chronic inflammatory changes could be shown to exist in the uterus after removal, or at least to nulliparous women with clinical evidence of chronic inflammation.

In regard to treatment of functional menorrhagias, Professor Beckwith Whitehouse's investigations seemed to indicate that their hope lay in the direction of lutein extracts. Mr. King thought that these should be given by hypodermic injection, and not by the mouth. The vagaries of thyroid medication were an example of how difficult it was to get consistent results with endocrine extracts—though thyroid extract was one of the few which could be given by the mouth. The menorrhagias of early menstrual life could sometimes be effectually cured by a single injection of one of the blood-coagulating serums now

on the market. It was not, of course, safe to repeat the injection, on account of the danger of protein shock, but permanent results might follow a single injection. He had found the cotarnino series of drugs to be the most useful empiric remedy. Radium had not given as good results as was at first expected. In 13 per cent. of the cases treated at the Jessop Hospital for Women there had been recurrence of the bleeding, using doses of 1,300 to 2,000 m.e. hours. He asked Professor Beckwith Whitehouse if he thought that the endometrium had any complementary function with the internal secretion of the ovaries. Though it was known that radium destroyed the endometrium without acting on the ovaries, yet 86 per cent. of the radium series of patients mentioned had menopausal symptoms. He was unaware of any work on these lines, but there appeared to be some grounds for supposing that endometrial extracts might be of use in controlling the hot flushes of the artificial climacteric.

Dr. RHODA H. B. ADAMSON (Leeds) had some questions to ask with reference to the explanation of certain clinical phenomena on the assumption that menstruation was a missed pregnancy. The first of these was the occurrence of three to four days' menorrhagia in schoolgirls of 17 and 18 years of age when sent from inland districts to boarding-school at the seaside, such menorrhagia not reacting to medical treatment while at school but always clearing up at once on return home. There was also the presence of amenorrhoea or greatly decreased menstruation in professional acrobats and ballet dancers; and lastly, the occurrence of apparently normal regular menstruation in cases of repeated pregnancy in certain patients during the first two or three months.

Professor J. S. ENGLISH (Singapore) strongly endorsed the proposal to classify these types of haemorrhage in accordance with the suggestions of Professor Whitehouse. In Singapore the temperature all the year round ranged between 75° and 85° F. Menorrhagia among the white population was common, but he had seen two patients, both of them the wives of prominent Government officials, who had suffered from complete amenorrhoea during their stay in the East. He thought that x-ray treatment applied to the ovaries gave good results in cases of excessive haemorrhage.

Mr. L. C. RIVETT (London) asked what were the clinical differences between subinvolution and chronic metritis. He had not distinguished between them, except that he had recognized the large flabby uterus and the small hard uterus. He would like to know what was the correct treatment. He understood Professor Whitehouse to say that curettage frequently cured this condition. If the pathology was as described by Professor Fletcher Shaw, he did not see how curettage could have any effect whatsoever on the elastic or fibrous cushion surrounding the vessels. He had seen patients temporarily relieved by curettage, but the bleeding returned. He now performed hysterectomy for both conditions, and wished to know if he was right in doing so.

Mrs. ALETHEA J. EAMES (Glynceiriog) said that regarding the correlation between thyroid gland and uterine function, in mountain valleys they saw many cases of enlarged thyroid of puberty, accompanied by simple menorrhagia. The results of internal gland medication varied. She asked whether Professor Whitehouse could throw any light on the subject.

Mr. MASLEN JONES (Wolverhampton) stated that in cases of severe haemorrhage at puberty he had found radiation over the ovarian region, in small repeated doses at intervals of one month, most useful in lessening and finally curing the excessive loss. In certain cases, however, apparently the ovaries were quite unaffected by the treatment; in these radiation had then been applied to the thyroid with permanent beneficial results. Referring to cases of haemorrhage due to subinvolution and metritis, he had found, if the condition was not of long standing, that curettage, followed by the repeated intrauterine injection of sterile glycerin, most efficacious. In these cases



the arrested involution seemed to be restarted, the uterus reverted to its normal size and consistency, with a permanent cure of the symptoms.

Mr. T. H. RICHMOND (Stoke-on-Trent) said that, following his usual custom, he sent all his curettings to the pathologist for his opinion. He thus had the information whether he was dealing with a malignant condition or not. There was, however, what appeared to be a rather rare condition—namely, the piling up of endothelial cells in the glands without breaking down of basement membrane. It was not in the truest sense malignant, but locally there appeared to be invariably a recurrence of the bleeding after curettage. It was in these cases that radium did so well.

Dr. COMRIE-SHARP (Capetown) said that, coming as he did from a country where nature had endowed women with very normal pelvises, he had enjoyed the advantage of hearing the experiences of men who were continually coming across cases of a kind which they in South Africa saw either only very occasionally or not at all. He thought that the opening papers were of such depth and merit that very careful consideration should be given to them before an opinion could be pronounced.

The PRESIDENT, on behalf of those present, thanked Professor Beckwith Whitehouse for his very interesting address, and Professor Fletcher Shaw for his lucid description of the various changes that were found in the uterus in those cases which formed the subject of the morning's discussion. It must be very rare for a Section to have present the two greatest authorities on the subject dealt with. He supported Professors Beckwith Whitehouse and Fletcher Shaw in their endeavours to disentangle the nomenclature of uterine haemorrhage. The terms "menorrhagia," "metrorrhagia," and "endometritis" should be abolished by all teachers, examiners, and writers of textbooks, and such terms as had been suggested substituted. He did not feel in a position to criticize Professor Beckwith Whitehouse's paper; much of it dealt with new work and would require very careful studying. As regards treatment, he had had great success with radium, which he preferred to x rays, principally because he always curetted the uterus first and so could be sure, so far as it was possible to be sure, that there was no malignant disease. He had known a case of carcinoma of the body of the uterus, in ignorance of this condition, x-rayed for haemorrhage, with disastrous results. He had obtained most successful results with thyroid and no results at all. Before treatment by radium and by x rays to the thyroid had been practised he had obtained very excellent results by uterine curettage, which had the advantage over the other available method of hysterectomy, in that so much of the uterus was conserved that a possibility of pregnancy remained, and the young patient of 20 on whom he had performed uterine curettage gave birth to an 8 lb. child four years later with a normal puerperium. He was interested to hear Dr. Adamson's remarks about acrobats and that she did not include ballroom dancers in this category; he thought that the acrobatic exploits of some ballroom dancers he had seen would take some beating, and he had had to treat two such performers for very excessive periods.

Dr. FLETCHER SHAW, in reply, endorsed all that had been said in favour of a more rational and a more accurate nomenclature. He agreed that it was impossible clinically to distinguish between chronic metritis and subinvolution. The majority of cases were undoubtedly subinvolution, but now and then the condition was found in nulliparous women. In answer to the question about excessive bleeding at puberty, he did not think that the sea air had anything to do with it; it was excessive stimulation of the nervous system. These girls were nearly always working up for an examination. If they were removed from school and relieved of the strain they almost invariably got quite well. There was no other cure for subinvolution but another pregnancy followed by normal involution. Temporary benefit might accrue from curetting combined with pituitrin to stimulate the uterine muscle. After the age of

40 it was advisable to get rid of the uterus altogether, either by total hysterectomy or radium. He was rather afraid of radium, as no one knew exactly how it acted. He favoured total hysterectomy, as these cases were nearly always complicated by the association of cervical leucorrhoeas and so forth. In dealing with every case of excessive haemorrhage they must always satisfy themselves that they were not dealing with malignant disease.

Professor BECKWITH WHITEHOUSE, in his reply, said that most of the questions had already been answered. He entirely agreed with Mr. King that the term "endometritis" should be banished for ever. Dr. Eames had raised the question of giving thyroid in excessive bleeding at puberty; it was a case not of increasing the amount of thyroid secretion but inhibiting it, and this could best be accomplished by x rays. The question of when to inhibit or when to stimulate the activities of the endocrine glands would only be satisfactorily solved by a complete investigation of the basal metabolic rate in health and disease. He confessed he was beaten by Dr. Adamson's question about the amenorrhoea of acrobats. All he could say was that manual labour appeared almost to abolish menstrual difficulties. He agreed with the President that ariculoplasty was a most useful measure, and had had considerable success with it himself. He looked upon curettage as mainly a diagnostic measure: it must certainly not be regarded as the last word in the treatment of uterine haemorrhage. When examining the curettings the pathologist should be acquainted with the menstrual rhythm of the particular individual patient whose case was under consideration.

## A GOOD DIET AND A BAD ONE: AN EXPERIMENTAL CONTRAST.\*

(With Special Plate.)

BY

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I HAVE on former occasions<sup>1</sup> referred to the high degree of physical efficiency attained by those Indian races—Sikhs and certain Himalayan tribes—whose food consists of coarsely ground whole-wheat, milk, milk products, tubers, roots, green leafy vegetables, and fruit, with meat occasionally. In physical development, hardihood, and powers of endurance they are probably unsurpassed by any other races of mankind. The conclusion was drawn that this is due, in the main, to the high nutritive quality of whole-wheat, as compared with other staple food-grains (such as rice), and to the manner in which these races combine whole-wheat with other protective foods—milk, milk products, fruit, and green leafy vegetables. This conclusion has now been subjected to the test of experiment, and the effects, on omnivorous animals, of "a good diet," constituted as above, have been compared with those of "a bad diet," such as is used by many Western people of the poorer classes. The results of this comparison are recorded in the present paper.

### THE EXPERIMENT.

Two colonies of half-grown rats were employed, each comprising 20 animals, of which 12 were males and 8 were females. They were selected from among ten or twelve litters of approximately the same age, and were so distributed between the two colonies as to ensure, as far as possible, that the growth-potential of the two groups would be alike. The aggregate weight of the animals in each colony was the same—2,540 grams (See chart). They were housed in the same room, caged in a precisely similar way, and were equally well tended.

One colony received "a good diet," designed to resemble that eaten by the Sikhs. It consisted of "chapatties,"

\* Abstract of a paper appearing in the January, 1927, number of the *Indian Journal of Medical Research*. Published by permission of the Director-General, Indian Medical Service.

made of whole-wheat flour (atta); uncooked vegetables (cabbage, potato, carrot); fresh fruit; sprouted "gram" (legumes); butter; fresh whole-milk; water; and fresh meat occasionally. Ten grams of butter, spread over the chapatties, were given for the whole colony every third or fourth day. Milk was supplied in amounts of approximately 300 c.cm. daily, and fresh meat once a week to the amount of two ounces for the whole colony. Liberal quantities of chapatties, sprouted gram, uncooked vegetables, and tomato—to take the place of fruit—were given, so that the animals could select for themselves the amount of each they cared to eat.

The second colony received "a bad diet" designed to resemble that eaten by many Western people of the poorer classes. It consisted of white bread, made from American white flour; vegetables—cabbage, carrot, potato, etc.—cooked in water to which pinches of sodium bicarbonate and common salt were added; a substitute for margarine, consisting of coco-nut oil to which 100 grains of boric acid were added to every pound of the oil; tinned meat, which had been exposed to formaldehyde vapour for several hours; tinned jam; tea, well sweetened with sugar, to which was added enough milk to give it the customary tinge; and water. The boracized coco-nut oil was lightly smeared on slices of the white bread and covered with a liberal coating of jam. The potted meat was given in like amount to the fresh meat in the first colony—two ounces weekly. Of the other ingredients of the food—the bread-and-jam, the cooked vegetables, the tea-and-sugar, and the water—the animals were allowed to eat and drink as much as they liked. They acquired an extraordinary liking for the tea, the colony consuming as much as 600 c.cm. daily, and therewith approximately 20 grams of sugar and 20 c.cm. of milk.

It will be noted that this diet contained two of the commoner food preservatives so widely used in Western countries—boric acid and formaldehyde. The former is commonly present, sometimes in large amounts, in butter, margarine, cream, imported liquid eggs, sausages, potted meat, potted fish, and some beverages; while it is also used for packing bacon and hams.<sup>2</sup> As much as 175, 140, and 110 grains of boric acid per pound have been found in margarine, butter, and bacon respectively; the amount in the first two is usually 0.5 per cent., or 35 grains per pound.<sup>2</sup> I added 100 grains to the pound of coco-nut oil in order that other sources of boric acid—bacon, liquid eggs, sausages, etc.—not included in the above diet, but commonly included in the dietaries of Western people, might be covered, so that the amount of boric acid ingested by the rats might be approximately proportionate to that ingested by these people. The potted meat was exposed to formaldehyde vapour in order to simulate the Langley process of treating chilled meat for export. In all probability the tinned jam contained sulphurous acid as a preservative<sup>3</sup>; so that in addition to the faults in composition and in quality of this diet (insufficiency of vitamins, of suitable proteins, and of certain mineral salts, and excessive richness in starch and sugar) there were present in it several food preservatives the effects of which on the animal organism may not have been negligible.

The experiment was continued for six months. During its course the animals were kept scrupulously clean, were comfortably bedded in fresh straw, and were given sun baths of two hours' duration—while in their cages—twice a week.

#### RESULTS OF THE EXPERIMENT.

##### 1. Mortality.

On the termination of the experiment there were 17 animals alive and well in the colony which received the "good diet"—10 males and 7 females. In the colony which received the "bad diet" 11 animals were alive at the end of the experiment—5 males and 6 females. The mortality from all causes in the former colony was thus 15 per cent., in the latter 45 per cent. But whereas the survivors in the first colony were well grown, sleek-coated, strong and active, those in the second colony were ill-

grown, poor-coated, weakly and listless. The differences in size and appearance of the animals in the two groups are illustrated in the accompanying photographs (Figs. 1 to 4), which were taken during the sixth month of the experiment.

##### 2. Causes of Death.

Of the 3 animals which succumbed in the well-fed colony one died from injury to the abdomen; at post-mortem examination it was found to be excellently nourished; its organs were in perfect health. A second animal died of pneumonia; the gastro-intestinal tract was not diseased.\* The third died from causes which I was unable to discover at post-mortem examination; a small cyst containing an embryo tapeworm was present in the liver.

Of the animals which died in the ill-fed colony 3 were killed and eaten by their fellows—so completely eaten in each case that little or nothing remained for post-mortem examination. The

fact that they were killed shows that they were in a weakly condition.

[At one time during the course of the experiment (see chart) I feared that cannibalism—that sure sign in rats of a faulty diet—might put an end to the experiment. Resort had, therefore, to be made to separating each animal in this group from its fellows every night. Later, a small quantity of fresh vegetable food was given, two or three times a week, in addition to the diet above mentioned, when cannibalism ceased.]

The immediate cause of death in the other 6 animals was bronchopneumonia; and this at a time when bronchopneumonia was so rare in my stock animals that only three cases of the disease occurred during the six months in a rat population which averaged 375 animals daily. One consequence, therefore, of the "bad diet" was to lower the resistance of the lungs to attacks by microbial agents of disease—a consequence of faulty food, deficient in vitamins, which has already been emphasized by Cramer.<sup>3</sup>

##### 3. Other Post-mortem Findings.

Of these, the most constant and the most important were changes in the gastro-intestinal tract which impaired its functional capacity. In illustration of this point I append

\* Owing to inadvertence the cage containing this animal was exposed to draught during a spell of cold and wet weather.

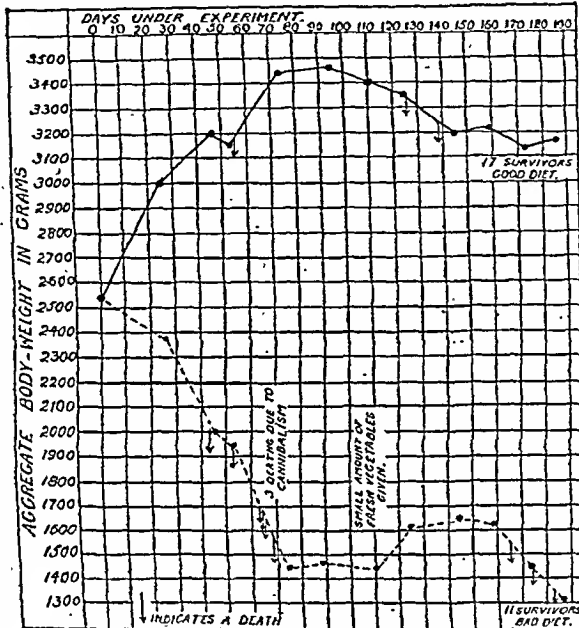


Chart showing (a) gain in aggregate body weight of the colony fed on the "good diet" and the mortality in this colony; (b) loss in aggregate body weight of the colony fed on the "bad diet" and the mortality in this colony. The 17 survivors in the first colony increased in body weight by approximately 46 per cent. The 11 survivors in the second colony lost in body weight by approximately 6 per cent. The average age of the rats at the beginning of the experiment was eighty days.

the notes of two cases dictated at the time the *post-mortem* examinations were made:

"On opening the abdomen the first thing observed is the extreme dilatation and thinning of the whole gastro-intestinal tract; atony of the bowels; ballooning and transparency; intestinal stasis; giving the appearances now so familiar to us in deficiently fed animals, and first observed in pigeons and monkeys in 1919."<sup>1</sup>

Again in another case:

"This case presents an extraordinary contrast to all other rats' intestines seen up to date. The lumen of the bowel is very much narrowed, the bowel being in its whole course hardly thicker than a piece of grocer's string. There is no distension of the bowel nor 'air-locks.' Intestinal stasis is marked; the lower part of the bowel is filled with hard, oval, faecal masses situated one above the other, which, with the attenuated bowel between them, resemble a string of beads strung at bead-distance intervals. The stomach is very small, and is not dilated; it is filled with coffee-ground-like material, some of which washes off in water, but much of which is adherent to the congested mucous membrane; and can be removed only by scraping. About the middle of the proximal portion of the stomach there are three mammiform areas, each having a small crater-like depression at the top."

These areas, which may be either villiform or mammiform, were found in this situation in 3 of the 6 animals in which *post-mortem* examination was made, but never, so far, in well-fed controls. On histological examination they were seen to be papillomatous outgrowths of the stratified epithelium lining the proximal part of the stomach. Their appearance is illustrated in the photomicrographs (Figs. 3 and 4). These notes will serve to indicate that the diet on which this colony was fed was such as favoured the production of an unhealthy and inefficient state of the gastro-intestinal tract, and an abnormal growth of epithelium in the proximal portion of the rat's stomach.

#### 4. Body Weight.

The difference in body weight of the two colonies is sufficiently indicated by the photographs. Aggregate weight curves are, however, given in the chart. Starting from the same point at 2,540 grams, it will be noted how the two curves diverged: the aggregate weight of the well-fed colony rose steadily; that of the ill-fed colony fell steadily. At the points at which deaths occurred in either colony an arrow indicates the event. The fall in the aggregate weight curve of the ill-fed colony was, of course, due mainly to losses by death; but the chart illustrates in a striking way the extent to which the ill-fed colony suffered.

#### CONCLUSION.

This experiment demonstrates that a diet composed of whole-wheat, milk, milk products, sprouted legumes, uncooked vegetables and fruit, with fresh meat occasionally, far surpasses in nutritive value that composed of white bread, tea, sugar, margarine, jam, boiled vegetables, and tinned meat, to which the common food preservatives—boric acid, formaldehyde vapour, and sulphurous acid—are added. The former promotes physical efficiency and health, but the latter gives rise to stunting of growth, to physical inefficiency, and often to disease. The maladies of which the bad diet is so apt to lay the foundation are lung disease and gastro-intestinal disease. I have repeatedly drawn attention to the influence of faulty and ill-balanced food in causing the gastro-intestinal diseases which are so common at the present day.<sup>2</sup> The results of this experiment furnish additional proof of this influence, and suggest also that the common food preservatives may contribute their share to the harmful effects of such a food. The high incidence of lung disease in the ill-fed group emphasizes no less strikingly the influence of what one may call the "white-bread-margarine-tea-sugar diet" in favouring the operation of pathogenic agents which attack the lungs.

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- <sup>3</sup> Cramer, W.: Discussion on Disturbances of Health Due to Vitamin Deficiency, *Proc. Roy. Soc. Med.*, London, 1925, p. 6 et seq.
- <sup>4</sup> McCarrison, R.: *British Medical Journal*, July 12th, 1919, p. 36; February 21st, 1920, p. 249; and June 19th, 1920, p. 822. *Ind. Journ. Med. Research*, October, 1919, pp. 283 and 303.
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## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### NEW SERUM PEPTONE IN ASTHMA.

My communications on this subject to the *BRITISH MEDICAL JOURNAL* (vol. ii, 1924, p. 575, and vol. i, 1925, p. 448) now require alteration. When the solution of peptone was added to the fresh blood and incubated at 37° C. a clear peptonized serum gradually formed, which was usually pipetted off on the following day. But last winter this no longer occurred. An insoluble clot, whitish in colour, formed over the blood. It was evident that plasma as well as serum was being extruded. Adding to the fresh blood a minute quantity of calcium chloride made matters no better. It is clear that the peptone must have undergone a change of some sort. A fresh batch of Armour's peptone (No. 2) showed the same thing.

The serum peptone could be made, however, by allowing the blood to clot, drawing off the serum, and adding peptone in powder or in solution, then incubating and adding phenol.

Since last spring I have been making the serum peptone by a new method. The blood is run directly from the needle into a four-ounce sterile glass tube,<sup>1</sup> which is made half or three-quarters full. It is then allowed to stand at room temperature until next day. As the patient is not allowed any food for five hours before the bleeding the serum is clear. It is pipetted off and some agar solution added to it.

The agar solution is prepared by mixing one part of agar with 1,000 of water (1 grain, 1,000 minims). This is well boiled and allowed to cool. No gel is formed, but should a little clot be present it is removed. One volume of this solution is shaken up with 5 volumes of the serum and the mixture incubated at 37° C. for about an hour. The peptone powder (Armour No. 2) is then added to the mixture in 4, 5, or 6 per cent., according to the patient, slightly agitating, and it is again incubated for an hour. By this time the peptone will all be thoroughly dissolved, and on adding 0.5 per cent. phenol the preparation is ready for use. If the peptone powder is doubtful as regards sterility (which it should not be) it may be heated to 100° C. for a time. I have tried trikresol instead of phenol, but it is not quite so good. Dilute the phenol with five or six times its volume of water and rapidly shake on adding it.

The preparation is given in 1½ c.c.m. doses intravenously every three, four, or five days, going up gradually to 3 or 4 c.c.m. The above agar solution is only one-fifth of the strength used experimentally by Bordet, as it was found that serum can be toxified with agar one-tenth of the strength used by Bordet. Bordet's agar forms a gel also on cooling. Novy and his colleagues found that keeping the serum for twenty-four or thirty-six hours before adding the agar had no effect on the toxicity. Hence, it is unnecessary to centrifugize the blood.

The effect of this solution, which must be very carefully prepared and administered, is very good in cases where peptone alone has proved unsatisfactory.

London, W.1.

A. G. AULD, M.D.

#### ACUTE INTESTINAL OBSTRUCTION DUE TO HYDROCEPHALIC CHILD.

The following case is recorded because of its unusual features and complications.

A married woman was admitted to the Bristol General Hospital on January 23rd, 1926. She was eight months pregnant and complained of intractable vomiting. Her previous history was that she had had Caesarean section performed for her first child in 1921 and had had an induction at eight months for her second in 1924; neither of these children survived. She was due for admission at a slightly later date for induction for her present pregnancy.

On admission she had a normal temperature but a persistent pulse rate of 120. There was no abdominal rigidity and no marked distension; the only tenderness was over the uterus itself. The presenting foetal vertex was on the brim. Urine examination showed the presence of diacetic acid but no albumin, and as there were no other evidences of toxæmia I put the presence of diacetic acid down to her persistent vomiting and consequent carbohydrate starvation. A fair result was obtained with an enema.

<sup>1</sup> From Baird and Tatlock.

The vomiting persisted in spite of treatment, and gradually the passage of faeces ceased though flatus was still passed in small quantity with turpentine enemata. On the second day after admission the presenting part was firmly fixed in the brim and obstruction became absolute. I decided to induce labour by rupturing the membranes, hoping that this would relieve the obstruction, as there seemed no other cause but the pressure of the presenting part. I induced labour at 5 p.m. on January 25th without anaesthesia; very little liquor escaped, but labour commenced later in the evening. At 2 a.m. on the next morning the patient's condition was very bad; vomiting had recommenced, the pulse was 160, the cervix was half dilated and the presenting part was in the pelvis. I determined to deliver the child through the vagina as her general condition seemed to preclude any abdominal operation. Under anaesthesia I found that the presenting part was the advanced part of a huge hydrocephalic head, the greater portion of which was above the brim, the only bony portion being in the pelvis. I immediately perforated and delivered the child quite easily, but this was followed by an alarming haemorrhage. I put my hand into the uterus in order to deliver the placenta, when I found that my hand went through the uterine wall into the abdominal cavity. The patient's position was changed immediately and I opened the abdomen, to find the placenta floating free in the abdominal cavity, which was filled with fresh blood and old blood clot; there was a large rent in the anterior wall of the uterus corresponding to the old Caesarean scar. I removed the placenta and then performed a subtotal hysterectomy, leaving a drainage tube in the pouch of Douglas on closing the abdomen. For the next few days the patient's condition was critical on account of the shock and haemorrhage, but she eventually made an excellent recovery. There was never any sign of sepsis, while the obstruction was immediately relieved by the operation.

That the obstruction was due to the hydrocephalus I think there is no doubt, as it filled the pelvic brim completely like any soft tumour and pressed on the intestine. Against a toxæmia is the presence of absolute constipation. The rupture of the Caesarean scar had evidently commenced prior to my intrauterine manipulations, as around the scar and in the abdomen there was a considerable amount of organized blood clot, but it is probable that it completed the tear in my efforts to dislodge the placenta, which was attached to the area of the scar.

As an eventful obstetrical history I think that this case will be hard to beat.

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## Reports of Societies.

### INTRACRANIAL TUMOURS.

At the first meeting of the winter session of the Section of Neurology of the Royal Society of Medicine was held on October 14th, when Sir JAMES PURVES-STEWART, who had been elected President for the year, delivered his presidential address, on intracranial tumours and errors in their diagnosis.

The President confined his remarks on intracranial tumours to purely personal experiences. While fully aware of the important contributions to this branch of neurology by various workers, he preferred to omit reference to the literature of the subject. His observations were based upon notes of 250 cases of cerebral tumour, in 119 of which the localization of the tumour was subsequently verified either by operation or necropsy. He showed many lantern slides illustrating brain preparations and displaying cerebral tumours or cysts in various parts of the brain, including cortical and subcortical tumours of the frontal, parietal, and occipital lobes, and tumours of the mid-brain, the basal ganglia, the pons and medulla, the optic and auditory nerves, the Gasserian ganglia, the pituitary region, and the cerebellum. Interesting specimens of tumour of the lateral ventricles and the cisterna magna were also shown. It was often the case that a cerebral tumour of large size gave rise to surprisingly few physical signs. Prefrontal tumours were sometimes associated with nystagmus and unilateral ataxia, and might therefore be mistaken for homolateral cerebellar tumours; this error had occurred in two of the cases of the series. On the other hand, cerebral tumours were sometimes accompanied by no other signs than nystagmus. More than one tumour might occur in the same brain and thus lead to errors of diagnosis or localization. Some cases of disseminated sclerosis simulated cerebral tumour, especially if associated with

intracranial haemorrhage; one such case was that of a girl, aged 17, with a history of failing vision (optic atrophy), attacks of unconsciousness associated with transient homiplegia, mental upathy, and a pronounced increase in weight. This patient, with some justification, was considered to be suffering from a cyst in the pituitary region, which probably involved the posterior lobe of the pituitary gland. At autopsy, however, a condition of disseminated sclerosis was found, with an area of haemorrhage into the right caudate nucleus. Tumours involving the basal ganglia or mid-brain might be mistaken for the Parkinsonian type of encephalitis lethargica; this error had occurred in one case. Serous meningitis with internal hydrocephalus secondary to otitis media might give rise to symptoms and signs closely resembling those of cerebral tumour, especially if optic neuritis was present. One interesting case was that of a woman who complained of headache, vertigo, and nausea only when sitting up or standing; on lying down these symptoms at once disappeared; at the necropsy a tumour of the lateral ventricles was found. Sir James Purves-Stewart suggested that the symptoms experienced by the patient when the head was erect were due to the tumour hanging down in the ventricles and blocking the foramina of Monro; in the supine position the tumour probably fell backwards and the foramina were not occluded. In another case, when tumour of the cisterna magna was present, the patient showed no symptoms or physical signs attributable to the pons or medulla, but had a spastic condition of both upper limbs. Pachymeningitis haemorrhagica might also be mistaken for cerebral tumour; since the Wassermann test was introduced as a routine examination, however, this error was less frequent. In conclusion, the President said that errors of diagnosis were divisible into two classes: (1) avoidable errors, such as those resulting from inadequate or incomplete examination, lack of a sufficiently detailed history, and attempting to fit in with a preconceived notion of the patient's case symptoms that developed subsequently; (2) unavoidable errors—in the early stages of cerebral tumour the physical signs might be inconspicuous, and even later, localization difficult, and sometimes impossible.

A vote of thanks to Sir James Purves-Stewart for his interesting address was passed, on the proposition of Professor EDWIN BRAMWELL (Edinburgh), seconded by Mr. DONALD ARMOUR (London).

### CHOLECYSTITIS.

At a meeting of the Brighton and Sussex Medical-Chirurgical Society on October 7th Dr. E. RIVAZ HUNT gave his presidential address on cholecystitis.

Dr. Hunt said that according to Hurst cholecystitis was the most common of all chronic abdominal disorders, probably occurring in at least 20 per cent. of all persons. It was probable that with a keener watch for this condition many complaints of bilious attacks, indigestion, flatulence, or even of that much abused term "influenza," could be attributed to their real cause—the presence of cholecystitis. Gall stones, found after death in at least 10 per cent. of all persons dying after the age of 20, were probably almost always secondary to cholecystitis, though the latter might have ceased long before the presence of the gall stones was recognized, and might also exist without the presence of gall stones. He emphasized the importance of recognizing this disease as a focus of chronic sepsis, either occurring alone or in conjunction with septic foci in the more common situations, such as the teeth, tonsils, and nasal sinuses. After briefly reviewing the anatomy of the gall bladder and its nerve supply, and mentioning the importance of the close relation in the spinal cord of the areas from which the gall bladder, liver, and stomach were innervated, he discussed the physiology of this organ. It was probable that the gall bladder acted as a pressure bulb to regulate the flow of bile into the duodenum rather than as a storehouse for bile, which was formerly thought to be its chief function. Cholecystitis was invariably microbic in origin, and therefore any agent which lowered the resistance of the mucous membrane of the gall bladder was a predisposing cause of infection. Streptococci isolated from infected teeth and tonsils in cases of cholecystitis

had often a specifically selective action on the gall bladder when inoculated into animals. Infection by the lymphatic path was probably the most important route. Inflammatory changes in the liver were a constant accompaniment of cholecystitis. Duodenal ulcer, appendicitis, and typhoid fever might lead directly to infection of the gall bladder. Factors of contributory or predisposing importance in provoking cholecystitis were conditions which reduced the vitality and resisting power of the gall bladder and biliary ducts, such as trauma, previous attacks of cholecystitis or gall stones, local diseases of the intestinal tract which might act as a source of bacterial infection, and general disorders, such as nephritis, in which complicating or terminal infections were common. Other predisposing causes were gall stones, tumours, foreign bodies such as worms, catarrh within the ducts, or tumours, compressing kinks or cicatrices, or general conditions leading to biliary obstruction or stagnation of bile in the gall bladder, such as sedentary habits, obesity, abdominal tumours, pregnancy, and tight lacing. A biliary infection complicating or following pneumonia, influenza, and such diseases might be due, not to the specific cause of the general infection, but to pyogenic cocci or the colon bacillus, the original infective agent or its toxin perhaps having prepared the way for the secondary invader. It was probable that symbiosis in combination with focal sepsis and some form of protein sensitization had an important bearing on the causation of many diseases, such as diabetes, Hodgkin's disease, eczema, and the various dermatoses; it was even possible that the cause of cancer might eventually be found in some combination of these three factors. Cholecystitis appeared to be more common in adults, and especially in those who were unable to take regular and satisfactory exercise. The onset was usually gradual, and as a rule there was little or no pyrexia, except at intervals when short attacks of a characteristic type might occur. Flatulent dyspepsia was the most prominent symptom, usually coming on immediately after meals, though, when associated with reflex hyperchlorhydria, it simulated the hunger pain of duodenal ulcer, beginning two or more hours after a meal, and being then relieved by food, alkalis, or vomiting. Vomiting was uncommon, but nausea was very frequently present. Indeed, cholecystitis was the most common cause of chronic nausea. Some irregularity of the bowels might occur during the attacks of pyrexia. Jaundice was not a marked feature. The pain of cholecystitis was not infrequently a recurrent gastric pain, often worse at night, but owing to the close association of the centres in the spinal cord innervating the stomach, liver, and gall bladder, the irritable focus in the cord might not be due necessarily to a gastric lesion, but might arise from disease of a neighbouring organ. Viscero-sensory accompaniments of cholecystitis included superficial and deep soreness in the right upper region of the abdomen, right subscapular and interscapular pain, and tenderness over the middle dorsal spines and along the course of the eleventh rib on the right side. In some cases of cholecystitis in which the gall bladder was situated abnormally high, the inflammation of the gall bladder might extend to the under surface of the diaphragm and give rise to many of the signs and symptoms of subphrenic abscess; it might even masquerade as a pulmonary affection with slight dullness at the base of the right lung, râles, and slight pyrexia.

In considering the necessary means of diagnosis, such as the x rays, functional test meals, and examination of the bile and duodenal contents by the use of the Einhorn tube, Dr. Hunt emphasized the importance of remembering that such newer methods should be considered as accessory only, and not as short cuts to diagnosis, to the exclusion of the older and simpler methods, including study of the history of a case and the intelligent use of the eyes, ears, and hands. Lewis's mydriatic test for diagnosing acute pancreatitis was described. The treatment of acute cholecystitis was surgical. It might be divided broadly into two classes: (1) Cases in which secondary complications, such as gall stones, or evidence of secondary septic troubles elsewhere, were present; for these operation was the ideal course. (2) Cases in which secondary complications were absent, or in which operation was declined, or for some

other reason was inadvisable; for these medical treatment might be tried first. An important point was the removal of any primary focus from which infection might be conveyed to the gall bladder. Oral sepsis, tonsillitis, infection of the accessory nasal sinuses, chronic appendicitis, pelvic infections in women, and *Bacillus coli* infections must be looked for and treated. An attempt must be made to treat the gall-bladder infection by means of biliary antiseptics and provision of adequate drainage. Large doses of urotropine combined with alkalis, given in the manner advocated by Hurst, might be used; hexamine, combined with hexamine salt of cholic acid, was sometimes efficacious. Salicylates or aceto-salicylic acid in large and regular doses had been advocated. Magnesium sulphate given in concentrated solution by the mouth promoted biliary drainage. The importance of exercise, especially horse-riding and rowing, was insisted upon. The diet should be carefully supervised so as to avoid or restrict those articles of food which contained or produced cholesterol.

### JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

THE Winter Session of the James Mackenzie Institute was opened on October 5th, when the Honorary Director, Dr. Maitland Ramsay, gave an address. In the eye, he said, physiological and pathological processes can be directly observed as they occur in a state of nature (as distinguished from experiment under artificial conditions), and since it is a fundamental principle that similar structures behave alike in all parts of the body, the phenomena observed in the eye are a valuable index of the conditions obtaining in other organs. With this principle in mind he proceeded to draw attention to some analogies and contrasts between the non-striped muscle of the eye, which can be directly observed, and that of the heart and other hollow viscera. The nerve supply of the non-striped muscle of the eye is derived both from the sympathetic and the cranio-autonomic systems—the dilator muscles, whatever their position, having a sympathetic supply, while the constrictor muscles are innervated by the cranio-autonomic. These supplies are anatomically and functionally distinct.

As a result of this reciprocal innervation (Dr. Ramsay continued) the pupil is never at rest, the two opposing actions maintaining an equilibrium adjusted not only to the influence of light, but to afferent impulses from all over the body. The pupil, for example, varies with respiration, while it contracts during cardiac systole and dilates during diastole. In the eye the dissociation of structures concerned in contraction and dilatation is so complete that a study of the reflexes of the pupil ought to throw light on the mechanism of the heart beat and the peristalsis of the bowel. There was an analogy between the nerve supply of the iris and of the heart, sympathetic and cranio-autonomic nerves opposing one another in each instance—contraction of the pupil is analogous to slowing, and dilatation to quickening, of the heart. In their reaction to drugs the two organs show a similar analogy. Atropine dilates the pupil and quickens the heart by paralyzing cranio-autonomic endings. Adrenaline produces similar effects by stimulating the sympathetic. The action of physostigmine on the eye and digitalis on the heart were also compared. Loss of the light reflex in Argyll Robertson pupil is no evidence of disease of the iris itself any more than heart block is evidence of disease of the ventricular muscle. The severe pain which accompanies spasm of the iris is comparable to that accompanying spasm of non-striped muscle elsewhere—in the heart, the intestine, and the ureter. The process underlying its production is in each case the same. The ciliary muscle and the heart muscle are two muscles of the body which can be overworked by an effort of will—the pain and hyperalgesia of eyestrain resulting in one instance and angina pectoris in the other. Both can be restored by physiological rest. Each muscle hypertrophies when subjected to prolonged strain and both become, at the same time, more easily broken down.

The lecturer gave many other examples of the physiological analogy between the non-striped muscle of the eye and of other organs.



## Reviews.

### EDUCATIONAL PSYCHOLOGY.

MR. CHARLES FOX, the director of the training of teachers and lecturer in educational psychology in the University of Cambridge, has produced a first-class book on the problems and methods of education, entitled *Educational Psychology*.<sup>1</sup> His aim has been to consider the contribution made by experimental psychology to the elucidation of educational problems. A vast amount of experimental work has been done during the last twenty-five years, and not a little confusion and exaggeration has resulted from too much undigested material. The aim of the author has been to attempt a conspectus of the present position, more especially as it is directly related to educational matters. The book is, however, much more than a survey, it is a critical exposition. The author recalls that much good work was done before the recent revolution came about, for wisdom did not delay its entrance into the world until the reign of experimental psychology began; the experience of practical teachers gave, and still gives, them an insight into the mentality of youth obtainable in no other way. Nevertheless, the value of experimental observation cannot be gainsaid, and the science of education must take into account the evidence acquired by exact methods.

In this book the history of the subject is well presented and related to the new work; the result is illuminating. The critical attitude of the author is refreshing. In the chapter on habit-formation he shows that there is no ground for the belief that acquired impulses are all derived from inherited tendencies to action. Hume first formulated the belief that reason could never of itself be a motive to conduct, but was confined in its operation to directing the conflict of inherited impulses. The recent tendency has been to assert the belief that only propelling and never attracting forces determine human conduct; that we can never acquire a new impulse to action, but that all the energy is derived from inherited impulses or instincts. The culmination of this doctrine is found in Freud's theory of the domination of the sexual impulse. No better corrective of this exaggeration could be found than is contained in this work, and in particular in the section on sex instruction. The author has something also to say on mental tests. Testers are, he says, losing their mental balance, and are confusing administrative with psychological procedure, so that devices invented to make easy the rapid marking of large numbers of answers have been erected into laws of the working of the mind. Hence we are offered tests in which the examinee no longer answers questions, but merely selects a stupid answer forced on him by the examiner. The book is excellently written, and free from the vice of many recent books on psychology, for its language can be understood by an educated person. There is an excellent bibliography.

This is a book both for study and reference. Despite its excellent form it is issued at a remarkably low price for present-day publications.

### PATHOLOGICAL HISTOLOGY.

THE second edition<sup>2</sup> of MAX BORST's book on pathological histology differs in no essential particulars from the first. Certain figures regarded as unsatisfactory have been replaced, and new illustrations inserted; and a separate chapter has been devoted to the organs of internal secretion. Otherwise the book remains the same, and is to be regarded, as the author expressly states, not as a textbook of pathological histology, but as embodying the subject-matter of a course of practical work such as is generally included in the medical curriculum. It, in fact, represents the actual course of pathological histology, apart from microscopical technique, which the author has found to be the best, after an experience in teaching extending over

twenty-five years; it should, therefore, be of interest to other teachers as affording a means of comparison with their own methods. Its most noticeable feature is the arrangement of the subject-matter on an anatomical basis; the several organs and systems are dealt with in order, commencing with the circulatory system and blood, followed by the respiratory system, and so on through the digestive, urinary, sexual, nervous, and locomotor systems to the skin and ductless glands. There is no section dealing with general pathology, the author considering that, if a careful selection of preparations is made, the facts of general pathology as regards any given lesion, tubercle for instance, may be satisfactorily deduced from the recurring examples of the disease that are met with as the organs are passed in review. An exception is made with regard to neoplasms. These are dealt with on a pathological basis and are described at considerable length; they occupy, in fact, nearly one-fourth of the volume. The section constitutes a valuable statement in concise form of our present knowledge of tumours, their relation to other tissue enlargements, such as hypertrophies, and the principles of the classification of neoplasms. The volume presents a tolerably complete course of pathological histology, but the author is careful to point out, in a short introduction, that the student will do well to regard it as no more than a ground-work for a deeper study. The student may succeed in obtaining a knowledge of the changes from the normal which are revealed by the microscope; but this is of little use without the faculty of correct interpretation, which is perhaps to some extent a special gift of nature, somewhat analogous to the so-called clinical instinct, and in any case is only to be acquired by long experience.

### EUGENICS.

EUGENICS, whether we use this term of classical derivation, or think in the form of common speech and speak of "breed," is of interest to everyone. As citizens we like the look of clean-limbed, well set up, well bred youngsters: they are a promise for the future, which we elders have tried to do something to make better. As doctors we are doubly interested, for nothing pleases the man whose business is so often with the sick and infirm as the contemplation of the wholesome and robust. We, like the prophet Samuel, look with pleasure on the youthful David, "for he was ruddy and of a fair countenance." But he love of breed, whether in man or beast, or eugenics as applied to man only, we all want it. The problem is how to get it, how to make sure of it. There can be no doubt that mankind has got it in the past, slowly, gropingly, and perhaps unconsciously; he had, through untold centuries, advanced on the great days of Greece from the scarcely human to the fully sentient human being. He had become a real personality, and some would aver to-day with more personality than his frail flesh can always support. How he has done it he scarcely knows. His breeding methods with the beasts of the field have been conscious, he has acquired a body of tradition founded on long experience, and the eye of modern science seeks to learn from what he has accomplished and seeks to ascertain the effect of the new conditions of highly organized civilization upon the prospects for weal or woe of man's body and mind. What has the future in store when man's fertility is conditioned by these new circumstances?

Major LEONARD DARWIN, in his book *The Need for Eugenic Reform*,<sup>3</sup> discusses this matter in his erudite way. It is a masterly exposition of the subject, and the book will command much study and thought. He leads the reader through easy stages from physical science based upon evolution, through the laws of inheritance and the effects of environment, to population problems. He considers our population is now probably too great. Thereupon comes the consideration of racial poisons, such as alcoholism and syphilis; the inheritance of acquired characteristics and the effects of natural selection are discussed, and the lessons of the breeding farm and the tendencies of individual and mass selection

<sup>1</sup> *Educational Psychology: Its Problems and Methods*. By Charles Fox, M.A. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1926. (Demy 8vo, pp. xiii + 380. 10s. 6d. net.)

<sup>2</sup> *Pathologische Histologie*. Von Dr. Max Borst. 2. Auflage. Leipzig: F. C. W. Vogel. 1926. (Sup. roy. 8vo, pp. xiii + 435; 275 figures. M.45; bound, M.52.)

<sup>3</sup> *The Need for Eugenic Reform*. By Leonard Darwin. London: John Murray. 1926. (Demy 8vo, pp. xvii + 529. 12s. net.)

are set out. A consideration of the problems of the feeble-minded and the habitual criminal, of insanity and genius, are discussed, followed by chapters dealing with the practical and immediate subjects of family allowances, income tax, and social legislation. Finally, he relates these factors with the higher ideals of mankind, and concludes that there is no necessary antagonism between religion and science. In studying this work the reader, certainly the medical reader will not be treading wholly unfamiliar ground, for much of it will be in his mind from the reading or hearing of Major Darwin's lectures; but the book presents the opportunity of taking in the whole of his teaching in a connected study, and it is one not to be missed.

#### LENGTHENING THE MORTAL COIL.

DR. SERGE VORONOFF is a most entertaining writer. His method displays quiet, almost apologetic enthusiasm in advocating his views. The argument seems so simple and straightforward, the evidence so irrefutable, and yet the results are so marvellous that the author appears to feel that some sort of apology is due to the reader. In his *Etude sur la Vieillesse et la Rajeunissement par la Greffe*\* Dr. Voronoff recalls first of all to our memory the immortality of unicellular animals which multiply by fission. Who has ever seen the corpse of an infusorium? In the higher animals most cells are mortal; but the sexual cells are immortal, and have eternal life. Yet even the mortal cells do not die a natural death; death which quietly extinguishes the flame of a life of 100 or 150 years' duration is not the enemy. It is against disease, with its concomitants old age and senility, that we must strive. The enfeeblement of the body in old age is due to the atrophy of the specialized cells in each organ, and to the increase of connective tissue. If we can retard this process of enfeeblement we shall not, perhaps, retard natural, physiologic death; but we shall retard accidental death, of which we all die.

Can the cells of an aged organism be rejuvenated? The maintenance of the activities of the cells depends upon the hormones poured into the blood by various glands. In old age this function of all the glands, although doubtless enfeebled, remains, with the single exception of the genital gland. Old age sets in contemporaneously with the cessation of the internal secretion of the genital gland. Dr. Voronoff based his experiments upon the supposition that if the genital glands continued to pour their hormones into the system of the elderly, senility should certainly be retarded. As corroborative evidence he quotes the opinion of a veterinary surgeon on the comparative longevity of a stallion and a gelding, and makes some observations on the physical appearance of eunuchs.

So far, of course, Dr. Voronoff has only been following the line of thought of Brown-Séquard in 1869. Unfortunately, the author points out, Brown-Séquard brought bad technique into the service of a good idea, with the result that he did disservice to the idea itself. Similarly those who attempted to graft testicles under the skin, in the muscles, or on the peritoneum failed to obtain good results. The grafted organ necrosed or was rapidly absorbed. When he began his researches there was, says Dr. Voronoff, absolutely no method of ensuring the survival of the implanted organ in any of the large mammals or in man. The method evolved by Dr. Voronoff was to implant freshly cut slices of young testicle on to the tunica vaginalis of the extinct organ of the aged animal. The proceeding was easy in the case of rams and goats; a young ram or goat could easily spare a testicle for his ancient relative. It was a different matter with human beings. It will always be difficult, says Dr. Voronoff, to procure enough human testicles; not because the ablation of one testicle makes any difference—the other will always hypertrophy sufficiently for its purpose—but because the mutilation is forbidden by law. Voluntary consent is not enough. At Nice use was made of the testicle of a young man who died of an accident; but, as Dr. Voronoff remarks naively, such

opportunities are rare, and, if one counted on them, occasions for the practice of the operation would be exceptional. In the face of these difficulties Dr. Voronoff had recourse to monkeys; and the rest of his book describes his methods for the simultaneous operation on monkeys and men, and the results he has obtained. There is also a chapter on the grafting of ovaries and the rejuvenation of women. In this Dr. Voronoff displays unexpected restraint. He states that, of course, the best place to plant the chimpanzee's ovary would be in the spot assigned by nature to the woman's ovaries. But he decided not to do this. In the first place, he did not aim at the ovulation of the grafts. In fact, if he had implanted monkey's ovaries on the ovaries of the woman he would have felt compelled to resect a portion of the Fallopian tubes, although he was not much afraid of pregnancy. Again, many of his patients were fat, and Dr. Voronoff thought that the laparotomy might be somewhat rash. He came to the conclusion that an extraperitoneal method would suffice, so he selected the anterior ends of the labia majora in the region where the fibres of the round ligament lose themselves.

The book is illustrated with fascinating photographs, such as that of an ancient ram, who ought to have been dead in 1918, but was rejuvenated and was still propagating his species in 1923; and those of the issue of "Jacky," and of "Jacky" himself, a dilapidated bull in 1924, who in 1925 was quite capable, apparently, of holding his own against younger rivals. The letters from patients, quoted by Dr. Voronoff, display the differences in point of view in different nationalities. The English doctor lays greatest stress on the improvement in his intellectual activities. Amongst patients of other countries the revival of amatory prowess seems to cause most satisfaction.

#### NOTES ON BOOKS.

In a book with the title "*Kinésie Paradoxale*" des Parkinsoniens," which may be freely translated the "paradoxical activity of the Parkinsonian syndrome," Dr. JARKOWSKI has not only presented an interesting study of this particular phenomenon, but has attempted also to find a solution of the whole problem of the physiology of voluntary movements in general. This "*kinésie paradoxale*" consists in the sudden and unexpected displays of motor activity which may be seen from time to time in patients who are usually quite inert with the classical rigidity of Parkinson's disease. Of this peculiar symptom the author gives many interesting examples, testifying, as indeed the whole book does, to prolonged and careful observations. In a discussion of the explanation of the symptoms of Parkinsonism the conclusion is reached that the essential disability consists in a weakening of desire to perform movements, and the hypothesis is advanced that this is due to a loss or diminution of what the author terms "affecto-motor reactions" or "proto-energy." Voluntary movement is therefore dependent not only on the activity of the ordinary motor systems of the central nervous system (and especially, of course, of the pyramidal tract), but also on the associated participation of these affecto-motor reactions. Those interested in this subject would do well to compare the opinions expressed in this little book with those contained in Dr. Kinnier Wilson's recent Croonian Lectures. Though the views elaborated by Dr. Jarkowski are highly interesting, they must be regarded as speculative, and are hardly likely to receive general acceptance, particularly from British neurologists.

A short monograph on the radiological study of the normal and pathological bladder after the injection of opaque liquids has been published, under the title of *La Cystographie*,\* by Dr. H. BLANC and Dr. M. NÉGRÓ, civil surgeons to the Hôpital Lariboisière, Paris. It is the result of the authors' own experience, and contains some hundred radiological illustrations; the history of cystography is briefly recalled; the technique, both radiological and urological, is then described; and, finally, the conditions observed in the normal and the pathological bladder are recorded. Pictures are taken antero-posteriorly, laterally, and obliquely, and show well the physiology of the normal bladder in men, women, and children. The writers classify their cases into four groups: (1) where cystography is necessary, as in diverticula, tumours, the patency of the ureters, and in fistulae of the bladder; (2) where cystography

\* *Etude sur la Vieillesse et la Rajeunissement par la Greffe*. Par Dr. Serge Voronoff. Paris: G. Doin. 1925. (Med. 8vo, pp. 213; 35 plates. 15 fr.)

\*\* *Kinésie Paradoxale* des Parkinsoniens. Par Dr. J. Jarkowski. Paris: Masson et Cie. 1925. (Roy. 8vo, pp. 79. Fr. 12.)  
\* *La Cystographie*. Par H. Blanc et M. Négro. Préface de G. Starck. Paris: Masson et Cie. 1925. (Med. 8vo, pp. 190; 108 figures. 6s. 8d.)

is useful, as in malformations of the bladder; (3) where cystography is a matter of curiosity, as in hypertrophy of the prostate; (4) where it can be used as a control post-operatively. Of the numerous opaque fluids mentioned in the text 4 per cent. collargol and sodium bromide are considered the best. This method would seem to find most scope in the detection of diverticula and fistulae of the bladder. Tumours are diagnosed mainly on alterations in the contour of the bladder, and the radiograms show distinguishing points between a papilloma and an epithelioma. The book is interesting and well written, and the plates are excellent. As a means of diagnosis, however, this method is limited to a narrow field, as most of the information it reveals ought to be detected by intelligent use of the cystoscope and ureteric catheter. Where it is impossible to pass this instrument, or where the view inside the bladder is obscured, either by haemorrhage, intolerance of the bladder, or by the size of a tumour, then cystography would seem to hold a definite place in surgery.

Binoctular vision is confessedly a very complex problem. Not the least of the difficulty of understanding its mechanism—if such a word may be used—is the complexity of the neuro-muscular equipment of the eye, the obliquity of the oculomotor muscles, the functions of the nerves and their nuclei. That there are many misfits in these arrangements is not to be wondered at; patent and latent squints might well be expected. The marvel is that there are so few of them. The study of these defects is fascinating, and he would be a rash man who tried to correct such defects without a wholesome appreciation of their difficulties. Dr. G. C. SAVAGE has given much consideration to these problems, and the results appear in his book *Ophthalmic Neuro-Myology*.<sup>7</sup> He propounds a theoretical scheme of neuro-muscular working, and therefrom has built up his own structure. There are, he says, eight conjugate centres in the cortex by means of which the several movements are effected, and one to effect convergence. Each of these centres is connected with two muscles. Besides there are twelve basal centres, each connected with only one muscle. These basal centres only come into action when there is a tendency to diplopia. The idea is a kind of mnemonic such as all students find of use at times, but the serviceableness of such devices does not render them scientific; so that we must disagree with Dr. Savage when he writes: "If the above hypothesis accounts for every phenomenon connected with the normal and abnormal actions of the ocular muscles, as it seems to do, then it ceases to be a hypothesis and becomes a scientific fact."

We have received the fourth part of *The Best Books*,<sup>8</sup> which represent an attempt to provide a systematic bibliography in all departments of science, art, and literature. The present volume relates to natural science, medicine, arts, trade, literature and philology. A list of the most available books on these subjects is given, with the dates of the first and last editions, and the price, size, and publisher's name in each case. The first part of the series was issued in 1910, and dealt with theology, mythology and folklore, and philosophy. The second part appeared in 1912, and included society, political and social economy, the science of politics, commerce and trade, and education; the third part, which dealt with geography, was published in 1923. The present volume will be of special interest to those concerned with the history of medicine and medical biography, as well as with more technical subjects.

A third edition of *Recent Advances in Medicine*,<sup>9</sup> by Drs. BEAUMONT and DODDS, has appeared. Reference was made to the two previous editions in our issues of January 3rd, 1925 (p. 26), and August 22nd, 1925 (p. 348). In spite of the short lapse of time there have been considerable alterations in the book, which is increased in size. An introductory chapter has been added on clinical investigations; a new section has been written on the after-care and treatment of diabetic patients, with tables of graduated diets, and the radiological examination of the gall bladder and the lungs is illustrated by radiographs. Recent work on blood grouping is included, and additions have been made to the descriptions of various pathological procedures.

A new edition has appeared of the second volume (English-Italian) of Mr. ALFRED HOARE's *Short Italian Dictionary*,<sup>10</sup> in

<sup>7</sup> *Ophthalmic Neuro-Myology*. By G. C. Savage, M.D., LL.D. Second edition. Nashville, Tennessee, U.S.A.: Published by the Author. (5½ x 8, pp. viii + 227, 39 plates, 14 figures. 3 dollars.)

<sup>8</sup> *The Best Books*. By William Sonnenschein. Part IV. Third edition, entirely rewritten. London: G. Routledge and Sons, Ltd. 1926. (8½ x 9½, pp. 1681-2510. 36s. net.)

<sup>9</sup> *Recent Advances in Medicine*. By G. E. Beaumont, M.A., D.M.Oxon., F.R.C.P., D.P.H.Lond., and E. C. Dodds, M.D., B.S., Ph.D., B.Sc.Lond. Third edition. London: J. and A. Churchill. 1926. (5½ x 8½, pp. xiv + 433; 46 figures. 12s. 6d. net.)

<sup>10</sup> *A Short Italian Dictionary*. By Alfred Hoare, M.A. Vol. II: English-Italian. New and enlarged edition. London: Cambridge University Press. 1926. (Demy 8vo, pp. vii + 421. 10s. 6d. net.)

which the special attention previously paid to idiomatic phrases has been extended, thereby considerably increasing its value. We note with some interest that, whereas in the previous edition it was found necessary to give an Italian equivalent for "Yorkshire fog," in this present edition "Yorkshire pudding" is also mentioned. A conscientious Italian who wishes to understand the exact significance of such words as "yoicks," "yclept," and "yahoo" will find his needs fully met.

## PREPARATIONS AND APPLIANCES.

### An Extensible Abduction Frame.

Mr. R. BERTRAM BLAIR, honorary surgeon to the Hull Royal Infirmary, has designed a simple abduction frame. It was made for him by a carpenter out of strips of wood about 3/10 of an inch thick, and 3 inches wide, but in practice it was found that the strips of wood would be more practicable if they were made 3/16 to 4 inches wide. It was capable of extension from 23 to 30 inches (from sacrum to heel), and was exceedingly useful in the treatment of cases of acute anterior poliomyelitis, or after operation for fixation of the hip before the wound was healed. By increasing the amount of padding on the sacral cross-bar a certain amount of hyperextension of the hip could be obtained.

Mr. Blair finds that if the sacral cross-bar is adjusted high enough above the coccyx there is no difficulty at all, as regards nursing purposes, in keeping the patient immovable on the splint. He can be lifted bodily in the splint in order to change bedclothes. The cross-bar A B is designed to support the sacrum: width 3 inches, length 10½ inches, and is capable of extension by 2 inches, the extension being governed by a slit, screw, and nut, the nut being on the under surface. The two pieces of wood are held together by brass rivets, and can slide along one another when the screw and nut are loosened. The cross-bar C D gives strength and is capable of extension in the same way as A B. This bar governs the amount of abduction, 15 inches extending by 3 inches. Right-angled foot pieces are attached at C and D; the vertical portions cannot be shown in the diagram. The portions of splint wood G and H are capable of extension in the same manner as X Y, to fit along the sides of the trunk from the iliac spines to the axilla. The side pieces of the splint X Y are 23 inches long and are capable of extension by 7 inches. The two strips of wood in each are really in apposition with one another, but are drawn with a space between for clearness. They are fixed by means of brass rivets and a sliding screw and a nut, as are the cross-bars.

### A Belt for Visceroptosis.

Mr. W. A. Mein, F.R.C.S., M.R.C.P. (Bournemouth) writes to recommend a form of belt which was found most satisfactory in the treatment of a patient with extreme visceroptosis and constant pain in the back, who had unsuccessfully worn various abdominal belts. He states that the belt gives comparative rigidity and comfort without any impairment of the movements of the trunk. The springs are so fashioned that a lift in an upward and backward direction is given to the whole of the front pad. The "angle of the lift" is such that the force passes below the pole of the kidneys, from before, backwards, and upwards, the kidneys being held against the posterior parietes, and not pushed forwards in the direction of least support. The pad at the back is designed to give that feeling of support so essential to the treatment of the condition. He adds that the belt has been made by Messrs. Bridge, Christchurch Road, Bournemouth.



## MOTOR CARS FOR MEDICAL MEN.

### NOVELTIES AND TENDENCIES REVEALED AT THE OLYMPIA SHOW.

By H. MASSAC BUIST.

THE yearly international motor car show, which the Society of Motor Manufacturers and Traders opens to-day (Friday October 22nd), under the patronage of the King, at Olympia, Kensington, will be available daily, Sunday next excepted, until 10 p.m. on Saturday, October 30th.

The general motoring conditions in prospect for the ensuing year, as far as mechanical and trading developments are revealed at this exhibition, were reviewed in these columns last week. It may be added now that 45.6 per cent. only of the makes of cars on the home market are of native origin, 25.4 per cent. being French, 12.7 per cent. American, 7.5 per cent. Italian, and the rest Canadian, Belgian, German, Austrian, Irish, Spanish, or Swiss. Four-cylinder engines are the predominant type, representing 54.6 per cent.; but six-cylinder types have increased greatly in number, constituting 36.6 per cent. There is only one twelve-cylinder engined car—the steel sleeve valve 50/150 h.p. Daimler mentioned last week. But the number of eight-cylinder engined car types has been increased from sixteen to twenty, all the new eight-cylinder engines being single line constructions, the most noteworthy of which is the 35-h.p. Sunbeam. Of the score of types, three only have the cylinders V set in blocks of four.

No fewer than twenty-seven new six-cylinder engined models are introduced, the majority by British constructors, ranging in size between 2 and 3 litre cylinder content. This confirms the tendency disclosed at the Paris show a week previously, where every native manufacturer except three presented a six-cylinder engined car type. Moreover, of that trio, two are known to have "small sixes" on the stocks.

Twelve new four-cylinder engined car types are introduced at Olympia, chiefly in the light car categories. There is only one three-cylinder engined car on the British market, but there are three two-cylinder types, two of them being two-stroke engines.

#### NEW SIX- AND FOUR-CYLINDER ENGINED CAR TYPES.

It is not possible, however, to form a definite idea of what will be the demand in regard to the number of cylinders employed, because we are on the threshold of a motoring year in which the public of moderate means requiring cars of moderate power is being offered for the first time practical six-cylinder engines. It is therefore assured that this coming motor year will witness the conversion of vast numbers of those who already own cars from the four- to the six-cylinder principle for a given power. Moreover, the situation at the moment is partly disguised by the effects of the coal strike, since some manufacturers have stocks of four-cylinder engined cars to-day, as of other types, which should have been disposed of by last July at latest. Therefore they are not exhibiting all that they had planned to display.

For the present it will be enough to say that new style six-cylinder engined cars should be studied on the stands of the following makers: Armstrong-Siddeley, Aster, Austin, Bean, Brocklebank, Daimler, Delage, Donnet-Zedel, Humber, Lagonda, Lea-Francis, Minerva, Oakland, Renault, Rochet-Schneider, Standard, Steyr, Sunbeam, Talbot, Vulcan, and Wolseley—certainly an assorted variety. Among new four-cylinder engined cars the following should be studied: Ansaldo, Citroën, Chuley, De Dion-Bouton, Fiat, Gillett, Humber, Lancia, Overland (Whippet), Riley, Rover, and Singer, some of them from curiosity merely. Medical men do not need two- or three-cylinder engines nowadays. Nor are eight- or twelve-cylinder types yet marketed at prices, and in sizes, suitable for the general practitioner.

#### DETAILS TO BE NOTED.

When making a tour of the show the medical motorist should look at such details as the attachment of the springs on cars, as there are some interesting examples

wherein ordinary bolts and shackles have been replaced by Belflex and such-like compositions that need no lubrication. While "one-shot lubrication" is not available, and in many senses is not desirable, for the kind of car necessary to his purpose, he will find that grease-gun lubrication is being standardized to an increasing extent, which is to his immediate purpose. He will observe also many examples of the pressed steel dash so designed as to carry the petrol tank conveniently, accommodate the instrument board neatly, and constitute a rigid cross-brace for the car frame. At last there is a general tendency towards tidy instrument board schemes as standardized.

In bespoke coachwork, finished in paint and varnish, attention should be drawn to the use of new style aluminium castings. Again, in fabric bodies which are very much in vogue, the problem of the fading of colour schemes other than jet black has led to introducing a new style covered body with fabric-covered upper portion and metal panelled lower portion. By this means the lower part and the bonnet of the car can be painted one colour and will therefore match each other throughout the life of the car. There is a welcome tendency to discard the use of lacings and even of cloth in the interiors of covered cars, and to upholster seats, panels, and so forth in plain shades of quite soft cowhide, which is as suitable for this purpose as it is unsuitable for open bodies.

#### SIX-CYLINDER ENGINES.

It matters not to the medical man whether six-cylinder engined cars are marketed as such, or as "light sixes"; what he wants to know is what they cost to buy and to run, and what advantage they are to him day and night all the year round.

For a given power or cylinder volume, the fuel bill might be a little more; but it would take a great deal of motoring to make it 40s. a year more with a six-cylinder than with a four-cylinder car. As constructed, however, the lower priced, smaller powered, six-cylinder engined car with developed transmission system, superior suspension, and saving of unnecessary weight in details, has a petrol bill approximately equal if fast speed is not indulged in. But where hills have to be climbed, if the motorist wishes to save time he must spend a trifle more on petrol, though there is no occasion for the tyre bill to be heavier if he uses his brakes with judgement and does not "hunt" the engine. If he is willing to go uphill at the same speed as he would with a sluggish four-cylinder engined car of the same actual power, then his petrol bill with a six will be a trifle lighter. But with a six-cylinder engine he will save both time and nervous strain, which are of the greatest importance to the class of motorists I am addressing here. There is not the same necessity to change speed with a six-cylinder as with a four-cylinder engine; in other words, a man with professional problems to solve will not also drain his energies by concentrating on physical tasks when journeying from one patient to another.

#### POINTS ABOUT NEW CHASSIS TYPES.

At this show the medical man may therefore be advised to examine the £18 tax, 2,230 c.c.m., overhead valve, six-cylinder engined, £345, five-seat Standard car that has been produced with all-weather equipment and, of course, four-wheel brakes. He will see that, though the taxation rating is a few pounds more than he might wish to pay, nevertheless the cost price for a car of this performance is so much below expectations that he will enjoy several years of use before the extra amount of money he must spend in tax will bring up the cost of the car to the limit he had in mind for this class of performance and service. Further, the general belief in the House of Commons is that our present taxation, on the principle of rating engines, will be abolished next year in favour of a fuel tax. This is not an expression of my personal opinion, but merely an incidental record of the present political atmosphere.

This Standard car follows the characteristic practice of the firm, providing ample accommodation and great strength as well as entirely original body construction. The new six-

cylinder engine is rated at 18/36-h.p. Certainly the general lay-out will interest the medical man. For those for whom this is too ambitious, Standard devotes the rest of its enterprise to concentrating on the 14/28-h.p. £275 overhead valve four-cylinder engined car which it introduced at the last show. The performance of this car is remarkable, eclipsing anything Standard has done before. Improved bodywork is available on all types, the developments including increased headroom, a higher windscreen, higher side windows, the extensive use of metal in place of wood in the construction of the body frames and doors, the standardizing of automatic windscreen wipers, and the provision of a special scheme of finishing that renders each body largely immune from the ills to which paint and varnish treatments are subject.

#### CONTRASTED EXAMPLES.

Reverting to six-cylinder engine practice, in another direction we find remarkable enterprise by Armstrong-Siddeley, whose chief novelties are a "long" 18-h.p. model and a "short" 18-h.p. model, the latter being a 20-h.p. R.A.C. rating, 2,872 c.c.m., six-cylinder overhead valve engined machine capable of 65 m.p.h. on top gear, and listed as a Taunton tourer complete at £450, the weight being 30½ cwt. This is therefore another type of six-cylinder engined car, perhaps more ambitious, which nevertheless comes within the class which some medical men require. But this world-famous engineering house, that built Sir Alan Cobham's engines for his flight to Australia and back, introduces other lower-priced propositions, as in the 14-h.p. four-cylinder overhead valve engined chassis at £230, which is available as a Sandowna tourer complete at £360, and as a Broadway four-door saloon at £15 more only, the latter having particularly smart lines. Armstrong-Siddeley's 1927 range of cars is very comprehensive, alike in variety of designs, in scale of prices, and in engine ratings. I have merely drawn attention to one or two leading features.

Humber, the pioneer of the cheap four-cylinder water-cooled engined car more than a score of years ago, whose post-war production has been concerned almost entirely with four-cylinder cars, nevertheless finds an insistent demand for a six-cylinder engined type. It meets that by bringing forward, after a long period of trial, a nominal 20/55-h.p. 3,075 c.c.m. overhead inlet and side exhaust valve engined £21 tax car with four-wheel brakes, a range of speed from 5 to 60 m.p.h. on top gear, a 10 ft. 10½ in. wheelbase, a track suitable for overseas service, with general constructional principles characteristic of the firm, including Perrot type four-wheel brakes with semi-servo shoes which are enclosed in weatherproof covers, at a chassis price of £570, or the five-seater complete at £725. Humber is one of the relatively few firms that use front-wheel brakes in association with the transmission brake, a compensating device being fitted between the two. The firm also introduces an entirely new 14/40-h.p. 2,050 c.c.m. four-cylinder overhead inlet and side exhaust valve engined, £460, four-door, five-seater tourer, and a two- or three-seater three-quarter coupé with dickey at £575. Special attention has been devoted to designing this new middle-size engined car to function smoothly and to do a large proportion of its work on the direct drive.

#### IN THE MIDDLE RANGE.

Lagonda supplements the £13 tax, 14/60-h.p., four-cylinder, overhead valve engined chassis introduced last year by bringing forward now a £16 tax, 16/65-h.p., overhead valve, six-cylinder engined chassis with a right-hand controlled four-speed gear-box, a single dry plate clutch, a spiral bevel driven back axle, and six internal expanding brakes employed on the four-wheel principle. A stripped chassis is shown as well as another surmounted by a saloon de luxe body with partition, and seating two persons in front; three are accommodated on the rear and two on occasional seats. The standard type saloon, not shown, costs £795, the chassis with tyres being listed at £570. The engine has forced feed lubrication. Detachable wire wheels with Dunlop tyres are standardized on a 56 in. track. A grease-gun is used for lubricating the chassis.

Ansaldo, an Italian firm known in this country for its six-cylinder engined practice, may be said to be working also

in the opposite direction, in that it now supplements that enterprise by introducing a new four-cylinder, 1,325 c.c.m. engined, 9 ft. wheelbase, 4 ft. 7 in. track chassis with a fabric universal joint between the engine and the three-speed gear-box, the open propeller shaft having two metal universal joints. The design shows that unnecessary cost has been eliminated without sacrifice of quality. The somewhat unusual practice of mounting the engine and the gear-box on a pair of heavy steel tubes attached to the cross-frame members, while it simplifies assembly, also reduces the time necessary for taking out the units when repairs are required. An overhead camshaft is employed. The forward suspension is unusual in that a transverse spring is used in front, the two main leaves having rolled eyes. In place of attachment to the axle by means of a shackle, a T-member is used with the steel sliding in a cylindrical housing in the axle and butting against a coil spring. A leather gaiter protects the slide from wind and dust. Anchorage to the axle is by means of a U-shaped member of circular section, the two ends of which pass through eyes in the actual forging and are secured by a nut. The loop is anchored to a cross-frame member. The three other Ansaldo models are being continued with practically no change.

#### MORE FLEXIBLE FOUR-CYLINDER PRACTICE.

While few medical men will have any use for the chief Alvis novelty, a 12/50-h.p. sports saloon capable of a speed of 70 m.p.h., the standard four-cylinder engined chassis has great attraction because of the unusual flexibility of the power unit, the roadworthiness of the chassis, and the sturdiness of the construction. This is a type which the firm has developed consistently during a period of years; it is now made only with overhead valve engines. The detail modifications introduced for 1927 in the standard chassis are all sensible and progressive; thus, for instance, a spherical bearing mounting is used for the cross-shaft operating the clutch. A lower gear ratio is furnished to the steering-box to enable low-pressure tyres to be used with ease. Longer wear is assured by the provision of wider brake shoes. A cross-tube, the downward end of which is mounted on spherical bearings to ensure that its movement shall be free of any binding that might be caused by frame whip, is now employed for stiffening.

The nominal 15-h.p. four-cylinder engined Triumph car of 2,169 c.c.m. content aims at all-round good road performance in association with economical running, the four-wheel brakes being hydraulically operated. The five-seater all-weather touring car is listed complete, at £325, the upholstery being in serviceable nautique finished real leather. The five-seater four-door saloon shown is listed at £100 more, the upholstery being in enamelled brown furniture hido. The lines of the body are smarter this year.

Apart from the retention of established types, De Dion-Bouton enterprise for 1927 takes two main directions. Very substantial reductions have been made in the cost of all models, amounting in some cases to £190. Yet all chassis have been improved in detail, none now lacking four-wheel brakes, a four-speed gear-box, and cantilever rear springs. These models are supplemented by a new 12/26-h.p. type and by a 20-h.p. type, the former being a side-valve engined machine, with Ricardo pattern detachable cylinder heads, which, for the rest, practically follows the firm's well proved constructional practice. Detachable wire wheels are standardized with large tyres, and the radiator is high enough to give a level line from its cap along the saddle of the bonnet to the high waistline. The standard four-door six-seater is listed at £375 only, the four- or five-seater *de luxe* torpedo with wire wheels, or with wood wheels at option, at £425, the three- or five-seater *de luxe* torpedo at the same price, the three- or five-seater *de luxe* three-quarter coupé at £495, and a four- or five-seater *de luxe* four-door saloon at the same price.

#### MORRIS'S IMPROVED SUSPENSION.

Probably the medical man will agree with the man in the street that the new range of Morris prices—the number of models available are too numerous to mention here—is amazingly attractive. But he is not likely to agree that the flat radiator is the most important mechanical improvement made in the chassis. On the contrary, the medical



man will appreciate that the change from three-quarter to half-elliptic rear suspension is a very much more material development, because it vastly improves alike the road-worthiness and the riding qualities of the car. Valuable, too, is the introduction of a pressed steel dash, affording a rigid cross-brace to the chassis and providing a convenient means for carrying the petrol tank (now increased to seven gallons capacity), as well as forming a mounting for the new instrument board, which is a really practical improvement, all the dials being grouped neatly in a central oval flanked by cubby-holes for parcels on either side. More conveniently controlled and better brakes are furnished this year. The adjustments provided for the steering rack and for the clutch and brake pedals will be appreciated; also the better system of controlling the ignition and the carburetter. All these details can be studied conveniently by the exhibition of developed Morris-Cowley and Morris-Oxford 1927 types.

Few novelties are likely to interest medical men, especially those working overseas, more than the latest Morris development shown in stripped chassis form. This is a 2,513.28 c.cm., side valve, four-cylinder engined 15.9-h.p. R.A.C. rating, four-wheel-braked chassis with Dunlop reinforced tyres, and semi-elliptic springs fore and aft, retailing at the provisional price of £245, the open four/five-seater with four doors, completely equipped, costing £325. The complete car weighs 26 cwt., and is capable of a high rate of speed because it has a gear-box with four speeds forward in association with a dry single-plate clutch. The three-quarter floating-type back axle has an overhead worm drive. All the brake-cam operating spindles are carried above the axle in a position where they are not liable to damage on rough roads. This car has a minimum ground clearance of 10½ in., a track of 56 in., and a wheelbase of 9 ft. 6 in.

All Morris coachwork types have been improved considerably by the provision of a higher waistline, deeper and more comfortable seating, and greater leg room. Wide doors are fitted to both the Morris-Cowley four-seater and the saloon types.

As it is impossible to show all the Morris products in the limited space on the stand at Olympia, a special exhibition is taking place during the show period at the Acton premises of Messrs. Stewart and Arden, within easy reach of Olympia by omnibus, every Morris-Cowley and Morris-Oxford chassis type and body type being on view there.

#### TEMPTING PRICES.

No firm in the British industry catering for the motorist of limited means but considerable ambition has gone ahead in the last year as has Clyno of Wolverhampton. Now it offers the two-seater nominal 11-h.p. type with front-wheel brakes, bulb horn, and windscreen, among other additional equipment, at £160 complete, which is £10 less than the cost of a car of this type last season without those accessories. This policy applies also to the four-seater, which has been reduced in cost £17 10s. and has additional equipment, including a windscreen wiper, four-wheel brakes, and a hood envelope. The same remark applies to the higher powered Clyno, which is now an ex-13-h.p. rater, being re-listed in developed form as a 12/28-h.p. machine, every example of which has the firm's system of front-wheel brakes and complete equipment, though each developed type is listed at a lower price than last year: for instance, £40 less in the case of the four-seater 12/28-h.p. type, now priced at £220 complete; and so on. The improved four-door saloon sells at £250 complete.

I referred last week to the 850 c.cm., overhead camshaft operated, overhead valve, four-cylinder engined Singer "Junior," introduced at £148 10s. as a four-seater to supplement the firm's two other models, the four-cylinder engined one of which is now renamed simply the "Senior" type. The six-cylinder engined model is styled the "Six" type. The "Senior" is presented this year with improved coachwork, the details embracing wide, roomy bodies and pneumatic upholstery covered in real leather. The equipment is complete. Four-wheel brakes are standardized on all these models, the four-seater costing £220, the two-seater the same price, and the saloon £40 more. Certainly the six-cylinder Singer, which was introduced

last year, is offered at a very competitive price—namely, £325 for a four-seater touring car complete, and £25 more for the saloon.

The exhibit by Gordon England, long known as specialists in Austin cars, is particularly interesting this year by reason of the proved practicability of its wholly original three-point design of body scheme, to which extensive reference was made in these columns on its introduction last year. It differs altogether from the flexible fabric type in that it is built and mounted to accommodate variations in chassis form. These bodies, which are neither heavy nor unduly expensive, may now be studied in detail and variety.

With a radiator that is a reproduction on a lesser scale of the six-cylinder engined Waverley, this firm introduces a nominal 7-h.p. £100 car with a four-speed gear-box, four-wheel brakes, and a horizontally opposed, water-cooled, two-cylinder engine with side valves, the rating being 7-h.p. The detachable wire type wheels are shod with balloon tyres. Electric lighting is standardized. The body is designed to be large enough for two adults and two children, and is equipped with a hood and a windscreen.

For the ensuing season Bayliss-Thomas offer two chassis, both with overhead valve four-cylinder engines and gear-boxes having three speeds forward; the £10 tax 1,247 c.cm. engined type being listed as a four-seater complete at £225, and the £12 tax 1,496 c.cm. engined model as a four-seater complete at £240 and as a saloon, complete, at £325.

#### POINTS ABOUT ACCESSORIES.

With the facilities provided by the enlarged building at Olympia the industry concerned with the production of accessories for motor vehicles presents a collective exhibit almost bewildering in its quantity and variety. Therefore a mere hint of a few phases of interest can be mentioned here. Thus, apart from its exhibit in the carriage section of various cars with Mann, Egerton and Company's bodies, this firm shows in the accessory section, at Stand 348, an ingenious car-washing outfit, an electrical air compressor and tank, a pressure cleansing tank, a paint-spraying pistol, a breakdown equipment, a car overhauling plant and tools, and a petrol consumption test tank which enables any owner to make an accurate record of the fuel consumption over a given route. The Autocar's "miles per gallon tests" are undertaken with these tanks, which are quite small and give visible reading at any moment.

Again, at Stand 424 A. W. Gamage, Ltd., show an ingenious ashtray, a series of radiator cosies, some attractive cushions, and a wide range of driving mirrors and motor horns. This firm also shows for women motorists rubber heel protectors designed to obviate damage to the most delicate shoe when driving, and which are, nevertheless, quickly slipped into place.

No accessories are subject to more rapid developments than sparking-plugs, owing to the necessity of making them withstand greater heat in proportion as standard engine efficiency is raised year by year. Under this head Lodge (Stand 447) shows a new sparking-plug; this is the latest form of the well known C3 type that is fitted to a large number of prominent British cars this year; it is packed in a new container. Plugs for all other purposes are also shown by the firm.

The latest types of Zenith carburetters are shown on Stand 505, including a new plate type filter that forms an excellent adjunct to the carburetter, non-corrosive bronze rings being employed.

In regard to motor fuel, there is an interesting exhibit by the British Petroleum Company, an all-British concern with refineries at Llandarcy in South Wales and at Grange, mouth in Scotland, employing 20,000 British workers. "BP" spirit for cars is displayed at Stand No. 219 by the suppliers of the fuel for the machine that won the Light Aeroplane Contest at Lympne. The Anglo-American Oil Company, marketers of Pratt spirit, were the first to realize the importance of the guarantee label which they now feature at Stand 270. Many types of petrol pumps, lubricating oil cabinets, and the "depth-o-meter" gauge for recording the contents of underground tanks are shown; also swing arms for use with pumps.

# British Medical Journal.

SATURDAY, OCTOBER 23RD, 1926.

## THE DEBT OF MEDICINE TO THE EXPERIMENTAL METHOD.

"The debt of medicine to the experimental method of Harvey" was the title of the very thoughtful and illuminating oration delivered by Sir John Rose Bradford on St. Luke's Day before the Royal College of Physicians of London. The occasion is always interesting, for though there have been more than two hundred Harveian Orations since the death of Harvey, the audience is always curious to hear how the orator will deal with his subject, while it is confident that he will succeed in showing it in a new light, or at least with new illustrations. Of late years, at any rate, these hopes have not been falsified. The present occasion, moreover, is remarkable because the Harveian Orator of the year is also the newly elected President of the College—a rare pluralism, due in this instance to the fact that Sir John Rose Bradford was appointed Harveian Orator for this year some eighteen months ago by his predecessor, Sir Humphry Rolleston.

The aspect of his subject chosen by the orator is very important, and it is complementary to that chosen two years ago by Sir Archibald Garrod, when he delivered the Harveian Oration on "The debt of science to medicine," which might well be re-read after that of this year. The earlier orator pointed out that the debt of science to medicine was overwhelming, in the sense that nearly all the pioneers of scientific discovery after the awakening from the long sleep of the Dark and Middle Ages were physicians. The very term "physic" suggests the fact that for a long time the physician was the only scholar who studied physics as compared with metaphysics, and included in his studies all the natural science of his time. Even astronomy owed something to medicine, and at one time no physician was well equipped who was not able to cast a horoscope and estimate the influences of the planets on his patients and his therapeutic measures. We tacitly acknowledge this to-day when we speak of influenza, a disease long supposed to be due to stellar influence. Yet ever since that renaissance of learning there has been—as a former lay President of the Royal Society acknowledged at a Harveian banquet—an indisposition to admit freely that medicine is a science in itself. Until late years it may be said to have included physiology and pathology, and if those children of medicine have grown too big to be tied to the maternal apron-strings, yet, as we wrote in a leading article a couple of years ago, clinical medicine is not only the mother of the sciences, but itself one of them. Who will deny that the observations and the conclusions of Thomas Sydenham, whose tercentenary was celebrated in the same number of the JOURNAL (November 15th, 1924), were as truly scientific as the experiments of Harvey or of any contemporary man of science?

Medicine and the other branches of natural science cannot do without one another, for, as Huxley said, "It is a peculiarity of the physical sciences that they are independent in proportion as they are imperfect;

and it is only as they advance that the bonds which unite them become apparent." There is, then, little room for doubt as to the relation of medicine to natural science in the past. What is that relation to-day, and what is it to be in the future? Sir John Rose Bradford said truly that the most valuable benefaction the College of Physicians has ever received is Harvey's exhortation to search and study out the secrets of nature by way of experiment, coupled with the example afforded by his own life's work.

Will such experiments be impossible without the abandonment of the practice of medicine as we know it, and is the advance of the allied sciences so great, or likely to be so great, that in future Medicine, the former mistress of her ancillary sciences, shall herself become their servant, only fit to carry out the directions given her by her former subordinates? If it is to be for the benefit of science and of the patient to whom that science must be applied, then must Medicine yield her pride of place; but we take it that the President of the Royal College of Physicians is far from thinking that this abdication is justified now or likely to become necessary in the future, heavy though the debt may be which he has recorded in his oration. He also showed how great a part clinical observation has taken in furnishing evidence on which fruitful deductions have been made. But, as Lord Moulton—quoted by the orator—has said, progress is slow and uncertain when observation alone is relied upon, whereas by experiment answers are at once obtained from Nature to questions properly put. Though he cannot make direct experiments, the observant clinician is sometimes able to watch the course of events in which Nature herself performs the experiment, and the reaction of the organism to injury or infection furnishes the answer to his inquiry. It was thus that Hughlings Jackson worked out the connexion between voluntary muscular movements and the cerebral cortex, the existence of which was afterwards confirmed in more accurate detail by physiological experiment on the lower animals. These researches form an excellent example of the interdependence of clinical and laboratory methods. The results obtained by experiments on other animals will always need checking by clinical observations in health and disease. Perhaps no department of medicine owes more to experimental physiology than neurology, which has profited enormously by researches carried on in the laboratory; by these knowledge of the mechanisms involved in the production and control of muscular action has been wonderfully increased of late years, and if our means of cure have not increased, *pari passu*, there is no cause to lose hope, but rather to look forward to still more knowledge, which may perhaps come from unexpected quarters.

In an oration commemorating the author of *De Motu Cordis* it was most fitting that much attention should be paid to observations and experiments concerning the heart in health and disease, and to this subject the orator devoted a good deal of his time. We are told by Harvey himself that the problem of the circulation baffled him for so long, despite many experiments, that he was tempted to give it up in despair. In like manner, questions connected with sounds of the diseased heart and its behaviour under pathological conditions have led to great differences of opinion and puzzled many skilled observers. This state of things was, if not completely remedied, at least greatly improved by the work of inquirers who, as was pointed out in the oration, were in search of truth for its sake alone, and not with any thought of

assisting clinical medicine. The beautifully simple and convincing experiments of Romanes on the jelly-fish and of Gaskell on the skate's heart laid the foundations of knowledge recently acquired as to the phenomena of the action of the human heart muscle. Much of this work was done with very simple apparatus, but the explanation of fibrillation in the human auricle, long known to physiologists on the laboratory table, we owe to the more elaborate electrical instruments employed later, which, though not often needed for clinical purposes, have been successful in establishing the fact of the existence of morbid conditions which can now be recognized without their aid.

Sir John Rose Bradford has well set before us the debt which medicine owes to science, and his conclusion that by the use of Harvey's methods we may still "claim that medicine has a scientific status as a branch of natural knowledge" must be considered as amply justified.

### MEDICAL PROBLEMS OF WEST AFRICA.

THE report of Mr. Ormsby-Gore, Parliamentary Under Secretary for the Colonies, on his visit to West Africa,<sup>1</sup> is, as he explains in his introductory remarks, a somewhat tentative contribution by an outside observer to the study of a whole series of problems. Unlike the report of the East African Commission, it is a purely personal document, binding neither of his companions on the tour, and while it is submitted to the Secretary of State for consideration and examination in consultation with the West African Governments, its primary aim is to give the people of Great Britain and other parts of the Empire some general picture of conditions on the West Coast as seen during what was admittedly a very brief tour. In such a document it would be unreasonable to expect any detailed discussion of the problems of tropical medicine, and, in fact, no such discussion is attempted. The chapter devoted to public health does, however, give an interesting and suggestive review of the advance already made and of the conditions which must determine future progress. The information it contains fully justifies the contention "that the field for investigation in tropical disease in West Africa is still great, and that the need for active preventive and curative measures is pressing." We may add that if the administrative difficulties presented by the organization of the West African Medical Staff and the direction of its efforts over so wide a field can be dealt with in the sane and sympathetic spirit which underlies the whole of this report, the further contention that "this Service provides a career which may well prove attractive to the young and enthusiastic medical man" may become equally well founded. Meanwhile, certain observations included in the report must serve as a partial explanation for the fact that, notwithstanding the relatively high rate of pay and the superior opportunities it offers for research, the Service has not recently proved as attractive as might have been expected. Among such observations three in particular are significant. One suggests the existence of "an unduly rigid and centralized system of control" in connexion with the development of the hospital system; the second speaks of the failure to appreciate the possibilities of the leave regulations expressly designed to allow of adaptation to individual requirements; and the third notes that only now is the medical staff, depleted during the war period, approaching its full strength.

Recognizing climatic conditions as the determining factor in British West African policy, Mr. Ormsby-Gore gives considerable space to a discussion of the divergent views of those who have experienced conditions both in West Africa and in other parts of the tropics, and expresses the general opinion that "the man who goes to West Africa has to face greater disadvantages than in many other tropical countries, besides those inherent in life in any tropical climate." On the other hand, he traces the reputation of the West Coast as "the white man's grave" to historical conditions which no longer obtain. He illustrates the effect of increasing knowledge of the causes of tropical diseases and the principles of tropical hygiene, and the consequent adoption of antimalarial measures and improved sanitation, by the fall in the death rate of European officials from 20.6 per 1,000 in 1903 to 12.8 per 1,000 in 1924, and the corresponding decline in the invalidity rate for the same period—from 65.1 per 1,000 to 21.7 per 1,000. As regards the health of the European community, adequate provision for leave periods, suitable housing accommodation, including an adequate supply of married quarters, improved water supply, and, wherever possible, electric power for light and fans, and improved drainage, more especially in the capitals, are indicated as urgently necessary, and practical suggestions are offered for the improvement of existing conditions. Due emphasis is laid on the fact that the West African Colonies are in a state of transition between the old conception of the public health functions of the Government as confined to the provision of a "garrison" medical service for attendance on officials, and the newer acceptance of responsibility for the promotion of the health of the whole community, both native and European, and on the contribution towards this change of outlook made by the Ross-Manson discoveries in preventive medicine.

According to the particulars contained in the report, the total strength of the West African Medical Staff is at present some 240 officers. These, with the help of a few women medical officers, engaged more particularly with child welfare, and a "fairly large" number of West African medical officers, are responsible for giving effect to this new conception in four colonies, geographically isolated and with widely differing needs and characteristics, with a total native population of some 23 millions scattered over an area of nearly half a million square miles. Little wonder is it that in his summary review of the main diseases prevalent in the West African Colonies, Mr. Ormsby-Gore has to lament the difficulty, "in view of the great extent of the country and the shortage of medical staff," of taking any effective measures to combat outbreaks of relapsing fever and cerebro-spinal meningitis which have occurred in the northern provinces of Nigeria since the war; and to regret that a severe outbreak of plague at Sekondi on the Gold Coast in 1923-24 spread inland to Kumasi, and, in the course of the latter year, to Nigeria. Cases are still occurring in Lagos and parts of the Ijebu-Ode province. The number of these cases is, fortunately, small. The review touches upon the work in connexion with trypanosomiasis and the experiments in methods of control of the tsetse fly carried out on the Gold Coast and in Northern Nigeria, where an important conference was held by the Lieutenant-Governor at Kaduna in September, 1925. Sleeping sickness is not, however, so prominent a factor on the West Coast as in the East African dependencies. The commission sent by the Rockefeller Foundation to West Africa to

<sup>1</sup> Cmd. 2744. H.M. Stationery Office. 1926. Price 3s. 6d. net.

study yellow fever had not at the time of the tour succeeded in discovering a case of typical yellow fever of the same nature as that which occurs in the West Indies and Central America. The results of the commission's research, as of the work on blackwater fever which is being carried on in Rhodesia, will be awaited with considerable interest as of great importance to West Africa. The problem of malarial control is rightly presented as very largely one of the education of the natives in the elementary laws of hygiene. An interesting contrast is drawn between Southern Nigeria, where venereal infection would seem not to be a principal cause of mortality either directly or indirectly, and the Northern Province, where it is roughly estimated that nearly 50 per cent. of the Hausa population are infected with syphilis or gonorrhoea. The absence of reliable vital statistics in West Africa is noted as a serious handicap to those responsible for the direction of medicine in making the most effective use of the staff and funds at their disposal.

In the discussion of hospital accommodation some very pertinent remarks are made as to the necessity and importance of further development. While due credit must be given to the excellence of the provision already made in the Colonial Hospital at Accra and the extensions under construction at Lagos and Freetown, it is deplorable that it should still be necessary to lay down as essential features not invariably present in existing hospitals that they should be suited to local conditions, properly equipped, and immune from breakdowns in the supply of all necessary drugs and dressings, or to protest that the performance of major operations in the village market-place is hardly a fitting procedure for countries advancing as rapidly as the West African colonies. Much stress is laid upon the need for the expansion of medical services, including hospital services, more especially in Northern Nigeria. The West African Governments already devote to medical and sanitary services from 10 to 15 per cent. of their total expenditure. The problem of the necessary expansion is therefore largely a financial one. For its solution Mr. Ormsby-Gore looks to the establishment of a native subordinate medical service, whose members should have received a good general education, a training as dispensers and dressers, and "such amount of general medical training as to fit them to take emergency measures and to supervise generally the sanitation and public health of a village." The work of these men would be supervised by travelling medical officers, who might have at their disposal small travelling laboratories, and would be available on a summons to any particular area where disease might break out. The suggestion is controversial, but worthy of careful consideration, as, indeed, is the whole report.

#### THE HARVEIAN FESTIVAL IN LONDON.

The Harveian Festival at the Royal College of Physicians of London was celebrated on St. Luke's Day in the usual manner. In the morning the President of the College, together with the censors, attended the church of St. Mary-le-Bow to hear the Sadleir sermon. This was delivered by the rector, Canon Gordon Ponsonby, who mentioned the losses by death during the past year of the Harveian lecturer for 1925, Sir Frederick Mott, and of other well known members of the medical profession, including Sir John Williams and Sir William Leishman. The sermon was based on the text "God is love," and the preacher referred at considerable length to the posthumous address

of Dr. J. G. Adami to the Church Congress on the relation of science to religion. The lesson was from the seventh chapter of the Book of Wisdom, which spoke of the power and spirit of the Wisdom of God moving through all human realities and events. Dr. Adami had similarly realized the utter darkness which would have existed but for the light of revelation, and had concluded his address with a strong expression of the growing intensity of his belief in the power and love of God. In the afternoon the Harveian Oration, on the debt of medicine to the experimental method of Harvey, was delivered by Sir John Rose Bradford; it is printed in full in the opening pages of this issue, and is commented on at page 741. After the oration the President presented the Bissett Hawkins medal to Dr. Ambrose Thomas Stanton, principal medical officer of the Federated Malay States and director of the Government Laboratories at Kuala Lumpur. This medal is awarded triennially to a British medical practitioner who has performed work in sanitary science or the promotion of public health which, in the opinion of the College, deserves special recognition. In the evening a dinner was held in the College, in accordance with custom and the injunction of Harvey; it was attended by a large number of Fellows, and many distinguished guests were entertained, including the Earl of Balfour, K.G., O.M., Lord President of the Council and chairman of the Medical Research Council; the Archbishop of Wales; Sir Ernest Rutherford, O.M., President of the Royal Society; Sir Berkeley Moynihan, Bt., President of the Royal College of Surgeons; Sir Frank Dicksee, President of the Royal Academy; Viscount Hambleden and Sir Frederick Fry, K.C.V.O., members of the Council of King Edward's Hospital Fund for London; the Attorney-General (Sir Douglas Hogg), Mr. Justice A. C. Clauson, Sir George Thane, Emeritus Professor of Anatomy in University College, and the Rev. S. G. Ponsonby, vicar of St. Mary-le-Bow. The toast of the guests, given by the President, was acknowledged by Lord Balfour in a happy speech, and by the Archbishop of Wales. The senior censor, Dr. H. Morley Fletcher, in proposing the health of the Harveian Orator, recalled that the oration had been delivered by the President on four previous occasions—by Dr. Josias Clerk in 1708, the year of his election to be President; by Dr. Charles Goodall, who succeeded him, in the following year; by Sir Henry Hallford in 1835, in the fifteenth year of his presidency; and by Sir James Alderson in 1867, the year of his election. The Harveian orator is appointed by the President in the year preceding the date of the delivery of the oration. After dinner the library was visited, where the Harveian librarian (Dr. Arnold Chaplin) had put on view a number of the incunabula and manuscripts possessed by the College.

#### A RADIOLOGIST LOOKS BACK.

On taking the presidential chair of the Section of Electro-Therapeutics of the Royal Society of Medicine for the first time, Dr. G. B. Batten on October 15th delivered a reminiscent address from the point of view of a general practitioner who has had experience in radiology ever since the x rays were discovered, and in electrology from a still earlier date. Dr. Batten, who began his x-ray work in 1897, claimed to be the oldest radiologist still practising in London. Of the many things his long experience had impressed on his mind he mentioned two. One was that the worker was always more important than the machine; in x rays particularly the advance in technique had gone ahead of the advance in apparatus. The second was that most of the progress had taken place through a succession of booms and slumps. First came the original discovery, with a consequent boom, then a comparative slump, followed by a certain amount of careful research and steady work, resulting in the retention of a really efficient method, the

scrapping of others, and emergence of the method into general recognition and appreciation. From this point of view he discussed the progress of high frequency and diathermy, the x rays, radium and radio-active substances, and light and heat treatment. One value of high frequency which he thought not generally appreciated was in the treatment of haemorrhoids; high-frequency applications were an almost certain palliative and often a cure in this distressing complaint. Diathermy was at present in its period of boom, especially in America, but he hoped that the power of diathermy for evil as well as good would prevent the unskilled worker and the quack from venturing on its exploitation. An urgent need was for a portable diathermy machine, reasonably priced and adapted to British conditions of electrical supply, by which patients could be treated in their own homes. He paid a tribute to the sound work accomplished during nearly thirty years by the Röntgen Society, which had now amalgamated with the British Institute of Radiology, and would doubtless render still greater service. The use of x rays had had its booms and slumps, though they had been less pronounced than those of other agents used in electrotherapeutics. A boom in respect to diagnosis occurred at the beginning, when patients were examined radiologically for all sorts of conditions which it was quite impossible for x rays to reveal. An inevitable boom occurred during the war, when the rays were applied widely for the localization of foreign bodies. Of late years there had been a boom in the x-ray therapy in gynaecological cases. Though the sanguine hopes held out with regard to the Erlangen method had not been fulfilled, the method of dosage with highly penetrating rays was becoming better understood and was entering upon the scientific plane. The public had to be guarded from the unwise use of x rays. It was extraordinary what expectations people entertained. They would come to the consulting room with the question, "I have got a chronic headache; will you give me x rays?" or "My husband's nerves are awful; will x rays do any good?" The progress in x rays, said Dr. Batten, had followed three main lines. In respect to tubes, to coils and transformers, and to photographic materials and accessories. The double-coated films now in use were really wonderfully good. The Potter-Bucky diaphragm also represented a great advance in technique. Methods of protection had rather lagged behind, but the principle of protection near the source had gained ground, and a comparison of the hands of present-day workers with the scarred and maimed hands of those who worked twenty-five years ago was significant. Of one form of x-ray treatment Dr. Batten claimed to be the originator in this country—namely, the treatment of ringworm of the scalp. He successfully treated his first case at the end of 1902. The London County Council began the x-ray treatment of ringworm in 1910, and Dr. Batten showed statistics of the cases treated under the Council's auspices and of the cases cured. One curious feature of these official figures was that for several years the number of cases cured was in excess of the number treated. This meant that cases were recorded as under treatment in one year and as cured in the year following; this should have been rectified in the grand totals, which showed, from 1911 until the middle of 1926, that 53,798 cases had been treated and 53,988 cured! Radium and radio-active substances found their best use combined with or consecutive to x rays, and this not only in malignant but in less serious conditions. Light treatment was now in its period of boom, and manufacturers could not make lamps fast enough. He believed the boom would do more good than harm, but the indiscriminate use of light by the inexperienced would do some harm, so that presently there would be a slump, due to disappointment, and this would be the opportunity for a really scientific light therapy to emerge.

## A MALARIAL ADVISORY BOARD.

THE annual report of the Malaria Advisory Board of the Federated Malay States<sup>1</sup> affords abundant evidence that those in authority have no intention of resting on their laurels or allowing conditions to lapse into their previous unhealthy state from relaxation of effort. Four meetings were held during the year, and a number of matters were brought before the Board for consideration. The report shows that this consideration was most thorough, and in no instance was a subject shelved without some definite conclusions being reached. Maintenance of the various health measures is ensured by thorough inspection and the apportioning of responsibility, so that there is always someone to whom those in doubt can apply with a certainty of receiving information and help; the intention is to leave no loophole for the shifting of responsibility. A vaunted new remedy for malaria, known as "Peracrina No. 303," was given a thorough and fair trial, and the conclusions, unhesitatingly expressed, are that it is quite ineffectual and cannot be trusted as a substitute for quinine. Propaganda took the form of circulars in the languages of the people, copies of which are appended to the report, and there is an account of various "shows," where there were exhibits of drainage schemes for malaria prevention, measures for personal prophylaxis, aquaria with larvicidal fish and insects, the destructive powers of which were demonstrated at frequent intervals, thus affording ocular proof of their value; at one of these shows nearly 70,000 persons attended. The list giving the constitution of the Board is sufficient guarantee that the excellent work already performed is to be assiduously followed up, and the record of their doings is evidence that measures are determined upon only after due examination, and that they will be amplified or modified as occasion requires without either waste or stint—a standing example which some other colonies might well ponder, and, after pondering, follow.

## ETHER ANAESTHESIA.

We have received from that distinguished veteran of surgery Dr. W. W. Keen of Philadelphia a copy of the inscription on the "Ether" monument in the public garden adjoining the Common at Boston, Massachusetts. No doubt Dr. Keen was moved to send this record at this time by having in mind the fact that his letter would probably arrive on a day very near to the eightieth anniversary of the demonstration of the efficacy of ether as an anaesthetic in the hospital at Boston on October 16th, 1846; the inscriptions on the four sides are as follows:

## Side I.

"There shall be no more pain."—*Revelation.*

## Side II.

"In gratitude for the relief of human suffering by the inhalation of ether a citizen of Boston has erected this monument."

The gift of Thomas Lee.

## Side III.

"This also cometh forth from the Lord of Hosts which is wonderful in counsel and excellent in wisdom."—*Isaiah.*

## Side IV.

"To commemorate the discovery that the inhalation of ether causes insensibility to pain first proved to the world in the Mass. General Hospital in Boston, October [16] A.D. MDCCCXLVI."

On top of the monument is a statue of the Good Samaritan ministering to the wounded traveller. It will be noticed that the patriotic citizen of Boston who gave the monument, in view of the very heated controversy which had raged around the names of Morton and of Jackson, wisely decided to avoid or perhaps to extinguish the strife by

<sup>1</sup> Federated Malay States. Annual Report of the Malarial Advisory Board for the year 1925.



mentioning no one by name. Not only was the credit of the discovery claimed by these two, but there have not been wanting those who have made claims for other experimenters in the United States. But it is beyond dispute that the operation performed under other anaesthesia in the Massachusetts General Hospital by Dr. John C. Warren on October 16th, 1846, first made known to the world the practical value of ethyl ether as a means of procuring insensibility to pain. On this historical occasion Morton played a conspicuous part. There seemed to be a curse on the pioneers of anaesthesia. Hickman, who first anaesthetized animals with nitrous oxide, could not get opportunities of applying the method in the human subject, and died young and disappointed. Morton died a bankrupt after failing to make a commercial success of ether; and Wells, who first used nitrous oxide in dentistry, and Jackson both became insane. Dr. Crawford W. Long of Georgia, who anticipated them all with ether, did not publish his experiences at the time, and he alone lived on untroubled by ambition as a country general practitioner. There is a monument to Long, on which his use of ether is recorded, at Jefferson, Georgia, and the University of Pennsylvania unveiled a medallion to his honour in 1912. It is difficult to kill any person with an overdose of ether, and small risk was run by the first experimenters with this substance; but Simpson and his friends, who later experimented with chloroform and some other allied substances, stood a very great chance of fatal accident. The reader of the account of Simpson's proceedings must be filled with wonder at the fortunate escapes of the investigators. Perhaps this lucky immunity has something to do with that confidence in the safety of chloroform as a general anaesthetic which prevails on the northern side of the Tweed, although no less an authority than Sir Berkeley Moynihan, in his address delivered to the Medical Society of London on October 11th, expressed his adverse opinion in the following terms: "It is some years since chloroform has been given to any patient of mine; it is far too dangerous a drug."

#### PATHOLOGICAL RESEARCH IN JAPAN.

THE National Research Council of Japan is to be congratulated on the first appearance of its Transactions in Pathology.<sup>2</sup> The first fasciculus gives ample evidence that the Council intends to give us of its best both in the subject-matter and in the style of the work. The two long articles comprised in the fasciculus are written in German, and although doubtless every English medical man is well acquainted with that language, we may hope that many of the subsequent contributions will pay us the compliment of appearing in our own tongue. The first article is by Dr. Masugi, and deals with the histology of the bone marrow in diseases of the haemopoietic system. He has studied a large number of cases in which the marrow changes were the result of simple stimulation, and compared them with the changes observed in splenic anaemia, acute and chronic leukaemia, pseudo-leukaemia, chloroma, and lymphadenoma, and has noticed certain significant differences, more especially in regard to the reticulum of the bone marrow. His general conclusions are that in splenic anaemia the hyperplasia of the marrow is of the simple reactive type; that in chronic leukaemia the reticulum exhibits a different and quite characteristic arrangement, and that the same feature is observed in chloroma. He further considers that both the reticular and cell proliferation in chronic leukaemia is

perivascular in origin and not diffuse. In acute leukaemia the changes sometimes resembled those of the chronic form, but in some instances were diffuse. In lymphadenoma, although the proliferation of lymphocytes is always perivascular, the arrangement of the reticulum does not present the characteristic form met with in chronic medullary leukaemia. The second paper, by Dr. Satake, gives an interesting account of the theory of the enteric function of the lymphocytes and the record of an extensive series of experiments conducted by himself with a view to testing the accuracy of Nagayo's theory on that subject. Nagayo considers that the emigration of lymphocytes through the intestinal epithelium into the lumen of the bowel is a biological function of the alimentary tract, and that the agminated and solitary glands are the sites of exit. On this theory the Peyer's patches have not a defensive function, as has been generally supposed, but are, on the contrary, dangerous sites of bacterial invasion. He further considers that the lymphocytes are in some way connected with the metabolism of fat. Satake's experiments tend to confirm Nagayo's theory. He found that the emigration of lymphocytes was most abundant where digestion and absorption are most active—namely, in the small intestine and caecum; it is at its maximum in the duodenum and jejunum, gradually diminishing in the course of the ileum, and exhibiting a sudden increase at the caecum. In fasting animals the emigration steadily decreases up to the time of death. With regard to the influence of different kinds of food, Satake found that the emigration of lymphocytes was most marked in carbohydrate and fatty diets, and that in these, contrary to what occurs in a protein diet, the lymph follicles become hypertrophied. Both papers are of considerable interest, and give good promise that the Transactions will be a valuable addition to medical literature.

#### SCARLET FEVER AND MEASLES.

AN important departure from the recognized use of hospitals for infectious diseases has just been made by the Metropolitan Asylums Board on the recommendation of its Infectious Hospitals Committee. It has been decided to abandon the present practice of always admitting scarlet fever in preference to measles; to allocate beds to the two diseases; and to revise periodically the allocation, so that in times of measles prevalence the larger proportion of accommodation shall be allocated to measles. In 1910 the Board decided to receive cases of measles and whooping-cough into its hospitals, but restricted the admissions to the beds available after the claims of scarlet fever and diphtheria had been satisfied. For the future the claims of diphtheria will be considered paramount, owing to the importance of early and efficient treatment and skilled nursing. The type of scarlet fever seen in London during recent years has been so mild that the large majority of the patients would probably recover whatever the conditions under which they were treated. From measles in London, on the other hand, of every million people living during the last fifteen years, 251 have died annually, as against 42 from scarlet fever. Of cases of measles treated in the Board's hospitals the case mortality was 10.6 per cent., whereas for scarlet fever it was only 1.5 per cent. To provide accommodation for the 80,000 to 100,000 cases of measles which probably occur in London annually is out of the question, but the Board considers that a substantial increase in the present accommodation might be made by so modifying the present scheme of allocation as to give to measles a considerable proportion of the beds now allocated to the less important disease—namely, scarlet fever. These changes have been agreed to by representatives of the Ministry of Health, the London County Council, and the

<sup>1</sup> Those interested in the history of ether may refer to "The Jubilee of Anaesthesia," BRITISH MEDICAL JOURNAL, October 17th, 1926, p. 1135. <sup>2</sup> Henry Hill Hickman; a Forgotten Pioneer of Anaesthesia," *ibid.*, April 13th, 1912, p. 843. For Long, see *Anaesthesia*, by J. T. Gwathmey, second edition, London, Churchill, 1925.

<sup>2</sup> Japanese Journal of Medical Sciences. Transactions. V, Pathology. Vol. I, No. 1. (72 x 10), pp. 81; illustrated.)

metropolitan borough medical officers of health. When a large proportion of the available accommodation becomes occupied, the selection of cases for admission to hospital will be made by the borough medical officer of health in accordance with the necessities and home conditions of the individual case. The policy adopted by the Metropolitan Asylums Board falls into line with the trend of the report on scarlet fever issued by the Office International d'Hygiène Publique, to which we called attention on October 9th (p. 643). The Infectious Hospitals Committee foresees that departure from the long-established practice of removing to hospital every case of scarlet fever may at first cause some criticism, until the public realizes the pressing reasons for the change and the advantages of the new policy.

#### PREVENTION OF DEATHS FROM CANCER.

THE Yorkshire Council of the British Empire Cancer Campaign has issued, very opportunely, a collection of clinical data on the causation and treatment of cancer, entitled *Notes on Cancer for Medical Men*. The book has been prepared by the Medical and Scientific Committee of the council, of which Sir Berkeley Moynihan is chairman. It is not a record of research work carried on by that committee, but an up-to-date and carefully balanced statement of the present state of knowledge. Such subjects as the increase of the death rate from cancer, family liability, cancer houses, methods of treatment, and the claims of quacks, are dealt with. There are excellent chapters on recent and illuminating investigations into the possibility of producing experimental immunization to cancer by Lumsden, and also on the work of Gye and Barnard. We have only cited these few since they form common topics of conversation in regard to cancer in well read circles. On such occasions any doctor who may be present is expected to be able to answer all and sundry questions with the voice of authority. This the book of the Yorkshire Council will help him to do. We understand that a copy of it will be sent to every registered medical practitioner in Yorkshire, and that a copy may be obtained free of cost on application to the offices of the Yorkshire Council (47, Park Square, Leeds) by any medical man. We anticipate that there will be a considerable demand for the book, for there can be no doubt it will serve a most useful purpose. As is seen from its title, the volume is primarily addressed to medical men, but much of it could be read with advantage by intelligent men and women who are not members of the medical profession. It contains, however, two short sections directly addressed to the public; the first is on the education of the public on cancer, and the second consists of questions and answers about cancer. Copies will be sent to any medical man desiring to distribute them among his patients on application to the above address. We may take this opportunity of calling attention also to another authoritative publication—the "Statement of Facts and Opinions" put out by the conference held last month at Lake Mohonk, New York. It is published in full at page 752, and as it was drawn up by a meeting of some hundred persons specially concerned with the pathology and treatment of cancer it must be regarded as embodying the best present opinion on the subject, and, therefore, as a document of great importance.

#### INTERNATIONAL OPHTHALMOLOGICAL CONGRESS.

At a general meeting of the Convention of English-speaking Ophthalmological Societies held in London in July, 1925, it was resolved: "That this Convention of English-speaking Ophthalmological Societies hereby empowers its president, Mr. E. Treacher Collins, to appoint a standing committee of five, of which he shall be chairman. The duty of this committee shall be to obtain such co-operation as is possible

from representatives appointed by various ophthalmological societies for the promotion of international ophthalmological congresses." It was also resolved that other matters of international ophthalmological interest should be referred to the international committee, when constituted. The committee of five, constituted in accordance with the above resolution, consisted of Mr. E. Treacher Collins, Dr. Edward Jackson, Sir John Herbert Parsons, Dr. G. A. de Schweinitz, and Mr. Leslie Paton. It considers that the time has now come to take further steps to form the larger representative international committee suggested. An invitation has been addressed to an ophthalmological society in every country where such a body was known to exist, and where none could be traced to a leading ophthalmological surgeon. It is desired that each nation should be represented by two delegates nominated by arrangement between the principal ophthalmological societies of the nation, or, in the case where no national ophthalmological society exists, by representative ophthalmologists. The meetings of the committee will be held at the Hague in July, 1927. The standing committee is now ready to receive the names and addresses of the two delegates selected to represent each country, and asks that they may be sent to Mr. Leslie Paton, 29, Harley Street, W.1, so soon as arrangements can be made for their nomination.

#### JOHN BULL.

THE first social evening of the Royal Society of Medicine for this session was held on October 18th, when an unusually large number of Fellows and their friends assembled to meet the new president, Sir James Berry, and Lady Berry. Sir Arthur Keith gave an address on "John Bull: a study in anthropology," which he suggested might be considered as a sequel to his lecture on "Punch as an anthropologist," of which we gave some account on January 26th, 1924. His present intention was to show how caricaturists generally, and Sir Bernard Partridge in particular, had delineated a type of cranial formation which was actually characteristic in some measure of many British subjects, though rarely found in an unmodified condition. The gossamer fancies of Sir Arthur Keith's wit and wisdom were skillfully woven together in his inimitable way to show that the stocky neck and aquiline nose, the brachycephaly, and the chin and forehead development associated with the character John Bull, first described by Dr. John Arbuthnot, though representing an ideal and not an actuality, were nevertheless characteristics of invaders of these shores who came from beyond the Caucasus in the second millennium before Christ. The characters had followed the Mendelian lines of inheritance and were still to be detected, not only by British but also by foreign caricaturists when not in too unfriendly mood. The John Bull type was certainly not Saxon, nor a later introduction into England. The lecture was most warmly appreciated by the large audience.

#### LISTER MEDAL.

THE Lister Medal for distinguished contributions to surgical science, with the honorarium of £500, has been awarded by the Committee of Representatives from the Royal Society, the Royal Colleges of Surgeons of England and Ireland, and the Universities of Edinburgh and Glasgow, to Professor A. F. von Eiselsberg of Vienna. This is the second award of the medal; the first was to Sir William Watson Cheyne. An address is to be given by Professor von Eiselsberg at the Royal College of Surgeons of England, in accordance with the conditions of the trust, on Thursday, July 7th, 1927, at 5 p.m. There will be a reception in the museum from 4 to 5 o'clock before the lecture, and the specimens added to the museum during the year will be on view.

## A MEDICAL REVIEW OF SOVIET RUSSIA.\*

IV.—CHANGE IN TYPE AND INCIDENCE OF  
DISEASE.

BY

W. HORSLEY GANTT, B.Sc., M.D.

(Formerly Chief of the Medical Division of the American Relief  
Administration, Leningrad Unit.)

## PART II.

## MODIFICATIONS IN INTERNAL DISEASES.

**Factors.**—Although the total of diseases increased enormously during the war and famine, some decreased not only relatively but absolutely. The had conditions acted as therapeutic agents for some derangements, or at least possessed a compensatory value. The etiological factors beginning in 1915 and culminating in 1920-21 were: (1) The psychical strain of the war and revolution—the loss of home, fortune, and friends, and the uncertainty of the future.† (2) The food: (a) starvation, particularly in fats and proteins, and involving all classes; (b) the indigestible and irritating character of the food, such as salt herring during 1918-19, and later mechanical irritants—as oats, millet, and flax; (c) the elimination of all alcoholic beverages until 1922, and the sharp decrease in tea, coffee, and tobacco. (3) The lodgings—the lack of light, warmth, and comfort during the worst years, and the presence of dirt. (4) The physical strain—the necessity for hard manual labour by those not accustomed to it, and the lack of means of locomotion.

It is suggestive therapeutically to see which diseases were affected by these conditions.‡ The following figures are an analysis of about 5,000 cases from the Erisman Hospital, Leningrad.

**Adiposity**, with which 0.75 per cent. of patients entering the hospital were affected in 1914, decreased to 0.37 per cent. in 1917, and completely disappeared in 1918-21.§ Chronic alcoholism fell from 1.5 per cent. of patients in 1914, to 0.75 per cent. in 1916, and in 1919 to 0.001 per cent. Diabetes mellitus was absent entirely during the famine years, and podagra showed a marked decrease. Drug addicts were also absent from the roster in 1920-22.

**Circulatory Diseases.**—With the exception of nephritis nearly all of these showed a marked increase. Arteriosclerosis and hypertension, cardiac neuroses, angina pectoris, myocarditis, and aortic aneurysm were greatly increased. In 1914 disease of the heart and blood vessels constituted 2.7 per cent. of all dispensary patients; in 1918, 4.2 per cent. Anaemia and dyspnoea were almost universal and bradycardia was common. These figures indicate that whatever benefit to cardiac disease might have accrued from the lightening of the diet was more than offset by the terrible mental and physical strain of the life of that time. Nephritis did not change its incidence. Emphysema was slightly increased. Raynaud's disease and chilblains were greatly increased.

\* Previous papers on medical and scientific work in Soviet Russia by Dr. Horsley Gantt were published in the *BRITISH MEDICAL JOURNAL* in 1924: I, A Review of Medical Education in Soviet Russia, vol. 1, p. 1053; II, Hospitals and Health Conditions in Soviet Russia, vol. 1, p. 1053; vol. II, p. 538. The first part of this article on "Change in Type and Incidence of Disease" was published on August 14th last, p. 703.

† Some idea of the strain under which the Russian was living can be gained from a comparison with the men of the relief organizations. They were in Russia for only one or two years, and usually had the Soviet Government had; there was no overcrowding, and the quarters, food and calorie intake were sufficient. But even among them there were several deaths from pneumonia and typhus, a good many contractions, and a large number developed neurasthenia.

‡ I am especially indebted to Drs. Lang and M. V. Cheraoronsky of the Leningrad Medical Institute, Dr. A. P. Zelman, and Dr. A. A. Vladimiroff, director of the Institute of Experimental Medicine, for information given me personally regarding disease statistics.

§ A certain professor of medicine who was overweight had unsuccessfully run through the gamut of the various treatments for obesity. During 1917-19 he became thinner than a normal person, and fell to about one-half his former weight. He has, however, now regained his 240 lb.

**Gastro-intestinal Diseases.**—Chronic constipation almost entirely disappeared owing to the coarse quality of the food. Hemorrhoids decreased. Most of the catarrhal and inflammatory conditions of the gastro-intestinal tract were greatly decreased (gastritis, chronic intestinal catarrh, chronic colitis, appendicitis). From 1914 to 1917 the incidence of appendicitis cases was nearly constant (2.3 per cent.), but in 1918 it dropped to 0.8 per cent. and in 1919 to 0.01 per cent. Diseases of the bile ducts—cholecystitis and cholelithiasis—decreased gradually from 4.7 per cent. in 1914 to 4 per cent. in 1917, and dropped suddenly to 1 per cent. in 1918 and 0.8 per cent. in 1919. The marked decrease in all these conditions suggests the value of starvation in their treatment, as it seems unlikely that the enforced exercise or the irritating nature of the food could have been so efficacious.

No change was noticed in the incidence of pneumonia, cancer, epilepsy, or endocrinal disease. Frequent ecchymoses were seen on the uvula and tongue from the rough food. Acute enteritis became epidemic. Meteorism and flatulency were generally present. But the most notable increase was in peptic ulcer (see above in the section on surgery) and in abdominal ptoses. The latter were present in 1/4 per cent. of all hospital (Erisman) patients in 1914, but the figure rose to 1 per cent. in 1917, 2 per cent. in 1918, and 5.2 per cent. in 1919. This was attributed to the emaciation and to the nervous and physical strain.

## NEUROLOGICAL AND PSYCHIATRICAL DISEASES.

A description of nervous and mental diseases falls into two periods—that of war, revolution, and acute famine, which lasted until the end of 1922; and the years since 1922.

The events of the first period increased enormously all functional neuroses and psychical diseases. "The nervous strain of war would naturally be expected to produce insanity, mental disturbance, and neurasthenia," and this statement held true for America and Germany as well as for Russia.<sup>2</sup> Sir Humphry Rolleston, formerly a Surgeon-Admiral of the British Navy, stated, however, that this anticipation had not been fully realized in the British Navy (in 1916), where serious mental troubles occurred in less than 1 per cent., and mild neurasthenia in less than 4 per cent.; this he attributes partly to the absence of alcohol.

A more potent cause in Russia even than the war was the revolution. Gssipov points out that, although actually the revolution lasted a short time, the concomitants (poverty, blockade, and famine) persisted much longer.<sup>3</sup> The entries for the psychiatric clinic at the Military Medical Academy, Leningrad, were increased not only for the months following the revolutions (that is, in March and December, 1917, the entries were greater than in the preceding and following months), but they were also increased for the years 1918, 1919, and 1920.<sup>4</sup> Gorovoi-Shaltan shows that in 1911 1 per cent. of the population of Petrograd suffered from mental diseases; in 1918, 4.2 per cent.; in 1919, 4.7 per cent.; and in 1920, 5 per cent.\* The figures for defective and delinquent children mounted to an even greater extent. Judging by the number of cases which entered the asylums, the index of child delinquency in 1910 was 3.6 per cent.; in 1918, 17 per cent.; in 1919, 22 per cent., and in 1920, 27 per cent. In 1920 52 per cent. of these were theft cases, nearly all of which were caused by the extreme hunger of the child.<sup>5</sup>

**Neurasthenia.**—Besides the increase in the serious psychoses the milder forms, such as neurasthenia, were greatly augmented. It has already been mentioned that some diseases, such as gastric and duodenal ulcer, in which nervous conditions seemed to play a part, were remarkably increased. We may inquire into the change in the type of psychoses which occurred during these troubled years.

**Typhus Psychoses.**—Many infectious psychoses resulted

\* The figure 1.9 per cent. given for 1911 does not represent the total number, because the asylums were able to care for only 58 per cent. of these patients. However, with the dying off of all chronic cases and the decrease of the population after 1917, the hospitals could fully satisfy the needs of the population in this respect.

from the typhus epidemic.\* It is worthy of mention that Spirtov, who made a special study of the effect of the typhus on previously existing organic nervous diseases, chiefly general paralysis of the insane, found that in contradiction to the views of Krapelin and others who have worked with malaria and general paralysis, no change was produced by the typhus toxin in general paralysis except for a slight psychic improvement during the neutro stage.<sup>6</sup>

**Famine Psychoses.**—The acute shortage of food and other difficult conditions of life caused a temporary psychosis simulating dementia praecox; it cleared up under proper nutrition. Other symptoms resulting from the famine resembled hypothyroidism. Serifimoff states that some starving patients showed symptoms that pointed to an affection of the nucleus ruber or of the corpus striatum.

**Asylums.**—The psychoses of patients who had been already confined to asylums underwent interesting changes. The following account is taken from communications from Serifimoff and Dobrotvorskoy. Until 1917 the inmates were sufficiently fed; during 1917 the feeding was sporadic, and in 1918 when the famine began, the patient often received only 800 calories. The shortage in the asylum rations amounted in 1918 and 1919 to 27 per cent. and 45 per cent. respectively of the normal in carbohydrates; 14 per cent. and 16 per cent. of normal in fats; and 23 per cent. and 22 per cent. of normal in proteins. "This resulted in an almost complete dying off of chronic cases in 1918; the mortality, which in pre-war times was 4 per cent., averaged 21.8 per cent. and in some months exceeded 30 per cent." Serifimoff says it exceeded 42 per cent. in some months, and that although the patients were greatly weakened by the shortage of food, nearly all the deaths were directly caused by acute exhaustion. After 1920 the mortality was not nearly so great: The weight of the men decreased by 24.7 per cent., and that of the women by 21.8 per cent. The percentage of recovering cases decreased, and acute cases became chronic. Mental diseases became more frequent among women than among men. An epidemic of theft spread among the patients, extending even to the most intelligent, who entirely lost all ethical control. States of despondency increased at the expense of mania and exaltation, which became rare. Ossipov and Dobrotvorskoy, who studied the psychoses of the 1905 revolution also, showed that the events of revolution do not develop psychoses *sui generis*, but give a characteristic colouring to existent forms. The patients in their delirium appropriate titles of war commissars, and during the famine those with delirium grandiosum operated with very scanty provisions of food, which seemed large to them on account of the shortage. Money was all forgotten, and only food thought of.

"The usual noises, abuses, and quarrels of the wards ceased; the only moment of animation was that of the distribution of the scanty rations. . . . The whole of the decay, cold, and famine was accepted by the patients as inevitable; life became unusually gloomy even for an asylum; patients took no interest in recreation, and expressed their disapproval of such arrangements during times so hard; they realized that conditions outside were worse, and did not try to escape."<sup>7</sup>

In the treatment of all these conditions nothing new was evolved. The cranio-facial index was introduced by Shalaboonoff, and is claimed to be more accurate than cranial index as a measurement of intellectuality. Lentz showed that in patients dying from starvation the brain loses 8.23 per cent. protein, 11.48 per cent. lipoids, 5.23 per cent. nitrogen, and 2.25 per cent. phosphorus. The grey substance of the brain loses 9.30 per cent. protein,

8.33 per cent. lipoids, 9.54 per cent. nitrogen, and 2.10 per cent. phosphorus.

**Alcoholism.**—Of those nervous diseases which decreased during the famine and war, alcoholic psychoses were the most notable. This was due to the prohibition of the sale of alcoholic drinks, which began in 1914 and continued until 1922. Since 1922 the strength of spirituous beverages has been gradually increased, and in September, 1925, the 40 per cent. vodka (the same as in Tsarist times) was reinstated. The amount to be sold<sup>8</sup> in 1926, as announced by the Government, will be more than that for 1924, but less than in 1913. The price of vodka in 1913 was 70 kopeks (20 pence); and in 1926 it was 3 roubles (7 shillings) per litre. The present higher price tends to restrict its use somewhat. Drunkenness was always notoriously popular in Russia with all classes, and the consumption of strong spirits was said to be greater than in any other country. Formerly the peasant spent practically all his earnings on alcohol, and the popularity of vodka does not seem to have diminished greatly at the present. Alcoholic drinks are especially injurious in Russia because the Russian will hardly drink wine or beer or anything except the strongest vodka obtainable, and that undiluted and often without food. The figures for the decrease in alcoholism have been given above. In 1922 it was stated (Dobrotvorskoy and others) that no physician anywhere in Russia had seen delirium tremens, which was formerly common, for six or seven years.<sup>9</sup>

**Morphine and Cocaine.**—Cocaine and morphine addicts were increased until 1920, when effective prohibitive measures were taken. Aronovitch states that cocaineism was notable especially in the youth, and that he saw cases of perforation of the nasal septum as a result of the constant smelling and the anaesthetization of the mucous membrane.

**Suicides.**—Suicides became distinctly rarer during the worse years. According to Professor Lang this was on account of the fewer love affairs in the period when the chief concern was only to obtain food to sustain life. They have greatly increased again. This is attributed by Professor Pavlov to the spread of atheism among all classes. (Personal communication.)

**Children's Neuroses.**—At the sixth Russian Congress of Children's Diseases, held in Moscow in 1925, it was pointed out that all the children of the period 1918-23 showed an unprecedented tendency to neuroses. Though their condition has greatly improved since 1924, one-third of all Russian children, on the authority of Professor Shesgo, are now suffering from some neurotic disturbance. It is noted that neurasthenia begins in much younger children than formerly.

#### PSYCHIATRY AND THE PRESENT LIFE.

This completes the review of the revolutionary and famine periods and brings me to a consideration of the present. These past years exerted an unquestioned deleterious effect on nervous and mental diseases, which remain definitely increased even now. The effect of the present mode of living in Russia cannot, however, be stated so unequivocally, and only a guarded prophecy as to its influence on neuroses and psychoses in the future generation can be made. But at least some of the factors of the present life that seem to be etiological can be pointed out.

**Effects Lasting.**—In the first place, the results of the war and revolutionary period will remain for some time. Although the terrible events of these years are now a matter of history, and Russian life has mended itself, their effects are problems of the present Russia. Dobrotvorskoy says:

"The nervous and psychic tone of the population has suffered, and its restoration to normal will have to take place in future generations. France, with its 'Paris blockade children,' may be mentioned as a parallel. Russia's 'blockade children' [are not

\* The manufacture of spirituous liquors is now, as it was in the time of the Tsars, a Government monopoly. In announcing the amount to be manufactured during 1926 the Government is virtually announcing the amount that will be consumed; for it knows that the Russian people will drink all that is available on the market.

† The lack of alcohol favoured the study of dipsomania. Professor Ossipov, from a series of these cases which he had observed before the prohibition of alcohol, concludes that a picture of the attacks coincides with the depressive phase of manic depressive psychosis, differing from it only by the shorter duration. In so classifying it he agrees with Korsakoff, but differs from Krapelin, Gaupp, Roemer, and others who considered it a kind of psychic epilepsy.

\* Besides the acute delirium, fatalonia, stereotyped movements, and exaltation connected with the acute stage of the fever, several forms of psychosis followed post-infectious "psychical asthma" (Giliarovsky), which always had a favourable issue, characterized by despondency, incontinence, inability to fatigue and exaltation, and certain psychical phenomena (atrophy of the skin and muscles, neuralgia, derangements in walk and speech, increased deep reflexes, sometimes paresis or convulsions), depressive mania, which begins as an exaltation state during the fever, schizophrenia, Korsakoff's disease, amnesia, pseudo-paralysis. Triumovskii concludes that "psychical asthma," amnesia, and Korsakoff's disease are different aspects of the same psychosis, whose form is determined by the constitutional peculiarities of the patient. The symptoms are loss of memory, neuritis, and psychic confusion, which are attributed to the action of the toxin and the derangement of the circulation in the cortex of the brain.

† Apropos of this many Russians have told me that they tried to get put into prison during the famine in order to get the meagre ration of black bread.

confined to one city and they] will be a prolonged reproach to the culture of the West, and prove a lasting misfortune to themselves and the State."

Sir William Osler expressed the same thought when he said that the treatment of neurasthenia should begin with the preceding generation. The truth of this statement is borne out by the great increase of nervous diseases and children's neuroses in 1926, and of anthropological changes (see below). Dr. L. Prozorov of the *Narkomzdrav* told me in January, 1926, that he did not think that insanity was any greater now than before the war, because 30 to 50 per cent. of all insane cases died in 1918-20; that now 5 per cent. of the insane cases were in institutions, against 10 per cent. in 1914; that the number of psycho-neuroses had greatly risen since the war.

**Changes in Method of Living.**—It behoves us now to inquire into the changes that have taken place in the method of living in Russia, and how these may affect psychiatrial and neurological diseases. At the outset it can be stated that at the present time, neglecting the famine and war years, the life of the peasant, who constitutes 85 per cent. of the population, has not changed much economically from what it was formerly, though it shows signs of improving; that the life of the industrial classes—a very small percentage—has improved; the life of the middle classes is somewhat worse, though gradually improving; that almost all of the extreme changes (financial, social, etc.) have been suffered by a small class, the intelligentsia and aristocrats, who make up less than 5 per cent. of the total, and that large numbers of these are either abroad or have died. Likewise most of the great reversals in life have taken place in the large cities, which contain a small proportion of the total population of all Russia.

**Recreations.**—Much has been written about the sodden, grey, and colourless life of present Russia. This is certainly one of the most remarkable features of the cities as one enters the Union of Soviet Republics from the Western world. After living among the Russian people for some time, however, I have found that this is more apparent than real, and that it is caused chiefly by the lack of the expenditures of a moneyed and leisured class—a relatively small group—and that the mass of the people, especially the lower strata, still have about the same amount, or even more, of pleasures and recreation than they had formerly.

**Fear.**—A parallel statement might be made of the terrorism and the fear of the secret police (formerly the "Cheka," now the "G.P.U."). It exists as a potent factor for undermining the nervous equilibrium but for relatively few, and with the masses there is less fear of authority than there was under the Tsar. I was told by an inspector of workers' schools that many of the pupils in those schools had never even heard of the "G.P.U." There is now probably more licence, or personal freedom of a certain kind, or freedom from convention, as one chooses to call it, with the exception of political limitations on freedom of speech, than formerly, and also than in a good many other countries.

**Simplifications.**—Russian life is simplified by the lack of money and of nearly all forms of machinery found in civilized countries except telephones, trams, and moving pictures.\* America, the country where machines are most common, is also the country where neurasthenia has been exceedingly widespread; and there may be some connexion between the two. A simplification in Russian life has recently taken place through the removal of social pretensions and artificialities, which may have a compensatory value in the cultured classes—who have suffered most—where it is chiefly operative.

**Education.**—Perhaps some methods in the present system of education will exert the greatest influence for good or bad on the nervous constitution of the future generation. Certainly many valuable things are being taught the boys and girls now about personal hygiene and sanitation and physical culture that were neglected under the former régimes, and many more people are being educated than formerly. These facts are mentioned in other papers of

\* As one of the Soviet ideals is an age of mechanics and machinery, this condition will probably not remain when they have money to carry out their ideals.

this series. The effects of some of the Marxian principles in the present education are not so clearly beneficial, however, from the standpoint of psychiatry. The new freedom, licence, and responsibility given to youth is even more extreme than the conditions in the United States, and in Russia it has come about overnight, while in America it has been a slow development. The effects of this lack of restraint in the youth, of the official and pedagogical warfare against not only the orthodox moral codes but against all forms of spiritual beliefs, of the rapid spread of atheism among the young over the whole country, of the instillation of class hatred, and of a gross materialism, remain to be seen when the generation in which they are taking root reaches maturity. It can be said in favour of the brutal frankness of the present materialism that it has had the good effect of removing the superstitions and fantasies which abounded in old Russia. The moral life in Russia seems to be on a plane that would delight the Freudians. On the other hand, we have the testimony of the eminent physiologist I. P. Pavlov, an opponent of Freudism, who stated in a public lecture that from the physiological point of view the lack of moral restraint taught the youth in Russia is building up a nation of neurotics.\*

Other characteristics of the Russian life, such as unemployment, etc., will not be discussed here as they are too variable and seem to be temporary.

#### DISEASES OF CHILDREN.

For the general conditions of child life that maintained until 1923 the reader is referred to Dr. L. H. Guest's article "Conditions of child life," in the *BRITISH MEDICAL JOURNAL* of October 20th, 1923 (p. 730). Dr. Guest has described adequately the collection of children into "children's homes" during the period of Communism; the general dangers which have beset child life in Soviet Russia, some of the present problems before the Government in dealing with children, and lines along which the Soviet Department of Public Health is making progress in this field.

#### Infectious Diseases.

Most children were immune to typhus and relapsing fever. There was no antagonism noted, however, between the ordinary diseases of childhood and these fevers. Both the morbidity and mortality of measles were strikingly increased during 1919 and 1920. The mortality for this disease in the hospitals of Leningrad was then 30 to 50 per cent., and this agrees with reports from the Volga regions giving a mortality of 40 per cent. (Becunwkes). The high death rate was thought to be due to the increased susceptibility resulting from the cold and damp and absence of sufficient clothing. By 1922 the frequency and mortality had nearly returned to normal. Scarlatina and diphtheria showed no increase until 1922; there was an increase in the complications (30 per cent. of nephritis with scarlatina instead of the normal 15 per cent., and 50 per cent. of laryngeal diphtheria). The general mortality of all children of Leningrad was given officially by the *gubzdrav* (public health department) as 27 per cent. for 1922. The latest figures for the whole of Russia are:

TABLE I.—All Russia: Acute Infectious Diseases.

	1921.	1922.	1923.	1924.
Scarlatina ...	381,913 (26)	75,731 (7.7)	115,681 (9)	201,236 (15)
Measles ...	467,601 (32)	132,889 (14)	124,471 (10)	327,912 (24)
Diphtheria ...	459,461 (31)	40,165 (4)	52,269 (4)	65,620 (5)
Pertussis ...	440,915 (30)	102,346 (11)	193,33 (18)	102,007 (14)

The figures in parentheses indicate the rate per 10,000 people. The table is taken from *Vestnik Sovremennoi Meditsiny*, June, 1925, No. 6, p. 17 (I. A. D. Breitner).

\* See *London Times*, May 5th, 1924: "Professor Pavlov stated that the whole of the Russian nation was suffering from an absence of real restraint which induced tendencies to succumb to fantastic suggestions. Neurotic affections had greatly increased recently, caused by the systematic undermining of the instinct of ownership and of the religious instinct. He stated that it was impossible to allow children absolute freedom from restraint during the educational period, as they would be unable to develop for themselves the power to resist emotional impulses, without which human beings become subject to hysteria and other psychoses on the slightest irritation."



An examination of 2,200 supposedly healthy children by the doctors of the American Relief Administration revealed the following illnesses:

TABLE II.—Results of Examination of 2,200 Children supposed to be Healthy.

Disease.	Percentage of Children Affected.		Disease.	Percentage of Children Affected.	
	Age 3-7.	Age 7-14.		Age 3-7.	Age 7-14.
Lymphadenitis ...	82.0	40.0	Eczema ...	6.2	7.0
Anaemia ...	79.0	68.0	Scabies ...	3.0	6.0
Rachitis ...	53.5	10.0	Cardiac neurosis ...	3.0	6.0
Scrofula ...	26.0	11.0	Scorbutus ...	1.0	2.0
Chronic bronchitis ...	13.0	15.0	Otitis media ...	4.8	4.0
Tuberculosis (all forms) ...	3.0	14.0	Furunculosis ...	0.5	2.5

The incidence and progressive decrease in mortality of scurvy in the hospitals of Leningrad is given as follows (the figures in parentheses show the mortality): In 1918 there were 752 cases (14 per cent.); in 1919, 839 (9 per cent.); in 1920, 2,065 (5 per cent.); in 1921, 1,301 (4 per cent.); and in 1922, 513 (4½ per cent.). Scurvy and rickets increased greatly in Germany also during and after the war. In Leningrad 80.4 per cent. of the cases of rickets occurred in males.

#### Veneral Disease.

In 1923 educators as well as doctors remarked on the great increase in venereal disease in children. The official organ of the Communist party stated in 1925:

"There has been a remarkable increase in juvenile gonorrhoea in the recent past. Thus in the Metchnikoff Hospital all eighty beds in the skin clinic are filled with children with gonorrhoea, and thirty-five more such cases have just been refused admission on account of lack of space. According to the chief doctor of the hospital there was never before so large a number of children with gonorrhoea. . . . Most of them are young children and come from the children's homes." (*Krasnaya Gazeta*, Leningrad, October 17th, 1925, No. 253, p. 3.)

#### Pirquet System of Feeding.

Our experience in the selection of the 80,000 children which we were feeding in the Leningrad district may be of value to those interested in nutrition. The system devised by Dr. von Pirquet, and used by the American Relief Administration in feeding children in Central Europe, had to be modified in its application to Russian children. The "pelidisi" was introduced as a simple method of determining the state of nutrition of the child. It is an arbitrary number based on a mathematical formula—the relation between the cubic root of the tenfold weight and the sitting height. Below 92 was taken to indicate severe malnutrition, and above 99 as good nutrition. To determine the accuracy of this system we made medical examinations and physical measurements in 2,200 children in Leningrad, taking 100 boys and 100 girls at each year of age from 2 to 13 years inclusive. These children were supposed to be without serious physical ailments, suffering only from the shortage of food.\* We found that 53.3 per cent. of these children were in urgent need of supplementary feeding—36 per cent. being classified as weak and 17.3 per cent. as exhausted. We compared the children with poor nutrition with an equal number of good nutrition (taking 100 boys and 100 girls of each age). Below are our results, as tabulated by Dr. A. Pospelova, a pediatrician of Leningrad, who had charge of this work for the A.R.A.

Most of the poor nutrition was found in the younger children, and in an equal number of boys and girls. From the ages of 11 to 13 there were more girls than boys in a state of poor nutrition. At the age of 12 there was a cessation in development of the child—of increase in height and weight—more marked in the girls than in the boys by an average difference of 5.7 kilograms. The cessa-

\* Classification of the children was based largely on the amount of subcutaneous fat, the tone and tension of the fibres, the development of the muscular system, and the colouring of the skin and mucous membranes ("sacratama" of von Pirquet).

tion of growth acted as a conserving agent, and although the children at 12 had stopped growing, we found as many at the age of 12 in a state of good nutrition as at 11. The relation between the circumference of the chest and half the height of the child was also found to differ more from the normal in girls than in boys.

Instead of accepting a single "pelidisi" for children of all ages as had been formerly recommended, we found that a lower "pelidisi" than the following represents malnutrition at the given ages: 97 for children 3 and 4 years old; 96 for children of 5 and 6; 95 for children of 7 and 8; 94 for children of 9 and 10; 93 for age 11; 92 for 12 and 13. "Pelidisi" lower than 91 always means malnutrition, and the younger the child the greater the malnutrition; pelidisi higher than 98 always means good nutrition, and the older the child the better the nutrition which is indicated by this number."

The "pelidisi" system of von Pirquet used intelligently is a simple and easy method of classifying children; used mechanically it may be very misleading. Corrections are necessary not only as to age and sex (girls at 12 and 13 have a greater sitting height than boys of those ages), but also as to nationality, as shown in Russia by the difference between Russians and Tartars.

#### Infantile Mortality.

As a result of the efforts of the Public Health Department to educate mothers, and of its social welfare work, infantile mortality has been markedly reduced in Russia during the past year or two, and is even well below the pre-war level. For example, in 1914 it was 26.5 per cent., and in 1924 only 18 per cent. (Genss).

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(To be continued.)

## WELLCOME HISTORICAL MEDICAL MUSEUM.

### REOPENING CEREMONY.

THE Wellcome Historical Medical Museum (54A, Wigmore Street, London), which has been closed for some months for cleaning and rearrangement, was reopened on the evening of October 14th. Unfortunately, Mr. Henry S. Wellcome, the founder, could not be present; he was detained on a humanitarian mission in America. In his absence, Sir Humphry Rolleston, Bt., and Dr. John D. Comrie acted as hosts, assisted by Dr. C. M. Wenyon and Dr. S. H. Danke, of the Wellcome Bureau of Scientific Research, and Mr. L. W. G. Malcolm, conservator of the museum.

Sir HUMPHRY ROLLESTON remarked that the study of medical history was, somewhat paradoxically, a modern development, and its expansion in this country had been largely due to four men—Dr. J. F. Payno, Sir William Osler, Sir Clifford Allbutt, and especially Sir Norman Moore. This research museum showed the advances which had been brought about through the ages in the various departments of medicine, and the evolution of discoveries and inventions of medical interest; it showed also certain of the retrogressive changes, particularly those which characterized the healing art in Europe during the Dark Ages. London was fortunate in having such an institution, and the whole medical profession was under a debt to Mr. Wellcome for his generosity in making available this wealth of historical lore. It would be difficult to describe how much this museum and library, so quietly amassed, would mean to the medicine of the future.

#### The Functions of a Museum.

Sir ARTHUR KEITH followed with an address the general theme of which was that museum-making and history-writing were the same thing. It was Pitt-Rivers, he said, the founder of the anthropological collection of the museum of Oxford, who demonstrated how reliable human history could be built up, bit by bit, in the shelves and show-cases of a museum, and it was he who made the spade an

instrument of exact history. What Pitt-Rivers did for human culture in general, Mr. Wellcome had sought to do for all that appertained to the art and science of healing, and he had got together an assortment of material for the history of medicine such as had never been available for study in any country. The evolution or history of medicine was more difficult to illustrate by museum methods than any other branch of knowledge. The difficulty came in because in the primitive races of mankind the practice of medicine was founded upon an elaborate code of beliefs—the fine-drawn gossamer of savage fancy—and these were too delicate threads for the relatively clumsy fingers of museum curators to touch. On the belief that the human body was the mere husk and the spirit within it the real person the native physician based his treatment of disease, and therefore to give a concrete representation of the beliefs in which medicine began was particularly hard for men like himself who had been trained to accept only what they could see and prove and to suppress all their childish notions. It would have been otherwise with Lewis Carroll, who understood how children reasoned, and therefore could have entered into the hearts of primitive men without effort. The foundations of medicine were laid on leechcraft, witchcraft, and priestcraft. The early physician was the magician and the priest, and unless this fact was grasped the visitor would altogether fail to understand Mr. Wellcome's hall of primitive medicine, for in that hall would be found a wealth of amulets, charms, talismans, mascots, phylacteries, totems, fetishes, divination bowls, effigies, idols, masks, and ceremonial dresses. This was a massed field of therapeutic artillery, the batteries by which ancient physicians sought to banish illness and disease from their patients. The counterparts in Harley Street of the native artillery were the stethoscope, the bismuth meal, the notebook for prescriptions, and a certain professional air. Sir Arthur Keith added that possibly as visitors walked through the hall of primitive medicine and their eye caught again the weird and uncouth implements of native witch doctors, they would view these exhibits as mere flotsam and jetsam from the Dead Sea of medicine which enlightened England had long since swept away. "I should like to think this is so, but when I see, as I sometimes do, mascots on the motor cars of the wealthy, charms and amulets treasured by many people, both rich and poor, ignorant and educated; when I see, as I occasionally do, the quack preferred to the man who has given his life to the study of rational medicine; and when I see learned men call in spirits to explain unusual physical phenomena, then I am not quite so certain that this part of Mr. Wellcome's museum does represent altogether a past state of things. In all of us there still remains more than a trace of primitive man." Sir Arthur concluded with a discussion of the service which a museum could render to medicine, especially in serving the needs of students, and said that Mr. Wellcome had earned the lasting gratitude of all who believed that the safety of civilization lay in the progress and dissemination of knowledge.

Sir FREDERICK KENTON, Director of the British Museum, in proposing a vote of thanks to Sir Humphry Rolleston and Sir Arthur Keith, said that there were two great men in the history of medicine who would have rejoiced to be

thoro that night—two men separated by more than two hundred years in time, but akin in their wide knowledge and their tastes and interests—namely, Sir Thomas Browne and Sir William Osler. What curious and illuminating reflections this wonderful collection would have stimulated in the mind of Sir Thomas Browne, and in what quaint and beautiful language he would have expressed them.

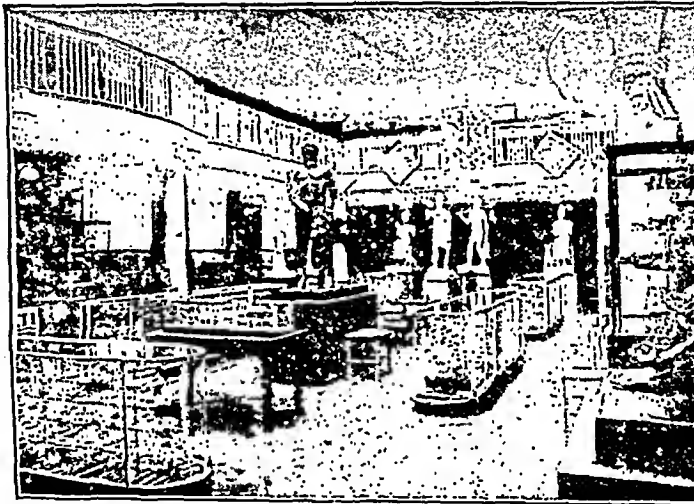
Sir D'ARCY POWER, in seconding, said that there was still more than a lifetime's work to be done in arranging and describing the present collection, and it was being added to daily.

Mr. W. G. SPENCER, as President of the Section of Medical History in the Royal Society of Medicine, proposed a vote of thanks to the absent founder. He said that the Royal Society of Medicine looked upon this museum as its indispensable ally so far as the history of medicine was concerned.

Dr. JOHN COMRIE, Lecturer on the History of Medicine at Edinburgh University, seconded the vote of thanks, and mentioned that, stimulated by the medals and prizes offered by Mr. Wellcome, over one thousand students had gone through the purely voluntary course in medical history at Edinburgh.

#### Additions to the Collection.

Dr. C. M. WENTON thanked the audience on Mr. Wellcome's behalf, and at the close of the ceremony the visitors were conducted through the halls and galleries, and the various additions to the collection were pointed out. The Lister section has been considerably enlarged; and includes some of the furniture and fittings from Lister's old ward at Glasgow; these were rescued by Mr. Wellcome when the ward was demolished a



HALL OF STATUARY.

(Copyright, Wellcome Historical Medical Museum.)

couple of years ago. In adjacent cases is some of the material actually used by Lister, and there is also shown a collection held on loan from the Glasgow Lister Memorial Committee. The war section has also been enlarged. The two rooms devoted to primitive medicine have been enriched by many fresh curiosities; a fine collection of shrunken heads from South America was pointed out here. In the arrangement of the collections the evolutionary idea has been followed as far as possible: for example, in the representative collection of instruments employed in surgery from the earliest times the history of each instrument may be studied separately. The historical development of dental instruments and prosthesis is also admirably shown; and again the full history of the microscope and of ophthalmological instruments can be traced. The visitor who wants to be transported into the Middle Ages has only to step into the section devoted to the history of alchemy, where he will find an alchemical manufacturing laboratory such as Paracelsus might have used. The pharmaceutical section carries on the idea, and includes a London apothecary's shop of the seventeenth century, as well as representations of Eastern pharmacies. The portraits, the casts and reproductions, the personal relics (of Jenner among others), the rare models in ivory of the human body, the prints, printed books, and incunabula, the objects illustrating curious phases of medicine such as the history of healing by the royal touch, the specimens of ancient drugs and herbs and medicine chests and apparatus, make an exhibition as fascinating to the casual observer as it is valuable to the research student.

## CANCER CONFERENCE IN AMERICA.

THE conference on cancer at Lake Mohonk, New York State, of which we gave some anticipatory particulars in our issue of September 11th (p. 492), was held on September 20th and four following days. Among those present were Sir John Bland-Sutton, F.R.C.S., Mr. W. Sampson Handley, F.R.C.S., surgeon to the Middlesex Hospital, Dr. Archibald Leitch, director of the Cancer Hospital Research Institute, and Dr. J. A. Murray, F.R.S., director of the Imperial Cancer Research Fund. Representatives were also present from Italy, France, Germany, Holland, Belgium, and Switzerland, as well as from the United States of America. Altogether more than a hundred persons attended. The main object of the conference was to ascertain what measures of agreement on the various problems of cancer in which the public are interested could be reached by discussions between pathologists and clinicians of America and European countries.

At the opening meeting on September 20th Dr. H. Canning Taylor, president of the American Society for the Control of Cancer, was in the chair, and the foreign guests were welcomed by Dr. W. H. Welch. The first paper read (on the following day) was by Sir John Bland-Sutton, on the value of co-ordinated effort among surgeons, pathologists, and others for the control of cancer; he was followed by Mr. Sampson Handley, who spoke on cancer education in England; by Dr. Henri Hartmann, director of the anti-cancer centre at the Hôtel-Dieu, Paris, who described the objects and methods of the organized movement against cancer in France; by Dr. Leon Bérard, professor of surgery at Lyons, on the organization and practical working of the centres against cancer in France; and by Dr. T. Mario of Toulouse, on the need for special institutes for the investigation and treatment of cancer. Addresses on the organized movement against cancer in Switzerland, Belgium, and Denmark were given by Professor Charles Dubois, Professor Maisin, and Professor Johannes Fibiger (of Copenhagen) respectively. On the next day (September 22nd) the description of measures taken for the control of cancer in various countries was continued by Dr. Raffaele Bastianelli (Italy), by Professor Ferdinand Blumenthal, and Dr. Robert Bierich, director of the Institute of Cancer Research at Hanburg (Germany), and by Dr. George A. Soper (America). The results of the surgical treatment of cancer of the stomach were then discussed by Dr. D. C. Balfour (Minnesota); the radiological treatment of cancer by Dr. Robert B. Greenough (Boston), and the equipment of institutions for the treatment of cancer by radium and x rays by Dr. Claude Regaud, director of the Pasteur Laboratory of the Radium Institute, Paris. Dr. J. C. Bloodgood (Baltimore) read a paper on the value of education in the control of cancer. The next day, September 23rd, discussions were opened on the new theories of the origin of cancer by Dr. Gustav Roussy, director of the Institute for Research and the Treatment of Cancer at Villejuif (near Paris); on the tissue and racial specificities of cancer, by Dr. J. A. Murray (London), and on the practical value of researches into the causes of cancer by Dr. Archibald Leitch. Then followed three papers on statistics: the first by Professor William de Vries, president of the Netherlands Cancer Institute, Amsterdam; the second by Professor H. T. Deelman (Gröningen); and the last by Dr. Louis I. Dublin (New York).

On the last day of the meeting papers were read by Professor Howard Lillenthal (Cornell University Medical School), on the relation of the general practitioner to the cancer problem; by Dr. George H. Semken (New York), on cancer as a specialty; by Mr. Ivy Lee, Adviser in Public Relations, New York, on some principles of publicity; and by Dr. Harry C. Saltzstein (Detroit), on the co-operation of newspapers.

## STATEMENT OF FACTS AND OPINIONS.

At the close of the conference the following statement of facts and opinions was drawn up and issued:

Although the present state of knowledge of cancer is not sufficient to permit of the formulation of such procedures for the suppression of this malady as have been successfully

employed for the control of infectious diseases, there is enough well established fact and sound working opinion concerning the prevention, diagnosis and treatment of cancer to save many lives, if this information is carried properly into effect.

1. The causation of cancer is not completely understood, but it may be accepted that for all practical purposes cancer is not to be looked upon as contagious or infectious.

2. Cancer itself is not hereditary, although a certain predisposition or susceptibility to cancer is apparently transmissible through inheritance. This does not signify that, because one's parent or parents or other members of the family have suffered from cancer, cancer will necessarily appear in other persons of the same or succeeding generation.

3. The control of cancer, so far as this subject can be understood at the present time, depends upon the employment of measures of personal hygiene and certain preventive and curative measures, the success of which depends upon the intelligent co-operation of the patient and physician.

4. Persons who have cancer must apply to competent physicians at a sufficiently early stage in the disease in order to have a fair chance of cure. This applies to all forms of cancer. In some forms early treatment affords the only possibility of cure.

5. Cancer in some parts of the body can be discovered in a very early stage, and if these cases are treated properly the prospect for a permanent cure is good.

6. The cure of cancer depends upon discovering the growth before it has done irreparable injury to a vital part of the body and before it has spread to other parts. Therefore, efforts should be made to improve the methods of diagnosis in these various locations and the treatment of the cancers so discovered.

7. The public must be taught the earliest danger signals of cancer which can be recognized by persons without a special knowledge of the subject, and induced to seek competent medical attention when any of these indications are believed to be present.

8. Practitioners of medicine must keep abreast of the latest advances in the knowledge of cancer in order to diagnose as many as possible of the cases of cancer which come to them.

9. Surgeons and radiologists must make constant progress in the refined methods of technique which are necessary for the diagnosis and proper treatment not only of ordinary cases but of the more obscure and difficult ones.

10. There is much that medical men can do in the prevention of cancer, in the detection of early cases, in the referring of patients to institutions and physicians who can make the proper diagnosis and apply proper treatment, when the physicians themselves are unable to accomplish these results. The more efficient the family doctor is, the more ready he is to share responsibility with a specialist.

11. Dentists can help in the control of cancer by informing themselves about the advances in the knowledge of the causes of cancer, especially with relation to the irritations produced by imperfect teeth and improperly fitting dental plates. They can also help by referring cases of cancer which they discover to physicians skilled in the treatment of cancer in this location. It may be doubted whether all dentists fully realize the help which can be obtained from x-ray photographs in revealing not only the state of the teeth but the condition of the bone surrounding them.

12. Medical students should be instructed in cancer by the aid of actual demonstrations of cancer patients, and this to a sufficient extent to give them a good working knowledge of the subject.

13. The most reliable forms of treatment, and, in fact, the only ones thus far justified by experience and observation, depend upon surgery, radium, and x rays.

14. Emphasis should be placed upon the value of the dissemination of the definite, useful, and practical knowledge about cancer, and this knowledge should not be confused nor hidden by what is merely theoretical and experimental.

15. Efforts toward the control of cancer should be made in two principal directions: (1) the promotion of research in order to increase the existing knowledge of the subject,

and (2) the practical employment of the information which is at hand. Even with our present knowledge many lives could be saved which are sacrificed by unnecessary delay.

#### PROPOSED INTERNATIONAL FEDERATION.

At the conclusion of the meeting Dr. C. Regaud proposed that an international federation should be formed in order to bring about more meetings of the kind and to publish in at least three languages an index and abstracts of all papers on cancer which appeared anywhere in the world. This proposal was referred to the national societies with a recommendation that the plan, or one similar, should be adopted if on further study means could be found to defray the cost of the work.

#### DINNER.

At a dinner in New York, attended by about 250 medical men, Sir John Bland-Sutton declared that the meeting would make medical history. There had been, he said, a complete absence of acrimony, and much work had been accomplished. The zeal which led so many investigators, surgeons and physicians to cross the Atlantic and to come from all parts of the American continent was admirable, and the earnestness displayed at the conference beyond all praise.

Dr. (Wendell) Phillips, President of the American Medical Association, said that the meeting had done much to

stabilize knowledge and would clarify the opinions not only of medical men but of the public. It was better to preach up the right than to preach down the wrong, and the conference had preached the right without making any attack on individuals or institutions.

Dr. Welch said that the great note struck at the conference was the tremendous importance of the cancer question and the appalling problems it presented. The general public and the medical profession must be aroused to the vital importance of efforts to control cancer. However inadequate knowledge might be to-day, it was an obligation of the profession to the general community that every effort should be made to control this scourge. "The community," he continued, "must be taught that all types of cancer are not certainly and inevitably fatal if they are recognized and properly treated at an early stage. The conference had emphasized the importance of research work, the need of further additions to our knowledge on the one hand; and, equally, the necessity of applying our existing information for the saving of human lives and suffering. There was no disease to which larger additions had been made to our knowledge than cancer, but because this knowledge did not reach the public which the profession was most anxious to reach, it seemed trivial. The many papers and discussions would be published, and make a volume which would be an epochal contribution to our knowledge of cancer."

## Canada.

[FROM OUR SPECIAL CORRESPONDENT.]

#### ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION.

THE Annual Meeting of the Canadian Medical Association for this year has come and gone, leaving behind it a healthy impression of growth and strength in our medical affairs. The attendance at a point even so far west as Victoria, B.C., was excellent. We cannot praise too highly the unwearied efforts of the Vancouver Medical Association to ensure the success of the meeting. They extended a welcome whose warmth was in keeping with the best traditions of the West, strengthened as it was by the natural beauty of Victoria itself. It was the natural thing for any comment on the meeting to begin with some reference to these beauties, and one such reflective observer remarked that he thought many members of the Association will eventually steal back to Victoria "in a quiet way" with the thought "Better fifty years in Victoria than a cycle in the East."

The standard of papers was high, and if there was no outstanding medical discovery to be discussed there was ample evidence of the increasing scope and importance of the Association. Its growth and organization has enabled it to take a more prominent part in the framing of laws affecting the profession. Medical education is being influenced directly and indirectly, and measures for the protection of public health successfully insisted on. As an example of the degree of organization of the medical profession reference may be made to the Province of Ontario, in which there are forty-seven district societies, all keenly active, showing large amounts of money spent upon extension work and post-graduate lecturing. The programme was practically an all-Canadian one, but several visitors contributed papers. Among these were Dr. Moffitt of San Francisco, Dr. Rowntree of Rochester, and Dr. Ritchie Rodger of Hull, England. Dr. Goldschmidt gave an interesting account of conditions in South Africa, and Dr. J. O. Thompson described those existing in China.

There is a value in these annual conventions which is independent of the scientific side of medicine; they foster personal relations among men in all parts of Canada, something which is as much to be desired as it is difficult to encompass on account of the geographical barriers. There are not, we may be thankful to say, among the profession in Canada, anything of the nature of those political differences which are perhaps too much insisted on; but that we do enjoy such harmony is due in no small degree to the careful organization of our annual convention. The meeting for 1927 is to be held in Toronto.

#### INCREASING NUMBER OF MEDICAL STUDENTS.

There are evidences of greatly increased numbers of men entering the profession of medicine in Canada. McGill University, Montreal, has received over 400 applications for admission to its School of Medicine, and this in spite of an increase in fees, which comes into effect this year, and more stringent entrance requirements. Each applicant must bring proof of two years' university study, including courses in physics, biology, and general organic chemistry, and of a grade sufficient to guarantee good work in the university. A considerable proportion of the prospective students are from the United States, most of them being from New York, Massachusetts, and California. There always has been a fair proportion of American students in this medical school. A recent decision of the Faculty, however, limits the number of first year students to one hundred, and this permits the selection of only the most promising among the applicants.

#### PURE MILK BY-LAW IN MONTREAL.

After a long fight a pure milk by-law has been passed by the city of Montreal. This provides for pasteurization of all milk in the city and the inspection of dairy herds; great improvement in the standard of Montreal milk is expected, more particularly among the small dealers. It has been very sensibly pointed out, however, that legislation per se will not be sufficient, and appeals are made to the milk dealers themselves to aid in the work. This is one among the fruits of the work of the Anti-Tuberculosis and Health League, which was formed here two or three years ago. The report of the league shows the establishment of clinics in the English and French sections, with the organization of a large staff of nurses for public health work. They carry out systematic follow-up work among families in which tuberculosis has occurred, and are prompt in sending contacts to the various centres for examination.

#### HEALTH OF THE CITY OF EDMONTON.

The report of the health department of the city of Edmonton for the year 1925, which has just been issued, shows a strikingly low death rate, both among adults and infants. The population of the city is estimated at 65,000; the death rate per thousand is only seven. The infant mortality was 54.8 per thousand births. Correspondingly low death rates from infectious diseases are shown, as also for cancer, tuberculosis, and influenza. There were no deaths from typhoid fever during the twelve months.

## England and Wales.

### SOCIETY OF MEDICAL OFFICERS OF HEALTH.

At the annual general meeting of the Society of Medical Officers of Health, held at the society's office in London on October 15th, Dr. Herbert Jones was elected an honorary fellow in recognition of his conspicuous services to the society. Dr. E. H. Snell was installed as president, and gave an address on health administration, reviewing the origin and growth of this since the time of the Roman occupation, when a system was established for the efficient repair of drains, the proper cleansing of the streets, the supply of good food to the markets, and the suppression of false weights and measures; these activities corresponded very closely with the duties of the modern sanitary inspector. The work of Chadwick during last century had been mainly instrumental in the great advance of the public health in this country, and his efforts had resulted in the passing of the Poor Law Amendment Act in 1834, and the creation of the first factory commission, while his report of the inquiry into the sanitary condition of the labouring population which was published in 1842 has now become classical. The president mentioned the importance of the report of the Royal Sanitary Commission in 1871, and passed on to show how unification of responsibility for sanitary matters in each town and district had been aimed at, but not yet fully achieved. He urged the importance of simplifying and unifying local and central government, and, as an illustration of the confusion still existing, mentioned the case of an important county borough which delegated its powers under the Midwives Act to the watch committee and the police. The knowledge of preventive medicine was hardly sufficiently reflected and utilized in administrative procedures, and the one essential need at present was a strong Government department to simplify the administrative machinery of public health and to bring the practice of preventive medicine into line with its science.

### BRISTOL CRIPPLED CHILDREN.

As was stated in a note on August 14th (p. 320), there has lately been much discussion as to the best means of providing for the needs of tuberculous and crippled children in Bristol and its neighbourhood. The two voluntary bodies, the Crippled Children's Society and the Orthopaedic Hospital, have recently united, and have decided to build a country school hospital as soon as their funds shall be sufficient. They made proposals for uniting with the municipal council in providing such a hospital; these were examined by the Ministry of Health, which reported in favour of a plan by which the voluntary bodies would provide a kind of convalescent home for the patients from the city's proposed new orthopaedic hospital at Frenchay and for other patients. This decision of the Ministry has somewhat hindered the prospects of a union between the voluntary bodies and the municipal authorities. The matter was discussed at a special and largely attended meeting of the Bristol Division, held at the University on October 1st. The subject was introduced by Mr. Hey Groves, who explained the present position of affairs. Several years ago a property had been acquired by the city on its north-east boundary at Frenchay, and although no new building had yet been erected on this site it had been decided by the Health Committee to build a new hospital for surgical tuberculosis there. In the meantime, in addition to the voluntary hospitals, a strongly supported public movement on behalf of crippled children had come into being. It was felt by most people to be very desirable to co-ordinate as far as possible the activities of the public health authority and the voluntary society. The first great obstacle, however, was the fact that in the opinion of most people the Frenchay site was by no means the best that could be procured for the purpose of an open-air school hospital. A site on a hill slope several hundred feet above the sea level, and having a southerly aspect, could probably be obtained beyond the southern boundaries of the city, and at no greater distance from the centre of the city than Frenchay Park. The latter is flat, comparatively low

lying, lies in the valley of the Frome, and being on the north-east of the city gets a great deal of atmospheric pollution by the prevalent south-west wind. After some discussion, it was decided, with only one dissentient, that a memorandum embodying these facts and opinions should be drawn up and sent to the Health Committee and to the Ministry of Health.

### THE NEANDERTHAL RACE.

At the opening meeting of the eighty-eighth session, on October 14th, of the Liverpool Medical Institution, the president, Dr. J. C. M. Given, delivered an inaugural address on the Neanderthal race. He began by passing in survey the geological periods in which mammals and primitive men appeared; the Tertiary period saw the birth of mammals, the tarsoidae represented to-day in the small tarsius found in Borneo. The hominidae and the anthropoid apes both come from a common stock. The latter are first seen in the Oligocene, more abundantly in the Miocene and Pliocene periods, whereas the hominidae have never been found earlier than at the top of the Pliocene, where Pithecanthropus, the Java ape-man, is placed. During the Quaternary period the evidence of man, derived from his skeletal remains, handiwork, and tools, becomes plentiful; knowledge of primitive man was largely due to French archaeologists and anthropologists. Dr. Given then described successively the Chellian, the Acheulian, and Mousterian types, and illustrated their cave habitations with lantern slides. It was now believed that mousterian man was contemporaneous with the Neanderthal race. Huxley was among the first to draw attention to the far-reaching importance of the Neanderthal skull and its significance in elucidating the origin of man. The president then described other fossil remains, and dwelt upon the characteristics of the Galilee skull and that recently brought to light in Gibraltar by Miss Garrod. He drew attention to the points of similarity and divergence between these prehistoric finds of aboriginal man and the anthropoid apes, gorilla, chimpanzee and orang-outang, and set forth the morphological characters of these human types with the help of lantern slides. In conclusion he touched upon the cradle of the human race and passed in review the steps by which *Homo sapiens* slowly developed and spread himself over the world, using archaeological and geological facts to support his view. Sir James Barr proposed a warm vote of thanks to the president, who, it was well known, had devoted a great deal of his leisure to the study of geology and archaeology. Dr. Thomas Clarke seconded the proposal, which was carried with prolonged applause. Afterwards Dr. Given entertained the members to refreshments and music. The number of members is now 520, showing a steady increase, and the finances are in a satisfactory state.

### LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

The opening meeting of the 1926-27 session of the London Association of the Medical Women's Federation was held at the House of the British Medical Association, Tavistock Square, on October 12th. The proceedings opened with the induction of the new president, Miss Elizabeth Bolton, by Dr. Christine Murrell, the retiring president. A vote of thanks was passed to Dr. Murrell for her services during her term of office. Reports were presented from the subcommittee on menstruation and the subcommittee on cancer research, in which certain research work during the past year was described. Miss Bolton's presidential address dealt with some aspects of disease of the caecum, illustrated by clinical records, lantern slides, and pathological specimens, and with particular reference to diagnosis and the results of operative treatment. After discussing carcinoma of the caecum she mentioned some rarer conditions which were often difficult to distinguish from malignant disease. Among these were actinomycosis of the caecum, inflammatory masses associated with chronic appendicitis, fibro-lipomatous polyp of the bowel complicated by torsion of an ovarian fibroma, and chronic appendicitis and cholecystitis associated with ovarian fibroid. The results of operation were uniformly good in the non-malignant cases.



## ST. LUKE'S DAY SERVICES.

The annual festival service of the Guild of St. Luke was held, by kind permission of the Dean, on St. Luke's Eve (October 17th) in Westminster Abbey. It formed part of the evening service of the Abbey. Members of the Guild in academic robes were conducted to their seats in procession, preceded by their banner, immediately before the entrance of the choir and clergy of the Abbey, while a limited number of seats had been reserved for ticket-holders under the lantern. The lesson, Ecclesiasticus xxxviii, 1-14, was read by the Rev. Dr. Kirkland Whittaker, secretary of the Guild, to whose setting was sung the well known hymn for hospitals, "Thou to whom the sick and dying." The lesson was followed by Bach's anthem "Jesu, joy of man's desiring," after which came the sermon, the preacher being the Rev. Canon Sopwith, vicar of Maidstone. Choosing as his text St. Paul's words, "the beloved physician" (Colossians iv, 14), Canon Sopwith drew an inspiring picture of one whose character made him beloved, adding that there must be many such among those who were followers of St. Luke in the profession of medicine. Again headed by their banner, the members of the Guild of St. Luke took part in the procession, during which were sung the hymns, "Hark! the sound of holy voices," and "For all the saints who from their labours rest." At the close of the service the Dean of Westminster read his Guild collect and pronounced the blessing.

The annual medical service at Liverpool was held in the Cathedral on October 17th, when the Bishop of Oxford (Dr. T. B. Strong) preached the sermon to a large congregation which filled the cathedral. The Lord Mayor and Lady Mayoress were present in state, accompanied by other high civic officials. The acting Vice-Chancellor of the University L. R. Wilberforce and Emeritus Professor of Medicine T. R. Glynn headed the procession of medical men and women, who wore academic dress, and the spacious building lent dignity to the moving mass of scarlet robes and university hoods as the procession wended its way from the chapter house to the seats in the chancel. Mr. Goss-Custard was at the organ; the musical portion of the service was beautifully rendered, and the anthem "O, every one that thirsteth" exquisitely sung. The Bishop took as his text Mark xii, 31: "Thou shalt love thy neighbour as thyself." He pointed out that, great as this commandment was, it was second to that of loving God and complementary to it. He emphasized the importance of man's love for man in the problems that had arisen in recent years. While great increases in knowledge had been attained in social and in economic problems that harassed mankind, many of the principles guiding actions which had been considered infallible would require revision if headway was to be made. He alluded to the beneficent relationship between the medical profession and mankind, which was assuredly based on knowledge, and true sympathy based on personal contact. The offertory made on behalf of the Royal Medical Benevolent Fund was taken by medical men, who acted as stewards on this occasion. Dr. J. Ernest Nevins, whose work in connexion with this and previous medical services has been untiring, merits the thanks of his brethren for his organization of the details so essential to the success of the occasion. The offertory amounted to £110 17s., and the honorary treasurer (Dr. Nevins, 32, Prince's Avenue, Liverpool) will gratefully acknowledge any donation from those who were unavoidably prevented from attending.

The Liverpool members of the Guild of St. Luke, SS. Cosmas and Damian, attended a special service in the Pro-Cathedral, Liverpool. Pontifical High Mass was sung by the Right Rev. Dr. Dobson (Bishop of Cynopolis and auxiliary Bishop of Liverpool). The Rev. Fr. Sheppard, M.A., O.S.B., who preached the sermon, said that the theologian had much to learn from the doctor about pathological conditions that might influence or modify the morality of human acts and about medical procedure which might touch upon the sphere of the moral law; and the doctor had much to learn from the theologian about the practical application of moral principles to certain delicate and difficult situations that might arise in the course of medical work.

## CARE OF CRIPPLED AND INVALID CHILDREN.

A joint conference on the care of invalid and crippled children, arranged by the Invalid Children's Aid Association and the Central Committee for the Care of Cripples, is to be held, by permission of the Council, in the Great Hall of the British Medical Association, Tavistock Square, on Thursday and Friday, November 18th and 19th. Mr. Neville Chamberlain, Minister of Health, will give the opening address, at 10.30 a.m., on November 18th. On the morning of the first day, when Lord Islington will be in the chair, papers will be read on the position of the work for crippled and invalid children in the British Empire at the present time, by Mr. R. C. Elmslie, F.R.C.S. (London); on the position in America and the Continent, by Mr. H. Platt, F.R.C.S. (Manchester); and on future developments, by Sir Robert Jones, Bt., Ch.M. In the afternoon, when the Duchess of Atholl, M.P., will preside, the subject will be the preventive side of cripple work; among the introducers will be Mr. Stuart J. Cowell, B.Ch. (Sheffield), who will deal with rickets; Dr. Arbour Stephens (Swansea), who will speak on rheumatism, chorea, and heart disease; and Dame Agnes Hunt of the Shropshire Orthopaedic Hospital, who will deal with tuberculosis. On the morning of the second day the Hon. Sir Arthur Stanley (Chairman of the Joint Council of the Order of St. John of Jerusalem and the British Red Cross Society) will preside at a discussion on unity of effort. The subject will be introduced by Dr. C. E. Tangye (M.O.H. Wiltshire), Mr. G. R. Girdlestone, F.R.C.S. (Wingfield Orthopaedic Hospital, Oxford), and Miss Christine Cox (Birmingham). In the afternoon, when Sir Robert Jones (Chairman of the Central Committee for the Care of Cripples) will preside, there will be a discussion on the physically defective child. Dr. E. J. Aetou-Davis, M.Ch. (consulting surgeon to the London County Council Cripples Schools), will deal with the child in school, and Sir Montagu Burrows, C.I.E. (Chairman of the Wingfield Orthopaedic Hospital), with the child after school age.

Tickets of membership, admitting to all sessions of the conference, price 5s., may be obtained from the honorary secretaries, Mrs. Munro, I.C.A.A., or Mrs. Townsend, C.C.C.C., 117, Piccadilly, W.1, together with all further particulars. The sessions commence at 10.30 and 2.30 on each day. The railway companies in Great Britain have agreed to issue tickets, available from November 17th to 20th, at the ordinary single fare and one-third for the double journey to passengers travelling to attend the conference. The necessary vouchers to obtain the reduced fares can be obtained from the secretaries of the two societies.

## SIR JAMES BARR.

At the quarterly meeting of the Liverpool city justices on October 12th a letter was read from Sir James Barr resigning the position of medical visitor to institutions under the Lunacy and Mental Deficiency Acts. In his letter he expressed regret at the severance of his long association with the magistrates in his official capacity, and said that he had found the duties very congenial, while his relations with the visiting justices and the clerk had been very harmonious. The Lord Mayor expressed regret that Sir James Barr had found it necessary to relinquish the duties which he had conducted to the satisfaction of everybody concerned since 1884, and moved a vote of thanks to Sir James for his valuable services. Dr. R. I. Richardson, J.P., was appointed to the office thus vacated.

## CENTRAL MIDWIVES BOARD.

The Central Midwives Board for England and Wales held a penal session on October 7th, which was followed by an ordinary meeting. Letters were read from the Ministry of Health (a) informing the Board that legislation would be necessary to give effect to its proposal in that midwives who practise as maternity nurses only should be compelled to notify the local supervising authorities, as practising midwives are required to do, under Section 10 of the Midwives Act, 1902; (b) approving the existing rules until December 31st next, making observations on

certain of the new rules submitted by the Board for approval, and suggesting that Rule E.21 (4), dealing with the cases of rise of temperature, should be altered so as to accord with the definition of puerperal pyrexia in Article 9 of the Public Health (Notification of Puerperal Fever and Puerperal Pyrexia) Regulations, 1926. The chairman drafted a reply, which was approved. With reference to an inquiry from the Registrar of the Joint Nursing and Midwives Council for Northern Ireland, the Board agreed that pupil midwives should not be allowed to count cases of Caesarean section as part of their necessary twenty cases. Drs. Andrew Carey McAlister and Everard Williams were approved as lecturers. The question of printing the Midwives Roll in one or two parts was considered, and it was decided, in view of the fact that the last Roll published only contains admissions to the Roll up to September 30th, 1924, and corrections of names and addresses up to March, 1925, that the new edition of the Roll be published in complete form.

## Scotland.

### PHARMACOLOGY IN EDINBURGH.

PROFESSOR ALFRED J. CLARK, successor to the late Professor Cushny in the chair of materia medica in the University of Edinburgh, delivered his inaugural lecture on October 11th, taking as his subject "The present position of pharmacology." Professor Lorrain Smith, dean of the Faculty of Medicine, presided. Professor Clark referred to his predecessor, Professor Cushny, as the acknowledged leader of pharmacology in this country, whose untimely death in the full tide of active work had been an irreparable loss to medical science. Pharmacology, he said, was ever increasing in importance, because almost every year research was providing important new drugs which formed new weapons of accuracy and power in the fight against disease. Many of these, however, if used incorrectly, were highly dangerous. In order to understand the alterations produced by drugs it was necessary to understand the functions of the body, and hence pharmacology was based on physiology. Pharmacology had really commenced in the last half of the nineteenth century, but its greatest triumphs had been in the present century, so that it might be regarded as the newest of the medical sciences. Advances in this subject had been made chiefly along two lines. In the first place, many drugs had been discovered which would kill parasites living in the body, and secondly, drugs produced by the body itself had been exploited. The discovery by Ehrlich of salvarsan had been the most outstanding example of the former type, and Ehrlich had instituted a new method of research by organizing laboratory tests which would indicate whether a drug could produce the desired action, and then had enlisted the help of organic chemists to help to build up a series of compounds according to a definite plan. His research had consisted in the endeavour to construct a new remedy with the desired properties. His method had proved very fruitful, and by it remedies had been found for a number of important tropical diseases; the dye germanin, for example, appeared to be an effective cure for sleeping sickness—one of the most important of the diseases that afflicted tropical Africa. While remarkable triumph had attended the search for remedies that would kill animal parasites, the search for remedies that would kill bacteria after they had invaded the body had been less successful. A few isolated successes had been obtained—for instance, the favourable results obtained by Sir Leonard Rogers in using chaulmoogra oil derivatives in the treatment of leprosy, and in the recent work by Moellgaard, who had produced a gold preparation, sanocrysin, which might prove of importance in the treatment of phthisis. It was reasonable to hope that in the future drugs would be found which would kill bacteria living in the body just as in the last fifteen years drugs had been found as remedies against protozoal parasites. It was possible, too, that drugs might ultimately be found which would discriminate between malignant and normal tissues; such a discovery would mean a revolution in medicine. The other important field of advance had been

endoeriology, the study of drugs produced by glands within the body. The complex problem was slowly being solved, and meantime insulin had been discovered. It was significant, the lecturer said, that the most important progress had been made on the border-lines where different medical sciences meet. Thus, the discovery of new internal disinfectants had resulted from the combined efforts of parasitologists and pharmacologists. Similarly, the discovery of endocrine secretions had been due to the collaboration of physiologists and pharmacologists. Pharmacology, therefore, was particularly interested in co-operation between the medical sciences, in which lay its greatest hope for advance.

### THE ROYAL MEDICAL SOCIETY OF EDINBURGH.

The 190th session of the Royal Medical Society of Edinburgh was opened on October 15th by an address from Sir Herbert Waterhouse, F.R.C.S., on the subject of "Some war experiences of a surgeon in Russia." Dr. J. G. McCrie, senior president of the society, presided. The lecturer said that he had been, prior to the bolshevik revolution, surgeon-in-chief of the Anglo-Russian hospitals, being one of a party which set out from this country, consisting of over twenty medical men, forty nurses, and a complement of V.A.D. nurses and orderlies. After mentioning that during the winter months of 1915-16 the expedition had a hospital in Petrograd, he described the conditions in a hospital near the Pripet Marshes. Three great difficulties had been encountered, consisting of flies, lice, and dust which changed quickly into mud. The staff had had little opportunity for sterilization, as water was extremely short; the amount allowed for drinking and washing was a quart a day. These conditions had persisted all the time he was on the Russian front. Food had consisted largely of rye bread, wild cherry jam, and coffee. The hospital had suffered very greatly from German bombs, and during one day over 100 bombs had been dropped within the grounds; though this had had its effect on the patients, nothing amazed him more than the extraordinary vitality of the Russian soldiers. Sir Herbert Waterhouse described a number of cases which had come under his notice and the treatment adopted. He also gave some interesting information about the German espionage system, describing, among other things, the arrest of a woman spy who had invisible writing on her body. In his opinion, the Russian revolution had been due to Rasputin. A vote of thanks to the lecturer was proposed by Sir David Wallace, C.M.G.

### EDINBURGH SCHOOL FOR MENTALLY DEFECTIVE CHILDREN.

An addition recently made by the Edinburgh Education Authority to the special school for mentally defective children at Balfour Place, Leith, was opened on October 13th by Mr. W. W. McKechnie, senior assistant secretary, Scottish Education Department, who said that for some time the authority had felt that the general organization of the mentally defective schools in its area could be improved. There had been too many small groups with twenty or fewer children in each, of all ages and of the most diverse mental attainments. In such small, heterogeneous groups there could be no adequate supervision for vocational training, which was essential for defective children as soon as they were able to derive profit from it. The mentally defective child was not fitted for the lessons of the ordinary school. It needed a special course in which the training of hand and eye was of the greatest importance. The necessary equipment for this was impossible at small centres, and centralization was therefore imperative. The authority's first duty under the Mental Deficiency Act was to ascertain who were mental defectives, and this was even more a social than an educational problem. The special school should be a kind of observation ward for conduct. If defective children were certified as such while at school, they automatically passed into the hands of the parish council at 16. If they were not certified they received no official care after school years and they were apt to sink into the depths of degradation, misery, or crime. Mentally defective girls especially required to be carefully guarded. Special schools were for feeble-minded children, not for those graded as idiots and imbeciles.

for whom something in the nature of an occupation centre was more appropriate. Teachers, doctors, parents, and the authority were all involved in the grave responsibility of ascertaining mental defect, and this could not be shirked without injustice to the child. There was no reason why every defective child should not be classified by the age of 7 or 8, and it was a serious fault of organization on the part of a headmaster to harbour in an ordinary school for more than six or eight months any mentally defective child of more than 8 years of age. There was a great deal of trouble with the parents of defective children, which was increased in inverse proportion to the intelligence of the parent, for no parents were so difficult to convince regarding the defect of their children as those who were themselves a little below par. Many a mother who had made vigorous protests against the transference of her child to a special school had afterwards blessed the day when the transference was made, for the effort to bring some sweetness and light into the lives of these unhappy children was not wasted, but was one of the best things which had happened in the history of education.

#### MENTAL DEFICIENCY AND MENTAL DERANGEMENT.

The first lecture of a Study Circle arranged by the Edinburgh Women Citizens' Association, consisting of six addresses on the problem of mental deficiency, was given on October 12th by Dr. W. M. McAlister, lecturer in psychiatry at the University of Edinburgh. The subject was "Mental deficiency as distinct from mental derangement." The lecturer quoted Dr. Tredgold's definition of mental deficiency as "a state of mental defect from birth or from an early age, due to incomplete cerebral development, in consequence of which the person affected is unable to perform his duties as a member of society in the position in life to which he is born." Mental deficiency was a lifelong condition, which differed from insanity, because the latter seldom made its appearance before puberty, then developed rapidly, and might be traced sometimes to a single experience. The number of recoveries from insanity was greater than the public imagined, and work in a mental hospital was of a most hopeful nature. Dr. McAlister referred appreciatively to the work which had been done by the association in assisting to establish a farm colony in Scotland where mental defectives could exercise such faculties as they possessed while becoming to some extent self-supporting.

## Correspondence.

#### BRITISH EMPIRE CANCER CAMPAIGN.

SIR,—The Medical and Scientific Committee of the Yorkshire Council, British Empire Cancer Campaign, has issued a booklet entitled *Notes on Cancer for Medical Men*.

Copies may be obtained gratis by members of the profession on application by letter or postcard to the office of the Yorkshire Council, British Empire Cancer Campaign, 47, Park Square, Leeds.—I am, etc.,

Leeds, Oct. 13th.

BERKELEY MOYNIHAN,  
Chairman.

\* \* A note on the scope of this book is published at page 746.

#### DISEASE IN SOVIET RUSSIA.

SIR,—Referring to my article, "A medical review of Soviet Russia," in the *BRITISH MEDICAL JOURNAL* for August 14th, 1926, I desire to add a few comments, as apparently I did not make perfectly clear the disease situation as I see it.

In my opinion the main general causes of the increased diseases and epidemics were the great war, the greater civil war (which was unfortunately prolonged by Allied intervention, being, as it was, unsuccessful), the revolutions, and the famine. Russia was previously saturated with inefficiency, and the wars and revolution had left the country prostrate. Then came severe famine for two years, causing swarms of refugees to move helter-skelter across the country, carrying disease and disorder with them. Although the rigid application of Marxian principles and

war communism following the revolution reacted disastrously on the intelligentsia and the city inhabitants, these classes constitute a small percentage of Russians—there are only 12 per cent. of the total population of present Russia living in cities and towns. But disease was in the country and universal, even where Marxian principles could not be enforced so strictly. Therefore I cannot agree that, in the words of one of your contemporaries, the "great disaster" (referring to disease) "was caused solely by the ruthless application of an economic theory," nor do I think that most of the disease can be attributed to bolshevism, but that it was due to an unhappy combination of events in a thoroughly disorganized and inefficient country. Of course, the revolution (including both revolutions) was a precipitating factor, but this brings up the question as to who should bear the responsibility of causing the revolution.

I desire to state the facts as plainly as possible on so important a subject; and after close acquaintance with conditions for several years, the factors which I mention in this letter seem to me, after careful deliberation, to represent the real causes.—I am, etc.,

Leningrad, Oct. 12th.

W. HORSLEY GANTT.

#### NIGELLUS, THE PHYSICIAN OF THE DOMESDAY BOOK.

SIR,—In the *BRITISH MEDICAL JOURNAL* for March 28th, 1925, I gave some details about a clerk-physician, by name Nigellus, who occupies a place in the Domesday survey. It may interest some of your readers if I add some further facts about him.

Nigellus held land in several English counties, those mentioned being Shropshire, Hereford, and Somerset. The Worcestershire Domesday supplies us with the following additional information. The entry is as follows:

"Terra Sancti Guthlaci. In Cent Hundredo. De Sancto Guthlaco tenet Nigellus Medicus I hidam in Wich. Ibi sunt i burgenses redditores xxx solidos de salinis et pro omnibus rebus."

Translation: "The land of St. Guthlac. In Cent Hundredo. Nigellus the Physician holds of St. Guthlac one hide in Wich. Here are nine burgesses paying 30 shillings for salt-vats and for all things."

The Domesday Wich is, of course, Droitwich; even at this early date the salt industry at this place was in full swing, and on Nigellus's land were nine burgesses paying 30 shillings for salt-vats and (I suppose) appurtenances.

I do not find it easy to hazard a guess at the hideage of Droitwich from the Domesday survey, as the land is entered on the record under the name of the holder, the invariable rule in this record; and the Domesday tenants in Worcestershire form a goodly number. Nash, in his *History of Worcestershire*, made an attempt to collect the various entries about Wich under one head, but as I read the page he has omitted the King's own holding in domesne; but he gives the following tenants in Wich in Volume I (page 317) and appendix, p. 5, vol. 2.

The palace of Gloucester, 1/2 a hide. The Church of St. Denys, 1 hide, 18 burgesses paying 4/6, and a vat worth 20 pence. The church of St. Peter at Gloucester, 1/2 a hide. That of St. Peter at Westminster, 1 hide, with 4 furnaces. Nigellus, 1 hide, with 9 burgesses. Ralph de Toden, 1 hide. Roger de Laet, 1/2 a hide, with 11 burgesses. Herald, son of Earl Ralph, 1 hide, with 20 burgesses and 7 vats yielding yearly 50 mits of salt. William Fitz Corbeuon, 2 hides (Witton) yielding 70 mits of salt. Urse d'Abitot, 1/2 a hide. Hugh l'Asne, one vat yielding 30 mits of salt.

From another page in the same volume I find that the church of Worcester had eight vats worth 100 shillings, and that the church of Coventry had houses and vats in Wich. St. Guthlac was the hermit of Crowland in the Lincolnshire fens. It may be worth while recalling the fact that Nigellus held land in Hereford under the church of St. Guthlac. I believe that the modern conception of the Domesday hide is that it is not so much an area of land in acres as a fiscal unit; in this case the hide in Wich would probably represent a smaller acreage than a purely agricultural holding such as Nigellus's Shropshire manor.

It is a standing joke against our profession that a doctor is much given to ordering his patients to a health resort in which he, the doctor, has some financial interest; and one wonders whether Nigellus exploited the brine

baths at Droitwich to any extent, or if he depended solely on the revenue derived from the salt. A little further on in the same folio of Domesday, under the land of Ralph de Toden, we get:

"The same Nigellus holds Duncient and Urso of him. In Cresslaw Hundred. Here are 3 hides. In demesne was one carucate, two bordarii, and two herdsman, and there might have been 5 carucates more. It was worth 25/-, but now 10/-. Odo held it formerly of St. Guthlac."

Round, in *Feudal England*, calls this Nigell "Nigell the Physician." If he had the formidable Sheriff of Worcestershire, Urse d'Abetot, as a tenant, I can only say that he had a most unpleasant tenant.—I am, etc.,

London, W.2, Sept. 28th.

R. R. JAMES.

### OBSTETRICAL THEORY AND PRACTICE.

SIR,—Is the theory of obstetrics, so perfect that its teachers are justified in blaming their pupils for the high death rate of motherhood and early infancy? An improved theory is the necessary preliminary to an improved practice, for theory governs practice in any science or art.

What is a normal labour? What is the cause of pain in labour? What are the causes and symptoms of uterine inertia? These are radical questions, and until they have been satisfactorily answered no one may justly blame general practitioners for the present death rate. Let us postpone the study of the fatal accidents of child-bearing, and study child-bearing itself. That the present-day average labour is pathological is sufficiently proved by a consideration of the suffering, the high percentage of still-born and weakly babies, and damaged mothers, associated with it. Three things are necessary to normal motherhood: a normal labour, in a healthy woman, under clean conditions. Listerism and ante-natal care aim at the two latter; but no one knows on what factors a normal labour depends, so that ante-natal care fails to achieve all that it might otherwise do.

My definition of normal labour and my theory of uterine inertia offer good mental tools for the development of obstetric theory and the consequent improvement of practice, in the hands both of the specialist and the general practitioner. I may briefly put them thus: (1) A normal labour is one in which the uterine contractions act thoroughly efficiently, leading in a short time to the spontaneous delivery of a healthy baby, and causing little or no pain or distress to the mother. (2) Pain is the first indication of uterine inertia. It now becomes possible to apply the principles of the late Sir James Mackenzie's *Symptoms and their Interpretation* to the study of labour. I have published two papers,<sup>1</sup> and have devoted a section of my *Clinical Notes and Deductions of a Peripartetic*<sup>2</sup> to the argument and the application, and am still engaged in a study of uterine inertia on these lines.

A science or art based on such a so-called definition of normal labour as our present accepted "definition" (really only a generalized description of an average labour, which actually omits all reference to the most patent fact of average labour—its pain and suffering) can hardly be regarded as having reached its highest development.

Uterine inertia, and not puerperal sepsis, is the central and fundamental problem of obstetrics. The study of end-results can throw but little light on incipient conditions. The present-day principles of obstetric practice have been proved and found insufficient. The general practitioner may be forgiven for thinking that some other principle, or principles, has been neglected because overlooked, rather than that he has failed to apply the principles he has been taught.

Consider the death rate of ectopic gestation (a maternal death rate). Superior skill in treatment and diagnosis on the doctor's part reduces the death rate; but he is responsible for the reduction of the death rate, not for its existence; likewise he is not responsible for the existence of the ordinary maternal death rate. Antisepsis and asepsis have abolished the old-time "puerperal fever" (an accidental infection carried by the accoucheur), but they

have naturally had no effect on other causes of illness and death during maternity.

There is no doubt that the general transfer of midwifery practice from the general practitioner to the specialist would have at least one happy result—the latter would at long last realize that not medical carelessness but medical ignorance (for which the specialist and the teacher are at least as responsible as the general practitioner) is the defect of practice. Good doctors, good nurses, good hospitals, are but palliative at best. A physiological labour is the prime necessity.—I am, etc.,

MARY C. DEGARIS, M.D., B.S.Melb.

Geelong, Victoria,  
Australia, July 24th.

### GOITRE IN CHILDREN.

SIR,—In your issue of October 2nd (p. 614), Dr. Turton says that I have made an error in imputing to him the statement that lime-containing waters are a cause of goitre; his words contained in your issue of September 11th are: "The distribution of goitre in this county [Derbyshire] shows how closely it is related to places situated either on the carboniferous limestone, or on other geological formations, but deriving their water supply from this formation." And, speaking of Melton Mowbray, "that since the introduction of a new water supply of a very calcareous nature it [that is, goitre] has increased."

I therefore gave in my letter of September 25th examples of water supplies of calcareous origin where goitre was almost unknown, or of very slight prevalence, such as Margate. I take it now that it is waters with "suspended matter, probably calcareous," that cause goitre, as stated by Dr. Turton in his letter of October 2nd, and quoted from Sir James Berry's article in the *Lancet*, February 6th, 1926. I would be inclined to agree that such waters may be one of the causes of goitre, particularly if polluted by bacteria or other organisms.

Is it too much to suggest that the question be put to test in some such way as this: to feed rats on (a) water containing sterilized suspended chalk, the water itself being sterilized; (b) sterilized water and sterilized suspended chalk polluted by faecal matter obtained from goitrous animals; (c) sterilized water without chalk and polluted with faecal matter from goitrous animals; (d) sterilized water. Other food to be the same in all cases and cages scrupulously clean.—I am, etc.,

Glossop, Oct. 9th.

E. H. M. MILLIGAN, M.D., D.P.H.

### MINER'S NYSTAGMUS.

SIR,—On October 2nd (p. 615) a letter by Dr. Ingram-Johnson was published which took exception to my statement that "twenty-five years ago the percentage of nystagmus cases at the South Moor Colliery was notoriously high." My statement was based on the authority of a colliery owner's representative; but as some doubt as to the reliability of the statement has been raised, I have consulted two owners' representatives, and to-day one workmen's representative who remembers Dr. Ingram-Johnson well; they all corroborate my statement entirely. The latter tells me that several of the workmen, including himself, at that time begged for oil lamps in place of the electric lamps with which they were provided. The South Moor Colliery then employed only about 300 men; this year it has employed about 800, and it must be remembered that before the Act of 1906 no records were taken of the incidence of the disease, and all who acquired it just worked on as long as it was possible.

I certainly agree with Dr. Ingram-Johnson in regarding the position at work and consequent strain of the external muscles of the eyeball as a very important factor in the causation of the disease. The tremors of the extended hands and of the neck muscles suggest some deep-seated nervous affection, but I am not disposed to accept Dr. Poston's view (October 9th, p. 664) that miner's nystagmus is caused by interference with the vestibular nucleus.

It is important to distinguish between the two forms of nystagmus: (1) the vibratory form, in which the movements have the same to and fro velocity; the rotatory form may

<sup>1</sup> *Medical Journal of Australia*, August 22nd, 1925, and July 3rd, 1926.  
<sup>2</sup> London: Baillière, Tindall and Cox.

bo also included in this class; (2) the resilient form, in which a comparatively slow movement occurs in one direction, followed by a rapid jerking movement in the opposite direction, or in some rare cases by a rapid oscillation. This form is well known in some nervous diseases, such as disseminated sclerosis, Friedreich's ataxia, as well as in vestibular nystagmus and Bárány's tests, but it is never seen in miner's nystagmus.—I am, etc.,

Newcastle-on-Tyne, Oct. 13th

A. S. PERCIVAL.

#### "ATOPHAN DERIVATIVES IN RHEUMATISM."

SIR,—In view of the recent correspondence in your columns as to the toxicity of atophan and its derivatives, particulars of the following case may be of interest.

A woman, aged 63, had for several years suffered from rheumatoid arthritis. On the advice of a friend she took atophan tablets (7½ grains) and averaged one tube of twenty tablets a week. She continued this for four and a half or five months. At the end of about three months she commenced vomiting, and this became more severe and frequent up to the time of her death. Her arthritic pains being benefited, and not associating her vomiting with the atophan, she continued this without remission until three weeks before death.

I saw her a week before she died. The vomiting had become increasingly severe. On palpation she complained of a certain amount of pain over her gall-bladder region; the pulse was slightly raised, the temperature normal. The urine contained a trace of albumin. About three days later she became jaundiced; two days later stuporose; then passed into coma and died.

I was allowed to examine the liver *post mortem* and found this extremely shrunken and small. A section cut by Dr. Gibson of Oxford showed yellow atrophy and a complete absence of normal liver tissue. To my finger the pylorus, and head of the pancreas, appeared normal. The gall bladder and bile ducts contained no stones. There was no previous history of sickness or other gastric disturbances.

Treatment by venesection and the administration of sodium bicarbonate in quantity by all routes had no effect on the course of the disease.—I am, etc.,

Banbury, Oct. 8th.

C. J. L. WELLS, M.B., B.Ch.Oxon.

#### APPENDICITIS AND VEGETARIANISM.

SIR,—For many years past I have had the opportunity of seeing a large number of vegetarian patients, and appendicitis is certainly not an unknown disease amongst them. Only during the last few months I have had a girl under my care whose brother was taken home from school, was transferred to a hospital, was operated on, and died within a week. The sister shortly afterwards developed similar symptoms and was admitted to hospital under my care, and was treated partly by fasting, partly by restricted dieting, partly by severe restriction of all fluids, and partly by the internal use of olive and castor oil, with extremely satisfactory results. Both these patients were life vegetarians, and their parents had been so for years also.

So far, however, I have never lost a patient suffering from appendicitis, nor have I ever yet found it necessary to operate upon one.

In my personal investigations among the villagers of India and Northern Africa, and among the peasants of Liguria and the West Indies, I came to the conclusion that people who ate little meat and who lived upon the simpler foods which prevented constipation were less liable to appendicitis than those who ate a considerable amount of meat and who more or less habitually found it necessary to take aperients.

If it is true that our modern and more meaty dietary is responsible for the increase in the prevalence of this disease there must be a sound scientific reason for it. May I suggest the reason? In carnivorous animals the intestine is shortened, so that by the time the faeces resulting from flesh food have reached the preliminary putrefactive stage they are ejected from the body. Nature has taught the

carnivora that these faeces, even when excreted, are dangerous, and therefore carnivorous animals either make holes for, or scratch dirt over, their defaecated masses. In man the intestine is much longer, and owing to this not a few eminent surgeons have called the lower bowel "the sewage gut," and have advised its removal.

The alternative, from the point of view of scientific hygiene, appears therefore to be, either to live like the carnivora—and amputate the lower bowel—or live like the ancestral anthropoid from whom we derived our alimentary canal, and retain it!

It is, I think, generally admitted that it is the *Bacillus coli* which infects the appendix. Now the *B. coli* is normally a beneficent inhabitant of the intestine, but when the lower intestine becomes a sewer, and especially when constipation gives a still longer time for putrefactive changes to take place in its contents; the *B. coli* develops pathogenic characteristics, may become amulatory, and may set up a focus for disease in any other part of the body.

The actual increase in appendicitis *pari passu* with the increased consumption of flesh food may, I think, be gathered—even though not necessarily proved—by the following statistics:

Appendix Cases in Hospital.

	1876.	1886.	1896.	1899.
St. Bartholomew's Hospital ...	1	10	38	97
St. Thomas's Hospital ...	—	16	70	141
The Middlesex Hospital ...	—	8	65	79
New York ...	—	3	89	178
Boston ...	—	5	195	229
Philadelphia ...	—	1	235	316

—I am, etc.,

London, W.2, Oct. 13th.

JOSIAH OLDFIELD.

SIR,—With regard to the alleged greater incidence of appendicitis in meat-eaters, may I suggest that a comparatively innocent individual is put in the dock?

When a student I read in Michael Foster's truly scientific *Physiology* that carbohydrates mixed with proteins in the stomach delayed the digestion and assimilation of the proteins. It seems to me that here we have one of the great rules of successful dietetics.

In my own practice I have found that by persuading people to simplify their meals—to eat mainly proteins at one meal, keeping the carbohydrates for a non-protein meal—their digestion and general health have greatly improved.

We have had two opposite methods of treatment of uric acid diseases—(1) the Salisbury diet (mainly protein feeding), and (2) vegetarianism, each upheld by its professors to be most successful; two apparently opposite dietaries. What is common to these two methods? Simplicity; the avoidance of mixing indiscriminately in one meal proteins and carbohydrates.

In the same way "liquid dieticians," if one may so call them, have concentrated on the evils of alcohol; when the evils, to any truly scientific observer, are so manifestly its misuse and abuse.—I am, etc.,

Flackwell Heath, Bucks, Oct. 17th.

G. D. PARKER.

#### DEFENCE OF MEMBERS FOR THE ACTS OF LOCUMTENENTS.

SIR,—Some misunderstanding appears to exist with regard to the protection which the two English defence societies afford their members when threatened with proceedings owing to the acts of locumtenents. The council of the Medical Defence Union passed the following resolution on January 21st, 1926:

That from and after the date of this resolution the council may in its discretion assume responsibility for any claim made upon a member in respect of the act or omission of any registered medical practitioner, whilst temporarily employed as locumtenens for such member.



The council of the London and Counties Medical Protection Society, Ltd., passed an identical resolution, and the position of the two societies in this respect is precisely the same.—We are, etc.,

HUGH WOODS,  
General Secretary, London and Counties  
Medical Protection Society, Ltd.

JAMES NEAL,  
General Secretary, Medical Defence  
Union, Ltd.

London, W.C., Oct. 13th.

### THE IMPROVEMENT OF HEALTH-WEEK EXHIBITIONS.

SIR,—During the last twelve months I have been at three health exhibitions in London. The three were arranged by the local Public Health Committee in connexion with their health-week programmes, and were opened with the usual élat.

The health exhibitions (so called) consisted of stalls for patent tooth-paste, soaps, dried milk, carpet cleaners, gas stoves, and other proprietary articles. In one case practically the only connexion with the subject of the exhibition that I could find was a stall of diseased meat standing outside the exhibition hall, but nobody was in charge to demonstrate it.

Cannot some action be taken to prevent medical officers of health being forced into the invidious position of promoting these exhibitions, which can do nothing in their district but lower the dignity of their department, and are, in fact, little better than trade exhibitions of proprietary articles?—I am, etc.,

A. H. G. BURTON,  
Medical Officer of Health.

Ilford, Essex, Oct. 16th.

### BILLS OF MORTALITY.

SIR,—In the article under the heading "Nova et Vetera" in your issue of October 9th (p. 645) a query is put to the term "burst" as a cause of death given in the Bills of Mortality. I think this is the old term for hernia. In this part of Kent a herniated sheep is still spoken of as burst or bursten.—I am, etc.,

F. WILLIAM COCK, M.D., F.S.A.

Appledore, Ashford, Kent, Oct. 12th.

### Obituary.

DR. THOMAS PERRIN, who died at Aylesbury on October 3rd, received his medical education at St. Thomas's and the London Hospitals, where he obtained the diplomas M.R.C.S., L.R.C.P. in 1899, and graduated M.B. in 1900. In 1905 he obtained the B.S. with honours, and the F.R.C.S. diploma; in 1906 he proceeded M.D., and in 1907 became M.S. He had held appointments as assistant medical superintendent to the City of London Union Infirmary, Bow, clinical assistant in the ophthalmic department of the London Hospital, and ophthalmic house-surgeon to St. Thomas's Hospital. During the war he held a commission as captain in the R.A.M.C., and served as surgical specialist to the Curragh Camp, Colechester, and Wimereux. He was surgeon to the Royal Bucks Hospital and was very popular in the Aylesbury district. He took an active interest in the work of the British Medical Association, being a member of the executive committee of the Buckinghamshire Division from 1913 to 1916, and honorary secretary of the Buckinghamshire Division of the South Midland Branch since 1922; he was also a member of the Local Medical and Panel Committee. A colleague writes: The sudden death of Dr. Perrin came as a great shock to a large circle of friends in the Aylesbury district, where he was held in high esteem; his unassuming manner and kindly and courteous behaviour endeared him to all his patients. He was a keen and scientific worker, and his colleagues on the hospital staff were always glad to have his help and co-operation; it is certain he will be sadly missed.

MR. ARTHUR WALTON ROWE, who died at Margate on September 17th, received his medical education at St. Mary's Hospital and the University of Durham. He obtained the diploma M.R.C.S.Eng. in 1883, and graduated M.B.Dunelm with first-class honours, and M.S. in 1884. The appointments he had held included those of assistant chloroformist and resident obstetrical officer, St. Mary's Hospital, surgeon to Margate Cottage Hospital, and consulting surgeon to the Royal Sea-Bathing Hospital. During the war he held a commission in the R.A.M.C., and retired with the rank of major. He was one of the foremost geological authorities in Great Britain, and took an especial interest in chalk formations. He published in the *Proceedings of the Geological Association* articles on the zones of white chalk of the English coast, including Kent, Sussex, Dorset, Devon, Yorkshire, and the Isle of Wight. He was also an accomplished archaeologist, and was responsible for the excavation of some of the oldest Saxon remains in Kent. Of his native town, Margate, he had completed a very comprehensive survey, and his lectures on its history, illustrated by plasticine models and plans, drew crowded and most appreciative audiences. He was a Fellow of the Geological Society, a member of the council of the Palaeontological Society, and a member of the Geological Association.

The death occurred at 84, Philbeach Gardens, on September 29th of Dr. WALTER THOMAS BEEBY, in his eighty-fifth year. Dr. Beeby was a student of Guy's Hospital where he was later house-physician. In 1865 he entered into partnership with the late Mr. James William Ilott of Bromley, Kent, and on Mr. Ilott's retirement and after his death was in partnership with his son Dr. Herbert James Ilott. It was largely owing to Dr. Beeby's influence that the Bromley Cottage Hospital was founded in 1869, and he was the first medical officer, being shortly after associated with Dr. Willey of Bromley, and later with Dr. H. J. Ilott. The hospital, at first on a very small scale, has been much enlarged, until now it is a well equipped institution with more than forty beds; it has attached to it a large staff both of local medical men and of London consultants. Dr. Beeby retired from general practice in 1898 and went to live at Rapallo, where he practised for seven years and had much to do with the building of the English Church of St. George. He then gave up medical practice and lived during the winter and spring months at Levanto, further along the coast. Dr. Beeby had a taste for architectural and antiquarian research, and was the author of a paper read before the Kent Archaeological Society on the Church and Manor of Bromley. He wrote also a useful little book on the parish church of Bromley. He married in 1879 and is survived by his widow. The funeral service was held on October 4th at the parish church of Bromley.

DR. D'ARCY BENSON, whose death is announced, was the eldest son of the late John R. Benson, who practised for many years at Gympie, Queensland, and was at one time member of the Legislative Assembly for the Peak Down district of Queensland. Dr. D'Arcy Benson practised for some years at Grosmont Pontillas, Herefordshire. Later he was for many years in practice at St. Peter's Port, Guernsey. He was a very keen yachtsman and was the owner of the cutter *May*, 20 tons, in which he made many cruises to the English and French coasts and elsewhere. In 1911 he had to retire from active practice owing to a serious breakdown in health due to infection from a patient upon whom he was operating. He retired to Dublin and became resident physician at Farnham House Mental Home, but his health seriously interfered with his activities there. He went abroad for his health, and after a few years of invalidism he died of bronchopneumonia at Kimberley, South Africa. Dr. Benson was for many years a member of the British Medical Association. He served in the great war with the rank of temporary captain R.A.M.C. Dr. Benson married Miss Mary Louisa Gabriel, daughter of the late Samuel Hawkes.

Gabriel of Calne, Wilts. He is survived by his widow and four sons, of whom two are members of the medical profession.

The following professors in foreign medical faculties have recently died: Dr. Commandeur, professor of clinical obstetrics at Lyons; Dr. Rudolf Boehm, formerly professor of pharmacology at Leipzig, aged 82; Dr. Adolf Lesser, formerly professor of internal medicine at Breslau, aged 75; Dr. Lorenzo Mannino, professor of dermatology at Palermo.

## Medico-Legal.

### A DANGEROUS DRUGS PROSECUTION.

THE Marlborough Street stipendiary magistrate (Mr. Cancellor), on October 15th, committed for trial at the Old Bailey John Kynaston, retired lieutenant-colonel R.A.M.C., whose address was given as Langham House, Regent Street, W., on a charge of aiding and abetting, counselling and procuring Rowland Pawsey, registrar of marriages, Marylebone, to attempt to obtain possession of a dangerous drug (powdered opium), contrary to a regulation of the Dangerous Drugs Act, 1920. A further summons of falsely using the description of M.B.C.S. and L.R.C.P.Lond., implying that he was a registered medical practitioner on August 25th, contrary to the Medical Act, 1858, was adjourned *sine die*.

Both summonses were first heard on October 8th, and a report of the hearing appeared in our last issue (p. 716).

Mr. Vincent Evans, for the Director of Public Prosecutions, stated that the defendant treated Mr. Pawsey for catarrh, and handed him a prescription at the top of which were the words: "Late R.A.M.C., L.R.C.P., M.R.C.S." The prescription was signed at the bottom: "Lieutenant-Colonel R.A.M.C., retired, M.R.C.S., L.R.C.P.Lond." His name had been removed from the lists of the two medical colleges in question, and also from the Register by the General Medical Council.

Mr. Edmond O'Connor, solicitor, for the defendant, said his client elected to go for trial on the first summons. He was not a quack, impostor, or adventurer, but a fully qualified medical man placed on the Register in 1885, and remaining there for over forty years. In 1886 he entered the army, serving in India, West Africa, and in the South African war, and in 1905 he was placed upon the retired list. On the outbreak of the great war he was again called up and served in the R.A.M.C. In 1922, in consequence of a dispute between the defendant and the General Medical Council for alleged "advertising," the defendant published a paper in which he said diseases of the tonsils and adenoids need no longer be subject to operative treatment. For this he was found guilty of "infamous conduct from a professional point of view," and his name was removed from the Medical Register. Mr. Pawsey had committed no offence in presenting the prescription. He did not want a dangerous drug and did not care whether what he got was opium or powdered rhubarb. If Mr. Pawsey could not be convicted of an unlawful attempt to obtain a drug, the defendant could not be convicted as an aider and abettor.

Mr. O'Connor further submitted, as a matter of law, that the regulation made by the Home Secretary in 1922, pursuant to the Dangerous Drugs Act, was *ultra vires* because the principal Act did not authorize him to make a regulation dealing with an attempt to obtain possession of a dangerous drug. The preamble to the Medical Act, 1858, showed clearly that what was intended was to distinguish qualified from unqualified practitioners. The defendant had been a fully qualified man since 1885, and nothing that the General Medical Council might do could deprive him of the right to say that he was such to-day. There was nothing in any Act to prevent him from acting as a physician or surgeon to a hospital supported by voluntary contributions. All that the erasing of his name from the Register had deprived him of was the right to sue for his fees, to issue certain certificates, such as for death, or to hold certain public appointments.

Mr. Cancellor: Is it your submission that the defendant is entitled to use the letters M.R.C.P.?

Mr. O'Connor: I do not think it is necessary for me to go so far as that. I say he is a fully qualified medical man.

Mr. Cancellor: Do you say, after he has been struck off the Medical Register, he is a duly qualified medical man?

Mr. O'Connor: I say that he is a fully qualified medical man.

The magistrate, in committing the defendant for trial, allowing bail in his own recognizance of £100, said he did so "in view of the great importance of the submission made to him."

### FEES FOR REPORTS TO INSURANCE COMPANIES.

IN the Llandudno county court Dr. S. L. B. Wilks of Colwyn Bay was recently successful in recovering from the executors of a deceased patient his fee for two medical reports; the charge of one guinea for each had been disputed. The reports were supplied to two insurance companies, and it was contended by the defendants that, since the information required for them was already in the possession of Dr. Wilks and had been used in the preparation of a report to the coroner, a fee of half a guinea for each was adequate. The judge, in giving judgement for the plaintiff, said that Dr. Wilks was perfectly justified in making the charge.

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

At a congregation held on October 15th the following medical degrees were conferred:

M.D.—C. B. S. Fallor.  
M.B., B.Ch.—O. K. Colwill, W. H. Gervis, S. Levy-Simpson.  
M.B.—F. B. Parsons.

### UNIVERSITY OF LONDON.

#### KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.

The following awards have been made: Senior Scholarship for General Clinical Studies, Todd Prize for Clinical Medicine, Special Prize for Diseases of Children and for Orthopaedic Surgery: F. Goldby. Jelf Medal, awarded annually on the senior scholarship examination to the candidate who is second in order of merit: A. W. Kendall. Barney Yeo Scholarship: R. G. Maoheth, Barney Yeo Scholarship (honorary): T. K. Lyle. Barney Yeo Exhibitions: F. O. Mayo and C. B. L. Orme. Raymond Gooch Scholarship: S. R. O. Price. Tanner Prize for Obstetric Medicine: A. P. Ross. Special Prize for Diseases of Children: J. L. Newman. Special Prize for Orthopaedic Surgery: H. L. C. Wood.

### VICTORIA UNIVERSITY OF MANCHESTER.

DR. A. D. MACDONALD has been appointed Lecturer in Experimental Physiology.

Dr. J. B. Duguid has resigned the post of Lecturer in Morbid Anatomy and Histology on his appointment as Lecturer in Pathology in the Welsh National School of Medicine, Cardiff.

### UNIVERSITY OF WALES.

DORIS WILLIAMS has satisfied the examiners in Part II of the examination for the Diploma in Public Health.

### UNIVERSITY OF ABERDEEN.

DR. A. LYALL has been appointed Lecturer in Clinical Chemistry and Clinical Chemist at the Aberdeen Royal Infirmary.

### UNIVERSITY OF EDINBURGH.

THE following candidates have been approved at the examination indicated:

FINAL M.B., Ch.B.—A. I. Barron, O. D. Beetham, H. Caplan, C. W. Clayton, B. G. T. Elmes, W. A. Erskine, E. T. Forbes, W. G. Hardie, J. D. Horsburgh, W. D. Jackson, J. M. Johnston, J. J. Mason, D. O. Peters, G. Phillips, E. M. Robertson, P. M. Scott, E. M. Sewell, F. Sizer, H. Somerville.

### UNIVERSITY OF GLASGOW.

THE following degrees were conferred on October 18th:

M.D.—I. Murray, A. Davidson, P. R. McNaught, P. J. O'Hare.  
M.B., Ch.B.—The degree of M.B., Ch.B. was conferred on the eighty-three successful candidates whose names were printed in our issue of October 9th, p. 668.

\* With high commendation.

The Branton Memorial Prize, awarded to the most distinguished graduate in medicine of the year 1926, has been gained by Herbert H. Pinkerton.

The West of Scotland R.A.M.C. Memorial Prize, awarded to the candidate with the highest aggregate marks in medicine, surgery, and midwifery in the Final Examinations for the degrees of M.B. and Ch.B. held during the year 1926, has been won by Stuart I. A. Laidlaw.

### ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

THE annual meeting of the Royal College of Physicians of Ireland was held at the College on St. Luke's Day, October 18th.

Professor T. Henry Wilson was unanimously elected president, Dr. T. Solomon vice-president, and Dr. Kirkpatrick and Sir John Moore were re-elected the registrar and representative of the College on the General Medical Council respectively. Four censors were elected, as well as examiners.

Dr. C. J. Usher Murphy was unanimously elected a Fellow.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY Council meeting was held on October 14th, when the President, Sir Berkeley Moyulhan, was in the chair.

The death on September 9th, at the age of 80, of Mr. Herbert William Puge, past member of the Council and of the Court of Examiners, was reported, and a vote of condolence was passed.

Sir Holburn J. Waring was re-elected a member of the Committee of Management.

#### Diplomas.

Diplomas in Tropical Medicine and Hygiene were granted jointly with the Royal College of Physicians to twenty-one candidates.

The diploma of Fellowship was granted to John Lewin, M.B., B.S. Lond. (Gyn.), and that of Membership to Wilfred M. de Kok, T. C. Hunt, S. M. Mallick, A. W. L. Row, H. Smith, Karin Stephen, H. Syed, J. G. T. Thomas.

*Supplemental Charter.*

It was reported that the Supplemental Charter, as prayed for by the College, was approved by the King in Council on July 26th.

*Awards.*

The Sir Gilbert Blane Gold Medal has been awarded to Surgeon Lieut.-Commander Stewart Russell Johnston, R.N., M.R.C.S. (Promotion Examination, 1926). Mr. Kenneth Swire Southom was nominated as the thirty-fourth Jenk's Scholar.

*Annual Report.*

The draft copy of the annual report of the Council was approved.

*Lectures.*

The Thomas Vicary Lecture, on "The significance of anatomy," will be delivered by Professor G. Elliot Smith on Thursday, November 4th, at 5 p.m., and the Bradshaw Lecture, on "Reconstructive surgery of the hip-joint," by Mr. Ernest W. Hey Groves on Thursday, November 11th, at 5 p.m.

## Medical News.

THE next term at the Royal Institution of Great Britain will begin on November 2nd, when Dr. G. W. C. Kaye, superintendent of the physics department of the National Physical Laboratory, will begin a course of Tyndall lectures on the acoustics of public buildings. On December 9th and 16th Sir Squire Sprigge, M.D., Editor of the *Lancet*, will give two lectures—the first on early medical literature, and the second on medical literature in relation to journalism. Two lectures on atmospheric electricity will be given on November 27th and December 4th by Dr. George C. Simpson, Director of the Meteorological Office. All these lectures will be given at 5.15. The lectures at Christmas for a juvenile auditors were founded by Tyndall, and a hundred such courses have now been given. The one hundredth and first will be given by Professor A. V. Hill on "Nerves and muscles: how we feel and move." There will be six lectures, beginning on Tuesday, December 28th. They will be given at 3 p.m. on each day and will be completed by January 8th.

THE secretary of the Royal Westminster Ophthalmic Hospital writes to explain that, although the site and buildings of the hospital have been purchased by Charing Cross Hospital, there has been no fusion of the two institutions. A new freehold site has been purchased in Broad Street, W.C.2, for the erection of a new building to carry on the work of the Royal Westminster Ophthalmic Hospital. It is hoped that building operations will be begun early next year, and completed in the spring of 1928. In the meantime the ophthalmic work is being carried on as usual, and it is expected that there will be no interruption during the transfer to the new building.

THE Fellowship of Medicine announces that Mr. Herbert J. Paterson will lecture on October 25th on gastric hæmorrhage and perforation of ulcers, and on October 28th Mr. Arthur Cheate will lecture on emergencies in aural disease. The lectures on emergencies in medicine and surgery are delivered in the Lecture Hall of the Medical Society, 11, Chandos Street, W., at 5 p.m. On November 9th, at 5 p.m., Mr. C. L. Giublett will give a lecture demonstration on the investigation of visual fields, at the Royal Westminster Ophthalmic Hospital. Both the lectures and demonstration are open to members of the medical profession without fee. During November a comprehensive course in venereal disease will be given at the London Lock Hospital. From November 15th to December 4th a course in gynaecology and diseases of children will be available at the Royal Waterloo Hospital, with special reference to endocrine deficiency, blood diseases, thyroid, breast, stomach, gynaecological diagnosis, and ophthalmia neonatorum. The St. John's Hospital will hold bi-weekly lectures in dermatology from November 15th to December 11th; if desired, a course in pathology can be arranged also. From November 22nd to 27th a week's course at St. Mark's Hospital will include all branches of diseases of the rectum. Two late afternoon courses will include one at 4.30 to 6 o'clock in general medicine, surgery, and the specialties at the Hampstead General Hospital from November 1st to 13th, and another at 5 p.m., on selected cases in neurology, at the West End Hospital, 73, Welbeck Street, W., from November 22nd to December 18th. Copies of all syllabuses, the general course programme, and the *Post-Graduate Medical Journal* may be obtained from the Secretary of the Fellowship of Medicine, at No. 1, Wimpole Street, W.1.

THE discussion arranged by the Post-Graduate Hostel, Imperial Hotel, Russell Square, W.C., on Monday next, at 9 p.m., will be on colour vision and colour blindness, and will be opened by Professor Roaf. On Thursday, October 28th, there will be a symposium on "The filled dead tooth as

a source of streptococcal blood infection." Dentists will be welcomed. Dinner will be served at 8 p.m. (price 5s.), and coffee and biscuits at 10 p.m. (6d.).

THE autumn session of lectures and demonstrations arranged by the South-West London Post-Graduate Association at St. James' Hospital, Ousley Road, Balham, S.W., commenced on Wednesday last, when Mr. Norman C. Lake gave his impressions on American surgery. On Wednesday, October 27th, at 4 p.m., Dr. Ivan W. Magill will deal with recent advances in anaesthetics; on November 3rd Mr. Eric Pearse Gould will speak on fractures of the tibia; and on Friday, November 12th, Mr. Swift Joly will lecture on recent advances of urinary surgery. The lecture demonstrations will be continued on subsequent Wednesdays at 4 o'clock until December 8th.

THE session of the Listerian Society of King's College Hospital was opened on October 20th, when a special of moot was held before the Lord Chancellor to hear a "sordid jury action." The Listerian oration is to be given by Sir Watson Cheyne, Bt., on April 4th, and the business of the session is to be brought to an end on April 20th, when Mr. A. H. Cheate, F.R.C.S., is to give an address on the detection of simulated car disease.

THE opening meeting of the new session of the North-Western Tuberculosis Society will be held at the Tuberculosis Offices, Joddrell Street, Hardman Street, Deansgate, Manchester, on Thursday, October 28th, at 3.15 p.m., when Dr. Adams, medical superintendent, Liverpool Sanatorium, Delamere, will give his presidential address on "Tuberculosis: the prospect."

THE University of Bristol Association of Alumni (London Branch) will hold its annual dinner at the Hotel Cecil, Strand, on Friday, October 29th, at 7.45 p.m. Viscount Haldane will preside, and Dr. Sibley, Principal Officer of the University of London, will be the guest of the evening. The honorary secretary is Dr. Elizabeth Casson, Holloway Sanatorium, Virginia Water.

THE annual dinner of the past and present students of the Manchester Medical School will be held at the Grand Hotel, Manchester, on Thursday, November 4th. Tickets (15s. 6d.) may be obtained from the Secretary, Students' Representative Council, The Medical School, Manchester.

THE PRINCE OF WALES has become patron of the Ross Institute and Hospital for Tropical Diseases, Putney Heath, S.W.

AT the annual meeting of the Royal Academy of Medicine in Ireland, held on October 8th, Sir James Craig was elected president and Dr. T. P. C. Kirkpatrick general secretary for the session 1926-27. The following were appointed presidents of the various sections of the Academy: Medical, Dr. G. E. Nesbitt; Surgical, Mr. A. Fullerton; Obstetrical, Dr. D. G. Madill; Pathological, Dr. J. W. Biggar; Anatomical and Physiological, Dr. J. M. O'Connor; State Medicine, Dr. V. M. Syngo.

MR. HERMAN CAMERON NORMAN, C.B., has been appointed a member of the Royal Commission on Local Government, in succession to the Hon. Sir Arthur Myers, who died on October 9th. Mr. Norman was secretary of the International Sleeping Sickness Conference in 1907, and in 1920-21 was British Minister at Teheran.

DR. R. CUNYNGHAM BROWN, C.B.E., has been appointed a commissioner under the Mental Deficiency Act, 1913.

THE White Rock baths at Hastings, recently purchased by the Corporation, are to be remodelled at a cost of £102,000. Medical baths are to be introduced and a pump room for the iron waters.

THE late Dr. J. C. McVail, formerly deputy chairman of the Scottish National Health Insurance Commission, who died in August last, left personal estate in Great Britain valued at £10,022.

MR. JOHN D. ROCKEFELLER, jun., has presented three and a half million francs to the University of Strasbourg for the enlargement of the ear and nose clinic and for the completion of various unfinished researches.

PROFESSOR LEJARS of Paris, member of the Académie de Médecine, has been created a commander, and Professor Leriche of Strasbourg an officer, of the Legion of Honour.

THE late Mr. Samuel Throop of West Kirby, who left estate of the gross value of £45,428, with net personally £44,075, bequeathed the whole of his property to his widow for life. After his widow's decease £750 is to be given to the Hospital and West Kirby Cottage Hospital, and the ultimate residue of his estate to the University of Liverpool to be applied as the authorities in their discretion may think fit for the furtherance and advancement of medical research into phthisis and cancer and any kindred diseases.

AN institute of hydrology has recently been founded at a medical school of Clermont-Ferrand.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the British Medical Journal alone unless the contrary is stated. Those who wish notice to be taken of their communications should authenticate them with their names and addresses.

Authors desiring REPRINTS of their articles published in the British Medical Journal must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBERS of the British Medical Association and the British Medical Journal are: HOUSE 3361, 3362, 3363, and 3364 (internal exchange, four lines).

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MEDICAL SECRETARY, Medisera Westcent, London.

The address of the Irish Office of the British Medical Association is 15, South Frederick Street, Dublin (telegrams: Haeilus, Dublin; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshugh Gardens, Edinburgh (telegrams: Associate, Edinburgh; telephone: 4351 Central).

### QUERIES AND ANSWERS.

#### TREATMENT OF INFLAMMATORY RASH.

"F. H." desires information about the treatment of a severe and irritating inflammatory rash on the face and neck, which clears up after an attack of influenza or protein shock therapy, but recurs subsequently. Is there, he asks, any means of obtaining lasting improvement?

#### WARTS AND EGGS.

DR. LEONARD WILLIAMS (London) writes: Recently, at a dinner table, a lady announced that, having been advised by a beauty specialist to use raw white of egg to improve her complexion, she had done so with conspicuous benefit, but had discontinued it because an American friend had told her that if she persisted her face would soon be covered with warts. Whereupon another lady at the table declared that it was not the white of the egg which provoked warts, but the shell. She went on to explain that this was well recognized in East Anglia, where poultry farm-hands and cooks were known to suffer from warts from this cause. In the discussion which ensued I was appealed to, but I could only reply that I had never heard of warts being due to either of these alleged causes. I should like to know if there is any basis for this indictment of eggs, their insides or outsides, and whether the belief is prevalent in any district besides East Anglia.

#### NERVOUS VOMITING.

DR. F. G. GARDNER (Oxford) writes: I suggest that "H. W. B.'s" patient (BRITISH MEDICAL JOURNAL, October 9th, p. 670), who is suffering from nervous vomiting, may have astigmatism or some other error of refraction. At any rate, in a case of this kind the eyes should be examined by a specialist.

#### RECURRENT BOILS.

DR. H. G. FALKNER (London) writes, in answer to "W. L. C." (October 16th, p. 717), to say that he has treated many cases successfully by ultra-violet rays. If the boil is caught in the inflammatory stage, before any pus formation, it can, he says, be aborted, and local treatment is necessary as well.

DR. A. E. R. RUTHERFORD (Westbury-on-Trym) writes: If "W. L. C." (TORQUAY JOURNAL, October 16th, p. 717) will impress on his patient the necessity of avoiding infection of the skin by scratching, I think the boils will soon cease recurring. Careful disinfection of the nails and, more important still, the use of cotton gloves, at night especially—because scratching and, therefore, infection is more likely to occur during the night. For many years I have been using this purpose. Very efficient in such cases. Recurring boils the skin is probably more septic than usual. The object in view is, therefore, the prevention of minute abrasions.

#### MUCOUS COLITIS.

DR. J. W. KING (Derby) writes in reply to "R. F.'s" request for suggestions in the treatment of mucous colitis (October 2nd, p. 619): Presuming the condition is not accompanied by enteritis, which of course should be attended to by using a suitable abdominal support, possibly a large dose of liquid paraffin might be helpful to cause leakage, and a large dose of castor oil or peristaltin tablets at once a week give 1 ounce of castor oil an hour and a half before breakfast.

Relieve pain with full doses of extract of belladonna, or, better, belladonna tablets (Sandoz Chemical Company, Bradford). Cease giving intestinal disinfectants, but give a highly dose of colloid kaolin. Let the patient eat anything she likes, except food with seeds or skins, and, of course, eat down flesh meat to a minimum, or, at any rate, to a small amount daily. Alcohol in all forms to be debarred and plenty of rest advised in the recumbent posture.

### LETTERS, NOTES, ETC.

#### MEDICAL GOLF.

THE Medical Golfing Society held its autumn meeting on the links of the Littlestone Golf Club. Good weather and the fine condition of the links contributed to a most successful meeting of over seventy members. The competitions resulted as follows:

Singh's v. Beery (for Mr. Max Page's Prize).—C. V. Mackay and Herdman Porter tied at 1 down; won on replay by C. V. Mackay. *Exhibition v. Beery*.—H. W. Carsoo and A. E. Mortimer Wood won at 1 down. O'Keefe, Chapelle, P. Goss, 112 down. The C. 10 score of 85-15= second and third places. A. Scott-Gilett was fourth with 85-11=75. The best scratch score was 74 by T. P. Kolesar.

#### TREATMENT OF PRURITUS ANI.

"J. S." writes: In the JOURNAL for October 9th Dr. Ward writes a note on the treatment of pruritus ani, which may be very useful. But is not cleanliness the real secret of success? After many years in India and the observation of the native method there of cleansing the anus after defaecation, I came to look on the European method as very barbarous. An Indian washes the part after defaecation. It is perhaps forty years since Sir William Broadbent advocated the use of water, instead of rags or paper, for this purpose. His method began with the use of paper. The pan was then washed out in the ordinary way, and the water which accumulated in the pan after the flow had ceased he used for thoroughly washing the anus, which he then dried carefully with a spun towel. The result was most comforting. He then dwelt on the omission to wash the hands after defaecation, still so common, I fear, even amongst members of our profession, and so prevalent in the world at large. It used to be said that Indians did not care to shake hands with white men from caste ideas, but there is no caste idea about it at all; it was solely because of the dirty habits of white men in connexion with defaecation. Why are pimples so common on the face, particularly about the chin? People do not wash as they should do, and go on picking their faces with their infected nails! White people have many curious habits which are never touched on in the school lectures on personal hygiene, the school lecturer being probably an habitual offender.

"M.R.C.S." writes: I suffered many years from this complaint and cured myself by washing the parts after each motion with cotton-wool and cold water.

#### COITUS INTERRUPTUS.

MR. FRANK COOK (London, W.) writes: In his letter on coitus interruptus (October 2nd, p. 620) Dr. Gubbin invites the experience of other practitioners. With regard to the evils resulting from this particular form of contraception, I can fully endorse his opinion. Anyone who has the doubtful pleasure of a considerable number of gynaece that the majority of them have account for their symptoms, however much they themselves may insist on an organic source of trouble in that direction. These unfortunate women are only too eager to find a concrete peg whereon to hang their afflictions. Their anxiety is presumably accentuated by a fear of the unknown, and it is perhaps natural that they should prefer to believe they are suffering from an "ulcerated" or "twisted womb," or "diseased ovary." Not infrequently their friends, and even their medical advisers, have already gained a certain amount of kudos by reassuring them accordingly. Some doctors have the happy knack of finding a tangible pelvic lesion to account for all the ills to which the female flesh is heir; those of us whose tactile sense is not so well developed have to search elsewhere for their source. Roughly speaking, these gynaecic cases resolve themselves into four groups. First, there is the tired mother, who is suffering from an enfeebled abdominal wall and pelvic floor, too many children, and genuine neurasthenia; secondly, there is the unmarried woman, generally of the middle class, who is suffering from a mode of life; thirdly, there is the woman who is suffering from a pause, who insists that she is swelling and has something growing and moving inside her; and lastly, there is the outwardly healthy married woman of child-bearing age to whom Dr. Gubbin refers. Almost invariably one finds on questioning patients of this latter category that they are in the habit of performing coitus interruptus, although the practice is by no means confined to the hospital class. One often obtains very little thanks for attempting to unravel their problems. This is really a matter for the psycho-neurologist; possibly gynaecologists have not the necessary delicacy of touch, or possibly they have too little time at their disposal to deal adequately with each individual case. Nevertheless, their clinics will doubtless continue to be patronized. The easiest way is a bottle of medicine or a curette, but these are double-edged weapons; once they are applied the treatment itself is henceforth held to blame.

It is not that gynaecologists are unsympathetic; we realize only too well how real are the symptoms, whatever their origin, and how powerless we are to deal with them effectively. I am by no means opposed to birth control in general, provided rational methods are employed. Unhappily we have not as yet evolved that ideal technique which would go far to solve many of our present-day problems.

DR. ALFRED A. MASSER (Penistone) writes: A short time ago I had a patient who had suffered from pain in both iliac fossae and some backache for twelve months and insomnia. She was childless and 30 years of age, and was five years married. There was some tenderness over the region of the iliac fossae, and on pelvic examination both ovaries were slightly enlarged and tender. On inquiring into the cause of her sterility I found her husband had been practising "withdrawal" since marriage. After pointing out to both the husband and herself the harmfulness of the method, natural intercourse has since been indulged in. The patient's mentality is now much brighter, the ovaries are normal, and her pains and insomnia have disappeared. I have no doubt that the practice is harmful to both the male and female, in the latter case causing possibly an instability of balance of the endocrine organs.

DR. R. MACDONALD LADELL (Birmingham) writes: I was pleased to see the letter from Dr. Gubbins in your issue of October 2nd, in which he calls attention to the nervous symptoms produced by coitus interruptus. I am certain that his experiences can be paralleled by every practitioner once he has learned to look for the syndrome. It is not only the women who suffer, but their partners, too, are apt to develop a mild anxiety state, accompanied by irritability. It would be interesting to know how many judicial separations owe their origin to quarrelsomeness engendered by lack of sexual harmony. Anxiety states are common, too, in young men and women during the "walking out" or engagement period. Sometimes this anxiety becomes localized around some particular organ, and the patient believes that he is about to fall a victim to phthisis, cancer, or heart disease. Every man in general practice should cultivate a sufficient knowledge of sex psychology to be able to recognize and deal with these cases on common-sense, matter-of-fact lines.

#### POISONING BY TOBACCO APPLIED TO THE SKIN.

DR. D. S. ROBERTSON (Moulton, China) writes: With reference to notes published recently on poisoning by tobacco applied to the skin, it is interesting to know that Chinese practitioners of the old school use tobacco juice as a means of treatment in cases of abdominal swellings, such as the splenic enlargement of kala-azar. The juice is extracted from the stem of a well-used pipe and rubbed into the skin over the swelling. This causes vomiting and, in some cases, purging. The belief is that the swelling may be reduced by such means. Splenic enlargements, by the way, are supposed to be caused by an accumulation of air and blood which has coagulated.

#### TEMPORARY EXTRUSION OF THE EYEBALL.

DR. T. LINDSAY (Tooting Bee Hospital) writes to report a case of temporary extrusion of the eyeball in an epileptic imbecile woman, aged 41, which occurred suddenly one morning. He says: I found an object like a small tomato of the transparent skinned variety protruding from the right socket, with the eyelids tucked in behind it. There was no pain or tenderness, and I was able to compress the tumour slightly, restoring the eyeballs to their usual position. The edges of the lids were thickened and oedematous. On the following morning the eye, apart from a slight purple tint of the sclerotic, was quite as usual. The eye is a blind one, with an opaque white lens, but, apart from that, is of the usual shape and appearance. No fit was reported during the night, and the condition was simply discovered in the morning. I cannot say how it was brought about, but it showed many of the features of a strangulated hernia.

#### AN IDEAL HOME.

MRS. NAYLOR-DAVIDSON and her husband, overwhelmed by the post-war difficulties of running their many-roomed old house in Uxbridge, with its far e kitchen and old-fashioned range, proceeded to build themselves an ideal home for modern conditions a little way out in the country. Mrs. Naylor-Davidson has published a description of this home, illustrated with plans and photographs, under the title "*Over Frays: an Original House for Practical People*." Although there may not be a large amount of originality in the actual labour-saving devices embodied in the house, the structure is a compact collection of many things that can make life easy to the harassed housewife. And there was, perhaps, considerable originality displayed in starting with—and, so to say, hanging the house out to—the garage, which is so arranged that it can be converted into a dining room, a smoking room, or a children's playroom. The garage opens out of the drawing room, but means have been taken apparently to avoid the leakage of petrol fumes. A lavatory with a red glass window serves an extra purpose as a "dark room" for photography. The kitchen is evidently regarded as the *chef d'œuvre* and we have a photograph

of Mrs. Naylor-Davidson cooking at the stove. The kitchen is the smallest room in the house, and is really an annex to the dining room, cut off by sliding doors. The tables are attached to the wall, and supported by swinging brackets. There is a gas cooker and a hot water circulator, for the house is within range of such useful adjuncts as gas, water, and electricity supplies. As there are five openings in this small kitchen and a special flue over the stove the odours of cooking can be rapidly removed. Mrs. Naylor-Davidson adds to her book some chapters on making a garden and an orchard, a few hints to housewives, and an account of the setting in which the house is built. A note at the end informs readers that if they wish to study the subject of building similar houses they can be received at "Over Frays" by appointment for a period not exceeding a quarter of an hour, on payment of a fee of 1 guinea. The book is most attractively got up.

#### PLUMBO-SOLVENT WATERS.

DR. T. D. HARRIES of Aberystwyth sends notes of a simple method for avoiding the dangers of plumbo-solvent water, while not interfering with its natural properties. The addition of lime, chalk, or silicates to a soft water has the effect of destroying the economic and therapeutic values of the water. Dr. Harries says that the Birmingham Corporation was not had very satisfactory results from the addition of lime or chalk to the Rhayader water; and that the expense of chemical methods would be prohibitive, except for the water supplies of rich corporations. Since lead cisterns and cisterns of slate slabs jointed with white lead have been discarded, the only source of contamination left is the lead service pipes. To avoid the danger from water which has stood in these pipes all night, many housekeepers allow a large quantity of water to run to waste the first thing in the morning. The principle of this procedure is right. In Dr. Harries's opinion, but the method wrong, as the waste is unnecessary, and often amounts to as much as twenty gallons. To clear 240 ft. of service pipe it is only necessary to draw off two gallons of water. Dr. Harries suggests that housekeepers should establish a routine practice of emptying the water-closet flushing cistern the first thing in the morning. In this way two gallons of water are withdrawn from the service pipes. The draining water tap should then be opened for eight or ten seconds, thus allowing about a quart of water to run to waste, and clearing 30 ft. of branch piping. Thereafter the frequent use of domestic taps during the day prevents the possibility of contamination of the water by long standing in the service pipes. If the routine practice of this method were adopted in a town of 10,000 inhabitants, the total loss of water daily would not be more than 5,000 gallons. In observations made on one of the softest and purest waters in the kingdom, Dr. Harries has found that the lead impregnation varied between 0.045 and 0.02 parts in 100,000, so that it would be necessary to drink from one to three and a half gallons of overnight water in order to absorb one thirty-first part of a grain of lead. Consequently Dr. Harries does not believe that there is much chance of lead poisoning under modern conditions of water supply. With his suggestion for emptying the service pipes in the morning the risk is negligible. If any water were found capable of acting on lead pipes to a dangerous extent in six hours, Dr. Harries thinks that the danger might be removed by running the water through a conduit twelve yards in length, containing limestone or marble fragments, before it enters its reservoir. This would reduce the plumbo-solvent action of this water by at least 50 percent., and, combined with his flushing cistern method, would do away with all risk. At the same time the limestone filter bed would have the disadvantage of diminishing the economic value of the water and render necessary increased expenditure on soap. The limestone bed would be renewed once a year, the disused stone being used for road metalling.

#### LIQUOR OPII SEDATIVUS.

MESSRS. ALLEN AND HANBURY ask us to state that the morphine content of liquor opii sedativus (Battley) has been increased from 1.5 to 1.8 per cent., so that each fluid drachm now contains 1 grain morphine. The dose has been reduced from 5 to 15 minims to 5 to 10 minims.

#### 1927 MOTOR CARS.

LAST week's issue of the *Autocar* contained a buyers' guide to 1927 model motor cars. The guide consists of an alphabetical list of all the cars which will be on the British market for the coming year, and gives for each car the country of origin, the annual tax, a full specification, the principal measurements, the number of seats, the weight, and the prices, both for the chassis and the complete car.

#### ERRATUM.

THE paragraph of news relating to Dr. Hermann Brohm in the *JOURNAL* of October 9th (p. 669) should have stated that the hundredth anniversary of the birth of Dr. Hermann Brohm was celebrated on August 14th, the famous specialist in tuberculosis having died in 1889.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 44, 45, 46, 47, 50 and 51 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 48 and 49.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 167.

"*Over Frays: an Original House for Practical People*. By CLARICE H. M. NAYLOR-DAVIDSON. Uxbridge: Printed privately for the Author; London: J. and E. Bumpus, Ltd. 1926. (9½ x 11½, pp. 67; 32 figures, 7 diagrams, 3 plates. £1 1s.)



## British Medical Association.

## PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

## SECTIONS OF NEUROLOGY AND PSYCHOLOGY AND OF OPHTHALMOLOGY.

E. FARQUHAR BUZZARD, M.D., F.R.C.P., in the Chair.

## DISCUSSION ON MIGRAINE.

## OPENING PAPERS.

## I.—EDWIN BRAMWELL, M.D., F.R.C.P.,

Moncrieff-Arnott Professor of Clinical Medicine in the University, and Physician to the Royal Infirmary, Edinburgh.

MIGRAINE has engaged the attention of the physician from very early days. Nor is this surprising when we recall the comparative frequency of the disorder, the temporary disabling effects to which it may give rise, the interesting phenomena which it presents, and the uncertainty which still enshrouds its etiology. The subjective symptoms of the classical migraine attack are well known. They have been portrayed in graphic language by many skilled observers from personal experience. A great variety of causes are recognized which serve to determine the paroxysms in individual cases, and yet we must still admit our ignorance as to the nature of the disorder and the mode of action of these varied exciting factors. A discussion such as this serves a useful purpose, since it enables us to refer to additions to knowledge which may have a bearing upon unsolved problems, to review recent suggestions, and to picture where we stand. Etiological considerations are of special interest, and to these more particularly I shall devote my remarks. It is, however, impossible in the time at my disposal to deal adequately with the many views which have been advanced in this connexion. I consequently propose, after some preliminary references to certain observations of etiological significance, to submit for your consideration and criticism the explanation which appears to me to be in closest accord with the facts, believing that by so doing I shall best serve the interests of this discussion.

## Nomenclature.

The nomenclature of medicine is not always all that is to be desired and is apt at times to be misleading. A designation often comes into general usage because it appears for the time being to be the best available. Thus while the term depicts a most symptom of many migraine attacks, I may remind you that the paroxysm is not always accompanied by headache, and that the headache is by no means always unilateral. Exception may also be taken to the synonyms "bilious headache" and "sick headache," for sickness and vomiting are not necessary accompaniments, and these epithets tend to perpetuate erroneous etiological conceptions.

## Idiopathic and Symptomatic Migraine.

The desirability of differentiating between a true or idiopathic and a symptomatic migraine has been repeatedly advocated, and I would commend this distinction to your consideration, for it is of undoubted value in diagnosis. Paroxysmal headaches, you will recall, are sometimes met with in cases of brain tumour, in cirrhosis of the kidney, and exceptionally as a late syphilitic manifestation. These headaches, to which the term "symptomatic migraine" is applicable, may be accompanied by vomiting, and the pain may be unilateral. A diagnosis from true migraine may, indeed, be difficult apart from the detection of the underlying process. Hence, when paroxysmal periodic headaches develop in later life, and particularly when there is no evidence of hereditary transmission, the probability that

the headache is symptomatic, in the sense that it may be secondary to one of the organic conditions above referred to, should always be borne in mind.

## Symptomatology.

The symptoms of the classical migraine attack are so well known, to many from personal experience, that to describe them would serve no useful purpose. Living, in his work upon migraine, which was published fifty years ago and is still the classic upon the subject, recognizes four types: first, simple hemiparesis in which unilateral headache is the striking feature; secondly, sick headache characterized by vomiting; thirdly, blind headache, so called from the visual phenomena and remarkable obscuration of vision which accompany it; and, fourthly, cases presenting manifestations which indicate "a wider implication of the sensorium, affecting the general sensibility of the extremities, and especially the sense of touch in finger-tips, lips, and tongue in varying degree; sometimes impairing the faculty of expression, producing a striking form of disordered speech, sometimes a confusion of ideas and temporary impairment of memory." This somewhat arbitrary classification is useful since it emphasizes certain prominent features which may dominate the picture in individual cases.

The classical migraine attack comprises an aura which is characterized by visual and it may be other phenomena indicative both of local and general disturbance of cerebral function, headache which is typically frontal and predominantly unilateral, nausea and vomiting. But while this is so I may remind you that headache often constitutes the only striking symptom of the paroxysm; that exceptionally—and this applies especially to childhood—attacks of vomiting may be the only manifestation; that occasionally visual disturbance, aphasia, or paresthesia may be unaccompanied by either of these symptoms, and that anomalous attacks are met with, undoubtedly migrainous in nature, which are characterized by a transient hemiplegia, by pain which closely simulates a true neuralgia, or by paroxysms of vertigo resembling Ménière's disease. Cases are reported in which migraine has so closely simulated an abdominal condition that a laparotomy has been carried out. Again, I have met with a case in which the gastric crises of tabes were attributed to migraine, the associated organic disease being unsuspected.

## Epilepsy and Migraine Compared and Contrasted.

A relationship between epilepsy and migraine is repeatedly referred to in the literature. These disorders, which are usually classed with the neuroses, present many points in common. Thus both are characterized by paroxysms which tend to recur with periodicity, in both the condition as a rule first manifests itself in early life, and in both there is often a history of familial neuropathic predisposition or direct transmission. Again, in migraine as in epilepsy the attack is often ushered in by an aura, while the paroxysm of migraine may be accompanied by temporary disturbance of sensation, of movement, and of speech, and by some degree of mental confusion. Further, in migraine as in epilepsy a cumulative effect may be observed—that is to say, that an unduly long period of freedom may be followed by an unusually severe attack. It is also of interest to note that, as is the case with epilepsy, attacks of migraine in women are apt to occur about the time of the monthly period, and that they often, though not invariably, cease during pregnancy when menstruation is in abeyance. Then I may remind you that in some cases migraine appears to be replaced by epilepsy, while in others there is an apparent substitution of migraine for epilepsy. Again, there are cases described—and I have met with more than one instance in point—in which anomalous attacks of migraine and atypical epileptic attacks so closely resembled each other as to be almost, if not quite, indistinguishable.

But while migraine and epilepsy present many points in common, the resemblance is superficial and certainly not such as to warrant the assumption of an intimate relationship. The two disorders are, indeed, rarely met with in combination, and a history of epilepsy in a

migrainous family is most unusual. Again, it is to be borne in mind that the slow spread of the migrainous aura suggests a different mechanism from the aura of epilepsy, that in the former disease mental deterioration is not observed, and that migraine, unlike epilepsy, tends to disappear in later life. Both disorders are, it is to be remembered, comparatively frequent. Consequently when migraino and epilepsy occur in the same patient or in the same family due allowance must be made for the possibility of coincidence.

#### *Incidence in Relation to Age, Sex, and Heredity.*

Migraino is a common condition. Some six weeks ago I addressed a short questionnaire to a class of senior medical students. The replies indicated that 15, or approximately 12 per cent., of those present suffered or had suffered from the disorder.

The approximate age incidence is expressed in the following table, in which I have tabulated the age of onset of 54 personally observed cases of true migraino met with in private consulting practice. A precise history as to the age of onset is often difficult to obtain, and I am unable to differentiate the age of onset sharply in relation to the first two decades. I find, for instance, that many patients used the expressions "in childhood," "in boyhood," "in girlhood," "during my school days," "as long as I can remember," etc. In 7 additional cases I have no definite note, and these are not included in this table. I have tabulated in a parallel column the age of onset in 49 cases reported by Dr. Liveing.

*The Age of Onset of Migraine.*

	The Author's Cases.	Dr. Liveing's Cases.	Total.
1 to 10 years ... ..	43	16	78
10 to 20 " ... ..		19	
20 to 30 " ... ..		12	
Over 30 " ... ..	3	2	5
Totals ... ..	54	49	103

These figures indicate that in three-quarters of the cases true migraino first manifests itself before the age of 20, and that it is most exceptional for the onset to be delayed beyond the thirtieth year. Liveing, I may remind you, was of opinion that there are three incidents which play a prominent role in determining the onset of migraine—namely, the period of the second dentition, the period of puberty, and "the strain upon the nervous system which is apt to precede and attend the entrance on the more serious business of life."

As regards sex, females suffer more often than males. Thus, among my 61 cases there were 43 women and 18 men—a proportion of approximately 7 to 3. It is of interest to note that the female preponderance in Dr. Liveing's series was not nearly so pronounced, for of his cases 29 were females and 24 males—a proportion of 5 to 4.

*Heredity* undoubtedly plays a very striking role in the etiology of migraine. A neuropathic heredity is observed in the great majority of cases, according to Möbius<sup>2</sup> in 90 per cent. Still more striking is the history of *direct transmission*. Thus, among my 61 cases of true migraino there were 23 in which one or other parent had suffered from periodic headaches, and 7 additional cases in which one or more brother or sister had been subject to migraino although the parents had escaped. Thus in 30 of the 61 cases there was a familial history of migraine. Liveing's figures are almost precisely similar, for, referring to his series, he remarks, "I find 26 out of 53, or just half, where migraine was stated to be a family complaint." Charles K. Mills has reported a family in which migraino could be traced through five generations.

Transmission through the mother is more common than through the father. Thus, among my 61 cases, in 14 the mother and in 9 the father had been subject to migraino. This preponderance is still more in evidence among the 15 medical students above referred to, for of these, in 8 the

mother, in 1 the father, and in 1 both parents, had been subject to periodic headache.

These considerations demonstrate that migraine is a disorder which commences during the period of active physical and mental development, which affects females more often than males, which occurs notably in families with a neuropathic taint, and which is directly transmitted, most often through the mother, in about half the cases. The frequency with which various neuroses are met with in migrainous families would appear to indicate a common predisposition which we are perhaps justified in describing as an inherited instability of the nervous system. But the constancy with which migraine itself is directly transmitted can only be explained on the further assumption that the individual who suffers must be predisposed by some additional factor or factors which render him peculiarly susceptible to this disorder.

#### *The Obvious Exciting Causes of the Migraine Attack.*

An attack of migraine can often be attributed to a definite exciting cause. These causes are numerous and vary in individual cases. Among them may be mentioned intense mental application, mental fatigue, physical exhaustion, the menstrual period, eye-strain, fasting or prolonged abstinence from food, the excessive consumption of various articles of diet, alcohol, tobacco, a stuffy room, thunder in the air, exposure to intense cold, etc. Prolonged anxiety and worry are potent causes in producing migraine, and a mental factor without doubt sometimes determines an attack. Among these various exciting causes there are two, I think, which call for special mention at the present time. I refer to eye-strain, the importance of which has recently been insisted on by Hurst, and the psychological factor, which has not perhaps received the attention it deserves.

Eye-strain has from time to time been suggested as a potent cause of migraine. According to Hurst,<sup>3</sup> who revived this view in his Savill Lecture two years ago, eye-strain is of "fundamental importance." Hurst states that during the past five years, since all his cases of migraine have been most thoroughly investigated from the ophthalmic standpoint and the smallest error of refraction corrected, his views regarding the prognosis in migraine have entirely altered.

"Personally," he writes, "I have never yet seen a case in which eye-strain was not present, and I have only seen two in which its correction did not either cure the patient or lead to very considerable improvement" . . . "the reason why the importance of the ocular factor is not more widely accepted is that few oculists trouble to give the attention to a patient with migraine that he deserves."

Although I am satisfied that eye-strain is sometimes an important exciting factor, and that the correction of a refractive error occasionally effects a cure, this is, in my experience, quite exceptional. On the other hand, it is to be remembered that in a large proportion of the cases of migraine seen by the physician the patient has already been examined by an ophthalmologist and any refractive error presumably corrected. The onus of proof in this matter consequently rests with the ophthalmologist, and we shall be interested to hear his views.

Mental factors may play an important role in determining migraine in an individual who is predisposed. The following case is a good illustration.

A woman of somewhat nervous temperament, whose father as also a brother and two sisters had suffered from periodic headaches, married a soldier home on leave from France in January, 1916. Some three or four months later—at a time when her mother, with whom she lived, was ill, her husband in the fighting line, and she overworked and obtaining little sleep—the first migraine attack occurred. The paroxysm was characterized by visual phenomena, headache, etc. A second attack occurred a few months later, and gradually the paroxysms became more frequent. Her first child was born in February, 1918. During the whole period of her pregnancy she was free from attacks, but two or three months after the birth of the child the attacks recurred and continued up to February, 1919, when her husband was demobilized. From that time the attacks ceased and there was no recurrence until March, 1922, two months after the birth of her second child, since which time they have been very frequent and distressing.

The facts are striking and their interpretation is interesting, for the patient attributed the recurrence of her attacks—and I think her explanation was almost certainly

correct—to the fact that from the time of the birth of the second child, though not before, she had been in a constant state of anxiety amounting to a dread lest she should again become pregnant.

Dr. F. G. Crookshank,<sup>4</sup> who has recently emphasized the mental factor in the etiology of migraine, believes that a certain "organ inferiority" is generally obvious. "The defect, as in the case of imbalance (eye-strain), may be an actual cause of cerebral exhaustion by reason of the efforts made to overcome the resulting disability"; or "organ defect may become the excuse, seized upon by the psyche for the maintenance of a persistent psychological attitude." Again Crookshank writes:

"If the present psychological state of anyone who seeks relief from a migraine be investigated, it will be found that, although the patient himself will at first deny the fact, yet always the mental content in the neighbourhood of the paroxysms, or during their persistence, is one that, in Adler's phrase, is coloured by repressed 'rage and humiliation.' The sufferer will protest that he feels no rage or humiliation, but, if pressed or moved to speak freely, will admit annoying circumstances that would perhaps provoke feelings of 'rage and humiliation' in anyone endowed with less control and of a coarser nature than himself."

I would have you especially note in passing that, whether the "organ inferiority" postulated by Crookshank results in brain exhaustion or emotional disturbance, these effects are no doubt associated with endocrine disturbance, a matter to which I shall presently refer. The following case is of interest in relation to these observations.

The patient, a man past middle age, who came of a migrainous family on the paternal side, had had but one attack of migraine in the course of his life. The paroxysm, which occurred when he was in the early thirties, was characterized by a typical aura and slight unilateral frontal headache. Upon inquiry it transpired that on the previous day the patient had been both disappointed and annoyed, since he had been unsuccessful in obtaining an appointment after having been given to understand that his chances amounted to a practical certainty.

But if, in an individual who is predisposed by heredity, so many factors of very different kinds may induce a paroxysm, the question arises, In what way do they act? Since they all produce similar effects, is it not a reasonable assumption that they must act through a common mechanism? Our inquiries must consequently be directed to the mechanism in question, and to the manner in which these numerous factors act upon it.

#### *The Symptoms of the Migraine Attack a Consequence of Vascular Disturbance.*

Let us next consider the manner in which the symptoms of the migraine attack are ultimately determined. Evidence of vascular disturbance is often observed during the paroxysm. Thus in the prodromal stage pallor of the face, which may be unilateral, is sometimes referred to, while later the face may be flushed. Again, the temporal artery is often described as hard and contracted. An alteration in the calibre of the retinal arteries—sometimes engorgement, exceptionally contraction—has been noted in some of those cases which have been examined with the ophthalmoscope during an attack. Further, the headache, which tends to come on insidiously and gradually increases in intensity, is often—I think I may say usually—described as throbbing in character, and may be alleviated by pressure on the common carotid artery. These observations suggest that similar changes may perhaps also occur in the intracranial vessels, and that the paroxysm may be a consequence of arterial spasm or other disturbance in the intracranial circulation. Indeed, the strong probabilities would appear to be that some of the phenomena—the disorders of speech, for example, and the unilateral sensory and motor symptoms, which are exceptionally observed it is true—are directly produced by a localized spasm of the cerebral arteries, and a consequent interference with the blood supply. The vascular view receives some support from the observations that migraine has been met with in Raynaud's disease, that isolated instances are recorded by Thomas<sup>5</sup> and others in which the hemianopic and other cerebral symptoms have eventually become permanent, and that in a case reported by Oppenheim<sup>6</sup> the paralytic symptoms were due to thrombosis of the internal carotid artery. It is of interest, too, in this connexion to recall the recurring transient hemiplegias and aphasias observed in later life in the subjects of arterio-sclerosis, which are,

as a rule, premonitions of a permanent arterial occlusion, and which are commonly attributed to arterial spasm. I may say, too, that I have personally observed cases of migraine in which the attacks have become aggravated with the development of an arterio-sclerosis.

The vascular view also helps to explain the occurrence of symptomatic migraine in interstitial nephritis and as a late syphilitic manifestation, for it may well be that there are here associated changes in the intracranial arteries. J. Herbert Fisher<sup>7</sup> holds that the visual phenomena can only be accounted for by a lesion in the chiasmal region, while others have attributed some of the symptoms to changes in the retina itself. The admission of these possibilities in no way negatives the vascular view. But what of the headache, the origin of which, to quote the words of Hurst, "remains a complete mystery"? May it not also be explained on a vascular basis? The headache, it will be generally admitted, must be referable to the meninges, for the brain substance itself is insensitive. I would suggest that it may be due to the re-establishment of the normal circulation following a spasm, not of the cerebral, but of the meningeal arteries. Some of you have, no doubt, experienced the intense throbbing pain which comes on gradually and may persist for a long time after the gum has been frozen for the removal of a tooth, and you will recall the pain which is experienced if a hand benumbed with cold is plunged into hot water. I submit that the pain of the migraine headache is similar in character and may be analogous as regards the manner in which it is produced; in other words, that it is due either to the gradual re-establishment of the circulation following a spasm of the meningeal arteries or to their subsequent engorgement. This view, I think, receives further support from the fact that a distinct period of time often elapses between the disappearance of the prodromal symptoms and the commencement of the subsequent headache, which develops gradually and is typically throbbing in character.

Objection has been taken to the vascular theory on the ground that it will not explain the cases of so-called ophthalmoplegic migraine. I am inclined, however, to agree with Oppenheim,<sup>7</sup> who, after referring to cases of the kind in which gross changes have been found, remarks:

"The most plausible view seems to me to be the one based on Charcot's opinion, viz., that periodic oculo-motor paralysis is allied to hemiparesis, and like it presumably due to vascular processes. The vascular spasm inhibits the flow of blood to the nerves and thus produces the paralysis."

I would therefore submit for your consideration the suggestion that: The symptoms of the migraine attack are to be accounted for by localized spasm and subsequent relaxation of the meningeal or cerebral arteries, or of both, in varying degree, the prodromal symptoms (when these occur) resulting from spasm of the cerebral arteries, while the headache is attributable to re-establishment of the circulation in, and engorgement of, the meningeal arteries.

#### *The Mode of Action of the Obvious Exciting Factors which are Responsible for the Attack.*

Evidence has been submitted which would appear to indicate that the migraine attack may be explained by a spasm of the meningeal and cerebral arteries; a number of factors have been referred to which may excite a paroxysm, and it has been suggested that these must produce their effects by acting upon a common mechanism. The question consequently arises, How are these vascular changes brought about? Although it is true that there is no proof that the cerebral arteries are regulated by a vasomotor mechanism similar to that which regulates the arterial system in other parts of the body, some of the phenomena observed during the migraine attack—the altered colour of the face, the unilateral hyperidrosis, and the contraction of the temporal artery which is often referred to—are clearly due to a disturbance of the sympathetic. Consequently it may be assumed with some degree of probability that changes in the meningeal and cerebral arteries may be brought about in a similar manner. But how are these changes actually initiated?

The suggestion that the migraine attack is directly determined by some toxic influence has long been popular. In the days when the humoral origin of disease was

generally accepted, the paroxysm was attributed to a superfluity of bile, and the vomiting which so often occurs towards the end of the attack was regarded as an attempt to rid the body of this noxious humour. Purging was consequently advised as the appropriate treatment. Of recent years migraine has been attributed to disturbance of the hepatic function and intestinal stasis; but I venture to think that there is no evidence to indicate that these conditions play an important role. There has been of late a growing tendency to attach importance to disorders of metabolism and endocrine disturbance in this connexion. The relation of migraine to the function of menstruation is here suggestive. You will recall that not infrequently migraine first makes its appearance about the time of puberty, that there is a tendency for the attacks in some cases to occur with great regularity at the menstrual periods, that the paroxysms are rarely met with during pregnancy, and that they often disappear in later life, although, in my experience, they are not infrequently aggravated during the active changes which accompany the menopause. Again, when we consider the various factors which in individual cases are obviously responsible for exciting the paroxysm, is it not a fact that some of these—physical exhaustion, mental fatigue, and emotion, for example—undoubtedly influence the endocrine secretions, while in addition some of the phenomena observed during the attack are such as might be determined by endocrine disturbance? Although I have had no personal opportunity of observing cases of migraine in the initial stages of the attack, I may remind you that a slow pulse, a low blood pressure, and yawning are referred to as occurring during the premonitory period, that Timme speaks of a low blood sugar and a lowered alkaline reserve, and that polyuria is not infrequent. Some of these observations are undoubtedly suggestive, although they require corroboration and amplification. At the same time it appears not unreasonable to suppose that the obvious exciting factors, or some of those responsible for the determination of the migraine paroxysm, may achieve this result by acting upon the endocrine glands and sympathetic nervous system.

#### Further Etiological Considerations.

But even if it be admitted that the symptoms of the migraine attack are due to vascular changes, and that these are determined in an individual who is predisposed by a variety of factors which act upon the endocrine glands and sympathetic nervous system, the localization of the process still calls for explanation. Why, for instance, should the headache be so often situated in the fore part of the head, why should it be so often unilateral, and why should it in some cases—a minority it is true—be so consistently referred to the same side of the head? In this connexion I would remind you that when several members of a family suffer from migraine the features of the attack often show a close correspondence. Had time permitted I might have cited several instances in point. These observations suggest, do they not, the presence of some factor which is responsible for the localization of the disturbance? May it be that some transmitted anatomical peculiarity constitutes the hereditary predisposing factor? But have any anatomical changes been observed which can be regarded as of etiological significance? Some twenty-five years ago it was suggested by Spitzer<sup>9</sup> that the migraine attack might be called forth by a temporary closure of the foramen of Monro, and that a relative stenosis of the foramen was the essential predisposing factor in migraine. Again, it has been argued by Auerbach<sup>10</sup> that the predisposition to migraine is to be found in a relative disparity between the size of the brain and the cranial capacity. I know, however, of no convincing anatomical evidence in support of these views. Attention has of late been directed to the pituitary gland in relation to migraine. Timme,<sup>11</sup> who has especially advocated this relationship, refers to quite a number of factors which are admitted to result in pituitary hyperactivity and which he believes produce at the same time temporary enlargement of the gland. According to Timme, an unusually small or enclosed sella is the transmitted hereditary factor. When the sella is too small to accommodate the enlarging gland he believes that the surrounding structures are pressed on

and that erosion of the bony capsula may occur. The cessation of the paroxysms in later life are, according to this view, to be accounted for by the accommodative enlargement of the sella turcica and the diminished activity of the gland. J. Herbert Fisher,<sup>4</sup> who also attributes the migraine attack to temporary enlargement of the pituitary, bases his contention upon his belief that there is only one region, and that the interpeduncular space, where a lesion could produce all the variations of the migraine scotoma. But is there any actual anatomical evidence in support of these views? Timme writes as follows in support of his contention:

"Deyl at a Paris International Congress a few years ago reported several cases of migraine in which the *post mortem* showed a unilateral pressure exerted by the enlarged hypophysis on the cavernous sinus. I myself have among my roentgenograms four that show a very marked unilateral erosion of the clinoids in patients suffering from migraine. About ten years ago Flavel confirmed Deyl's findings."

Obviously these observations, if corroborated, are of much importance. Indeed, it would appear to be not improbable that some transmitted anatomical peculiarity may constitute the essential factor which determines migraine in an individual who is predisposed by a general neuropathic heredity.

I may summarize these suggestions in the following words. Migraine is met with in individuals who are almost always predisposed by a neuropathic heredity, but in whom some additional factor or factors must be assumed to account for the frequency of direct transmission and the special features of the disorder. The symptoms of the migraine attack may be explained by assuming that there is a localized spasm of the cerebral arteries (accounting for the prodromal symptoms where these exist) or a spasm of the meningeal arteries, with, it may be, subsequent engorgement (accounting for the headache), or of both in varying degree. A variety of obvious exciting factors, both physical and mental, may bring about an attack. These must presumably act through a common mechanism in order to produce a common effect. Phenomena often observed during the attack indicate a disturbance of the sympathetic system, and although there is no proof of the regulation of the intracranial circulation by a vasomotor system, it would appear not improbable that in migraine there may be accompanying changes in the intracranial circulation, and that they may be produced in a similar manner. There is suggestive evidence which would associate migraine with disordered function of the endocrine glands, while, further, some of the most potent obvious exciting factors of the attack—physical exhaustion, mental fatigue, emotion—admittedly influence the endocrine secretions. There is some reason for believing—although it is true there is no definite proof—that a transmitted structural peculiarity may predispose to migraine and determine the special nature and localization of the symptoms.

#### Therapeutic Considerations.

The treatment of every case of migraine constitutes a distinct problem. Migraine is one of those disorders in which a thorough inquiry into the history is a necessary preliminary if the best therapeutic results are to be obtained. There are, I am satisfied, few cases which so well repay the time devoted to their investigation from the therapeutic standpoint. The first essential in treatment consists of necessity in a careful review of the patient's daily routine and the correction of any apparent exciting factors. Often the patient will mention incidents which he has found by experience will precipitate an attack, while the physician may detect exciting factors to which the patient has attached little importance or which he has obviously repressed. All such factors, whether physical, mental, or dietetic, must be eliminated so far as circumstances permit. Among general measures to which special importance is to be attached are the avoidance of bodily fatigue and brain fog. The patient of sedentary habits must take more exercise and spend more time out of doors. Again, the advisability of avoiding long intervals between meals is to be remembered, and, needless to say, the refraction should be very carefully examined by an expert in every case, and any error, however slight, corrected. The importance of psychical factors must be kept in mind,

the mental attitude of the patient studied, and anxiety, should this exist, where possible relieved. Of late peptone therapy has been attended with promising temporary results. Luminal, bromides, and the nitrites are often of much value, and I would particularly advocate the value of the first, which I usually prescribe in a dose of  $1\frac{1}{2}$  grains at bedtime. But these medicinal agents must be administered systematically over long periods if they are to be of real benefit.

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### MIGRAINE FROM THE OPHTHALMIC STANDPOINT.

FROM the standpoint of the ophthalmologist the most interesting features of migraine are the visual symptoms so frequently associated with attacks, and its relation to certain ocular defects.

One of the most characteristic features of migraine is the occurrence, generally at the onset of a paroxysm, of some kind of subjective sensory disturbance. Although many people suffer from migrainous headaches without any such prodromal symptoms, it is probable that they occur at some time or other in the majority of cases. Visual disturbances are by far the commonest of these subjective sensory phenomena. Their frequency has been variously estimated by different writers. Thus Living<sup>1</sup> found that of 60 cases of migraine 37 had scotomata; Gowers<sup>2</sup> estimated that visual symptoms occurred in 50 per cent. of cases; while Möbius<sup>3</sup> noted the occurrence of visual auræ in only 14 out of 130 cases. Jelliffe and White<sup>4</sup> state that close questioning reveals the fact that at some time in the course of the disease the majority of patients have had visual symptoms, and that many people who at first deny having had such symptoms will, when shown Airy's drawings of scintillating scotomata, recollect having seen such appearances. I think those of us who have had personal experience of the visual symptoms of migraine are likely to recognize the imperfect descriptions given by patients more easily than those who have not had this advantage. The symptoms are really not easy to describe, and complaints of "dizziness," "spots before the eyes," "blurring," or "dazzling" often prove on close questioning to refer to typical migrainous phenomena. Another thing that tends to prevent recognition of these symptoms is the widespread popular belief that anything that can be described as "spots before the eyes" means only "liverishness," and is not worth talking about.

A very clear description of the visual aura of migraine, based upon personal experience, was given in 1868 by Dr. Hubert Airy,<sup>5</sup> and illustrated by coloured drawings. In 1895 Gowers<sup>6</sup> devoted the greater part of his Bowman Lecture on subjective visual sensations to discussion of the visual spectra of migraine, using as illustrations the drawings made by Airy and other sufferers. Reproductions of some of these drawings were published in the *Transactions of the Ophthalmological Society*, and I recommend all who have not had personal experience to study these reproductions if they wish to get some idea of what many migrainous patients see. In looking at these pictures one should remember to keep the eyes directed to the point of fixation and to bear in mind that the luminosity of the bright lines should be continually changing, so producing a scintillating effect. The subjective visual sensations are very varied; but one feature is, I believe, always present

—a loss of sight in part of the field of greater or less extent. Very commonly there are also subjective sensations of light (migrainous spectra).

The scotoma may be positive or negative, may develop suddenly in its full extent, or may start at a small spot and gradually spread. The spectra, as Gowers pointed out, present as their most important feature a zigzag or angled character, well known in its common curved form as the fortification spectrum. The angled spectrum is associated with a scotoma, generally bounded by the luminous zigzag or definitely related to it. Thus, in the common form of expanding spectrum the part of the field over which the spectrum has passed remains blind for a short time, so that there is a curved (expanding) scotoma bounded peripherally by the bright zigzag line. This relation of the scotoma to the spectrum is, however, by no means constant. In some cases the scotoma develops before the occurrence of subjective sensations of light. In such cases the spectrum may take the form of a stationary or moving angled sphere appearing in the scotomatous part of the field. In most cases the scotoma is limited to one half-field, left or right, and complete homonymous hemianopia is not rare; but such limitation to the fields on one side of the vertical line is by no means invariable. Sometimes a scotoma, with or without associated spectrum, extends across the middle line of the field. Loss of the upper or lower half of the field in both eyes may occur. Rarely, there is a central scotoma, and cases are recorded of transient total loss of vision; but as a rule the fixation point is not involved. The scotomata are nearly always binocular, homonymous, and identical in extent in the two eyes. In a very few cases the scotoma is monocular. For a long time I was doubtful of the occurrence of monocular scotomata. Patients often say that the defect is in one eye, because a defect in one half of the field of both eyes is thought to be due to a fault in the eye on the side of the defect; but a few reliable observers have stated that one eye only may be affected. A well known neurologist has assured me that he has had a monocular scotoma.

The scotomata of migraine usually last but a short time, seldom more than half an hour, though cases of persistent homonymous hemianopia have been recorded by Thomas,<sup>7</sup> Gowers,<sup>8</sup> Ormond,<sup>9</sup> Gordon Holmes,<sup>10</sup> and others.

Visual disturbances are sometimes accompanied by other prodromal symptoms—for example, paræsthesia and aphasia. Usually the type of prodromal symptom is constant in any one individual, but sometimes different symptoms occur in different attacks, and there may be a tendency in the course of years to a gradual change in the type of aura. I know a member of our profession who has suffered at different periods of his life from an extraordinary variety of symptoms, affecting at one time or another nearly all the special senses. When I last heard him speak of his symptoms he described a highly elaborated visual hallucination, which was then the constant precursor of his attacks. With reference to the association of aphasia with visual disturbances, Gowers<sup>11</sup> and others have noted that when aphasia accompanies scotomata the latter are right-sided. One would expect the reverse to be true in left-handed persons, but I know of no observations to this effect.

A discussion of migraine from the ophthalmic point of view would be incomplete without some reference to ophthalmoplegic migraine. Cases of recurrent ocular palsy following attacks of headache of migrainous character were described by Gübler<sup>12</sup> in 1860 and by Saundby<sup>13</sup> in 1882. The first detailed study of the condition is contained in a paper by Möbius<sup>14</sup> published in 1884. The name "ophthalmoplegic migraine" was first suggested by Charcot.<sup>15</sup> In these cases the headache is usually very severe, and lasts longer than in ordinary migraine, generally for several days. As the headache passes off an ocular palsy develops, becoming complete in a few hours. In the majority of cases the third nerve is affected; in a few cases the fourth or sixth nerve is involved. The paralysis persists for a variable period, from a few days to several months, and passes off gradually. Attacks occur at long intervals. With recurrent attacks there is a tendency for the paresis to pass off more slowly and for recovery to be incomplete. Many patients have suffered from ordinary



migraine for years before the first ophthalmoplegic attack, and many suffer from simple migraine in the intervals between the paralytic attacks. In some cases there is a family history of migraine.

The explanation of the ophthalmic symptoms presents a baffling problem. It seems impossible to avoid the conclusion that different parts of the visual apparatus are affected in different individuals. The homonymous and identical bilateral scotoma, with or without spectrum, indicates, of course, a change occurring above the chiasma in the visual tract or centres of one side. The common form of scotoma, starting as a small defect close to the point of fixation and slowly extending towards the periphery, with its advancing margin marked by a bright zig-zag scintillating line, suggests a change occurring in the visual cortex, starting at a spot and gradually spreading: a change presenting two phases—a nervous discharge giving rise to sensation of light, followed by a temporary paralysis causing the scotoma. But it is important to note that this sequence of positive and negative phases is by no means constant, and probably one must not lay too much stress upon it. It is, of course, conceivable that the changes arise lower in the visual paths. It has been suggested that they originate in the basal ganglia, and recent work showing the representation of the fields of vision in the external geniculate bodies makes such a localization reasonable. The by no means rare extension of a scotoma without a break from one lateral half of the field into the other complicates the problem of localization, but still leaves the visual cortex the most probable site of origin. The association of visual disturbances with aphasia or other symptoms suggests some widespread intracranial disturbance in one hemisphere; but to account for a monocular scotoma one must assume that the disturbance arises in the eye itself or in the optic nerve of the affected side. A remarkable case was described by Khen<sup>16</sup> in 1917. A woman, aged 51, had suffered for many years from ordinary migraine with scintillating scotoma, but in occasional attacks the visual aura took the form of a network with hexagonal meshes appearing before one eye. Khen attributed this symptom to entoptic vision of the hexagonal pigment epithelium of the retina. He suggested that the retina might be stimulated by changes in the epithelial cells brought about by impulses conveyed by the centrifugal fibres, whose presence in the human optic nerve was asserted by von Monakow.

The fundi have been examined in many cases during the time that scotomata were present. Some have noted pallor of the disc, others dilatation and pulsation of the retinal arteries, but it is generally agreed that as a rule no abnormal condition is found. Higgins,<sup>17</sup> however, examined a patient on several occasions during temporary attacks of monocular blindness associated with migraine, and found the retinal arteries reduced to mere threads, whilst the veins were distended. Watching the fundus, he could tell when vision was returning by noticing the enlargement of the arteries.

The character of the ocular palsies occurring in the ophthalmoplegic form of migraine indicates affection either of the oculomotor nuclei or of the nerves themselves. Some writers consider that these cases are not really migraine. It is well known that recurrent ocular palsies associated with headache and vomiting may occur over long periods in some cases of definite organic intracranial disease. *Post-mortem* examinations have been made in a few cases of recurrent ocular palsy with migraine-like headache and no other symptoms of nervous disease. In these cases lesions have been found involving the third nerve: meningitis with plastic exudation about the third nerve<sup>18</sup>; fibro-chondroma of the third nerve<sup>19</sup>; tuberculous enlargement of the third nerve at the point where it issued from the crus<sup>20</sup>; a fibroma the size of a split pea in the course of the third nerve.<sup>21</sup> Knapp<sup>22</sup> concludes that the recurrent palsy is due to some vascular change, inflammatory or oedematous, in a focal lesion involving the root of the third nerve. Although the scanty pathological evidence indicates that organic disease may be present in some cases of so-called ophthalmoplegic migraine, the clinical features and histories of many cases are such that one feels bound to regard them as examples of a specially severe form of migraine.

I do not propose to discuss at length the various theories of migraine, preferring to leave that to our neurological colleagues. My own feeling is that the immediate cause of a paroxysm is most probably a vasomotor change. The question of the relation of migraine to other vasomotor neuroses is one of considerable interest, and one which I hope will be discussed by later speakers. I have myself noted an interesting relation between urticaria and migraine in a patient whom I have had under observation for more than twenty-five years. In early life this patient suffered from severe attacks of migraine, starting with scotomata and aphasia. About the age of 25 the attacks of migraine ceased and she became subject to attacks of severe urticaria. The urticaria continued troublesome for some fifteen years, and during that time she was free, or almost free, from migraine. About the age of 40 the urticaria became less troublesome, and finally ceased, but with the cessation of the urticaria she again became subject to attacks of migraine, although less severe and much less frequent than in early life.

Whatever may be the essential underlying cause of migraine, there can be no doubt that it is very often inherited. Farquhar Buzzard,<sup>23</sup> in a recent Lettsomian Lecture, speaking of epilepsy, said that he accepted the view that that disease was a manifestation of instability on the part of some important nervous mechanism closely related to, if not identical with, the vasomotor system. Epileptic attacks he regarded as only the outward and visible signs of some permanent underlying nervous state, which was inherent in a certain proportion of the population. It appears to me that a similar hypothesis best explains the problems of migraine; that in the migrainous patient, too, there is an inherent permanent underlying state of instability of some important nervous mechanism closely related to, if not identical with, the vasomotor system. Given the inherent state, the development of the symptoms of migraine may be due to a great variety of accessory causes—for example, toxæmia, eye-strain, protein sensitization, psychological repressions, etc. Many writers seek to establish one of these accessory causes as the essential factor in the etiology of migraine. So one will claim to cure all cases by a system of dieting, another by correcting errors of refraction, another by psychotherapy, and so on. All such claims to universal efficacy of one line of treatment I believe to be mistaken, but possibly all of them may be effective in some cases by removing accessory causes of the disorder. The conception of migraine as due primarily to some innate peculiarity in the constitution of the nervous system, but liable to be excited or aggravated by accessory causes of various kinds, is no new thing. It was supported by Living in his classical work on the subject, and it still seems the most useful theory on which to base our treatment.

As ophthalmic practitioners we are, of course, especially interested in the question of the part played by errors of refraction and heterophoria in causing migraine. Very different views are held on this question. It may be said that ophthalmologists are not in a position to give unbiased opinions thereon; but even among physicians I find that opinions differ considerably. Thus, quite recently, two distinguished physicians have expressed almost diametrically opposite opinions. On the one hand, Dr. James Collier<sup>24</sup> writes that very undue prominence has been given to the importance of errors of refraction, that the majority of the subjects of migraine have no errors of refraction; and that the correction of such errors has never cured migraine. On the other hand, Dr. Hurst<sup>25</sup> states that his experience points to an ocular origin as being of importance in the great majority of cases, if not in all. He considers that few modern writers give the ocular factor the prominence which he is convinced it ought to have. He states, further, that the most important treatment is the correction of the eye-strain, that personally he has never seen a case in which eye-strain was not present, and only two in which its correction did not either cure the patient or lead to considerable improvement. It appears to me that this question requires joint investigation by physicians, ophthalmologists, and statisticians.

It is impossible for an ophthalmic surgeon to be sure that the migraine cases he sees represent a fair sample

of the migrainous population. Ocular defects are, however, so generally recognized as causes of headache that it is probable that the majority of patients suffering from persistent headaches do sooner or later get their eyes examined. I think all my ophthalmic colleagues will agree with me that errors of refraction are found in a large proportion of the sufferers from migraine whom we see. The errors are usually slight, the commonest being low degrees of hypermetropic astigmatism, often with oblique axes, or against the rule. Slight degrees of heterophoria are also common.

It is not easy to ascertain what relief, if any, patients obtain from correction of their errors. Even though we ask them to report, only a very small proportion do so. But we do know that many patients derive much benefit and that some obtain complete relief. If I find a definite error of refraction I feel I can confidently promise that some relief, possibly very great relief, will be obtained by wearing glasses. Very careful estimation of the errors and accurate fitting of glasses are, of course, essential. It is perhaps not altogether unnecessary to stress these points, for patients are apt to object to the cost. But inaccurate and ill fitting glasses are as likely as not to aggravate the disorder and discredit ophthalmic treatment. If glasses are to be given a fair chance they must be worn constantly.

If we accept the view that many factors may play a part in the etiology of migraine, it follows that very exhaustive examination of the patients is advisable. The physician and neurologist should work in close association, not only with the ophthalmic surgeon, but with the rhinologist, dental surgeon, pathologist, biochemist, psychologist, and other specialists. I venture to suggest that only by well organized team work is it possible to discover the many abnormalities of structure or function which may be in some degree responsible for the symptoms of migraine; and further, that such team work is desirable in order to correct any tendency for specialists unduly to stress the importance of defects found in the organs in which they are most interested.

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- <sup>19</sup> Richter: *Ibid.*
- <sup>20</sup> Weiss: *Ibid.*
- <sup>21</sup> Karplus: *Ibid.*
- <sup>22</sup> Knapp: *Boston Med. and Surg. Journ.*, 1894, cxxxi, 308.
- <sup>23</sup> F. Buzzard: *Lectures on Migraine*, *British Medical Journal*, 1926, i, 426.
- <sup>24</sup> J. Collier: Article on Migraine, *Price's Textbook of the Practice of Medicine*, 1922, p. 1440.
- <sup>25</sup> A. F. Hurst: *Savill Lecture, British Medical Journal*, 1925, ii, 60.

## GENERAL DISCUSSION.

Dr. WALTER TIMME (New York) expressed his thanks and appreciation at being invited to discuss so interesting a subject as migraine. Professor Bramwell's paper seemed to him to be of much interest, and his exposition of the pathogenesis of the type of migraine chosen by him quite new and probably true. The idea of a latent or premonitory period during which the contraction of the arteries took place, followed by their intermittent resumption of function, accompanied by the throbbing pain of the migrainous attack, seemed to be a simple and adequate explanation. Dr. Timme thought that migraine was a name which covered as many conditions possibly as "cough." Personally, he himself was subject to two kinds, distinctive in character—one superinduced by eye-strain, with an occipital throbbing pain, lasting for a few hours;

and the other produced by mental "fatigue" or moderate fasting, with a severe intratemporal pain, either unilateral or bilateral, which lasted for one or several days. He believed that there were quite a few types other than these, and he had seen them in his patients. One of these types, however—the intratemporal, either unilateral or bilateral—was the one of greater interest to him, and that which he would wish to discuss. In this migrainous attack the patient complained of pain radiating from the intratemporal region towards either or both temples, to the vertex, or to the mid-orbital region. The nature of the pain was described by the patient as a "fullness" within the skull, of throbbing or bursting or corkscrew character, as of something trying to get out, quite different from the hand-like type of pressure about the head of the neurasthenic. If the patient were examined closely it was found that the veins of the fundus of the affected side—or both if the headache was bilateral—were markedly distended. Frequently vision was disturbed, ptosis might supervene, a bitemporal and occasionally a homonymous hemianopsia occurred, and diplopia and strabismus took place. In certain rare cases a trigeminal neuralgia might arise in addition. Just before such migrainous attacks began the patient might have an inordinate sense of well-being and a lightness of the head which he soon recognized as premonitory. Frequently a craving for sweets was prodromal. The blood sugar at this time was found relatively low for the patient under observation. Soon the headache arose and the attack was on. During the attack, or just before it ended, polyuria was a frequent symptom. Patients with these attacks at very frequent intervals in their youth grew extremely fast in height—one of the speaker's patients increased 8 inches in one year. Later on in life many such attacks were synchronous with the production of a mild acromegaly. The symptom-complex in these migrainous attacks led him to suspect the pituitary body as the seat of the disturbance. Indeed, the close anatomical relations of this gland to the cavernous sinus laterally on either side with its contained cranial nerves—the third, fourth, ophthalmic division of the fifth, and sixth—as well as the superimposition of the optic chiasm and the slightly more lateral situation of the Gasserian ganglion, might well point to enlargement of the pituitary as the causal factor of the headache with its visual and optic disturbances. When they further recognized that the usual causes for these intratemporal headaches were fatigue, both mental and physical, fasting, sexual excesses, intensive carbohydrate feeding, menstruation, and that they began in that period of life when genital development reached its maturity, the implication of the pituitary became even more probable. If they examined with x rays the sella turcica of these sufferers the evidence became quite complete, for invariably the films showed erosion of the cavity, either of the anterior or the posterior clinoids—usually the latter—evidences of enlargement of the cavity itself (facets), and occasionally even a complete break through the cavity walls into the sphenoidal sinus, or into the general cranial cavity itself. Dr. Timme had a number of such examples in his possession. The enlargement of the pituitary gland which produced these erosions and the concomitant symptoms was probably due to a demand upon it for hyperactivity to compensate for various types of fatigue states in which blood sugar was relatively reduced and blood pressure lowered. They knew that the pituitary gland, as well as the thyroid and adrenals, responded by hyperactivity to similar demands. Furthermore, to complete the evidence, Deyl and Plavec, as Professor Bramwell had said, had reported *post-mortem* evidences of enlarged pituitary glands impinging upon the cavernous sinus and oculomotor nerves in two cases of long-standing and intense migraine. He believed that there existed a group or class of sufferers predestined to those headaches—a class determined by a congenitally small and enclosed sella turcica, and not necessarily by a "neurotic" make-up. Such a class might have other stigmata—such as a small cardio-vascular system, small genitals, a small glandular system generally—with exception of the lymphoid group consisting of tonsils, thymus, liver, spleen, and Peyer's patches, all of which were hypertrophied. This was a group of which, in America, they saw many examples—the status hypoplasticus—or, as

originally known, the status thymico-lymphaticus. In these cases, with their inadequacies—lack of resistance, fatigability, low pressure, and low blood sugar—he believed that a gradually increasing activity of the pituitary (also of thyroid and adrenals probably) occurred, with the production of a true hyperplasia. This gradually, through pressure, caused an enlargement of the sella turcica, with erosions and faceting. But this hyperplasia was of the nature of a compensatory process, overcoming in a measure the inadequacies of the individual—that is, the blood sugar increased, the blood pressure improved, and the fatigability vanished. During this process, before the sella was sufficiently enlarged, migrainous attacks were frequent, owing to the many causes enumerated, each of which produced a rapid demand for pituitary activity. In the course of time—decades usually—the sella became sufficiently enlarged to permit of exacerbations of pituitary activity without undue pressure, and hence the spontaneous cure of these migraine attacks.

As regards the relation of pituitary migraine to epilepsy, which had been touched upon by Professor Bramwell, in Dr. Timme's experience there were two types of epilepsy—one due to pituitary inadequacy, accompanying Frölich's adiposo-genital dystrophy, in which the infundibulum was subjected to such pressure as to prevent sufficient circulation of the pituitary secretion; and the other, the low blood sugar type, due to moderate fasting. This blood sugar was lowest, as would be expected, after the long interval without food ingestion between the evening meal and breakfast, and hence the epileptic attack came on in the early morning just upon arising. Both these forms of epilepsy were associated with pituitary inadequacy in many patients, who for similar reasons—associated with small sellae turcicae—also had pituitary migraine. The hereditary factor was the small enclosed sella. (A simple anatomical unit-character in hereditary transmission probably.) It was interesting to note in this connexion that if such patients, before arising in the morning, took some easily digested food, carbohydrate preferably, and waited a little before getting up, no attack would occur. The most easily diffusible carbohydrate was probably alcohol, and, paradoxical as it might seem, a small quantity of whisky, perhaps half an ounce, given daily to these patients before arising, was quite effective in preventing the attack. This was just another example of the folly of treating alike all cases called by the same name, for alcohol in other types of "epilepsy" was apparently bad. Dr. Timme hoped that he had conveyed his idea that there was a pituitary type of migraine, that it was not necessarily a disease process, but a compensatory one tending to final cure of the individual in the gradual enlargement of the sella turcica, and that the headache was merely its hall-mark.

Dr. GORDON HOLMES (London) knew of no subject more suitable for discussion by members of all branches of the profession than migraine, for not only was it one of the most common of the minor maladies, but it was, in his experience, frequently not recognized, owing to the fact that the existence of visual phenomena was generally regarded as a necessary and essential feature. As Professor Bramwell had pointed out, this was by no means so—not more than 50 per cent. of cases ever had teichopsia, and among those who had it the symptom did not accompany every attack. It was frequently said that though visual phenomena occurred in the earlier attacks, they ceased in the third or fourth decade of life. Dr. Holmes had no doubt that migraine was a clinical entity—that is, it had a constant and uniform pathological basis. It was true, as Professor Bramwell had said, that they met with symptomatic migraine in renal disease and other conditions, but these attacks must be separated from true migraine. He agreed with Dr. Timme that a swelling of the pituitary might produce headache and some of the other symptoms he had described so vividly, though it was to him unintelligible how a hyperplasia—that is, an increase in the number of the functional elements of the pituitary gland—could cause symptoms which developed so rapidly and usually passed off in the course of four or five hours.

To treat this common malady rationally it was necessary to have some idea of its pathology, but unfortunately, though theories abounded, facts were few. Professor Bramwell had revived the vasomotor theory; to him (Dr. Holmes) there seemed little evidence in favour of it. Vascular spasm might be due to either some substance circulating in the blood, as an endocrine hormone, or a toxin, or to change in the sympathetic innervation of the arteries. In migraine a local change in the brain must be assumed to explain the visual and other symptoms, and this could scarcely be directly due to a substance circulating in the blood. The acceptance of a sympathetic origin was quite as difficult, for not only had an innervation of the cerebral blood vessels never been demonstrated, but Florey's recent investigations by van Krogh's method of direct observation of the cerebral vessels under a microscope had shown that they could not be influenced by stimulation, section, or other effect of the sympathetic, nor by drugs or extracts that act on the sympathetic system. Consequently not only was there no evidence for this theory, but its possibility seemed definitely disproved.

It had seemed to him that the symptoms of migraine could be more easily explained by the assumption of a local swelling of the brain due to a local and temporary alteration in the osmotic relations of its substance with that of the fluid in which it was bathed, resulting in an imbibition of fluid and consequently a local swelling. That such swellings of the brain did occur they knew from the work of Reicherth and others. If it affected the occipital lobe they obtained the positive and negative visual symptoms of migraine, the teichopsia and scotomata, and the swollen brain pressing on the membranes would cause the headache, for the pain must be referred to a disturbance of the meningeal nerves. Two arguments favoured this hypothesis: in the first place, Dr. Holmes had seen several persons who had been subject to migraine, which ceased after an operative or traumatic opening of the skull; and in the second, the peptone treatment, to the success of which Professor Bramwell had referred, might act by inducing changes in the reactions of the proteins.

One form of migraine deserved further notice. Professor Bramwell had referred to migraine-like symptoms occurring in renal and other affections; a recurrence of true migraine might be due to the same and other causes. He had seen many patients who had suffered with migraine in youth and, as so often happens, became free from attacks in middle life, who again became subject to more or less typical attacks during the course of chronic nephritis, arterio-sclerosis, or on exposure to certain poisons, especially alcohol. In some of these cases the recurring attacks reproduced those of earlier life; in others there might be headache and vomiting only, or these associated with various symptoms of cerebral origin. The practical importance of this group of cases was that treatment of the intercurrent affection generally relieved the migrainous attacks.

The treatment of migraine must still remain empirical and mainly symptomatic owing to ignorance of its pathology. Luminal, bromides, and nitrites were helpful in many cases, and it was only by experiment that they could determine which suited any individual patient. They must also search for exciting causes and remove them, whether they were eye-strain, articles of diet, drugs, or psychological factors. Some patients undoubtedly obtained some relief from correction of errors of refraction and imbalance, but in the speaker's experience the value of these measures, even when undertaken with the most scrupulous care, had been grossly exaggerated. Change of occupation and environment had rarely any permanent effect.

Dr. R. G. GORNON (Bath) said that it seemed generally agreed that migraine was a complex subject, and no one could suggest that any one cause was responsible, any more than that any one method of treatment was likely to be successful in every case. Quite apart from the immediate precipitating cause of the attack there did seem to be some inherent defect in these patients which rendered them sensitive to these various influences which had been discussed. It frequently happened that children who suffered from cyclic vomiting developed migraine in later life. So

far as the latter condition was concerned, Dr. Gordon suggested that there was a condition which corresponded to that of ordinary epilepsy, but chiefly affected the occipital lobe rather than the motor area. In the first place, it was generally recognized that the mental attitude of so-called idiopathic epileptics was often, if not always, a peculiar one. There was an egocentricity and narrowness of outlook, combined with a certain truculence, which on further investigation proved to be a compensation for a definite feeling of inferiority. Now in many migrainous patients—the speaker's limited experience would not allow him to say more—there was a similar mental attitude towards life. Further, it was by no means unusual to find symptoms common to both conditions, and Dr. Gordon quoted one case illustrating this contention:

An epileptic gave a history of fits dating from the age of 6, when he was stated to have sustained a severe injury of the right temple. At times the ordinary attacks of grand mal and petit mal were replaced by what were called visual equivalents. In these attacks there appeared before his eyes lights, or sometimes figures which started in the centre of the field of vision and passed over to the right margin of the field. While these were going on he had a right homonymous hemianopsia, which passed off with the end of the attack.

Here apparently there was suppression of the proper highest function of the visual cortex at the left occipital pole with substitution or liberation of lower and less co-ordinated function. This corresponded exactly with what happened in lesions of the motor cortex which caused fits. The explanation of these attacks was, of course, uncertain, but there seemed to be evidence of inherent or acquired injury (by contrecoup) to the superficial cells of the left occipital lobe, so that under certain conditions their function was entirely abrogated, and the activity of deeper and lower grade cells was liberated. In this connexion a result of less severe occipital lesions could not escape notice—that is, the frequency with which typical migrainous attacks were initiated by such an injury. These were characterized by a visual aura followed by headache, and the analogy with the visual epileptic equivalents described above was at least permissible. He would suggest that in these traumatic cases of migraine the condition depended, at least partially, on an interference with the highest grade superficial cells whose function was to control the activity of the lower; further, that a liability to migraine depended on an instability of these highest grade occipital cells, just as an epileptic fit depended on an instability of the highest grade cells of the motor cortex. A further analogy to epilepsy was supplied by the rare occurrence of automatisms following migraine, analogous to the automatisms of epilepsy. A case of typical migraine sometimes showed asocial behaviour with irritability and violence after the attack. This condition passed off and the patient was quite unaware of what he had done. It was not suggested that migraine was epilepsy, but that in certain cases both were manifestations of the same underlying nervous instability which might be due to a variety of causes.

Dr. E. I. Spriggs (Ruthin Castle) said that when he was a student there were many physicians sceptical about the benefits of treatment generally. Although never one of them, he said that there were certain groups of cases whose treatment he undertook formerly without much expectation of benefit, which he now knew could often be relieved. Among these were the sufferers from headache. So many headaches were regarded as chronic, recurrent, familial, or due to the nervous make-up of the subject, that they seemed to be evils to be borne with such alleviation as a few simple medicines could afford, rather than a field for active inquiry and treatment.

To the general physician, as distinguished from the neurologist, there was some danger of headache being an unclassified symptom. Indeed, it was hard to make a classification which was at the same time concise and adequate. Certain clinical types stood out, but many headaches did not conform to a clinical type. This was not the occasion to discuss the classification, but it might be of interest to refer to the proportion of migraine to other headaches in the work of a general physician. Of 1,219 patients at Ruthin Castle in the years 1923 to 1926,

89 (7.3 per cent.) complained of headache as a major symptom on admission. Of these, 4 per cent. (57)—that is about two-thirds—complained of headache as the chief symptom for which relief was sought. Going back a little further than three years Dr. Spriggs had added 11 earlier cases, so as to get 100 consecutive patients complaining of that symptom: 65 were women, of an average age of 44; 35 were men, of an average age of 50. In comparing these with other published cases it should be borne in mind that all were severe. He had compiled a classification, which it would be recognized was founded on the writings of Auerbach, Wilfred Harris, Gordon Holmes, and Pavy-Smith, as a basis on which to found an analysis. Each of the 100 cases was investigated with some care, and after the investigation was made the patients were distributed under the various kinds of headache, as shown in the accompanying table.

#### Causes of Headache.

<b>I. CRANIAL.</b>	
Sinuses ... ..	4
<b>II. EXTRACRANIAL. Referred pain from—</b>	
Teeth ... ..	2
Lungs (asthma) ... ..	1
Stomach and duodenal ulcer ... ..	3
Gastric or intestinal adhesions ... ..	1
Appendicitis ... ..	3
Gall bladder ... ..	5
<b>III. INTRACRANIAL.</b>	
<i>Dural.</i>	
High blood pressure—heart disease (including some cases of renal disease) ... ..	20
Vasomotor—	
Migraine ... ..	12
Cough ... ..	1
Hyperthyroid ... ..	1
Hypothyroid ... ..	1
Hyperadrenia ... ..	1
Toxaemia—	
Constipation ... ..	23
Diverticulitis ... ..	4
Colitis ... ..	2
Uræmia ... ..	2
Diabetes ... ..	1
Tubercle ... ..	1
Alcohol ... ..	1
General paralysis of the insane and cerebral syphilis ... ..	3
Pituitary tumour ... ..	1
Petrosal phlebeith ... ..	1
Low blood pressure (including 1 lumbar puncture) ... ..	2
<i>Cortical.</i>	
Cerebellar or basal ganglia ... ..	1
Nervous exhaustion ... ..	2
Mental ... ..	1

It would be seen that 12 cases were classified as migraine—namely, a periodic headache, usually with some kind of aura, going on to vomiting, beginning in childhood or youth, and often hereditary. A difficulty, however, arose. For in this series there were 24 other cases in which the headaches were in all respects typical of migraine, except that they dated back a few years only, were associated with a definite morbid state—gall stones, appendicitis, severe constipation, some definite anxiety or responsibility—and were frequently lessened or abolished on the removal of the associated lesion or strain. There were, therefore, 36 cases out of the 100 in which the headaches were migrainous in type. Were they justified in saying that because in 12 patients the attacks began in childhood, and in some of them were hereditary, these were true cases of migraine, and the others, arising from various causes in later life, were symptomatic migraine? The speaker's experience suggested that the more thoroughly the case was inquired into the less clear this distinction became.

It was admitted that true idiopathic migraine was excited by a variety of adverse influences—strain, overfatigue, want of food, alcohol, bad air, eye-strain, and menstruation. The onset of migraine in adolescence, for example, was ascribed to the strain of entering on the serious business of life. But a greater strain might come later in the conduct of that business, and might give rise to migraine then. He suggested that there was no boundary, from a classification point of view, between the poison or irritation from bad air and eye-strain, and similar effects from constipation or a diseased appendix.

Further, in some of the cases dating back to childhood, a definite physical lesion was present, the treatment of

which relieved or cured the headache. If too much stress was laid upon the distinction between idiopathic and, symptomatic migraine there was a danger lest the idiopathic cases be regarded as definitely diagnosed, and that further steps be not taken. It was a mistake to regard any case as one for prophylaxis and alleviation only until a thorough physical investigation had been made; two cases were described in illustration of this.

Each of these patients gave a typical history of idiopathic migraine. In each a morbid state was present, the relief of which cured the headaches. A number of cases could be quoted in which the systematic treatment of intestinal stasis, leading to regular natural actions, relieved or cured the migraine. The use of irritative aperients was not adequate treatment for constipation. Purgation might relieve a headache, but would do nothing to prevent its recurrence. It might be mentioned here that in two instances a patient had a severe migraine during an x-ray examination with a barium meal, and in each the peristalsis of the stomach was arrested, little or no food passing out. In the last of the above-described cases there was still barium in the stomach twelve hours after the meal. On re-examination the stomach emptied in four hours.

Prophylaxis, by a close review of the daily habits of life and correction of special stresses, was the first line of treatment. Special diets were not of advantage unless directed to a definite morbid state, such as in the alimentary or renal system. In two-thirds of these cases the headaches ceased, and others were greatly benefited. In 4 cases a diagnosis was made but no treatment was given.

The proportion of good results was far higher than Dr. Spriggs would have expected ten years ago, and higher than was expected when the review of the series of cases was entered upon. It was due to (1) the discovery and treatment of a concomitant diseased or disordered state, and (2) the better environment and withdrawal from habitual strains. The factors were environment *plus* morbid state *plus* special strains. The aim was to try to remove both the latter. In many patients freedom was enjoyed if one factor only was removed.

The conclusion Dr. Spriggs drew was that no case of migraine, whether lifelong or arising in adult life, should be accepted as a necessity, to be simply palliated and endured, until after every possible source, not only of mental and psychical, but also of physical disorder, had been excluded so far as possible by a careful investigation and appropriate treatment.

Dr. W. A. Potts (Birmingham) thanked Dr. Timme for his interesting account of the type of migraine associated with functional enlargement of the pituitary gland, which he felt sure was correct. Such cases were like forms of epilepsy due to hypoglycaemia. Although Dr. Potts agreed with Dr. Timme's statement regarding the value of alcohol, he wondered why Dr. Timme had not recommended barley-sugar, which, in the speaker's experience, was the most effective remedy. With reference to Dr. Spriggs's suggestion that fear of life was a marked predisposing cause in adolescents, and later the conduct of life a more potent cause, Dr. Potts asked whether the so-called conduct of life was not, in many cases, still the fear of life. Dr. George Robertson, in his recent interesting Maudsley Lecture, had shown that in middle life the incidence of psychosis was greater in the unmarried, possibly because they were not taking up the full responsibilities of life, and had suggested that responsibility was actually preventive of mental disease. Dr. Potts inquired how many of the cases Dr. Spriggs considered due to the conduct of life were unmarried.

Dr. G. E. NESBITT (Dublin), as a personal sufferer, testified to migraine being a clinical entity. He considered heredity a doubtful etiological factor as he had met with many cases in which no such influence could be traced. Although attacks occurred under all conditions, suggestion might play a part—for example, he had known the elicitation of symptoms from a patient suffering from migraine followed by an attack in the investigator. By a determined effort of concentration it was often possible to maintain central vision during an actual attack in

spite of the absence of peripheral vision. The two theories concerning etiology which most appealed to him were those of (1) vasomotor disturbance, although the cause of such a disturbance had yet to be found, and (2) pituitary enlargement. Why the pituitary alone should swell, however, and not the other endocrine glands, needed explanation.

Mr. E. W. BREWERTON (London) mentioned a case of severe migraine with a visual aura in which great relief had been afforded by complete rest, with the application of heat (an india-rubber hot-water bottle) to the occipital region until normal vision returned; then cold applications until the headache was relieved.

Dr. C. WORSTER-DROUGHT (London) suggested that there was at least one form of migraine or migrainous condition that was very closely allied to epilepsy, if not an actual equivalent of an epileptic attack. Contrary to Professor Bramwell's experience, he had met with several examples of migraine and epilepsy in combination in the same patient; the epileptic attacks were usually of the petit mal type and often occurred early in the morning. Recently he had seen two cases in which petit mal occurring in childhood had been replaced by migraine in adolescence and later life, and he had also seen cases in which the reverse had happened. Concerning etiology, Dr. Worster-Drought could recollect no case of true migraine in which no refractive error was present. Unfortunately, however, correction of such an error was not a certain cure, though many cases were undoubtedly benefited. He recalled a few cases of migraine with severe hemianopia in which unilateral dilatation of the pupil (on the affected side) was present only during the attack. This feature suggested overactivity on the part of sympathetic fibres and lent some support to the vasomotor hypothesis.

As regards medicinal treatment, the most efficient remedy for preventing migraine, or at least diminishing the frequency and intensity of the attacks, was luminal administered in half-grain doses twice or thrice daily over long periods—almost indefinitely. Calcinum in large doses was successful in some cases, but many were unrelieved. He had seen several patients benefited considerably, however, by the intravenous injection of a solution of a calcium-urea compound (afenil) in 10 c.c.m. doses, carried out twice weekly; as the solution was most irritating to subcutaneous tissues it was necessary to inject it intravenously with the utmost care. In his hands both endocrine and peptone therapy had proved disappointing. He was very interested in Dr. Gordon Holmes's remarks on the possible value of cerebral decompression, as he had met with a case of severe migraine associated with mucous colitis. The patient, a lady now aged 40, developed migraine at the age of 23; the attacks occurred at intervals of about six weeks with prostrating intensity, and all remedial measures proved unavailing. At the age of 33 a subtemporal decompression was performed on the left side, and following this the patient remained completely free from migraine for nearly five years; two years ago, at the age of 38, they had recurred, with an average frequency of one in two months, but with less intensity than formerly.

Professor BRAMWELL, in reply, said that Dr. Timme's observations upon migraine had opened up a broad field. The question whether migraine was to be regarded as a symptom-complex or as a distinct clinical entity was indeed of much interest. As Dr. Gordon Holmes had mentioned, the vascular origin of migraine was first suggested fifty years ago and had had many advocates since that time. Higgens's observations, mentioned by Mr. McMullen, appeared to afford strong corroborative evidence in support of this view, for they indicated that some of the visual phenomena were due to vascular disturbance. The cumulative evidence in favour of the vascular view was indeed, in Professor Bramwell's opinion, very strong despite the experimental results of Florey to which Dr. Holmes had referred. Both Dr. Holmes and Dr. Nesbitt were inclined to discount the tendency to a neurasthenic heredity, but with this opinion he was unable to agree. Mr. McMullen had emphasized the necessity of examining cases of



migraine from every point of view, and Dr. Spriggs had pointed out that a subdivision into true and symptomatic migraine might be dangerous, since the need for an exhaustive examination in the former group might not be realized. With these opinions the speaker was in entire agreement. One of the most important points which had emerged from the discussion was that every case must be considered as a distinct problem from the therapeutic standpoint. Dr. Gordon had emphasized the psychological aspect of the subject, but in the speaker's opinion the relation to epilepsy was not so close as Dr. Gordon would have them believe. Dr. Potts's observations on the effects of the ingestion of sugar were of interest in relation to Dr. Timme's views. In conclusion, Professor Bramwell said that he could lay no claim to originality for the views he had expressed, except perhaps that he had attempted to correlate the etiological data and advance an explanation which he had not heard previously suggested to account for the headache.

## SECTION OF ANAESTHETICS.

SAMUEL JOHNSTON, M.D., President.

### DISCUSSION ON THE FUTURE OF ANAESTHESIA.

#### OPENING PAPERS.

#### I.—SAMUEL JOHNSTON, M.A., M.D., C.M., F.A.C.P.,

Lecturer in Anaesthesia, University of Toronto; Chief of Anaesthetic Department, Toronto General Hospital.

IN this workaday world we cannot rest content with the achievements of the past or the progress of the present. Although anaesthesia has passed the venerable age of three-score years and ten I cannot challenge your attention more dramatically to its age-old value than to ask the question, What would happen to-morrow if anaesthesia were blotted from the world to-day? The whole structure of modern surgery, a great part of medical practice, and most laboratory research would go crashing into the abyss of oblivion. Can you conceive of life going on without succor from pain in face of the fact that, day by day, as many casualties of peace drift into our hospitals as were evacuated from the trenches in the war?

Commonplace as anaesthesia has become to us, it remains so vital a concern to the public that in the United States the only members of the medical and dental professions in the Congressional and New York University Halls of Fame are Crawford W. Long and William T. Morton—those imperishable figures of the first use and public demonstration of etherization for painless surgery. Nor should we forget that had it not been for other immortals of anaesthesia its beneficence might have been lost to us; even after its discovery and demonstration. At a time when the utility of anaesthesia in surgery hung in the balance of space John Snow went into the laboratory and gave the specialty a scientific interpretation and developed satisfactory methods for clinical use. In so doing he became the founder of that illustrious line of research workers and anaesthetists who have graced the specialty since his day.

Had Sir James Young Simpson lacked the courage to defeat the entrenched religionists, or had Her Majesty Queen Victoria failed him in personally approving chloroform *à la reine*, our women of to-day, under the curse of Eve, might still be bringing forth their children in pain and sorrow.

What of dental anaesthesia, had Wells, Morton, Colton, and Evans been timid and inventing souls instead of the intrepid pioneers they were? We still believe that painless surgery was welcomed with open arms by many, despite the fact that when Hickman memorialized the French Academy, Velpeau and his associates denounced the claims of anaesthesia as a chimera, and only Larrey, of later Napoleonic fame, believed in him. Even in the sixties General Grant had to override the bitterest opposition of his own army medical service in giving Morton a special field ambulance, and permission to anaesthetize the

wounded rebels and Yankees in the later campaigns of the Civil War; thus 10,000 were spared the conscious agony of sitting in at their own operations.

Assembled as we are to-day, we think of anaesthesia as having permeated the known world, and yet among nations of hundreds of millions of souls, painless surgery is as primitive now as it was among the Scythians and Incas and in China in the days of Ho-sho! When we consider the future of anaesthesia, what of these numberless hordes? In our own midst how many countless things are done in our hospitals, clinics, offices, and the homes of our patients, with never a thought of pain relief? This is one of the remaining cruelties of medical practice, and must pass before we are really entitled to the affection and esteem of the public, who look to us to deliver them from unnecessary suffering.

#### ORGANIZATION.

Organization has been the slogan of progress in all ages, and anaesthesia has had its full quota. The famous old London society, now the Section of Anaesthetics of the Royal Society of Medicine, this Section of Anaesthetics of the British Medical Association, and the Scottish Society of Anaesthetists, all have their counterparts in the Associated Anaesthetists of the United States and Canada and its five regional societies—the Canadian, Eastern, Mid-Western, Southern, and Pacific Coast.

Whether further regional organization would advance the progress of anaesthesia in the British Isles and the status of British anaesthetists is something for your discreet consideration. But this recognition of anaesthesia by the British Medical Association leads us to hope for the development of sections or societies in the colonies, especially Australia, New Zealand, and South Africa, where interest in this connexion is already rife.

In our experience in the United States and Canada regional organization has been found very influential. Our Congresses of Anaesthetists are usually held at the same time and place as the annual meetings of the American Medical Association; the Canadian Anaesthetists meet with the Canadian Medical or some Provincial Association; the Eastern and Mid-Western Anaesthetists usually hold joint sessions during the week of the Clinical Congress of Surgeons; the Southern Anaesthetists meet with the Southern Medical Association, and the California Medical Association usually acts as host to the meetings of the Pacific Coast Anaesthetists. In this way the message of anaesthesia is brought home to members of the most important medical and surgical organizations in at least five metropolitan centres every year. Also the conjunction of such organizations in their meetings provides papers of unusual excellence for the programmes and speakers of very high calibre. In covering so vast a territory, anaesthesia is developed very broadly, and anaesthetists, no matter where located, have every opportunity to attend and profit by the progress that is being reported. In addition, they are given the opportunity to contribute the results of their own work.

The most recent advance in organization is represented by the Anaesthesia Research Society, originally only national, but now international in scope. This society would seem to have an interesting future. So far, during its brief existence, it has organized a Research Committee of the more important scientific and clinical investigators in the specialty; it has established its own journal (*Current Researches in Anaesthesia and Analgesia*); it has issued special monographs, and anticipates reviving an Anaesthetic Year-Book, while at the same time it is finding funds for fostering research. Beginning with 1926, this society is sending its *Journal* to every American and Canadian medical and dental school and society, as well as teaching hospital libraries, with the purpose of making the progress of anaesthesia available in as many places of reference as possible, especially for the generation of anaesthetists which will follow our own. Its Record Committee has developed a uniform anaesthesia chart, and is working on a student's chart for teaching purposes.

The activities of the Research Society have so intrigued pure science that its most noted devotees in the larger universities and laboratories find pleasure in attending the various meetings and presenting their latest investigations

and results. This has enabled the society to provide very remarkable sessions of research papers, and has opened many laboratories for experimental demonstrations. This correlation of interests has brought the achievements of science into the operating room and has sent the clinical problems of anaesthesia back to the laboratory for solution. When time and place have permitted, the programmes of several of the Congresses of Anaesthetists have been equally divided between the usual sessions of papers and lecture demonstrations in laboratories of members of the Research Committee. These latter enable those in attendance to come up to date on the experimental advances in their specialty.

In fostering the fellowship of clinical anaesthesia with pure science, officers of the Associated Anaesthetists and Governors of the Research Society are accustomed to attend the holiday recess meetings of the Federated Societies of Experimental Biology, and it may be said, with pardonable pride, that anaesthesia is often the only specialty participating in these invaluable sessions. As an illustration, following this meeting in Nottingham many of those who are on the Clinic Tour Abroad will go on to Stockholm in pleasurable anticipation of extending co-operative relations with the leaders of the International Congress of Physiologists.

#### TEACHING ANAESTHESIA.

The fact that an older generation of anaesthetists may have lacked something of the laboratory development of present-day medicine does not prevent us from realizing that progress in anaesthesia has always rested on a foundation of clinical practice and experimental science, and in visioning the future we cannot but feel convinced that the coming generation of anaesthetists must have the resources of applied physics, mechanics, chemistry, biochemistry, pharmacology, and pathology as part of the basis of their future careers. Coupled with these, there must also be a well rounded out medical education in the essentials of general practice and of the specialty, and most particularly in the technical and clinical phases of anaesthesia. Such requirements are none too drastic. In fact, a correlation of basic subjects in terms of essential knowledge, in relation to future utility, is merely a common-sense preparation of the medical student for clinical practice. When possible, it is always preferable to develop information and technique on experimental animals than on human beings—always remembering, however, that the practice of medicine is a humane art, and not a cold-blooded laboratory experiment.

For the future it is hoped and expected that all these intimate alliances with the basic and experimental sciences already mentioned will result in the preparation and publication of a loose-leaf textbook on anaesthesia—not for the student, but for the teacher—a textbook that will in résumé exhaust the essential knowledge of the basic and applied sciences in relation to experimental and clinical anaesthesia, and which, from time to time, will be revised to include current and valuable progress. With the consummation of such an arrangement as this anaesthesia could be very readily fitted into the present curriculum, and could be taught intelligently from the viewpoint of applied science in relation to the solution of clinical problems.

#### IDEAL OF SERVICE.

Back of this idea in teaching is an ideal of service. Medical education and organized anaesthesia cannot accomplish their larger purposes merely in securing a steady flow of housemen, proficient enough to satisfy the demands of hospital anaesthesia service and ambitious enough to provide a limited source of recruits for maintaining and extending the ranks of the specialty. If the medical profession is ever to accomplish the broader possibilities of anaesthesia in relation to public service every physician must be qualified to give safely, pleasantly, and efficiently such anaesthesia as may be required in painless childbirth or minor surgery, whether in the home, industrial clinic, or office. Also a certain number of better trained and more competent anaesthetists are required to go into this work in the hospitals of smaller towns, where more and more of the surgery of the future is going to be done. As such anaesthetists develop through years of practice,

they may look forward to staff positions challenging in importance those of the anaesthetists who have elected to stay on in the teaching hospitals in the larger centres and make anaesthesia a metropolitan career. It is understood that, as in the past, teaching hospitals must continue the policy of fostering the development of anaesthetists who vie in calibre with the personnel of any other department.

Details of the plans for securing these three types of anaesthetists would necessarily differ according to local conditions and circumstances. Suffice it to say that they are being secured in certain localities by the co-operation of those interested in accomplishing the ideals of service. The general practitioner anaesthetist is essential to fulfil the obligation of the profession toward the public demand for the universal relief of pain and suffering, whenever and wherever that is possible in medical practice. The clinical anaesthetist must be the internist of the surgical team, and be capable of standing shoulder to shoulder on common ground with his fellows in the College of Physicians. The teaching anaesthetist must be the liaison officer between the research laboratory of the medical school and the surgical department of the hospital. His is the alchemy of transmuting pure science into applied science and practice, for the benefit of all concerned—students, surgeons, patients, hospitals, and his own associates and work in the specialty.

Almost all hospitals of any pretension appreciate the value of expert anaesthesia, and on their staffs have specialists in this work. Opportunities have thus been afforded for the development of the art to a very high degree. The result is that the mortality under anaesthesia has been reduced to a minimum, and patients entering a hospital have for their comfort and safety the services of men of large experience and scientific training in the art of anaesthesia.

In considering the future of the teaching of anaesthesia one naturally takes a survey of its past history and present advancement, and the short period of time that has elapsed since the introduction of this subject in the curriculum of our teaching hospitals is amazing. When it is realized that only within the last twenty-five years have interns in our Canadian hospitals been taught anything of the art of anaesthesia, or that students were given more than one lecture in this subject during their entire medical course, the growth in this specialty, as exemplified in the present system of anaesthesia in the Toronto General Hospital, would appear phenomenal. To-day there exists in this institution, which is affiliated with the University of Toronto, a department in anaesthesia consisting of a chief and eight assistants, all of whom are specialists in the art. This department is as distinct as that of surgery or medicine. The chief is a member of the Medical Advisory Board of the hospital, which is composed of the heads of the various departments. He is also lecturer in anaesthesia in the Faculty of Medicine of the University of Toronto.

As a result of this organization in anaesthesia the student has the advantage of a complete course in every phase of anaesthesia. It is interesting to note here that the department of anaesthesia reaps the benefit of any laboratory experiments in the University of Toronto which may lead to greater safety in the sphere of anaesthesia. During the past year the professor of therapeutics and his assistants have been experimenting with epinephrine, in connexion with blood pressure in anaesthesia, and spinal anaesthesia in particular, and it would appear that this drug has come into a new field of usefulness in raising and sustaining the blood pressure and stimulating the heart action.

But even with such progress we look forward to greater things, and feel that surely it is not too much to hope for the establishment, in the near future, of a Chair of Anaesthesia in every university where medicine is taught.

#### RECORDS AND SAFETY FIRST.

Having for a time exalted perfection of technique above all else, discounted the laboratory, and left the internist outside the hospital portals, surgery, in its fourth and physiological era, has sensed the necessity for essentials other than sublimated dexterity and intuitive infallibility.

Anaesthesia anticipated this change in attitude, and the International Anaesthesia Research Society in developing its uniform Anaesthesia Record—which is really a safety first campaign to prevent needless fatalities—stands ready to co-operate in bringing surgery from under the odium of the time-worn adage, "The operation was a success, but the patient died."

For the future, the patient's fate is not to be left to chance. Hence the Research Society's Record demands the following essentials:

1. Evaluation of surgical and anaesthetic risk before operation, to determine what pre-operative therapy, preparation, and care will add to the prospects for a safer operative ordeal and a more assured recovery.
2. Five-minute blood pressure guides and safeguards during the entire operative period, to give accurate information to indicate that the patient is still in a zone of safety, or to anticipate the onset of shock and provide remedial measures in time to be effective and life-saving.
3. Evaluation of recovery indices after operation, to determine post-operative therapy and care that will reduce morbidity to a negligible minimum.

Simply as these essentials may be stated, they can be made to include all the resources of experimental and clinical progress in medical practice as adaptable to the preparation, protection, and recovery of operated patients; and the more intensively and routinely anaesthetists and surgical teams extend the use of these safety-first essentials and chart the treacherous course 'twixt life and death, the more gloriously will they serve the interests of safer surgery, and the sooner will they secure the utter and complete confidence of suffering humanity. The "supposedly fit" will cease to pass away unexpectedly and without adequate explanation; the "gravest risks" will no longer be hurried into emergency operations without safeguarding preparation; and there will be no guesswork about what is happening to the patient during the operative period. Finally, the critical seventy-two hours of post-operative anxiety, morbidity, and too frequent mortality, will give way to the blessing of a comfortable and uneventful recovery.

At the present time the Record Committee of the International Anaesthesia Research Society is working on the development of a Teaching Anaesthetic Chart that will enable students and interns to collate in detail the entire fund of their medical knowledge in terms of diagnostic and prognostic aid. This chart will make all pertinent data of the complete history, as well as the results of further indicated examinations and tests, available for exhaustive pre-operative evaluation, operative protection, and post-operative recovery. Time and experience will then show how such charting and evaluation may be simplified and concentrated without sacrificing anything that assures safety-first surgery and anaesthesia.

#### SOURCES OF PROGRESS.

It is readily to be seen, from the records of progress in the past decade, that the specialty of anaesthesia is prepared for future development. Research workers have enthusiastically discovered and perfected newer general and local anaesthetics; manufacturers have made them available in quantity and quality, and with proper equipment for widespread use; and anaesthetists and other specialists have given them rapid and thorough clinical trial. The end is not yet. We seem to stand on the threshold of a new era, in which the very mechanism of anaesthesia itself will be explained, and after that the possibilities of progress would seem to be limitless.

Nothing would seem to be more important to the future of anaesthesia than the co-operation of all concerned in securing supplies of anaesthetics that may be depended on for absolute and undeviating purity and potency. This holds true for the older anaesthetics, such as chloroform, ether, ethyl chloride, and nitrous oxide, as well as for the newer anaesthetics—acetylene, ethylene, and propylene. Strange as it may seem, in spite of all efforts at foolproof production, packing, and storage, anaesthetics still get into the operating room that now and again are open to the suspicion of contamination with impure or deteriorating by-products. It augurs well for the ultimate solution of

this problem that a joint committee to investigate and act in these premises has been established by the British Medical Research Council and the Section of Anaesthetics of the Royal Society of Medicine. No precautions in commercial handling, hospital testing, and operating room use can be too rigid or exhaustive in obviating the occasional disasters, seemingly due to unaccountable and all but inexplicable impurities in anaesthetics.

While connexions that would in any way commercialize the specialty of anaesthesia or the practice of medicine as a whole could not be countenanced, it has remained for the University of Toronto to show the way in which a new clinical remedy (insulin), the product of intensive laboratory research, may be made available through commercial channels without prejudice and to the best interests of everyone. There would seem to be no good reason why newer anaesthetics should not be developed and made available according to the same ethical plan, and the royalties accruing from such used for further research in anaesthesia.

Perhaps without realizing the full significance of what has been done, or its possibilities, anaesthesia has established two central exchanges—one in Manchester and the other in Aron Lake, Ohio. If any of you have had occasion to get in touch with either of these exchanges, to secure information or to be connected with someone who could give it to you, you will readily appreciate my inference that such exchanges and those who man them play an important part in the future of anaesthesia. The specialty is fortunate in having the incumbents of these exchanges peculiarly qualified to carry on the editorial organization and executive duties that are involved.

Regarding the Manchester Exchange, it is splendidly manned by Dr. H. M. Cohen, assisted by Dr. S. R. Wilson, both of whom need no introduction to this Association. They are doing excellent work and receiving loyal support from their fellow anaesthetists.

The "Little Father of Anaesthesia" in the United States and Canada to-day—Dr. Frank H. McMechan, who is the "Aron Lake Exchange"—has the heart-whole affection and devotion of each and all of us who know him. To him belongs the credit of the organization of the existing societies of anaesthetists in these two countries, as well as the founding of the International Anaesthesia Research Society. "The centre of every man's existence is a dream," and anaesthesia and its advancement have been his. His inspiration has come from "a clear vision of the eternal landscape of the past," and to him we owe our meeting here to-day—an achievement truly worthy of a Prometheus!

If other such exchanges can be established to serve as well as the existing two, we should have at least one such exchange in every country in which anaesthesia is recognized and practised as a specialty.

The present Clinic Tour, in which all too few of the leaders of anaesthesia in the United States and Canada have found it possible to participate and meet their fellows in the specialty in Ireland, Scotland, and England, is a sequel to the visits of two of your representatives—Dr. H. E. G. Boyle and Dr. Z. Menzell—to our congresses. In extending and cementing the fellowship of anaesthesia in this personal way, may we not look forward to many joint meetings, as well as to the prospect that out of these associations of the present and past many more may eventuate for the future, and out of them may be developed a College of Anaesthetists, international in scope and purpose? The founding of such a college would go far in raising the specialty of anaesthesia to its proper level, and the qualifications could be made exacting enough for membership to be a challenge of perfection in work and prestige of character.

#### THE PATIENT'S POINT OF VIEW.

In viewing the future of anaesthesia from the annals of the past, one realizes above all else the momentous changes due to scientific progress; but in this vision we must never for one moment forget that in this world of ours from the dawn of history one thing has remained in the very midst of its own wildest vagaries strangely immutable—human nature. For that reason the patient's point of

view remains for the future as it is in the present, and has been in the past, a paramount consideration. Just as the anaesthetists of each generation must be taught their work anew, so, too, the fathers and mothers, sisters and brothers of each generation must be reconvinced of the beneficence of the painless practice of medicine. When all is said and done, a successful profession, like a successful business, is based on the best possible service to the greatest number of people, and anaesthesia will thrive in direct proportion to its satisfied "customers." Physicians themselves are extremely exigent as patients. Bearing this in mind, we can easily fathom the patient's point of view by putting ourselves in his place and doing by him as we would be done by.

In conclusion, it seems to me that, as anaesthetists, our purposes, aspirations, and vision are encompassed in the motto of the Pacific Coast Association, "It is godlike to relieve pain," and that of the Canadian Society, "We safeguard those who sleep."

## II.—WESLEY BOURNE, M.D., Montreal.

### FOSTERING RESEARCH IN ANAESTHESIA.

THE spirit of investigation has always been nearly peculiar to mankind, and therefore research is by no means new, not only with respect to anaesthesia, but also with all other human activities. Research zeal has been particularly keen in recent times, and it is common knowledge that considerable light has been thrown on some of our propositions. As examples I need only make mention of the advances in obstetrical anaesthesia, in insufflation methods, in the many methods of administering anaesthetics generally, the successful employment of the newer gases, our knowledge of the acidosis of anaesthesia, of heat regulation and water exchange, the technicalities of the procedures of regional anaesthesia, the uses of carbon dioxide, of alpha-lobelin, and the borocaines. Just now have come the results of some work done in the Department of Pharmacology of McGill University on the effects of certain compounds on respiration, blood pressure, and recovery when known quantities are added to pure anaesthetic ether.

#### Acetaldehyde.

In the case of acetaldehyde, with concentrations up to 1/2 per cent. respiration was not significantly affected; with 1 per cent. or more the breathing became embarrassed, audibly, visibly, and as shown by tracings. The blood pressure was not affected significantly even though the mixture was administered for as much as three hours. It may therefore be concluded that such percentages of acetaldehyde as may occur in old or improperly prepared ether—that is, less than 1 per cent.—do not affect respiration, blood pressure, and recovery to any appreciable extent even when administered for an unusually long time.

#### Ether Peroxide.

With ether peroxide it was found that with a concentration of 0.5 per cent., or greater, definite effects occurred even after short periods of administration. When the anaesthesia was prolonged these were more marked. Respiratory embarrassment developed, and there was a decided fall in blood pressure. In one instance the heart stopped permanently after one hour of administration. When the percentages were less than 0.5 the effects were negligible. With higher concentrations the depression of blood pressure was extreme. It may be concluded, then, that ether peroxide in ether is only harmful when the concentration approaches 0.5 per cent.

#### Sulphur Compounds.

In the usual method of making ethyl ether side reactions with the production of ethyl sulphide and ethyl mercaptan are conceivable. Both of these substances possess very strong and disagreeable odours, which are detectable when very small amounts are contained in ether. This is particularly the case with the mercaptan, and yet when this impurity is present to the extent of 1 per cent. it does not materially affect the animal after a period of three hours.

With ethyl sulphide the story is different. When 1 per

cent. was employed breathing and blood pressure were both markedly changed. On stopping the anaesthesia there was evidence of good recovery, and yet twelve hours later the dog died after a most severe gastro-enteritis. With smaller concentrations the effects were nugatory even to the extent of three-tenths of 1 per cent. These sulphur compounds, then, do not act alike. Ethyl mercaptan, although a most "Augean" material, does not have much influence when present up to 1 per cent. Ethyl sulphide in 1 per cent. concentration produces an extremely severe gastro-enteritis. With three-tenths of 1 per cent. or less no such effect is caused, and the blood pressure and respiration are not altered.

#### Ketones.

The ketones—acetone, ethyl, methyl, and di-ethyl up to 5 per cent.—did not cause any disturbances worthy of consideration. That these substances are indifferent is clear.

One more instance of the fostering of research comes from the laboratory of pharmacology of McGill University as a corollary of previous works on blood concentration and body temperature in anaesthesia. It may be remembered that an animal under the influence of ether maintains its normal body temperature only when that of the surroundings is very considerably increased (87.8° F.); irrespective of environmental conditions blood concentration occurs. This may be prevented by the use of water or hypotonic solutions, but now, in spite of the previous determined optimum of environmental conditions, the body temperature falls. It was then discovered that with a further elevation of the room temperature (91.4° F.), and with the administration of fluids, there result negligible changes in either body temperature or blood solids.

Morphine, given prior to ether, protects the animal against blood concentration. This fact fits in well with some of the findings in another field of investigation at present being explored by Professor Stehle and myself; in effect, morphine prevents the oliguria or anuria caused by ether.

Now, as it is impracticable for one to work in such temperatures as approach those mentioned, it is quite out of the question for us to have our operating rooms much warmer than they ordinarily are, and as all other methods of maintaining body temperature are rather difficult of control, diathermy was tried. The initial depression of body temperature after ether was followed by a rise to one above the normal after 800 to 1,000 milliamperes. No decided effect on blood concentration was produced by the use of diathermy. When the current was applied before etherization the body temperature was readily increased. Finally, it was found that the ordinary acidosis of anaesthesia was not interfered with by changes in body temperature.

## III.—H. M. COHEN, M.R.C.S., L.R.C.P. LOND., Editor, *British Journal of Anaesthesia*.

### JOURNALS, CURRENT LITERATURE, YEAR BOOK.

WE have our colleagues in the United States and Canada to thank for the establishment of the first regular periodical for anaesthetic literature, which is the now well known *Current Researches in Anaesthesia and Analgesia*. However, the genesis may well be placed as far back as Morton's *Circular*, which that unfortunate world benefactor commenced to issue in 1847 and continued at irregular intervals and at his own expense. This *Circular* was the medium in which Dr. Morton published the various experiments of etherization, and it marks the various stages of his fight to establish his claims. At first it appeared almost weekly in the form of a letter of advice, but as its contents increased it was found necessary to enlarge it to four sheets of fine print. Soon the *Circular* grew into a full-sized magazine containing arguments against his opponents, and one issue actually contained nearly one hundred closely printed pages.

The *American Journal of Surgery's Quarterly Supplement of Anaesthesia*, now abandoned, which was edited by Dr. F. H. McMechan, for many years held the entire field, with the exception of the *Bulletin* of the National Anaesthesia Research Society.

At the 1922 meeting of the Canadian Society of Anaesthetists Dr. William Webster, in his presidential address, made the suggestion that a committee be formed, with Dr. McMechan as chairman, to go into the question of the establishment of a journal to be devoted entirely to anaesthesia, and very soon *Current Researches* replaced the *Bulletin* as the official publication of the previously mentioned society. In 1923 the *British Journal of Anaesthesia* made its appearance in England.

How far can a science advance without the "printed word"? One thinks that it will be generally accepted as a truism that there can be no progress unless it is simultaneously possible to record that progress. That is especially true where those who are interested in that particular science or art are scattered over great areas, and who, for that reason, are unable by close contact to benefit by the knowledge or efforts of other workers. In anaesthesia this is especially so because of the comparatively few practitioners in any given locality. We are, therefore, dependent on print to convey to us what other men are thinking or doing, and a journal is of the greatest importance to record the progress of our art here, there, and everywhere.

Just as it is a contemporaneous *sine qua non*, much of the development of the future is dependent on its character, for not only do the pages reflect the grade of advance of anaesthesia at a given time, but the type of papers and abstracts published represents its teaching value. What is published to-day may contain a seed which the fertile mind of a reader will cause to blossom forth into something of great value. Or it may whet the appetite of some searcher for truth and spur him on to greater activity. Or it may arouse interest in the laggard and convert him into an enthusiast.

A journal has many advantages over a society. It has no limitations of scope. In its workings it may be likened to the "endless chain," for it not only reaches and influences its immediate subscribers, but through libraries and exchanges it goes out to the farthest ends of the earth, and anything that is of value is transferred to other periodicals throughout the world. Anything worth while is eagerly abstracted, and no language which has its own print will fail to pass the good things along.

A journal's usefulness does not end with its power of dissemination. It brings to its readers the ideas and teachings of others. In its abstracts it serves up in more or less digested form the things that are passing through other minds. Every language makes its contribution, and so the output of the whole world of anaesthesia is recorded number by number for the benefit of all and sundry.

It also has an historical value. One must not forget the men who make up the history of anaesthesia. Our art, though comparatively young in years, is none the less rich in accomplishment. It is a duty, therefore, to bring to public notice the pioneers in anaesthesia—those to whom we owe its inception and development. Although, in a measure, they worked in one limited field of surgery, notwithstanding that the major art owes much of its success to their efforts, it is left to journals of anaesthesia to review their trials and adventures. It is of the greatest importance that the works of such pioneers as John Snow, Clover, Joseph Lister, Paul Bert, and Henry Hill Hickman should be brought to the attention of the medical and anaesthetic world; and it is thanks to Dr. Dudley Buxton that the *British Journal of Anaesthesia* has been able to perform this valuable function in England.

While it is deemed to be an essential part of the purpose of a journal of anaesthesia to keep fresh the memory and works of pioneers of the past, we must not overlook those pioneers of modern anaesthesia who are fortunately still with us. We delight to honour them for their labours, and it is felt that we should spread their story broadcast so that it may be possible for active practitioners to profit by their experience as well as to be guided by their example. The anaesthetic world ought to know something of their struggles in working out techniques of practice, in establishing the relative safety of different drugs, as well as something of the story of what must have been a fight to obtain recognition. The pioneers of modern anaesthesia form an important link with the dawn of

anaesthesia, and our journals are needed to record the important stories which they alone can give the world.

Finally, a periodical to serve its true purpose to anaesthesia must bear as its stamp the badge of courage as well as enterprise—courage to light up the thoughts of men, and enterprise to find proper ways and means. There are still great fields for exploration, and this needs constant emphasizing. Who can prophesy what the future holds for the art of painless surgery? There are many Everests in anaesthesia yet to be scaled, and there are many paths still to be explored. Our journalism must breathe and exhale the air of adventure, for the future calls especially for the type of men who will be unafraid to go into the dark places, if need be, to bring about better and safer anaesthesia.

It is therefore clear that the future of our specialty needs a robust journalism. In *Current Researches America* has now an ideal medium, and, taken with the *British Journal of Anaesthesia*, anaesthetists may rest assured that, with their proper support and encouragement, side by side with the advance of anaesthesia will be found their own publications.

#### IV.—CHARLES W. MOOTS, B.S., M.D., F.A.C.S., Toledo, Ohio, U.S.A.

##### CO-OPERATION WITH THE SURGEONS.

Your description, Mr. President, of the organization of the Department of Anaesthesia in the Toronto General Hospital deserves special mention, apart from the excellent plans you have suggested throughout your discussion on the general topic, "Teaching." A visit to this institution on our way to this meeting easily convinced us of the righteousness of the reputation for leadership which this institution enjoys. It is certainly a far step from conditions existing but a few years since, when it was all too common for the family physician, who probably administered one or two anaesthetics yearly, to accompany the patient to the hospital to make sure that she was safely anaesthetized. It is encouraging to note that a number of hospitals have already fallen in line with the plans of the Toronto General Hospital, and soon there will be a considerably increased number of thoroughly trained medical graduates engaged in the solution of the many intricate problems presenting themselves in the great field of anaesthesia.

As an additional plan for teaching better anaesthesia, may I presume to suggest better organization for opportunities in practical post-graduate work in this field? And as much of our time during the past five years has been given to this endeavour, I will beg your indulgence while offering for your consideration a few of the details.

Being charged with the responsibility of the professional side of the Lucas County Hospital, wherein care is given the indigent cases of both the city and county, as well as the supervision of the surgery in the State Hospital for the Insane, an institution with two thousand beds, it occurred to me that this great wealth of material (2,600 beds) should be placed at the disposal of doctors who might desire advanced work in anaesthesia. As the County Hospital has a well organized staff consisting of thirty-six men of excellent standing in their respective specialties, and well equipped laboratories, an excellent collaboration of data on every case is easily possible. Further, as Dr. McKesson and his associates supervise all anaesthetics in both institutions, we have been able to aid to a considerable extent the many doctors from different lands who show a desire to obtain further experience in the practical administration of the newer gaseous anaesthetics, especially nitrous oxide and ethylene.

A very important part of this plan is to be sure that the entire surgical staff give complete and sympathetic support to the idea of professional anaesthesia. Our surgical staff also understand that it is not necessary to relax the patient to the point of shock in order to accomplish good surgery; that unless they learn to operate under local anaesthesia, as well as under the gaseous general anaesthetic agents, they have not yet acquired the touch of the master surgeon which is so necessary in the protection of the patient.



While the plan thus briefly outlined may not be unusual or final, I believe that if a greater proportion of the leading hospitals will follow some such well defined plan it will give to the profession an impetus that must result in establishing the "future of anaesthesia" in its logical relationship to the other departments of our profession.

#### GENERAL DISCUSSION.

Dr. A. L. FLEMING (Bristol), who had acted as chairman while Dr. Johnston read the opening paper, said that the President had touched on very vital points. The barriers between the various clinical departments at the hospitals were breaking down, which was a good sign, but in the universities this was not the case yet, a fact which he deplored. A great improvement to be noticed was the closer relation nowadays between anaesthetists, both individual and national. The establishment of the Anaesthetic Exchange in Manchester was a milestone in the history of British anaesthesia. As regards the teaching of anaesthetics, what was necessary was the elimination of chance and art in favour of certainty and science. From the point of view of the public the sooner an art could be turned into a science the better, though the time was not yet when the art could be entirely overlooked. He stressed the necessity of the preliminary teaching of anaesthetic drugs being given by the chemist and not by the anaesthetist. An anaesthetic research committee should be established at every teaching centre and university, and be run by collaboration between the physicist, chemist, biochemist, surgeon, and anaesthetist. The ease with which open ether could be administered took away the interest of the student from anaesthetics, which was a pity. He was glad to note that the collaboration between the surgeon and the anaesthetist had increased of recent years.

Dr. R. E. APPERLY (London) queried the effects of aldehyde; the recovery showed irregularity of breathing accompanied by struggling. With minute traces of aldehyde there was sickness and struggling in the case of patients during recovery. Co-operation between the surgeon and the anaesthetist was most necessary in local and regional anaesthesia.

Dr. F. H. McMECHAN (Avon Lake, Ohio) was glad that water-tight compartments had been broken down since anaesthesia had become necessary for research work. Experimenters had thus become converts to association with anaesthetists. The prevention of avoidable deaths on the table must be supplemented by the abolition of unnecessary deaths during the following seventy-two hours. As regards teaching, even the best anaesthetists were limited to certain technical performances. The patient had good surgery and good anaesthesia, but often lacked good doctoring later. The anaesthetist should dominate the preparation of the patient, the patient himself during induction and maintenance of the anaesthetic, and the after-treatment during the post-operative period. The surgeon would thereby be relieved of much work for which he had neither the time nor the training to accomplish with satisfaction.

Dr. S. R. WILSON (Manchester) wished to stress the value of the printed word, as in his opinion the advances made during the last century had been due to this. Meetings also had their value, and he strongly advised anaesthetists to attend and put up with any financial loss incurred. As regards the physician in relation to anaesthesia, any shortcomings in the advice given by the physician must be attributed to the physician and not to the anaesthetist. The physician must take into account not only the systolic pressure but the diastolic, which was the more important. His experience with students and open ether was at variance with Dr. Flemming's. The students were, if anything, too inquisitive.

The PRESIDENT, in reply, said that art could not be taught, for it was inherent in the individual; science wedded to art made the perfect anaesthetist. Pharmacology

and chemistry should be taught in the other departments, and the anaesthetist should confine himself to teaching his students to give anaesthetics safely and comfortably. There was a great difference between a condition of anaesthesia and a condition in which the patient was practically dead to the world. Even under open ether shock and loss of blood might cause death. In collaboration with another worker Dr. Bourne had produced an ether free from impurities, and this could be given to produce an anaesthesia with little or no after-vomiting. The work of Dr. Moots and Dr. McKesson was of the utmost value. Dr. Apperly was right in stressing the value of regional anaesthesia; the trouble was that it had been wrongly applied, as, for instance, in the case of toxic goitres.

#### ACUTE SUFFOCATIVE PULMONARY OEDEMA.

The following three cases may be added to those reported in the JOURNAL during the last few months:

##### CASE I.

Nine weeks ago I was called in the middle of the night to see a patient whom I had been treating on account of double aortic and mitral systolic murmurs. He was sitting up on the side of the bed supported on either side. His face was pallid and grey and a cold perspiration was running down his cheeks and neck. All skin surfaces were cold and clammy. He was breathing in short sharp gasps, using all the muscles of forced respiration. He had a frequent cough and each time brought up pink frothy fluid. His pulse was almost uncountable, feeble but regular. His whole aspect was that of a man about to die—a typical attack of acute suffocative pulmonary oedema. While a hot mustard foot-bath was being prepared he was given a hypodermic injection of morphine gr. 1/3 and atropine gr. 1/120, and a few minutes later one of digitalin, gr. 1/100. In a little more than half an hour he was sitting propped up in bed, breathing easily. His pulse rate had dropped to 80, and his skin was dry and warm. On this occasion some blood was also taken from the median basilic vein. Amyl nitrite inhalation seemed to have no effect.

Within the same week he had three other attacks similar in character and all occurring at night, but on each occasion easily controlled by a hypodermic injection of morphine gr. 1/3, atropine sulphate gr. 1/120. A few days later he had a fifth attack, but this occurred in the daytime. He was then given nightly doses of chloral hydrate gr. 30 and ammon. bromide gr. 30, and leeches were applied to the right costal margin over the liver. He was also given a mixture containing bromide and digitalis as a routine during the day.

For seven weeks he was free from attacks and had been allowed up daily in his room for two hours during the latter part of this time. For a week or ten days his nightly sleeping draught had been at first diminished and then left off without any interference with his sleep.

Suddenly, two nights ago, after he had been some time in bed, an attack started; and, in his own words, he first felt a tightness in his chest, he then came over hot and commenced to cough, and in ten minutes he was in the full blast of an acute suffocative attack. He was given morphine and atropine with digitalin as before, but as half an hour later improvement was only slight atropine alone (gr. 1/100) was repeated, and after another half-hour he was comfortable in bed, with a normal pulse, breathing easily, and able to talk and laugh.

He fell asleep a little later and had a good night and was breathing normally the following morning. This attack—his sixth—was the worst.

He states that in the interval just mentioned he found that the attack seemed to be ward off by inhaling oxygen on the first sensation of any tightness in the chest. Whether an attack would have developed without the oxygen is doubtful. At any rate it inspired him with confidence.

##### CASE II.

Within a week of the first attack in the case just recorded, I was called at 2 a.m. to see a similar case in the same village. This patient, however, had no cardiac murmur, but the auricle was fibrillating. A hypodermic injection of morphine and atropine and one of digitalin very soon cleared up this man's attack, and since then he has not had a recurrence.

##### CASE III.

About eighteen months ago I saw a third case—a severe one—but as this man was known to have albuminuria a hypodermic injection of atropine and digitalin alone was given, without the morphine, and good recovery was also obtained.

It would appear that this condition is not a rare one, but one which a general practitioner is liable to meet at any time. Its onset is exceedingly sudden, and very little warning is given of its advent. Only in my first case did the patient seem to have lost consciousness during the whole attack, and this was only evidenced by the fact that he did not know of the second injection of atropine.

The treatment that seems to have given success in these cases is as follows:

During the attack: Hypodermic injections of morphine and atropine and digitalin; hot mustard foot-bath. A repetition of the atropine in half an hour if no marked improvement has occurred. Recourse to bleeding in very severe cases in which the above treatment is failing.

Between attacks: Oxygen on the first sign of recurrence; bromide and digitalin in a mixture; chloral and bromide at nights; leeches applied over the liver. General attention to state of bowels and stomach, and removal of septic teeth, etc.

An interesting point is that in none of the three cases was there any general oedema and none of them had rheumatic hearts.

Arlesey, Beds.

W. W. MACNAUGHT, M.D., Ch.B.

The case of acute pulmonary oedema reported by Dr. M. Cohen (BRITISH MEDICAL JOURNAL, March 20th, p. 528) is of especial interest as his patient was a young man. In my experience the usual type of patient is an elderly person with marked arterio-sclerosis and raised blood pressure. The cause of acute pulmonary oedema seems to me an acute failure of the cardiac action or some vasomotor disturbance. The following cases will illustrate this view.

#### CASE I.

A married woman, aged 74, had been under my care for the past five years. She was suffering from valvular disease of the heart with arrhythmia and extra-systoles. She never showed any signs of decompensation, being a very active woman. She had marked arterio-sclerosis, her systolic blood pressure being 180-200 and diastolic 100-110. Her urine contained traces of albumin, the specific gravity being 1012-1016. She was highly myopic, but apart from that the fundus of both eyes was arterio-sclerotic only. So it was a definite case of essential hyperpiesia. Suddenly one night last winter, being in comparatively good health, she developed an attack of acute pulmonary oedema. When I arrived another doctor was already present. The patient was semiconscious, sitting up in bed, pale and cyanotic, with a rapid pulse; systolic blood pressure 120 and diastolic 90. Coarse moist râles were audible all over the chest, and a little froth came from her mouth. After a brief consultation we decided on a liberal venesection from both arms: strophanthin and atropine were injected, followed later by 1/2 c.cm. of pituitrin. The patient still being very distressed a small amount of morphine was injected. Then we left her. Nine hours later we saw her again. She had had a few hours of good sleep, her blood pressure was raised to 140, she was more comfortable and obviously improved. In the urine albumin was present in considerable amount. In five days her blood pressure returned to 180, and she made an uninterrupted recovery. The albumin was gradually reduced to traces only with the rising of the blood pressure. Two months after, again at night, she had another attack with the same symptoms. The same treatment was applied and she was better again in the morning. But her blood pressure rose only to 140, and she complained of severe retrosternal pain, although the heart was not much enlarged by percussion. She was sleepless for three nights. A consultant was called in three days after the night attack, and advised the injection of 1/4 grain of morphine, with strophanthin and atropine. A few hours later she died. It was, in my opinion, a case of acute pulmonary oedema following the hyperpiesial crisis of B. Shaw. Pituitary extract seemed to me the most helpful drug in this case.

#### CASE II.

I was called urgently to see a woman of about 70 whom I had not seen previously. She had marked arterio-sclerosis, systolic blood pressure 220 and diastolic 110. Diagnosis: Acute pulmonary oedema, full consciousness being present. Treatment: Liberal venesection, pituitrin and atropine. Next day the blood pressure had dropped to 180 systolic and 100 diastolic. The pulmonary oedema passed away, but she developed a severe attack of bronchial asthma, which caused anxiety for a few days and subsided in fourteen days. I was under the impression that in this case the pulmonary oedema was caused by a vasomotor disturbance which produced later the attack of bronchial asthma.

London, E.L.

N. PINES.

The following case occurred at Charing Cross Hospital, in August, 1925, when I was house-surgeon to Mr. L. R. Broster.

A woman, aged 42, who had had the right breast removed on the previous day, suddenly developed intense dyspnoea and cyanosis, and frothy blood-stained fluid escaped from the mouth and nostrils. Death occurred within a few minutes, an injection of camphor in oil having no effect.

The post-mortem examination showed that no large blood vessel had been opened at the operation, and apart from the left lung all the organs were healthy. That lung was extremely oedematous, blood-stained fluid pouring off the cut surface; it weighed 18 oz., as against 14 oz. for the right lung. There was no sign of embolism of the pulmonary vessels.

This condition of unilateral pulmonary oedema is sufficiently uncommon to justify a record.

HAROLD ABRONIN, M.R.C.S., L.R.C.P.

Leyton, Essex.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### MENINGITIS AND ENCEPHALITIS DUE TO FOREIGN BODY IN THE CAVERNOUS SINUS.

It would appear that in the following case a piece of wood must have entered the orbit through the upper eyelid when the woman fell. Guided by the bony roof of the orbit the wood must have lodged in the cavernous sinus and broken off, obvious signs of injury disappearing owing to the elasticity of the skin of the eyelid causing it to resume its normal position.

A woman, aged 55, fell and struck her head against some wood outside her cottage door on the evening of July 19th. She was found by her husband a few minutes later and put to bed. Her doctor was called to see her in the morning and said she was suffering from concussion.

On July 23rd she was admitted to the Kent and Canterbury Hospital owing to the condition of the right eye. She had then recovered from the concussion. The right eye was protruded downwards and forwards. The upper eyelid had a brownish appearance and was slightly oedematous; about its middle was a small graze less than 5 cm. in length which appeared to have involved not more than the superficial layers of the skin. There was no voluntary ocular movement. Examination with the retinoscope showed nothing abnormal within the eye; the temperature was slightly raised.

Two days later the local swelling and oedema, which was never very marked, had disappeared, and the eye could be pushed back into the orbit until it had nearly assumed its normal position. At the same time a curious crepitation could be felt transmitted through the eyeball. X-ray examination of the skull showed no bony lesion.

During the next week the patient became very drowsy and unable to concentrate her attention for any considerable length of time. The temperature chart showed an intermittent fever; the temperature rose to 101° on several occasions. On August 3rd an orbital abscess was diagnosed, and pus was obtained on exploring the orbit above the eyeball. Under a general anaesthetic an abscess the size of a walnut was found, opened, and drained. This, however, produced little effect upon her general condition. On August 6th there was a secondary haemorrhage through the drainage tube saturating the dressings. During the afternoon of August 7th the patient suddenly screamed and jumped out of bed; she died during the evening of the following day (August 8th).

*Post-mortem Examination.*—Acute pyogenic meningitis and encephalitis were found with an acute abscess in the right temporal lobe, communicating with the lateral ventricle, which also contained pus. Most of the substance of the right cerebral hemisphere appeared to be acutely inflamed. On removing the brain six small pieces of wood, the longest being 1.5 by 0.5 by 0.3 cm., were found inside the right cavernous sinus. It could be clearly seen that the infection had entered the cranium through the right orbital fissure. No bony injury was discovered. The eyeball was found intact, while the orbital abscess had been successfully drained.

The small healed wound seen when the patient was admitted to the hospital was the point at which the foreign body had entered. It is probable that the sudden nystagmus which she experienced the day before she died was due to abscess in the temporal lobe bursting into the lateral ventricle.

I should like to thank Mr. E. D. Whitehead Reid and Dr. J. A. Pringle for permission to publish these notes, and Dr. H. N. Seymour-Isaacs for assisting me at the post-mortem examination.

London, W.

J. F. L. KING.

#### PYLOROSPASM DUE TO HELMINTHS.

The following case seems of sufficient interest to be placed on record:

An Indian, aged 43, on December 5th, 1925, at 6 p.m., was seized with acute spasmodic pain in the epigastrium and sensations of dragging from the sides to the centre of the chest. He was intensely nauseated, but did not vomit. The pulse was 96, and the temperature 97.2°. The epigastrium was acutely tender and distended. The stomach resonance was high. The bowels had last been opened by a pill on December 4th.

Terebene (m v) given by the mouth was followed by the passage of flatus. Mindful of a similar case, I injected morphine 1/4 grain. Relief was prompt, and the epigastrium became less tender and presented a tense swelling on the left of the middle line. I gave 1 1/2 oz. of castor oil.

By the next morning he had passed nothing. The pains were returning and the swelling was greater. Castor oil was given again. At noon a motion was passed containing ova of ankylostoma, of *Acaris lumbricoides*, and of *Trichuris trichiura*. He vomited a quantity of semi-digested rice, castor oil, and mucus. He had not swallowed rice for forty-eight hours. The epigastric swelling vanished and there was no pain. After anthelmintic treatment he passed numerous ankylostomes and six ascariids. He has been under observation ever since and is still well (September 14th).

Singapore.

M. J. RATRAY, M.R.C.S., L.R.C.P.

## HYGIENE AS A WORLD FORCE.

*Address at the Opening of the new School of Hygiene  
of the Johns Hopkins University, Baltimore,  
on October 22nd, 1926,*

BY

ANDREW BALFOUR, C.B., C.M.G., M.D., LL.D.,  
F.R.C.P. Ed.

[Abridged.]

My first duty is to thank most sincerely the authorities of the Johns Hopkins University for the great honour they have done me in asking me to deliver an address upon such an auspicious and important occasion. It would have been very easy for them to find on this side of the Atlantic someone well fitted to perform the task and far more in touch with the great march of public health in the United States; someone also with a more extensive knowledge of hygiene as now practised and developed in countries with temperate climates, for many years of my working life were spent in a land where public health work was in its infancy. It is only since taking up residence in England, and especially since my association with that undertaking which, in large measure, owes its inception and progress to the beneficent generosity of the Rockefeller Foundation, that I have had opportunities of becoming intimately acquainted with those modern movements which have wrought so great a change in the domain of State medicine.

A study of hygiene in England, and particularly of the history of hygiene, has, however, shown me why, in all probability, those responsible desired to have a speaker from that country. England is undoubtedly the cradle of modern hygiene—that is to say, it was in England that the principles and practice of hygiene were first properly developed and placed on a sound administrative basis. Thus other nations have acquired the habit of looking upon England as a leader in the great campaign against disease and death. This habit, flattering to the old country—and the term "old country" includes Scotland, Ireland, and Wales—was undoubtedly justifiable in the early days of public health, and I trust may still be looked upon as wise and salutary, even though the old country has now much to learn from other lands, more especially from this great and wealthy Republic of the West. On the other side of the Atlantic we are perhaps a little apt to forget that America has public health traditions of considerable antiquity, and that, if England is a cradle of hygiene, the United States is indubitably a baby's cot. It could not well be otherwise. Long ago New York was Dutch, and the stout burghers from Holland reached the New World with a great tradition behind them of personal and domestic cleanliness. The Dutch who settled in New York doubtless practised those habits of cleanliness in which they had been reared, and their influence cannot have wholly vanished even when New York, foul, crowded, and unhealthy, had become "The City that Was," so graphically portrayed by Dr. Stephen Smith. Personal cleanliness and cleanliness of the home meant much, but hygiene became a living force only when it extended from the individual to the community, when it became an affair of government, both local and central, and when the aid and majesty of the law were invoked on its behalf. Strange to say, of late years the pendulum has swung back in the old direction, and environment, at one time all-important, is now seen in its proper perspective, while the health of the individual has become a matter of primary importance to the State and to all who have the well-being of mankind at heart.

To-day, in the brief space available, I wish to consider hygiene as a world force, as one of the great factors which have influenced human life and activity, and as possibly the greatest factor which will influence man's progress in the future. To do so, it is necessary to institute a few comparisons.

#### Religion and Hygiene.

While any general comparison of religion in the abstract with hygiene also in the abstract would serve no good purpose, I cannot refrain from contrasting the influence of applied hygiene with that of the application of religious principles in human life and work; in other words, with

organized religion, whether such takes the form of Christianity, Judaism, Mohammedanism, Buddhism, the faith of Confucius, or any of the other creeds which have helped man along the thorny path of existence and guided him, in some measure, through its trials and difficulties. The practice of these beliefs has, of course, had a profound influence upon the world. I think it possible, however, that the hygiene instinct, apparent in some animals he it noted, preceded the religious instinct, and that, even at the present time, the influence of the former is more universal. There are many to whom religion makes no appeal; there are a few races of mankind which appear to be wholly devoid of any religious instinct, but even the most primitive, the most debased, practise certain laws of health. These are essential for life and procreation, and the two ideas which dominate every type of man are those which control the animal world of which he is a part: love of life and the desire for reproduction.

It is instructive to note that some forms of religion had, and still have, a hygienic basis. Rites of purity and certain forms of exercise are, to this day, closely associated with religious observances. Both Moses and Mohammed were hygienists of no mean order. The best features of some faiths are those which relate to the care of the body and the prevention of disease. In India the great system of caste following the institutes of Vishnu and the code of Manu brought the teeming millions of the peninsula some measure of sanitary salvation, while the creeds themselves did little to raise or elevate the masses.

In the hands of man religion playing the part of a world force has unhappily often produced turmoil and bloodshed. On the other hand, hygiene as a world force is a power for peace. Health and its promotion are subjects which sensible men—I say sensible, for we must exclude cranks—can discuss without acerbity and bitterness. I venture to think that the Health Section of the League of Nations is likely to prove the most constructive and most successful part of the great Geneva organization designed to precipitate the millennium. In public health work and propaganda jealousy takes the form of a healthy rivalry. You may envy your neighbour's health record, but there is no sense in being jealous of him because his infantile mortality rate is much lower than yours. The revelation merely stimulates you to further effort, and it is almost inconceivable that nations should go to war in the race to be the fittest, as they do when it is a question of riches or power or *amour propre*, or (in the old days) religion, or self-defence. Yet enviously enough this fitness brings wealth and perhaps power with it, and is a very excellent form of self-protection. I am quite sure that, if the International Health Board of the Rockefeller Foundation had not the word "Health" in its title, its manifold activities would never have been received with complacency and gratitude by countries not owing allegiance to the Stars and Stripes.

It is true that, in certain directions, organized religion has played a part comparable to that of hygiene in moulding man's destinies, though it is also true that at times it has been the bitter foe of progress and enlightenment. Christianity throughout the dark Middle Ages kept alight here and there the torch of knowledge. We recall the stimulus to thought and inquiry engendered by the Reformation in Europe, but, as a rule, when it has signally influenced progress the effect has been due rather to a spiritual movement as, for example, the awakening of a spirit of sympathy with the sick and, as Dr. Welch has pointed out, the development of that new humanity which paved the way for the work of the sanitary reformers in England, rather than any deliberate campaign by a religious body. Religious organizations were in being in various parts of the world for many hundreds or thousands of years without any serious attention being paid towards the betterment of life and working conditions. It is true that Judaism, the creed of Mohammed, and certain other faiths did lay stress on the practice of preventive medicine, but it seems to me that none can equal in this or other fields what hygiene has accomplished in a remarkably short space of time, achievements which have wrought amazing changes in many parts of the globe and brought about a veritable revolution. It is too much to expect that organized religion could conquer disease: that is not its

province. The ancient faith of China did nothing to alleviate the myriad plagues of that vast territory; all the creeds of India—amongst them Buddhism, which possesses much that is attractive—failed to show how cholera could be mastered and malaria subdued. Christianity, with all its virtues, for hundreds of years coexisted with a great burden of communicable maladies. It was not until, in the fullness of time, scientific knowledge was applied to the prevention of disease that we gained our freedom from the fear of small-pox and of typhus and that you Americans were able to sweep yellow fever out of the New World.

The old, wise Greeks knew what they were about when they worshipped the goddess Hygieia and made her votive offerings. I am inclined to think that in some countries, such as India, hygiene will never exercise its full sway unless it comes to the people in the form of a religion, a new revelation to save and succour a vast multitude, the prey of superstition and disease. I believe that to-day you are opening and consecrating not a school only but a temple, a shrine with infinite possibilities.

Leaving the ancients out of the question and pioneers like Mead and Jenner, the credit for initiating the campaign which has had such remarkable results is due neither to the votaries of religion nor those of medicine, for it was a layman and a lawyer, Edwin Chadwick, who devoted all his time and gifts and energies to the realization of this ideal. Similarly in the United States it was Lemuel Shattuck, who was neither a divine nor a physician, but a student of social problems, who played the part of a pioneer.

There are, I think, three other factors which may be termed "world forces," and with which hygiene may, nay must, be compared: the pursuit of pleasure, the pursuit of wealth, and the pursuit of knowledge. All these, though in very different ways, have exerted a great influence on man and his affairs. No one, however, would place either the pursuit of pleasure or the pursuit of wealth in the same class with hygiene as a controlling force in human destiny. The influence of both is evanescent compared with that of hygiene, and too often is not in the direction of progress and true comfort. The pursuit of knowledge is in a different category. It has been a great and cardinal force, and might well contend with hygiene as a benefactor of mankind were it not that the art and science of hygiene have arisen from this pursuit and that hygiene, being the application of knowledge to man's needs, has outstripped it. The pursuit of food, at the call of hunger, has from the beginning been a world force, but, inasmuch as it is, in certain directions, a hygienic activity, it need scarcely come into our comparative list.

#### *World Hygiene To-day.*

And now let us see how, at the present time, hygiene acts as a world force. It does so in various ways. One is by the great system of quarantine, with its stations scattered over the globe and its control of ships and shipping. It is of interest to note that the first Quarantine Act was passed by the General Assembly of Pennsylvania in 1700, and was quaintly entitled "An Act to prevent sickly vessels coming into this Government." Hygiene has always had a close association with the sea and ships. It has abolished two great sea scourges, scurvy and ship beri-beri; it has radically changed life afloat, so far as navies are concerned; and now, at long last, it has commenced to take the merchant seamen under its wing. In this respect I must sorrowfully confess that the American mercantile marine is ahead of that of Great Britain. Speaking generally, you house and feed your sailors better than we do. This is a reproach we, an old seafaring nation, are now taking steps to wipe out, and if only the control can pass from the Board of Trade to the Ministry of Health, much may be accomplished.

Most unprejudiced persons will, I think, admit that, taken all in all, the British Empire has been a power for good in the world; and its sons, throughout the long years, have done much to make hygiene a world force. The traditions of the homeland have been carried overseas, and some of the great dominions, favoured perhaps by

local conditions, have, in certain directions, progressed further than the mother country. New Zealand has the lowest infantile mortality in the world; Australia has probably the most complete and best organized quarantine system on the face of the globe; South Africa has done more to prevent and stamp out disease amongst miners than has any other land; Canada, closely in touch with the vast public health developments in the United States, has in some ways more than held its own. For example, I believe the milk supply of Toronto, under the fostering care of Dr. Charles Hastings, will compare favourably with that of any other city. The Indian Empire, with its fine record of research in tropical medicine and hygiene—a record reaching back more than a century and containing the crowning triumph of Sir Ronald Ross, based on the reasoning of Sir Patrick Manson—has, it is true, failed to apply, as it might have done, all the lessons that research has taught, but its task is a stupendous one. It is something to have furnished great cities like Calcutta and Bombay with active sanitary organizations, to hold cholera in check, to grapple successfully with leprosy, to indicate the method whereby kala-azar may be controlled, to rob enteric fever of its terrors, to alter the whole outlook as regards amoebic dysentery and liver abscess, to cope manfully with the grim spectre of famine. In Malaya Sir Malcolm Watson and others have accomplished a great work in reducing malaria and rendering estate labour healthy. Hong-Kong has changed from a pestiferous hole to a comparatively healthy seaport. Singapore and Colombo have carried out important sewage and water works and taken elaborate steps to guard themselves against imported infection. In Palestine a revolution has been effected since the war, and there is not a single branch of public health which has not received some attention there at the hands of a small but devoted band of workers. The east coast of Africa, from Uganda and Kenya in the north to the Rhodesias in the south, has been the scene of active operations, and I would cite especially the campaign against syphilis in Uganda, that against yaws in Kenya, the war on the tsetse fly in Tanganyika, and the determined attack on malaria and blackwater fever in Southern Rhodesia. On the west coast, once the white man's grave, a great change has taken place, and, although there is much yet to be accomplished, notably in the case of yellow fever, where valuable help is being rendered by American experts, life is now very different, both for the white man and the black, all the way from the Gambia to Southern Nigeria, than it was when that intrepid woman Mary Kingsley sent out her clarion call for action. There remains the Anglo-Egyptian Sudan, a greatly changed territory now from what it was in the days of the Mahdi and the Khalifa. Turning to the New World, the British record is not so good, but we can point with some satisfaction to important advances in British Guiana and with a reasonable pride to what has been done in Port of Spain, while here and there elsewhere the torch of hygiene has been kept alight, even if it glows but dimly.

France, ever to the fore in questions scientific, has greatly ameliorated conditions in the vast territories under the tricolour. Her work on malaria in Northern Africa has been remarkable, in French equatorial sleeping sickness has been relentlessly pursued, in Madagascar plague has been combated to good effect, while in French Indo-China much has been done in the way of safeguarding the public health. The Dutch, with a passion for cleanliness bred in their bones, have displayed qualities of great thoroughness and persistence in coping with difficult situations in Java and Sumatra. The way they have tackled plague is an example for other countries to follow; they have solved important problems relating to the manufacture of vaccine lymph in the tropics; and, recognizing that hygiene pays, and pays handsomely, they have spent great sums in improving the housing and living conditions of the coolies on their fine rubber and cinchona estates.

The Germans have been shorn of their overseas possessions, but German influence and work continue to keep hygiene a world force and to increase its efficiency, more especially perhaps by shedding fresh light on the various sciences upon which hygiene and sanitation are securely

based. Belgium is busy, both at home, where her campaign against venereal diseases attracts special attention, and in that vast Congo region, so long inaccessible and full of terror for the white man, now a country where much scientific work is being carried out on preventive lines, notably in the case of sleeping sickness and tuberculosis. Italy, where the revival of learning had its birth, has contributed greatly towards the common cause. The early work there on malaria has had its repercussion in many parts of the world, and, in such colonies as she possesses, Italy does not forget Emerson's maxim, "The first wealth is health." Other examples from the Old World might be cited, for the activities of Japan have not been confined to the Archipelago of the Far East, and Japan can certainly claim a place in disseminating the principles and practice of hygiene; but it is time to cross the Atlantic or Pacific and see where America stands.

I said little in the way of comparing war and hygiene. In many respects they are as the poles apart, but let it not be forgotten that war has its constructive as well as its destructive side. There is no doubt hygiene is the greater and more beneficent force, but some of the most valuable advances in hygiene may be traced to war. Consider how campaign after campaign in Europe combined to give us the wisdom of that great army physician Sir John Pringle.

Moreover, it was war—war with Spain—which led the United States to spread abroad the knowledge and experience of public health measures it had gained and garnered since the days of Shattuck, to plunge into research with a view to prevention, to embark upon a policy which has had far-reaching results. Reed and his colleagues in Cuba penetrated the mystery which had shrouded yellow fever for centuries and Gorgas applied the new knowledge. In the Philippines and Porto Rico a hopeful gospel was preached and hygiene became a factor of paramount importance. Then followed Panama with all its wonders and triumphs, and now the good work has been extended to Haiti.

#### *Wealth in the Service of Health.*

With a few exceptions, all the cases I have cited are examples of countries busy in their own possessions, sometimes forced by circumstances to support the cause of hygiene, sometimes wise enough to see that such support is profitable, sometimes, no doubt, influenced by feelings of compassion and a desire to do the right thing.

But hygiene has been given an opportunity of showing itself as a world force in quite another manner, and this is perhaps the most startling and interesting and impressive development mankind has ever witnessed. Never before has altruism played such a part in hygienic progress, for never before has colossal wealth been turned to so beneficent an object.

When John D. Rockefeller placed his millions at the disposal of the International Health Board of the Foundation bearing his name he made that Board a power for good, a world power with amazing possibilities before it. Some of the possibilities have already been realized. Yellow fever, the scourge of tropical America, which formerly took terrible toll on your eastern seaboard, has been wellnigh exterminated. It has also been attacked in West Africa, and there is more than a reasonable hope that in the next few years it will be extinct. Even if it is not blotted out for ever, it has been so reduced and controlled as no longer to be an international danger. Again, take the hookworm campaigns set on foot in various parts of the globe; not so dramatic as the yellow fever work, but far more extensive. The war on the ankylostomo has already worked wonders in certain places, and, if only properly followed up, will make an enormous difference to labour in the tropics, and incidentally will greatly diminish the evils of soil pollution.

I have no time to tell of all the other ways in which the International Health Board is proving hygiene to be a world force of the first magnitude. Were I to enlarge upon the subject I would have to ignore another international organization which is also demonstrating in a remarkable manner how hygiene may sway the destinies of nations and be a power for peace. I refer to the Health

Organization of the League of Nations, the Health Section of which, under the guidance of its restless, enterprising, and far-seeing medical director, Dr. Rajchman, is becoming a friendly, if comparatively humble, rival of the International Health Board, and is extending its activities far and wide. The parent organization is now a very important body which certainly looks upon hygiene from the widest aspect and seeks to increase its scope and intensify its undertakings. This it does by means of its Advisory Council, represented by the Permanent Committee of the Office International d'Hygiène Publique at Paris, a committee on which both Great Britain and the United States are represented, its Health Committee with its various Commissions, and its Health Section. When one looks through the long list of their activities one recognizes, not only how much is being done, but how much has yet to be accomplished. Surely, however, the outlook is hopeful with powerful organizations on either side of the Atlantic exemplifying a new spirit of international co-operation and control.

It would take hours to recount the triumphs of hygiene, but, viewing them all, let us render thanks in this country to the men who have fought the good fight and seen the works of their hands established upon them. And what of the future? These men had not the facilities you are providing for the students of to-day. They had no schools of hygiene, in large measure they had to learn the lesson in that best of all schools, the school of experience. Yet it cannot be doubted that your young men will now start upon their careers better equipped than were their predecessors. Their enthusiasm can be aroused, their imaginations quickened by what they hear and do in this new school at Baltimore, and the very sight of a magnificent building devoted wholly to the teaching of preventive medicine should impress upon them the importance of safeguarding the public health, should convince them that hygiene is indeed a world force.

## Reports of Societies.

### RUPTURE OF THE BLADDER DURING PREGNANCY.

At a meeting of the North of England Obstetrical and Gynaecological Society, held in Liverpool on October 15th, with the President, Mr. W. GOUGH (Leeds), in the chair, Miss HELEN M. DUVALL (Liverpool), on behalf of Professor E. E. GLYNN and herself, reported a case of rupture of the bladder during labour, with fatal peritonitis. Miss Duvall said that the clinical details of the case were as follows.

The patient was a primigravida, aged 29, who had been a regular attendant at the ante-natal clinic attached to the hospital during her pregnancy. Her pelvic measurements were normal, and the urine, which had been tested weekly for some time, had no abnormal constituents. On admission she was at full term, the os was one fingerbreadth dilated, the head well down in the pelvis, and the presentation left occipito-anterior.

During the next three days she had intermittent labour pains, and the membranes ruptured at 6 p.m. on the fourth day, the os being three-quarters dilated at 8 p.m. At 3 o'clock on the following morning the patient is said to have given a piercing shriek, and to have complained of acute abdominal pain. The nurse felt the uterus then, and there was no contraction, but the patient was rather cold and clammy, and became somewhat hysterical. As the labour had been long, and the interest of the child seemed to demand it, low forceps were applied under chloroform, and the patient was easily delivered of a living male child weighing 6 lb. 5 oz. A perineal tear of the second degree occurred, and was repaired. The third stage occupied an hour and a half, and the placenta and membranes were delivered by manual expression. The condition of the patient was then considered satisfactory. The patient passed urine voluntarily just before the anaesthetic, and no urine was obtained on the passage of a rubber catheter before the application of forceps. Apparently the patient's condition gave rise to no anxiety during the next twenty-four hours, but as she passed no urine during that time she was catheterized, and 8 oz. of "smoky" urine (said to contain no blood or albumin) withdrawn. On the following day she passed 8 oz. voluntarily at 2 a.m., and 6 oz. again at 2 p.m. By the evening she had become very ill, complexion sallow, temperature 100.2° F., pulse rapid and almost imperceptible, respirations quickened. The abdomen was much distended and very tympanitic, and there was pain in the left iliac region. The usual restoratives were given, but she was much worse by the next morning, with



a frequent brownish-green vomit and incontinence of faeces. She died at 10.55 a.m., three days and five hours after delivery.

At the *post-mortem* examination, seven hours after death, the subcutaneous fat of the abdominal wall was found to be fully three to four inches thick, which must have made accurate diagnosis of the abdominal condition during life extremely difficult. The peritoneal cavity contained about six pints of a turbid and slightly blood-stained fluid, smelling strongly of urine, and containing large flakes of recent fibrin. The intestines were distended to about double their normal size, and the peritoneal coat injected. A small oval perforation, which would just admit the points of a Spencer-Wells forceps, and the edges of which were gangrenous, was discovered on the posterior surface of the bladder, about midway between the fundus and the utero-vesical reflection, and half an inch from the mid-line. Radiating from the hole were three rents, involving the serous and muscular coats, but not the mucous membrane. On slitting open the bladder from the front, the perforation was seen to be surrounded by an area containing numerous small haemorrhages. Apart from this the lining epithelium appeared to be normal, as were also the ureters and their orifices. The kidneys and other organs showed no evidence of disease. The uterus was uninjured, except for a deep right-sided cervical tear. The cause of death in this case was undoubtedly rupture of the bladder followed by peritonitis.

Miss Duvall said that this type of accident must be very unusual, as after a good deal of search she had only found two cases recorded, in which intraperitoneal rupture occurred actually during the course of full-term labour. The first of these was a Liverpool case, reported to this society at Manchester in 1905 by Dr. Grimsdale, and afterwards published in the *Journal of Obstetrics and Gynaecology*, vol. vi, 1, p. 354. The second was in 1908 by C. P. Porter in the *Transactions of the Obstetrical Society of London*, vol. 49, p. 171. Both these cases presented many similar features to this one—namely, the patients were primigravidae with no pelvic contraction and no definite history of urinary disease. Both had instrumental deliveries, and in both the rupture was situated, as in the case reported by Miss Duvall, on the postero-superior wall of the bladder; it was considered by the authors to have been spontaneous, and to have occurred prior to the application of forceps. In Miss Duvall's case there was no clinical evidence of pre-existing urinary disease, and the naked eye and microscopical examination of the urinary organs was in accordance with the history. With the exception of the bruised area around the perforation, the lining of the bladder appeared normal. Professor Glynn considered at the *post-mortem* examination that the wall, however, was somewhat thinner than normal. The thickness of the muscular and mucous coats empty measured just over 2 mm.; the normal measurement was 6.8 mm. Had there been cystitis it would have been visible in the trigonal area, which was obviously quite free from disease. The microscopical section taken from the uninjured portion of the bladder showed no pathological condition except some congestion of the submucous vessels; the absence of epithelium could not be adduced as evidence of disease, and had occurred in a control specimen subjected to similar *post-mortem* conditions and methods of preparation. The section taken from the bruised area simply showed a recent extravasation of blood throughout all the layers; it was, in fact, the picture of a bruise. The muscle was not diseased, and there was no inflammation. The situation of the lesion made direct injury by the forceps unlikely. In a primigravida, at any rate, this portion of the bladder would have been in the abdomen. The presence of distension at any time during the labour was not shown in the history, but the first stage was prolonged, and the patient might not have been properly emptying the bladder throughout. She was so fat that distension, if present, would not have been observed. Evidence of the time of rupture was afforded by the gangrenous edges of the perforation and the degree of peritonitis found at the *post-mortem* examination. In view of the fact that the urine was certainly not grossly infected, acute peritonitis would not follow very soon after the rupture. The chart was also consistent with an ingravescent sepsis. The amount of urine obtained after delivery was only 22 oz. in three days. A curious point was the ability shown by the patient on two and possibly three occasions to pass urine voluntarily, presumably after rupture; but in view of the very small leak this was not to be considered an impossibility. Lastly, there was the history of the cry uttered by the patient three hours before delivery, followed by the complaint of acute abdominal pain. All these facts seemed to point to the

rupture having occurred prior to or at the time of delivery, the cause being increased intra-abdominal pressure due to the pains of labour on a bladder probably overdistended, and therefore weakened, but certainly not otherwise diseased.

#### *An Eight Months' Abdominal Pregnancy.*

Dr. J. W. A. HUNTER (Manchester) gave an account of a case of abdominal pregnancy which lasted eight months. The clinical history was as follows.

A married woman, aged 30, was admitted to hospital on August 23rd. Her last menstrual period had been on March 16th, and was followed by several weeks of irregular bleeding for which she was cured, a diagnosis of incomplete abortion having been made. After curettage the bleeding ceased, and she was sent home, but shortly afterwards she noticed a gradual increase in the size of the abdomen. About the beginning of July she had a sudden attack of acute pain in the abdomen with sudden enlargement of the swelling, and accompanying the pain were recurrent attacks of vomiting and faintness. During the six weeks before admission there was progressive abdominal enlargement, with increasing tenderness and recurrent attacks of severe abdominal pain, often accompanied by vomiting. Six days before admission there was slight loss of blood from the vagina. Beyond these, increasing frequency of micturition and gradually increasing constipation were the only symptoms of which she complained. On admission she was rather pale, collapsed, and obviously in considerable pain. Her pulse was small and rapid, the rate varying between 120 and 140; temperature 100°. The abdomen was enlarged to the size of an eight months' pregnancy, the tumour extending almost to the ensiform cartilage. The swelling tended to occupy more the left side of the abdomen than the right, and was hard, rather fixed, and extremely tender, the whole picture closely resembling that of a concealed accidental haemorrhage. It was possible to elicit fluctuation in the upper left portion, but the mass in the right iliac fossa was quite hard and solid. There was no dullness in the flanks, and no foetal heart sounds or movements could be detected. Vaginal examination was unsatisfactory on account of the extreme pain and tenderness, but suggested a firm mass continuous with the cervix occupying the lower right quadrant of the abdomen, and a large cystic mass inseparable from it above and to the left. The diagnosis lay between concealed accidental haemorrhage and a twisted ovarian cyst complicating early pregnancy. The possibility of an abdominal pregnancy was considered, but rather discounted in view of the previous curettage and absence of other signs. The patient was kept under observation for twenty-four hours, but did not improve, in fact became rather worse, and an operation was then decided upon, a diagnosis of twisted ovarian cyst complicating early pregnancy having been made.

On opening the abdomen a large rather thick walled cyst was seen almost filling the peritoneal cavity; the latter also contained a large amount of recent fluid blood and old blood clot. On extending the incision the "cyst" was seen to be rising from the left broad ligament, which had been stretched and lifted up, the size of a three months' abdominal wall in front and to the right side. The "cyst" on the right side. The "cyst" abdominal wall in front and to the omentum and small intestine above and behind; during this separation the anterior wall suddenly gave way and a large quantity of liquor, followed by a living child, came out. The gestation sac was then seen to be composed of a much stretched out broad ligament anteriorly, while posteriorly it had burrowed under and lifted up the caecum and mesentery of the small intestine; the right colic artery was running in the wall of the sac. The placenta was hurriedly removed, and the sac packed with gauze and marsupialized. During removal of the placenta there was very little bleeding, but there was considerable haemorrhage in the abdominal cavity, probably from a torn branch of the right colic artery. After operation the patient was very collapsed and failed to respond to treatment, dying shortly after return to the ward. The child, weighing 2½ lb., was quite normal and lived for fourteen days.

Dr. Hunter said that the case presented several unusual features. On looking over the history it appeared certain that the so-called incomplete abortion for which she was cured was in reality an early ectopic gestation, and very possibly rupture of the sac into the left broad ligament occurred during this manipulation. Secondly, the associated hydramnios almost excused the mistake in diagnosis, for even when the cyst was exposed it was impossible to palpate the foetus through its walls. To avoid a fatal result was very difficult in view of the manner in which the "sac" had displaced the mesentery and bowel, and even if the patient had recovered from the operation, intestinal obstruction would have almost inevitably ensued. It was possible that incision of the sac, emptying the contents, and packing it immediately, instead of an attempt to free it from the surrounding adhesions, would have given the one chance of a successful result.

#### *Malignant Disease Associated with Genital Prolapse.*

Dr. J. W. BRIDE (Manchester) described two cases of malignancy in association with genital prolapse, the first being a case of cervical carcinoma with vulval epithelioma

and the second one of primary carcinoma with prolapse of the uterus.

The first patient, aged 50, had six children, the last ten years ago. Menstruation had been 4/28 type and profuse, the last two months ago. In June, 1921, she complained of a brownish watery discharge and of "something coming down." She had never worn a ring pessary. She was found to have a complete prolapse with hypertrophy and severe ulceration of the cervix. Although the cervix was not considered definitely malignant the uterus was removed by vaginal hysterectomy in the course of an extensive anterior colporrhaphy according to Fothergill's method. The pathologist's report was that there was a columnar-celled carcinoma of the cervix. The patient made an uninterrupted recovery, and until April, 1925, four years later, she had no further trouble. At this date there was no sign of any recurrence of growth in the pelvis, but she was complaining of a small ulcer on the right labium majus, obviously epitheliomatous and fixed. She first noticed irritation and then ulceration in December, 1924. The vulva and glands were excised, and microscopical examination showed it to be a case of epithelioma of the vulva. Recurrence followed at the end of that year, and radium was applied on two occasions. The patient died in 1926. There was never any recurrence due to the cervical condition.

Dr. Brido said that it appeared to be generally allowed that malignancy of the cervix was rare in association with genital prolapse. Cullen regarded the incidence of the two conditions as accidental, and did not consider that prolapse predisposed to carcinoma. Pantow, who reviewed the literature in 1893, found only twenty-nine cases, in all of which the prolapse preceded the carcinoma. The unlikelihood of there being any connexion between the primary columnar-celled carcinoma of the cervix and the vulval epithelioma was important. This case seemed to illustrate the point that vaginal hysterectomy might still be regarded as holding out almost as good hope of cure as the abdominal total extirpation.

Dr. Brido's second patient was married, and had four children, the eldest being 29, the youngest 23 years of age. All the labours were normal, but she had noticed "something coming down" since the birth of the first child. For the last five to six years this had been getting much worse, and she had worn a rubber ring pessary. Menstruation had ceased eleven years ago, but three years ago she had a profuse attack of bleeding for three weeks, and had a slight brownish discharge at times since. In June, 1926, she had, against advice, retained her rubber ring pessary, No. 3, for ten months. On removing it, in a very offensive condition, a large raised bleeding plaque was found on the lower middle part of the posterior vaginal wall, and epithelioma of the vagina was diagnosed. The growth was an oval plaque with raised hard edges and crater-like centre, about 2 inches long by 1½ inches wide. It appeared to be fixed to the rectum, probably inoperable, and best treated by radium. However, being anxious for a section of it, Dr. Brido performed posterior colporrhaphy, including the growth in the flap; it was dissected off the rectum with great difficulty though it was right on to the rectal mucosa. Previously to this the uterus was everted, and so malignant disease of the body or cervix was found. The growth was a primary squamous-celled carcinoma of the vagina. The patient was discharged, and before leaving hospital radium was applied.

Dr. Brido said that Dougal at Liverpool, in 1922, had described a case of primary carcinoma of the posterior vaginal wall treated by hysterovaginectomy, where the growth occupied the upper two-thirds of the wall. In summarizing the literature Dougal mentioned that Meyer, Schmit, and Winckel had each described a case possibly due to pessary irritation. It seemed possible that Dr. Brido's case might have originated from the same source, since the patient neglected to have the pessary removed and cleaned at proper intervals, as instructed. For a growth situated in the lower part of the vagina, possibly this very simple operation together with radium might effect a cure.

#### Malignant Growths in the Cervix.

Professor W. BLAIR BELL described a case of bilateral squamous-celled carcinoma of the ovaries and peritoneum. The patient was a nullipara, aged 55, who, five months previously, had undergone vaginal hysterectomy for cancer of the cervix. A very large tumour was found occupying the whole of the right side of the abdomen from just below the ribs to the symphysis, and free fluid was present. Bilateral, partly cystic and partly soft, solid tumours were removed; the left one was adherent to the bladder. Nodules of growth were discovered in the pelvis at the vault of the vagina, and metastases were observed in the liver. The tumour consisted of malignant cells derived from squamous epithelium, and there was much necrosis with softening. Comment was made on the extreme rarity of such tumours

in the ovary. Professor Blair Bell also described a case of squamous-celled carcinoma of the ovaries and peritoneum subsequent to carcinoma of the cervix in a widow, aged 62, treated by radium. The pelvis was occupied by squamous-celled carcinomatous growths of the ovaries. Nodules and masses were present in the peritoneum and the omentum. This appeared to be a case of cervical cancer cured by radium, but growth of a similar character subsequently developed in the ovaries, and from them disseminated in the peritoneal cavity.

The PRESIDENT emphasized the rarity of malignant growths of the ovaries secondary to carcinoma of the cervix, though not in the case of carcinoma of the body. Dr. LEITH MURRAY thought that the growths might be columnar-celled rather than squamous-celled carcinomata. Professor BRIGGS agreed with this suggestion, and it was decided to refer the matter to a pathological subcommittee.

Dr. C. P. BRENTNALL (Manchester) showed slides illustrating endometrioma of the anterior abdominal wall; and Dr. H. LEITH MURRAY (Liverpool) demonstrated a specimen of primary carcinoma in the appendix removed from a patient aged 42.

### THE EFFECT OF LIGHT ON THE SKIN AND SKIN DISEASES.

At the meeting of the Section of Dermatology of the Royal Society of Medicine on October 21st, with Dr. J. H. SEQUEIRA in the chair, a lecture, well illustrated by the epidiascope, was delivered by Dr. C. RASCH (professor of dermatology and venereal diseases, Copenhagen), on the effect of light on the skin and skin diseases.

Professor Rasch began by objecting to the pronouncement of a certain physiologist that clinical medicine was a played-out science, and that the only use now was for experimenters. He contended that clinical science and experimentation were the twin supports of modern medicine. Turning to his subject, he said that priority in studying the effects of light on the skin must be given to Sir Everard Home (1763-1832), who had conducted experiments showing that irritation caused in the skin by the sun was due to its light, not to its heat, as also was the pigmentation function. One effect of the sun on morbidly sensitive skin was to produce a condition which Professor Rasch had previously described as an eczema-like polymorphous light eruption. The rash itched intensely, and consisted of slightly raised erythematous spots, oval or round in shape, varying in size, partly vesicles and partly scab-covered papules. In 1911 Dr. J. H. Sequeira had described a disease which he called permanent freckles, for which light was held responsible. It consisted of a steadily increasing outbreak of spots of pigment, as in xeroderma pigmentosum, but lacking the other signs of this latter disease. The manifestations of skin reaction to light varied with each individual, the itching being followed sometimes by papular lesions, or erythematous or urticarial lesions, often with diffuse weeping on the surface. There might be secondary infections with impetigo or folliculitis. He agreed with Dr. H. G. Adamsen that there existed a relationship between the milder cases of summer eruption and Bazin's hydroa vacciniforme. There should be a distinction between this latter condition and the polymorphous light rash. Polymorphinuria was not always associated with this sensitiveness to light, but it seemed to act as a sensitizer to the skin, as did also alcohol. The lecturer showed a photograph of an extensive ulceration on the hands of an alcoholic who had slept in the sunshine in a park; it was a bullous rash, like the "pseudo-pellagra" of the French. He also described two cases of war melanosis due to the action of light, and two cases of colloid degeneration of the skin owing to the same cause. The chronic reddening and thickening of the skin in old peasants was a common observation, and he attributed it to the continual effect of the sun's rays. Allied to this condition was a senile degeneration of the elastic tissue of the skin. It was an old observation that the lesions of small-pox healed without leaving scars when the patient was kept in the dark. A "red room" ought to be installed wherever small-pox was treated. Pityriasis simplex was sometimes rendered eczematous by the action of light. Lupus erythematosus

was decidedly aggravated—indeed, was often produced—by light. Light also aggravated dermatitis herpetiformis, Besnier's prurigo, psoriasis, purpura, and erythema multiforme. On the other hand, there were not many skin diseases which were actually improved by natural light. Even lupus vulgaris was not appreciably influenced by the local action of light, the effect in this case being caused by cauterization and burning, with a mixture of heat rays and concentrated light rays. The universal light bath often had a good effect in this disease. Skin affections which usually benefited by light were acne vulgaris, the secondary syphilitic affections of the skin, elephantiasis, and lichen planus. Sometimes direct light prevented a papular syphilitic lesion from developing. In conclusion, Dr. Rasch said that the reason there were so many harmful effects due to light was that many held the view that as much light as possible was good for all people and for all diseases.

#### Clinical Cases.

Preceding this lecture a number of clinical cases were shown to the Section, including one by Dr. HALDIN DAVIS, entitled "Pigmentation of unknown origin," and another, by the same exhibitor, under the name of "argyria." This second case of pigmentation, Dr. Davis said, was due to the ingestion of silver nitrate pills, at one time a fashionable remedy for indigestion. This woman took these pills three times daily for a period of twelve months twenty years ago, and she had suffered from argyria ever since that date; the discoloration had only become slightly fainter. Argyria seemed to be very capricious in its incidence. One woman, after only six weeks' use of protargol in the form of swabs for uterine trouble, had this same characteristic pigmentation, but it disappeared after lasting three years. He was still unaware of the origin of the pigmentation in the case first referred to. Civette called an apparently similar case poikiloderma reticularis, and stated that there was atrophy of the skin. No atrophy had been noted in the case now shown; there had been menstrual troubles for six or seven years.

Dr. GRAHAM LITTLE showed a patient who, when he came before the Section in May last, had a serious condition of acute nodular leprosy. So serious was the condition that the patient was urged to return to India as speedily as possible. But he came under Dr. Hasson's care, and two months later that gentleman asked Dr. Little if he would like to see him again. He did so, and found, to his astonishment, that the disease had become completely involuted, and no lepra bacilli could be found in the mucosa of the nose or in blisters artificially caused in the anaesthetic areas. Searches for the bacilli since the great clinical improvement of the patient had consistently failed. Dr. Hasson briefly spoke on the case, remarking that he found the use of chaulmoogra oil useless in this disease, and in 1923 commenced giving his patients a special vaccine, which was not autogenous, but a stock vaccine, the patient being blistered in order to carry out the technique. This patient had had fifty-three injections of the vaccine, some into the veins, the remainder under the skin. He hesitated to apply to this case the term "cured," as a relapse might occur up to five years, but certainly all signs of leprosy had now disappeared.

### SURGERY AND THE WORKMEN'S COMPENSATION ACT.

In the Section of Surgery of the Royal Society of Medicine on October 20th Mr. V. WARREN LOW, the incoming President, delivered his address from the chair, which was followed by a discussion. He took as his subject "Surgery and the Workmen's Compensation Act."

Mr. Warren Low began by tracing the history of workmen's compensation. As far back as 1846 a Select Committee, shocked by the casualties occurring among labourers engaged in railway construction, reported in favour of making the railway companies pay compensation in cases of accident, but it was not until 1880, and then only tentatively, that steps were taken by the Legislature to give effect to that salutary suggestion. In 1880 the Employers' Liability Act was passed. Previously the only remedy for the workman was to bring a common law action

against his employer, in which he had to show that the injury arose through the employer's personal negligence or through his having knowingly employed an incompetent servant. Furthermore, the counter-charge of contributory negligence might, if substantiated, deprive the workman of success in his action. In 1897 the Workmen's Compensation Act introduced into English law the entirely new principle that the workman was entitled to compensation irrespective of any question of negligence, but that statute applied only to certain dangerous trades. In 1900 the Act was extended to agriculture, and in 1906 to all employments with some specified exceptions. The innovation of greatest interest in this last measure was the provision that the county court judge should have a medical referee sitting with him as assessor. In 1919 a departmental committee was appointed, and as a result of its report the Act of 1923 was passed. This was repealed in large measure, and the Act of 1906 was wholly repealed, by the new consolidating Act of 1925.

Owing to the number of cases which had been decided in the courts and to the medical knowledge now available, the legal position of any plaintiff, save in a few exceptional cases, was perfectly clear provided the facts were proved. To the legal mind, untrained in medicine, it must often appear that opposing doctors were expressing quite contradictory views, not to be explained by the ordinary and legitimate differences of professional opinion. The difference, however, was more apparent than real. In this class of cases there was plenty of room for wide differences with regard to the essential points at issue. The duration of incapacity, for instance, was a matter upon which there might be quite different views, and it was often most difficult for the conscientious surgeon to decide after what period the injured workman ought to be forced to resume his normal employment. A number of cases were found in which a few weeks of incapacity created a workshyness and an inertia which was exceedingly difficult to overcome, and the certifying doctor might shrink for months from applying the drastic remedy of refusing a certificate. It would be difficult to assess the loss to industry which ensued from this prolongation of the period of supposed incapacity, and perhaps even more serious was the effect upon the man's morale. With a little more encouragement and persuasion the time of incapacity might be materially diminished.

Of all the pitfalls those which arose in connexion with diseases of the nervous system were possibly the most treacherous. Mr. Warren Low gave details of typical cases in some of which, for example, commencing general paralysis or other syphilitic affection of the central nervous system was accelerated or aggravated by an injury. He had notes of several cases in which a trivial injury was held to give rise to symptoms which were really due to the insidious onset of cerebral tumour. The possibility of a typical neurasthenia or psychasthenia following an injury had to be admitted. In these cases the distinction between a pathological condition and a certain type of malingering was very difficult. Often in cases in which neurasthenia ensued upon a trivial accident it seemed to efface from the individual not only all ambition but even self-respect, and he was content to live a life of semi-invalidism in which he could never quite be said to be malingering, but was certainly making the most of a very slight disability. Some of these people, once they were labelled neurasthenics, were content so to remain as long as the stimulus of want did not force them to make exertions. A large proportion of cases of surgical tuberculosis, particularly in the spine and joints, were associated with injury, and here again often the injury was an afterthought, so deeply rooted in the mind was the idea that disease must be caused by something exterior to the patient, and the thing easiest to recall was some, perhaps, slight injury no more than that which men in certain employments frequently sustained. It was quite impossible to lay down any general rule for dealing with these cases; each case must be considered by itself.

The difficulty was very great also in cases of osteoarthritis. Slight repeated injuries to joints might possibly induce this condition, but the first intimation of anything wrong with a joint often followed an injury. A man might

have been carrying on his customary work for some time without noticing, or others noticing, how stiff and awkward his movements were, but when an accident occurred which laid him up for a short time he often had singular difficulty in getting again into his stride. Mr. Warren Low gave many examples of the difficulties which a cunning or a stupid man might introduce into what should have been a straightforward case. Another very difficult question was the length of time which should elapse before a man who had sustained a fracture, particularly a fracture of the lower limb, might return to work. Many such men were put for years upon light work—mess waiters, lift attendants, and the like—which was of small economic value. Good anatomical results might be secured, and there might be no stiffness of joint when the man left the hospital; nevertheless, he would go limping about, making no attempt to continue the exercises he had been taught. The conditions of industry would seem to require, in addition to the use of ordinary hospitals, some after-care centres where, by constant supervision and encouragement, men who had been discharged from hospital might be induced to overcome their lack of faith in their own restored powers.

Dr. ERNEST SOLLY (Medical Referee, Harrogate) corroborated what the President had said about the difficulty in deciding between the disability definitely due to an accident and that due to other causes. One great deficiency in the Act was that it made no provision for the assistance of the medical assessor or referee by affording him reliable evidence, such as an x-ray photograph. He had twice applied to the Home Office on this matter, and had been told that in one case one guinea and in the other case two guineas could be expended for this purpose; this was not enough for a proper radiological report. The referee was called upon to give an opinion from which there was no appeal, and yet no definite provision was made for him to obtain the evidence by which alone he could make that opinion definite.

Dr. MURRAY LESLIE (Medical Referee, City of London) said that a radiograph was only one of several things which the medical referee ordinarily could not get. He agreed with the President's suggestion as to the need for industrial after-care centres. When the surgeon had done all that he could, when the Pott's fracture or the Colles's fracture had healed, when the punctured wounds had cleared up satisfactorily, and the man was sent out of hospital, he still remained in his own opinion and in the opinion of his friends not able to resume work, and the period of such incapacity might extend from one to five years. The determination of incapacity depended very much on the temperament and environment of the man himself and the character of his friends. A peculiar thing happened to the majority of these men. It was more than mental inertia, and the word that expressed it most clearly was "deterioration." The man's whole mental outlook worsened. This was partly the result of idleness, possibly lounging at the public-house, partly also the result of the commiseration of his friends, which led him to feel himself a victim and a hero, and his injury assumed an undue proportion in his mind. Treatment was required in many of these cases for the man's mind no less than for his limb.

Dr. D. A. COLES (Beckton) hoped that the next Workmen's Compensation Act would be less slipshod in its language. For example—the word "serious" was used—"serious and wilful misconduct of that workman," "serious and permanent disablement"—although neither a lawyer nor anyone else could define the term. He referred also to the unintelligibility of Section 9, in particular the rules for calculating the weekly payment in the case of partial incapacity. One thing to be deplored in all these cases of industrial accident was the usual absence of any careful note of the time and circumstances.

Mr. MARYARD STURM asked whether Mr. Warren Low had come across many cases of acute osteomyelitis. He had had two such cases in young persons following a very trivial injury, in one of them so trivial that no notice of it was given to the foreman at the time. Was it to be held that osteomyelitis was the direct result of an injury? He had also had a case which suggested that progressive muscular atrophy might follow an injury. He thought that

some care might be taken in the choice of referee with respect to the type of case. He had known a nervous specialist sitting as referee in a surgical case.

Dr. R. PROSSER WHITE (Wigan) said that there had been about 500 cases of mule-spinner's cancer in Lancashire, costing the masters about £100,000 in damages. These cases began with a papule, which enlarged, and then developed into a spindle-celled sarcoma. He wished to ask the surgeons at what stage this should be treated by operation. Following operations on the groin there had been some lymphatic stasis and lymphangitis, and the man operated on had never been able to return to his ordinary work. Was there a greater danger in removing glands from the groin than from the axilla?

Mr. MAX PAGE said that in his out-patient department he had been very much struck by the frequency with which epididymitis was attributed to a definite injury. The actual injury had nothing to do with the beginning of the infection, it simply called attention to the painful spot. He also drew attention to the industrial disability following fractures of the os calcis. These patients with impacted fracture were sent out of hospital still complaining of painful heel, and he wondered whether the men ever got back to work at all.

Mr. WARREN LOW, in replying, said that he could not help feeling that the profession had been a little slack in the matter of certification; to give a certificate that the man was not yet fit for work or fit only for light work was so often the path of least resistance. Light work was not economic labour, and there were thousands of men, otherwise able-bodied, employed on these jobs. He had not actually come across cases of osteomyelitis developing after injury; the condition was rare in adult life, though recurrent osteomyelitis was sometimes found in older people when the original organism had been introduced into the system during childhood. In reply to Dr. Prosser White, any extensive dissection of the lymphatics of the groin was very apt to lead to lymphatic blocking. In conclusion he urged that industry should take some steps by means of after-care to speed up the return of men to work. In America the Pennsylvania Railroad and other big industrial undertakings had their own hospitals and medical officers; when the patient reached the stage at which he would ordinarily be discharged from a public hospital he was taken in hand and trained and encouraged to fit himself for resuming his occupation.

### THE PHYSIQUE OF SCHOOLBOYS.

At a meeting of the Manchester Medical Society, on October 6th, Dr. ALFRED A. MUMFORD, medical officer to Manchester Grammar School, delivered his presidential address on the physique, stamina, and efficiency of schoolboys.

Dr. Mumford said that the Manchester Medical Society was founded in 1834 by a number of young medical men, many of whom had had ample experience of the ill effect of the factory system owing to their holding appointments at the numerous local hospitals and dispensaries. They had advocated Government inspection and control, signed petitions in its favour, and had given evidence before various parliamentary committees and commissioners. Sixteen out of the twenty elected as officers to the new society were associated as teachers with one or other of the local schools of medicine. That there was a general desire for the improvement of health in the district was shown by the fact that a board of health had long been established, and a few years later a sanitary association was started for instructing the public in general matters of health. There was good reason for believing that the activating spirit was James Kay Shuttleworth, who had already instigated the formation of the Manchester Statistical Society to inquire into problems concerning the degradation, ignorance, and disease of the town population. Problems similar to those aroused by employment of children in factories were naturally met when the national system of education compelled the attendance of children at school. Though the medical assessment of health had vastly improved during the last ninety years, yet the methods of

measuring physique advised by the medical witnesses during the Factory Commissions, the measuring rod, the scales, the tape and the pulmoimeter of Thackral, and the data of eruption of the permanent teeth introduced by Sir E. Saunders, still constituted the basis of judgement of the physique of the schoolboy. In all calculations they must begin with the average boy, and from him measure the degree of accelerated or retarded physique, the effect of instruction in the gymnasium, swimming-bath, games, and classrooms; they had even extended their inquiries to the comparison of school physique with its sequel in the local university. The Manchester Grammar School measurements had been taken under exactly the same conditions from 1881 to the present time. They showed that the average boy was steadily improving in height, weight, and chest girth, though the measurement of vital capacity and of endurance (by Flack's test) was of too recent adoption for determining whether thorax was any improvement in respiratory power. Comparisons of boys admitted to the Classical Sixth and Science Sixth between 1890 and 1910, and of boys chosen for the gymnasium eights during the same period with the normal boy, showed that, while there was little to distinguish them in height or weight from the average boy, yet in both cases there was a significant difference between them and the normal boy as regards chest girth, which in both cases was superior. In order to find a common basis for comparing mental and physical progress some units of physical measurements must be taken and based on time increments—namely, in the progress made in six or twelve months. Tables of time increments in height, weight, chest girth, vital capacity, and endurance based upon the records at the school had been drawn up, and were used for constant reference. By means of these the relative development in the different categories could be compared. Observations were also made on the specific gravity of boys in the school swimming-bath during the summers of 1923-24. It was found that the largest factor in the variations was due to the degree of inflation and the size of the chest. When the means of the observations with inflated chest at each year of life were taken it was found that they were always below that of water, while the means of the observations with deflated chests were always above that of water. The question of buoyancy as a standard of health was therefore considered. As it was impossible to measure the buoyancy of all the boys in the swimming-bath, an attempt was made to utilize the measurements taken in the gymnasium for finding the relation between weight and volume—namely, the specific gravity.

The formula  $\frac{\text{Weight in grams} \times K}{\text{Height in cm.} \times (\text{chest in cm.})^2}$  was adopted.

A lengthy series of inquiries showed that for the average boy K was in the immediate neighbourhood of 19.5. In the subsequent 2,300 calculations of the series of measurements the K was left out and the formula  $\frac{W}{H^2}$  was used as a "crude buoyancy index" of health. If special cases, where the chest girth differed markedly from the mean circumference of the body, as for example, the cases of boys of exceptional shoulder development and the case of boys of very full stomach, were left out, the crude buoyancy index was a very useful method of testing the physical fitness of different boys. The means of the crude buoyancy index of the 2,300 cases at each age were taken as the normal, and it was found that the high-level scholar was of markedly greater buoyancy and the gymnasium champion of still greater buoyancy than the average boy of the school. A further series of measurements of shoulder girth was taken, and this girth was calculated as a percentage of the trunk height in order to obtain an index of shoulder development. Dr. Mumford added that a study of the development of the shoulder in relation to physique was of very great importance, since in Circular 1363 the Board of Education had virtually scrapped the elastic horizontal ladder, the row of rings, the parallel bars and the horizontal bar, which had played so large a part in developing the physique and courage of English public schoolboys, substituting Swedish apparatus for them. Mathematical analysis of measurements taken at the Manchester Grammar School showed a high correlation between

the development of the shoulder, as secured by English methods, and the high range of breathing; whether Swedish methods would prove as active and beneficial to English public schoolboys remained to be proved. Graphs illustrating the development of champion gymnasts, swimmers, winners in long-distance runs, sprinters, holders of school colours in lacrosse, football, and cricket, and also graphs showing differences in physique between boys of accelerated and boys of retarded scholarship, had been constructed and exhibited. Finally, a group had been taken of 140 students who, during the last ten years, had been educated at the Manchester Grammar School, where they had been submitted to periodic measurements and had subsequently passed on to the Manchester University. The group was divided into two sections: (1) about forty-five in number who had passed through a five years' course at the medical school and had not failed at any examination; and (2) those who had suffered one or more failures. It was found that though the mean height after 16 years of age in the former group had been slightly less than the mean of the latter group, yet when the relative gradings in height, weight, and chest girth were compared, the boys who had passed through the university without any failures had shown an ampler range of breathing or a larger chest girth in relation to their height than the group who had suffered failure.

### SCOTTISH SOCIETY OF ANAESTHETISTS.

#### Annual Meeting.

THE Scottish Society of Anaesthetists held its annual meeting in the Faculty Hall of the Royal Faculty of Physicians and Surgeons, St. Vincent Street, Glasgow, on July 6th last. The meeting was attended by the Associated Anaesthetists of the United States and Canada, who were then touring in this country; among those present were Dr. Mary E. Botsford of San Francisco, Dr. Wesley Bourne of Montreal, Dr. J. Wado Elphinstone of Pittsburg, Pa., Dr. R. B. Hammond of White Plains, New York, Dr. F. H. McMechan of Avon Lake, Ohio, and Drs. E. I. McKesson and Lamara Schuey of Toledo, Ohio.

Dr. J. STUART ROSS, who was succeeding Dr. A. Mills as president of the society, gave his presidential address on "The provision of an anaesthetic service." Dr. Ross explained the steps he had taken to ascertain what was being done at the various medical schools to improve the supply of skilled anaesthesia both in hospitals and in private practice. A questionnaire had been drawn up and circulated to leading anaesthetists. Replies had been received from a large number of schools in England and some of the Dominions. From the replies it appeared that lectures to students were universally provided and that attendance was obligatory. The number of attendances varied from three to a dozen. Dr. Ross thought they should always be more than six, and should include instruction in applied physiology. In many schools the subject was illustrated by demonstrations upon anaesthetized animals, whereby the causes of various accidents which might happen in the operating theatre were made more clear to the student mind. In the supervision of students in practical administration emphasis should be laid upon the use of safe methods for minor surgery and for dentistry. Owing to the deficient teaching of the medical student in Scotland the Edinburgh Dental School had educated its pupils to give their own anaesthetics. In over sixty thousand administrations at the Edinburgh Dental Hospital there had not been a fatality. Special instruction in anaesthetics should always be given to residents immediately on or before taking up office. This was evidently generally recognized; but some schools which had resident anaesthetist appointments naturally did not need to give extra teaching to the other house officers. Post-graduate instruction was now available, particularly in London, so that qualified practitioners could take a course under a skilled teacher. Practically all the schools questioned, including those in the dominions, had included in their full staff one or more of their visiting anaesthetists. But this was not the case, Dr. Ross thought, in any Scottish school. In five of the London schools one or more resident anaesthetists were appointed. This had a



marked effect in improving results, and also furnished the best possible training for one who wished to take up the subject as his life work. Only by providing a twenty-four-hour service could the mortality rate in hospitals be kept within reasonable limits. In private the supply of skilled anaesthetists had certainly increased. Dr. McKesson had estimated that the number of persons doing anaesthetic work exclusively had increased within the last few years from four or five hundred to two thousand. As the result of all these efforts, Dr. Ross could not doubt that vast improvement had taken place. If, however, one turned to the statistics of the Registrar-General for England and Wales, and also for Scotland, the impression given was of progress in the wrong direction. In comparing the death rate from or under anaesthetics per hundred thousand population for the three pre-war years with the rate for all the post-war years Dr. Ross had been able to see, it appeared that in England and Wales there had been a rise since the war, but only from 0.8 to 0.9. In Scotland there had been a very substantial post-war rise.

Year.	England and Wales.		Scotland.	
	Mortality Rate per 100,000 Population.	Proportion of Total Anaesthetic Deaths occurring under CHCl <sub>3</sub> or a Mixture containing it.	Mortality Rate per 100,000 Population.	Proportion of Total Anaesthetic Deaths occurring under CHCl <sub>3</sub> or a Mixture containing it.
1911	0.7	65.0 per cent.	0.9	95.0 per cent.
1912	0.7	52.0 "	0.9	91.5 "
1913	0.8	46.3 "	1.0	87.5 "
1919	0.8	63.5 "	0.8	86.0 "
1920	0.9	52.1 "	1.4	84.5 "
1921	0.9	44.0 "	2.2	93.4 "
1922	0.8	46.4 "	1.6	88.0 "
1923	—	—	1.5	76.0 "
1924	—	—	1.7	82.1 "

These figures could not be considered satisfactory. But the effect of adopting the measures already indicated had, in one hospital in Scotland, reduced the death rate by half between 1922 and 1924. Dr. Ross commended this point of view to the responsible authorities of the large hospitals.

Dr. E. I. McKesson (Toledo, Ohio) said that not enough time in lectures and clinical practice was given in most colleges for the proper instruction in anaesthesia. Particularly practical work under supervision was important; but, as pointed out, the student also needed to know the sciences underlying the subject and to be acquainted with what had been done by others. Toledo was outside a medical teaching centre, so that Dr. McKesson gave post-graduate instruction only, and the type of student was entirely different from that encountered in medical colleges. His students wanted to learn anaesthesia, having been in the practice of dentistry or medicine long enough to know the value of anaesthesia. They were a hand-picked group with intense interest. Dr. McKesson's plan consisted of practical instruction in the use of nitrous oxide-oxygen, etc., under supervision, and informal lectures and discussions of theory, of blood pressure and other reactions, and of technique for various cases. The supervised practice was by far the more important. The student was kept alert by intentional disorganization of his technique by turning off the gas or oxygen, or by changing the mixture. It was obvious that the most cordial co-operation of the surgeon and anaesthetist was necessary for such instruction in anaesthesia. Dr. McKesson believed that the best time to train anaesthetists was after the student had learned, by experience in practice, that anaesthesia was of great importance and desirable as a specialty. At the same time the routine instruction of medical students was necessary.

Dr. MARY E. BORSFORD (San Francisco) expressed admiration for the valuable work done in the specialty of anaesthesiology by the British. As to the comparative mortality rate referred to by Dr. Ross, she said that statistics were notoriously unreliable; the determination

of the cause of death accruing in the first twenty-four hours post-operatively was often difficult and occasionally impossible. There was also the question of perhaps greater accuracy in reporting fatalities. With the unfortunately lower standards in certain districts in the United States, where technicians were used as anaesthetists, she was confident that the mortality rate would exceed the British if chloroform were used as frequently.

Dr. TORRANCE THOMSON referred to the large number of students that had to be dealt with in a short time, and to the fact that the interests of the patient must always be the first consideration. He deprecated giving theoretical apart from practical instruction, and said it was his custom to deliver six lectures at the beginning of each term to the students with whom he was to work in the operating theatre.

Dr. FAIRLIE felt that Dr. Ross did well to stress the importance of the teaching of anaesthesia. He was interested in the comparative way in which the subject had been approached, and to hear of the methods adopted for instruction in the various medical schools.

Dr. MILLS (Dundee) said that certain advantages were enjoyed in a young and comparatively small school. The anaesthetist was recognized as a member of the staff, and the lecturer in anaesthetics had the status of any other lecturer in the university. The number of students being relatively small, each student secured thorough instruction in the administration of anaesthetics before he sat for his final examination.

Dr. WESLEY BOURNE (McGill University, Montreal) then gave a lantern lecture on the effects of ether impurities.

Before the annual meeting of the society, Dr. H. P. FAIRLIE gave a demonstration at the Glasgow Royal Infirmary of the intratracheal administration of ether and of nasal administration of nitrous oxide and oxygen gases. This was followed by a lantern lecture by Dr. J. ROSS MACKENZIE on carbon dioxide in gas and oxygen anaesthesia. He showed that the partial pressure of nitrous oxide at atmospheric pressure was insufficient to produce anaesthesia for major surgery, without reducing the percentage of oxygen below that in the atmosphere. The assistance to good anaesthesia derived from local and regional analgesia, rebreathing, and carbon dioxide were mentioned. The effects of carbon dioxide deficiency upon the patient were tissue asphyxia, nitrous oxide toxæmia, apnoea, and depression of the vital medullary centres. Rebreathing, when properly regulated, he considered a very important factor in gas and oxygen anaesthesia, since it conserved the patient's body heat, retained the carbon dioxide in the expired air, and at least delayed the onset of signs of surgical shock. Infants and children were difficult to anaesthetize with gas and oxygen because relatively to adults they had a smaller respiratory exchange, a larger vital capacity, and a smaller alveolar area from which gas and oxygen might pass to the blood. A face-piece with an expiratory valve, attached directly to the gas bag, and a small percentage of carbon dioxide greatly facilitated the induction in infants. The advantages of a small percentage of carbon dioxide were, Dr. Mackenzie believed, both operative and post-operative. The operative advantages were that it hastened induction, counteracted the respiratory depression of morphine, maintained the acid-base balance of the blood, promoted ready separation of oxygen from oxyhaemoglobin to the tissues, improved the general condition of the patient, indirectly gave tone to the heart muscle and intrathoracic vessels by stimulation of the respiration, and hastened anaesthetic recovery and convalescence. The post-operative advantages were that it protected the patient against abdominal distension, respiratory complications, thrombosis and embolism, as well as post-operative collapse. Ether was frequently required in gas and oxygen anaesthesia, and, when used, he was of opinion that it should be washed out of the blood and tissues either before or after the patient left the theatre. Auto-de-etherization and de-etherization by inhalation of carbon dioxide were reviewed. The dangers of carbon dioxide administration were urgent, but in his experience could usually be anticipated. They were epileptiform convulsions, asphyxia, rupture of alveoli from excessive intrapulmonary pressure and hypercapnia.

## Rebels.

### SIR JAMES MACKENZIE.

"MACKENZIE was a great doctor, the greatest, I believe, of our generation. He was a great man of science, a great observer, a great thinker, a great controversialist. But over and above all these things he was a great man, a great friend, true in heart, noble in spirit, dauntless in courage." This statement, made in the opening pages of the book, will be endorsed by many who knew about Mackenzie and his work and by all who knew him well. It also stamps the author as a hero-worshipper, and such a one may sometimes depict his hero not actually as he was, but as he appeared to the worshipper. For a really interesting biography—and this one will certainly grasp the reader—the author should always be an enthusiast with a gift of picturesque writing.

An attempt has been made to render this book, *The Beloved Physician: Sir James Mackenzie*,<sup>1</sup> suitable for the lay and the medical reader, and not always quite successfully. The technical parts describing Mackenzie's medical work will probably prove beyond the grasp of the ordinary lay mind. The medical reader will probably be irritated by the elementary instruction of the layman in medical matters, but he will be rewarded by a singularly lucid account of the medical problems which confronted Mackenzie, and his method of solving them. As a new generation has grown up which accepts Mackenzie's teaching as authoritative, without knowing how it was evolved, we can strongly recommend this masterly exposition of his life work as extremely valuable to young practitioners.

The Beloved Physician, the name which came to be applied to him in Burnley, had in many respects a placid life, but the author deals with it in somewhat dramatic style. All readers of Mackenzie's writings are familiar with the case of the young mother dying in childbirth as the result of heart disease. He made it the text of many a sermon, and it showed well the clinical value of one case in directing the physician's attention to special investigation. Here it serves to give an opening to the author's power of description and his tendency to a journalistic style of writing. He makes great play of the "giants" which crossed Mackenzie's path and threatened to wreck his progress. At times they took the form of the editors of medical journals, though the author of this book pays handsome tributes to two of them. At others, they appeared as "Harley Street," and again as all who failed to appreciate the greatness of the man. As a matter of fact, Mackenzie's experience was the same as that of all great medical pioneers—their discoveries are not accepted at first. What the profession has to be thankful for is the fact that Mackenzie was a first-rate fighting man, and poured his views down the throats of the doctors—in season and out of season. Mackenzie was a golfer, and when requiring a niblick in a bunker he used to call for his claymore. At times this was the sort of weapon he used in controversy, and there is little doubt that he thus accelerated the general acceptance of his views by many years.

There runs through the book a curious contradiction in that Mackenzie is at one time pictured as ignored and misunderstood in London, and at another as loaded with all the honours his professional brethren and country could give him. The author even apologizes for the fact "that some passages of the book are inspired by bitterness or unkindness or sarcasm," and explains this by saying they are directed first and most of all against himself because he did not grasp Mackenzie's meaning and aims until late in the day. This method of relieving an author's feelings does no good to the hero's memory, nor does it tend to historical accuracy. It appeared to many that Mackenzie's views were often difficult to grasp, and it may be left an open question whether the fault lay with the exponent or the hearer. There is no doubt that one reason was his actively progressive mind—he was constantly at new ideas based on a substratum of facts not sufficiently understood by his audience. Mackenzie was distinctly an

elusive personality, and the author of his biography might have developed this side of his character rather than indulge in sarcasms levelled at the medical profession.

The personal details about Mackenzie's life are extremely interesting. With the knowledge of what was to follow, it is delightful to read that on going to school at the age of 5 years, "when he returned home again, after the first day's work, he announced that his education was finished. He had had enough of it." Apprenticeship in a chemist's shop followed school life, and it is very terrible to read in these days of his working hours—"twelve hours on each week-day, fifteen hours on Saturday, and four hours on Sunday." On the Saturday nights, when Mackenzie could not get home before midnight, "his mother was accustomed to pull up a blind of the farmhouse, and set a lighted lamp in the window, so that he might see this sign of welcome a mile or so away on his lonely journey. Mackenzie never forgot that lamp." Readers will enjoy all the personal details of the doctor's life in Burnley, at first in residence with the senior partner, and later in his own house at Bank Parade. No event was more important than his marriage, which, judging by the happy result, must have been arranged in heaven. All friends of Mackenzie will also feel indebted to his wife for the family details which she has given in this book and which she alone could give.

Full justice is not, we think, done to the last great adventure, the settling in St. Andrews. The work at the institute there, and the stimulating effect of Mackenzie's presence and guidance, are fully described; he himself, however, was dreaming great dreams and pondering over the future of medicine. Not everyone understood this, and some of his readers were puzzled. While in the past his work had naturally been limited to a great extent to the study of the heart, he now sought to find out the laws which governed the production of symptoms in all forms of chronic disease. He believed that such laws existed and ought to be discovered. The path probably lay through the recognition of the disturbance of physiological laws. To physiological laws and to the description of physiological processes he turned, but found them to be unsatisfactory and in many respects untrue, so far as the current teaching went. And so death came to the old warrior, the old general practitioner, and found him struggling to find out new great general laws which would aid the progress of medicine.

### BONE DISEASES: INFLAMMATORY AND TOXIC.

THE appearance of a new book on the somewhat complicated subject of bone disease is always a matter of interest, and particularly so when the author is a practical surgeon who has also made an intimate study of the subject from the pathological side. The advantages of this combination are well seen in the recently published work of Mr. LAWFORD KNAGGS on *The Inflammatory and Toxic Diseases of Bone*.<sup>2</sup> It is probable that this country is unsurpassed in the wealth of material existing in its museums exemplifying the various diseases of bone, and in illustrating his subject the author has wisely made use of this material, not only from the extensive collection in his own university of Leeds, but also from the abundant material in the Royal College of Surgeons and the London and provincial medical schools. The result is a volume possessing the satisfactory features of being eminently practical, in that the clinical aspect is kept in the foreground, while the pathology of the subject is adequately treated and its practical bearing duly emphasized. The author's plan of accompanying his descriptions of the several diseases by means of clinical histories of actual cases and of referring, as far as possible, to actual specimens accessible to his readers in museums, is excellent; these features, with the addition of good illustrations, form the best possible basis for a satisfactory exposition. The illustrations number, on the average, one to every other page, without undue crowding, and of their quality the beautiful figures of leontiasis ossea

<sup>1</sup> *The Beloved Physician: Sir James Mackenzie. A Biography by R. Macnair Wilson.* London: John Murray. 1926. (Demy 8vo, pp. 2 + 316; 1 portrait, 12s. net.)

<sup>2</sup> *The Inflammatory and Toxic Diseases of Bone.* By R. Lawford Knaggs, M.C. Cantab., F.R.C.S. With numerous photomicrographs by G. H. Rodman, M.D., Hon. F.R.P.S. Bristol: J. Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. 1926. (Med. 8vo, pp. xii + 416; 197 figures. 20s. net.)

may be mentioned as good examples. The author evidently attaches much importance to good illustrations.

In the matter of classification, by including in a single group both inflammatory and toxic diseases, the difficulty of satisfactorily placing certain diseases, such as osteitis fibrosa, has been avoided; practical considerations have led Mr. Knaggs to include the neuropathic arthropathies; he has appropriately placed them between syphilitic disease and osteo-arthritis. An interesting chapter has been appended on osteogenesis imperfecta. The ground covered by the volume includes the non-specific inflammations, with which are grouped Perthes's and Köhler's diseases; the specific inflammations; Charcot's joints; jaws; arthritis deformans; pulmonary osteo-arthritis and allied conditions; rickets; infantile scurvy; osteitis fibrosa; osteomalacia; osteitis deformans and leontiasis ossea.

In an interesting discussion on the relation between osteitis deformans, osteitis fibrosa, and osteomalacia, the author expresses the opinion that the three diseases have a similar and possibly identical origin. The lesion in osteitis fibrosa and osteitis deformans is practically the same; in both there is a marked degree of fibrous marrow, associated with a production and an absorption of osseous tissue. In osteitis deformans ossification outruns absorption, whereas the reverse is the case in osteitis fibrosa. It is suggested that this depends on differences in the vital resistance of the patient to toxic influence. This view is to some extent supported by clinical experience, for osteitis fibrosa is a disease of young people, while osteitis deformans affects middle and advanced life; further, the victims of osteitis deformans usually show marked evidence of arterial disease. The argument, therefore, leads to the inference that a susceptible individual with a sufficient resisting power may stave off osteitis fibrosa in youth, but succumb to osteitis deformans in old age, with its failing vitality. In accordance with this view, osteitis fibrosa and deformans are regarded as different expressions of the same disease. The relation of osteomalacia to the other two diseases is similarly explained; the resistance in this disease, owing to the severe depression of the patient's vitality, is so slight that the fibrosis of the marrow is unaccompanied by bone formation, the sole effect being degeneration and absorption of the osseous tissue. In connexion with Charcot's disease the author advances an interesting theory in explanation of the excessive bone formation which occurs in the hypertrophic form. He has observed that the excess is usually found in cases where there has been rapid attrition of the ends of the bones, and he suggests that large numbers of osteoblasts are thereby set free into the joint cavity and give rise to the masses of bone around.

As indicated on the title-page, the book is intended to be a textbook for senior students; to these it will be of great service, but doubtless it will be welcomed by a wider circle. It was undertaken, so the author states, in order to create an interest in the leisure that follows retirement from active surgical duties; we feel sure that he has, in the completed work, furnished interest for many others besides himself.

#### CLINICAL EXAMINATION OF THE NERVOUS SYSTEM.

We recently had the pleasure of reviewing the French edition of Professor MONRAD-KROHN's admirable little book published under the above title. The third English edition<sup>1</sup> is now before us, and the standard of previous editions is more than maintained. The book is the best short account of the clinical examination of the nervous system, brought into line with the results of recent research, with which we have met. Dr. GRAINGER STEWART points out in an introductory note that the book is not a translation from the Norwegian, but has been written in English by Professor Mourad-Krohn, who is a Member of our own College of Physicians. He is to be congratulated on his clear style and diction, and on the remarkable

completeness of the information which he has made available within such a small compass.

The routine of examination recommended is on the generally recognized lines, but the notable feature of the book is the account it includes of clinical methods dependent upon recent knowledge which, though fully accepted, has not yet passed into the currency of the textbooks. Such subjects are the reflexes of spinal automatism, associated movements, examination of cerebellar function, cistern puncture, etc. There are admirable short accounts of all of these, though we may differ from occasional statements, such as that "in extrapyramidal motor lesions of the paralysis agitans type there is a marked diminution or loss of all associated movements." Kinnier Wilson has shown that this is a misinterpretation of the facts.

The book will be found of value by clinical teachers as well as by house-physicians and others working in the wards, while many in general practice will appreciate a brief account of modern methods. There are a number of aptly chosen photographic illustrations and some diagrams in the text.

#### RIDER HAGGARD.

SIR RIDER HAGGARD, who died last year at the age of 69, left behind him an autobiography coming down to 1912. It has been edited by Mr. C. J. LONGMAN, and published with the title *The Days of My Life*.<sup>2</sup> The book, which is in two volumes, is discursive, but its author was a practised writer, and knew well how to keep his reader's interest alive. Haggard was one of a class that grows scarcer, partly because families grow smaller. It consisted of younger sons of squires and lairds reinforced from the parsonage and the manse. Their fathers were able to give them as good an education as the grammar schools and minor public schools could afford, and at an early age many of them sought fortune overseas; some of them failed, some of them became active in public life overseas, some made money and came home, where not a few of them took their share in local and national affairs. For the foreigner's view of the value of this class to the nation and the Empire reference may be made to the opinion Mr. W. H. PAGO expressed in one of his letters written from England during the war.

Haggard got his overseas experience early, and made money at home. He began life at the age of 19 as secretary to Sir Henry Bulwer, who had been appointed Lieutenant-Governor of Natal; he had some varied and exciting experiences, especially when on the staff of Sir T. Shopstone, which served him well when he took to writing romances. After about five years as an official he resigned, married, set up with a friend as a farmer, and purchased a stock of ostriches. Like a good many others on the spot, Haggard was distressed by Mr. Gladstone's bargain with the Boers after Majuba, and, believing that it would lead to a long period of unrest and eventually to a big war, as it did, he sold his farm and returned to England in 1881. He was called to the Bar, but to maintain his family took to writing stories; their growing success, culminating in *She*, induced him to give up the law. All along he had had one foot in the country, for he had gone to live in Norfolk, the county in which he was born, as early as 1882; there he came in time to live the life of a typical country gentleman of the active-minded sort, farming his own land, becoming chairman of the local bench, standing for Parliament and coming within a little of success, and eventually taking a rather prominent part in the investigation of national and imperial problems affecting the land and the workers on it. He emulated Arthur Young by an inquiry into the conditions of life in rural England, and made an arduous journey on the other side of the Atlantic to report on labour colonies.

His interest in public life led him to write (1898) *Dr. Thorne*, a novel of vaccination. It was the story of a young medical man who fell into the toils of the anti-vaccinators. He was invited to stand for Parliament as a

<sup>1</sup> *The Clinical Examination of the Nervous System*. By Professor G. H. MONRAD-KROHN, M.D. Oslo, M.R.C.P. Lond., M.R.C.S. Eng. With a Foreword by T. Grainger Stewart, M.D., F.R.C.P. Third edition. London: H. K. Lewis and Co., Ltd. 1926. (Cr. 8vo, pp. xvi + 201; 82 figures, including 12 plates. 7s. 6d. net.)

<sup>2</sup> *The Days of My Life*. By Sir H. Rider Haggard. Edited by C. J. Longman. In two volumes. London and New York: Longmans, Green and Co., Ltd. 1926. (Cled. 8vo. Vol. I, pp. xvi + 394; 9 plates. Vol. II, pp. ix + 226; 7 plates. 28s. net the two volumes.)

Radical and antivaccinator, and after a brief struggle, not exactly between ambition and conscience, but rather between ambition and intellect, he agreed. In our review of the book at the time we said that it "will be eagerly read for the sake of its vivid pictures of life and its powerful study of a complex human character by those who would never trouble their heads about vaccination further than to be revaccinated when an epidemic is threatening." Our expectation that the book would be read has been amply fulfilled, and it is still to be obtained from Messrs. Longman. As, however, Haggard had at that time parliamentary ambitions it called for some courage to write it.

In the peroration to this autobiography he described himself as "a lover of the kindly run of men . . . a lover of the land, and of all creatures that dwell therein, but most of all, perhaps, a lover of his country, which, with heart and soul and strength, he has tried to serve." This is a fair statement of the motives that inspired him throughout his life.

### "BRAIN."

THE current issue of *Brain*,<sup>5</sup> vol. xlix, Part 3, opens with an article by Dr. W. J. Adie, in which he describes twenty cases, including five which he has observed personally, of a syndrome to which it is proposed to apply the term "idiopathic narcolepsy." It is characterized by attacks of two kinds: in the one the attack consists of sudden and irresistible sleep of short duration; in the other, as the result of some sudden emotion, the muscles relax suddenly and the patient sinks to the ground, but without loss of consciousness. In a few cases sleep attacks only occurred. Reasons are given by which the syndrome may clearly be distinguished from epilepsy, hysteria, and other conditions. In only two instances has the condition in typical form been found to follow encephalitis lethargica. In an interesting discussion, Dr. Adie considers the mechanism of sleep, especially Pavlov's work on conditioned reflexes in which he found that inhibition of conditioned reflexes led to a tendency to sleep, and that, in fact, internal inhibition and sleep were probably identical processes. In several of the cases Dr. Adie describes, symptoms and signs were present suggesting pituitary disease, and he believes that idiopathic narcolepsy is a functional disorder of an endocrine-nervous system comprising the pituitary body and adjacent structures in the "twain-brain." This article will well repay study in detail.

Drs. James Charles Fox and Gordon Holmes contribute an important article on "Optic nystagmus and its value in cerebral lesions." This is a type of nystagmus which occurs when an individual gazes out of the window of a fast-moving train, but a similar nystagmus is brought about when a drum with vertical lines upon it is rotated in front of a normal individual. The authors employ a drum upon which are coloured pictures instead of vertical lines. It is found that when the drum is rotated in a clockwise direction, and viewed from above, nystagmus develops in an individual watching the drum; it consists of a quick phase to the right and a slow recession—that is, a nystagmus is produced opposite in direction to the rotation of the drum. Converse conditions hold when the drum is rotated anti-clockwise, and an analogous vertical nystagmus can be obtained when the drum is rotated on a horizontal axis. In an investigation of a large number of cases of cerebral lesion, including 41 cases of cerebral tumour, Drs. Fox and Holmes have found that this optic nystagmus may be abolished in one direction—namely, to the opposite side, in unilateral cerebral lesions. Their observations support the hypothesis that reflex centres for optic nystagmus lie in the occipital lobe and in the second frontal convolution, and that these are connected by a reflex path. Since optic nystagmus is present even if visual acuity is very slight, and however restricted the visual fields, it is clear that it forms a new localizing sign of considerable value.

<sup>5</sup> Published in London by Macmillan and Co., and in New York by the Macmillan Company. Yearly subscription in this country 24s., to be sent to Messrs. Macmillan, St. Martin's Street, London, W.C.2. Price per part 6s. net.

### NOTES ON BOOKS.

WE must confess that the title of Mr. T. N. Roy's book, *The Organon Modernised*,<sup>6</sup> led us astray. We expected to find a modern version of Bacon's *Novum Organum*, for we had forgotten that Hahnemann also wrote a monumental organon. Mr. Roy presents this work in an abridged form, and commends it not only to students of homoeopathy, but also to psychoanalysts and students of heredity and biology. In Part II the author advances a new theory "to scientifically explain" the action of homoeopathic medicines. Briefly, his theory is based on the researches of Kucharenko on crystals. According to these, it is the nature of crystallons which explains the need for high dilution and the therapeutic action of inert substances such as gold. Through the theory of crystallons also Mr. Roy is able to explain the action of hormones, to prove the success of homoeopathy in chronic disease, to show the cause of the failure of the allopath, the eupath, and the isopath, and to demonstrate the wild-goose chase that is pursued by the vitamin-hunter. Mr. Roy has acquired an immense amount of information; his book is full of delightful sentences, such as "The gland-therapists are just in the chickenhood of homoeopathy"; and he has a remedy for the unfriendliness which he says exists between allopathists and advocates of homoeopathy. The proper sphere, he says, of allopathy is surgery and certain acute cases where homoeopathy is uncertain of success. The proper sphere of homoeopathy is the chronic disease and those acute diseases which do not run too rapid a course. Mr. Roy is, perhaps, a person of profound wisdom: he is D.H.A., M.A.G.A., and also field expert to the Government of Bengal.

The volume by Dr. ARTHUR WEBER, published in Berlin, on electro-cardiography and other graphic methods in circulatory diagnosis,<sup>7</sup> does not contain a comprehensive account of all the methods available. The "other methods" of the title are restricted to those for the photographic registration of the apex beat, arterial and venous pulses, heart sounds and respiration; of the use and interpretation of these, as well as of electro-cardiography, short and simple accounts are given. The book is therefore not so much for the general practitioner as for the medical officer in charge of a hospital heart clinic where a dark room is available. The electrical instruments described are the Edelman modification of Einthoven's galvanometer and the electro-cardiograph of Siemens and Halske. Detailed consideration of experimental and theoretic aspects are omitted, but there are numerous references to the original papers. The illustrations on the whole are only fair, due partly to the fact that they appear to be reproductions of paper strips, and partly because too many curves are recorded on one strip.

The second part of the second volume of the *Annals of the Pickett-Thomson Research Laboratory*<sup>8</sup> contains a series of papers with illustrative plates dealing particularly with the corynebacteria and the etiology of tuberculosis. The volume is intended to assist working bacteriologists by giving detailed information about the puzzling group of "diphtheroids," the nomenclature of which is in great confusion. The numerous plates and the tabulation of the distinctive characteristics of each species are very helpful in this respect, and a full list of references to original papers is included.

<sup>6</sup> *The Organon Modernised: or the Philosophy, Science and Practice of the Curative Art.* By T. N. Roy, D.H.A., M.A.G.A., Government Farm, Dacca: G. N. Roy, 1925. (Gr. 8vo, pp. v + 148. 3 rupees net.)

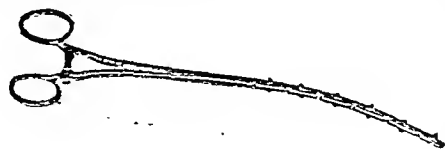
<sup>7</sup> *Die Elektrokardiographie und andere graphische Methoden in der Kreislaufdiagnostik.* Von Dr. Arthur Weber. Berlin: J. Springer, 1925. (Roy. 8vo, pp. ix + 208; 139 figures. R.M.18; bound, R.M.19.20.)

<sup>8</sup> *Annals of the Pickett-Thomson Research Laboratory.* Vol. II, No. 2. London: Baillière, Tindall and Cox; Baltimore: The Williams and Wilkins Company, 1925. (Demy 4to, pp. iv + 175; 40 plates. Subscription 42s. net for one volume a year.)

### PREPARATIONS AND APPLIANCES.

#### A Gastric Clamp.

MR. DONALD MACLEOD, F.R.C.S. (Leigh, Lancashire), has devised a clamp, which he finds most useful for the operation of gastro-enterostomy and also for pylorotomy, in which there is always danger of retraction of the stomach walls from the blades of the usual type of clamp. The instrument is an extremely light screw joint flexible clamp; the edges of the blades are raised at intervals to prevent slipping,



and, in order to provide additional security in this respect, a small stud is placed on the inner surface of one blade, at its tip, fitting into a small recess on the opposite blade. The clamp has been made for him by Messrs. Archibald Young and Son, surgical instrument makers, Edinburgh.

# British Medical Journal.

SATURDAY, OCTOBER 30TH, 1926.

## VOLUNTARY HOSPITALS AND THE BODY POLITIC.

VOLUNTARY hospitals are institutions of such mark that it is inevitable that the attention of publicists and officers of the State should be drawn to them. Indeed, they are clamant of attention, without which they cannot accomplish the work for which they exist. They make a twofold claim: a claim on the individual and a claim on the community of individuals—the State. And the claim is recognized by both. On the reverse side also a twofold claim is made: the individual (whether patient or benefactor) looks to the hospital for certain effects, and the body politic (through its representatives) looks to these hospitals for maximum effects upon the public health.

In the days when the bulk of our hospitals were founded, less than two hundred years ago, the idea of their founders was clearly individual—the cure of the sick man, woman, and child. It was the response made by an individual to an individual, of the well and able to the unwell and unable. There appears to have been little, if any, thought of a community effect. Indeed, at that time the State was callous to the last degree towards the lives of its citizens. Its laws were brutal, its tolerance of evil shocking. "Gin Lane" was justified in the interests of agriculture! The awakened conscience of individuals broke through social neglect, and to-day the appeal of the awakened social conscience is so vehement that it is thought by some to threaten to shoulder out individual effort. But a visit to only one hospital (or even the surgery of one private doctor) will calm such apprehensions. There, it is one to one, doctor to patient, nurse to sufferer—a complete absorption in a single aim. And this is as it must ever be. The attitude is not a limitation of view. It is the continuation of the spirit of pious founders which aimed at an individual recovery truly, but it embraces the larger view of a better public health, for only by health in the individual can there be health in the body politic. Both in religion and in medicine the eighteenth century reformers aimed at individual salvation, but as "he which converteth a sinner . . . shall cover a multitude of sins," and he who cures a sufferer will relieve a host of aillings, so each secured an effect wider than the immediate, and each advanced the public weal.

Nevertheless, there is a change of attitude to-day. The advancement of the idea of public health, and the high position it has attained—and rightly so—in the public mind, has brought to the forefront the problem of co-ordination of effort. The field of endeavour is too precious to allow of waste, of overlapping, or of competition. Although there is in effect now existing a high degree of co-ordination of effort between State hospital and voluntary hospital, as between private practitioners and public health officers, secured by mutual accommodation and good-will, yet there is evidence of a desire for something more than this as between the hospitals—for some formal alliance or scheme of co-operation. This desire was pointed out by a speech made by Mr. Neville Chamberlain, the Minister of Health, at the Coventry and Warwickshire Hospital on October 19th. He said that public health could not be treated in water-tight compartments, and

that in any survey of the general health question the part played by huge public institutions like the voluntary hospitals could not be left out of account. He thought the time had nearly come when the voluntary hospitals might be fitted into some scheme covering a wider field than any that had hitherto been formulated. Then followed the suggestion that a time would come when those responsible for the conduct of voluntary hospitals might be represented on some central health authority upon which would rest the responsibility of the general hospital policy of the area. In return for a certain subordination of their complete and absolute freedom to do what they liked the voluntary hospitals might be willing to receive some further assistance than that they got at present; under a system of that kind a central authority upon which the voluntary hospitals would be represented might lay down in the broadest possible outline the principles upon which questions such as extension should proceed, while leaving to each individual unity the widest possible freedom in the administration and conduct of its work.

Mr. Chamberlain hoped that the idea would not frighten his audience. It will not frighten doctors, at any rate. The British Medical Association has already faced the problem, and published its considered opinion in the *Hospital Policy of the Association*. In 1923 the Representative Body adopted a series of resolutions on the co-ordination of voluntary, Poor Law, and municipal hospitals. It held that there was danger in the overcrowding of voluntary hospitals, and the isolation and understaffing of Poor Law hospitals. It urged the extension of the principle of the Local Voluntary Hospital Committees (set up under action taken on the report of Lord Cave's Committee) so as to make them co-ordinating bodies for all hospitals, to ascertain the hospital accommodation existing and required, both as regards general and special hospitals, centres in rural districts, and convalescent homes. And that "the Committees should not interfere with the domestic autonomy of the several hospitals of whatever type within their areas, but act only in an advisory capacity; each type of hospital should be encouraged to work upon those lines of local initiative which have proved so vital in hospital work." It also conceived the enlargement of the Voluntary Hospitals Commission into a Standing Consultative Hospitals Committee as a "buffer state" between Ministry and local hospital committees. There is in these citations sufficient likeness to the ideas expressed by Mr. Chamberlain to make us hope that when he comes to formulate legislative proposals which must affect the Poor Law hospitals, co-ordination of effort may be secured without injuriously cramping individual effort.

It is satisfactory to find that though certain passages in his speech at Coventry have been taken to mean that the policy of the Ministry of Health is to secure the subordination of hospitals and of the medical profession to the Ministry—or, in other words, to secure what is primarily called a State Medical Service—Mr. Chamberlain has repudiated this interpretation. He has stated, first, that the general practice has been, and will continue to be, to have recourse in the greatest possible extent to the private practitioner "on terms which are the regular subject of discussion with the British Medical Association and with the responsible local authorities"; and, secondly, that his policy in regard to the hospital question is based on the same principle. He is, he says, and always has been, a firm supporter of the voluntary hospital system.



## ETHYL ALCOHOL SUBSTITUTES.

ORGANIC chemistry in the last few years has been developed on new lines; indeed, a new branch of the subject seems to have arisen which has already borne fruit in the syntheses of important organic products from inorganic sources. The new method, which may well revolutionize the manufacture of many important commercial organic compounds essential in the arts, depends on the utilization of high temperatures and pressures not previously available.

If carbon monoxide prepared from water gas is reduced at a high temperature and pressure in the presence of a catalyst, methyl alcohol is produced. Previously this compound was obtained from America, where it is prepared by distilling wood, and the impure product is termed "wood alcohol." Wood alcohol is employed in large amounts in this country; over a million gallons, for example, are used annually in the preparation of varnishes. The Germans are now said to be producing it in large quantities by the method indicated, at a cheaper rate than the Americans can produce it from wood. But this is not the whole story: by altering the physical conditions under which the reaction occurs it has been found possible to produce the higher homologues of methyl alcohol—particularly common ethyl alcohol and iso-propyl alcohol. It seems likely, unless unforeseen difficulties occur in the manufacture, that in the future this method of production will supersede all others. Although ethyl alcohol also can be prepared by this method, neither in France nor in Germany is it being pushed; it may be that the authorities think it more important to their countries to encourage the cultivation of potatoes, from which alcohol is prepared by fermentation. Those who have been following the trend of this branch of chemistry can hardly fail to appreciate that synthesis of carbohydrates for food purposes is already on the horizon.

Ethyl alcohol is by far the most generally useful of the alcohols in pharmacy and medicine. It is an important agent in the extraction of active principles from drugs, and is largely used in the manufacture of perfumes. The excise duty on ethyl alcohol is, however, so high that it is natural that search should be made for substitutes which would serve the purposes of ethyl alcohol, but be cheaper. Several proprietary preparations are in fact now on the market as substitutes for ethyl alcohol. By far the most important constituent of these is iso-propyl alcohol, which can be bought, roughly, at about half the price of ethyl alcohol. This alcohol has been used in lotions and as a vehicle for external medication, for washes, gargles, dentifrices, and particularly in perfumery. An Interdepartmental Committee is now sitting to consider the question of ethyl alcohol substitutes, particularly in reference to its bearing on revenue, trade, and public health, and the uses to which these substitutes may be put.

Pure iso-propyl alcohol is a colourless liquid with an alcoholic odour; it is miscible with water; its boiling-point—82.4° C.—is higher than that of ethyl alcohol—78.5° C. Commercial varieties may contain traces of aldehydes and ketones, which impart a disagreeable taste and smell. Iso-propyl alcohol is absorbed more slowly than ethyl alcohol, and its effects are somewhat different. It will be remembered that ethyl alcohol has a selective action on the more recently developed portion of the central nervous system, the so-called higher centres, and the good-humoured liveliness of the moderate consumer of alcoholic beverages is due to a relatively greater

sedative effect on the controlling centres than on others. This effect is much less pronounced with iso-propyl alcohol; it partakes rather of the nature of a hypnotic than a "stimulant," and gives no satisfaction to the spirit drinker. Even in America, where almost every available substitute for alcohol has been used, it finds no favour. Its toxicity, weight for weight, is certainly greater than that of ethyl alcohol, but probably not twice as great. So far as our information goes, no ill effects can result from the absorption of a few cubic centimetres, such as might occur when it is used as the vehicle in a mouth-wash, douche, or dentifrice.

## THE PANEL CONFERENCE.

THE chief subjects considered by the Annual Conference of Representatives of Local Medical and Panel Committees last week—a full report of which appears in the SUPPLEMENT (p. 189)—were the procedure in connexion with complaints against insurance medical practitioners, and the increase in claims for sickness benefit in its relation to medical certification.

The procedure in connexion with complaints is the administrative matter which is at present most in the minds of insurance practitioners; and, indeed, the Representative Body of the British Medical Association has this year declared it to be of fundamental importance to the whole profession. The report of the Insurance Acts Committee to the Conference contains a letter sent in July last by the Committee to the Minister of Health (see SUPPLEMENT, August 14th, p. 117). This letter placed clearly and strongly before the Minister the points to which it was desired to direct his immediate attention. Whereas up to the time of the receipt of this letter the attitude of the Ministry seems to have been entirely negative and unhelpful, two letters quite recently received from the Ministry indicate a more complete realization of the position and of the need for some drastic modifications of procedure. Both of these letters were placed before the Conference, and one of them was published in the SUPPLEMENT of October 16th (p. 173). The proposals made in these communications relate to (1) the control of those Medical Service Subcommittees which have a tendency to ignore the time limit within which complaints must be lodged; (2) irregularities on the part of approved societies or their agents with regard to medical certificates; (3) an appeal from the decision of the Minister in certain classes of case. On the first two matters the Minister appears to go as far as can reasonably be expected at the moment. He is prepared to "require that the decision in the first place as to whether a complaint should be heard by the subcommittee should be given by him in any case in which the chairman proposes to investigate a complaint not made within six weeks after the event giving rise to it and the practitioner objects to an investigation taking place on the ground that unreasonable delay has occurred in submitting the complaint"; and to consider an amendment of the law which might give him power to impose penalties in cases in which there is irregularity on the part of approved societies or their agents with regard to medical certificates.

It was the third of these points, relating to disciplinary procedure, which led to an important debate at the Conference. For some years past there has been before the Annual Panel Conference a resolution asking for an appeal to the courts from all decisions of the Minister on disciplinary matters. In this wide

form the proposal has never yet been endorsed either by the Insurance Acts Committee or the Conference. There are obviously some very grave objections to it, and the letter of the Committee to the Minister dated July 5th, with the Minister's reply dated October 9th, make it clear that these are recognized on both sides. It is nevertheless true that there is a manifest and strong feeling in the medical profession that there must be some protection against unreasonable action on the part of any Minister beyond that which is at present afforded by a possible appeal to the courts on the ground of irregular procedure, and that it is intolerable that the Minister should determine any issue which is of a purely professional character. The suggestion of the Committee and the Conference is that there should be certain defined classes of case in which an appeal should lie. The suggestion of the Minister is that in the most important class of case indicated he should be guided by an advisory committee composed of "independent practitioners of recognized standing whose impartiality could not be questioned." He states that he would be prepared to accept nominations by the Insurance Acts Committee of a "small panel of practitioners regarded as suitable to act in this capacity, from among whom would be selected those whose advice would be sought in particular cases." The Minister recognizes that the definition of the class of case to be referred to the advisory committee, and various points of detail of procedure, must be the subject of careful consideration with the profession; but assuming that these matters are satisfactorily determined, and assuming, of course, that the Minister would in fact accept the advice given on questions involving medical issues, the proposal seems to afford a hopeful basis on which a satisfactory solution of a difficult matter may be founded. The Conference decided that the Insurance Acts Committee should negotiate with the Ministry with a view to such a solution.

The other main subject before the Conference was brought to its notice in an entirely unofficial, frank, and confidential manner by Sir Walter Kinnear, controller of the Ministry's Insurance Department. Such occasional and informal visits from officers of the Ministry with a view to placing the Conference in full possession of facts necessary for the formation of a sound judgement are very welcome and useful, and Sir Walter Kinnear's was no exception. The seriousness of the position which may arise indirectly from the great increase of claims to sickness benefit during the last few months was fully appreciated by the Conference. The explanation of this increase is probably not so simple as is sometimes assumed, and the question is not without its difficulties; but in this connexion a doubt may certainly arise as to whether some practitioners when giving certificates may not be unduly influenced by the economic circumstances of the patient rather than guided solely by the consideration of capacity for work as required by the Insurance Act; and as to whether the extreme ease with which an insured person may change his doctor may not carry with it some unfortunate disadvantages. The resolution passed by the Conference asks the Insurance Acts Committee to consider what practical steps can be taken to meet the situation, and the representatives pledged themselves "to use their influence locally in endeavouring to secure strict adherence to the principles governing certification for the purposes of the National Health Insurance Acts." If the Insurance Acts Committee can successfully carry out its mandate on these important matters, this year's Conference will prove among the most fruitful of the series.

#### SICK HEADACHES.

THE full report with which this issue opens, of the discussion on migraine at the Annual Meeting this year, is, we venture to say, well worthy of study by general practitioners, especially those who have among their clients any considerable proportion of the professional and business classes. To such a person the recurrence of severe headaches is a serious handicap; to ascertain their cause becomes a matter of first-rate importance. The investigation of migraine is always embarrassed by the difficulty of definition. We must give up hope of being helped by etymology, for the word is a French contraction of *hémicrania*, and the pain is not by any means always one-sided. Dr. Edwin Bramwell, in opening the discussion, spoke of the classical attack of migraine as comprising "an aura which is characterized by visual and it may be other phenomena indicative both of local and general disturbance of cerebral function, headache which is typically frontal and predominantly unilateral, nausea and vomiting." But he had at once to qualify this by stating that the headache might occur alone, that, in children particularly, vomiting might be the only symptom, and that the visual disturbances, the paraesthesia, and the palsies, any or all of which may attend the headache and vomiting, may occur without either but in circumstances which point to their migrainous nature. Dr. E. I. Spriggs, who made an interesting practical contribution to the discussion, took as a working definition "a periodic headache usually with some kind of aura, going on to vomiting, beginning in childhood or youth, and often hereditary." As to the etiology of true migraine, it seems to be agreed that there must be a predisposition, usually hereditary, which enables a rather long and diverse list of determining causes to act, but as to the actual mechanism of the attack there is no such unanimity. Dr. Bramwell sees in it a vascular derangement, a localized spasm of the cerebral arteries during which the aura and other prodromal symptoms occur, followed by a relaxation, when the headache due to engorgement of the meningeal vessels is the chief symptom. Dr. Gordon Holmes would not accept this view, and sought an explanation in a local swelling of the brain due to a temporary disturbance of the osmotic relations of its substance to the fluid in which it is bathed; this swelling could be supposed to produce the aural palsies, and by pressing on the meningeal nerves to cause the headache. Dr. Timme of New York took the opportunity of expounding his theory, which is that the symptoms are caused by growth in size of the pituitary body raising the intracranial pressure locally and generally, but he said also that migraine was a term which covered a number of conditions; this brings us to what we conceive to be the value of Dr. Spriggs's statistics. He took one hundred cases in which the major symptom for which the patient had been induced to apply for treatment was headache. Of these in twelve only was the diagnosis of migraine made, whereas in thirty-seven the attacks were considered to be due to some gastric condition, which in twenty-three instances was constipation. Reference was made to cases in which the symptomatic treatment of that condition, leading to regular natural action, cured or greatly diminished the migraine. The upshot of this is that any case in which there is a temptation to make the diagnosis of idiopathic migraine should be very thoroughly overhauled in search of some lesion or disorder, perhaps gastro-intestinal, the cure of which will check or possibly arrest the migraine. This surely is a useful hint.

#### PROGRESS IN ANAESTHESIA.

It is natural that the opening address in a discussion devoted to the future of a specialty should combine a paean for past triumphs with the promise of future victories. So it is with the inspiring paper published in our present

issue (p. 775) with which Dr. Samuel Johnston of Toronto opened the Section of Anaesthetics, over which he presided, at the Nottingham meeting of the British Medical Association. For future advance in anaesthesia Dr. Johnston looks to the efforts of the International Anaesthesia Research Society, a body which demands for its Record the evaluation of surgical and anaesthetic risk before operation, pre-operative therapy, five-minute blood pressure guides during the operative period, and post-operative therapy and care in order to reduce morbidity to a minimum. We are not sure that the British surgeon would accept the ideal of Dr. McMechan of Ohio that the anaesthetist "should dominate the preparation of the patient, the patient himself during induction and maintenance of the anaesthetic, and the after-treatment during the post-operative period." Dr. Johnston desires that every medical practitioner should be qualified to give safely, pleasantly, and efficiently such anaesthesia as may be required in painless childbirth and in minor surgery. Some of the specially trained and experienced anaesthetists would be required for hospital work in smaller towns. After years of practice such anaesthetists might look forward to staff positions of similar importance to those of the anaesthetists who have been elected to the teaching staffs of hospitals in large centres. To provide all these categories teaching in anaesthesia is necessary; and the teaching anaesthetist must be the liaison officer between the research laboratory of the medical school and the surgical department of the hospital. Dr. Johnston speaks with pride of the system of anaesthesia that has been developed in the Toronto General Hospital, where there is now a department consisting of a chief and eight assistants, all of whom are specialists in the art. The chief is a member of the medical advisory board of the hospital. He is also lecturer in anaesthesia in the Faculty of Medicine of the University of Toronto. It is interesting to note that earlier in the month of July Dr. Stuart Ross gave his presidential address on "The provision of an anaesthetic service" (summarized at page 789) to the Scottish Society of Anaesthetists, the report of whose meeting has just reached us. Dr. Ross had taken the trouble to elicit answers from anaesthetists, attached to medical schools in this country and the dominions, to various questions on the teaching and organization of anaesthetics. He appears to have found that, in the larger schools in England matters were fairly satisfactory, but that in Scotland the position was by no means happy, and that there had been a substantial post-war rise in the death rate from or under anaesthetics. Furthermore, the figures produced by Dr. Ross seem to show that the proportion of anaesthetic deaths in Scotland which occur under chloroform or mixtures containing chloroform is extremely high. Dr. Ross thinks that the significance of the figures for chloroform is open to doubt. They are certainly surprising in a country which has always prided itself on the method adopted for the administration of this anaesthetic. The moral of the investigations by Dr. Ross, no less than of the opening address of Dr. Johnston, seems to be that the advance of surgery needs a corresponding advance in methods, teaching, and research in anaesthetics; and that improvement in the status of the anaesthetist will conduce to this advance. So that perhaps we may agree with Dr. Johnston that "it is not too much to hope for the establishment in the near future of a chair of anaesthesia in every university where medicine is taught."

#### NEW HOSPITAL CENTRE FOR BIRMINGHAM.

In order to meet the growing need of Birmingham for hospital accommodation, the Hospital Council in April last invited the governing bodies of the General and Queen's Hospitals to consider a scheme for a new hospital centre, to be erected on a site adjacent to the University at

Edgbaston. The invitation was accepted and a joint committee appointed. The committee recommended that the new centre should be under the joint control of the General and Queen's Hospitals, which should be amalgamated for all purposes; that the unified board of management should have at its disposal a minimum of 1,200 beds; and that the new hospital centre should start with a minimum of 750 beds. The committee points out that the existing hospitals serve not only the population of Birmingham, approximately a million people, they have in addition to meet demands from a radius of more than thirty miles from the city, embracing a population of about three millions. The magnitude of the problem is apparent, and in considering it the committee had in view three main elements: (1) the provision of additional beds; (2) provision for out-patients and casualties; (3) the maintenance of the medical school. With regard to additional beds, the present deficiency is from 600 to 800. It is calculated that the total requirements in five years' time will be not fewer than 2,400. This will mean that 600 extra beds will be required in voluntary hospitals by 1931, the remainder being provided in the hospitals of the guardians of the poor. The departments for out-patients and casualties will have to expand proportionately. The medical school is at present split up, the hospitals being at some distance from the scientific departments. The removal of the medical faculty to the actual site of the hospital centre would bring about the necessary unification. These considerations can be satisfied by the erection of the new hospital centre on the proposed site. The scheme has been given a splendid send-off by the gift to the city of an area of 150 acres of land adjacent to the University by Messrs. Cadbury Bros., Ltd., together with a donation of £5,000 towards the initial expenses of laying out the site. It is stipulated that as much of this land as shall be agreed upon by the City Council and the Hospitals Council in consultation shall be secured for hospital purposes, and shall be leased to the hospital authorities at a nominal rent.

#### MODERN HOSPITAL ABUSE.

A NEW Division of the British Medical Association has been formed at Windsor. This is a matter for congratulation. It was an anomalous situation that there was no Division in the royal borough where is the chief residence of the Patron of our Association. We wish the new Division much success in its work. At the inaugural meeting under the presidency of Dr. F. J. Hathaway, the chairman of the Division, an address was given on the subject of "The modern hospital conception" by Mr. N. Bishop Harman. Incidentally, he dealt with a new form of hospital abuse. Abuse by individuals was, in his experience, diminishing owing to the efficiency of the modern almoner system; he held that in a full development of hospital facilities for all classes there would be no hospital abuse. But there was an increasing volume of abuse arising from the exploitation of the hospitals and their staffs for the treatment of industrial disease and accident. Yet no arrangements were made for meeting the costs to the hospitals, which were heavy, as for remuneration of the medical staffs. The companies gained materially, and their shareholders benefited, by the good treatment given to these patients in hospitals. So also with the numerous road accident cases. In the discussion that followed the paper it appeared that the King Edward VII Hospital, where the meeting was held, was a particularly heavy sufferer from this form of abuse. We have received also reports of a discussion on this same subject at the quarterly meeting of the governors of the Royal Devon and Exeter Hospital. Here the matter was raised by the lay members of the board. The *Hospital Policy of the British Medical Association* contains a paragraph on

the relation of insurance companies to hospitals, but things move so fast that it is hardly definite enough to meet present-day conditions. It reads: "Greatly extended support to voluntary hospitals should be sought from employers and insurance companies, seeing that they benefit largely, both directly and indirectly, by the services of the voluntary hospitals." Mr. Bishop Harman cited a precedent in the practice of the State of New York, where the law lays the onus of payment for the medical treatment of compensation cases upon the employers and the insurance companies. That, he thought, afforded an indication of what might be done in this country.

#### LESSONS FROM TISSUE CULTURES.

THERE would seem to be no better method of studying the biology of cells than that of culture *in vitro*. The cell can be isolated and its inherent powers of growth and differentiation studied under conditions which can be varied at the will of the observer. Further, by the method of tissue culture the mutual relations of cells and the influence of one type of cell on another can be investigated. Since Harrison, some twenty years ago, watched the growth of the isolated spinal axis of the embryo frog in lymph the method has been used by numerous experimenters, in regard to both normal and pathological cells, and the technique has been brought to great perfection, chiefly through the work of Carrel and Burrows. Before, however, it can be usefully applied in pathological research it is necessary that the biology of the normal cell shall be fully worked out, and in this direction considerable progress has already been made. Some very interesting investigations on the normal cell have recently been recorded by Strangeways and Fell. They have shown<sup>1</sup> that if the undifferentiated limb-bud of the embryonic fowl is cultivated *in vitro* it undergoes a considerable amount of progressive development; well marked differentiation of tissues and distinct indications of the formation of limb-segments occur. Recently<sup>2</sup> still more remarkable results have been obtained with cultures of the embryonic eye of the fowl. The embryos were incubated for sixty-four to seventy-two hours; one eye was dissected out (the other being left for purposes of control) and grown in a centrifuge tube containing a mixture of embryo extract and plasma. When first explanted the eyes appear as minute colourless bodies which are difficult to distinguish with the naked eye. After twenty hours' growth the optic cup has enlarged and is seen as a small grey vesicle surrounded by a diffuse growth of mesenchyme. By the second day the explant has about doubled in size and the pigmentation has increased, so that the eye is dark grey in colour. The rate of growth is greatest between the second and fourth days of cultivation; after that it falls off rapidly, the maximum size being reached about the eighth day. Examined histologically the eye, in the earliest explants, consists merely of an optic cup composed of two layers of undifferentiated cells containing little or no pigment, and a simple lens vesicle, the wall of which is of uniform thickness without any local thickening indicative of the future lens. In this simple structure the authors were able to follow the development of pigment, the different zones of the pars optica of the retina (rods and cones, inner and outer nuclear layers, inner and outer plexiform layers, ganglion cells, and nerve-fibre layer), the pars ciliaris retinae, and the fibres of the lens. This remarkable differentiation of the structures of the eye took place in the normal manner, and, in the later stages, at almost the normal rate. The authors draw special attention to the disparity which is observed between the rate of growth and the rate of differentiation. After seventeen

days' growth the retina may exhibit a histological structure almost equivalent to that of the retina of a day-old chick, whilst the greatest length of the explant is only 1 to 2 mm. It therefore appears that inhibition of normal cellular multiplication is not necessarily correlated with inhibition of normal tissue differentiation. Another instance of the value of this form of research is that relating to the effects of irradiation upon mitotic cell division. Strangeways and Oakley observed<sup>3</sup> that when a tissue culture in which cell division is active is subjected to small doses of  $\alpha$  rays, a decrease or complete disappearance of mitosis occurs. A closer examination of this result has led to the following interesting conclusions.<sup>4</sup> The earliest recognizable effect of  $\alpha$ -radiation upon growing cells is the temporary inhibition of the onset of mitotic division in the majority of those fully formed vegetative cells which are about to divide, while cells actually undergoing mitosis are unaffected; but if a cell, immediately prior to the visible prophase, is subjected to a dose of  $\alpha$  rays above a certain strength, it will enter mitosis, but the process of division will be of an abnormal type and may result in complete disruption of the cell. Variation in the quality of the incident beam of  $\alpha$  rays appears to have little or no effect, and no evidence was forthcoming that the rays exercise any stimulating effect on cell division.

#### A SYNTHETIC REMEDY FOR MALARIA.

CHEMISTS have tried for many years to produce synthetically quinine and its allied compounds, and at the eighty-ninth conference of Naturforscher und Ärzte at Düsseldorf in September communications were read on a new synthetic remedy for malaria, "plasmochin." It is an alkaloid with certain genetic relations with quinine. Its action on canaries experimentally infected with bird malaria has been tested in the zoological laboratory by Dr. Roehl of Elberfeld, who devised a quantitative method for the purpose. Professor Sioli of Düsseldorf has used it also for the treatment of general paralytics artificially infected with benign tertian malaria. The effect on the temperature, number of parasites, and general well-being was satisfactory; the upper limit of dose was determined by the appearance of cyanosis. Finally, the drug was tried by Professor Mühlens and others at the Hamburg Tropical Diseases Institute, where 134 patients with malaria contracted in various countries were treated from August, 1925, to the date of his report; they were mostly chronic or relapsed cases previously treated with quinine. The results generally were satisfactory, and the effect of the drug is now being tested in recent cases of malaria by Professor Mühlens in the Balkans, by Dr. Roehl in Spain, and by Professor Merusi and Dr. Schulemann in Italy. Some of these cases were treated with plasmochin and quinine prescribed in combination. In the Balkans and Italy no relapses of tertian malaria have occurred within six weeks of treatment; in Italy recurrence of tropical malaria was occasionally observed, but this, it is noted, may occur after treatment with quinine even when large doses are used. A point is made of the ease with which children, and even babies, accept the treatment; the drug is often administered to them in a suspension. The haemoglobin content of the blood has been observed to increase, and rapid decrease of the enlargement of the spleen during treatment has been observed; this, it is held, tends to show that the blood cells are not injured. Several cases of blackwater fever have been treated without any untoward results; among them were two in which quinine was thought to have produced haemorrhages. The compound of plasmochin and quinine is being used for prophylaxis. Professor Mühlens and his

<sup>1</sup> Proc. Roy. Soc., B, vol. 99, 1925, p. 349.

<sup>2</sup> Ibid., vol. 100, p. 273.

<sup>3</sup> Ibid., vol. 95, 1923, p. 373.

<sup>4</sup> Strangeways and Hopwood: Ibid., vol. 100, 1925, p. 283.

colleagues, holding the view that without crescent carriers the wide spread of tropical malaria is impossible, and that plasmodium alone or in combination with quinine destroys the crescentic sexual forms of the parasite occurring in the severest tropical forms, consider that the new synthetic remedy may prove of value in the cure and prevention of the spread of malaria.

#### THE ART OF TRANSLATION.

In the *English Review* for October there is an article by Dr. E. W. Adams on translation and the translator. In it Dr. Adams is concerned to defend the translator from the accusation *traduttore traditore*, while pointing out the difficulties with which he is beset. Dr. Adams does not agree with Emerson that all that is best in a book is translatable; but no man can have all languages at his disposal, so that the translator becomes an invaluable middleman whenever it is impossible to deal direct with the original producer. According to Dr. Adams, thought is naked when first conceived within the brain, and as it roams the chambers of the mind it gathers the apparel of language, the relation of which to thought is so intimate that to separate the two is not to strip but to slay. How Dr. Adams arrives at the conception of a naked thought we are not sure, since most people must think in terms of language, unless, like the deaf and dumb, or the artist and musician, they think in terms of vision. However this may be, the garment of language is appropriate to the nationality and mental make-up of the thinker and his reader, so that it would be impossible, says Dr. Adams, to translate the thoughts of Keats or Shelley into the holophrastic language of the people of Tierra del Fuego. These are circumstances in which translation must fail. Again, there is the difficulty of reproducing the rhythm, cadence, or harmony of the language in which the thought was enunciated. Nevertheless, the translator is an expert in his own line, and is comparable to a ferryman, bearing goods of price of which he is the owner as well as the goods of another. He unloads a mixed cargo at his home port. In a translation, says Dr. Adams, "an author cannot speak to you through yourself." You cannot conduct a conversation *à deux*, but must take with you to the interview a third person in whom you are not greatly interested. But it is better to interview an immortal through an interpreter than to have with him no speech at all. And there Dr. Adams leaves it. It seems to us that Dr. Adams has not discriminated between different classes of translator. Perhaps it is impossible to reproduce in a foreign tongue the thought of the poet and of the imaginative writer, though thoughts on canvas, in stone, or in melody can appeal with equal force to many nationalities. Not only are the nuances of language different and difficult to reproduce; the thoughts themselves have different appeals to different races. But these difficulties should not beset the translator of scientific works. In them the ideas can be reproduced provided the translator himself thinks in terms of his own language. The failure to do so makes him a bad translator.

#### LAY AID IN MEDICAL PROPAGANDA.

THE American Association for Medical Progress was constituted in New York City, and local branches are now being formed in various States. We have received the first annual report of the Santa Barbara County Branch. From this it appears that the association was formed for the purpose of disseminating authentic medical knowledge more widely amongst laymen, emphasizing particularly the results gained by medical research and its application to sanitation and other activities for human and animal welfare. An important part of the work of the association is similar to that of our Research Defence Society. Thus

one of its objects is "to resist the efforts of the ignorant or fanatical persons or societies constantly urging legislation dangerous to the health and well-being of the American people." In pursuit of this object the association made inquiry of all the medical colleges and research institutes in the United States as to how far the public was at liberty to visit medical laboratories. As a result a long list has been gathered of laboratories for animal experimentation at which any responsible person is admitted; or officials of humane societies are particularly welcome; or responsible persons are admitted, but those who have seen an operation on the human being are preferred; or accredited officers of humane societies are admitted; or only officials of humane societies who have seen an operation are allowed entrance. In all medical schools and research institutes certain rules are observed. Wandering dogs and cats brought to the laboratory are kept for a time for return to their owners if claimed. The animals are kept in the best sanitary condition. No operations are performed without the sanction of the director of the laboratory. If an operation is likely to cause greater discomfort than that attending anaesthetization, the animal is rendered incapable of perceiving pain. Exceptions to this rule can only be made with the approval of the director. In all cases possible the animal is killed painlessly at the end of the experiment. The American Distemper Committee has attempted to get in touch with the so-called humane societies by pointing out that their aims are similar—namely, the prevention of suffering in animals; but from the report of the American Association for Medical Progress the effort does not seem to have met with success. The association seems to be carrying on a large amount of publicity work, and hopes to protect the public against plausible quackery by constant reiteration of the elements of knowledge in non-technical language. As the branches of the association are controlled by means of a lay advisory board and a medical advisory board, there seems every reason to suppose that this lay effort in the dissemination of medical knowledge will keep within the bounds of what is authentic and legitimate.

#### THE BOARD OF CONTROL.

ON the recommendation of the Minister of Health, the King has been pleased to appoint Dr. Robert Cunyngham Brown, C.B.E., to be a Commissioner of the Board of Control, to fill the vacancy caused by the retirement of Dr. R. W. Branthwaite, C.B. Dr. Cunyngham Brown was originally in the Prison Medical Service; afterwards he became Deputy Commissioner of the Board of Control for Scotland. During the war he served with the Salonika Force, and then became D.C.M.S. Ministry of National Service and Deputy Director-General Medical Services, Ministry of Pensions. He retired some years ago, and we are glad to know that his great abilities are again to be at the service of the country.

#### PROFESSOR SCHMIEGELOW'S JUBILEE.

A LITTLE time ago we announced that the seventieth birthday of Dr. E. Schmiegelow, professor of oto-laryngology in the University of Copenhagen, would be celebrated on October 13th. On that day there was a large attendance to hear his last lecture at the Rigshospital before finishing his active career there both as head of the clinic and as professor. That he is not without honour in his own country was shown by the manifestations of esteem and regard from his townsmen and compatriots, who presented him with a striking portrait of himself painted by the well known Danish artist Henningsen. In addition, the brotherhood of laryngologists in other lands united to present him with a bas-relief portrait in bronze by the Swedish artist Gösta Carrell. This had been subscribed for



by friends and admirers from many countries, under the leadership of Gunnar Holmgren (Stockholm), who, in their name, presented it to the throat clinic of the Rigshospital. Amongst the representatives who supported him were numerous colleagues from Sweden and Norway, and amongst those from other countries were Burger (Amsterdam), Marschik (Vienna), Spiess (Frankfurt), von Eicken, Kuttner, and Flatau (Berlin), and StClair Thomson (London). The jubilee was further celebrated by a meeting of the Danish Oto-Laryngological Society presided over by Dr. Stranberg. The foreign delegates were made most welcome, with much private hospitality, especially from Messrs. Möller, Stranberg, and Schmiogelow.

#### PART-TIME EFFICIENCY.

Dr. L. J. PICTON, part-time medical officer of health for Winsford, Cheshire, produces reports which are both entertaining and instructive. His report for 1925 includes a review of the progress made during the last five years, together with "any further action of importance . . . contemplated by the local authority or considered desirable—by me." The staple industry of Winsford is the manufacture of salt from brine. As the mortality rate from cancer at Winsford is no higher than elsewhere, the theory that salt has anything to do with cancer has, says Dr. Picton, no support. In consequence of the pumping of brine for salt manufacture the neighbourhood is very liable to subsidence. By floating the houses on a raft of concrete not only is the danger from subsidence provided against, but the dampness of houses, which the British Medical Association's Subcommittee on Rheumatic Heart Disease in Children regarded as an important cause of carditis, is prevented. The Winsford birth rate is the second highest in the country, the infantile death rate is low, and the illegitimate deaths were nil. Dr. Picton is very keen on improvement in the health conditions of his district, and at the same time wisely prefers settlement by amicable negotiation to the use of the iron heel of officialdom. Thus we find him anxious that school clinics should be established, and that ante-natal work should be developed; but in both cases he has approached the local practitioners on measures for carrying out his ideals. With the consent of his council he submitted to the Ministry of Health a scheme for paying the practitioners for a report on the ante-natal conditions of expectant mothers. The Ministry declined to give its approval because the Maternity and Child Welfare Act of 1918 refuses to "authorize the establishment by any local authority of a general domiciliary service by medical practitioners." Dr. Picton denies that his scheme makes any such proposals; but as the wording of the section in the Act suggests the influence of British Medical Association policy, he has no doubt considered the advisability of discussing the situation with the Association. Further evidence of Dr. Picton's talent for amicable agreement is shown in the arrangement by which butchers send meat which is condemned by the inspector to the gasworks for destruction, and thus avoid the publicity of seizure. Winsford seems to be a most fortunate area. The housing conditions appear to be quite good, with a house for every four inhabitants and four-fifths of the houses low-rented; the water supply is fair, and is being improved; venereal disease is comparatively negligible (when a V.D. centre existed the patients almost all came by train from other towns); and the hospital question is being settled by means of a small local hospital staffed by the general practitioners. Dr. Picton notes an unusual outbreak of nephritis following symptoms of influenza. As is natural in a disciple of Dr. Vivian Poore, he deplors the absence of earth-closets; and he makes a vigorous attack on patent foods for infants.

#### BEIT MEMORIAL FELLOWSHIP IN TROPICAL MEDICINE.

THE trustees of the Beit Memorial Fellowships for Medical Research have under consideration the appointment of a Fellow to devote his whole time to research in tropical medicine. The appointment will be for five years at a salary of £1,000 per annum. If the research is conducted in the tropics the passage money out and home will be paid, and a grant may be made for necessary laboratory expenses. The deed of trust applying to all Beit Fellowships requires that every Fellow shall be a person of European descent by both parents, but otherwise of any nationality whatsoever who at the date of election shall have taken a degree in any faculty in any university in the British Empire approved by the trustees, or, if a woman, have passed the examination which would have entitled her if male to take any such degree. In exceptional cases the possession of a medical diploma registrable in the United Kingdom may be accepted in lieu of a degree. Applications, on forms to be obtained by letter only addressed to Sir James K. Fowler, M.D., Honorary Secretary, Beit Memorial Fellowships for Medical Research, 35, Clarges Street, London, W.1, must be received on or before February 1st, 1927. Candidates resident abroad should send written applications giving full particulars of their previous career, with references to any published scientific papers or other evidence of capacity for research. They should state the nature of the research they desire to undertake, and how it is proposed to attack the problems presented. No testimonials will be received, and canvassing the trustees or Advisory Board is forbidden. The candidate appointed will commence work at as early a date as possible.

#### CONFERENCE ON MENTAL WELFARE.

THE postponed conference on mental welfare, under the auspices of the Central Association for Mental Welfare, will be held in the Central Hall, Westminster, on Thursday and Friday, December 2nd and 3rd, beginning at 10 a.m. each day. On the first morning there will be a discussion on the proper care of defectives outside institutions, with Sir Leslie Scott, K.C., M.P., in the chair, and in the afternoon the Right Hon. H. P. Macmillan, K.C. (chairman, Royal Commission on Lunacy and Mental Disorders), will preside over a discussion on borderland cases, to be opened by Dr. Edwin Goodall and Dr. Kemlo Watson. On the second morning the training of teachers for special schools will be discussed, with Dr. H. B. Brackenbury in the chair and Lord Eustace Percy (President of the Board of Education) as the opening speaker; in the afternoon the subject of encephalitis lethargica and its after-effects will be introduced by Dr. A. F. Tredgold and Dr. F. C. Shrubbsall, under the chairmanship of Sir Archibald Bodkin (Director of Public Prosecutions). Tickets entitling holders to admission to all sessions, and to advance copies of papers, may be obtained from the offices of the association (24, Buckingham Palace Road, S.W.1) at a cost of 5s.

THE Hunterian Oration before the Royal College of Surgeons of England will be delivered by the President, Sir Berkeley Moynihan, Bt., on Monday, February 14th, 1927. Professor G. Elliot Smith's Thomas Vicary Lecture on "The significance of anatomy" will be delivered at the College on Thursday next, November 4th, at 5 o'clock, and Mr. Ernest W. Hey Groves's Bradshaw Lecture on "Reconstructive surgery of the hip-joint" on Thursday, November 11th. The annual meeting of Fellows and Members will be held on Thursday, November 18th, at 3 o'clock.

## THE BRITISH ORTHOPAEDIC ASSOCIATION.

## NINTH ANNUAL MEETING.

A MEETING of the British Orthopaedic Association was held in London on October 22nd and 23rd. The first morning meeting took place at the house of the Royal Society of Medicine.

After the short business session, Mr. H. A. T. FAIRBANK, the President, gave a presidential address on "Some general affections of the skeleton, including achondroplasia, osteogenesis imperfecta, and osteomalacia." He showed a large number of clinical photographs and radiograms illustrating the various points in the correlation of certain of these obscure bone conditions.

*Discussion on Injuries of the Carpus.*

The subject for discussion at the morning session was injuries of the carpus. Mr. MAX PAGE, who opened, commented on the fact that the knowledge of this complicated subject was of comparatively recent date. He quoted largely from Mouchet, Destot, and Kellogg Speed, and presented a simplified classification based on the findings of the French school. He dealt in some detail with the treatment and prognosis. Mr. S. T. IRWIN gave a careful analysis of the records of the Royal Victoria Hospital, Belfast, during a five-year period. He reported the incidence of each particular fracture, the period of disability, and the functional end-result. Mr. HARRY PLATT suggested a classification, similar to that of Mr. Page, and reported in detail the results of carpal injuries from his fracture clinic at Ancoats Hospital, Manchester, over a period of five years. Mr. THURSTAN HOLLAND, Mr. OLLERENSHAW, Mr. R. C. ELMSLIE, and Mr. ST. J. D. BUXTON carried on the discussion. Sir ROBERT JONES gave the results of his great experience, and described the treatment he was accustomed to employ. He said that, with a fractured scaphoid, if the wrist moved freely under anaesthesia, he immobilized for three weeks in dorsiflexion, and the end-result was good. He had found that if the wrist did not move easily under the anaesthetic prognosis was less good. He did not consider that removal of the whole or part of the scaphoid, although sometimes necessary, resulted in a perfect hand.

*Clinical Meeting.*

A clinical meeting on Friday afternoon was held at St. Thomas's Hospital. Two operations were first performed, Mr. Bristow removing a torn cartilage from the knee-joint and Mr. Page performing arthrodesis of the hip. Then followed a clinical demonstration. Mr. Bristow showed a group of patients treated in the orthopaedic department of the hospital, illustrating points of interest in the surgery of the joints and bones. The first group illustrated the results obtained from modified arthroplasty of the hip, the reconstruction operation devised by Whitman—namely, excision of the head, remodelling of the neck, and lowering of the trochanter; three patients upon whose hips arthrodesis had been performed were shown for comparison. Four patients illustrated the end-results of the treatment for recurrent dislocation of the shoulder; one cured by a deltoid muscle sling, one by repair of the glenoid ligament after the Clairemont-Erich operation had failed; the other two patients were cured by a bone operation to raise the rim of the glenoid fossa, the glenoid ligament being found torn and so shrivelled as to be incapable of repair. Two patients illustrated reconstruction of the elbow-joint, and one in whom a fractured internal epicondyle had been removed from the interior of the joint. This patient, whose elbow was stiff for some long time, had recovered full movement. Two patients in whom arthrodesis of the ankle-joint had been done for old malunited Pott's fracture were shown walking well and without pain. Other patients illustrated the result of repair of muscle and tendon, bilateral rupture of the ligamentum patellae repaired by a free fasciae graft, and bilateral rupture of the quadriceps by transplantation of tensor fasciae femoris to the patella. Cases were shown of chronic sclerosing osteomyelitis (Garré), fibrocystic disease of the neck of

the femur dealt with by curetting and grafting, haemophilic knee, and adolescent coxa vara treated by open operation. A group of patients with affections of the knee-joint were demonstrated, illustrating the end-results after synovectomy, cheilectomy, and patello-femoral arthroplasty. Mr. PAGE showed two patients in whom he had removed five inches of bone from the femur to shorten the leg, and a patient who was cured of a clicking jaw by the removal of the interarticular cartilage.

The members were entertained to tea in the Shepherd Memorial Hall by the kind invitation of Miss Lloyd Still, the matron of St. Thomas's Hospital, after which a short visit was paid to the orthopaedic wards. Dr. J. B. MENNELL then gave a demonstration in the massage department of the methods he employed in manipulating the joints. He explained the various points of his technique.

*The Association's Dinner.*

In the evening a most successful dinner was held at the Café Royal. Mr. FAIRBANK, the president, was in the chair, and some eighty members and their guests were present. His Majesty KING MANOEL, the most distinguished honorary member of the association, made a graceful speech in response to the toast of his health. Sir ARTHUR STANLEY, treasurer of St. Thomas's Hospital, replied, in a witty speech, to the toast of the guests, which had been proposed by Sir ROBERT JONES. Sir JOHN BLAND-SUTTON proposed the health of the association, and the PRESIDENT replied. Professor MURK JANSEN of Leyden then proposed the health of the President. The guests of the association included Sir Arthur Stanley, Sir George Makins, Sir John Bland-Sutton, Sir James Berry, Sir Cuthbert Wallace, Sir Dawson Williams, Sir Squire Sprigge, and many other distinguished members of the profession.

*Short Communications.*

Saturday morning was devoted to short papers. Mr. E. P. BROCKMAN reported several cases of renal rickets, and showed a series of radiograms. He also showed a tibia from one of the patients and for comparison the tibia from a rachitic patient, and a normal tibia from a child of the same age. He had investigated the microscopic changes about the growth disc, and exhibited a series of coloured drawings illustrating the changes which he had found. The PRESIDENT warmly congratulated Mr. Brockman on his paper. Mr. PERKINS reported the end-results of the operation of excision of the head of the first metatarsal bone in fifty patients, from the orthopaedic department of St. Thomas's. He found that from the patient's point of view the operation gave a good result in 96 per cent. of cases. He called attention to the fact that pain about the fore-foot was not relieved by excision of the head, and that free mobility must be restored to the toes. He suggested that the bad results associated in the mind of some surgeons with this operation were due to coexisting pain about the fore-foot, and that treatment for the two conditions should be simultaneously undertaken. Mr. Perkins's paper was discussed by Professor MURK JANSEN, Messrs. OPENSHAW, MITCHELL of Belfast, ELMSLIE, ARMOUR of Liverpool, BRISTOW, TRETHOWAN, ROCYN JONES, and others. Mr. LAMBRINUDI described an operation which he had devised for the cure of paralytic drop-foot, and showed two patients. Mr. BROCKMAN reported a case of femoral aneurysm arising in a boy suffering from Pott's disease of the spine. He exhibited the vessel which had been excised by Sir Cuthbert Wallace, and a microscopic section of the artery wall showing local tuberculous disease. Mr. BRALLSFORD (Birmingham) showed radiograms of the spine from patients illustrating spondylolisthesis—erosion of the bodies caused by aneurysm and the localization of a foreign body. Owing to shortness of time, papers by Mr. Max Page, Professor Murk Jansen, and Mr. Barnett, which were to have been presented, were taken as read.

*Visit to Open-air Hospital.*

On Saturday afternoon some forty members visited St. Nicholas's and St. Martin's Orthopaedic Hospital at Pyrford in Surrey. This open-air hospital of 160 beds, which

belongs to the Waifs and Strays Society, is staffed by the orthopaedic department of St. Thomas's Hospital and Dr. T. M. Hardy of Byfleet, who is the local medical officer. Members were shown round the hospital and visited the open-air wards, after which a clinical demonstration was given. A number of patients was exhibited, including a group of eight cases of pseudo-coxalgia with serial radiograms showing the various changes over a three-year period, and for comparison two patients with flattening of the head of the femur and cavitation of the neck. An informal discussion was kept up during the demonstration.

## A MEDICAL REVIEW OF SOVIET RUSSIA.\*

### IV.—CHANGE IN TYPE AND INCIDENCE OF DISEASE.

BY

W. HORSLEY GANTT, B.Sc., M.D.

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#### PART II (continued).

#### GYNAECOLOGY AND OBSTETRICS.

##### Amenorrhoea.

AMENORRHOEA has been one of the chief gynaecological conditions arising from the famine. It was present in more than 50 per cent. of women and often persisted in many after a return to normal nutrition. There were no disagreeable symptoms, and many stated that they felt better when they were not menstruating. Chalator and others stated that the amenorrhoea acted as a compensatory factor; that those in whom it was present were in better health and had a higher percentage of haemoglobin than those menstruating; and that it occurred oftener in single than in married women.<sup>1</sup>

##### Sterility.

Sterility was not affected as far as could be ascertained. The sexual libido was markedly decreased and impotencia increased as a result of the hunger, lowered metabolism, and distraction of attention. There was a relaxation of the sphincters, particularly of the bladder. Dysmenorrhoea and metrorrhagia were not affected; menorrhagia was decreased.

##### Abortion.

The subject of abortion is so important that some detailed statistics will be given to illustrate the effect of the legalizing of abortions. Leaving aside the moral considerations, a seeming benefit is that more people would seek reputable physicians, and that there would be fewer infections. Would this be offset by the increase in undesirable pregnancies?

The former penalty for illegal abortion was exile of the mother and doctor to Siberia. Now the law requires that practically anyone applying can have it done, but that it must be done by a licensed physician in a public hospital. It is now illegal when performed by a midwife. It is done without fee if there is a medical certificate from the family physician showing some physical indication, or if there is a certificate from the *Narkomzdrav* committee (composed of a communal doctor and workmen) saying that there is a social or financial reason. If the patient does not bring one of these certificates a fee may be accepted by the surgeon. In Moscow there are special hospitals for doing abortions, but in Leningrad they may be done in any hospital.

There has been a rapid and continual increase in abortions in all the hospitals of Leningrad in which statistics were kept. The lack of moral and legal restraint does not account entirely for these increased figures because formerly

none of the abortions were registered except those done for medical indications.

TABLE III.—Abortions: State Clinical and Obstetrical Hospital, Leningrad.

Authority.	Year.	Abortions.	Ratio of Abortions to Admissions.	Mortality.
Gugenberger ..	1883-93	21	2.6%	0.0%
Viridarsky ...	1883-93	150	2.6%	0.8%
Chapin ... ..	1891-97	185	3.69%	0.0%
Jakovzev ... ..	1904-07	1,039	11.8%	1.0%
Bublichenko ...	1907-13	3,674	—	0.9%
Gepner ... ..	1912-22	4,338	22.5%	—
...	1922	—	28.6%	—
...	1923 (first half)	—	42.0%	18.0%

In another of the large city hospitals (Erismán) 60 per cent. of all pregnant cases entering the hospital in the first five months of 1923 came to abortion. The *Statburo* gives 6,000 as the official number of abortions done in Leningrad in 1924; in 1925 there were 11,897, in 60 per cent. of which the women were between 20 and 30 years of age. (*Krasnaya Gazeta*, April 9th, 1926.)

In spite of the facilities afforded the public in these hospitals many women continue to go to midwives, I am told, because they fear the publicity of the hospital; in fact, most of the cases that enter the hospitals enter as incomplete abortions. The Gubzdrav figures show that abortions have increased sixfold during the past four or five years.

It is impossible to say what percentage of the cases are unmarried. In the first place, a woman may now register in her maiden name; and in the second place it appears that some are married just before entering the hospital, and, owing to the freedom of the present laws, divorced when they leave. However, during the past three years both marriage and divorce laws have been more stringent. But it is stated that pregnancy in young girls has greatly increased, and that special wards have had to be opened for this group of patients.\*

Dr. A. Genss, head of the department for mother and child welfare for Russia, in his book on abortions in Russia (Moscow, 1926), advances arguments for the legalizing of abortions. The system of permitting abortions in Russia succeeded, he says, better than that of forbidding them prevalent in other countries, and gives a comparison with Germany in 1924.

	Germany.	Russia.
Total number of abortions ...	600,000	150,000
Illnesses from abortion ...	78,000	3,000
Deaths from abortion ...	7,000	1,000
Sepsis from abortion ...	10 per cent.*	4 per cent.†
Imprisonments (abortions) ..	5,000	None

\* Berlin. † Leningrad.

He gives as the number of abortions in New York in 1924, 130,000; in Paris, 50,000; in Berlin, 23,000; in Moscow, 8,000. The figures for Moscow in 1925 were 7,900, and for 1922 4,000, showing an increase for 1924, as do also the data for Leningrad. The proportion of illegitimate births in Leningrad for 1910-12 was 16 per cent.; in 1922, 14 per cent.; and in 1925, 17 per cent.

What has been the cause of this increase in immorality? Has it been due to a moral decay following the war and crisis through which Russia has passed, the breaking up of the home, the loosening of the hold of the Church, the utter dissolution through which everything has passed, or to the results of any specific teachings of the present régime?

Although there may have been cases where children have been wrongly instructed, I do not believe that most of the

\* Previous papers on medical and scientific work in Soviet Russia by Dr. Horsley Gantt were published in the *BRITISH MEDICAL JOURNAL* in 1924: I, *Hospitals and Health Conditions in Soviet Russia*, vol. i, p. 1055; II, p. 533. The first part of section IV, on "Change in type and incidence of disease," was published on August 14th last, p. 303; Part II of this section was commenced last week (p. 747) and is concluded in this issue.

\* More than 50 per cent. of the cases in one of the largest obstetrical hospitals entered as incomplete abortions in 1923, and 18 per cent. of these were infected; 0.5 per cent. entered with perforations, and in all the obstetrical hospitals of Leningrad 0.45 per cent. of the cases entered with perforations. These perforations occur in those who attempted to abort themselves. According to Professor Stroganoff there were ten times as many infections in the aborted cases as in the normal deliveries.

immorality has been due to this, nor do I believe, as I have been told, that it is a result of teaching youths in the primary and grammar schools the anatomy and physiology of reproduction. It has probably been a result of all the factors mentioned in the preceding paragraph. There have been also many more real indications, such as tuberculosis and malnutrition; nephritis and cardiac diseases have not changed in frequency. A prominent obstetrician attributes it to (1) poverty, tuberculosis, malaria, and anaemia; (2) spread of atheism; (3) absence of shame on account of the legalization. He says that the number of people who attempt abortion without a doctor has not diminished.

There has been a great increase in the number of tubal pregnancies all over Russia in the past few years. This was at first attributed to the increase in abortions and the use of iodine in the uterus. However, as the increase has also been noted in the villages and country where abortions and iodine are not in vogue, this reason has to be discarded. Fewer cases of puerperal fever have occurred since 1918-19.

The percentage of eclampsia in pregnancy has not changed in the past eight years from its normal of 0.2. Its mortality in some of the hospitals has been 14 to 16 per cent. (Mariinsky), but in the State Obstetrical Hospital where Professor Stroganoff works it has been kept down to about 1 per cent. Stroganoff's technique consists in keeping the patient in a dark room, and the careful administration of chloral hydrate and morphine at regular intervals. It has been described in the *BRITISH MEDICAL JOURNAL* (July 12th, 1924, p. 53).

#### SURGICAL DISTASTES.

The first important surgical conference in Russia after the war took place in Leningrad in September, 1922. Papers were read by the eminent surgeons Wreden, Federov, Grekoff, Spaskokutsky, and others. Some of these have been made use of in the following account.

**Class of Patients.**—The hard conditions of living affected mostly the city dwellers and the intellectual classes, and the great increase in surgical patients came from these groups. The lack of leisure and rest, the disorganization of nutrition, the physical and nervous exhaustion, were expressed surgically by a complete loss of resistance to infection. In these severe circumstances surgical diseases assumed quite a new character. Ordinarily trivial complaints became chronic and serious, and diseases formerly rare appeared suddenly as epidemics. For example, there was an epidemic of purulent infections, of hernias, abdominal ptoses, varicose veins, peptic ulcers, flat-foot, and necroses. On the other hand, the hospital register showed a decrease of cancer, erysipelas, and acute peritonitis, and a marked decrease of all kinds of appendicitis. The decrease in the first three diseases mentioned was probably only apparent, as during the bad conditions these patients died off too rapidly to reach the hospitals. The opinion is, however, that appendicitis underwent an absolute great decrease. The lack of abundant food may have played a part in this decrease.

**Cachexia.**—Beginning with 1917 there was an unexplainable and rapid emaciation, especially in the educated classes, which suggested a developing cancer or diabetes. Later appeared hunger oedema, which passed into a peculiar state of cachexia with atrophy of the tissues. Premature senility occurred in numbers of the young and the middle-aged, and it was accompanied by an enormous increase of the senile diseases—arterio-sclerosis, angina pectoris, apoplexy, gangrene of the extremities, etc. Grekoff says:

"The course of ordinary surgical diseases became so unusual that a surgeon of the old school, having been out of Russia, would be puzzled and have to learn anew, and to change radically the routine, methods of treatment, indications for operation, and his point of view of surgical pathology."

**Normal Patients.**—In spite of the conditions it was noticed that there was a small contingent of "normal" patients, who were well nourished and endured happily the most complicated operations, and whose wounds healed normally. These were usually peasants from villages which had not been affected by famine.

**Cause and Variety of Infections.**—The enormous increase of surgical infections can be attributed to two main factors: first, the abundance of dirt in the hospitals and the lack of means of cleanliness of the patient and of disinfection (soap, hot water, etc); secondly, the lowered resistance of the patient. In such an environment the most virulent infections resulted from the most trivial circumstances, such as slight scratches, bangnails, burns, stitches, chilblains, corns, lice, and insect bites. Cutaneous infections were also greatly increased (scabies, eczema, skin necroses, ulcers, furuncles, and carbuncles). There was an increased tendency to bedsores owing to the general emaciation. Dr. Grekoff states that he saw more paronychia in 1917-18 than in several decades of his preceding surgical practice. Dry gangrene of the finger-tips was not rare. Purulent tendo-vaginitis took a severe course and had a tendency to become an intramuscular phlegmon, and to be accompanied by extensive necrosis of subcutaneous tissue, skin, tendons, and muscles. These infections were said to be made worse by incisions, as an extensive necrosis spread rapidly from the wound edges to healthy skin areas; sacrifice of the entire limb was usually necessary to prevent death from sepsis.

**Other Rare Infections.**—Various affections of the vascular and lymphatic systems were seen in increasing numbers. The increase in arterio-sclerosis will be described under "Internal Diseases." There were more varicosities (resulting from the continual standing in line for food), thrombophlebitis, lymphangitis, lymphadenitis. The latter appeared almost as an epidemic; sometimes symmetrical glands were affected, and the surgeons became acquainted with glands the location of which was formerly unknown except to anatomists. Other rare infections which became common were: thyroiditis (purulent), idiopathic purulent parotitis, Mikulicz's disease (seven cases at the Obockoff Hospital in three years, against two for several preceding decades), purulent otitis, purulent pericarditis, inguinal buboes. Gangrene was frequent—not only on the tips of the extremities following typhus, but, without apparent cause except undernutrition, on the tip of the nose, the external ears, the laryngeal and costal cartilages, and in the lungs.

**Orthopaedic.**—Grekoff reports three cases in which he observed absorption of bone (caused by famine?). Corns and callous formations were greatly increased, as were also hydromas on the forearms. *Pes planus* was much more common than formerly. The fact that no great addition of surgical tuberculosis was noted may have been due to the rapid dying off of all tuberculous patients.

**Hernias and Prolapses.**—Hernias, prolapses, and abdominal ptoses were enormously increased, as a result of the hard physical labour, the loss of fat, and the weakening of muscles and aponeuroses. Every variety of hernia occurred in the young which was ordinarily found only in the aged, and the majority of all surgical patients, regardless of the chief ailment, had one or more hernias (Grekoff, Shamoff).<sup>\*</sup> Strangulation of hernias was frequently brought about by the great increase in coprostasis and meteorism, and operations could rarely be performed on account of the condition of the patient. Although the frequency of haemorrhoids was lessened, the number of cases of prolapsed haemorrhoids was relatively increased. Prolapse of the rectum and uterus was common.

#### Digestive Organs.

Maxillary osteomyelitis took a more severe turn than usual, and was not infrequently accompanied by fatal Ludwig's angina. Most of the digestive neuroses were greatly increased, such as spasmodic oesophageal stenosis simulating cancerous stenosis (the cancerous form being rare during these years), pylorospasms, cardialgia.

#### Gastric and Duodenal Ulcers.

Gastric and duodenal ulcers have been among the most striking and persistent of the surgical diseases. They were most prevalent in 1920-22, when a conservative estimate was that they were six times more frequent than before the war. At the present time (1926) they are said to be about twice as common as in the pre-war period (Bush and

<sup>\*</sup> A case with seven hernias was reported from the Obockoff Hospital.

Wreden). The greatest increase came about one or two years after the worst years, suggesting that this time was required for the development of the ulcer to the point of producing critical symptoms; a good many of the patients referred the beginning of their symptoms to 1918-19.

Two main factors have been mentioned to account for the increase: first, the rough, indigestible, and irritating character of the food (as described above); and secondly, the neuropathic experiences through which the population passed. This nervous influence, according to Grekoff and some others, exerted the greatest etiological force. In the first place, the ulcers occurred at about the same time that the neuroses occurred in greatest number; and secondly, ulcers often were noted from those villages where there was no acute famine, and in patients who were better nourished than the average. Patients with ulcer often showed marked neuroathenic symptoms, and gave in their history neurotic traumata, such as destruction of property, loss of kiusmen, etc. (Grekoff). Besides the general nervous influence, it has been suggested that there is a direct nervous or trophic disturbance due to the irritation of the sympathetic nerve in the case of duodenal ulcer, and of the vagus in the case of gastric ulcer. Spaskokutsky and Kraus of Saratov, however, have done experimental work during the last three years showing that mechanical injury produces ulcer (personal communication). Probably both the nervous and mechanical factors played a part.

#### Treatment.

Dietetic treatment was out of the question, and therefore the only relief for these patients was surgical. Gastro-enterostomy performed during this period often resulted in a jejunal ulcer or an enlargement of the original ulcer, and some form of pyloroplasty was found to be most efficacious.

**Experimental Gastro-enterostomy.**—Recently gastro-enterostomy experiments have been performed in Professor Pavlov's laboratory by Fursikov and Brestkin. The miniature stomach of Pavlov was made in three healthy dogs, and the juice found to be normal. Three months later gastro-enterostomy was performed, after which the acidity was markedly higher and remained high for three or four months. Then a second operation was done to break the gastro-enterostomy. In a short while the acidity in all three dogs returned to normal, and the unfavourable symptoms which had been noted when the gastro-enterostomy was present disappeared. (Personal communication of this unpublished work by the courtesy of Dr. Fursikov).\*

**Dilatation and Obstructions.**—The impaired nutrition and lack of neuro-muscular tone increased the frequency of acute dilatation of the stomach, and of intestinal obstructions (chiefly dynamic, though also mechanical). Impaction of faeces due to weak peristalsis was often a cause of obstruction. Ulcerative colitis and perityphlitis occurred. Infiltrations formerly easily dissolved became indolent.

#### Prognosis.

Owing to the reduction of the materials and of the staff, as well as the inability of the patients to endure operation, only the most urgent cases were attempted. If the patient did not die on the table he usually succumbed to post-operative pneumonia, heart failure, or sepsis. Surgical wounds required weeks and months to heal instead of days. It was the rule for them to become oedematous or infected, and the starting point of an extensive necrosis or gangrene, or to come apart on the slightest exertion. The cold of the operating room appeared not to be as dangerous as supposed. Grekoff states that he performed gastro-enterostomies when the temperature of the room was only 6° C., and that he never noticed shock or other complications although the intestines became rapidly cold.

#### Amputations.

The following table from the Obokoff Hospital shows the decrease in the total number of operations, a parallel

\* Dr. J. S. Hensley has suggested to me that inasmuch as these experiments were done on normal dogs they cannot be compared too closely with operations on the patient, who is not normal.

decrease in operations for a comparatively trivial ailment like hernia (although the number of hernias entering the hospital was greatly increased), and the increase in the percentage of amputations which had to be done to save the patient from death from a spreading infection.

TABLE IV.

	1913.	1918.	1919.
Total number of operations ... ..	2,035	987	491
Percentage of surgical patients operated on for hernia.	7.2	3.7	6.2
Amputations (percentage of total number of operations)	2.5	5.0	12.0
Amputations (percentage of total number of all hospital patients)	0.5	1.3	2.0

#### Mortality.

The increase in mortality of surgical diseases is shown in the following table.

TABLE V.

	1913.	1914.	1917.	1918.	1919.
Mortality (per cent.) of:					
Surgical patients ... ..	3.8	—	7.9	11.1	13.0
Furunculosis ... ..	—	4.0	7.0	29.8	—
Pilegmonous infections ... ..	—	4.6	6.6	21.6	—
Ulcers ... ..	—	0.6	6.5	33.5	—
Gangrene ... ..	—	17.8	32.5	23.2	—

\* The figures for surgical patients are those of Professor Maniloff; the others are from Professor Ponomareff. The decrease in the mortality of gangrene for 1918 resulted from the increase in the number of amputations.

Dr. N. S. Zvonitsky of the Narkomzdrav tells me that the deaths from cancer have increased from an average of about 90 per 100,000 population before the war to about 103 in 1919-24 in Leningrad, as compared with an increase in London from 85 in 1890-1910 to 94 in 1910-20; and with an increase in Berlin from 69 in 1881-85 to 153 in 1916-20.

#### Nerve Section for Trophic Ulcers and Cancer.

I obtained from Dr. R. R. Wreden, one of the leading Russian surgeons, the following account of the method of treating ulcer and cancer by the resection of nerves.

**Ulcers.**—Trophic ulcers have been greatly benefited by the cutting of the nerve which supplies the region of the ulcer, according to the method of Dr. Molotkov of Leningrad, the originator of this procedure. The nerve is cut across and the cut ends are immediately sutured. This is supposed to arrest the altered metabolism or inflammation in the nerve which is believed to be causing the ulcer. The pronounced hyperaemia of the region which follows may have something to do with the healing; the temperature is higher by 1½ to 2½° C. One of the cases in which remarkable recovery ensued was an ulcer over the tendo Achillis, 2 cm. in diameter, which had lasted fourteen months, and which had resulted from the entangling of the sural nerve in a callous formation following the fracture of both bones of the lower leg. The ulcer failed to granulate under any form of treatment. After section of the sural nerve the ulcer disappeared in fourteen days, and did not recur. Another was a case of tuberculous of the bones of the arch of the foot with a painful fistula opening on the sole. The fistula, which had lasted for two years, healed completely in about two weeks after the section of the tibial nerve. Many similar cases have been reported.

**Cancer.**—Molotkov treats cancer also as a trophic ulcer, but the results have not been nearly so successful. Professors Wreden, Grekoff, and Bush have all tried the Molotkov method of nerve section and suturing in many cancers, but they inform me that only two of a large series have shown good results. In the following cases the carcinoma was demonstrated by microscopic section, and a complete disappearance ensued upon the nerve cutting.



One was in a physician who had a carcinoma on the index finger and an ulcer on the fourth finger of the same hand. A year ago Dr. Molotkov had cut the median nerve; fourteen days later the ulcer and the cancer disappeared, and have not returned. In the other successful case—a carcinoma of the upper lip—Dr. Grekoff cut the second branch of the trigeminal nerve close to the exit from the skull. The growth went away during the course of the following month, and has not reappeared; at the time of writing this the patient has been under observation at the Obokoff Hospital for sixteen months.

These two cases have given the method a wide publicity both in Russia and abroad, but the surgeons of Leningrad do not look upon it altogether with favour except for trophic ulcers. Professor Pavlov told me that he considered the method entirely in the experimental stage.

#### ANTHROPOLOGICAL CHANGES.

Anthropologists state that starvation is an important factor in causing degeneration. The prolonged famine and food shortage in Russia caused the following anthropological changes: a decrease in average height, and weight (up to 40 per cent.); a decrease in all dimensions of the head; a change in the facial and cranial indices; a decrease in the circumference of the chest; a decrease in Pignet's vital index. A. A. Ivanovsky, in an examination of 1,139 people, found that the skull is now larger in the anteroposterior diameter than formerly, the arms are longer, the face longer, the nose narrower, and the lips thinner. These are supposed to be a return toward the features of our primitive ancestors. Shefko reports that the number of stillbirths and monsters has increased. In an examination of a hundred skulls he found that the volume is smaller as a result of the famine, and he confirms the other findings of Ivanovsky. M. Spirtov, of the Academy of Science, Leningrad, tells me that the tissues which arise from the mesoderm in the embryo especially have shown faulty development. Ivanovsky claims that these anthropological changes will be present in the offspring as mutations and regressions, but Vishnovsky and Nikolov contend that these alterations are already showing a tendency to disappear.\*

#### CONCLUSIONS.

This review, besides recording the effects of fighting and famine on specific diseases in Russia, shows that the record of war is written as indelibly in health statistics as in battle fatalities in regard to both present and after effects. This has been seen in most of the combatant nations of Europe, but particularly in Poland and Russia, and even in such an ordinarily well ordered country as Germany.

While most of the modifications in disease can be blamed on the war and revolution (typhus, malaria, etc.), there are some which have resulted from governmental policies—such as the disappearance of alcoholism up to 1922, changes in the incidence of abortions, and decrease of infantile mortality and of typhoid fever. The public health department is making commendable and strenuous efforts, as described in another paper, but it may find that fallen houses, grass-grown streets, and musty factories are easier to repair than diseased and crippled bodies. One must remember that the present health is more a legacy of the past (war, revolution, famine, and ignorance) than a result of present policies. If allowance can be made for the backward state of Russia before the revolution, and for the terribly disastrous events of the wars, it will be interesting to see in the future what will be the health of a nation under this new form of government,† and to judge by the morbidity rates whether the living conditions of the masses will have bettered. From the progress already made in public health work it is likely that Russian health conditions will be better in the future.

#### REFERENCE.

\* Chalatov, S. S.: *Textbook of Pathology*, Leningrad, 1925.

\* I am indebted to Dr. M. Spirtov for bringing to my notice some of the above anthropological facts.

† One cannot, of course, take morbidity and mortality rates as an exact criterion of the worth of the abstract principles of the ruling party of a nation because these principles may be strictly followed by only a small percentage of the people.

## England and Wales.

### HALIFAX INFIRMARY.

SIR BERKELEY MOYNIHAN, President of the Royal College of Surgeons of England, opened on October 20th a new operating theatre block at the Royal Halifax Infirmary. The erection and equipment of this extension has been made possible by a gift of £5,000 from Mr. Samuel Watkinson in memory of his parents and other relatives. The new theatre, with separate rooms for sterilizing, washing, and instruments, has been built as a complete unit independent of the existing theatre, with which, however, it is connected. The entrance lobby has an anaesthetizing room on one side, and on the other a recovery room fitted with a large cupboard for the provision of warm blankets to patients immediately after an operation. The theatre is lofty and well lit on its northern side by a studio window, with double glass to prevent condensation; a dark blind between two windows facilitates special eye and throat work. The walls of the theatre and its subsidiary rooms are covered with large vitrolite sheets, highly glazed, easily washed, and acid-proof. They are devoid of any fittings, such adjuncts as sinks, radiators, and towel rails being placed in the adjoining sink and washing room, following the practice in many new hospitals. Arrangements are made to control the heating and ventilation, air filters being provided for the removal of fog impurities, while the ventilation ensures a complete change of air every twelve to fifteen minutes without draught. The temperature is controlled by thermostats and pneumatic pressure operating steam valves. The sterilizing apparatus has a special ventilating plant to prevent free steam escaping into the general atmosphere, and the large sterilizer is hydraulically operated. The artificial lighting is provided by four ceiling lights and a central adjustable swing lamp, the light of which is controlled by numerous mirrors so as to abolish shadows. It is believed that these arrangements represent the last word in efficiency at the present time. The old theatre was constructed about thirty years ago. Sir Berkeley Moynihan, in his address, referred to the great traditions of the Royal Halifax Infirmary, and sketched the surprisingly swift advance of surgery during the last fifty years. He remarked that the longest journey the surgeon had ever taken was the little inch of space between the skin and the heart, which had occupied over thirty centuries. Cardiac and abdominal surgery was almost inconceivable fifty years ago. The credit for this advance must be attributed in large measure to the brilliant work of Lister, who was the greatest material benefactor the world had ever known. Surgical theatres and schools of medicine corresponded to the temples of ancient days, in which the physical and spiritual welfare were furthered simultaneously. The theatre was no longer a place of suffering, but rather a temple of science, and in it devotion, reverence, and compassion were exercised by men who felt themselves to be high priests in the service of humanity.

### A YORKSHIRE BENEVOLENT SOCIETY.

The eighteenth annual meeting of the Medical Benevolent Society for the North and East Ridings of Yorkshire and the City of York was held at York on September 25th. The reports of the secretary and the treasurer were adopted. The financial statement showed that there was a satisfactory balance in hand, and the trustees were directed to make a further investment from the funds of the society. The objects of the society are to give assistance to its members or their families where it may be needed owing to illness or other disability or death. It is felt that the work of the society is not sufficiently known amongst the profession, and steps are being taken to bring its claims before all practitioners in its district; it is hoped there will be an increase of the support it receives. The honorary secretary is Dr. Henry J. Mackenzie (254, Bishopthorpe Road, York).

### LONDON HOSPITAL OLD STUDENTS' DINNER.

The annual dinner of the London Hospital was held at the Trocadero Restaurant on October 21st. Dr. Russell Andrews was in the chair, and 225 old students of the hospital

were present, including Sir Neville Howse, V.C., the new Commissioner for Australia. In proposing the health of the hospital the chairman referred to the loss it had sustained by the death of Queen Alexandra, its president, whose constant and practical devotion to the hospital had been such a source of inspiration to all those engaged in its work. Queen Mary, in graciously accepting the vacant office, had given a further proof of the personal interest of the Royal Family in the hospital. The chairman spoke also with regret of the death of Mr. Mark Hovell, a member of the consulting staff, and for many years surgeon to the aural department. A reference to the long connexion of Lord Kintford and Mr. E. W. Morris with the hospital, and a tribute to the incalculable value of their services as chairman and house governor, were greeted with loud applause. During the year three generous donors had each given a sum of £10,000 to the hospital for the service of its students—Mr. Alfred Williams for a research scholarship, Viscount Bearsted for a clinical lecture theatre, and Mr. Bernhard Baron for an extension of the pathological institute. In addition an anonymous donor had given the magnificent sum of £50,000 for the establishment of a "Freedom Research Fund." In the next few months a new cardiological department, new maternity wards, and a large hostel for the residents, would add still further to the opportunities which the London Hospital offered to its students. The resignations of Mr. James Sherren, Dr. E. W. Clapham, and Dr. Probyn Williams would fill all "Londoners" with regret, mingled with gratitude for the long years of service they had devoted to the hospital. With an even more personal regret they would hear of the resignation of Miss Brain, who would always live in their affection as Sister Victor. During the year there had been many additions to the visiting staff. Mr. A. C. Perry and Mr. H. W. B. Cairns had been elected assistant surgeons, Dr. Maitland Jones had been appointed director of the new children's department, Mr. William Morris and Mr. Geoffrey Carte had been elected surgeons to the aural, Dr. O'Donovan to the skin, and Mr. Victor Lack to the gynaecological departments. The hospital continued to attract students of a high order by its great reputation as a teaching school and its incomparable clinical material. It was a remarkable testimonial that among its present students were seventeen sons and three nephews of its old graduates. Old students might look forward with confidence to the future of their hospital, just as the hospital itself relied on the affection and patriotism of its children.

#### NEW HOSPITAL FOR WOMEN IN LIVERPOOL.

The foundation stone of the Liverpool and Samaritan Hospital was laid on October 14th by Mrs. E. W. Hope, the lady mayoress. The new building will contain 120 beds, and the cost of erection will be about £120,000, of which £61,000 has already been collected; in it the work now carried on by the Hospital for Women in Shaw Street and the Samaritan Hospital for Women in Upper Parliament Street will be combined and considerable extension will be possible. At the Shaw Street hospital during 1925 there were 1,531 admissions and 1,185 operations, while at the Samaritan Hospital the corresponding figures were 485 and 410. The number of beds at the Shaw Hospital is sixty, and at the Samaritan Hospital twenty, so that in the new building the present severe demand for beds should be decreased to some extent. The hospital will be equipped on the most modern lines and the voluntary tradition of the two institutions during the last forty years will be maintained. Accommodation will be provided for a limited number of paying patients.

#### VITAL STATISTICS FOR 1925.

We referred a fortnight ago (October 16th, p. 709) to Part I of the *Statistical Review of England and Wales for 1925* (Medical). Part II has now been issued and can be obtained (price 5s.) from H.M. Stationery Office or through any bookseller. The salient features are: The estimate of the population of England and Wales at June 30th, 1925, was 33,890,000, as against 33,746,000 in 1924, an increase of 144,000. The births registered in the year 1925 totalled 710,582, representing a rate of 18.3 per 1,000 population, which was 0.5 per 1,000 below the rate

for 1924, and with the exception of the war years 1917-18 was the lowest recorded. Excluding the years 1917-19, the number of births is the lowest number registered in any year since 1861. The proportion of male to 1,000 female births was 1,045. This proportion showed a great increase during the war years and reached a maximum of 1,060 in 1919, since when with one exception it has shown a continuous decline, but is still above the proportions recorded since 1860. The deaths numbered 472,841, and corresponded to a rate of 12.2 per 1,000, the same as for the previous year, but 0.6 more than that for 1923, which was the lowest on record. The marriages registered in England and Wales during the year 1925 numbered 295,689, corresponding to a rate of 15.2 persons married per 1,000 of the population; this is a decrease of 727 over 1924. The greatest number of marriages was again registered in the third quarter of the year, being 90,314, or 30.5 per cent. of the total, whereas the number for the first quarter of the year was 46,263, or 15.3 per cent. This preference for the third quarter has been a feature of the returns since the beginning of the present century; previously the highest rate was recorded in the fourth quarter. The number of decrees nisi made absolute during the year was 2,605 (2,563 dissolution and 42 annulment), as against 2,286 in 1924 and 2,667 in 1923.

## Scotland.

#### ANIMAL BREEDING AT EDINBURGH.

A GIFT of £10,000 by Lord Woolavington towards the endowment of a chair of animal breeding in Edinburgh has just been announced. It follows on an offer by the Rockefeller International Education Board of £30,000 for the extension of the Animal Breeding Research Department, on condition that a similar sum should be obtained in this country. A substantial grant in aid of the scheme is also expected from the Development Commission, and it is anticipated that the Department of Animal Breeding in Edinburgh University will be unique in the British Isles, and will greatly strengthen the school of agriculture as well as the scientific department of the Medical School. It is estimated that a capital sum of between £60,000 and £70,000 will be required. The history of the Edinburgh Animal Breeding Research Station is comparatively short. The suggestion that work on this line might be undertaken was made by the Board of Agriculture in 1911, and was selected as the centre probably on account of the work which had previously been done in this direction by Professor Cossar Ewart. The activities of the committee appointed to carry out the project were suspended until 1919 on account of the war. Dr. Crew was appointed director in 1920, and in February, 1921, accommodation was provided in an old building in High School Yards, the property of the University, where a small staff of workers was gradually collected.

In the sixth annual report of the Animal Breeding Research Department of the University recently issued, Dr. F. A. E. Crew stated that the transfer of the department to the King's Buildings in December, 1924, had provided room for considerable expansion. Research was being done in regard to the value of certain recognized breeding practices. Much that the breeder had already accomplished would receive the endorsement of science, and much that was at present held to be financially profitable would be ruthlessly condemned on biological grounds. Evidence was being accumulated to show that in certain instances the breeder was seeking to fix characters which were genetically unstable and to perpetuate what was biologically unworthy. The department had been engaged for a considerable period in the study of sheep-breeding problems, particularly in connexion with the fleece of the sheep, which occupied a special place among agricultural products because it was definitely a by-product which was sold directly by the farmer. The practical values characteristic of other animal products were not so well defined in the case of the fleece. Investigation had to be made into the relations that might exist between the nature of the fleece and mutton qualities, the suitability of sheep for

their environment, and special breed characters that might be termed points of valuation. The co-operation of the private breeder was essential, no less than that of the manufacturing expert. Breed characters having been defined, it had become possible to discover the variations that existed and to take advantage of this to lay down standards within a breed. While it was necessary to maintain a certain number of sheep at the department in order to conduct investigations, the great bulk of the work could be done on the flocks of institutions or of private breeders, who were willing to co-operate, without materially disturbing the normal management of the flocks.

Other problems already under investigation are the developmental intersexuality in the fowl, sex link inheritance in fowls, the influence of the ductless glands upon development, the pathology of calves in the Dexter breed of cattle, the factors involved in natural incubation of chicks, and an inquiry into the problem of sterility in cattle. Work is also in progress in regard to pigs, with a view to finding out which of the problems of the pig-breeder are amenable to genetical investigation. An example of the wide scope embraced in the investigations of this department is afforded by the arrangements made with the directors of the Stirling Bacon Factory and with the Prison Commissioners for Scotland in regard to pigs raised at Barlinnie Prison near Glasgow, with a view to investigating the live weight increase in proportion to food consumption, quality and maturity in different strains, and correlating these with the question of fertility. Various other pig-breeding societies are also collaborating with the department in this investigation. Somewhat similar investigations are being made with the help of other associations into problems connected with the breeding of horses, cattle, and goats. In addition to these investigations, a grant of £200 for five years from the Carnegie Trustees has enabled a biochemical laboratory to be equipped, so that many problems which cannot be solved by purely genetical methods may be more thoroughly investigated.

The staff of the department includes Dr. Crew as director, with Mr. A. D. Buchanan Smith, M.A., M.Sc., as assistant and liaison officer between the department and the agricultural community of Scotland. Over twelve research students, from the United Kingdom and from Australia, India, and Japan, have been working in the department. Courses of lectures have been given to students of agriculture in the University, as well as to students of veterinary science and students of the post-graduate medical school. Various public lectures have been given by the director and other members of the research staff, and Dr. Crew has given to the Dundee Branch a British Medical Association lecture on the mechanism of inheritance, which was published in the *BRITISH MEDICAL JOURNAL* of August 14th, p. 285.

#### MOTOR ACCIDENTS AND HOSPITALS.

Various voluntary hospitals have recently been concerned about the number of persons admitted to the wards owing to injuries in motor collisions. The Board of Managers of the Royal Infirmary of Edinburgh on October 4th discussed the question of making claims to meet the cost of treating such cases, and directed a return to be prepared. It was presented to the meeting on October 18th, and showed that during August 42 cases had been treated in the institution; up to September 1st these patients had received a total of 475 days' treatment. This had involved a cost for maintenance during the month of August of £184 1s. 3d., and 18 were then still under treatment. It was suggested that the attention of the insurance companies concerned should be drawn to the matter, and that they should be asked to make grants to hospitals for the treatment of such cases when disposing of their annual surplus. The principle, it was pointed out, had already been recognized by railway companies, and in one instance a substantial grant had been given in recognition of the services rendered by the infirmary following a collision. It was agreed that the matter should be raised again at the beginning of next year, and that a return of the number of cases due to motor accidents should be included in the annual report of the infirmary.

#### MATERNITY BENEFIT IN SCOTLAND.

One of the matters considered at the annual committee, held in Edinburgh on October 13th, of the Convention of Royal Burghs of Scotland, a body which has existed for several centuries, was the disposal of maternity benefit. A letter was read from the town clerk of Kilmarnock regarding the question of maternity benefit mandates in favour of local authorities. Sir Henry Keith, who was in the chair, said that treatment in maternity hospitals was not free, except in cases of necessity; the general practice was to charge for maintenance, and a practice had grown up with some local authorities of suggesting to the woman that she should assign her maternity benefit to the authority, in respect of the charges which otherwise would be made, as a form of security for payment of the expenses incurred. The Board of Health had originally favoured this plan, but recently some of the approved societies had objected to signing the mandate. This matter seemed to be one which could be settled by mutual co-operation and goodwill, and it might be approached either through the Association of Approved Societies or through the Association of Insurance Committees, before seeking new legislation on the matter. It seemed reasonable that since maternity benefit was given for the purpose of enabling the woman to pay for additional nourishment and expense, she should pay for the expenses incurred in the maternity hospital. It was stated by an Edinburgh representative that the matter had been before the Edinburgh Town Council recently, because a large number of the inmates in the maternity hospital of that city paid nothing, although it was believed that many of them were able to pay. The Edinburgh corporation, it was believed, would approve of legislation, and it was finally resolved to approach the Board of Health on the subject.

## Ireland.

#### ROYAL VICTORIA HOSPITAL, BELFAST.

Mr. S. T. IRWIN, F.R.C.S.J., delivered the opening address of the new session in the King Edward Memorial Hall of the Royal Victoria Hospital, Belfast, on the morning of October 19th. Mr. Mitchell, chairman of the visiting staff, presided, and there was a large attendance of the staff and of students. The lecturer pointed out the dependence of voluntary hospitals on the lay press to educate the public, and hastened to acknowledge the value of the help the hospital had always received. He recalled the days in the old Royal Hospital in Frederick Street, where he was one of the four resident pupils in 1903 when it moved to its present quarters. The old hospital was founded in the year of Waterloo and opened in 1817, and had been added to from time to time. Chiefly by the exertions of the late Lord Pirrie, and by his wife, their president, Lady Pirrie, the present hospital was founded and opened free of debt in 1903 by his late Majesty King Edward VII; the originators had the courage of their convictions, and it was planned and built on the latest designs, and had proved a great success; it had 204 beds, and His Grace the Governor would next day (October 20th) open new wards to bring it up to 435 beds. The out-patients were then 22,585; they now numbered 41,024. The visiting staff had increased from 17 to 37; the residents from 4 to 14; and the nursing staff from 60 to 150. There were now a range of laboratories, a biochemistry department, and large x-ray and dental departments. Some of these existed in a very immature and undeveloped condition before; now they were flourishing and in full order, and, indeed, already overworked. Mr. Irwin drew attention to the value of these later and more scientific methods of examination and of treatment in the prevention of the chronic invalidism so prevalent in former years, as well as in the reduction of mortality; this could be well illustrated by the study of the protean ravages of tubercle. The lecturer, on behalf of the staff, welcomed all students, senior and junior, to their hospital studies. The most striking difference from his student days was the large proportion of women, and he paid a graceful compliment to their hard work, steadiness, and conscientiousness, although, as an orthopaedic

surgeon, he could not approve the still popular high heel and narrow toe of the shoe. Dr. Morrow proposed and Mr. Howard Stevenson seconded a vote of thanks to Mr. Irwin, which was passed with acclamation.

The extensions of the Royal Victoria Hospital, Belfast, were formally opened by the Duke of Abercorn, Governor of Northern Ireland, on October 20th. There was a large and representative gathering. Viscountess Pirrie, the president of the hospital, who was in the chair, called upon Professor J. A. Lindsay, M.D., chairman of the board of management, who, after thanking the Governor of Northern Ireland for having kindly consented to inaugurate the extensions, spoke of the pleasure those present felt in seeing in the chair their honoured and beloved president, Viscountess Pirrie, to whom and to the late Lord Pirrie, the hospital owed so much, both at its inception, through its course of the last twenty-three years, and now in the large extensions. Lady Pirrie had been its constant and generous friend, ever mindful of its interests, over sympathetic, and ever helpful. A pamphlet which had been prepared and was in the hands of those present gave full information on the work of the last three years; every department had shared in the benefits, and additional beds, a new nurses' home, three new operating rooms, and new classrooms had been provided, as well as additional accommodation in the ophthalmic, x-ray, pathological, biochemical, electrotherapeutic, and dental departments; more room for offices, kitchens, laundry, workshops was afforded, and a new gate lodge had been erected. This long list accounted for the heavy expenditure, amounting to £130,000. There was no finality in hospital construction; all recent improvements had been adopted. There was a demand to-day for paying departments in voluntary hospitals, and they were the rule in Canada and the United States. It was hoped that in the near future it would be possible to meet this want. The hospital was specially indebted to the superintendent, Colonel Forrest, who had given much practical assistance and made many valuable and fruitful suggestions. Viscountess Pirrie expressed their great pleasure in welcoming the Governor of Northern Ireland, and regret at the absence of the Duchess; she referred also to the prevision of those responsible for the hospital at its foundation, who made plans to meet the essential developments which experience and success brought; she looked upon the demand for enlargement as proof that the board and medical staff continued to hold in increasing measure the confidence and goodwill of the public; she referred to the munificent legacy of the late Mr. Musgrave, which had rendered it possible to build the new nurses' home. The Governor, in declaring the extensions open, paid a graceful tribute to the late Lord Pirrie and to Lady Pirrie. He stated his great pleasure in seeing such advances in hospital work and construction, and the generosity of the public in enabling the work to be carried on to such a successful issue. Dr. Livingstone, Vice-Chancellor of the Queen's University, proposed a vote of thanks to His Grace, and gave some figures of the medical school, and of the course of instruction in the classrooms and in the hospital. This was seconded by Mr. A. B. Mitchell, F.R.C.S.I., chairman of the medical staff, who said that these improvements enabled the staff to carry out their work with increasing accuracy and efficiency. His Grace responded. After the opening ceremony a tour of inspection was made.

#### APPOINTMENT OF COUNTY MEDICAL OFFICERS OF HEALTH.

The Minister of Local Government and Public Health has addressed a circular letter to all county councils in the Irish Free State, in the course of which he states that the Executive Council has appointed Local Appointments Commissioners in pursuance of the Local Authorities (Officers and Employees) Act, 1926, and that he will not consent to any appointment made contrary to the provisions of this Act. The Minister further states that it now devolves on the county council, in conformity with the terms of Section 6 (1) of that Act, to request the Local Appointments Commissioners to recommend to them a person for appointment as county medical officer of health. Having regard to the urgent necessity for making these

appointments, each county council should at the earliest possible moment take the whole question into consideration as recommended in the circular letter above mentioned, and should fix a suitable salary for the post. An application should at the same time be addressed by it to the Local Appointments Commissioners to recommend a person or persons for appointment as a county medical officer of health.

## Correspondence.

### A GOOD DIET AND A BAD ONE.

SIR,—It is to be hoped that doctors will take seriously to heart the lesson taught by Colonel McCarrison's paper published in the JOURNAL of October 23rd (p. 730). Of recent years we have heard much of the work done on experimental dietetics—of the calorie value of different foods, of the dangers of vitamin starvation, and the like—until we have almost come to suppose that it is impossible to construct a healthy dietary without calling the laboratory expert to our aid. No doubt experimental findings have been helpful in clarifying ideas concerning the evils attaching to many of our modern highly artificial foods, but surely the best way to arrive at the diet most suitable for man is by studying that of healthy races living under primitive conditions; by healthy races I mean such as are well set-up and conspicuously exempt from such disorders as tonsillitis, adenoids, dental caries, appendicitis, and cancer.

Colonel McCarrison cites instances of such races, and describes their diet. We seem justified in assuming that if, from early years, we all adopted a similar diet the national standard of health and physique would be greatly improved, although, owing to our necessarily more sedentary life, our standard would still fall below that of these remarkable races.

Much as we can learn from studying the diet of comparatively primitive agricultural peoples, I venture to think that we can reach an even deeper level of truth concerning human dietetics by studying the diet of the pre-agriculturalists. It is possible to trace out precisely the changes which have taken place in the diet of the evolving man from the pre-human anthropoid phase to that of late pre-agricultural man. To me it does not seem possible for us to have a firm grasp of the fundamentals of human dietetics until we have learnt the lessons to be learnt from a study of man's diet at the late pre-agricultural phase; for let us not forget that civilized man is innately much the same to-day as when man first began to cultivate the soil, and that, from the standpoint of evolution, this phase was but as yesterday.

What do we find when we examine the diet of pre-agricultural man as he exists to-day? We are told that bread is the staff of life; pre-agricultural man has no cultivated cereals of any kind; and therefore no bread, whole-meal or other. We are often told of the value of sugar as a food: pre-agricultural man has no concentrated sugar save an occasional taste of wild honey. Again, we are told that non-human milk is a necessity for children after the weaning period: pre-agricultural man has never tasted milk other than his mother's, and knows nothing of butter or cheese. Needless to say, he is equally ignorant of tea, coffee, and alcohol. The cardinal truth to grasp is that, on a diet which, to all intents and purposes, contained no one of these items, man evolved from a speechless ape to a being capable of abstract reasoning, and during all that time maintained a standard of physical fitness far beyond that of civilized man of to-day.

A further important particular wherein the food of pre-agricultural man differs from that of modern man is in the comparative paucity in starch, and in the abundance of raw vegetable foods requiring vigorous mastication as compared with the richness of modern dietaries in soft starchy ingredients. Man evolved as a hunter. He subsisted on animal food supplemented by carefully selected raw vegetable foods until the discovery of cookery. With this discovery (with which, by the way, pre-agricultural man has been familiar for thousands of years) he greatly augmented his vegetable food, notably his supplies of starch.

It must not be supposed that I am suggesting we should all return to the diet of pre-agricultural man. I merely wish to insist that we can correct some of our notions concerning human dietetics by studying the dietetic habits of primitive peoples—above all, of the pre-agriculturalists, now almost extinct. By a judicious study of the diet of primitive races now living, it is possible to construct agreeable varieties of diet which, if generally adhered to, would raise in a surprising degree the national standard of health and physique and increase to a corresponding extent the fund of human happiness.—I am, etc.,

London, W., Oct. 23rd.

HARRY CAMPBELL.

#### MINER'S NYSTAGMUS.

SIR,—I note that in Mr. Percival's letter (October 23rd, p. 758) he states that he certainly agrees with Dr. Ingram-Johnson's theory (October 2nd, p. 615) that the position at work and consequent strain of the external muscles of the eyeball is a very important factor in the causation of miner's nystagmus. At the same time he is "not disposed to accept" my view (October 9th, p. 664) that miner's nystagmus is caused by interference with vestibular function. He omits to state, however, that before coming to this conclusion I too expressed the opinion that this interference was primarily due to the abnormal posture of the body adopted by the miner and to the prolonged or intermittent strain of the muscles of the eyeball.

The important nerve structures which would be affected in such a case would be the vestibular reflex arcs; for example, (1) that constituted by the fibres of the medial longitudinal bundle which pass from the vestibular nucleus to the oculomotor, trochlear, abducent, and accessory nuclei and to the motor cells of the cervical spinal cord. (2) The auxiliary arcs formed by the oculomotor, trochlear, abducent, accessory, and cervical spinal nerves which supply the muscles which move the head and eyes. By means of these arcs combined movements of the head and eyes (for example, nystagmus) are regulated in response to vestibular stimulation. (3) Through the vestibulo-spinal tract a reflex arc is established between the vestibular sense organ and the skeletal musculature, thus bringing the primary motor neurones under the reflex control of the vestibular apparatus. (4) Through its connexions with the vestibular nucleus, the cerebellum is able to influence the descending vestibulo-spinal tracts and the spinal neurones.

These manifold but important connexions have led me to offer what I still think is a sound physiological and anatomical explanation of how the phenomenon is evolved, and it must be admitted that the theory is more than plausible, not only in connexion with the nystagmus itself but also in connexion with the other symptoms. I can think of no other nerve structure, "deep-seated" or otherwise, whose connexions could possibly fill the bill more completely than the nucleus of Deiters.

As the incidence of miner's nystagmus seems to vary in different pits some contributory cause must be looked for. Such a cause may be bad light, or it may be toxic owing to inhalation of foul air in ill ventilated mines, or there may be an hereditary tendency, as an hereditary type of nystagmus is described which is passed from mother to child and which shows no ocular defect. Coal-mining is usually a familial occupation, so statistics of the familial incidence of miner's nystagmus would be of great interest in this connexion.

Mr. Percival's remarks concerning the types of nystagmus met with are of great clinical interest, but no matter what form the nystagmus assumes, it cannot take place without the medium of the vestibular nucleus.—I am, etc.,

Manchester, Oct. 23rd.

RICHARD I. POSTON, M.D.

#### SANATORIUM TREATMENT.

SIR,—Dr. Stocks in his reply (October 16th, p. 713) misses the point of my criticism. He assumes that treatment is completed in the sanatorium, and that similar remedies are not employed in "non-sanatorium" cases; also that the duration of treatment in the sanatorium is a measure of the duration of sanatorium régime; none of which statements are correct. If he were trying to test

the value of salicylates in rheumatic cases, would he think it fair to include patients who had only had a few doses, and to exclude others who had had a full course elsewhere?

Sanatorium treatment is not so much a remedy as a manner of life, with precautions and special remedies learnt from clinical experience, and employed as occasion arises. The same treatment is adopted outside the sanatorium by every up-to-date doctor, though under difficulties and with the omission of unattainable remedial measures. There is no clear-cut distinction between Dr. Stocks's groups.

Length of stay, taken alone, is no measure of the completeness of the course: four months may be enough for safety in one case, and utterly insufficient in another; but in every case the ultimate result will depend mainly upon the conditions of life—including such matters as good sense and perseverance of the patient, a careful wife, no long spell of unemployment, as well as many others which are not all included in Dr. Stocks's list. And the effect is cumulative. When all or most of these conditions are favourable tuberculosis officers will attempt home treatment; so that the "home treated" are likely to be a more favourable group than the "hospital and sanatorium treated." Nearly every had case is sure to be sent for treatment to an institution at some time or other, and so to be included in Dr. Stocks's "sanatorium treated" group. Of over 2,000 sanatorium patients of whom I have notes, not more than 25 per cent. are early favourable cases.

So long as patients admitted to sanatoriums consist predominantly of those who are no longer in the most favourable stage, and treatment there is limited to the average time available for all collectively, so long will sanatorium treatment be regarded as a failure by the "man in the street." A better policy would be to treat early favourable cases for prolonged periods, or to provide sanatorium conditions for them elsewhere while at work; and to treat the less favourable cases elsewhere, in some place where elementary requirements with medical attention can be provided.—I am, etc.,

Farnham, Surrey, Oct. 19th.

F. R. WALTERS.

SIR,—Accustomed as I have been to regard statisticians as men who strive after the attainment of accuracy and truth, I feel a sense of keen disappointment when I find Dr. Percy Stocks (October 16th, p. 713) resorting to a controversial device which I had associated in my mind with ordinary unscientific men. The device is that of representing me as saying what I did not say, and then replying to the misrepresentation.

I did not object "that the presence or absence of tubercle bacilli in the sputum was not made the indispensable criterion for diagnosis." Nor did I "speak of the finding of bacilli as a *sine qua non* in diagnosis." What I said was that in my experience "among patients suffering from pulmonary tuberculosis who have survived for more than six months from the time when they first came under observation, there has been an enormous difference, as regards both survival and recovery of working power, between cases in which tubercle bacilli were found in the sputum and those in which, though sought for, they were not found." Clearly this implies that I acknowledge that there are cases of pulmonary tuberculosis in which tubercle bacilli, though sought for in the sputum, are not found.

My contention still holds good that in any investigation of this kind T.B.+ and T.B.—cases should be kept quite separate, and that data which do not permit of this being done should be avoided. Among the Belfast cases on which Dr. Stocks's investigation was based, the percentage of T.B.+ cases is so small that I cannot help thinking that there was a want of thoroughness in looking for tubercle bacilli; and that, if systematic search had been made, the bacilli would have been found in a considerable, but unknown, percentage of the cases now regarded by him as T.B.—. This is on the assumption, which I have adopted throughout, that all the cases under consideration were actually cases of pulmonary tuberculosis. Take, for instance, the figure given by Dr. Stocks for female patients in the L<sub>1</sub> stage sent to sanatoriums of the Lancashire County Council from 1914 to 1923. Of these, he says, 29 per cent. "had the diagnosis confirmed in this way." And compare.



this with 4.2, the corresponding percentage in the Belfast cases. Again, taking all the county Down cases diagnosed by my assistants and myself as pulmonary tuberculosis from 1913 to 1924, tubercle bacilli were found in the sputum in 62.2 per cent. The percentage varied from year to year; the highest, 77.3 per cent., being the 1917 figure; and the lowest, 53.6 per cent., the 1920 figure. The corresponding figure for the Belfast cases used in Dr. Stocks's investigation was about 10 per cent.

This uncertainty as to the proportion of T.B. + cases in each of the subgroups made by Dr. Stocks from the Belfast data is what prevents me from having any confidence in the conclusions based on these data.—I am, etc.,

Knock, Belfast, Oct. 18th.

JOHN R. GILLESPIE.

## CONTAGIOUS BOVINE ABORTION AND UNDULANT FEVER.

SIR,—Owing to absence from London, my attention has only now been drawn to an article in your issue of August 21st (p. 353). In it I am credited with finding two cases of undulant fever in England in people who had never left the country. This is an error. My work consisted in showing that the milk and blood serum of some London cows contained agglutinins for the *Micrococcus melitensis*.<sup>1</sup> This was one of the first links in the chain of evidence that was gradually built up to show the close relationship between the organisms of bovine abortion and of undulant fever in man.—I am, etc.,

J. C. KENNEDY,  
Colonel, R.A.M.C.

London, S.W.1, Oct. 22nd.

## Medico-Legal.

### A MEDICATED WINE.

In a Divisional Court of the King's Bench Division, on October 19th, the Lord Chief Justice, and Salter and Talbot, JJ., upheld a decision of the Brighton justices, that "Wincarnis with quinine" was intoxicating liquor within the meaning of Section 65 of the Licensing (Consolidation) Act, 1910, and that it was an offence to sell it without a justices' licence.

The question whether "Wincarnis with quinine" was an intoxicating liquor or a patent medicine arose on a case stated by the Brighton justices. The appellant, H. J. Sharp, a chemist and druggist of Edward Street, Brighton, had been convicted on an information preferred by a police superintendent of selling by retail, on January 27th, 1926, certain intoxicating liquor—namely, wine known as "Wincarnis"—he not then being the holder of a justices' licence, and had been fined £1, plus the cost of the analysts' fee.

#### Case Stated by Brighton Justices.

The case stated that the appellant was the holder of an excise licence to sell patent medicines. A police constable a day or two before January 27th entered the appellant's shop and asked for a bottle of "Wincarnis," and was told that it was not stocked, being referred to a wine merchant. On January 27th, however, the appellant sold to this policeman a bottle of "Wincarnis with quinine" for 3s., several bottles being displayed in the shop. The wrapper and bottle each had three labels containing the following words: "made with choice wine," "contains one grain of quinine to the ounce to meet the requirements of the Board of Inland Revenue," "contains 28 per cent. of proof spirit," "strongly recommended by the medical faculty," "dose—one tablespoonful to two tablespoonfuls may be taken three times a day," "bottle not to be shaken as there is occasionally a little sediment from the wine after bottling." On the wrapper was an excise label showing that a medicine stamp duty of 6d. had been paid on the contents. The liquid was found on analysis to contain 27.99 per cent. proof spirit (equivalent to 13.99 per cent. of alcohol) and 1.2 grains of quinine per fluid ounce. The justices found that the liquid in the bottle was an intoxicating liquor; was medicated, and tasted of quinine; that according to the standard of quinine wine in the *British Pharmacopoeia* a mixture containing one grain or more of quinine to the fluid ounce was considered a medicine; that sherry was also contained in the *Pharmacopoeia*; that a good port wine contained 30 per cent. of proof spirit; that the dose of quinine as prescribed by the *Pharmacopoeia* was from one to ten grains; that with a full dose of ten grains half a pint of the liquid would have to be taken.

The appellant's contention was that "Wincarnis with quinine" was not an intoxicating liquor within the meaning of the Licensing Acts, whilst the respondent's contention was that the labels on the wrapper and bottle were prima facie evidence that the liquid was made with wine, that no evidence was called to rebut it, and that it was intoxicating liquor within the meaning of Section 65 of the Licensing (Consolidation) Act, 1910. The justices found that the liquid sold was wine, and convicted the appellant.

Mr. Roland Oliver, K.C., and Mr. Llewellyn appeared for the appellant; Mr. E. J. Rimmer appeared for the respondent.

<sup>1</sup> *Journal of the R.A.M.C.*, January, 1914.

### The Appellant's Case.

Mr. Oliver said that if the conviction were right it would be necessary for every chemist and druggist who sold that or similar medicated wines to hold some sort of licence to enable them to do so. The Excise authorities had never taken any action on the matter. This prosecution was taken by the police. He agreed that before quinine was added to the liquid it was probably some sort of port, but as it stood it was not the sort of stuff people would want to drink as a beverage. Counsel quoted Section 110 and Section 111 (2) of the Licensing (Consolidation) Act, 1910, and Section 3 of the Spirits Act, 1886, and argued therefrom that if he could show that "Wincarnis with quinine" was not a wine; it could only come under the definition of "spirituous liquor," and would be exempt as "spirits made up in medicine." One must have regard to the two objects of the licensing law: the due preservation of public order, and the safeguarding of the revenue. The passage in *Paterson's Licensing Acts* saying that a wine licence was required for the sale of medicated wines was, in his submission, wholly wrong. He relied on the finding of the justices that it tasted of quinine, and cited *Attorney-General v. Bailey* (17 L.J., Ex. 9).

### The Respondent's Case.

Mr. Rimmer argued that the fact that it was not the practice of the Excise authorities to require chemists to take out an excise licence for selling that preparation was a purely departmental rule not in any way binding on the prosecution. It was immaterial that quinine wine was mentioned in the *British Pharmacopoeia*, so was sherry, and it could hardly be argued that sherry was not a wine. The admixture of non-alcoholic liquor with a wine did not make it cease to be a wine and become a spirit. If that were so, a person who had a wine licence could sell port but could not sell "Wincarnis with quinine," or could sell claret but not claret cup. The distinction between "wine" and "spirits" contemplated by the Act was that which the man in the street would make. "Spirits" implied distillation and "wine" fermentation without distillation. If before the admixture it was a fermented liquor in the sense of being wine, it remained after the admixture a fermented and not a spirituous liquor.

Counsel was stopped by the court.

### Dismissing Appeal.

The Lord Chief Justice, in his judgement, said the only question was whether the liquid that was being sold was wine. If it was, then its sale by retail without a justices' licence was illegal. It was possible to conceive a problem not medical or chemical, but of a commercial kind—namely, how to command a large sale of inferior port wine at a comparatively high price with the help of a great number of persons who do not commonly sell wine, and especially a great number of purchasers who might hesitate to buy or drink wine if it were offered to them as such. The answer to that problem might conceivably be the putting of a little medicine in wine and selling it in chemists' shops. That might be a matter which deserved the attention of the Legislature. Upon the facts of the case, how could it be said that there was no evidence upon which the justices could hold as they did? It might well be that the commercial problem was how to put enough medicine into wine to make it cease to be wine for the purposes of argument, without putting in so much medicine as to make it unpalatable to men, women, and children, and especially women who on being told they suffered from nervous diseases were not at all disinclined to find a plausible excuse for drinking port at 11 o'clock in the morning. His lordship thought there was abundant material upon which the justices could find as they did.

Salter and Talbot, JJ., concurred.

## The Services.

### NAVAL MEDICAL COMPASSIONATE FUND.

At the quarterly meeting of the directors of the Naval Medical Compassionate Fund, held on October 19th, when Surgeon Vice-Admiral Sir Joseph Chmehers, K.C.B., C.M.G., Medical Director-General of the Navy, was in the chair, the sum of £114 was distributed among the several applicants.

### DEATHS IN THE SERVICES.

We much regret to record that among the names of those missing from H.M.S. *Valerian*, which foundered in a hurricane, is that of Surgeon Lieutenant Colin Joiner, R.N. He graduated M.B., Ch.B. Abc'd. in 1924, received his commission on September 1st, 1924, and was appointed to the *Valerian* on April 29th, 1926. He was a member of the British Medical Association.

Lieut.-Colonel Sidney Herbert Carter, R.A.M.C. (ret.), died suddenly in a nursing home at Brighton on October 15th. He was born in county Antrim on March 14th, 1848, and was educated at Trinity College, Dublin, where he graduated B.A. and M.D. in 1870. He entered the R.A.M.C. as surgeon on September 30th, 1874, became surgeon lieutenant-colonel after twenty years' service, and brigade surgeon lieutenant-colonel in November, 1897. He retired in January, 1903. While serving in South Africa, as principal medical officer of a division, he was granted the local rank of colonel from April 15th, 1900. He served in the Afghan war of 1878-80, when he was present at the battle of Ahmed Khel, and received the medal with a clasp; in the Egyptian war of 1882, at the battle of Tel-el-Kebir (medal with clasp, and Khedive's bronze star); in the Tirah campaign on the North-West Frontier of India, in 1897-98, on the lines of communication (frontier medal with two clasps); and in South Africa, 1899-1901, when he took part in the defence of Ladysmith, was twice mentioned in dispatches, and gained the Queen's medal with five clasps.

The Conservator's report records the appointment of Mr. Cecil F. Beadles as pathological curator in succession to the late Professor S. G. Shattock. Much progress was made in the revision of the collections illustrating the injuries and diseases of special systems and organs of the body; also in the re-cataloguing of specimens illustrating special pathology, and in the cataloguing of the Army Medical Collection now almost completed. Mr. Alban Doran completed his task of preparing a descriptive catalogue of the collection of surgical and other instruments, and the labelling and arrangement of specimens has been greatly improved under the guidance of Mr. C. J. S. Thompson. The scheme for extending the odontological collection, under the honorary curatorship of Sir Frank Colyer, is now on the point of completion. During the period under review more than 11,000 students and visitors used the Museum. The number of readers in the library was 6,350, and the Librarian in his report states that the supply of books and periodicals was well kept up during the year, works bearing on surgery and the contents of the Museum being chiefly provided. A useful addition to the *Calendar* is an inset plan of the floor of the library, indicating the position of periodicals and works of reference.

The diploma of the Society has been granted to Messrs. R. C. Glover, A. Henkamp, W. Johnson, C. E. Nicholas, J. Pattis, and R. I. Richards.

## Obituary.

W. H. WHITE, M.D.,

Consulting Physician, Royal Hospital for Diseases of the Chest.

DR. WILLIAM HENRY WHITE, whose death occurred suddenly on October 22nd, was born at Wexford in 1849 and educated in Ireland. He graduated at Trinity College, Dublin, ultimately becoming M.R.C.P.Lond. When he came to England he practised at Westbury, Shropshire, but after a few years he found that the work of a very great and growing practice was too much for his health. After a rest he settled at 43, Weymouth Street, and for forty-five years, down to the day of his death, was seeing patients. Dr. White belonged to the old school of practitioners. Very definite in diagnosis and perhaps somewhat dogmatic, he had a great hold on his patients. His appearance was striking, and his personal magnetism as great with the poor as with the rich, largely owing to his cheerfulness and geniality. He was for many years physician to the Royal Hospital for Diseases of the Chest and to the St. Marylebone Dispensary. His treatment of disease was intensely practical; he was quick to discard useless methods. His friends will ever remember him for his charm, kindness, and sympathy. He was a great lover of horses, for many years a familiar figure in the Row, and only a few years back did he at last give up driving his own pair on his rounds. Another favourite pastime was yachting at Falmouth and along the south coast. The death of his wife in January last, just after their golden wedding, was a terrible blow to him, from which he never recovered. He is survived by his two children, a daughter and son, Norman.

We regret to record the death of Dr. ROBERT PARRY, a leading practitioner of Carnarvon, at the age of 71. He was a native of Merionethshire, and received his education at Owens College, Manchester, and Guy's Hospital Medical School. He obtained the diplomas of L.S.A. in 1878, M.R.C.S.Eng. in 1879, and L.R.C.P.Lond. in 1882, and graduated M.B.Lond. in 1882. In 1883 he started practice in Carnarvon, and soon afterwards began to take an active part in the public life of the district. He was for nearly forty years a member of the town council, was mayor from 1897 to 1899, and in 1921 his name was added to the roll of freemen. He had also served as chairman of the County Council and chairman of its Health Committee, and was a member of the Carnarvonshire Insurance Committee and of the Joint Sanitary Committee for the county. He was a justice of the peace for the borough and county of Carnarvon. His professional appointments include those of medical officer to the Carnarvon Union Infirmary, and surgeon to the police and to the local prison. For many years Dr. Parry had been a loyal and zealous member of the British Medical Association, and at the time of his death was a member of the North Wales Branch Council and of its Executive Committee; he was president of the North Wales Branch in 1901. He was highly esteemed by his colleagues, and his guidance in professional difficulties was much appreciated. At the funeral there was a large assembly of mourners, including representatives of all the public bodies on which Dr. Parry had served, and a great many medical men. He is survived by his widow, three sons, and two daughters; two of the sons are members of the medical profession.

Dr. CHARLES CLEMENT LAPAGE, who was for forty-two years in practice at Nantwich, Cheshire, died on October 14th after a short illness. He was a native of Leeds, and was educated at Leeds and Magdalene College, Cambridge. He obtained the diplomas M.R.C.S.Eng. in 1876 and the L.S.A. in the next year; he graduated M.B.Cantab. in 1882, and in the same year proceeded M.D. After holding the appointment of assistant house-surgeon to the Leeds General Infirmary he commenced private practice in Nantwich, and retired in 1919. In addition to his private practice he was consulting phy-

sician to the Brine Baths Hotel, and took an active part in the voluntary medical work of the town. He was medical officer to the Red Cross detachment before the war, and served throughout it as medical officer to the Nantwich V.A.D. Hospital. Dr. Lapage was for many years a member of the British Medical Association, and he was also very active in ambulance work, being well known over the Cheshire district as an examiner and lecturer for the St. John Ambulance Brigade. He took great interest in athletics, and in his university days was prominent in many forms of sport. This interest he retained as far as possible when he went to Nantwich, where he was well known in the hunting field and as a supporter of every form of open-air life. His wife predeceased him in 1919, and he is survived by a daughter and five sons, two of whom are members of the medical profession.

The following well known foreign medical men have recently died: Dr. KAUFFMANN, oto-rhino-laryngologist, at Angers; Professor MAX KOCH, pathologist, at Berlin, aged 53; Dr. MAX HOWALD, professor of medical jurisprudence at Berlin; and Professor E. OPITZ, gynaecologist, at Freiburg.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

PARLIAMENT reassembled on October 25th to approve the continuance of the Emergency Regulations during November. This was done after discussion. The House of Commons sat on October 25th and 26th, but its debates did not result in any new proposals for settlement of the mining dispute, although approaches were made to the Prime Minister behind the Chair. Occasion was taken during the sittings to take the opinion of the House on certain remarks made earlier in the month by Dr. Salter in a speech at a temperance society, in which he imputed inebriety to certain members of the House of Commons. A prolonged debate ensued, during the course of which Dr. Salter repeated his allegations. Veteran members testified to the much improved sobriety of the country and of the House. A motion repudiating Dr. Salter's charges was made, but an amendment was proposed to refer the matter to a Committee of Privileges; the amendment was rejected, and the original motion adopted without a division.

The House of Commons will meet again on November 9th for the ordinary business of the autumn session. The heavy work caused by the coal stoppage and the Imperial Conference has, however, disturbed the Ministerial programme, and Mr. Neville Chamberlain does not now hope to obtain this autumn a preliminary debate in the House of Commons on the bill he is preparing for the reform of the Poor Law and the abolition of boards of guardians. He may, however, issue a draft or summary of it for examination by politicians and public authorities. The hope is that the Government will make this bill a principal item in its legislative programme of next year, but the Cabinet has not decided to do so.

## Outbreaks of Infantile Paralysis in England.

On October 25th, in reply to Mr. Ammon, Sir Kingsley Wood said that an outbreak of infantile paralysis occurred in Broadstairs this month. Fifty-three cases had been notified and there had been two deaths. The outbreak had been mainly restricted to private boarding schools and day schools in Broadstairs; three cases had occurred in convalescent homes. A medical officer of the Ministry of Health visited Broadstairs immediately, and had conferred with the medical officer of health and the local medical practitioners as to the administrative arrangements for dealing with the outbreak. Leaflets of advice had been issued and facilities for hospital isolation and disinfection provided. An outbreak in Leicester began at the end of July and reached its maximum in the week ending September 18th. The last case was notified on October 14th. There were altogether 73 cases, 6 of which were fatal. They occurred sporadically, all over the town. In no instance did more than one case occur in a household, and no one school was specially affected. Each case was personally investigated by the medical officer of health, who arranged for the necessary isolation and for treatment, either at the isolation hospital or the Royal Infirmary.

Mr. Ammon asked whether instructions were issued from the department, so far as Broadstairs was concerned, that all reports were to be suppressed and no information allowed to leak out. Sir Kingsley Wood said all notifications had been published in the official returns week by week; the council of Broadstairs—the proper body to make a statement—issued an official statement to the public generally.

## Medical News.

THE Lloyd Roberts lecture for 1926, at the Manchester Royal Infirmary, will be delivered by Dr. W. E. Gye on Tuesday, November 9th, at 4.15 p.m. The subject will be "An outline of the knowledge gained by the experimental study of cancer."

At a meeting of the Medical Officers of Schools Association, to be held at 11, Chandos Street, Cavendish Square, W.1, on Friday, November 12th, at 5 p.m., Dr. A. I. Simey will introduce a discussion on suggestions as to the modification of the rules usually observed in the management of infectious diseases in boarding schools. (Tea 4.30 p.m.) All interested in the subject are cordially invited to attend.

A MEETING of the Medical Prayer Union will be held, by kind invitation of Dame Mary Scharlieb, M.D., M.S., at 71, Harley Street, on Friday, November 5th, at 5.30 p.m., when an address will be given by the Rev. Hubert L. Simpson, M.A., on "The doctor and religion." An intimation of intention to be present will be welcomed by the honorary secretary, Dr. Tom Jays, Livingston College, E.10.

At the Post-Graduate Hostel, Imperial Hotel, Russell Square, W.C.1, on Monday next, November 1st, at 9 p.m., Sir James Dundas-Grant will read a paper on some clinical experiences, and on Friday, at the same hour, Dr. E. I. Spriggs will discuss diverticulosis. All medical practitioners are welcome. Dinner will be served at 8 p.m. (price 5s.) and coffee and biscuits at 10 p.m. (price 6d.).

THE Fellowship of Medicine announces that on November 4th, at 5 p.m., at the house of the Medical Society of London, 11, Chandos Street, W., Mr. C. Max Peto will continue the series of lectures on surgical and medical emergencies by speaking on the treatment of fractures. On the same day, at 1 p.m., Mr. M. L. Hepburn will give a demonstration in clinical ophthalmology at the Royal London Ophthalmic Hospital. At the Royal National Orthopaedic Hospital on November 1st Mr. E. Laming Evans will give a special afternoon demonstration, starting at 3 p.m. All the above are free to members of the medical profession. On November 1st a practitioners' course in general medicine and surgery will start at the Hampstead General Hospital, with daily sessions from 4.30 to 6 p.m.; the course will last for two weeks, and a clinical demonstration will be given for the first three-quarters of an hour, followed by a lecture. On the same day a course in venereal diseases will begin at the London Lock Hospital, with clinical work each day from 1 p.m. onwards; four or five lectures will be given weekly during the four weeks of the course. At the Royal Waterloo Hospital for Children and Women a three weeks' course in medicine, surgery, and gynaecology, occupying every afternoon and some mornings, will start on November 15th, and will include lectures and clinical demonstrations on diseases of the nervous system, feeding of infants, congenital heart disease, diseases of the blood, kidneys, thyroid, joints, stomach, and intestines, with gynaecological diagnosis, consideration of the commoner gynaecological affections, ophthalmia neonatorum, and skin diseases, and modern methods of laboratory diagnosis. A course at the St. John's Hospital for Diseases of the Skin, from November 15th to December 11th, will include daily instruction in the out-patient department, and lectures on Tuesdays and Thursdays. The West End Hospital for Nervous Diseases, from November 22nd to December 18th, will hold lecture-demonstrations daily at 5 p.m. At St. Mark's Hospital, from November 22nd to 27th, there will be a course of operations, demonstrations, and lectures, and at the London Temperance Hospital, from November 29th to December 11th, a course in medicine and surgery in the late afternoons. Copies of all syllabuses, the general course programme, and the *Post-Graduate Medical Journal* may be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

THE People's League of Health has arranged a series of eight lectures on "Diet: What we should eat and why," to be delivered in the lecture room of the Medical Society of London, 11, Chandos Street, Cavendish Square, W.1, commencing on Wednesday, November 3rd, at 6 p.m. The lecturers include Professors Leonard Hill, Winifred Cullis, W. E. Dixon, and Hugh Maclean, and Dr. Harry Campbell. The fee for the series will be 8s. The syllabus may be obtained from Miss Olga Nethersole, 12, Stratford Place, W.1.

A FURTHER extraordinary general meeting of the Medical Sickness, Annuity, and Life Assurance Society will be held at the offices of the company, Lincoln House, 300, High Holborn, W.C., on Monday, November 1st, at 4 p.m., for the confirmation or otherwise of the resolution approving alterations in the articles of association adopted at the meeting on October 11th.

THE Norman Lockyer lecture for 1926 will be given in the Goldsmiths' Hall on Tuesday, November 23rd next, at 4 p.m., by Mr. J. S. Huxley, Professor of Zoology and Animal Biology at King's College. Its subject will be biology and human life. Tickets can be obtained from the Secretary, British Science Guild, 6, John Street, Adelphi, London, W.C.2.

THE London Clinic of Psycho-Analysis has recently been opened for the out-patient treatment of cases found suitable for this form of therapy. Its purpose is to place a method of treatment that is lengthy and therefore usually expensive within the reach of those who cannot afford the usual or indeed any fees, and to provide opportunity for the training, under supervision, of medical students and practitioners who desire to specialize in this branch of work. The staff consists of the following honorary physicians: Drs. Ernest Jones (honorary director), Douglas Bryan, E. M. Cole, M. D. Eder, Edw. Glover, M. B. Herford, W. Inman, Sylvia M. Payne, R. M. Riggall, W. H. B. Stoddart, and John Rickman (honorary secretary). The address of the clinic is 36, Gloucester Place, W.1.

THE British Social Hygiene Council has arranged a course of lectures to teachers and those concerned with education, to be held at the College of Nursing, Henrietta Street, Cavendish Square, W.1, at 5.30 p.m. Mr. D. Ward Cutler will open the course on November 4th with a lecture on the contribution of biology to social hygiene. Dr. Feldman will describe the contribution of physiology to social hygiene on November 11th. Dr. J. A. Hadfield will discuss the contribution of psychology to social hygiene on November 18th. Dr. Mary Buchan Donie will discuss adolescent and social hygiene from the standpoint of the home on November 25th, and on December 2nd Professor Winifred Cullis will lecture on adolescent and social hygiene from the standpoint of the school. Free tickets can be obtained from the London secretary of the Council, Carteret House, Carteret Street, S.W.1.

A NATIONAL conference on milk in relation to public health will be held in the King George's Hall, Caroline Street, Groat Russell Street, W.C.1, on Tuesday, November 16th. At the morning session reports will be received from public authorities on the present conditions of the milk supply, Dr. Harriette Chick will read a paper on milk in relation to public health, and Dr. W. G. Savage will open the discussion. The afternoon session will open with remarks by the Minister of Health, and consideration will be given to suggestions received by the conference committee as to steps to be taken by the public, public authorities, and the Government for the improvement of the milk supply. A general discussion will be opened by Professor H. R. Kenwood.

A QUARTERLY meeting of the Royal Medical-Psychological Association will be held on November 16th at the Horton Mental Hospital, Epsom, when it will be proposed to form a special committee on research and clinical psychiatry as a preliminary to the appointment, at the next annual meeting, of a standing research and clinical committee to consider the most profitable lines on which the matter can be pursued. It will be proposed also to ask each division to appoint a clinical committee to organize regular meetings devoted solely to the clinical aspects of psychological medicine on such lines as will encourage the attendance primarily of assistant medical officers. In the afternoon a paper and clinic on chronic epidemic encephalitis will be given by Dr. P. K. McCowan and Dr. J. S. Harris, at West Park Mental Hospital, Epsom, and a visit will be paid to the Manor Institution for Mental Defectives. On the previous day (Monday, November 15th), at 4 p.m., an address will be given at the British Medical Association House, Tavistock Square, W.C., by Dr. Alfred Adler, of Vienna, on the cause and prevention of neurosis.

At the annual dinner of the Chelsea Clinical Society on October 26th, the president, Dr. Ernest Charles Young, took the chair, and a record attendance of members was present. The toast of "The Visitors" was proposed by Mr. Ivor Baek, who coupled with the toast the names of Lord Carson, the Dean of St. Paul's, and Sir Arthur Conan Doyle. Lord Carson, in replying, spoke of his appreciation of the personal help he had received from doctors during his life, and admitted that he thought they appeared to greater advantage in the consulting room and at the bedside than in courts of law. The Dean of St. Paul's confessed to a strong sympathy with doctors, of whose services, however, he was glad that he had not had to take advantage very often. He contributed two humorous anecdotes to the gaiety of the evening. Sir Arthur Conan Doyle remarked that, although he felt somewhat of a traitor to the medical profession, having deserted it after comparatively short service, yet his professional life, though not very long, had certainly been broad, and perhaps deep. He thought he was the only representative present of the old unqualified assistant,

on whose character and activities he touched lightly and tactfully. His medical work had also been conducted in ships, while he had once occupied a consulting room and a waiting room in Wimpole Street, both of which, however, he had found to come under the latter title. The remaining boasts were the Chelsea Clinical Society; the Allied Societies, with special reference to the Hunterian Society, the dinner meetings of which had been copied by the Chelsea Clinical Society; and the health of the president, who said that the society aimed at being of particular value to general practitioners. A gratifying feature was the excellent attendance at its meetings during the past year, while the membership had also reached its highest point so far. The prospects for the future were very good.

At the third Pan-Pacific Scientific Congress, to be held at Tokyo from October 30th to November 11th, the following subjects will be discussed in the medical section: (1) the prevalence, prophylaxis, and treatment of diseases on the Pacific Coasts; (2) the prevalence, symptomatology, prevention, and treatment of dysentery, ankylostomiasis, and Japanese schistosomiasis; (3) the climate, feeding, clothing, and power of resistance of the inhabitants of different parts of the South Sea Coast.

DR. HAMEL, President of the German Health Department, has been elected member of the Commission for Combating Tuberculosis appointed by the Committee of Hygiene of the League of Nations.

THE late Mrs. Margaret H. Hamilton-Fallowes, who died in August last leaving estate amounting to nearly £2,000,000, has bequeathed £1,500 to the Boscombe and West Hants Hospital to endow a bed in her memory, and £1,000 each to the Royal Waterloo Hospital for Children and Women, the Royal Surrey County Hospital, Guildford, and the Royal Ophthalmic Hospital.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

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## QUERIES AND ANSWERS.

### RECURRENT MONSTERS.

"**P.L.V.S.**" asks for suggestions for the treatment of the following case: A woman, married three years, now aged 29, has twice become pregnant. The pregnancies terminated at seven and six and a half months respectively with hydramnios, anencephaly, spina bifida. Her husband is about 40. There is no suspicion of venereal trouble on either side. This woman suffered from spinal scoliosis as a girl. There is still some deformity and apparent tilting of the pelvis.

### RECURRENT BOILS.

DR. D. McASKIE (Southsea) writes: "I 'W. L.-C.' (Torquay) (*JOURNAL*, October 16th, p. 717) will, as soon as he sees a boil appearing, apply 83 plaster-mull, the boils will be at once aborted.

**SURGEON-LIEUTENANT L. P. SPERO, R.N.**, states that he has found the following line of treatment of recurrent boils very satisfactory: (1) The urine is often strongly acid; if so, it should be rendered alkaline with potassium citrate and sodium bicarbonate (large doses are necessary sometimes), and then endeavour to maintain the urine neutral, or, at all events, to diminish the

acidity as much as possible. (I am presuming the question of diet has been tackled.) (2) Take a piece of lint larger than the boil and cut a very small hole in the centre. Smear ung. hydrarg. ammon. lil. on the lint and apply to the boil and surrounding area, so that the aperture is over the centre or that part which is most likely to "point"; now soak a piece of gauze in 1 in 20 carbolic, squeeze out and place over the aperture, covering all with a thick pad of wool and bandage. This simple dressing is most effective and should be done once or twice a day. It is said, I believe, that hot fomentations tend to reinfect. I have had far better results since giving them up entirely.

### WARTS AND EGGS.

DR. C. LUTHER BATTESON (Watford) writes: In answer to Dr. Leonard Williams's inquiry in the *JOURNAL* of October 23rd (p. 763), it used to be a common superstition in my young days in the East End of London that drinking water in which eggs had been boiled would cause warts. I have known people make tea or cocoa with the water in which eggs had just been boiled, but have no evidence that warts were ever caused thereby.

### INCOME TAX.

#### Assessment.

"J. W. G." refers to the reply to "A. G." in our issue of October 2nd, 1926, and asks for a fuller explanation of the distinction referred to therein.

"\*." The case of *Tennant v. Smith* (*Appeal Cases*, 1892, p. 150) decided that if the holder of an office receives a salary and, in addition, an advantage—such as free residence—of which he is obliged to avail himself, and which he cannot transfer to others for profit to himself, then he is assessable in respect of his salary only. In the later case, *Cordy v. Gordon* (41 *Times Law Reports*, p. 401), Rowlatt, J., drew a distinction between the above facts and the case where a person is paid a salary and out of that salary has to pay a counter amount to secure himself some necessities which his employers think he ought to have in a certain form; in such a case the gross salary, and not the excess over the counter-charges, is held to be assessable.

## LETTERS, NOTES, ETC.

### POTASSIUM CHLORATE IN CONGENITAL GOITRE.

DR. R. VERNON BAILEY (Manchester) writes with reference to Dr. R. K. White's article on potassium chlorate and congenital goitre (*JOURNAL*, August 14th, p. 332) to point out that Professor W. E. Fothergill of Manchester published the description of a similar case in the *BRITISH MEDICAL JOURNAL*, 1903, i, p. 847, and also in the *Journal of Obstetrics and Gynaecology* in January, 1904, under the title of "Maternal eclampsia: hypertrophy of foetal thyroid."

### TREATMENT OF NEOPLASMS.

MR. G. S. THOMPSON, F.R.C.S. (Sydney, N.S.W.) writes: In view of the recent articles and work on the treatment of malignant growths and the claims to priority therein, I wish to call attention to the special (prize) article written by me in 1909 from Kimberley, South Africa, and published in the *Hospital* (London) on June 4th, 1910 (pp. 283-84), in which I elaborated my theory and practice of the treatment of neoplasms by inoculation of growth substances to produce active and passive contraction, either by inoculating the patient with growth substance (active immunization) or immunized serum (passive immunity), etc.

### ST. KILDA.

DR. ROBERT GORDON MACDONALD (Dunedin, New Zealand), who tells us that it is now some fifty years since he joined the British Medical Association, sends the following note on the article on St. Kilda, published on July 10th:

I visited St. Kilda many years ago when on a visit to the Old Country, and was much interested in the place and its people. The "shore cough" you refer to was, and probably still is, quite common throughout the more remote Highlands, both on the islands and mainland. The people spoke of it as "Chanlan na gall," or Saxon's cold. On settling in Dunedin over forty years ago I thought I would never again hear of "Chanlan na gall," but it is quite common here. When shepherds from far inland sheep stations visit town in winter, which is their off season, they invariably develop "Chanlan na gall" on the second or third day of their visit. The Saxon shepherds call it "flu," while the Highland shepherds still call it "Chanlan na gall." All these people live in a germ-free atmosphere at home, but when they meet strangers or visit towns they invariably develop feverish symptoms with cough. Though St. Kilda and Dunedin are about the extreme ends of the British Empire, they are one in "Chanlan na gall."

### VACANCIES.

**NOTIFICATIONS OF OFFICES** vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 37, 38, 39, 42, and 43 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 203.



## Thomas Vicary Lecture

ON

## THE SIGNIFICANCE OF ANATOMY.

DELIVERED BEFORE THE ROYAL COLLEGE OF SURGEONS  
OF ENGLAND

BY

G. ELLIOT SMITH, M.D., D.Sc., F.R.S.,

PROFESSOR OF ANATOMY, UNIVERSITY COLLEGE, UNIVERSITY OF LONDON.

MR. PRESIDENT AND FELLOWS.—In the first place I must express to you, Sir, my appreciation of the unexpected distinction of being invited by your predecessor, Sir John Bland-Sutton, to deliver this address.

It may seem strange that in this museum where the Hunterian Collection is housed I should discuss such a subject as the significance of anatomy, the scientific and practical value of which as the essential foundation of surgery John Hunter has surely established once and for all. But no one who is familiar with the attitude towards morphology which is widespread at the present time can doubt that there is need for an appreciation of the part the study of anatomy has played in the history not only of biology and medicine but also of civilization as a whole, and the even greater services it still remains for the morphologist to achieve.

At the present time it is not only the physiologists and clinicians who fail to realize the importance of morphology, but also some anatomists and even more biologists bow the knee to the strange fashion of depreciation. In some famous medical schools it is considered almost an offence on the part of an anatomist or biologist to devote himself to the essential business of his subject, and work at real anatomy. The interest and importance of experimental embryology and the fascination of this method of interrogating the processes of nature everyone will readily admit. But even the fullest recognition of the value of such work and of the brilliance of its pioneers does not lend any sort of justification for the strange assumption that anatomists who devote their attention to other no less important parts of their subject are wasting their time in obsolete diversions. The situation has been so accurately diagnosed by Professor H. S. Jennings of the Johns Hopkins University that I make no apology for quoting him. Referring (*Science*, July 30th, 1926, p. 98) to anatomy as "the physics of organism," he said:

"It requires separate consideration, both because of its extreme importance for zoological experiment, and because it was minimized, nay, despised and rejected of the physiological impulse in zoology. This is the role of physical arrangements of material in organisms; gross physical arrangements as well as minutest ones; what is variously called organization or structure. Structure had become the object of one of those epidemic phobias that beset scientific men as they do other men. In the days before experimentation zoologists had given a romantic and mystical turn to the phenomena of structure in organisms; they built upon it a great edifice which was called morphology. They discovered in organic structure plans, styles, comparable to the diverse styles of architecture—to Gothic, Romanesque, Classical, and the rest. But the physiologists said: This may be pretty, but is it Science? It is not. Out with it. We shall have nothing to do with morphology; it is fantastical. And throwing away the baby with the bath water, they largely rejected also the role of structural arrangements, even in experimentation. This it was that led to most of the adventures or misadventures of the sort I have recounted, in the progress of experimental zoology. It is important that this phobia should no longer dominate our work. Consider for a few moments the role of arrangements or organization in experimental work, and the consequences of its neglect.

"Structural arrangement, organization, is of course physics; we find it playing a very great role in physics as that science advances. The properties of atoms depend upon the arrangement of electrons; of molecules on the arrangement of atoms; of crystals on the arrangement of molecules. In organisms there is a great extension of this. They are bodies in which the arrangements have become complex and differentiated, and have passed into the grosser, the visible features as well as in the finer details. They are bodies in which there is an almost infinite variety of these arrangements, as we pass from species to species. They are systems of structures. In consequence, their properties and the way they respond to experiments, depend largely on these systems."

This so admirably explains the real significance of morphology as the foundation of all science, physical as well as biological, that it is hardly necessary for me to add to it. It also emphasizes the fact that when dissociated from morphology so many lines of experimental research soon become exhausted.

The disparagement of anatomy extends also to morbid anatomy, and at the present time in many schools, with a few conspicuous exceptions, medicine and surgery are suffering from the neglect of adequate morphological inquiry into the reasons for diagnostic and therapeutic failures.

The eponymous label attached to this lectureship is not without significance. Thomas Vicary was the Court surgeon of Tudor kings and queens, and he left behind him an obsolete treatise on scholastic anatomy, based upon the writings of Lanfranchi and Mondeville in the fourteenth century, which completely ignored the revolution that had been effected in the whole outlook and discipline of anatomy by Vesalius twenty years before Vicary's death. Like Thomas Vicary, the anatomist at the present day has retained in his teaching an undue amount of mediaeval method and material that has no justification either on the ground of its practical or scientific value. In paying respect to these antiquated conventions—what earlier bookmen wrote rather than what the body itself reveals—he has neglected the great opportunity of bringing the subject of anatomy into closer correlation with the needs of the times. The possibilities for great achievements in anatomy were never so great as they are to-day; and the need for men who will devote their whole time and energies to the exploitation of these rich veins of ore was never so urgent as it is now in England. It was a great step forward when, a generation ago, men were appointed to devote their whole time to research and teaching in anatomy. The problems to be solved are so complex, and the technique of inquiry so exacting, that those who work at the subject must be wholly absorbed in it.

It will help us to realize what anatomy has done for mankind and civilization if we glance at certain aspects of its history. So far as the development of a systematic study of the human body is concerned, the Ptolemaic school at Alexandria, founded by the disciples of Aristotle three centuries before Christ, represents the beginning of the story. In the museum, which was the essential achievement of that school, the discipline of true science was developed and organized. This Egyptian town gave the world its greatest heritage—namely, the scientific method. This decisive advance in the history of civilization extended to all sciences. It was the triumph of the inductive method based upon observation and the formulation of laws to give expression to the observed facts as generalizations. Experimentation was the complement of the inductive method, but not the real foundation of it, for without morphology experimentation would be quite inconclusive and frivolous.

In studying the development of the scientific school at Alexandria it is important to remember that the anatomical researches of Herophilus and Erasistratus played a very important part, not simply in establishing the importance of observation in anatomy itself, but in the demonstration of method for all the sciences. As Galen, a student of the Alexandrian school, pointed out five centuries later, the study of the phenomena of life is based upon the solid foundation of anatomical observation, experiment, and clinical observation. Until the anatomists had begun their work the profession of medicine lacked any real discipline and professional standard. Galen attributed to an ignorance of anatomy on the part of medical men the lack of success in the treatment they often administered.

The special force of these observations is revealed more clearly if we push back the inquiry to the dawn of civilization, more than thirty centuries before Aristotle. Then it becomes clear that the study of mankind (and in particular the phenomena of life and death) was indeed the sole aim of all science and art.

The farther back we go in the history of civilization the more definitely and exclusively anthropocentric all inquiries into natural phenomena become. There is no innate curiosity in mankind to study the forces of nature; but such things as seemed directly to affect his own welfare appealed to man's interests. Man did not at first study physics, astronomy, zoology, and botany simply for the intellectual joy of discovery, but so as directly to benefit himself other than by a reputation for wisdom. In particular attention was paid to the problems of life and death, the solution of which might enable man to safeguard his own existence and avert the risks of death.

For example, celestial phenomena at first interested man solely because the moon seemed to control the physiological periodicity of women and the life-giving functions. The sky, therefore, was believed to regulate and measure the duration of life, and was studied for the purpose of controlling human destiny—a sort of life insurance of the individual who made the inquiries. It can be shown that in a similar way all man's early nature studies were self-centred, and in the last resort were related to the expressions of life in his own body—the heart, liver, kidneys, the breath, the blood, the moisture, and the odour of life—the safeguarding of which was the underlying motive of all early speculation and belief. Several millennia before man systematically studied anatomy he was building up the fabric of civilization under the influence of doctrines based upon his ideas of the functions of his heart and blood, his breath and moisture, the placenta and the "life-substance." It would, in fact, not be an exaggeration to claim that civilization was evolved out of man's endeavours to understand the constitution of his own body and to preserve the life that animated it.

All learning was at first focused on the preservation of life. As the Greeks expressed it many centuries later, the healer was a naturalist (physician, from *φύσις*=nature)—one who studies the forces of nature to safeguard life. Throughout the ages the essential doctrines of philosophy centred around the anatomical facts of the anatomy of the brain and heart, as the means of interpreting thought and behaviour.

But having thus referred to the fundamental significance of anatomical studies in the history of civilization, it will now be more illuminating to cite certain illustrations that have some direct bearing on medicine.

#### WILLIAM HARVEY AS AN ANATOMIST.

In his Harveian Oration a fortnight ago the President of the Royal College of Physicians (Sir John Rose Bradford) gave an eloquent exposition of the significance of the experimental method and of the debt of medicine to Harvey for having introduced it. Thanks largely to the work of Harvey, to quote Sir John's conclusion, we may claim that medicine has a scientific status as a branch of natural knowledge.

In this connexion, however, we should not overlook the fact that Harvey himself called his magnum opus *An anatomical dissertation on the movement of the heart and blood in animals*, and that he was an anatomist, a pupil of Fabricius of Aquapendente, under whom he worked for five years at Padua, when he was demonstrating the existence of valves in the veins. Harvey used his master's picture of these valves to illustrate his own book; and it is clear from his writings that this anatomical fact formed the solid ground upon which was based the great achievement that at the beginning of the seventeenth century transformed the whole scientific outlook on the human body. On the other hand, Sir Charles Sherrington has summed up the experimental investigations of a generation on reflex action in terms of structure.

The state of anatomy in England at the time when Harvey introduced into it the new life of the scientific method is revealed in the fact that Vicary's mediaeval nonsense was still in circulation as a textbook of anatomy at the time when Harvey brought back from Padua the methods of comparative anatomy Fabricius was inculcating. Harvey was none the less an anatomist because he resorted to experiment to test the meaning of the arrangements revealed in the dissection of the body, as every anatomist should in order to interpret anatomical facts. The experimental degenerations in the nervous system, for example, are devices for discovering facts of structure.

#### WILLIAM SHARPEY.

Another British anatomist, who like Harvey was a student of the Paduan school, invented the modern methods of practical physiology at University College. William Sharpey's disciples, Sir Michael Foster, Sir J. Burdon-Sanderson, Dr. W. H. Gaskell, and Sir Edward Sharpey-Schafer, carried their master's methods and his inspiration into other British universities. But, unfortunately for anatomy, these anatomically trained physiologists insisted on retaining microscopic anatomy as part

of their subject, to the grave injury of anatomy in this country. It is worthy of note that until the time of Sharpey there was in England no separation between anatomy and physiology; and it is a consideration of fundamental importance to recognize that each of them should be free to employ any technical methods that promote its particular aims. For anatomy is not simply descriptive: it aims at understanding and interpreting the meaning of structure, and experiment is one of the necessary procedures for elucidating structure. In the school where Sharpey accomplished his great pioneer work efforts are being made to retrieve the disaster he unwittingly inflicted upon his subject. By bringing the two departments into close contact as a single unit, and by integrating the two subjects into one discipline, it is hoped to break down the artificial barriers between the investigators of structure and function.

#### JOHN HUNTER.

If Harvey laid the foundation of a real science of medicine, John Hunter can with equal truth be said to have accomplished a like service for surgery. His principles were established on the basis of a wide comparative study of anatomy and the phenomena of growth. By investigating the means adopted by Nature for dealing with the infinite variety of problems that arise in the animal economy, to use a favourite word of his, Hunter discovered methods to imitate in surgical procedure. He raised surgery from the empiricism of the barbers to become a craft inspired by the methods of true science and a technical skill controlled by reason and understanding.

The late Mr. Stephen Paget refers to the work of William and John Hunter on the lymphatic system as a new truth of vast importance, second only to Harvey's discovery of the circulation of the blood; and in estimating its significance he uses the words so many writers have applied to Harvey's achievement: "it changed the whole character of medical science and practice." That the lacteals, which carry food products into the blood, were absorbent vessels men knew already, but they had not realized that the whole body, every organ and tissue of it, is penetrated and drained by a special system of vessels to bring the fluids in the tissues back into the blood stream. It is not necessary for me to say anything to impress upon this audience the importance of the lymphatic system in surgery and the value of the pioneer work of the Hunter brothers. A vast amount of detailed work on the lymphatic vessels and glands has been accomplished in recent years, and valuable light has been shed, especially by our American colleagues, upon their developmental history. But the satisfactory solution of the controversies that have arisen as to the interpretation of the meaning of these observations will not be attained until we return to comparative methods and study the phylogeny rather than the mere ontogeny of the system.

The brilliant research on the lymphatic system of Lophius that has recently been accomplished in this museum by the physiological curator, Mr. Richard H. Burne, is an encouraging sign that this great work is being carried on in its appropriate setting.

#### CHARLES DARWIN.

If Harvey introduced a new era in medicine and Hunter in surgery, Charles Darwin gave the whole world of learning a new outlook.

The recognition of the reality of evolution effected a revolution, not simply in biology, but in every field of intellectual work. Although Darwin's work was inspired primarily by what we now call nature studies, it is clear that the foundation of the argument, without which he would not have been able to convert people to accept his views, was represented by the facts of comparative anatomy and embryology. He himself says in the *Origin of Species* that morphology is the soul of natural history.

Darwin's achievement gave a new orientation and a new meaning to morphology. What is not generally recognized by physiologists at the present time is the vast scope of evolution and the significance of processes that took many millions of years to effect. They do not seem to appreciate that only an altogether insignificant fraction of the great natural processes is susceptible of experimental

inquiry. When they ask what use can be assigned, say, to the morphology of the lizard's chondrocranium, they thereby show a failure to appreciate that the great story of evolution is based upon the linking-up of the facts of morphology and palaeontology. No full understanding of the behaviour of man or any experimental animal can ever be attained without a knowledge of his or its origin and evolution.

#### THE CELL THEORY.

What Professor E. B. Wilson calls a milestone of modern scientific progress—the cell theory enunciated by Scheiden and Schwann in 1838-39—stands forth as one of the greatest achievements in biology, which marked the beginning of a new era in knowledge and its application in practice. Goodsir, Virchow, and their successors used this conception for the analysis of the structure of organisms, and in doing so opened far-reaching vistas of progress in every department of biology and medicine. In more recent times the evidence afforded by the behaviour of chromosomes afforded anatomical corroboration of the results of experimental breeding, and compelled even the geneticists to admit that morphology had its uses.

#### THE PRESENT POSITION OF ANATOMY.

Even if anatomy had achieved nothing more than make vital and essential contributions to the great revolutions in thought effected by William Harvey, John Hunter, William Sharpey, Rudolf Virchow, and Charles Darwin, its place in the forefront of progress would be established. But its claims are much wider than that. Its influence was in fact universally felt in the advance of civilization. It is not, however, the place of anatomy in history with which I am chiefly concerned to-day. It is rather its present position and future development that I want to discuss.

In your museum the word "physiology" is, significantly enough, used to connote comparative anatomy. This uncommon usage expresses an important truth. For no method more clearly reveals the functions of structures than the correlation of their varying size and structure in animals of differing capabilities.

In his comparative study of the heart, and in particular of the bulbus cordis, the present conservator of the museum has shown, perhaps more clearly than in any other of his numerous works, that the spirit of John Hunter is still alive here. For the use of comparative anatomy, in conjunction with the study of the functional meaning of the varying arrangements, to illuminate the normal morphology and pathological states of the heart would have delighted the founder of the museum. Sir Arthur Keith's greatest service to science, however, has been his persistence in keeping constantly before the anatomist the urgent need for the study of function as an essential part of the interpretation of structure. From its foundation the principle has been emphasized in your museum. The use of the term "physiological series" for the collection of comparative anatomical preparations is a happy illustration of the real spirit of Hunter's work.

Take, for example, the case of the cerebellum, which I discussed in the Arris and Gale Lectures in this room six years ago. Some physiologists (for example, Professor Magnus in his Croonian Lecture to the Royal Society this year) are now proclaiming that their experiments do not reveal any functions for the cerebellum; but anyone who walks through the gallery of this museum, where the wonderful collection of vertebrate brains is exhibited, can see for himself that Nature's great experiments in modes of posture and locomotion have left their impress so clearly in the cerebellum that he who runs may read. So also in the morphology of the brain as a whole, the varying sizes and histological structure of its parts express the habits and capabilities of animals and reveal the broad lines of their functions.

In his great treatise *The Integrative Action of the Nervous System*, which opened a new era in the interpretation of the brain's meaning, Sir Charles Sherrington calls the cerebrum "the ganglion of the distance-receptors," by which are initiated and guided long series of reactions of the animal as a whole. Unfortunately he did not avail himself of the facts of comparative anatomy to elucidate and reap the full harvest of his illuminating idea. Here again it requires no difficult technical procedure or abstruse

knowledge to discover facts of fundamental importance, which have escaped those who neglect to give due consideration to comparative anatomy. It is only necessary to look at a comparative collection of brains such as this museum contains to see at a glance that the most primitive type of cerebrum is not equally the ganglion of all the distance-receptors, but predominantly of the one concerned with smell. The part of the brain that eventually became the organ of mind is primarily a receptive centre for olfactory impressions, and the instrument whereby such experience can influence behaviour. The whole arrangement of the brain is dominated by this fact, which is fully borne out by experiments on the dog-fish such as those of Professor Parker of Harvard University.

Considerations of structure cannot be ignored with impunity by those who aim at understanding function. After all, the aim of experiment is to interpret the working of an instrument, and the mode of construction of that instrument cannot be neglected. It is not, however, morphology alone that is essential, but also considerations of phylogeny, the relative place in nature and affinities of the experimental animal, the appreciation of which is based upon morphology. In all investigations considerations of evolution are matters of fundamental importance, and are especially significant in the case of the nervous system, which undergoes profound changes in the course of its history. In such researches as those now being carried on by Professor Magnus and his collaborators the differences of behaviour in various grades of animals are being forced upon their attention. But the full fruits of much patient work are being lost by many physiologists from their neglect of the phylogenetic factor.

How fruitful researches can become when due importance is given to the facts of evolution is revealed in the splendid experimental and clinical researches of Professor Brouwer of Amsterdam. By arranging the experimental animals in an orderly series he has been able to demonstrate the progressive changes that occur in the lateral geniculate bodies, the oculomotor nuclei, and the cerebral cortex in a series of vertebrates, and has shed a brilliant light upon a series of problems of fundamental importance to the morphologist and clinician. In particular, his work illuminates the process of evolution of the brain that ultimately brought about the emergence of man's high intelligence. Dr. Brouwer's researches have given the lead in this country to Dr. H. H. Woodard and Mr. W. E. LeGros Clark to work the rich vein of ore opened up by his genius.

#### THE NEW OUTLOOK IN ANATOMY.

As knowledge advances in physiology, pharmacology, biochemistry, and clinical medicine and surgery a host of new problems arise, for the solution of which anatomy provides in many cases the field of research, and in all cases the coping-stone of objective demonstration, and becomes the last court of appeal for its validity—the translation of elusive modes of reaction into the concrete terms of structure.

Experimental physiology aims at explaining the behaviour of living organisms and tissues, and if it is successful its results must be expressed in terms of the constitution of the organism and its parts. Morphology is not only the foundation of experimental research—the territory in which the work is done and the study of the physical properties of the material investigated—but it also affords the ultimate test of the significance and validity of the results attained. Hence both kinds of investigation are essential and complementary the one to the other. The morphologist and the physiologist should work in close co-operation the one with the other, and the clinician has opportunities for applying their results and making fresh observations suggesting new problems for the morphologist to investigate. How fruitful this co-operation of workers in the three fields can be is shown by recent research in neurology, by such bridge-builders as the Dutch investigators Magnus and Brouwer, who in different domains of neurology have revealed the importance of the combination of morphological, experimental, and clinical methods in dealing with complex problems.

The results of a great deal of experimental and clinical work are being interpreted to-day in defiance of the clear

facts of structure. The recognition of the significance of morphology is of vital importance as a preventive of such errors. It can also be shown that a lack of anatomical knowledge at certain epochs in the history of civilization was responsible for hampering progress. In 1674 Malebranche (*Recherche de la verité*) expressed his belief in the existence of *rasomotor nerves* ("Nerfs qui environnent les artères pour fermer, par leur contraction, le passage au sang qui montre vers le cerveau, et pourrir par leur relâchement à celui qui se répond dans toutes les autres parties du corps"), but he lived two centuries before men had sufficient knowledge of bodily structure to appreciate all that was involved in this precocious intuition of genius.

Because anatomy had not prepared the way, for instance, the understanding of the injuries that produce aphasia had to wait for three centuries. In the year 1558 Nicholas Massa published an account of a case of traumatic aphasia, which disappeared after operation. The patient received a blow from a halberd that perforated the base of the skull and penetrated the meninges and brain, into which a fragment of bone was driven. He makes the comment, which in the mouth of a surgeon has a very modern and familiar ring about it, that the physicians had not noticed the depressed bone. Massa assumed that the loss of voice might be due to the pressure on the brain of the piece of bone he had detected. Hence, in the presence of the physicians and other onlookers, he proceeded to remove it. To their intense astonishment the patient at once recovered his speech.\*

It was not until the beginning of the nineteenth century that, as the result of anatomical observations, Dr. Joseph Gall was able finally to demolish the old theory of animal spirits, which had prevented a proper understanding of the nature of the problem. Then the way was prepared for the admission of the reality of cerebral localization. In a work published in 1818 Gall recorded a case of traumatic aphasia such as Massa had seen in 1558—an officer who received a sword thrust just above the left eye and lost "the memory for words." But it took more than another half-century before physiologists and clinicians were willing to admit the reality of localization, and then only when the genius of Hughlings Jackson and Broca and the experiments of Fritsch and Hitzig, Ferrier, and others had given the observations an anatomical setting by assigning to definite areas of the cortex the control of certain movements. The history of these fifty years is told in full by Dr. Henry Head in his great treatise on *Aphasia and Other Disorders of Speech* (1926).

With reference to the question of cerebral localization, it will be common knowledge that the histological investigations of Dr. Bevan Lewis from 1869 onwards established the fact of anatomical localization. Yet Lewis's important work was brushed aside because the precise results obtained by him seemed to come into conflict with those obtained by experimental investigations.

The difference in structure between the pre- and post-central convolutions of the brain was completely overridden by the fact that Sir David Ferrier and others obtained responses to electrical stimulation from both convolutions. It is important to remember that when Sir Charles Sherrington in 1900, using a more exact method of investigation, was able to prove that the post-central convolution was not excitable, the method of histological localization was restored to favour, and the work which Dr. Bevan Lewis had begun more than thirty years previously was taken up with renewed vigour, and yielded some of the most significant additions to our knowledge of cerebral structure, the full extent of which has been impressed upon us recently by the great treatise by Professors Economo and Koskinas.

#### THE SYMPATHETIC NERVOUS SYSTEM.

The new chapter in the history of medicine created by the work of Gaskell, Langley, and Anderson on the sympathetic system was based essentially on anatomical investigations. At the present time the question of the practical and clinical applications of this knowledge is the subject

of lively controversy. There are grave differences of opinion in respect of almost every aspect of these problems. But in the long run the issue will be settled by the facts of anatomy. When we know more of the structure of the nerves passing to muscles and their connexions in the central nervous system the decisive evidence for the solution of these difficult problems will have been attained. In respect of this matter the morphological outlook comes into direct conflict with the attitude taken up by many of those who rely solely on experimental evidence. It is generally admitted that muscles have two more or less distinct functions to perform—contraction and maintenance of posture. The brilliant investigations of Sir Charles Sherrington have demonstrated beyond question that posture is automatically regulated by means of proprioceptive reflex arcs. It is also admitted that in invertebrates there are separate and distinct muscles for performing these two functions, even though the movements of the animal are slow and clumsy.

To the morphologist, in whose outlook ideas of evolution loom more largely than they do to the mere experimentalist, it seems in the highest degree improbable that vertebrate animals, in which muscular activity attains a much higher degree of rapidity, skill, and complexity than it does in most invertebrates, should reveal no corresponding differentiation of muscles and nerves for carrying out these two functions. For fifty years it has been known that there is a duality of innervation. We know that there are differences in muscular fibres—the thick and the fine—the relative proportions of which are responsible for the obtrusive differences in colour between red and white muscles. It seems, therefore, if one applies the morphological argument, in the highest degree probable that the greater efficiency of the vertebrate muscle may be due to the fact that the two kinds of muscle fibre, instead of being separate as they are in invertebrates, are intimately blended to form composite muscles.

We know that in the case of the viscera there are two functionally distinct groups of nerve fibres, and it seems again highly improbable that the voluntary muscles, which have automatic functions to perform like those of the involuntary muscles and in addition the highly complex reactions associated with willed movements, should be less well equipped for these more complicated functions than the simpler muscles. It remains for anatomical studies to provide the explanation of the conflicting evidence derived from experiments and surgical operations.

#### SOME PRACTICAL APPLICATIONS.

In spite of the widespread neglect of morbid anatomy, the development of cytology and the recognition of its fundamental importance in the investigation of cancer is bringing an increasing number of pathologists back to morphological studies. An interesting application of such knowledge is now being made in clinical surgery, in which observations in the cytology of cancer (such as were made years ago by Sir G. Lenthal Cheatle) are being used by Dr. McCarty in the Mayo Clinic to determine the prognosis in cases of carcinoma.

Some observations that my colleague Dr. H. H. Woollard has been making on the neuro-muscular lesions of so-called beri-beri induced experimentally by depriving rats of certain vitamins suggest that in the last resort the evidence afforded by the structural changes in muscles and nerves cannot be neglected in any estimate of the effects of food deficiency. This impression is even more emphatically confirmed by the observations on bone growth by another of my colleagues, Dr. H. A. Harris. He has been able to demonstrate by anatomical studies that after any diminution of the growth processes of the body (such as normally occur during the week after birth and in certain phases of puberty, as well as in grave illness, or even deprivation of a diabetic patient of his dose of insulin) an opaque line makes its appearance in x-ray photographs of bones. This has been mistaken for and used as a diagnostic sign of healed rickets, and many observers' work has been vitiated by erroneous interpretations of the effects of vitamins, etc., on bone growth. Such results indicate that morphology provides criteria by which the influence of the various

\* This case of Marcus Goss is reported in Nic. Massae, *Epilethol. medicinal.*, II, 59-61 (Venetia, 1558); and a similar case in Fr. Arcaeus, *De recta eundem ruitur ratione*, 62-67 (Antwerp, 1574). My attention was called to these surprising records by the reference to them in Jules Soury, *Système nerveux central*, 1899, T. I.

vitamins on growth and metabolism will in the future be tested, as for some years in California Professor Herbert M. Evans has been testing their potency.

The knowledge of the arrangements of the tracts in the spinal cord that has been acquired within recent years seemed at first to have little more than an academic interest, or at most a use in diagnosing lesions beyond the scope of treatment. But in 1911 Dr. Spiller suggested that the knowledge could be put to the humanitarian purpose of relieving the terrible sufferings of patients with inoperable cancer. In the *Archives of Surgery* three months ago Dr. M. M. Peet has described the truly wonderful results obtained by cutting that part of the antero-lateral column of the spinal cord which conveys impulses provocative of pain. Thus the unfortunate victims of incurable disease can get relief from their suffering without resort to drugs. Such a technical procedure has the advantage over section of posterior nerve roots because it does not deprive the parts of all sensation, and the patient is unaware of any abnormal feeling.

During the last ten years thorough investigation of the effects of nerve injuries in soldiers and the correlation of evidence so obtained with the facts of anatomy has enabled Professor Stopford to extend and clarify our knowledge of the arrangement of the sensory nerves and has given the surgeon now and exact methods for the diagnosis and prognosis of nerve lesions.

Only four years ago the pancreas used to be cited as an example of an organ which when diseased could give rise to such profound changes in the whole organism as we know in diabetes without revealing any structural indications of disease. But we now know that this is no longer the case. The morphological changes in the islands are clear enough once one knows where to look for morbid changes.

The anatomical localization of the lesions of encephalitis lethargica and morphological studies to determine the sites of injuries to the mid-brain and hypothalamus that in experiments and clinical cases give rise to definite reactions of body and mind will eventually give us a new insight into the physical factors concerned with personality, and also the neural processes concerned with the manifestations of the common symptoms, such as raising of the body temperature, nausea, etc., in grave constitutional diseases with which every medical practitioner is daily concerned.

These instances chosen at random are enough to indicate that in the near future anatomy promises to become the stepping-stone to a new revelation of knowledge, which will illuminate the whole field of human endeavour.

In this address I have endeavoured to suggest the vastness of the opportunities that now present themselves in anatomy, and how vitally they affect the progress of surgery, not merely the mere craft of operating, but also the wider problems of diagnosis, prognosis, prevention, and treatment. This College has the power actively to promote progress on these lines, which I hope you will permit one who is beyond the pale of your membership to mention. By means of the primary examination for its Fellowship it can insist that the rising generation of British surgeons is inspired with the true spirit of understanding of the human body and is alert and open-eyed to appreciate the great vision that is about to be revealed. Instead of helping the persistence of the mediaeval conceptions of anatomy, it can encourage the development of an anatomy that deals with really vital problems. The College has in its great museum the most valuable instrument for promoting the study of anatomy on right lines. The growth of the collection started by John Hunter is one of the great scientific achievements of the last century; under the direction of Sir Arthur Keith the opportunities for the comparative study of anatomy have been brought to a higher pitch of efficiency than ever. The College has it in its power to induce the candidates for its Fellowship to avail themselves of this wonderful instrument that is now too much neglected, and in doing so it will enhance the importance of the College itself and raise the standard of the science and practice of surgery.

## REFERENCES.

- <sup>1</sup> Charles Singer: *The Evolution of Anatomy*, 1925, p. 174.  
<sup>2</sup> Quoted from Jules Soury, *Système nerveux central*, 1899, T.I, p. 407.

## British Medical Association.

## PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

## SECTION OF LARYNGOLOGY AND OTOTOLOGY.

A. BROWN KELLY, M.D., D.Sc., President.

DISCUSSION ON  
THE TREATMENT OF MALIGNANT DISEASE OF  
THE UPPER AIR AND FOOD PASSAGES.

## OPENING PAPERS.

I.—F. J. STEWARD, M.B., M.S.LOND., F.R.C.S.ENG.,  
 Senior Surgeon and Joint Lecturer in Surgery to  
 Guy's Hospital.

## SURGICAL TREATMENT.

The subject of this discussion is so vast that no individual speaker can attempt to deal with more than a small section, and even then anything in the nature of detail is not to be thought of.

In the time at my disposal I propose to consider briefly some of the general principles involved in the surgical treatment of malignant disease of the mouth, fauces, and the oral and laryngeal portions of the pharynx. These will be considered under four heads: (1) selection of cases; (2) preparation for operation; (3) the operation; (4) after-treatment.

## Selection of Cases.

As regards suitability for operation, cases fall naturally into three groups—favourable cases, doubtful cases, and hopeless cases.

The group of really early, favourable cases is a small one—10 per cent. of the total or less—and includes those in which the primary growth only involves a limited area, no enlarged lymphatic glands are palpable, and the general conditions are good. In the majority of such cases operation results in apparent cure, but even here it is easy to be too optimistic—for instance, the smallest epithelioma of the tongue I ever saw led to the death of the patient from secondary deposits within three months.

Doubtful cases constitute the majority—I should say about 50 per cent. of the total. Here it is usually a question of giving the patient a chance, and provided that the growth can be completely removed without too great interference with function, there is a chance of cure, a probability of a considerable respite, and almost a certainty of alleviation, even though the primary growth is extensive and the glands on one side of the neck are definitely invaded. The actual site of the growth is largely immaterial, for if a suitable method of approach is adopted the growth can usually be so completely exposed to view that its removal is comparatively simple. About four in every ten cases I see are obviously hopeless, either on account of the extent of the primary growth, or of the glandular involvement, or both. Even here, however, a purely palliative operation may be indicated—for instance, the removal of a tongue that has been largely converted into a fetid, bleeding ulcer, and is associated with extensive glandular disease, or the destruction of a widespread ulcerating growth by diathermy, will quite often give the patient several comparatively comfortable years.

Perhaps the most difficult decision which has to be made relates to the group of doubtful cases which more nearly approach the hopeless class. I can only suggest that every factor which has a possible bearing on the question must be taken into consideration and carefully weighed in the light of experience. While desiring, on the one hand, to avoid subjecting the patient to a trying ordeal which is foredoomed to failure, yet, on the other hand, it is necessary to be careful not to let slip the chance of a brilliant success.



*Preparation for Operation.*

The principal dangers and complications of these operations are the result of infection of the operation wound or of the lungs. These complications are more prone to occur, and are more serious when they do occur, if the mouth is septic owing to the presence of teeth.

The teeth must therefore claim first attention. Should the patient be already edentulous there can be no doubt that the dangers of the operation and the risk of complications are greatly lessened unless there be some other cause of infection present. If, however, the patient is not already edentulous, should he be always made so? In spite of the strong opinions that have been expressed, I do not think that this question should be considered closed, and I hope that there will be further discussion in regard to it. The removal of a number of teeth from an old patient whose health is already affected by the presence of a malignant growth is admittedly a serious matter. Moreover, the time taken for recovery from the extractions, and for getting the gums soundly healed, will probably be three or four weeks. In the circumstances this loss of time, while rendering the operation safer, may also destroy the chance of cure. Is it justifiable in every case? It is my practice to be guided by circumstances. If the patient has a good set of sound clean teeth I do not advise extraction; if he has a number of obviously septic teeth I usually have them removed. If, however, the teeth are in fairly good condition I trust to careful scaling and cleaning up, with perhaps a few extractions, especially if the patient is old and in poor health.

Oral sepsis may also be maintained by infected tonsils. The danger from these is lessened by painting with 1 in 500 chinolol in glycerin for a few days. During the period before operation the mouth and the primary growth should also be rendered as clean as possible by frequent use of mildly antiseptic mouth-washes and sprays; the general condition is improved by means of rest, fresh air, abundant food of suitable character, and careful regulation of the bowels.

*The Operation.*

The anaesthetic I have used for many years in all major operations upon the nose, mouth, and throat is either administered by intratracheal insufflation. Of the many advantages of this method two call for special mention. The first is that the perils of chloroform, both during and after the operation, are avoided. The second is the elimination of all risk of pulmonary infection from inspiration, at all stages of the operation. This is of particular importance during the removal of the glands, if this is undertaken prior to the removal of the primary growth, and while the preliminary operation for the exposure of the growth is being performed. During these procedures the patient is lying for a considerable time under deep anaesthesia with a foul ulcer somewhere in the neighbourhood of the upper opening of the larynx. This must involve a serious risk of sowing the seeds of an inspiration pneumonia before the main operation is even begun. This risk can only be eliminated either by preliminary laryngotomy or tracheotomy and plugging the pharynx or trachea, or by intratracheal insufflation of ether: the latter is obviously far simpler and safer. There is one objection to the method and that a small one: haemorrhage is rather more free than when chloroform is given through a laryngotomy or tracheotomy tube, and consequently the operation takes rather longer.

With few exceptions the operation upon the primary growth consists of three distinct procedures—namely, the operation of approach by which the growth is exposed to view, the removal of the growth with a sufficient margin of healthy tissue, and the repair of the wound.

In a small group of cases, where the growth is quite small and superficial and can be comfortably reached through the mouth, either with or without division of the cheek, all that is needed is the removal of the growth, with three-quarters of an inch of healthy tissue round it, either by the knife or by diathermy. In the former case the wound must be closed by a number of mattress sutures of catgut bringing broad surfaces into apposition. In all other cases

an operation of approach, carefully planned according to the site of the growth, will be needed.

Without going into the details of these operations some of their main features may be reviewed. It is usually convenient first to clear the corresponding side of the neck of lymphatic glands and vessels. The first incision follows the anterior border of the sterno-mastoid for its whole length; a second passes from the chin to join the first at a right angle. The two skin flaps are then dissected forwards. The deep fascia is divided in front of the sterno-mastoid, as recommended by Mr. Trotter, so that the flap thus formed may later be sutured to the prevertebral fascia in front of the main vessels, which are thus completely shut off from the main wound. The advantages of this step are obvious. All glands are now removed, together with the internal jugular vein if necessary, and the external carotid is tied close to its origin.

The further steps are necessarily dependent upon the site of the growth. If this is oropharyngeal, involving tonsil, fauces, pharynx, or base of the tongue, the mandible must be sawn through in front of the masseter, and the mucous membrane of the mouth and the pharyngeal wall then divided to a sufficient extent and the wound widely retracted, the incisions being so planned as to serve, at any rate in part, for the removal of the growth. If, on the other hand, the growth involves the laryngeal portion of the pharynx the pharyngeal wall will be divided lower down, usually after removal of the great cornu of the hyoid bone and of the greater part of the ala of the thyroid cartilage.

Before opening the pharynx it must be isolated so far as possible from the surrounding tissues by gauze packs in order to minimize the risk of infection of the wound by pharyngeal contents, and after the growth is exposed it also should be further packed off. The next step—removal of the growth—may be effected either by excision or by diathermy. In my opinion the principal advantage of diathermy is that the peripheral coagulation seals off the surrounding tissues. In consequence of this the most serious danger involved in these operations—that of spreading infection—is practically eliminated. The chief disadvantage, on the other hand, appears to me to be the increased danger of pulmonary sepsis resulting from the prolonged local suppuration associated with healing and cicatrization.

So far as I am concerned the question of using excision or diathermy is at the present moment *sub judice*, but, as regards actual practice, if the base of attachment of the growth is small, so that after removal the wound can be securely closed, I prefer excision; if, however, the growth is large and irregular I am inclined to favour diathermy.

At the end of a long operation, and especially if the anaesthetist is not very well pleased with the patient's condition, the last stage of the operation—the closure of the wound—may tend to be rather hurried. It must be remembered, however, that the upshot of the whole operation is dependent in great measure upon the successful closure of the opening into the pharynx, for the infection which results from leakage is always serious and may be fatal. Security against leakage from the pharynx can only be obtained by inserting numerous mattress sutures bringing broad submucous surfaces together, further sutures approximating the muscles and occluding all spaces. Of the superficial wound the part over the sutured pharynx is left widely open and lightly packed, thus making provision for possible leakage. The rest of the wound is sutured, a drain being left in the lower angle.

The removal of the more extensive growths may result in a defect which cannot be completely closed at the time, but will require a plastic operation later. In these cases the mucous membrane should be sutured to the skin edges. This will help to prevent spreading infection and subsequent cicatrization, and will, moreover, greatly simplify subsequent plastic measures.

The removal of a hypopharyngeal growth, either alone or combined with total laryngectomy, will also result in a defect which cannot be closed by direct suture of the pharyngeal wall, but must either be made good by a skin flap, which will need to be provided for by the original

incisions, or, failing this, a cicatricial stricture may be allowed to form. This will require to be kept dilated by a Gluck's tube.

#### *After-Treatment.*

I will consider only one point under this head—that of feeding. This is usually provided for by means of a tube passing either through the mouth or the nose. In either case the tube sets up a varying degree of discomfort and irritation which results in excessive secretion of saliva and perhaps coughing, both of which would be better avoided. This can be done by passing a soft rubber catheter through the wound in the neck into the pharynx in an oblique direction so that the opening in the skin is not opposite to that in the pharynx. Both pharyngeal wall and skin are fixed tightly round the catheter so that it does not tend to slip out and no leakage takes place. Abundant fluid food can be given in this way for as long as is thought desirable without causing the patient any inconvenience, and when the catheter is finally withdrawn, owing to the valvular track, there is no leakage and the opening closes at once. I have adopted this plan for a number of years and have found it a very great advantage.

#### II.—ROBERT KNOX, M.D.ED., M.R.C.P.LOND.,

D.M.R.E.Camb.,

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Fulham Road.

(With Special Plate.)

#### TREATMENT BY X RAYS.

The treatment by x rays of disease occurring in these regions has, up to the present, not been very satisfactory—as is also the case with other methods. The site of the lesion makes it very difficult to evolve a satisfactory technique, while the small area involved, and the number of structures in this small area, give rise to difficulty in accurately restricting the beam of rays to the structures under treatment. For cosmetic purposes it is essential that the skin and subjacent tissues should not be damaged, but the chief difficulty is one of dosage; in such a limited available depth of tissue it is not easy to administer anything like a satisfactory dose without running the risk of damage.

Recently, however, in the case of both radium and x rays, advances of technique have brought the possibility of administering a satisfactory dose perceptibly nearer. With both agents this advance has been made possible by increasing the power of the apparatus. In the case of radium Regaud has shown that large quantities used in a special way, and heavily filtered, will produce results in malignant disease of these regions which show a great improvement on those formerly obtained. Similarly with x rays, higher voltages enable us to apply a greater intensity at the depth, while working at a greater tube distance. Filters on the skin of 2 to 10 cm. of wax aid in the giving of a strong dose in the depth with no risk of skin damage.

Working with x rays on somewhat similar lines as Regaud is doing with radium, we have been able to obtain response of a favourable kind in diseases which up to this time baffled us. On the assumption that an erythema dose or more on the skin is the accurate measure of the dose necessary to induce biological response of a favourable kind, and also assuming that to a similar type of growth situated more deeply in the body a dose of like nature will induce the same change, we were led to experiment with radiations of medium wave-length. We increased the anticathode skin distance to 20 inches, or 50 cm., using a filter of 0.1 mm. of lead with a voltage of 135 kilovolts, 4 amperes, primary current, 4 milliamps. in the secondary; on the skin wax to the depth of 2 to 6 cm. was used according to the type of growth and its depth from the surface. A pastille placed at the half-distance under these conditions required a time exposure of 330 minutes, or 5½ hours.

As a result of these experiments we found that a pastille dose can be given with safety, so far as the skin is concerned, in one sitting, but as a rule only fractions of the dose have been given at short intervals. Various voltages

can be used under the same conditions, and a dose worked out for each. The shorter or more penetrating ray will take a relatively shorter time for the production of the same effect in the deeper structures. Technique of the same order has been extensively used in enlarged cervical glands secondary to malignant disease of the upper air and alimentary tracts, with beneficial results; the glands have slowly diminished in size, while the primary growth has in a number of cases shown improvement.

#### *Accuracy of Diagnosis.*

In the treatment of diseases in these regions an accurate diagnosis is essential. Malignant disease of the upper air passages and alimentary tract is frequently accompanied by secondarily affected glands; and it is often the latter which first call attention to the disease and give rise to distressing symptoms. The distinction has therefore to be made as to whether the glands are primarily affected or are secondary. A careful search for a primary lesion will almost invariably settle the point.

A greater difficulty is to determine the nature of the disease. The chief conditions likely to confuse the diagnosis from malignancy are tuberculosis of the glands, syphilis, and actinomycosis. The differential diagnosis is not always easy. In doubtful cases, when a primary lesion cannot be found, a few x-ray treatments may indicate the nature of the disease. The response generally met with in glandular enlargements is striking—the glands diminish most rapidly in simple inflammatory conditions; in lymphadenoma and lymphosarcoma the response is often nearly as rapid; in tuberculosis the reaction is more difficult to obtain, and a much longer time period must elapse before any diminution in size follows, and in carcinomatous glands the response is very slow indeed—not infrequently there is a total failure to respond.

There is no doubt at all that in comparatively recent times the improvements noticed in cases of the type described as carcinomatous have been more marked and of more frequent occurrence; this has been due to the improvements in the technique of radium and x rays.

The conservative use of x rays in combination with surgical measures is to be commended, and it is urged that in all forms of treatment the earlier the case is treated the more favourable will be the response. In cases where surgical removal is possible, and which are complicated by widespread glandular involvement, pre-operative treatment is advocated; in such cases this will be limited to the glandular enlargements, the primary growth receiving only a fractional dose. In cases where the enlargement of a group of glands is likely to prolong the duration or extend the region of the operation, x rays may be employed to bring the condition within the range of a moderate operation. This has been done in a number of cases. After operation, treatment by x rays should be continued for a period of time commensurate with the gravity of the condition; the x-ray treatment should, however, never be pushed to the extent of depressing the reparative power of the patient; on the contrary, it should be directed to maintaining the natural power of resistance at a high level, or, as often happens, of increasing it when it is below par. By judicious dosage the patient may be tuned up to a considerable degree; this can be proved when repeated blood tests are taken as a check on the treatment.

In inoperable cases, where surgery and other measures are not advisable, x rays may be and are extensively employed, often with no hope of curing the patient, but to alleviate symptoms. In this field x rays have achieved a certain measure of success. The cases quoted serve to indicate the degree of response sometimes met with, and to show that even in the most desperate cases x rays, if used in moderate as distinct from destructive or lethal doses, can give relief, and occasionally much more than relief. Such cases are encouraging also in that they show that there is a definite ground for hope that future advances in technique may yet yield more brilliant results.

The outstanding feature in the improvement of technique has been the recognition of the fact that it is not advisable, and certainly not necessary, to adopt the lethal dose as the unit of effective dosage, but rather to take it as a unit of measurement of a total dose, which can be

spread over several days, weeks, or months, according to the urgency of the symptoms. This has been proved both with x rays and with radium.

### Cases to Illustrate the Differential Diagnosis and Effect of Treatment.

#### CASE I.

A patient was sent for treatment of an enlarged tonsil with greatly enlarged glands in the cervical region posterior to the angle of the lower jaw. When seen in the first instance the skin over the glands was involved, and the condition was diagnosed as epithelioma of that region. The tonsil on the left side was enlarged and reddened. The patient had previously been treated with a mercurial and iodine mixture with no material improvement. Energetic x-ray treatment to the glands resulted in a considerable degree of ulceration and breaking down of the glandular mass. Haemorrhage supervened and the patient was admitted to hospital in a serious condition.

The ulceration had extended down to the bone in the cervical region, and in spite of treatment by various forms of radiation continued to spread. The haemorrhage ceased, and accidentally it was found that he had had a mercurial mixture for a few days while in the ward, after which slight improvement was noticed. A Wassermann reaction gave a strongly positive effect. Thereafter he was put on a thorough antiseptic treatment, and mild radiations applied, chiefly ultra-violet rays supplemented with occasional small doses of x rays. The condition completely healed and for a considerable time the patient remained well. When seen last, about a year ago, he was perfectly well.

#### CASE II.—Actinomycosis.

The following notes of a case of this class are interesting. A man, aged about 50, was sent for treatment with a history of an operation to the lower jaw and subsequent development of a glandular mass in the submaxillary triangle. A piece of the growth removed was reported as being inflammatory in character.

When seen at the Cancer Hospital in June, 1925, there was a glandular mass behind and below the angle of the lower jaw, the surface was irregular, and in places presented a pustular appearance, though no pus could be found exuding from these spots. The patient was told to foment the mass and to present himself when pus was found to exude. The report (pathological) pointed to a diagnosis of actinomycosis. Two doses of x rays led to a rapid improvement in the appearance of, and a diminution in, the size of the tumour. The lower jaw when x-rayed showed the appearance suggestive of actinomycosis of the bone; the glandular mass was secondary to this lesion. The patient was put upon potassium iodide, etc. The glandular mass is slowly subsiding under combined treatment.

#### CASE III.—Sarcoma of the Right Tonsil.

This case of sarcoma of the right tonsil with secondary glands in the cervical region and mediastinum was treated on similar lines to the technique described, and gave a satisfactory response for a time. In addition to x rays, radium was applied to the enlarged tonsil on two occasions. The glandular condition cleared up and the tonsillar enlargement practically disappeared. (Figs. 3 and 4.) The patient developed mental symptoms, and while being treated for this condition the radiation treatment had to be suspended. He died some time later, presumably from an exacerbation of the original condition.

#### CASE IV.

A man, aged 48, attended the hospital for the treatment of a malignant condition of the nasopharynx, and secondarily enlarged glands at the angle of the lower jaw on the right side. Previously to coming to hospital he had attended at Charing Cross Hospital, and was operated upon there for disease of the antrum. Mr. Davis, who performed the operation, stated that he found a growth in the nasopharynx, but it could not be removed. No section of the growth was made.

The patient was treated with x rays in the following way: To the glandular enlargement doses were given at frequent intervals. The beam of rays was directed in each instance towards the nasopharynx, in the hope that the growth there would get a percentage of the dose. The voltage was 135,000. A filter of 0.1 mm. of lead was used, and 2 cm. of wax placed on the skin. Sixty minutes' exposure to this radiation was given; the total pastille dose for these conditions would be 5½ hours. The first dose was given on March 11th, 1926. On the following dates, March 17th, 24th, 31st, and April 7th, doses of thirty minutes each were given.

The nasopharynx was blocked with polypi, of which Sir James Dundas-Grant removed portions. The glands diminished in size after three exposures. The type of radiation was now changed. On April 14th he was given one-third of an hour's exposure to radiations of 160 kilovolts filtered through 1½ mm. of copper, 2 mm. of aluminium, and 1 mm. of celluloid, with 4 cm. of wax, directed through the same area as before. This dose was repeated on several occasions.

The patient was sent to Mr. Davis, who reported that the trouble in the nasopharynx was practically gone, and commented on the fact that the rays had done a great deal for the patient. Sir James Dundas-Grant also reported on the condition about the same time as follows: "Less polypoid excrescences in right nostril anteriorly; by posterior rhinoscopy there is nothing beyond a little thickening round the right Eustachian tube, serous exudation from the right tympanum; hearing improved by inflation."

The treatment was continued, and on May 28th the following note was made: "Enlarged glands much smaller, can hardly be

felt now." A blood count taken at this time showed practically no change from one taken at the commencement of the treatment. A Wassermann reaction gave a negative result.

At the present date, June 24th, the glandular condition has disappeared, the patient is in good health, and, so far as can be seen, the nasopharyngeal mass has gone.

This case illustrates what can be achieved with x rays alone in disease of the nasopharynx.

#### CASE V.—New Growth of the Larynx.

In this case (a patient sent for treatment by Sir St. Clair Thomson) the diagnosis was open to suspicion, though to a number of specialists who saw the case there was clinically no doubt, and a section removed from the larynx by Sir James Dundas-Grant was shown to be undoubtedly epithelioma. The history and records of treatment are given elsewhere, but for our purpose it will suffice to indicate the general method employed. Voltage about 120,000, filter 8 mm. aluminium and wax on the skin. Weekly doses were given to either side of the larynx and glandular area in the neck. These were continued for a period of several months. The patient made a complete recovery, and remained free from the disease until his death about two and a half years after the commencement of treatment.

An interesting point is that, in spite of the prolonged treatment, no reaction of the skin over the parts irradiated occurred. The enlarged glands in the neck completely disappeared. The progress of the local condition in the larynx from the commencement of the clinical observations to the period of complete healing is shown on the drawings kindly lent to me by Sir St. Clair Thomson. (Figs. 1 and 2.)

### III.—SIR WILLIAM MILLIGAN, M.D.,

Consulting Aurist and Laryngologist to the Royal Infirmary, Manchester; Surgeon Laryngologist to the Manchester Radium Institution.

#### TREATMENT BY RADIUM.

In discussing the treatment of malignant disease of the upper air and food passages by means of radium I labour under the disadvantage of having to confine my remarks almost exclusively to the treatment of surgically inoperable growths—a by no means insignificant proportion, however, of the cases which to-day are brought under our notice.

So far as the treatment of malignant disease in general is concerned—and our own specialty is no exception to the rule—few surgeons have had the courage to employ radium where the growth to be removed appeared to be removable by ordinary surgical procedures, a course of action which at the moment is in consonance with recognized surgical opinion. I venture, however, to say that I look forward to the time when, with improved technique and a more accurate knowledge of dosage and duration of exposure, radium will be used in the type of case which to-day the surgeon claims as his very own. For this reason my remarks must in the main be confined to that vast and distressing array of inoperable cases—vast because I think that no one who has carefully studied the subject will deny that cancer is on the increase, and distressing because, were the public educated as to the danger signals of early malignant disease, much suffering would be avoided and many lives saved.

Since the isolation of radium salts in a pure condition in 1903, and its isolation as a metal by Madame Curie in 1911, its employment as a therapeutic agent has been persistently advocated, more especially in the treatment of malignant growths, its beta and gamma radiations having the property of destroying the malignant, while sparing the healthy, cell. In addition, much clinical work has been done, and various changes in the method of its application, and the amount and duration of dose have been effected as the outcome of increasing experience. In the treatment of inoperable carcinomata two schools of thought dominate the situation: (1) those who believe in large doses and short exposures; (2) those who believe in small doses and long exposures.

Having carefully noted in a numerous and varied series of cancer cases the relative merits of both methods, I am myself in favour, in the majority at any rate, of treatment by small doses and long exposures—exposures running at times to ten, fourteen, or even twenty-one days. For such long exposures it is obvious that the element, and not the emanation, must be used, and this has the disadvantage of locking up large quantities of radium for somewhat prolonged periods, so that its employment is only possible when a moderately large supply of the metal is available. The advantage of accurately burying tubes, needles, or seeds, screened or unscreened, in the tissues is so obvious

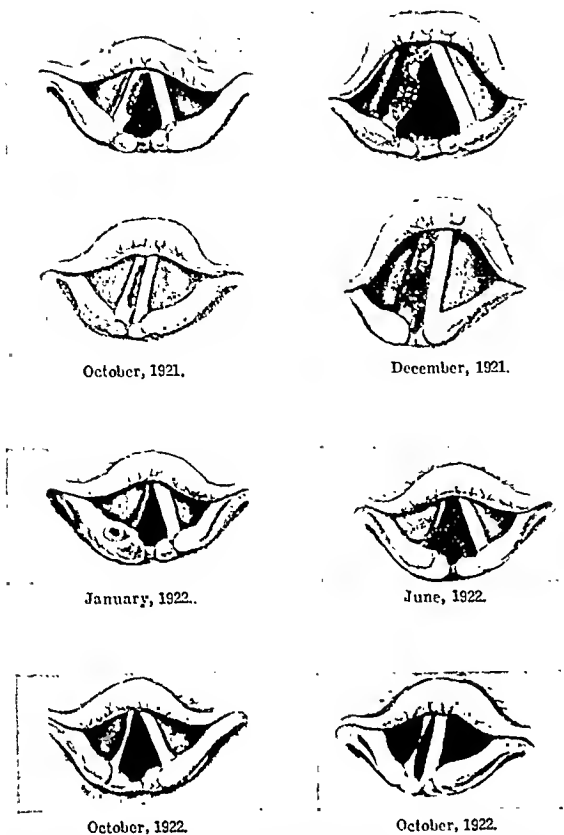


FIG. 1.—New growth of larynx, showing progress and effect of treatment. (Photographed from coloured drawings kindly lent by Sir StClair Thomson.)



FIG. 2.—High power magnification of section of new growth of the larynx.

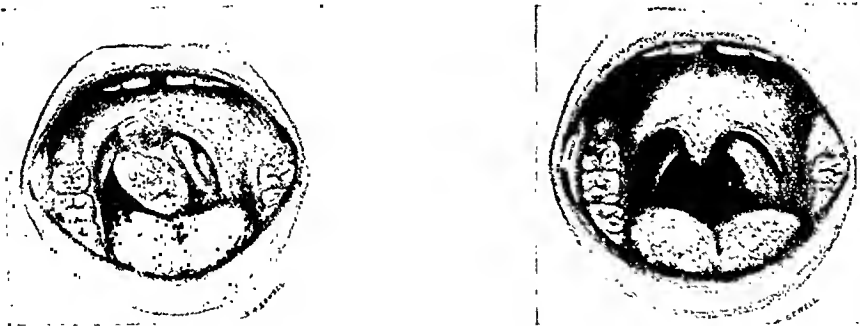


FIG. 3.—Sarcoma of tonsil, showing result of radiation treatment.



FIG. 4.—Sarcoma of tonsil with secondary glands in neck and thorax. Low and high power magnification from section of gland removed from neck.

H. WARREN CROWE: OSTEO-ARTHRITIS OF THE HIP-JOINT TREATED BY VACCINES.

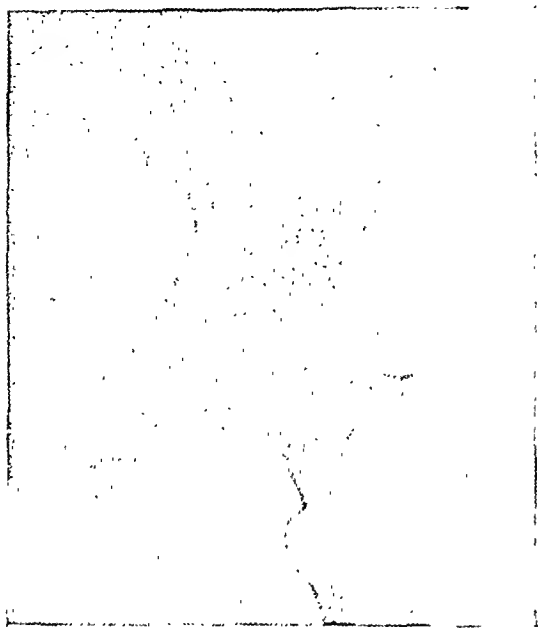


FIG. 1.—Skiagram of left hip-joint of Case 1 before treatment.



FIG. 2.—Case 1 two years later, after treatment.

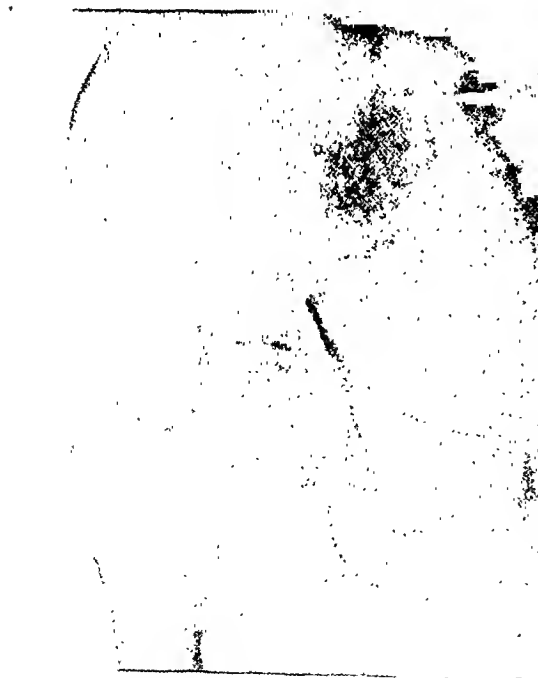


FIG. 3.—Right hip-joint of Case 2 before treatment.



FIG. 4.—Case 2 twelve months later, after treatment.



as to require no emphasis, and points to the advisability, whenever possible, of exposing the growth, more especially its base, and under the guidance of the eye inserting tubes, needles, or seeds in an exact and well-thought-out series.

Sarcomata, more especially the rapidly growing variety, are, however, extremely susceptible to small doses of radium applied even for so short a time as twenty-four hours. Their disappearance is at times almost miraculous, but, unfortunately, owing to the seeds of metastasis having already been sown, recurrence at a distance from the primary growth is by no means unknown. In endotheliomata short exposures of from twenty-four to forty-eight hours are often quite sufficient.

In certain situations, such as the nasopharynx or the oesophagus, considerable technical difficulties, due to inaccessibility, confront the operator. In the former an approach to the growth may be made by the lateral nasal route and tubes inserted alone or in combination with other surgical procedures. Another path of approach is by way of the nasal passages with the aid of a special introducer; while yet a third is the introduction of tubes under the guidance of posterior rhinoscopy.

As a means of dealing with malignant growths in the nasopharynx radium offers many advantages. In the first place, from the point of view of prophylaxis it is useful for its devascularizing effects previous to surgical intervention; in the second place, the uncertainty of effecting complete removal by surgical measures, combined with the risk of serious hæmorrhage and the possible occurrence of severe septic otitis media, renders its employment, apart from occasional perforation of the palate or necrosis of the bony walls of the posterior choanae, practically free from risk. The more fibrous the growth, the larger the dose required and the longer the time taken for its disappearance. Growths such as sarcomata, more especially the round-cell variety, conforming as they do to embryonic tissue, are readily dispersed, even with short exposures, by suitable doses of either element or emanation. I have, however, been disappointed at times by the subsequent appearance of serious blood changes after its employment. These blood changes are probably of metabolic origin and not the direct result of radio-activity on the hæmatopoietic organs or cellular elements of the blood.

In that type of sarcoma, round-celled or lympho-sarcomatous, probably arising from glands, and characterized clinically by the appearance of smooth globular swellings in the neck, a fatal issue may result as the outcome of a toxæmia produced by the rapid absorption of the autolytic products of the tumour. In such cases a very gradual absorption of the growth should be aimed at. In the treatment of peritubal malignant growths—growths which as a rule rapidly infiltrate the lateral wall of the nasopharynx—the insertion of radium appears to me to be the most reasonable and hopeful line of treatment to adopt. When the growth is pedunculated, which it rarely is, except in the histologically non-malignant, although clinically malignant, fibromata, surgical removal is indicated; when, on the other hand, it is sessile and infiltrating, surgical intervention is hopeless, while radium has at least a sporting chance.

Whether enlarged glands are present or not, the lymphatic network leading to the first line of defence should be thoroughly saturated with its gamma radiations. If present, and if operable, it is a moot point whether glands should or should not be removed prior to the operation upon the primary growth. After all, they are Nature's first line of defence, and even when infected serve a useful purpose for a time. The immediate effect of the introduction of radium into any growth is to cause considerable reaction in the tissues, increased vascularity and a general oedema, with the probability that malignant cells may commence wandering from their original habitat, to be locked up, however, for a time at least, in the nearest glandular barrier. For this reason I am not now disposed to remove glands in the first instance, as was formerly my practice, but to wait until the period of the first reaction has ended and then to operate. Whenever possible the surgical extirpation of glands should be undertaken. The burial of screened tubes in their substance is scientifically unsound, although it may possibly succeed at

times. The general practice has been to bury tubes in the obviously enlarged nodes, but, as is well known, many small glands exist in the connective and fatty tissues of the involved area, and also at times in adjacent muscular bundles—glands which contain microscopic deposits of cancer cells and which remain entirely uninfluenced. Following the surgical removal of the infected lymph nodes, radium tubes may with great advantage be buried in the lymphatic field for periods varying with the histological structure of the primary growth. External irradiation is also of value, but has to be governed by the tolerance of the skin. It may be effected by placing a collar or frame, to which are attached the necessary number of radium tubes, over the affected area. In addition, the main artery leading to the growth should be tied in order to devascularize the tumour.

Malignant growths in the nose are not very common. Primary carcinoma is somewhat rare, although it so happens that I have myself seen a somewhat exceptional number of these cases. Sarcoma, especially the round-cell variety, is much more common. The varying virulence of nasal sarcomata is known to, and appreciated by, all rhinologists, although I am unaware of any satisfactory explanation of the reason why. The higher up the origin of the growth is in the nasal passages, the worse the prognosis. Although small, favourably situated, and early malignant growths may be treated by one or other form of intranasal operation, access from without—as, for instance, by a lateral rhinotomy—is as a rule preferable, and affords a much better opportunity of radical destruction.

In the treatment of malignant growths of the maxillary antrum and ethmoidal labyrinth—growths usually of the columnar-cell variety—exposure of the tumour should be obtained in the former by a window resection through the canine fossa to facilitate approach and to lessen the risks of extensive necrosis, in the latter by the performance of a lateral rhinotomy. The lines of treatment are the same for growths in either situation and consist in: (1) ligation of the external carotid artery; (2) removal of infected glands; (3) opening of the maxillary sinus or ethmoidal labyrinth; (4) curetting of growth; (5) application of radium; (6) surface radiation. The fact that necrosis may result should not diminish the surgeon's zeal even in the event of deformity resulting—deformity which it is possible to rectify by one or other form of plastic operation, the aim and object of treatment being to get rid of the disease. Sequestra may take months and even years to exfoliate.

Glandular involvement following malignant disease of the accessory sinuses is a late phenomenon. When it occurs the nodes involved are the submastoid and the carotid, and treatment should follow on the lines already laid down.

Malignant disease of the palate is fairly frequently met with. From the surgical point of view it is more often than not inoperable, but lends itself admirably to treatment by diathermy, so much so that I venture to think treatment by radium is rarely called for. In the diagnosis, however, of suspected malignant disease, more especially of the soft palate, I venture to emphasize the necessity of excluding chronic tuberculosis and tertiary syphilis, diseases which at times simulate epithelioma. In this situation glandular involvement is also a late phenomenon.

Primary malignant disease of the tonsil is, in my experience, uncommon, but malignant disease attacking the tonsil as the result of extension from the tongue, the palate, or the faucial pillars, is far from rare and presents one of the most difficult therapeutic problems the surgeon has to deal with. Ordinary surgical intervention is admittedly seldom successful, and is, moreover, very mutilating. The growth is almost invariably a squamous-cell epithelioma highly radio-resistant and particularly difficult to destroy.

In what might be termed favourable cases—that is, where the growth is limited in size and not fixed—the introduction of tubes or seeds may be effected per os, after the extraction of all septic teeth. At least six tubes should be introduced—three from behind forwards and three from before backwards—in parallel series and 1 centimetre apart,

the silk thread from one introduced from behind forwards being tied to the silk thread of the nearest parallel one introduced from before backwards, so that when tied the tubes are kept, not only in position, but also in parallel planes. The manipulation is, however, unquestionably difficult and requires considerable practice. A more successful plan is the burying of a large number of seeds—ten to twenty or even more—in the substance of the growth. These seeds, usually from 3 to 6 mm. in length and from 1 to 2 mm. in thickness, and containing a dose of from 0.5 to 1 m.e. of emanation ( $=0.5$  to 1 mg. of radium element), are implanted in parallel series 1 cm. apart through the substance of the growth, and either become encapsuled or slough out, the idea aimed at being to effect a wide fibrosis without inducing necrosis or sepsis. One milliecurie of radon or emanation omits 132 hours of radioactivity before becoming quite inert.

When the growth is large, infiltrating, and adherent to surrounding structures, it should be exposed from without by means of a subperiosteal resection of the angle of the jaw, a piece of bone at least one inch square being removed. The necessary number of tubes or needles should then be inserted, while later on the whole affected area should be irradiated from the surface by the application of a specially constructed mask carrying radium tubes. Preliminary to resecting the angle of the jaw a ligature should be applied to the external carotid artery, infected glands being dealt with at the time or subsequently at the discretion of the surgeon.

In dealing with malignant growths of the larynx the ordinary classification of intrinsic and extrinsic growths should be borne in mind.

Extrinsic growths—such as growths in the sinus pyriformis, the arytenoid region, and the epiglottis—may be successfully approached *per vias naturales* with the aid of Haslinger's directoscope. In cases, however, where the growth has extended laterally, it may be advisable, in order to effect an exact introduction of tubes or seeds, to expose the wall of the deep laryngo-pharynx from the outside.

In intrinsic carcinoma where from one or other reason surgical removal is contraindicated, an approach may be secured either through the directoscope or by a window resection of the wing of the thyroid cartilage, or by a laryngo-fissure, the site and extent of the growth determining the exact method of procedure, the thyroid artery having previously been ligatured. My experience is that the implantation of a generous number of seeds into the growth is likely to produce the best results. A number of inoperable cases treated in this way have been free from symptoms for periods of from one to two years.

The performance of a preliminary tracheotomy may or may not be necessary. Speaking generally, it is a convenience and a safeguard, as considerable reaction may follow the insertion of unsecured tubes. As a rule I have found it advisable to perform a tracheotomy when the growth extends below the level of the vocal cords; if above that level it may be dispensed with. A low tracheotomy is advisable and a vulcanite cannula should be inserted. If a tracheotomy is to be performed it should be postponed, if possible, until all manipulations connected with the insertion of radium seeds have been completed. Later on external radiation should be employed with a casted radium applicator round the neck.

The frequency of carcinoma of the hypopharynx, especially in females, is well known and appreciated by laryngologists. Therapeutically it proves a most intractable disease. I have never yet seen a single case in which the insertion of radium tubes or needles has had more than a merely temporary effect.

Malignant disease of the oesophagus presents one of the saddest, the most difficult, and the most disheartening problems the surgeon radiologist has to deal with, and largely because the cases are seen too late. The fetish of what are called nervous symptoms, and the fetish of the bougie, that dangerous and altogether inconclusive instrument, still hold the imagination of large numbers of the profession. By the time obstruction to the passage of the bougie is diagnosed the disease is far advanced. As a matter of actual fact, many cases of malignant disease of

the oesophagus never suffer from obstructive symptoms at any stage of the disease. Squamous-celled epithelioma, the type most usually found in the upper two-thirds of the oesophagus, and adenocarcinoma in its lower third, frequently remain for long local and slowly growing pathological entities, unaccompanied by pain but by the presence of vague symptoms referable to the physiological mechanism of deglutition and by a gradual loss of weight. It is just these vague nervous symptoms which may be the signals of impending disaster and which call for the one and only means of accurate diagnosis—namely, a Roentgen-ray or endoscopic examination. Until the profession grasps this elementary fact there is little prospect of the mortality rate falling below 100 per cent.

The relative inaccessibility of oesophageal carcinoma, whether at the cervical, the hiatal, or the cardiac end of the tube, the absence of a serous coat, and the consequent want of mural rigidity, make effective treatment very difficult. To my mind, any and every form of treatment is enormously helped by the performance of a gastrostomy. To wait until the patient is actually suffering from water hunger and then to perform a gastrostomy is the height of folly. Whatever treatment is adopted—radium, diathermy, or deep x-ray therapy—it will be much helped by the provision of physiological rest to the affected part. As the growth is frequently annular and has infiltrated the submucous tissues, a screened tube attached to a flexible copper wire may be passed down through the stricture and retained in position for the requisite number of milliecurie hours. In long strictures "tandem tubes" or hour-glass tubes may be introduced. The accurate introduction of these tubes—and they are of very little value unless accurately introduced—is much facilitated by first of all giving a light bismuth meal and then working with the aid of the fluorescent screen; or an endless thread to which several radium tubes are attached may be swallowed, more especially if the limits of the growth have been ascertained by the method of coulée reversée—in other words, allowing the swallowed bismuth meal to run backwards while the patient is in a reclining position.

In several cases I have introduced radium seeds through a long introducer, but the method is not free from danger, as it is impossible to gauge the thickness of the oesophageal wall, and perforation is not unknown. The therapeutic value of intramural radiation, however, greatly exceeds any extramural method.

Exposure of the cervical oesophagus is quite a practicable procedure if necessary, but exposure of the thoracic oesophagus by a thoracotomy in order to attempt the removal of a growth or to introduce tubes into its substance is a most formidable surgical undertaking, as many here present realized when they had the privilege of watching Mr. Stoward at work at Guy's Hospital.

The type of case at present in which radium treatment is generally employed is as a rule so serious and so desperate that results are in consequence far from brilliant. The patient, emaciated, cachectic, and toxic, rejected by the surgeon, but not by the radiologist, grasps at his one and only remaining chance—a chance which too often, unfortunately, is purely transient.

When the profession recognizes the fact that an exact, and not an inferential, diagnosis of oesophageal lesions is imperative if any progress in treatment is to be made—and that such a diagnosis can be made, and can only be made accurately, as the result of an endoscopic examination of the lumen of the tube—then and then only will cases be discovered sufficiently early to admit of the possibility of cure. Endo-oesophageal malignancy starts as a purely local process, is insidious in its onset, and slow in its progress, but it is capable of being accurately diagnosed, both clinically and histologically, by means of modern endoscopic technique.

It is my profound conviction that in the near future the treatment of malignant disease by radio-active substances will take a more and more important position in therapeutics, and that the time will come when radium will be employed in early and operable malignant disease in place of many of the more or less mutilating and unsatisfactory operations performed to-day.

In the successful treatment of malignant disease time

is the great factor. In its early stages the disease is purely local, and, if treated at once, curable. So far I have only had the courage to treat two early and quite operable malignant cases with radium and with radium alone, and in both with excellent results. The assertion that many of the failures with radium in our own particular department of work are due to faulty technique, inadequate exposure of the growth, and inadequate experience, is merely a truism. The haphazard introduction of tubes is not only useless, but is actually provocative of harm.

The radiologist—by which term I mean the radium expert—works to-day under great disadvantages. To his care are relegated as a rule the inoperable and surgically hopeless cases of malignant disease. His chances of brilliant results are few and far between, but that he does get successes and encouragement in his work, even in the desperate cases he deals with, becomes obvious on reading the reports of either the London or the Manchester Radium Institute. In passing I would just mention that a considerable number of the cases he is asked to treat are not even suitable for radium treatment, the extent of the growth and the condition of the patient being such that his experienced and critical judgement negative intervention of any sort.

The conclusions, so far as the treatment of malignant disease of the upper air and food passages by means of radium is concerned, which I venture to place before you for discussion are:

1. That in the present state of our knowledge surgical removal of a malignant growth should be undertaken if a practical proposition.
2. That the lymphatic nodes into which the lymph stream from the growth drains should be removed by dissection or by block dissection.
3. That the lymphatic vessels between the growth and the infected nodes should be irradiated either from within or by external irradiation, and preferably by the former method.
4. That the growth to be irradiated should, wherever possible, be exposed so as to admit of its being handled.
5. That the introduction into the growth of a large number of seeds containing small doses of emanation to be retained *in situ* gives even better results than the implantation of screened tubes.
6. That the implantation of the seeds should follow a definite mathematical plan.
7. That as the periphery of the growth is reached the emanation dose may be reduced.
8. That the main artery to the growth should invariably be ligatured.

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#### TREATMENT BY DIATHERMY.

For more than seven years I have used diathermy in the treatment of malignant disease of the mouth and throat—at first timidly and only as a palliative measure in inoperable cases; later, and gradually, operable cases in all stages have been dealt with.

I need not enter into the physics of the method or describe the apparatus in detail, but only deal with the terminals, of which there are two—one consists of a flat leaden plate; the other, like *hors d'oeuvres*, is "various." The former is the static terminal in that it remains where it is placed; the other is dynamic in that it is the terminal with which the operation is conducted. For this latter terminal there are different points—knife, needle, and round and flat buttons of various shapes and sizes. The heat generated at the point of this terminal varies in inverse proportion to its size as compared with the other flat terminal. The leaden plate is wrapped in several layers of lint wrung out of warm saline solution, and is applied to the skin of the patient in the region of the buttock, the patient lying on it; or, better still, I think, one surface of it is smeared with soap and wound round the arm, being kept firmly applied by a bandage. The aim of surgical diathermy is coagulation by heat and not cauterization. When properly used coagulation is obtained

for a radius of a quarter of an inch or more from the acting terminal. Too strong a voltage will result in cauterization, too weak will consume much time in raising the tissues to a sufficient degree of heat.

There are two methods of dealing with the growth. The aim may be to remove it, or it may be to coagulate it, in part or in whole, and allow the coagulated portion to slough away. In all cases in which it has seemed to me that the growth might be removed I have done so, and in this way. With the current off, the diathermy knife is plunged into the tissues beyond the growth, and the current is turned on. At first it takes a little time for the tissues to become heated to a point where coagulation occurs; this is seen by blanching of the tissues around the point and by boiling of the serum or secretion. The current is then switched off and the knife introduced at a little distance from the first place. If the point is withdrawn and introduced with the current flowing cauterization of the surface is apt to occur. This cannot always be avoided, but as far as possible it should be prevented. In this way the whole growth is encircled, and deeply, without regard to structures. Hard bone like the lower jaw will not be destroyed at once, but the part exposed to the heat will come away later as a sequestrum. After coagulation has been produced all round the growth it may be left to slough away, but my practice has been to use the diathermy knife as a knife, and remove it. Where for any reason—and chiefly because it seemed to me that the growth could not be removed—I have adopted the other method, I have dealt with the tumour by means of a blunt point which is applied to the growth in various places, in part or whole extent, according to circumstances.

Though the coagulation will seal up small blood vessels, it cannot be expected to do so with those of large size, and where these are likely to be encountered I always tie the main artery to the part—for instance, the lingual or the external carotid, as a rule the latter. Sometimes it is necessary to tie both linguals or both external carotids. This, too, is a safeguard against secondary hæmorrhage. Sometimes a preliminary tracheotomy is performed. As far as possible the mouth should be put into a healthy condition and diseased teeth should be removed. In short, we must not neglect ordinary surgical principles because we are making diathermy the handmaid of surgery. Chloroform is the anaesthetic; obviously ether is contraindicated.

The treatment of affected glands requires consideration; some surgeons remove these first and then attack the primary growth either at the same time or subsequently, according to the extent of the disease and the length of time required. After removal of glands the diathermy button may be used over the cavity left to seal up the lymph channels as far as possible, though obviously, in the presence of the large blood vessels, this can be only partially accomplished. In the presence of small masses of glandular invasion my practice is to remove the glands at the time I ligature the artery, if I do so. Where the glandular involvement is greater, or where it appears doubtful whether the glands can be removed, I deal with the primary disease first. As a general rule this leads to reduction in the size of the glands, no doubt owing to the removal of sepsis, and their subsequent extirpation is facilitated. In two cases a process of repair seemed to have taken place in the glands, which aroused interest in the pathologists. I have, however, in one or two instances found the glandular disease extend rapidly after the treatment of the growth in the mouth. Every case must, in my opinion, be considered on its own merits. Where no obvious glands are present I do not open into the neck, unless to ligature the carotid, when naturally a further search is made. When the mass in the neck is obviously inoperable, and it is decided either to remove the primary growth or to treat it in a palliative manner by the button, puncture of the glandular mass in different places with the diathermy knife or needle may be performed, and I have seen this mass regress decidedly as a result. Naturally the greatest care must be observed as it is impossible to tell in these cases where the large vessels are.

In dealing with malignant disease of the lower pharynx I have in several instances exposed the tumour by the more

usual surgical method, and then treated it by diathermy; in other cases I have made use of the suspension apparatus. Of the two methods I am convinced that the latter is the better where it can be employed. It is almost impossible to close the pharynx again after an extensive use of diathermy, and for the smaller growths the suspension apparatus affords a good exposure. The two methods may be combined. The growth may be treated on the surface by diathermy with the aid of the suspension apparatus so as to mitigate as far as possible the sepsis, and later it may be removed by ordinary surgical methods through an incision in the neck. Here again, however, every case must stand on its merits.

How much should one attempt at one operation? Diathermy, it is conceded, is followed by little or no shock, much less, indeed, than follows operative procedures of equal severity by ordinary surgical methods. Indeed, it is surprising how brisk and well these patients are some hours afterwards or the next day. I am convinced, however, that there is more seeming than reality in this feeling and appearance of well-being. The stimulation has been made at the expense of something, probably the heart muscle. These patients with such advanced sepsis as obtains in serious malignant disease of the mouth and throat are not good subjects, either for prolonged anaesthesia or for protracted operative procedures. Though they appear very well the day after the operation, in three or four days they are, most of them, very much the reverse, and death occurs sometimes suddenly from heart failure. No doubt great care is required in the nursing. Discrimination, however, must be observed in regard to the extent of operative procedure carried out at one time. If the palliative treatment of an inoperable growth is undertaken it is easy to coagulate it in stages, but where it has been decided that there is a chance that a growth may be entirely removed, there is the temptation to complete the operation at once. In some cases, of course, the call is for non-interference: the disease is too widespread and advanced, and the inevitable end too near. In view of the benefit obtained even in advanced and inoperable cases there are very few patients to whom some measure of relief will not be given. The diagnosis of malignant disease of the mouth and throat is another story, much of it tragedy, but in Glasgow, to which patients come from remote districts in the West of Scotland, Highlands, and Islands, some terrible cases of this disease are seen. In other parts of the country, less isolated, I should expect the patients to present themselves or to be sent earlier and at a time when there is no hesitation in advising the use of surgical diathermy with one or other aim.

Extent of the disease is not the only point we have to consider; its position will also determine the prospect of treatment by diathermy. Broadly speaking, this method decreases in suitability as the site of the disease descends from the alveolus to the oesophagus. The cases most suitable are those in which the growth is confined to the mouth, including the tongue, upper jaw, palate, fauces, and floor of mouth. For these I claim that removal by surgical diathermy, or, for inoperable cases, treatment by surgical diathermy, is the method *par excellence*. For operable cases of the lower pharynx, for post-cricoid car-

TABLE I.—Particulars of 122 Cases of Malignant Disease of the Mouth and Throat operated on by Surgical Diathermy, (1923-25).  
(Males 105. Females 16. Ages 34 to 74.)

Position of Growth.	Males.	Females.
Tongue ... ..	13	1
Tongue and floor of mouth .. ..	30	1
Fauces, soft palate, tonsil, and (in some) tongue	25	2
Pharynx .. ..	16	5
Upper jaw .. ..	20	6
Oesophagus .. ..	2	1
Total .. ..	105	16

Of these cases 39 are alive, 69 are known to have died, and 14 are untraced. The disease was localized in 33, extensive in 60, and otherwise inoperable in 29.

TABLE II.—Showing Period of Survival of the 69 Patients who Died after Operation.

Position of Growth.	Under 1 Month.	1 to 6 Mos.	6 to 12 Mos.	1 to 2 Years.	Over 2 Years.
Tongue ... ..	6	—	1	—	—
Tongue and floor of mouth ... ..	10	3	3	1	—
Fauces, soft palate, tonsil (and tongue)	8	4	1	1	2*
Pharynx ... ..	9	7	1	1	—
Upper jaw ... ..	2	2	2	2	—
Oesophagus ... ..	1	1	1	—	—

\* One of these, a male, died of diabetes in March, 1925, three and a half years after operation for epithelioma of the fauces with glandular involvement. There was no recurrence of the malignant disease.

cinoma, and for malignant disease of the larynx, diathermy is altogether unsuitable. In these regions it is only of value as a palliative measure in inoperable cases, in which a great measure of relief has been afforded in a number of instances. In malignant disease of the oesophagus it is possible that with increased experience temporary relief may be given by this method in conjunction with others.

The accompanying tables show the results of treatment in 122 cases which have been operated on during the four years 1922-25.

#### GENERAL DISCUSSION.

Mr. W. G. HOWARTH (London) considered that diathermy was the method of election in dealing with malignant disease in the pharynx and the pyriform fossa, even though it did not appear ideal from the surgical standpoint. He did not think that diathermy removal implied slow healing or increased infection. He was impressed by Mr. Steward's method of feeding through a pharyngeal tube introduced through the wound. If surgical removal was contemplated and the patient had carious teeth, he would allow three or four weeks to elapse after their extraction before operating; if the teeth were sound then operation need not be delayed.

Mr. MUSCHAYE WOODMAN (Birmingham), referring to the use of diathermy, said he had had sixty patients with oesophageal disease under his care during the last three years, and had operated 105 times. He had not cured a single case, and he was not even sure that he had been able to prolong life to any appreciable extent. In nearly all instances he had been able to keep the patient eating ordinary food *per vias naturales* until death ensued from extension of the disease. The results were superior to those of gastrostomy, and throughout the disease the patient was able to swallow freely by the ordinary route. The operation was well borne, produced very little shock, and the patient left the hospital two or three days afterwards, eating and swallowing well, and in good condition. The present value of diathermy in the oesophagus was limited by the anatomy of its situation. In the absence of a peritoneal coat and of any fibrous tissue in its wall, it was extremely difficult to produce artificially an irritant fibrosis around the oesophagus sufficiently dense to prevent leakage during the time the growth was being destroyed. In experimental work on monkeys he had injected warm paraffin wax and suspensions of silica in glycerin, and had transfixed the oesophageal wall with electrolytic needles. In every case at the post-mortem examination of the animal no trace of the injected material was found and no resulting fibrosis was produced.

Dr. WILLIAM HILL (London) gave a lantern demonstration of his special radiumtherapeutic apparatus and technique, and showed the radiographic appearances in selected cases of malignant strictures before and after radium applications. If, for example, an annular stricture was about an inch long, a silver cylinder 1 mm. thick, as used at the Radium Institute, could be employed enclosing a capillary tube 3 cm. long containing either a pure radium salt or else radon, with an emanation equivalent of radioactivity equal to that of 50 mg. of radium bromide—

approximately 25 mg. of radium element to each centimetre in length. This apparatus so charged could safely be retained in the stricture for fifteen hours, more or less, according to the thickness of the growth. The silver style kept the radon cylinder down in the right place on the stricture, and the special collar in Dr. Hill's apparatus prevented it being pressed down beyond the thick hardened upper collar-like end of the stricture. The question of dosage was discussed as regards the weight dose per centimetre length, the screen dose, the time dose, and the repetition dose. Dr. Hill had made over 400 applications of radium salts or of radon in cancerous stricture in the throat and gullet, and had found that about a third of approximately one hundred patients so treated had exhibited very remarkable temporary improvement, one-third substantial improvement, and yet another third were either not obviously benefited or else were rather worse, either from the incidental manipulative interference or from a massive toxic effect very exceptionally induced by radium. Dr. Hill also showed twenty-four slides relating to twelve selected cases, radiographically demonstrating the difference in the size of the lumen of the strictured gullet before and after radium or radon applications. The lives of a certain number of patients had been prolonged with comfort for periods varying from one and a half to three years. In one exceptional case (the radiograms of which were also shown on the screen) the patient had ten applications with Dr. Finzi's radium in the course of two years, and lived normally a further five years (seven in all) with apparent temporary local cure of the primary gullet lesion up to the time of death, which was due to sudden activity in long quiescent small secondary deposits in the liver and abdominal glands. Palliative success depended on exact knowledge and experience of the technique of radium therapy in cancer of the gullet as in parallel measures elsewhere. Loose work by inexperienced persons had brought discredit on this form of therapy in the past and would do so in the future.

Professor VON NEUMANN (Vienna) stated that he injected intravenously 30 c.cm. of a 30 per cent. solution of dextrose before operating.

Sir JAMES DUNDAS-GRANT (London) said that the necessity for exact diagnosis emphasized by Dr. Knox was illustrated by the case of cure of intrinsic epithelioma. It was originally diagnosed as tuberculosis, and the speaker's removal of a portion for microscopical examination indicated the nature of the disease only just in time to save the patient's life. He strongly recommended the early adoption of this method of diagnosis. He stated that simple polypi frequently occurred in the course of malignant disease of the ethmoidal cells, and that the report as to their simplicity should not mislead the examiner. In diathermy the bipolar method was useful. More delicate non-conducting retractors were to be desired. It had to be remembered that ligation of the external carotid artery was occasionally followed by cerebral embolism. In comparing laryngo-fissure with laryngectomy, the speaker called attention to the danger if the patient fell subsequently into water. Laryngo-fissure should always be given the preference, as was usual with British operators.

Mr. E. B. WAGGETT (London) believed that when the jugular vein had to be ligatured it should be resected; in a very promising case in which he had failed to do this the patient died with pulmonary embolism. Post-operative feeding of such cases by a tube inserted through the pharyngeal wound might result in parotitis. It was desirable to give the patient chewing gum to obviate stagnation of secretion in the salivary ducts. Extensive dentistry upon septic sockets might be followed by Vincent's ulceration of the tonsil. It was therefore advisable not to fix a date for the major operation until some days had passed after the dentistry.

Mr. ANDREW WYLLIE (London) had found that patients suffering from malignant disease of the throat or oesophagus were usually of a placid nature, and he did not use a general anaesthetic in diathermy. A dose of morphine was given before the operation; both electrodes

were put into the growth, and the patients could sit up immediately after leaving the theatre. He considered that by this method there was less danger of unfortunate sequelae, such as secondary haemorrhage, and had never known of evil after-effects. Very few patients suffering from malignant disease in this situation had sound teeth. He advised every tooth to be extracted two weeks before operation.

Mr. C. A. S. RIDOUT (Portsmouth) emphasized the importance of treatment of oral sepsis before operation for malignant growths of the mouth and pharynx. He thought diathermy was the operation of election for malignant growths of the tongue, fauces, and palate, and emphasis was laid on the value of, and lack of risk in, previously tying the external carotid artery. His experience of treating certain growths of the hypopharynx by diathermy, especially in the neighbourhood of the pyriform fossa, by endoscopic methods was not unsatisfactory. Early gastrostomy was useful in cases of malignant ulceration of the oesophagus, and the consequent improvement in the condition of the ulcer was an aid to further treatment.

Mr. HERBERT TILLEY (London) said that his experience in malignant disease of the nose and its accessory cavities had led him to believe that it was better practice to remove the primary disease as far as possible by surgical measures and then to employ radium or x rays afterwards. If radiotherapy was instituted in the first instance, there was the danger that the patient's system might be flooded by the toxins of broken-down growth and inflammatory products. This was by no means improbable in a large closed cavity like the maxillary antrum. Diathermy was an invaluable agent in malignant disease of the readily accessible regions of the mouth and throat, and he had been struck by absence of inflammatory reaction in the normal tissues immediately surrounding the large sloughs on those areas which had previously been occupied by a new growth. Coincident with this was the almost complete absence of shock or other systemic reaction.

Mr. NORMAN PATTERSON (London) considered that a preliminary gastrostomy was a great advantage in that the general condition of the patient was improved thereby and that post-operative feeding was more comfortable and effective.

Dr. W. JOHNSON HORNE (London) thought that the importance of accuracy in diagnosis before the commencement of treatment could not be overstated. Of all diseases malignant disease was the one that was diagnosed more often than it existed. He mentioned the frequency of erroneous diagnosis of a chronic inflammatory or granulomatous condition in the nose or a tonsil as sarcoma. The result was an increase in the number of cases of malignant disease of the upper air and food passages, and a corresponding increase in the number reported as being cured of cancer. Going back to before the days of x rays, radium, and diathermy, there might be some present who remembered the prominence given in the press to the "violet leaves cure of cancer." The patient, a lady, had been troubled with a throat affection; finally a diagnosis was made of inoperable malignant disease of the tonsil. The patient had resigned herself to her fate when a sympathetic friend suggested treatment with violet leaves, which, in view of the verdict that had been passed, could do no harm. Violet leaves in form of poultices, or compresses, or gargle, or tea, were used, and recovery followed—post hoc and not propter hoc. This "cure" was taken up by the press. The pathological sections were examined microscopically, and a chronic inflammatory or granulomatous condition was then diagnosed. In the present day of treatment by diathermy an erroneous diagnosis would probably escape notice.

Mr. L. COLLEDGE (London) said that if septic teeth were present with an obviously foul mouth, and the patient declined to have them extracted, it was better to refuse to operate as the patient would die. If the patient had sound teeth the conditions were better, but primary healing was unlikely. The case was more favourable if the patient



was edentulous, but the most favourable condition was when the mouth had been cleared of septic teeth about three weeks previously. The immunity of the patient seemed then to be highest, and primary union without leakage or sloughing might be obtained.

Mr. F. J. STEWARD, in reply, said that his experience did not coincide with Mr. Colledge's on the dental question. He would have all septic teeth removed before operation, but he had not found that the presence of sound teeth had militated against primary union. In regard to diathermy, he would stress the importance of an adequate exposure of the growth before applying the electrodes, and of the preliminary removal of glands, if surgically possible. He had not found that diathermy was unsatisfactory in malignant disease of the deep pharynx or in extrinsic laryngeal growths; rather the reverse. His rule was to remove small growths surgically and large ones by diathermy.

Dr. Knox, in reply to the question raised regarding the term "lethal dose," said it was necessary to realize what was meant by the lethal dose in reference to malignant disease. The generally accepted explanation was that given by Seitz and Wintz of Erlangen, who, in their valuable work, laid down the rule that if the erythema dose was taken as 100 per cent, the lethal dose for cancer worked out at from 80 to 110 per cent. of the erythema dose. This had been found to be more or less inaccurate; the lethal dose for cancer might vary in wide degrees from that estimate, and in practice it had been found that if the lethal dose was given, the response was not invariably a favourable one. The method of estimating the dose at the depth was, however, based on the work of Seitz and Wintz, and it might be used as the standard of measurement of the depth dose.

Sir WILLIAM MILLIGAN rather doubted the benefit to be gained from preliminary gastrotomy. He would always remove a removable growth surgically and use radium subsequently to prevent recurrence. He only allowed patients in the sitting-up posture when they were quite out of the anaesthetic.

Dr. W. S. SYME said that in discountenancing the use of diathermy in malignant disease of the pharynx he was thinking rather of the larger growths, and the virtual impossibility of closing the pharynx. He was not inclined to remove a large growth by diathermy without an anaesthetic.

## SECTION OF ORTHOPAEDICS.

E. MURHEAD LITTLE, F.R.C.S., President.

### DISCUSSION ON NON-TUBERCULOUS COXITIS IN THE YOUNG.

#### OPENING PAPER

BY

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Last year a discussion took place in the Orthopaedic Section of the Royal Society of Medicine on the differential diagnosis of non-tuberculous coxitis in children and adolescents. In the admirable paper with which he opened that discussion, Mr. Alan Todd raised points of great interest and importance: upon these points those who heard his paper or read it afterwards have now had ample time to ponder. At the request of the President of this Section I shall endeavour to cover the same ground as was covered in the discussion at the Royal Society of Medicine last year, confining my remarks to the affections of the hip-joint met with in children and adolescents.

Now, I take it that, speaking generally, coxitis arises either from trauma or from infection. By trauma I mean the repeated minor injuries incidental to anatomical abnormalities, whatever the cause of these may be, which involve a want of fit between the head of the femur and the acetabulum, as well as violence applied directly or in-

directly to the joint from without. There are affections of the hip-joint, I admit, the exact nature of which is still in doubt, and in which the part played by infection has yet to be decided. For instance, what is the cause of pseudo-coxalgia, or of arthritis deformans juvenilis? We could spend a whole morning discussing either of these; I must content myself with brief references to them later. The subject of this discussion is so vast that it is only possible to touch on many of the interesting problems that present themselves. It will be my endeavour to clear the air, if I can, on some of the points raised in the previous discussion, and to invite the opinion of others upon some of the many debatable questions that are met with in the consideration of the various affections included in the title of this paper. As a basis of discussion I have drawn up the following classification of the common affections which may, I think, be legitimately included in "non-tuberculous coxitis."

#### Non-tuberculous Coxitis.

1. Traumatic synovitis and arthritis.
2. Traumatic synovitis and arthritis with adolescent coxa vara.
3. Infective arthritis—acute, subacute, and chronic. (Sub-section—arthritis secondary to osteomyelitis.)
4. Acute rheumatic arthritis.
5. Rheumatoid arthritis (Still's disease).
6. Pseudo-coxalgia.
7. Coxitis complicating congenital dislocation of the hip: (a) Villous; (b) Absorptive; (c) Osteo-arthritis.
8. Arthritis deformans juvenilis.

It may be noticed that this classification differs in some respects from that of Mr. Todd. For instance, "coxitis of secondary onset" has been entirely left out. Surely infective coxitis; whatever the causative organism, whether this be the tubercle bacillus or one of the pyogenic organisms, is invariably secondary to some other lesion, though this primary lesion from which the blood-borne infection arises may not be easily found. Then again, the nature of the arthritis depends on the particular organism responsible for it, and upon the virulence of that organism, and not upon the mode of entry of the infection. Arthritis of the hip in a case in which the mode of infection is obscure is precisely the same disease as arthritis that follows appendicitis or a sore throat. Those cases of arthritis of the hip-joint which begin as an acute osteomyelitis of the femur—or more rarely of the pelvis—might legitimately be called secondary, I agree, but they are only a variety of acute suppurative arthritis and should, I think, be considered under this heading. I cannot help feeling that we are in danger of multiplying the varieties unduly, and I would suggest that we should aim at simplification in our grouping of the cases and should avoid adding to our classified list until we are certain that a particular type of case really deserves a separate heading. No doubt future experience will lead to a further grouping, as has happened in the past, but it behoves us to be wary that any such separation of a group of cases is really justified on clinical or bacteriological grounds.

#### 1. Traumatic Synovitis and Arthritis.

It is sometimes forgotten—probably because of the difficulty of palpating the joint as compared with the knee, for instance—that the hip-joint is subject to synovitis as a result of a strain. There is little doubt that this is the true diagnosis in many cases of pain and disability following trauma.

Limitation of movement in such a case usually does not involve all movements, and complete recovery follows, as a rule, in a few days with simple rest in bed without a splint or extension. Some even recover without any rest at all. In one or two such cases lately the radiogram has revealed the presence of an oval piece of bone opposite the outer part of the anterior margin of the acetabulum. This loose fragment of bone may be in a definite notch in the margin of the socket, and it is suggested that it may be a sesamoid in the reflected head of the rectus femoris. Is it possible that the presence of a loose fragment of bone in this situation, whatever its nature, renders the part more liable to strain?

A boy, aged 13, sprained both hips when jumping, at the age of 5 years, the left being the worse; he was laid up for three months. Eighteen months later the right hip again gave trouble, laying him up for a month. He was quite well till a week

before he was first seen, when he strained the right hip while running. Since then the hip had ached a bit and was worse if he walked. He said the hip was a bit stiff. On examination there was no limitation of movement in the hip, but full flexion and extension caused pain and there was some tenderness over the front of the joint. X rays showed a fluffy piece of bone near the upper lip of the acetabulum on each side. The acetabular shadows on both sides were distinctly irregular, but the heads of the femora were smooth and rounded.

The appearance of these two fragments of bone in this case does not, it is admitted, strongly suggest a sesamoid bone, but the situation is the same as in others in which the regular oval shape of the bone fragment is much more suggestive of a sesamoid. It may well be that all loose fragments in this situation have not the same origin. Abnormal ossification of the acetabulum would seem to be at any rate uncommon. We hope to hear whether others have met with this condition associated with symptoms referred to the joint. Juxta-epiphyseal strain should, I think, be regarded as the initial stage of an adolescent coxa vara; it is considered under this heading below.

## 2. Traumatic Synovitis and Arthritis with Adolescent Coxa Vara.

This group is so well recognized that little need be said about it. The cases are preceded, as a rule, by more definite trauma than in the preceding group, and are distinguished by limitation of abduction, raising of the trochanter, and shortening, to some extent at any rate, while the x-ray pictures are characteristic. In the early stages, the juxta-epiphyseal strain of some authors, there is widening of the epiphyseal line—the head of the femur appears to be loosened from the neck—and there is always a little displacement which accounts for the shortening. It is hardly necessary to emphasize the importance of recognizing and treating these cases in the early stage and thus preventing gross displacement of the femoral head. Mistakes can only be avoided by invariably looking for this lesion and making a minute comparison of the shadows thrown by the two hips. These early cases complain of a limp and pain on walking, beginning immediately after the trauma, but may show no limitation of movement, not even of abduction, though a slight degree of shortening is always present.

When gross displacement is taking place, or has taken place fairly recently, traumatic arthritis with its accompanying spasm limits the movements of the joints more or less completely. It is this condition which is so often mistaken for tuberculosis, in spite of the fact that the limb is not flexed but is markedly everted, and the trochanter is already raised well above the normal level. If the normal anatomy is not restored—and this, unhappily, is rarely possible—the joint is permanently damaged and is susceptible in a marked degree to osteo-arthritic changes.

## 3. Infective Arthritis—Acute, Subacute, and Chronic.

The acute case with a high temperature and a polymorph leucocytosis gives little difficulty in diagnosis. Common organisms are the staphylococci, streptococci, and pneumococci. All degrees of virulence of the infecting organisms are met with, particularly, I think, the staphylococci. The same pyogenic organism can cause all grades of arthritis, even, occasionally, in the same patient. One inflamed joint goes on to suppuration while another in the same patient remains dry. A well marked case was met with in an adult some months ago.

A man, aged 50 (under the care of Dr. Fraser), developed an acute arthritis of one hip, with a very high temperature and leucocytosis. The hip-joint was opened and found to be bone dry, yet a culture grew pure *Staphylococcus aureus*. The joint was closed, and the wound healed by first intention and remained healed. Erosion of the cartilage surfaces was present and this progressed during the following weeks. The swinging temperature continued and the knee on the same side became affected. After a few weeks a small abscess was opened on the inner side of the knee and from this *Staphylococcus aureus* was grown. Eventually the knee was freely opened and the patient recovered with ankylosis of both joints.

Recently we have seen a case with acute osteo-myelitis of one femur and acute non-suppurative arthritis of the opposite hip-joint.

A boy, aged 4½ (under the care of Dr. Grosart Wells), developed acute osteomyelitis of the lower end of the left femur. This was

operated upon, and *Staphylococcus aureus* grown from the pus. Almost from the first the child complained a little of the right hip. This joint was eventually opened and was found to be dry, so the wound was closed. It healed and remained healed. Two weeks later x rays showed subluxation of the head of the femur, which rather suggests that at one period the capsule had been distended, the fluid becoming absorbed later. The subluxation was easily reduced by extension and gradually increased abduction.

This is not the place to discuss in detail the treatment of acute arthritis, but one or two points may be touched on. If the hip requires opening at all, I believe in obtaining thorough drainage. This necessitates the making of a posterior incision, whether the joint has been first opened in front or not, but it does not involve the insertion of a tube beyond the opening in the capsule. When, however, the child is young, the signs and symptoms rather subacute, and the fluid in the joint thin and flaky, a pneumococcal infection may be suspected, and the wound may be closed after a thorough irrigation of the joint with saline, with a fair prospect of success.

Another point which I venture to emphasize in connexion with acute arthritis of the hip-joint is the importance of maintaining abduction for several weeks in order to avoid dislocation. Retention of abduction for four weeks, for instance, is not long enough. After a minimum of four weeks' abduction with extension the limb should be retained in abduction by a plaster case for at least another two months. Dislocation is extremely common without any gross erosion of the bones having occurred, both when the joint has been drained and when it has been washed out and closed, and it may even occur without the joint having been opened at all.

Brief reference must here be made to coxitis secondary to osteomyelitis of the femur. The exact diagnosis in these cases is often extremely difficult, not only as regards the presence or absence of an infection in the bone, but also, when this is certain, as to the condition of the joint. When an acute infection starts in the head or the neck of the femur arthritis is always present by the time the case is operated upon, but when the disease begins near the epiphyseal line of the greater or lesser trochanter the possible involvement of the joint becomes a question of the first importance. If aspiration, through unbroken skin, fails to yield conclusive evidence as to the condition of the joint in such a case, I think the bone lesion should be freely dealt with and the patient watched. If after a couple of days the state of the temperature and pulse and the local signs still give cause for anxiety, the joint should be opened and drained.

I have long believed that a mild strain of staphylococci accounts for many cases of subacute and chronic non-suppurative arthritis, with or without erosion of the joint surfaces, but it is difficult to prove this. It is, of course, the subacute or chronic case which causes us the greatest difficulty in diagnosis. For instance, we commonly see patients with definite signs of arthritis of one hip, the symptoms having been present only for a few weeks, with little or no temperature, and negative x-ray findings. The joint is flexed and abducted and movements are restricted or obliterated in all directions. Although considered to be non-tuberculous, such a case, in my opinion, requires immobilization, preferably with extension, and a fresh x-ray examination after a month; and this should be repeated again after a further month if necessary. The usual sources of infection, particularly the tonsils, are examined, and, if necessary, dealt with radically. Time is necessary to clear up the diagnosis. If non-tuberculous, all spasm has usually disappeared in four to eight weeks, and radiograms are still negative. The child is kept in bed without fixation for a few days, and then allowed up, the recovery usually being complete and permanent. Occasionally recovery is delayed and some doubt as to the nature of the case remains; removal to the country—if this has not already been done—for a further period of fixation is then necessary.

What is the nature of the infection in these cases? In my opinion it is probably staphylococcal. The von Pirquet reaction I do not rely upon. A positive reaction is useless; a negative reaction deserves to be considered as a link in the chain of evidence.

Another question upon which I would invite discussion

is this: Is an attack of measles sometimes followed by coxitis with special characteristics which distinguish it from other forms of arthritis of the hip-joint? Non-tuberculous coxitis appears to be a distinctly uncommon sequela of measles, while tuberculous hip disease is more often met with. Careful inquiry among my colleagues at the Hospital for Sick Children, Great Ormond Street, showed that, without exception, their experience agrees with my own. We have no reason for thinking that there is a special form of arthritis associated with measles. When coxitis follows an attack of measles, and is non-tuberculous, it is the result of infection by one or other of the common pyogenic organisms, and this arthritis differs in no way from that caused by the same infections in other patients.

With regard to scarlet fever, the question is rather more difficult. Arthritis in the early convalescent stage of this fever is much more common than after measles, and often takes the form of "rheumatism," which is said to have special features of its own by those with the greatest experience of infectious fevers. While simulating ordinary acute rheumatism in some ways, it differs in certain important respects. There would appear to be, however, no clear line to be drawn between cases of the rheumatic type and those in which the arthritis goes on to suppuration; and it appears to be reasonable to suppose that the presence in the joint of toxins only or of actual infection with streptococci of variable virulence accounts for all the forms of arthritis met with after scarlet fever, and that these are similar in every way to grades of arthritis met with apart from this particular infectious disease.

A few words are necessary on the relation of infected tonsils with arthritis of the hip. Few will question, I think, that the throat (and mouth generally) not uncommonly provides the path by which micro-organisms enter the body and cause acute coxitis, and also that there are cases in which arthritis of the hip-joint, less often perhaps than of other joints, has cleared up rapidly after a "spring clean" of the throat, nose, and teeth. The exanthematous fevers unquestionably favour the entrance of organisms by these paths. I would, however, dispute the correctness of regarding coxitis following the removal of tonsils and adenoids as a not very uncommon occurrence—common enough, in fact, as suggested by Mr. Todd, to warrant special mention in a class of "secondary coxitis." Our combined experience at the Hospital for Sick Children—and this experience runs into very many thousands of operations on the throat—fails to provide a single case of arthritis following enucleation of the tonsils. We have, it is true, seen cases of arthritis arising at varying periods subsequent to removal of the tonsils and adenoids performed elsewhere, but invariably such cases were found to have masses of septic tonsil still present in the fauces, necessitating a second operation. I know of one solitary case, that of a medical man, where a mild coxitis followed total removal of the tonsils by a first-class throat specialist.

#### 4. Acute Rheumatic Arthritis.

Acute rheumatic arthritis need only be mentioned. It forms a group with such characteristic clinical features and complications that it is convenient to continue to separate it from other forms of infectious arthritis.

#### 5. Rheumatoid Arthritis (Still's Disease).

Rheumatoid arthritis may present difficulties in diagnosis in the early stages when the hips are the first joints to be affected, but this would seem to be a rare occurrence. The involvement of other joints before long (the cervical spine being often affected early in the course of the disease), the enlargement of the lymphatic glands and spleen, and the x-ray appearances, should make the diagnosis clear.

#### 6. Pseudo-Coxalgia.

The characteristics of this affection are becoming so well known to all branches of the profession that mistakes in diagnosis are now far less common than they were. The radiographic change typical of this disease may, however, be closely simulated for a time by other affections of the joint, notably tubercle. It behoves us, therefore, to

treat as tuberculous any doubtful case until time and further x-ray examinations make the diagnosis clear. May I be allowed to remind you that there are two clinical stages of pseudo-coxalgia in which the differentiation from tuberculous coxitis may be difficult and the help of a first-class radiogram essential. First, when limitation of movement involves abduction only, or abduction and internal rotation, the case may suggest the pre-arthritis stage of tuberculous coxitis; by this I mean the stage in which a tuberculous deposit is present in the neck of the femur or beneath the acetabular cartilage, but in which as yet there is no general arthritis. The healthy condition of the child, and perhaps an entire absence of pain, may suggest a non-tuberculous diagnosis, but often the radiograms have to be relied on to decide this matter. Secondly, when spasm limits all movements in pseudo-coxalgia, tuberculous arthritis may be closely simulated. The diagnosis must depend on the points mentioned above; the rapid disappearance of the spasm on immobilization with extension is in favour of pseudo-coxalgia.

#### 7. Coxitis complicating Congenital Dislocation or Subluxation of the Hip.

The arthritis which is discovered within a few weeks or months of reduction of a congenital dislocation seems to be essentially traumatic in origin, but that a mild infection plays a part, in some cases at any rate, is rather being forced upon us by further experience. It is certainly wise to postpone reduction in children not in perfect health, and any obvious infective foci that are found must be eliminated in all cases before operation is proceeded with. With regard to the cases that for one or other reason have been left without treatment, I cannot help feeling that the opinion, which would seem to be pretty general, that the onset of pain and increasing disability at a comparatively early age is inevitable, is hardly justified. Though difficulty in walking may increase long before a patient is fully grown, particularly in bilateral cases, a fair number of cases are met with in adult life with surprisingly little discomfort referable to the hip-joint. It is my belief that the pain from which many of these cases, at any rate, sooner or later suffer is due to arthritis rather than to mere static conditions. Further investigation on this point is urgently required, if our methods of treatment are to be on the right lines. Villous arthritis has been found in an untreated dislocated hip in a girl of 13 years who could not walk more than a few hundred yards. The radiogram was negative to any obvious arthritic change. Is this form of arthritis the usual cause of the pain in the cases which show little or nothing in the way of erosion oripping of the femoral head? If this suggestion—and it can be nothing more than that at present—is correct, the formation by operation of a bony shelf above the displaced head is surely unlikely to afford relief of the symptoms. On the other hand, gross absorption of bone and flattening of the head of the femur may occur. These changes we see more particularly in untreated subluxations, and especially after reduction in a child rather older than is desirable, both when the reduction has been successfully maintained and when a partial relapse has occurred. This type some years ago we ventured to call "absorptive arthritis"; the loss of tissue may be extreme—enough to suggest a neuropathic joint.

Lastly, osteo-arthritis—and this constitutes one form of arthritis deformans juvenilis—may develop whether the dislocation has been treated or not. This type is met with typically in adults with a poorly formed acetabulum and only the smallest degree of displacement of the femur. The underlying congenital defect is sometimes overlooked.

#### 8. Arthritis Deformans Juvenilis.

With regard to this form of arthritis, we may usefully ask ourselves whether it ever occurs as a primary affection of a previously normal joint. Though it is probable that it may occur in rare cases as a primary affection, with or without antecedent trauma, it is, I suggest, substantially true to say that juvenile osteo-arthritis affects a hip which has been definitely damaged anatomically by trauma or infection, or is the seat of a congenital malformation. It

is hoped that we shall learn whether this statement is supported by the experience of others. It is possible that our conceptions of what is meant by this title differ somewhat, so it is perhaps advisable to state exactly what I mean. In my view arthritis deformans juvenilis is simply osteo-arthritis occurring in a patient far below the usual age at which we commonly meet with it. It is a chronic arthritis associated with pain, progressive limitation of movement, and deformity. The pathological changes, as revealed by x rays, are slow erosion with a decided tendency to "lipping" at the articular margins. The conditions which favour the onset of these osteo-arthritic changes in the young are congenital subluxations, unstable hips with imperfectly formed acetabula, adolescent and traumatic coxa vara with permanent displacement of the head on the neck of the femur, fracture of the femoral neck with or without union, pseudo-coxalgia, acute arthritis, particularly when complicated by pathological dislocation requiring replacement, and no doubt others. Whether the secondary arthritic changes are due to infection in addition to chronic trauma is uncertain, but it would appear probable that infection plays a more important role in those cases, such as Mr. Harry Platt describes in his paper on pseudo-coxalgia, in which the arthritis seems to be primary. My impression is that these last have a decided tendency to be bilateral. I have met with it once in a female of 16; the radiogram in this case shows a remarkable symmetry in the deformation of the two femoral heads.

There are other forms of coxitis occasionally met with that are difficult to classify. For instance, we have seen a bilateral case in which the x-ray changes were confined to the inner or lower part of the two joints. These rarer types are, I think, better left out of the discussion to-day. Gonorrhoeal, meningococcal, typhoid, and dysenteric arthritis, particularly of the hip, are so uncommon in children that they need only be mentioned. Haemophilia affecting the hip-joint I have not seen. An effort has been made at least to refer to all the common groups of cases, and to call attention to some of the points which seemed to me most worthy of discussion.

#### GENERAL DISCUSSION.

Mr. S. W. DAW (Leeds) considered Mr. Fairbank's classification of non-tuberculous coxitis a very good one, but he suggested that the last group—arthritis deformans juvenilis—might be omitted, as he was not yet satisfied that it existed as a separate primary entity, though a condition of this type might follow any of the other groups, except, perhaps, acute rheumatism. It was often difficult to fit cases of hip trouble into any of the recognized groups; it was better to leave these ungrouped until there was more certainty, and he suggested that arthritis deformans juvenilis should be allowed to remain unclassified. In rheumatoid arthritis (Still's disease), difficulties of diagnosis in the earlier stages were perhaps due to imperfect observations, and Mr. Daw described two cases to illustrate the fact that the development of multiple joint lesions might be slow. It was sometimes difficult to distinguish pseudo-coxalgia from ankylosis, but it was nearly always the case that in pseudo-coxalgia the x-ray developments were in advance of the clinical symptoms, whereas the reverse obtained in tuberculosis. Many patients with congenital dislocation of the hip continued for a long time with very little pain.

Mr. S. T. IRWIN (Belfast) showed some anatomical specimens to demonstrate the formation of the upper end of the femur and its mode of ossification. A careful investigation of these, in his opinion, explained several of the important problems associated with injuries and inflammations occurring at the hip-joint. Five specimens of the upper end of the femur were shown, forming a series at the respective ages of birth, 1 year, 2½ years, 6 years, and 13 years. He stated that at birth the upper extremity of the femur formed a single cartilaginous mass which included the head, the neck, and the greater and lesser trochanters; development of the upper end of the femur was produced

rather by a growth from the diaphysis than from the ossific centre which subsequently formed. At one year the greater part of the upper extremity was still cartilaginous, but two important changes had occurred—namely, the deposit of a small ossific centre in the caput, and an upward growth of the diaphysis into the inferior aspect of the neck. This growth during the second year separated the lesser trochanter from the upper extremity proper, and also extended into the neck, but the great mass of the extremity, including the head, the upper part of the neck, and the great trochanter, remained cartilaginous. At 2½ years the conformation had not materially altered. There had been further growth in the mass of bone arising from the diaphysis which formed the neck and some enlargement of the epiphyseal bone, but the main portion of the head was still cartilaginous, and a thick layer of cartilage on the upper aspect of the neck connected the head with the great trochanter. At 6 years there was yet no material change in the distribution of bone and cartilage. The neck had become slightly longer, the amount of bone relative to cartilage was greater, but a firm cartilaginous bar still ran from the great trochanter to the head, and it was to this connexion of cartilage that he wished to draw special attention. A dry specimen at the age of 13 years showed the bony formation of the neck complete, the cartilage of the great trochanter having been completely separated from the cartilage of the head itself; this completely surrounded the ossific centre, which had greatly extended in the meantime; at this age the articular cartilage was still continuous with the epiphyseal line of cartilage. At a later stage a differentiation of these occurred, and ultimately the epiphyseal line disappeared.

Summarizing these points, therefore, it might be concluded that at birth the whole of the upper extremity of the bone was cartilaginous, that growth of bone to form the neck originated from the diaphysis, and that a bar of cartilage connected the caput with the great trochanter up to at least the age of 10 years. A consideration of these anatomical points explained the variations in the inflammations in the neighbourhood of the joint—namely, an acute arthritis would destroy whatever portion of bone and cartilage arose from the epiphysis; on the other hand, an acute osteitis commencing in the neck would destroy the bone arising from the diaphysis but, in the early stages at all events, spare the cartilage and bone arising from the epiphysis. A series of slides was shown to illustrate these variations. In one case of acute arthritis occurring soon after birth the whole of the upper extremity corresponding to the cartilage was destroyed by acute arthritis, the patient being left subsequently with little more than the shaft and great trochanter, and a flail joint resulted. Another case of arthritis, occurring at the age of 10, showed destruction of that portion of bone arising from the epiphyseal cartilage but preservation of the neck of the bone, which at this stage was well formed and was of considerable importance to subsequent function, as it supplied a strut which, when returned to the acetabulum, supported the weight of the body. In a case of this sort comparison of the affected with the normal side showed this point clearly. Acute arthritis in the adult, on the other hand, was followed only by destruction of the articular cartilage; hence the difficulty in reducing such cases when a pathological dislocation occurred and was unreduced for any length of time. Several cases were shown of acute osteo-periostitis commencing in the diaphysis, as was usual. It was unusual for the inflammation to extend in a suppurative form from the diaphysis to the joint cavity and to find destruction of the epiphysis, whether cartilage or bone, resulting from the osteo-periostitis; hence there was no complete separation between the head of the bone which remained in the acetabulum and the great trochanter. This was exemplified by lantern slides of a patient, aged 5, who developed an acute osteo-periostitis in the upper end of the femur. Special attention was directed to the problem of slipped epiphysis in relation to the anatomical changes which occurred with age and growth in the upper end of the femur. It was common knowledge that these cases did not occur below the age of 10, and the most common time to find them was rather later than this. The speaker's explanation of this fact was that

a separation of the upper end of the femur could not occur until there had been a separation of the cartilage of the head from the cartilage of the great trochanter. Lantern slides were shown of a patient, aged 14, in whom an x-ray photograph soon after the onset of pain showed the upper end of the femur normal. Three months later the case was found to be a well marked example of slipped epiphysis, indicating that there was a pathological condition precedent to the actual slipping. Another case was shown of bilateral separation of the epiphysis in a boy, aged 14, weighing over 12 st., with undescended testes and many of the secondary female characteristics. Cases of this sort would seem to indicate that some congenital defect was associated with the slipping of the epiphysis as well as a possible inflammatory change at the epiphyseal line.

Mr. HARRY PLATT (Manchester) said that the clinical picture of uncomplicated hip-joint irritability—to use a broad, non-committal term—was familiar in the out-patient clinic. So many and so varied were the lesions which, in their earlier phases at least, gave rise to the hip-joint syndrome that Mr. Fairbank's plea for simplicity in grouping must receive their support. It would be most instructive to determine the relative incidence of the various forms of non-tuberculous exitis as compared with proved tuberculous exitis in the out-patient material of large clinics. There had been a tendency to envisage exitis as a whole from the standpoint of the segregated material of the tuberculous dispensary or county orthopaedic hospital. Sundt, the author of the classical monograph on pseudo-coxalgia, had pointed out some years ago that tuberculous arthritis of the hip was a much rarer disease than was generally taught. Broadly speaking, a persistent hip lesion in a child under 5 was likely to be tuberculous arthritis; between the ages of 5 and 10 pseudo-coxalgia was at least as common as tuberculous arthritis; while in the second decade tuberculous hip disease became a comparatively rare lesion, the characteristic affection at this age period being traumatic coxa vara. At all age periods a transitory arthritis, due, presumably, to trauma or infection, might be seen.

Tuberculous arthritis proper presented little difficulty in diagnosis in the florid phase, but there was often a long period of uncertainty in the extra-articular forms. In primary tuberculous osteitis of the femoral neck the radiographic change was often recognizable soon after the onset of persistent limp and muscular pain. In a certain number of such cases spontaneous healing of the focus might occur under appropriate conservative treatment and the integrity of the joint cavity remained unimpaired. Unfortunately, such results were by no means the rule. Primary acetabular disease was often characterized by an unusually prolonged latent clinical phase, during which the diagnosis was in considerable doubt. In a number of such cases Mr. Platt's attention had been drawn to the existence of an early clinical sign which gave a lead—namely, enlargement of the iliac glands. French writers had always stressed the importance of iliac adenitis in the syndrome of tuberculous hip disease, but in England this valuable clinical sign had been neglected, and the student was rarely taught to look for it when examining a suspected hip.

There was another small, but definite, group of hip lesions in children, which fell into the atypical tuberculous exitis class. In these the clinical symptoms, often intermittent, were those of a mild, persistent hip disease, in which repeated radiograms showed little or no change. The clinical course was comparable with the better known arthritis sacra of the shoulder-joint. In the end absorptive changes became evident, and the diagnosis might be settled by the appearance of a cold abscess. There was always the danger, in such cases, of countermanding prematurely the regime of immobilization. In the majority of cases the radiographic appearances of pseudo-coxalgia were sufficiently typical to be diagnostic. It was not true to say, however, that in every case of pseudo-coxalgia, when first seen, the radiographic appearances were always in advance of the clinical symptoms. There was a small group of pseudo-coxalgia cases in which the first onset of definite hip symptoms was associated with little or no radiographic abnormality; in Mr. Platt's experience such atypical cases

were seen in older children, usually after the age of 10 years. The group of subacute and chronic infective synovitis and arthritis was surrounded by much obscurity. It was desirable to decide whether chronic infective arthritis of the hip arising *de novo* in children or adolescents was a definite clinical entity. From his own observations on this point he concluded that in children chronic infective arthritis of so-called primary origin did not exist as a clinical entity, though chronic arthritic changes of a destructive or hypertrophic type arose not infrequently in hip-joints which were already defective, either by reason of a mild degree of congenital subluxation or as the result of an old acute infective arthritis in early infancy. In the adolescent there were two chronic types of hip disease which might be considered to represent a primary chronic infective arthritis—namely, arthritis deformans juvenilis and dry arthritis. The clinical picture and radiographic changes of the first named were well recognized. He was formerly under the impression that this disease arose *de novo* in a normal hip-joint, but further observations had not produced conclusive evidence in favour of this view.

Mr. Platt agreed with Mr. Fairbank that arthritis deformans juvenilis represented a secondary development in an already defective hip. In the adolescent there was a definite non-tuberculous dry arthritis of the hip-joint, which ran a mild course, with moderate destructive changes leading to subluxation and ultimately ankylosis; French writers, and in particular Nové-Josseland, had long recognized this condition as a definite entity. It might be objected that it was often impossible to produce the final pathological proof that such cases were not a mild form of tuberculous. In several hip-joints of this type, however, which the speaker had explored in order to perform arthrodesis, careful histological examination of tissues removed had failed to establish the presence of a tuberculous lesion.

Mr. ALAN H. TODD (London) stated that his proposed class of cases of "exitis of secondary onset" was suggested as a purely clinical and practical classification; he recognized that, apart from trauma, all cases were infective, and therefore secondary, but there was obviously a vast difference between an acute fulminating suppurative arthritis at one end of the scale and a chronic infective arthritis of many years' duration at the other. It was only by grouping together the various types of cases which had well defined and similar clinical characteristics that any progress would be made with the elucidation of this disease, until the time when the complete pathology became known. Juxta-epiphyseal strain must, he thought, be the first stage of cases of ordinary "slipped epiphysis"—traumatic coxa vara. In most of these cases there was an injury in the hip region, and after a short interval the epiphysis was found, by an x-ray examination, to have slipped. Now and again a case occurred in which the hip was x-rayed and no bony abnormality was discovered, and then, a few days later, when it was again x-rayed, the epiphysis was found to be slipping or actually separate. He had heard of a case in which three successive radiograms showed at first no abnormality, then the epiphysis beginning to slip, and finally the epiphysis actually displaced. It would appear that "juxta-epiphyseal strain" would be a correct description of the clinical condition present in a case of this sort, before the actual displacement of the epiphysis had begun. As regards the sesamoid bone in the reflected head of the rectus femoris demonstrated by Mr. Fairbank, Mr. Todd thought it might be a cause of hip pain in some cases; the fact that in many cases it caused no pain was no reason why pain should not be occasioned in some. An analogy was furnished by the case of the sesamoid in the tendon of the tibialis posterior, which seemed to account for pain under the inner side of the instep in some children, since treatment directed to this cause relieved their symptoms. In addition to the definite sesamoid described, Mr. Todd had come across another abnormality in the ossification in the edge of the acetabulum, generally in boys of 15 or 16 years; the edge of the acetabulum, generally at its upper part, appeared to be fragmented, and a number of separate islets of ossification were seen. In some of these cases the



boys complained of chronic pain, and nothing else could be found to account for it, though upon x-ray examination it was often found that a similar anomaly of ossification was present in the other hip as well. As a rule the symptoms disappeared after a short period of rest, and as the boy grew older the various islets coalesced and the trouble ended.

The question of testing a suspected case of coxitis for tuberculosis had acquired a special importance in view of the fact that public bodies assumed financial responsibility for the treatment of these long and expensive cases when they were definitely diagnosed as tuberculous, but, as a rule, not otherwise. Mr. Todd had often been asked whether he was prepared to certify a given case as tuberculous, since the county medical authorities would then be prepared to provide all necessary institutional treatment, and to pay for it for several years. He feared that many were often sorely tempted to certify a doubtful case as a ready means of circumventing this unfortunate distinction. Apart from this, it was extremely important to distinguish the two classes if possible, for the non-tuberculous patients required, as a rule, a very much shorter treatment than did the tuberculous ones, so that to treat all doubtful cases as if they were tuberculous caused much unnecessary trouble to the patients and an enormous and unnecessary expenditure of public money. Mr. Todd thought that an "activation test" was a useful method of distinguishing, and quite harmless. "The patient to bed, without splints or . . . all the symptoms subsided after about two or three months he allowed the patient to walk about a little. If the case was tuberculous recrudescence of symptoms soon occurred, though the speaker had never known a case in which the disease was lit up by this test to any serious extent. On the other hand, if the case was not tuberculous, it would probably be found that the symptoms had disappeared finally, and in this way some one and three-quarter years of unnecessary splintage and expense were saved. It was necessary to record the temperature of the patient—at rest and after activity—with great accuracy: the readings should always be taken at fixed times—namely, half an hour before rising and half an hour after returning to bed. Gonorrhoeal arthritis in children was quite uncommon as a sporadic disease, but in epidemic vulvo-vaginitis, as occurring in hospital wards, it was a fairly frequent complication and usually a protracted one. Dr. Knyvett Gordon had suggested that a histological examination of the blood should always be made in these doubtful cases. He had stated that in closed tuberculosis a blood count would almost always show leucopenia with relative lymphocytosis characteristic of a bacillary lesion, while in the infective group, usually due to coccal sepsis, leucocytosis with relative predominance of granular cells would be the rule. Mr. Todd had as yet had no opportunity of testing this suggestion, but said that only by making a collective investigation of every likely suggestion would increased knowledge of this difficult type of case be obtained. He hoped that the profession generally would not be misled into thinking that orthopaedic surgeons regarded the efficient early treatment of congenital dislocation as being other than of vital importance. The usual result of failure to reduce a dislocation was a life of absolute crippledness, and frequently of acute suffering. Even to-day there were far too many cases in which the parents had been told that there was nothing much the matter, and that the child would grow out of it; or else that nothing could be done until the age of 10 years or so, by which time there was very little that could be done. It should be widely announced that in a case of congenital dislocation of the hip all efforts must be made to secure complete reposition of the head of the femur at an early age. In several cases in which reduction had not been effected Mr. Todd had found that treatment for some years by means of a fully weight-relieving calliper splint had resulted in satisfactory stabilization of the femur in its new position, and he was inclined to think that in the case of many delicate children this was the best treatment to adopt, for all the standard methods of fashioning a new acetabulum, by means of turning down flaps of bone, implantation of large grafts, and the like, involved a very

considerable operative shock, and were associated with formidable operative mortality.

Mr. F. C. PYBUS (Newcastle-on-Tyne) considered it important to simplify, so far as possible, the classification of the joint diseases, especially for teaching purposes; the primary division must be into tuberculous and non-tuberculous. It was also important, as suggested by Mr. Platt, to have some idea of the relative frequency of the various lesions at different age periods so that the student or practitioner might distinguish between possibilities and probabilities. It had been suggested that in pseudo-coxalgia the radiographic findings were often in advance of the clinical picture; while this was probably the commonest state of affairs, there were patients with signs and symptoms of early hip disease in which no bone change was found. Radiographic examination at a little later stage might show definite evidence of pseudo-coxalgia. Extensive bone changes might be apparent when a patient was clinically cured. He had felt some doubt as to the existence of osteo-chondritis juvenilis as a definite entity, for while the radiographic picture suggested it—by an irregularity in the bony wall of the acetabulum—this appearance was seen in normal joints, and on the sound side in some cases of unilateral pseudo-coxalgia. The greatest difficulty in diagnosis was, perhaps, in children with symptoms and signs of early hip-joint disease but without demonstrable bone or joint lesion. A period of rest for a few weeks or months might show complete resolution. After this period an examination might be made or the patient allowed exercise as a diagnostic test. There was no need to fear damage being caused by some test exercises, for, as Dr. Rollier had shown, a small degree of movement, even in tuberculous joints, was not harmful. Some years ago, when investigating the blood supply of bones, Mr. Pybus had been struck by the vascularity of the cartilaginous ends of foetal and young bones, even before the appearance of an ossific nucleus. These vessels were well seen in Mr. Irwin's specimens, and an acute arthritis of the hip in an infant represented a very unusual condition of a blood infection of hyaline cartilage.

Mr. W. A. COCHRANE (Edinburgh), referring to Mr. Irwin's account of the development of the capital epiphysis of the femur in its relation to epiphyseal separation, said that an additional point of interest in this connexion was the variation in the manner in which the capital epiphysis was set upon the neck of the femur. The line of epiphyseal cartilage might occupy the horizontal or the perpendicular plane. Mr. Cochrane thought that in the latter case epiphyseal strain and separation were more liable to occur. There might possibly be some relation between slight and neglected epiphyseal separation and the later development of cervical coxa vara. As growth proceeded, the main incidence of the bending must come to lie further and further away from the epiphyseal line, until it might finally reach its maximum in the cervico-trochanteric region of the neck. In the post-operative treatment, by drainage, of acute infective arthritis, early active movement should be encouraged. The consideration of chronic infective arthritis in regard to the removal of foci of infection was of the first importance. It had been the speaker's experience that the cases which benefited were made temporarily worse of the arthritis. With reference to pseudo-coxalgia, he did not think that it was always the case that gross x-ray changes usually preceded the onset of the clinical features. He had recently seen a patient who showed all the clinical and x-ray features of pseudo-coxalgia. It was discovered that he had been to the hospital six months previously, complaining of pain in the hip and a limp, following a fall on the hip. At that time the skiagram of the hip showed a normal appearance. Was the connexion simply a coincidence or one of cause and effect?

Mr. FAIRBANK, in reply, said he thought Mr. Daw had made a good point as to the discrepancy between the advanced x-ray changes and the duration of the symptoms in pseudo-coxalgia, but this discrepancy was by no means always present. Time must be allowed to elapse before a definite diagnosis could be arrived at in rheumatoid cases when the hips were affected first. He regarded a typical

case of rheumatoid arthritis (Still's disease) as a clinical entity with very definite signs, and he was not inclined to allow any chemical investigations to interfere, one way or the other, with his opinion. He was not prepared to accept Mr. Irwin's explanation of the fact that displacement of the head of the femur did not occur in the younger children. He thought the buffer-like action of the thick epiphyseal cartilago might be responsible, since in the femur, as in other bones, the displacement of the epiphysis usually occurred in older patients when ossification of the epiphysis was far advanced and the epiphyseal line was thin. The case of coxa vara shown by Mr. Irwin had supported his (Mr. Fairbank's) contention, as in the early radiogram shown there undoubtedly was a slight degree of displacement of the epiphysis. It was very difficult to indicate the age at which an attempt should be made to treat a pathological dislocation by arthrodesis, but he suggested 9 as the earliest age, and preferably later. In acute arthritis secondary to osteomyelitis of the femur he thought the surgeon should err on the side of opening the joint in a doubtful case. Drainage would do no harm if no tube was inserted inside the joint, and early drainage before there was any erosion would give a better result than waiting till definite changes had occurred. It had been stated that suppurative arthritis was rare in osteomyelitis. He agreed that this was so in the case of most bones and joints, but not at the upper end of the femur and the hip-joint. As to the sesamoid bone in the reflected head of the rectus, he thought there were two distinct situations in which a separate piece of bone was seen in the region of the upper acetabular lip. One, which he suggested might be the sesamoid, was near, but just inside, the upper or outer acetabular margin, while the other was outside that margin, apparently in the capsule. A woman, aged 42, showed bilateral congenital deformity of the acetabula with subluxated femora; she was suffering severely from arthritis of comparatively

recent origin. The films showed a large lump of bone on each side, apparently in the capsulo above the femur. Mr. Platt's method of teaching the probable cause of arthritis at various ages would be most helpful to the student. The acetabular disease to which he (the speaker) was referring was that type in which a tuberculous deposit was present in the bone beneath the acetabular cartilago, and so was extra-articular until it perforated into the joint; it was not that form in which superficial erosion of the joint surfaces appeared to be affecting the acetabulum rather than the femur. In the slide shown by Mr. Platt he ventured to suggest, although he had not, of course, had an opportunity to see the films thoroughly, that the femur showed upwards and outwards, that the case was one of primary synovial disease, with secondary erosion of the acetabulum, and was not essentially primary acetabular disease. These often showed surprisingly mild symptoms. He was glad Mr. Platt agreed with his suggestions as to arthritis deformans being secondary as a rule. He did not think the blood examination, as suggested by Mr. Todd, would be of any more use in the diagnosis of tuberculous coxitis than the Pirquet and other tests. He was afraid that they would have to treat these cases as tuberculous till the progress of time made the nature of the case clear. He had not found alteration of the plane of the epiphyseal line a cause of adolescent coxa vara. In this type his experience was that the epiphyseal line was in the normal plane.

Mr. FAIRBANK showed lantern slides of a case of acute streptococcal arthritis of the hip in a child aged 3, in which the head of the femur disappeared as a result of the suppuration, and was seen to be ossifying again seventeen months later. The shadow of the femoral head was even more obvious two and a half years after the onset of the arthritis.

## OSTEO-ARTHRITIS OF THE HIP-JOINT TREATED BY VACCINES.

(With Special Plate.)

BY

H. WARREN CROWE, D.M., B.Ch., Oxon.,  
HARROGATE.

There seem to be no records of any serious attempts to treat osteo-arthritis of the hip-joint by means of vaccines, and in fact medical opinion regards the disease as hopelessly incurable and progressive. It is certainly true that no medical treatment touches it—hydrology and massage are equally useless. There is often a great deal of pain, which most physicians would say was due to pressure on, or involvement of, nerve endings by bony changes in the joint.

Until a few years ago I had found myself in complete accord with these widely held views. Experience has led me to change my opinions. Osteo-arthritis of the hip-joint is not of necessity either incurable or progressive. The pain is not directly due to the bony change. The cases which follow are brought forward to prove these two contentions. Definite bony change was demonstrated by radiograms in every patient.

*Case 1.*—A labourer, aged 54, suffered for three years with pain in the left hip-joint; he was unable to sleep owing to the severity of the symptoms. Treatment by vaccines was started in November, 1925, and was continued steadily until the end of June, 1926. Although carrying on his daily work, he lost his pain and therewith his insomnia. Apart from a slight limp he now has no symptoms of any kind whatever. Of the first two radiographs, one was taken before and the other after treatment. There is hardly any difference; perhaps the bony changes are somewhat more sharply defined in the later photograph.

*Case 2.*—A woman, aged 62, had originally a fall on the right hip-joint, which was followed by intermittent pain; this had become much worse and had been very severe during the last four years. All the teeth had been removed at the age of 27. The patient was anaemic. Movement of the joint was fair, although abduction was limited and painful. This is a curious and atypical case (see Fig. 3). The disease has destroyed a considerable area of the head of the femur; operation would probably have revealed a cavity filled with granulation tissue.

Treatment was carried on for some twelve months, when all symptoms had completely disappeared. There was no limitation of movement, no pain, no limp, and function was completely restored. Fig. 4 shows, however, that the condition of the hip-joint was but little altered.

*Case 3.*—A woman, aged 62, had phlebitis eight years ago, followed by a marked limp and extreme mental depression. The right hip was adducted and slightly flexed. There was no movement of abduction and only a small degree of flexion and extension; the apparent shortening was fully one inch. Treatment was started in August, 1925, and in December the patient wrote that the depression had all gone, there was much less pain, and she was able to walk better and farther, with no pain afterwards.

*Case 4.*—A woman, aged 57, began to notice three years ago that the hip-joint was "drawing in." The pain varied in intensity, massage made it worse, and walking was intensely painful, although the joint was movable to a very fair extent. There was a most distressing limp. Treatment began in November, 1921, and was carried on intermittently for twelve months. The symptoms entirely cleared up except for a slight limp, and the patient has remained well.

*Case 5.*—A man, aged 60, had, ten years previously, felt some pain in his right hip-joint, and also in his right knee-joint. The hip is at present in a position of slight flexion and adduction, with good compensation and one inch shortening. Treatment was begun in August, 1922. In April, 1923, the apparent condition of the joint was not changed, but compensation had still further improved. He was able to lace his shoes, work in his garden, and walk several miles.

*Case 6.*—A man, aged 48, began to get stabs of pain in the right groin two years ago; this gradually extended down the leg, and, when seen, he complained of sudden sharp "turns" which nearly threw him over. He had always been an athlete. Treatment was begun in June, 1924. In August, 1925, the report was: "Played four sets of tennis and one round of golf with no ill effects."

*Case 7.*—A doctor, aged 55, had had some pain and stiffness from time to time in the left hip-joint; abduction and flexion were painful. Treatment was started in April, 1925. In October he motored twenty-five miles, played seven sets of tennis, motored back, and never felt the leg at all.

*Case 8.*—A married woman, aged 55, had felt increasing pain in her right hip-joint for the last four years. Movement was found to be very limited; slight creaking was present in the knee-joints. After treatment from August to December, 1924, the symptoms cleared up.

*Case 9.*—A woman, aged 36. This was an extremely severe case of osteo-arthritis of both hips, with eight years' history. She became much worse after a recent pregnancy. Neither leg could be adducted, with the result that in attempting to walk the feet

were always widely straddled. Pain was severe, especially at night. Treatment was begun in November, 1924, and nine months later, for the first time in two years, the right hip-joint had flexed. Now there is no pain, no discomfort, and more movement.

*Case 10.*—A very heavy man, aged 52, complained of pain in the left knee-joint, and later in the hip-joint. He limped about painfully. Treatment was begun in June, 1925; by September he was better, and in November both pain and limp had disappeared.

It is clear from these cases that after treatment the disease had not progressed, and that the symptoms had cleared up. The claim is then made good, that osteoarthritis of the hip-joint is curable, and that in successful cases patients can resume a full and active existence circumscribed only by the amount of bony changes. These are to be regarded as the results of the disease, and not as the disease itself. That the bony changes are not the cause of the pain is now obvious, for this has disappeared, although the radiographs show the condition of the joint to be unaltered.

The above cases are given as examples of very definite improvement or complete cure in osteoarthritis mainly confined to the hip-joint. Of all cases treated rather more than 50 per cent. gave similar results. Whether or no the cure is permanent time alone will show, but from experience in other forms of osteoarthritis I am confident that any relapse would quickly yield to a further course of treatment. Beyond saying that the chief vaccine used was made from streptococci obtained from foci of infection, no further details are here given, as I am shortly publishing a book on the subject, in which the methods used in this and other forms of arthritis and rheumatism are fully described.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### PULMONARY EMBOLISM FOLLOWING CHILD BIRTH.

The following report of a case which I had under my care recently may be of general interest.

A woman, aged 39, gave birth to her third child; there had been very little warning of the onset of labour, and I was not present at the birth. The nurse said that she had not interfered in any way. As the placenta was a little slow in coming away I expressed it by Credé's method without vaginal manipulation. Five days later the patient complained of pain in the left thigh, and I found that many of the superficial veins were thrombosed. She then volunteered the information that she had suffered from a similar condition after the birth of her first child, and was at that time confined to bed for several months. I kept the patient in bed for a month, at the end of which time the pain had completely gone, there was no evidence of thrombosis, and she could move her leg quite freely. The temperature had been slightly raised for the first few days after the thrombosis was noticed. As a precautionary measure I kept her in bed for another week; she made rapid progress, and was soon able to get about. A fortnight after I had stopped attending, the patient developed a cough; I examined her chest carefully, but could find no evidence of anything pathological. There was no sign of thrombosis, and no complaint of pain in the legs. The next day she complained of pain on the left side of the chest under the breast, and I ordered her to bed. There was a little sputum with the cough. The symptoms suggested pleurisy; but I could find no evidence of its presence. Next day the pain was present on both sides of the chest; it was so severe that every movement caused agony. The temperature was 100° F., the pulse 85, and respirations 24; the breathing was irregular and gasping. It was difficult now to make a thorough examination, and all I could elicit was diminution in the expansion of the left side of the chest. The patient was obviously in a critical condition, and I could not determine the underlying cause. The nurse reported a slight degree of hæmoptysis, which gradually became more severe. I had the sputum examined for tubercle bacilli, with a negative result. The next development was the onset of pain in the right leg, and I found that the superficial veins were thrombosed. It came to me in a flash then that the whole trouble had arisen from the impaction in the lung of an embolus from a vein in the leg. The subsequent course of the case confirmed me in this diagnosis, and the patient is now making an excellent recovery.

Reviewing this case of a condition by no means uncommon I have come to the conclusion that I erred unwittingly in allowing the patient to get up too soon. Although all signs of thrombosis had gone I have no doubt now that the process had not completely stopped, even though there was no clinical evidence of its presence.

Cambridge.

THOS. McCULLOCH, M.B., Ch.B. Glas.

**PULMONARY** embolism is such a very rare complication of childbirth that it seems scarcely ever thought of. Though Galabin gives a considerable space to it the last edition of Comyns Berkeley's *Midwifery* makes no mention of it at all. Perhaps, therefore, the following brief notes of a recent case in my practice may prove of interest.

A perfectly healthy, strong girl, aged 18, was delivered of a full-time living female child on September 6th, after an easy labour. There had been no intervention of any kind, and the baby and placenta were born before my arrival. The perineum was not torn, there was no more than the usual loss of blood, and the puerperium passed without incident. She got up, feeling perfectly well, on September 16th. The next day, about 7 p.m., she got up from her chair, picked up the baby, suddenly let it fall, fell herself to the floor, and died almost immediately.

No necropsy was performed, but I think the diagnosis of pulmonary embolism can hardly be doubted. Of all the predisposing causes given in Galabin, none were present in this case, and there was no reason to anticipate such a disaster. It would be of interest to know of any similar cases.

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Harston, Cambridge.

#### PYLORIC STENOSIS IN BROTHERS.

In August, 1923, a male infant, aged 5 weeks, weighing 7 lb., was brought to the Royal Hospital, Richmond, suffering from persistent vomiting and wasting. After keeping the child under observation for two or three days I diagnosed pyloric stenosis, and operated on August 23rd. The pylorus was constricted, rather hard, and fibrotic. The pyloric canal was a quarter of an inch in diameter. I incised the pylorus longitudinally and sewed it vertically, but unfortunately the child was so wasted that it died thirty-six hours after operation. The mother was delivered of another son in July, 1924; the second child was brought to the hospital when three weeks old, quite obviously suffering from the same condition. As there was no doubt of the diagnosis, I operated on August 5th, when the child was twenty-four days old and weighed 7½ lb.

#### Operation.

On opening the abdomen, by a mid-line incision, the stomach was so enormously dilated that it literally blew out of the abdomen like a toy balloon. So thin appeared the structure of the stomach coats that the organ was almost transparent. The pylorus itself was spindle-shaped, about one and a half inches long and three-quarters to one inch wide; it was as hard as the tendo Achillis. The pyloric aperture would admit nothing more than a large probe. It seemed useless to perform Rammstedt's operation or a pyloroplasty, as I did not see how this could cure or even relieve the obstruction; I therefore decided to perform posterior gastro-jejunostomy as the only effective remedy, although a somewhat drastic one in so young a child. The operation took thirty-five minutes. Tincture of belladonna (1 minim) was given every four hours for a few days. The child vomited occasionally, but eventually made a good recovery. The weight increased by 2 or 3 ounces weekly during the three months it was in hospital. Subsequently the child has been admitted for slight vomiting attacks, which seemed to be due to some error in feeding. At the last visit to the hospital the stomach was x-rayed, and was seen on the screen to be acting perfectly. The patient is now 2 years old, well developed, and in every way a fine child.

JOHN W. HECKES, B.S., M.B. Lond.  
Surgeon to In-Patients, Royal Hospital, Richmond

#### HERPES AND VARICELLA.

The following case is of interest in connexion with the alleged relation between herpes and varicella.

On March 21st my wife developed a very severe attack of unilateral herpes, affecting the neck and shoulder, which kept her in bed for a month. On April 5th my son, aged 9 years, was taken ill with chicken-pox, which ran a typical course. No outside source of infection could be traced.

E. W. MATTHEWS, M.B., D.P.H.

Kingston-upon-Thames.

## STRANGULATED HERNIA IN AN INFANT.

THE memorandum on strangulated hernia in infancy by Dr. Buckley in the JOURNAL of September 18th (p. 525) recalls a similar case I had recently.

A male child (full time) was born with a right inguinal hernia which was easily reduced. The mother consulted me when the child was 19 days old because she could not get the swelling back as usual, and the child was continually crying. I failed to reduce the hernia with gentle manipulation, posture, etc. Later in the day I tried again, unsuccessfully, with light chloroform anaesthesia. By this time the swelling had become tense and tender, the pulse was rapid, and the temperature  $99^{\circ}$ , so I decided to operate in hospital. Under chloroform I opened up the sac, which contained dark fluid and about four inches of small intestine, barely viable. I divided the stricture, replaced the loop of bowel, and did a radical cure as quickly as possible. The skin wound was closed with Michel's clips, and no dressing was applied except daily dusting with pulv. acid. bor.; healed by first intention. The child was kept on the breast and made an uneventful recovery.

J. O'C. FITZSIMONS, L.R.C.P. and S.I.

Blaina, Monmouthshire.

## Reports of Societies.

## ANATOMICAL FACTORS IN URINARY INFECTIONS.

MR. W. GIRLING BALL read his presidential address at the meeting of the Section of Urology of the Royal Society of Medicine, at the society's house, on October 28th. The subject of his address was "Some anatomical factors in urinary infections."

In opening the subject, Mr. Girling Ball referred to the presumption that in all cases of urinary infection the presence of some pre-existing abnormality should be considered. Admitting that these were not always demonstrable, certain cases in which a long-standing diagnosis of pyelitis had been made were referred to and the existence of such factors was demonstrated. Recent experiments seemed to show that bacteria did not pass through a normal kidney and cause a persistent infection unless some causative factor existed. The speaker considered that it was not clear that irregularities of the action of the bowel were always present in cases of urinary infection, and pointed out how difficult it was to define an actual lesion of the intestine in these cases. He suggested that some obstructive lesion of the urinary tract, or some contact lesion between it and the intestinal tract, was more commonly present than might be anticipated. To support this, records were given of obstructive lesions of the urinary tract to show how commonly these were associated with urinary infections. It was also shown that the bacterial flora of the intestine were the most common micro-organisms of infection. A review was then made of intestinal diseases which were associated with urinary infections, including those associated with appendicitis, diverticulitis, intestinal fistulae, malignant growths of the intestine, and salpingitis, and the following conclusions were arrived at—namely: that adhesion and anatomical proximity of inflammatory lesions of the intestinal tract and pelvic viscera, although not common, occurred more frequently than was generally recognized; that although these lesions did occur, the symptoms of urinary diseases with the absence of urinary lesions occurred much more frequently. Many urinary infections of the chronic type might be dependent upon intestinal lesions which were adherent to some part of the urinary tract for considerable periods before the actual condition of affairs was shown by an acute flare-up of such a lesion; and it might be that more chronic infections of the urinary tract were due to this cause than was generally recognized. Although the haematogenous infection of the urinary tract was the course at present most generally recognized, it must not be assumed that this was the only method of infection; neither should it be considered that, in the event of contact between the two tracts, the direct infection was dependent upon this contact, for in some cases the adhesions between the two were responsible for obstruction to the urinary passages, which rendered the renal pelvis a suitable site for a haematogenous infection.

## COMPARATIVE MEDICINE.

THE first meeting of the session of the Comparative Medicine Section of the Royal Society of Medicine was held on October 27th, with the President, Sir D'Arcy POWER, in the chair. Before reading his presidential address, the President paid a warm tribute to the late Sir William Leishman, the president-elect of the Section, and a resolution of sympathy with Lady Leishman was passed in silence.

Sir D'Arcy Power then read his presidential address. Mindful of his own limitations, he said, and acting on the advice of Apelles the Athenian, that a shoemaker ought not to criticize outside his trade, he had decided to speak about those who might have qualified for election to honorary membership of the Section of Comparative Medicine, and so give some idea of the origin of the Section. Like a river, medicine had a common source in natural history; it divided into two streams of human and veterinary medicine—both empirical—and reunited to form comparative medicine, which it was the business of the Section to maintain and to place on a scientific footing. The first to be considered as president, that was if he was not elected patron, would be Hippocrates, whose keen intellect recognized that the diseases of man and animals were very closely allied. Aristotle, the "Master of all who know," would at once have joined and have taught us much that was long forgotten and was only now being re-discovered. The first candidate for honorary membership, however, would undoubtedly be Mago, the Carthaginian, the "Father of agriculture," whose twenty-eight volumes on the subject had been translated into Latin and Greek. Xenophon, who had a very real and a very modern interest in horses, would have been a member, and so also would have been Vegetius, who was far in advance of his time, and who, ridiculing the idea of disease being evidence of divine wrath, advised the deep burying of dead animals. Pliny, who took all knowledge for his province, would also have been a member, and with him would have joined Celsus, a writer about whom it was still disputed whether he was practising physician, veterinary surgeon, or merely a literary Roman gentleman with scientific aspirations.

Leaving the ancients, Conrad Gesner, whose *Historiae Animalium* dealt at large with the diseases and habits of animals, would surely have been admitted. The next on the list would have been Gervase Markham, who, however, might have been blackballed, for Sir Frederic Smith said of him, that he knew nothing of his subject, and was not only a mean plagiarist, but a violently untruthful person! Robert Lovell would certainly have been admitted because of his *Complete History of Animals and Minerals*, even though his book was a mere restatement of the learning of classical times and might well have been written in the Bodleian. John Hunter would surely have been elected first president had his times been ripe for inaugurating the Section, and he would as certainly have enlisted the assistance of Astley Cooper, the elder Cline, William Simmons, Edward Jenner, and Munro secundus, while Sainbel, the first principal of the veterinary college in London, would at least have attended the meetings. In our own times, Parker and his great expositor, Thomas Huxley, would have been members.

It thus came about that, by a gradual process of development, a society for the study of comparative pathology became possible. The Section owed much to Clifford Allbutt and Sims Woodhead, who wished to start such a society at Cambridge many years ago. However, no active spirit had come forward then, and it was not until the veterinary side of the profession became active that the Section became possible—possible also in a wider sense than had been originally planned, for it became comparative medicine instead of comparative pathology. The experiment was proving a great success. The work embraced a vast field, extending on the one side to the most difficult problems of human medicine, and on the other to the interrelation of human and veterinary medicine, showing thereby that the processes of disease, whether in man or in animals, were identical. Its world, too, touched the confines

of tropical medicine—the most virile, the most progressive, and the most valuable of all branches of medicine to a country with a great colonial empire. For this reason a discussion had been arranged between that Section and the Tropical Diseases Section on trypanosomiasis, a subject which the late Sir William Leishman had made peculiarly his own.

Sir ANASTASIOS LANE joined with the president in paying tribute to Sir William Leishman, and looked to a great future for the Section of Comparative Medicine.

### TUBERCULOSIS IN YOUNG GIRLS.

A MEETING of the Manchester Medico-Chirurgical and Obstetric Society was held on October 13th, when a short address was read from the President (Sir THOMAS BANLOW) and Dr. N. C. HANING read a paper on the treatment of tuberculosis in young girls.

Dr. Haring said that he had little belief in any of the new and much advertised cures for consumption, but he was hopeful that something would result from the recent work of Professor Calmette of Paris, whose work was known all over the world, and whose laboratory was above reproach. As a result of many years of patient investigation in this country it had been stated that there were very few children who did not have some infection with the tubercle bacillus. It was possible that if the risk was not too great it might be beneficial for all children to be infected with tuberculosis in a mild form so that they might be spared the horrors of consumption in its ordinary and severe forms. Neither medicine nor surgery had done very much to cure consumption. When tuberculosis was cured it was more often cured by natural processes than by the treatment of the medical man who attended the case. It was true that abdominal tuberculosis was sometimes much improved by a simple laparotomy; it was also true that a broken down tuberculous gland in the neck required an operation, but on the whole the efforts of the surgeon were uncertain in their results. Fresh air, good food, cod-liver oil and malt, iron, and other tonics were the stand-by. The treatment by artificial pneumothorax was of undoubted value when only one lung was affected. The value of x rays in the diagnosis of tuberculous disease of the lungs was uncertain. If the result of the photograph was positive it was most useful, but if the plate showed no disease it was not certain that all was well. X rays were very useful in diagnosing enlargement of the mediastinal glands, and sometimes would show up abdominal tuberculosis, but not always. He urged practitioners to investigate every case of anaemia very closely, for he was convinced that the old type of chlorosis was rarely seen in these days, while the anaemia of consumption was becoming more and more common.

Dr. G. CHESNEY asked if it was worth while boiling the milk for young children if it was better for them to begin life with a mild attack of tuberculous infection.

Dr. LOUISE ARONOVITZ asked if it was safe to diagnose tubercle by a deficiency in the breath sounds combined with an x-ray photograph showing a slight abnormality in shaded areas.

Dr. J. C. ATHERLEY asked how it was that some children had developed tuberculosis under apparently the most perfect conditions possible and without any hereditary taint or tendency.

Dr. HANING, in reply, said that all milk should be boiled, since no one could guarantee a mild infection. Diagnosis of tubercle based on deficient entry of air into the chest was unsafe. How exactly tuberculosis was caught was a matter for discussion, but the bacilli were ubiquitous, and infection was therefore possible everywhere, and under any conditions.

A prolonged discussion followed on the various methods of treatment which had been recommended.

### WEST KENT MEDICO-CHIRURGICAL SOCIETY.

THE seventy-first annual meeting of the West Kent Medico-Chirurgical Society was held at the Miller General Hospital, Greenwich, on October 8th, when Dr. H. Nockolds

was elected president and Dr. C. J. B. Buchan honorary secretary. In the course of the clinical part of the meeting Mr. C. A. JOLL showed cases illustrating abdominal surgery in women aged 58 and over. His cases included perforated gastric ulcer in a bilocular stomach, of which seven-eighths was removed by operation; gastric ulcer associated with chronic duodenal ulcer and gall stones; columnar-celled carcinoma of the ascending colon; caecostomy; cholecystectomy; and removal of the rectum by the abdomino-perineal route in a woman aged 62, who had mitral stenosis. Mr. P. B. ROHN showed a girl, aged 9, with a crushed sixth cervical vertebra due to a cycle accident; torticollis had been produced at first, but was cured by massage. He showed also a girl with overgrowth of the radius in both forearms, involving considerable deformity but no loss of power, and a man with muscular wasting of the right hand, due to pressure on the brachial plexus from his having been accustomed to carry heavy planks of wood on his shoulders. Dr. H. NOCKOLDS showed a boy with pseudo-hypertrophic muscular atrophy, and a woman, aged 59, who had not been abroad, but who had had elephantiasis of the right leg since the age of 19.

### JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

#### High Blood Pressure.

ON October 19th Sir HUMPHRY ROLLESTON, Bt., M.D., read a paper on high blood pressure from the clinical aspect. The question particularly raised was whether or not a rise of blood pressure *per se*, apart from causal toxic factors or the resulting arterio-sclerosis, gives rise to symptoms of ill health. It was not an uncommon experience to detect blood pressure readings higher than the average in individuals who are entirely free from symptoms, and harm might result from too energetic measures adopted for lowering these pressures. Certain hypersensitive subjects, however, might conceivably manifest symptoms as the result of the heightened blood pressure alone. Libman had described a simple means of estimating the individual's response to afferent stimuli, and attributed angina sine dolore to the patient being hyposensitive. But to apply this explanation to high blood pressure would necessitate the assumption that in the early stages persons with high blood pressure were hyposensitive and became hypersensitive; possibly as high blood pressure was often due to protein derivatives, the hypertensive individual's nervous system might at some stage become sensitized by the protein bodies and so allow symptoms due solely to the high blood pressure to appear. On the other hand, some—for example, F. M. Allen—considered that high blood pressure was always due to underlying structural changes either of the kidney or of an arterio-sclerotic nature. Bordley and Baker showed by *post-mortem* findings that arteriolar sclerosis in the medulla oblongata was definitely associated with high blood pressure. But it was difficult to believe that such a change could underlie those cases in which a high pressure persists for years with no advance and without interference with health. The possibility of arterial spasm was also referred to in this connexion. Much interesting work done by Draper on the constitutional make-up of subjects of high blood pressure was mentioned. Finally the lecturer considered seriatim the various symptoms commonly associated with high pressure cases in their early stages and questioned whether or not these occurred in the absence of definite chemical or structural changes. The tendency to haemorrhage (epistaxis, intestinal, retinal, cerebral, etc.) was probably dependent, not on the pressure alone, but on vascular degeneration associated with it. Each common symptom was considered separately, and it was shown that probably each could be explained by the presence of some factor other than the rise of pressure.

In the paper and the discussion which followed it the importance of the distinction between the rise of pressure itself and the associated degenerative changes was emphasized.



## Reviews.

### A TREATISE ON SOCIAL HYGIENE.

THE first volume of a German handbook of social hygiene and the care of health,<sup>1</sup> edited by GOTTSTEIN, SCHLOSSMANN, and TELEKY, suggests a subject for discussion—namely, whether there really is any advantage in such joint undertakings over independent ventures; any advantage, we mean, from the point of view of the student. Such textbooks as Osler's *Medicine*, the material of which has been moulded by a single intellect, are wholes; they bear the stamp of one personality. This is less true, even of so carefully edited a work as Allbutt and Rolleston's *System of Medicine*, and not true at all of the new French treatise on medicine, the forty fascicules of which will really constitute a medical encyclopaedia without alphabetical arrangement. The scale upon which the book before us is planned—the first volume contains 511 large pages, and five more volumes are announced—ranges it with the encyclopaedic class. Ventures of this kind are more often undertaken in France and Germany than in England. Were they chiefly of German origin we might perhaps explain it by supposing that the more docile German student is glad to be saved the trouble of choosing an "authority" for himself. But actually French works on this scale are almost as numerous. Perhaps the only strong argument in favour of the method is that an expert who has it in him to write a good treatise may be more readily induced to take part in a co-operative work than to publish independently. If we compare French and German treatises it is usually said, and truly said, that the former are better written but the latter take more heed of work done outside the writer's own country. The explanation of the undoubted superiority of French books over German treatises in the art of writing is not, we think, any inherent superiority of French over German as an instrument of precision—Heine's prose illustrates how beautifully German can be written—but the fact, noted in Mr. Floxner's recent study of medical education in Europe, that Frenchmen are made to take pains to write French, while Germans have very little more respect for their mother tongue than most of us have for ours.

The first article in this *Handbuch* is by Hueppe; it affords a good illustration of what has been said. Many sentences must be read more than once by a foreigner moderately well acquainted with German before he grasps the meaning, and with one sentence we have succeeded in puzzling a German. Some of the facts—the article is an account of the history of social hygiene—will be new to most readers, but the whole produces no clear impression. The second article, on statistical methods, by Weinberg, is much more satisfactory; it is a clearly written account covering a good deal of ground and using no more mathematics than is indispensable. It would not have been human if the author had not given rather more space to his own work than the impartial critic might think it needed. But as this work, particularly with reference to the fallacies of selection and how to avoid them, is really important, it is well that it should be clearly described. Weinberg was one of the first statisticians to maintain that Karl Pearson's demonstration of a greater liability of first-born children to various abnormalities was fallacious, a position subsequently taken up by Yule and Greenwood in this country. Pearson replied to their arguments in 1914, and, as generally happens, all the parties to the discussion remain of their original opinions. Weinberg puts his side of the case quite clearly. The next article, by Prinzing, is a short but quite satisfactory account of the principal data of medical statistics. The essay which follows is by Valentin Haecker on heredity. It is fully documented and quite easy reading, for the author eschews the technicalities of modern Mendelism, which are almost as provocative of headaches as even skew variation and multiple regression.

The longest section is devoted to tuberculosis, and the

conclusion to which it leads the reviewer is that, in spite of all that has been done and written in the last twenty-five years, we really know practically nothing of importance about the constitutional factors, if any, of tuberculosis, so that both those who proclaim that there is no problem of inheritance in tuberculosis and those who assert that an inheritance of soil is almost everything and variations of exposure to infection of trifling importance are merely darkening counsel. Indeed, the whole modern history of opinion upon the general etiology of tuberculosis is somewhat humiliating, for, without any real additions to our stock of positive knowledge, there have been violent changes of fashion in opinion. Clinicians, biometricians, biologists, and economists have never hesitated to form (and publish) conclusions which not one of them had really sufficient knowledge to enable him to test.

The next chapter, by the late Professor Martin, on school anthropometry, is chiefly descriptive of technique and seems to be exhaustive. Martin Vogel deals with popular education in hygiene and includes a useful summary of methods employed in other countries; he is very appreciative of Sir George Newman's memorandum on public education in health. This article is long, but it covers a wide field. Grotjahn's account of the education of the medical student shows that, at least in some German universities, hygiene as a branch of the ordinary curriculum is more seriously considered than in this country. Both in Munich and Berlin it would appear that there is a much better provision for the instruction of such students and graduates as wish to learn than we shall have in London until the new School of Hygiene opens its doors. The programme of the department of social hygiene at Berlin originally formed in the Hygienic Institute of the university by Flügger is very attractive. The seminar system is undoubtedly far more satisfactory for real students than being lectured at even by eloquent lecturers.

The remaining sections, by Dietrich and Krautwig, on organization of health measures, are rather more interesting to German physicians and hygienists than to foreigners, but will be of value to those of us who wish for detailed information respecting present German law and practice.

On the whole we should say that this is a sound treatise. It has no literary charm, but, with one exception, the articles are clearly written, and all are, we think, technically adequate. For some time to come it will be a useful work of reference.

### PSYCHOTHERAPY.

*Psychotherapy*,<sup>2</sup> by Dr. EDWARD WYLLYS TAYLOR, James Jackson Putnam Professor of Neurology in Harvard University, is one of the volumes of the "Harvard Health Talks." The book is the substance of a lecture given at the Harvard Club, and in a compact form the writer has managed to convey an eminently readable account of the treatment of disease by mental means from the beginnings of communal life to the present day.

At the conclusion of his lecture Dr. Taylor expresses the view that the future of psychotherapy, halting as its progress has been, is now assured. He points out, however, that if this mode of treatment is to advance along rational lines it must remain essentially in the hands of the medical profession, from which, so he believes, it already shows signs of passing. It would be regrettable if this were to happen, since in view of the wide incidence of mental disorder in the community it is essential that the medical practitioner should be in a position to apply psychotherapeutic methods where they are indicated, and to this end, as Dr. Taylor observes, subjects dealing with the mind should be given equal importance with those dealing with the body in the pre-medical as well as in the medical course. Unfortunately, as far as this country is concerned, insufficient attention is still given to mental disorders and their treatment in the medical curriculum, though the creation of out-patient clinics for psychiatric cases in the majority of teaching hospitals has done something to remedy this deficiency.

<sup>1</sup> *Handbuch der Sozialen Hygiene und Gesundheitsfürsorge*. Herausgegeben von A. Gottstein, A. Schlossmann, und L. Teleky. Erster Band: Gr. u. Kleinere Methoden. Berlin: Julius Springer, 1925. (Sup. roy. 8vo, Pp. xi + 511. G.M. 39; bound, G.M. 35.)

<sup>2</sup> *Psychotherapy: Mental Elements in the Treatment of Disease*. By Edward Wyllys Taylor. Harvard Health Talks, 14. Cambridge: Harvard University Press; London: H. Milford, Oxford University Press, 1926. (Fcap. 8vo, pp. 53. 4s. 6d. net.)

## RECENT PHYSIOLOGY.

It is not surprising that Professor LOVATT EVANS's *Recent Advances in Physiology*,<sup>3</sup> which was reviewed in these columns on January 9th last (p. 57), has so rapidly passed into a second edition. The preface to the first edition is dated August, 1925, but since then more recent advances have necessitated additions to what the author modestly but appropriately calls "an elementary textbook of advanced physiology." Thus the work of C. R. Harrington on thyroxin, and of Best, Dole, Hoet, and Marks on insulin, have rendered obsolete what was so recently believed. J. J. Abel's isolation of insulin in a crystalline form is mentioned; and it is considered that if it is a peptide, two of the most likely component amino-acids are histidine and cysteine. Other additions and alterations have been made—for example, attention is directed to Anrep and Segall's experimental work, which modifies Minoy's law so that now in addition to a reflex from the heart through the vagi the influence of raised blood pressure on the cardio-inhibitory centre must be taken into account in the production of the slowing of the pulse rate as the result of a rise in blood pressure. The section on muscular contraction has been expanded, and in the interesting account of the capillary circulation Florey and Carleton's contention that the motor activities are due to the endothelial elements of the capillaries, and not to Rouget's cells, is mentioned.

That a work of this kind is essential to a scientific physician who wishes to keep in touch with the ever-advancing and shifting knowledge of the fundamental science of physiology cannot be questioned.

## MAKING TERMS WITH TUBERCLE.

A popular book such as *Diseases of Animals in Relation to Man*,<sup>4</sup> just added to the series of "Modern Health Books" edited by Professor D. FRASER HARRIS, was wanted, and he is to be congratulated on the writer he selected. It would have been easy to turn out a couple of hundred small pages of rhetoric and error, mingled with abuse of persons concerned with the preservation of the public health. Instead the choice fell on Dr. T. W. M. CAMERON of the London School of Hygiene and Tropical Medicine, who knows the subject from A to Z, understands the relative importance of things, and has the command of a simple clear style. He begins with two chapters on tuberculosis, and a better presentation of the present position of the subject is not anywhere to be found. Dr. Cameron is a veterinary practitioner, but thoroughly understands the problem on the human side, and does not hesitate frankly to explain how much the best pathological and epidemiological opinion has changed during the last few years. After describing bovine tuberculosis and its relation to human, he has the courage to write, "The more widely spread tuberculosis is in a community, the smaller is the case mortality," and to quote with approval the dictum of an Italian worker, "Where there is much tuberculosis in animals, there is little in men." The argument is that, if we were successful in completely eradicating tuberculosis from man and animal in Britain we should be a highly susceptible race, and in order that the future tubercle-free generation should be safe it would be necessary to achieve this "throughout the whole world, or else prevent communication with all other lands where tuberculosis exists." Dr. Cameron's conclusion is that our efforts towards eradicating the disease as a cause of death must be directed to "our being thoroughly, and completely, and benignly tubercularized." Everyone will not be prepared to accept this view, but the author at any rate leaves us in no doubt about his opinion, to which much weight must be attached.

The chapter on rabies is excellent, well informed, and temperate; the same is true of the next, on small-pox and cow-pox. Then come short accounts of various diseases common to, or supposed, sometimes erroneously, to be common to, man and animals, a chapter on milk which is

a model of condensation and good sense, and another on meat poisoning, short but good.

Dr. Cameron has produced an excellent book, one which members of public health authorities ought all to study, and one which should be in the offices of newspapers that do not wish to be swept away by every wind of sensationalism.

THE EARLY HISTORY AND ANTIQUITIES OF  
MACEDONIA, THRACE, AND ILLYRIA.

Those who served during the war with the Salonika Army, the Army of the Black Sea, and on the Gallipoli Peninsula (the Thracian Chersonese), and who take an interest in the antiquities and ancient history of the areas over which military operations were conducted, will read with pleasure a book that has been published recently on Macedonia, Thrace, and Illyria in their relations to Greece from the earliest times down to the time of Philip of Macedon, son of Amyntas III and father of Alexander the Great.<sup>5</sup> The author, STANLEY CASSON, is university lecturer in classical archaeology at Oxford, and was sometime assistant director of the British School at Athens. It will be remembered that representatives of the school were attached to the Salonika Army during the war, and that antiquities unearthed during digging of trenches and other military constructions were carefully collected by them. Mr. Casson had visited Salonika in 1913 and 1914, and during the war, between March, 1916, and December, 1918, saw most of Macedonia from the Vardar to the Struma. Subsequently, down to April, 1919, he was in Constantinople, and became acquainted with the country round the Bosphorus, and in later years journeyed throughout Macedonia and Thrace, the Gallipoli Peninsula, Dalmatia, and Montenegro.

In the first part of his volume he gives an account of the geography of Macedonia and Thrace, their natural resources, especially the mining industries, known to the ancients, and the grouping of their cities. There are interesting descriptions and illustrations of those well known features in the country round Salonika, the Macedonian tumuli, and of the antiquities found in excavations and caves in the Balkans. Several of the "finds" were collected by the British Salonika Force in 1915-16, and were presented by the Greek Government to the British Museum after the armistice. Illustrations and descriptions of some prehistoric Thracian weapons, including the *Máxapa*, which is not unlike some of the weapons which could be seen in the Salonika bazaars, and a list of sites where excavations have been made, are appended to a chapter on prehistoric periods. Chapters on the kings and chieftains of Macedonia and Thrace, on the Thracian Chersonese, and on art during the sixth to the fourth century B.C., are full of interesting and scholarly historical research. Appendices to Part I of the volume contain a map and description of Ainos, the modern Enos, at the mouth of the Maritza. Ainos was an important seaport for the trade of Thrace and of the districts beyond Adrianople as far as the Black Sea. An underground church there is regarded by Mr. Casson to have been in ancient times a shrine for the worship of Pan, a form of worship unusual among the Thracians. Another appendix indicates the sources available for the study of the earlier history of Thrace and Macedonia.

Part II of the volume is a brief description of the ancient roads, antiquities, and Greek settlements in Illyria, the territory between Serbia and the Adriatic. The evidence regarding ancient times is meagre, and it was of minor importance in early history; but, according to the author, its story is indisputably bound up with that of Macedonia.

A list of the museums where collections of North Aegean antiquities are to be seen is given in the preface; and at the end of the volume there is a numbered list of finds of the Neolithic, Bronze and Copper, and Iron Ages, with corresponding numbers plotted on a map, showing the places where each was found. The volume also contains an extensive bibliography, and a list of British and foreign maps of the areas with which it deals.

<sup>3</sup> *Recent Advances in Physiology*. By C. Lovatt Evans, D.Sc. Lond., M.R.C.S., L.R.C.P., F.R.S. Second edition. London: J. and A. Churchill, 1926. (Post 8vo, pp. xiii + 370; 70 figures. 12s. 6d. net.)

<sup>4</sup> *Diseases of Animals in Relation to Man*. By Thomas W. M. Cameron, M.A., B.Sc., Ph.D., M.R.C.V.S. London: Faber and Gwyer, Ltd., the Scientific Press. 1926. (Fcap 8vo, pp. 222; 13 figures. 3s. 6d. net.)

<sup>5</sup> *Macedonia, Thrace, and Illyria: Their relations to Greece from the earliest times down to the time of Philip, son of Amyntas*. By Stanley Casson, M.A. London: H. Milford, Oxford University Press. 1926. (Fcap 8vo, pp. xxi + 357; 106 plates, 18 maps. 21s. net.)

The main portion of the book is founded on an essay awarded the Connington Prize for 1924, and its purpose is to set forth the chief evidence available for the reconstruction of the earlier history of the North Aegean coastline and its hinterland. The volume is illustrated by excellent photographs, some of them reproducing beautiful views of places in the Near East.

### THE SIGMOIDOSCOPE.

THE small book on the endoscopy of the rectum and colon by Dr. BENSANDE, a second edition<sup>6</sup> of which has just reached us, contains a very complete description of the sigmoidoscope and its use in the differential diagnosis of diseases of the rectum and colon. Valuable practical hints on the choice of instruments, the preparation of the patient, and the technique of examination are followed by a well illustrated account of the normal appearances of the bowel at different levels.

The diseases of the rectum are dealt with on a plan which comprises a good description of the pathological anatomy of each morbid condition, illustrated by numerous black-and-white drawings, and the sigmoidoscopic appearances are then shown in a series of colour plates which most successfully and faithfully reproduce what is actually seen. A special feature of the colour plates, which are certainly above the average both in execution and variety, is the polyglot description attached to each of them, for no fewer than six European languages are employed to explain each picture; French naturally takes pride of place, with English second, followed by Italian, German, Spanish, and Portuguese.

### NOTES ON BOOKS.

THE medical practitioner at home, whether he has lived abroad or not, is frequently asked for his opinion and advice by those who are proceeding to the Colonies either for a trip or to take up some appointment. The absence of any small work dealing with the numerous points involved has led to the promulgation of all sorts of information, some of it fantastic, much of it erroneous, a little of it correct. Dr. BALFOUR KIRK's book of *Hints on Equipment and Health*<sup>7</sup> fulfils to a nicety the requirements of the European about to venture trade abroad. It is small and inexpensive, and, though not intended strictly for medical men, will be read by them with advantage. It consists of a series of letters, giving just the kind of information which the layman wants and needs. With the exception of a few points on first aid, medical matters, *sensu stricto*, are rightly left alone. One of the greatest bores, and the most noxious which it is the lot of most professional men to encounter, is the layman with a smattering of so-called medical knowledge. Here we have a common-sense view of the dangers of tropical residence and of the means of forestalling them; advice as regards vaccination against small-pox and the enterica group prior to sailing; recommendations as to outfit, both for children and adults, and the domestic medicine chest. The questions of personal hygiene, diet, and drink, its use and abuse, exercise, recreation and fatigue, the advantages of an agreeable hobby, and the need for rest—all are dealt with. Sanitation, including not only personal hygiene, but also domestic matters which have to be supervised by the European if his house is to be comfortable and himself and his belongings kept free from disease—such matters, for instance, as cleanliness of quarters, mosquito-proofing of rooms, mosquito nets, the taking of quinine, disposal of refuse, exclusion of flies, and so on—all receive attention, adequate but not too elaborate. The letters are written in a vein of sound common sense, with witty turns of expression, and the advice given is such as will be strongly endorsed by everyone who, by hard-won personal experience of life in tropical countries, has learned the lessons which are here conveyed so clearly. The author is to be congratulated on the success with which he has performed his undertaking; the book should, and probably will, become part of the equipment of each intending traveller to the tropics. We can only wonder at the space it will occupy having been so long unfulfilled.

<sup>6</sup> *Traité d'Endoscopie Recto-Colique: Rectoscopie Sigmoidoscopique*. Par Dr. B. Bensande. Deuxième édition. Paris, Masson et Cie. 1926. (Imp. Soc. pp. 183; 115 figures in the text, 93 figures on 25 plates. 120 frs.)

<sup>7</sup> *Hints on Equipment and Health for Intending Residents in the Tropics*. By J. Balfour Kirk, M.B., Ch.B.Ed., D.P.H.Oxon., D.T.M., and M.C.I.C. London: Baillière, Tindall and Cox. 1926. (42 x 7, pp. vii + 120. 6s. 6d. net.)

The fasciculus on the genus *Amblyomma* forms the first part of the second volume of NUTTALL, WARBURTON, and ROBINSON's monograph on the ticks.<sup>8</sup> Although not so rich in species parasitic in man as some of its congeners, the genus *Amblyomma* is the largest in point of numbers of the genera of ticks. It contains four species which have been recorded from human beings. One of these species is a carrier of Rocky Mountain spotted fever, and another has been described as "the greatest pest to man" in Jamaica. Many of the species are parasitic on mammals—including the vector of "heartwater"—but the range of hosts is large, although, curiously enough, no species has been recorded from birds. Geographically also the range is large, although, excepting a single species in Spain, none have been found in Europe. This part, written by Dr. L. E. Robinson, maintains the high standard set in previous parts of the monograph. It is well illustrated—there are in the text over 130 excellently drawn figures, of which 120 are original. Each of the 86 species is described in detail. There is an extensive host-list, a bibliography, an index, and an appendix on the biology of the genus. Dr. Robinson has contributed an immense amount of labour and patience to the making of this part of the monograph, and he has rendered yeoman service to a branch of entomology in which there is much still to learn. He has made available for entomologists throughout the world a volume which has long been awaited, and which, for once, proves that realization may be better than anticipation.

The book on radium treatment of cancer,<sup>9</sup> by Dr. SIMONE LABORDE, director of the Radium Laboratory at the Anticancer Centre at Villejuif, consists of four parts. In the first the author discusses the physical properties of radio-active substances in general and those of radium in particular. The second part serves as an introduction to the study of cancer, including its clinical aspects and diagnosis by laboratory methods. In the third part a description is given of the sensitiveness of healthy and neoplastic tissues respectively to radium. The fourth part, which forms the bulk of the volume, deals with the technique of the radium treatment of the various localizations of cancer. The last two chapters are devoted to the complications observed during radium therapy and the accidents that may be caused by the manipulation of radio-active substances, with the precautions to be taken to avoid them. An extensive bibliography is appended. The book, which is essentially practical, will not only appeal to the specialist, but will furnish the general practitioner with a valuable guide to the study of the radium treatment of malignant disease.

The publishers of Wheatley's authoritative edition of the Diary of Samuel Pepys have now issued in one volume an abridgement of the complete copyright text, with the title *Everybody's Pepys*.<sup>10</sup> The abridgement has been judiciously carried out by Mr. O. F. MORSHEAD with an eye to the tastes and interests of the ordinary reader. The printing is excellent, and the volume is adorned with a large number of cheerful illustrations by Mr. Ernest H. Shepard, whose delicate humour in black and white is well known to readers of *Punch*. The insides of the back and front covers are appropriately decorated with maps of London in the sixteen-sixties, showing the districts east and west of Whitefriars, and the River Thames from Whitehall to Richmond, and eastwards by London Bridge. A jollier gift book it would be hard to find.

<sup>8</sup> *The Genus Amblyomma*. By L. E. Robinson, Ph.D. Cantab., A.R.C.S. Lond. Being Part IV commencing Vol. II of Ticks: A Monograph of the Ixodoidea. By George H. F. Nuttall, F.R.S., C. Warburton, and L. E. Robinson. London: Cambridge University Press; London: H. K. Lewis and Co., Ltd. 1926. (Cr. 4to, pp. xii + 302; 8 plates, 130 figures. 20s. net.)

<sup>9</sup> *La Curiothérapie des cancers*. By Simone Laborde. Paris: Masson et Cie. 1925. (Med. 8vo, pp. xi + 333; 43 figures. 27 fr.)

<sup>10</sup> *Everybody's Pepys: The Diary of Samuel Pepys, 1660-1669*. Abridged from the Complete Copyright Text and edited by O. F. Morshead. London: G. Bell and Sons. 1926. (Cr. 8vo, pp. xxiv + 570; 60 illustrations. 10s. 6d. net.)

### PREPARATIONS AND APPLIANCES.

#### Zorbo Joint Jackets.

MESSRS. ROBERT BAILEY AND SON, Ltd., of Marriott Street Mills, Stockport, and Sentinel House, Southampton Row, W.C.1, manufacture a dressing for joints entitled "Zorbo joint jackets." The dressing consists of a shaped pad of cotton-wool in a gauze covering, to which are attached tape straps and small buckles. The pad can be impregnated with lotion or liniment prescribed by the doctor, and is easily applied by the patient to the affected joint. It is claimed that the pad is useful in the treatment of sciatica and rheumatism; and there is no doubt that the shaping of the pad renders evenness of application easy. The joint jackets are made in six shapes: for the chest, the shoulder, the elbow, the wrist, the knee, and the grom.

# British Medical Journal.

SATURDAY, NOVEMBER 6TH, 1926.

## THE SIGNIFICANCE OF ANATOMY.

THOMAS VICARY, M.D., F.R.C.S., to four English sovereigns and to four times Master of the Company of Barbers and Surgeons of London, would hardly have appreciated the lecture delivered in his memory by Professor Elliot Smith, of which we publish a report in the opening pages of this issue. The lecturer, with becoming candour, declined to flatter the eponym of the endowment under the auspices of which he spoke, but admitted that Vicary was even behind his own times and his book a mere plagiarism of the authors whose works had been discredited by the new knowledge of Vesalius. We venture to think that he would also have been puzzled by the views set by the lecturer before his audience. In some ways Professor Elliot Smith's lecture may be taken as an elaboration of the theme upon which Sir John Rose Bradford spoke so well and wisely in his Harveian Oration, for he makes—although not in so many words—a well supported claim upon medicine as a debtor to anatomy. If we adopt the lecturer's view that anatomy includes physiology, morphology, and morbid anatomy, and that morphology is the foundation of all science, then indeed the claim may be considered to be triumphantly established, and morphology should be enthroned in the highest place of the scientific Olympus, instead of being, as he complains, depreciated by physiologists, clinicians, and biologists, and even by some anatomists.

It is right and proper that a distinguished man of science, such as Professor Elliot Smith, should be enthusiastic in magnifying the importance of those branches of knowledge with which he has been and is so conspicuously concerned, and the opinions he has expressed deserve the closest attention and study and the deepest respect. Many who are not specialists in descriptive anatomy are apt to regard it as an indispensable but unprogressive branch of knowledge—a valuable and standardized tool of the physician, and still more of the surgeon, which has reached such a degree of perfection, as compared with other departments of medical study, that little further change is likely to be made in it. But to Professor Elliot Smith it is almost infinitely greater than this. More than thirty centuries before Aristotle, he says, the study of mankind (and in particular the phenomena of life and death) was the sole aim of all science and art, and no innate curiosity exists in mankind to study the forces of nature except in so far as they affect his own obvious interests, so that the moon was only watched on account of its apparent connexion with the reproductive system of the female, as shown in the periodicity of the observed phenomena. Yet it might be supposed that to dwellers near the sea or the estuaries of great rivers the phenomena of the tides, and the synchronism of springs and neaps with the phases of the moon, must early have excited a curiosity quite unconnected with any questions of human life and fate. Whatever may have been the case in Egypt, where the study of the viscera seems to have had so great an importance, we venture to

think that many anthropologists will hesitate to admit that, in other and more primitive civilizations, considerations less anthropocentric had not their influence, and that it is too much to claim that "civilization was evolved out of man's endeavours to understand the constitution of his own body and to preserve the life that animated it." Self-preservation was doubtless the moving power in all primitive communities, but magic, which played such a great part in the beliefs and life of the savage, was surely concerned at least as much with the phenomena of outside nature as with the real or supposed construction of his body. Our knowledge of Egyptian civilization, of which we owe so much to Professor Elliot Smith, goes back a long way, but who can doubt that between the Neolithic culture and such an advanced organization as the Egypt of five millenniums ago there must have been many successive cultures that have been wiped out and have left no intelligible message for us? In what manner and from what point of view each of them envisaged the eternal problem of how and why and whither, we know not.

If some of the opinions expressed by Professor Elliot Smith invite criticism, there can be no doubt of the value of his remonstrance against any neglect of morphology as an aid to investigation, in which it ought to go hand in hand with physiology. He wisely cautions us against putting our trust so greatly in experiment as to neglect the evidence that can be given by the study of form in organisms of all sorts and the lessons that may be learnt by the comparison of a whole series of homologous parts from the simplest to the most complex known to us. In the great physiological collection in the Museum at Lincoln's Inn Fields comparative anatomy has many lessons to teach to those who can and will learn them. Function is of the greatest importance to the physiologist and anatomist.

Perhaps not the least interesting portion of the lecture was the historical sketch of the part played by anatomy (using the word in Professor Elliot Smith's widest sense) in the history of medicine and surgery. Harvey was primarily an anatomist. Sharpey, who invented the modern methods of practical physiology, insisted on retaining microscopical anatomy as part of that subject, and so, as Professor Elliot Smith maintains, crippled anatomical research, by depriving anatomy of the use of the experimental method and separating the investigators of structure from those of function. The brilliancy and extent of John Hunter's work has prevented a due appreciation of that of his great brother William, and their remarkable joint work on the lymphatic system has not had the appreciation it deserves. Charles Darwin based his own work on comparative anatomy, and himself wrote that morphology is the soul of natural history.

Even now questions as to the sympathetic system and the existence in man of differentiated muscle fibres, and their innervation, are the subjects of discussion and difference of opinion between physiologists and surgeons. Still more anatomical studies are necessary before the truth can be ascertained. Many other instances of the need of anatomical investigation were given by the lecturer, whose hopes of future progress are neither faint nor faltering. His appeal to the Council of the Royal College of Surgeons to modify the primary examination for the Fellowship in the direction of demanding a greater knowledge of comparative anatomy and morphology will be received with mixed feelings by those unfortunates who are

preparing for that *peine forte et dure*, unless it is to be understood that a corresponding relaxation on the side of descriptive human anatomy is to be its accompaniment.

### POOR LAW REFORM.

ALMOST a year ago the Ministry of Health circulated to associations of local authorities, to county councils, county boroughs, and others concerned, the proposals for Poor Law reform which were to be incorporated forthwith in a bill.<sup>1</sup> It will be recalled that the Government proposed, among other things, to abolish boards of guardians and transfer their functions to county and county borough councils. But from one cause and another the Ministerial programme was disturbed, and, as recorded last week in our parliamentary notes, the Minister of Health does not now hope to obtain this autumn even a preliminary debate in the House of Commons on the bill he is preparing. It is anticipated, however, that Mr. Chamberlain will shortly issue a draft or summary of the bill for examination by politicians and public authorities, and there is still some expectation that the Government will make this bill a principal item of legislation next year. In the meanwhile it is of interest to note that the provisional proposals of the Minister have been accepted by the London County Council, subject to certain amendments called for by the special conditions obtaining in the metropolis. A report was made to the Council on November 2nd by a special committee, under the chairmanship of Sir Cyril Cobb, M.P., which was appointed in December last to explore the situation.

The Minister's proposals for London involve the abolition of boards of guardians and of the Metropolitan Asylums Board, with the transfer of their functions, institutions, and staff to the London County Council, and the central supervision, through the Council, of the administration of these services. There are in London twenty-five boards of guardians, which control about 140 institutions, including 30 hospitals and infirmaries; and the Metropolitan Asylums Board has about 60 institutions, including 17 infectious diseases hospitals, 10 institutions for tuberculosis, and 7 mental hospitals. The committee considers that the proposals, while not entirely in accord with the principles approved by the Council as a basis for Poor Law reform, should be welcomed as an earnest attempt to deal with a difficult and controversial problem. Under the Minister's scheme the Council will be the ultimate authority in questions of relief, including domiciliary medical relief, and it will undertake complete responsibility for all forms of institutional treatment, all the work relating to pauper lunatics and the mentally deficient at present dealt with by the guardians, and the services of the Metropolitan Asylums Board. One of the declared objects of the scheme is the co-ordination and improvement of the provision for the prevention and treatment of ill health, both institutional and other, and the inclusion in such provision of public assistance which may be required as the result of sickness, accident, or infirmity. With a view to achieving this object it is proposed that the powers of the London County Council shall be strengthened to enable it to undertake the general oversight of all health services throughout the county, as well as the duty of acting in place of a metropolitan borough council in default of any of these services. This proposal is con-

sistent with a scheme which was submitted to the Council some time ago by a special committee on health administration, which desired to see the Council the central organizing authority with the responsibility of preparing surveys of health services from time to time. The responsibility for the distribution of local grants in aid of health services will also devolve upon the Council.

The report presented to the London County Council on Tuesday last stated also that it may be necessary for the Council to be enlarged in order to cope with this transferred work, and that in any case there should be provision (as, indeed, the Minister forecasts) to enable the Council to avail itself by co-option of the services of suitable persons from outside its own body, on some of the committees upon which the duties will devolve. There is provision also for the delegation by the Council to the metropolitan borough councils (twenty-eight in number) and the Common Council of the City of London of any transferred service identical in kind with a service already administered by those bodies. The committee is uncertain what services other than maternity and child welfare would fall within this definition. The care of the health of Poor Law children attending school, for instance, could not be delegated, and the committee suggests that the definition should be widened to include similar or ancillary as well as identical services. The scheme also provides that the functions of guardians under the Vaccination Acts shall be vested in the Council, but the committee points out that vaccination is a service extraneous to the general work of public assistance, and thinks that this service should be transferred direct to the borough councils. The registration of births, deaths, and marriages will, under the Minister's proposal, be transferred to electoral division officers acting for metropolitan boroughs. There is a consensus of opinion on the committee that the administration of outdoor relief, or "home assistance," should be a function of the borough councils, the London County Council to be responsible for matters of policy and finance concerning the county as a whole and for the laying down of general principles and rules, including the scale of relief, but delegating to the borough councils the duty of administering such assistance and any ancillary functions in their areas. The Council would appoint an advisory committee, called a Public Assistance Committee, consisting of members of its own body with a number of persons from outside having experience in such work, and each of the local councils would appoint a similar committee.

The London County Council agreed to a resolution authorizing its special committee to enter into negotiations with the Minister of Health, with the Common Council of the City of London, and with the metropolitan borough councils, with a view to the amendment of the Minister's scheme generally on the lines indicated in the report. The matter is one of considerable importance, direct and indirect, to the medical profession, and the outcome of these negotiations, and also of those which must take place between other big public authorities and the Minister, will be awaited with interest. The attitude of the British Medical Association towards certain features in the Government's proposals was discussed briefly in our issue of June 19th last (p. 1048), and a month later the subject was debated further at considerable length by the Representative Body at Nottingham, as recorded in the SUPPLEMENT of July 31st. Since April a special committee of the Association has been watching the position in regard to reform of the Poor Law.

<sup>1</sup> BRITISH MEDICAL JOURNAL, December 12th, 1925, p. 1136.



## THE BEIT MEMORIAL FELLOWSHIPS.

WE mentioned last week that the trustees of the Beit Memorial Fellowships for Medical Research are about to appoint a Fellow to devote his whole time to research in tropical medicine, and an advertisement of the terms and conditions will be found elsewhere in this issue. The fellowships were founded and endowed in December, 1909, by Sir Otto Beit, as a memorial to his brother Mr. Alfred Beit, to promote the advancement by research of medicine and the allied sciences in their relation to medicine. The general policy for the administration of the foundation was settled by a board of trustees, which consisted of men of affairs and representatives of medicine and the allied sciences. The trustees act under the guidance of an advisory board consisting of Dr. William Bulloch, F.R.S., Professor T. R. Elliott, F.R.S., Sir James K. Fowler, K.C.V.O., M.D., Sir F. Gowland Hopkins, F.R.S., Dr. C. J. Martin, F.R.S., Sir Charles S. Sherrington, G.B.E., M.D., F.R.S., and Professor E. H. Starling, M.D., F.R.S. There have hitherto been three classes of fellowships—junior fellowships of £350 a year, usually held for three years; fourth year fellowships of £400 a year, to which a junior Fellow may be appointed; and senior fellowships of £600 a year, usually held for three years. A senior Fellow must have been first elected to the junior fellowship on or after January 1st, 1920. The election of Fellows takes place in July, and applications from candidates must be received on or before the first day of June preceding the election. The fellowships are open to persons of European descent without restriction as to nationality. All the facts necessary to be known by a candidate are set out in the book of regulations, which can be obtained from the honorary secretary, Sir James K. Fowler, 35, Clarges Street, London, W.1. To the new issue of this book has been added for the first time an account of the after-histories of those who have held a fellowship since the foundation in 1910. During the four years of the war very few appointments were made, and nearly all the Fellows resigned to undertake war work of more immediate importance. The real purpose of the trust is to help young men and women who show promise of being capable of doing good research work in their early fertile years, before, as is almost inevitable, they settle down in teaching appointments and become involved in administrative duties. The list of Fellows shows how widely the trustees have cast their net and some of the big fish they have caught. The first name is that of Sir Thomas Lewis, F.R.S., who held a fellowship from 1910 to 1913 for the study of irregularities of the heart. The second is that of G. C. McKay Mathison, M.D., Melbourne, who was investigating the nervous control of respiration; he died in 1915 of wounds received at Gallipoli. Another name on this page is that of Dr. Sidney Russ, professor of physics, Middlesex Hospital Medical School, who was appointed in 1910 to study the association of radio-activity with cancer, a subject to which he has since made many valuable contributions. Two other names early on the list are those of Dr. Edward Mellanby, now professor of pharmacology in the University of Sheffield, and of Dr. T. R. Elliott, F.R.S., professor of medicine in the University of London and head of the Medical Unit of University College Hospital, who in 1911 was appointed to make researches into the pathological changes in the suprarenal glands. The first woman's name to appear is that of Miss Ida Smedley (now Mrs. Hugh Maclean), who was a Fellow for four years and investigated the processes involved in the formation of fat in the organism. The names of many other well known workers are contained in the list; it already possesses historical interest, which will be greatly increased as time goes on if the list is maintained, as is to be expected, from year to year. It may be added that

in its selection of Fellows in the past the trustees have not failed to encourage the study of tropical medicine; for instance, one of the first Fellows was Dr. Hindle, who was appointed to investigate the morphology and treatment of protozoic blood parasites, and there have been a good many other appointments since. The new appointment of a special fellowship in tropical medicine will be made for five years, and the salary will be £1,000 a year; in addition passage money out and home, if the research is conducted in the tropics, will be paid, and a grant will be made for laboratory expenses. Applications for this tropical fellowship must be received by the Honorary Secretary on or before February 1st next, but candidates resident in Australia and New Zealand can obtain a form of application from the registrar of their university.

## BACTERIAL ENDOCARDITIS.

THE war was responsible for many infections, and among them chronic bacterial endocarditis, also called endocarditis lenta, which came more prominently into notice, and has been specially studied by Lewis, Cotton, Horder, H. J. Starling, and others in this country. Before the war Osler and Libman in America were foremost in defining its clinical and pathological features. As has been already mentioned in our columns (1926, i, 749) in connexion with Sir Thomas Horder's Lumleian Lectures on endocarditis, Professor W. S. Thayer<sup>1</sup> has recently published an elaborate monograph on bacterial (infective) endocarditis, and analysed 362 cases of acute and subacute endocarditis examined after death at the Johns Hopkins Hospital during the thirty-four years and a half ending on January 1st, 1924. Bacteriological examinations were made before or after death, or both, in 241, or 66.6 per cent., and the nature of the bacterial infection was determined in 130, or 36 per cent., of the total 362 cases, streptococci heading the list with 60, *Staphylococcus aureus* and the pneumococcus with 26 each coming next; the gonococcus with 19 was the only other micro-organism in double figures. A table of 212 cases obtained by combining the figures given by Harbitz, Lenhartz, Horder, and Clawson shows the streptococcus in 62 per cent., the pneumococcus in 17 per cent., the *Staphylococcus aureus* in 14 per cent., and the gonococcus in 3 per cent. The relatively large number of gonococcal cases in the Baltimore series is explained by the inclusion of negroes, among whom venereal disease is very common, and by the keen look-out for thirty years for gonococcal endocarditis at the Johns Hopkins Hospital. The much debated question of the relation of rheumatic endocarditis to recognized bacterial endocarditis is carefully considered, and, while it is admitted that rheumatic endocarditis may in the future be proved to be bacterial, the following data are laid down as necessary before a case can be labelled rheumatic: negative cultures from the blood during life or from the blood and heart lesions after death, and a clinical history of rheumatism or chorea. Aschoff's focal perivascular bodies, which are considered to be characteristic of acute rheumatism, were present in six cases yielding streptococci; for this and other reasons the total number of cases of fatal rheumatic endocarditis was reduced from 43 to only 24; but it is remarkable that fatal cases have lately become less rare than in the earlier years of this hospital's records. The bacterial forms of endocarditis are considered separately; the Baltimore statistics are compared with those from other sources, and valuable summaries given; thus pneumococcal endocarditis contrasts with the rheumatic in occurring later in life, after pneumonia, accompanied by high leucocytosis, frequent embolic phenomena, and in nearly a quarter of the cases by acute

<sup>1</sup> Johns Hopkins Hospital Reports, Baltimore, 1926, xxii, Fasciculus I.

nephritis; previous cardiac disease is uncommon, the infection appears to be uniformly fatal, and acute suppurative meningitis the usual termination. Gonococcal endocarditis, which in many respects resembles the pneumococcal, is less acute in its course, a third of the cases lasting more than two months, and a case of recovery after four months' illness is recorded; it has a special tendency to attack the aortic and pulmonary orifices and the aortic intima. Of the streptococcal cases the acute—namely, under a month's duration—were ascribed to undifferentiated forms in nearly 80 per cent., whereas in the subacute cases—namely, over a month's duration—*Streptococcus viridans* was the infective agent in over 80 per cent. Enough has perhaps been said to show the minute character of the analysis of the pathological data; the clinical features are considered in similar detail, and there can be no doubt that Professor Thayer's monograph will long remain a valuable storehouse for reference.

#### RESEARCH IN GENERAL PRACTICE.

THE claims of clinical medicine to be ranked as a science have lately been ventilated in our pages and elsewhere, and we think that we have shown cause why they should be granted. The fact must not be lost sight of, however, that the great mass of clinical work in this country is done by general practitioners, who, unfortunately, for various reasons are not able to take advantage of the opportunities that offer themselves for advancing medical science. Deficient equipment is no doubt one reason, but very much more often the cause is to be sought in the engrossing and multifarious duties which take up the time and exhaust the energies of the men and women engaged in general practice. The matter has been raised once more in a thoughtful article by Dr. M. Forrester-Brown,<sup>1</sup> in which, after mentioning the nature and vast amount of the material available and the difficulties in the way of its fruitful study, she takes as an example of the good that may be done the schemes for the care and cure of eripiles which have been brought into being, first in Shropshire and since in other counties and districts. The distinguishing feature of these schemes is continuity of treatment through co-operation between general practitioners and specialists; a serious attempt is being made to ensure that every case shall be detected at the earliest possible moment and be properly looked after from the first sign of disease until its cessation. Although it is no doubt true that many of the cases treated under such schemes differ in their age and their tendency to spontaneous cure from other categories of disease among the general population, it is suggested that by a somewhat similar organization similar benefits might be secured in those other categories. The great advances in medicine and surgery in late years have made it impossible for any one practitioner to be efficient and up to date in all branches, and increased division of labour seems to be desirable and indeed inevitable. This necessity has already been recognized in various quarters, and the custom of a medical firm including among its members one who specializes in surgery, another in ophthalmology, and perhaps another in cardiology, is, as we are informed, on the increase. Radical changes in the relations between the doctor and those numerous patients who still, like their savage ancestors, look upon him as a dealer in magic, whose spells are conveyed in mixture, lotion, powder, or pill, must come slowly; but it is to be hoped that the younger generations are more wholesomely sceptical and will in time welcome co-operation in medicine as well as in industry. The doctor in populous districts will have, on his part, to train himself to be much more of a specialist than he is at present, and to achieve this

recourse would have to be made to post-graduate instruction, a good deal of which might be imparted in local clinics. Dr. Forrester-Brown thinks that the more brilliant practitioners should have the chance of appointment to the teaching staffs of the medical schools, so that some at least of the instruction in his life's work would be given to the student by those who had had personal experience of such work, as was the case under the old system of apprenticeship whenever the master was willing and able to instruct. But since the chief complaint is that neither the earliest beginnings of disease nor the real end-results of treatment are now adequately known and recorded, it seems that teaching of the kind suggested must be given outside the great teaching hospitals, which devote—and, as far as we can foresee, must always devote—their attention to what may for convenience be called acute cases. If this be true it follows that there will be no place for the general practitioner on the staffs of the medical schools. His work and his teaching must be done elsewhere by utilizing the material which only exists outside the walls of the educational hospitals. Dr. Forrester-Brown does not claim to have solved the problem which she set before her readers, but her suggestions seem worthy of consideration and discussion out of which something of practical value may come. Of the soundness of the view that organization, co-operation, specialization, and division of labour are needed in general practice there is not much doubt.

#### AMBROISE PARÉ AS NATURALIST.

DR. PAUL DELAUNAY, the well known medical historian of Le Mans, has devoted an erudite monograph<sup>1</sup> to the attention paid by the father of French surgery to the various branches of natural history, including zoology, parasitology, toxicology, and teratology. It may be said at once that Ambroise Paré was merely an amateur naturalist, and that his knowledge of natural history was based, not so much on the direct observation of nature, as on a study of the early Greek and Latin writers, such as Aristotle, Pliny, and Aelian—and even these only at second hand in translations, and on the often distorted descriptions given by travellers of hitherto unknown animals in the recently discovered continents of India and America. Dr. Delaunay points out that Paré had the misfortune to live at a time when science was only escaping from the toils of scholasticism to become the slave of antiquity again. Among other errors Paré shared the belief of Aristotle and Pliny in the spontaneous generation of certain animals, such as spiders, scorpions, worms, frogs, toads, and snake-like. Moreover, Paré's observations on natural history, to the study of which he was drawn by his instinctive curiosity, laboured under three disadvantages characteristic of the time—namely, the absence of a rational classification, an exact nomenclature, and an accurate iconography. Except for one or two designs, all the illustrations in Paré's book had been borrowed from other works, and were either delineations of purely imaginary monsters or inexact representations of animals which really existed. The only problem on which Paré appears to have exercised his critical faculty was that of the existence of the unicorn, his conclusion being that but for the authority of Scripture he could not believe that such animals existed. In his description of monsters, to which he devoted the whole of his twentieth book, Paré attributed their origin partly to the wrath of God or the work of demons. He admitted, however, that natural development might be disturbed by purely material causes, such as inherited disease, weakness of the sperm, narrowness of the womb, or injury from without. In forming a just estimate of Paré's contributions to natural history it must be borne in mind that

<sup>1</sup> *Practitioner*, September, 1926.

<sup>1</sup> *Ambroise Paré Naturaliste*, Laval, 1926.

it was not until the time of Bacon, followed by Descartes, and later still the encyclopaedists, that natural science became free from the influence of authority and the occult, and became based solely on experience.

### THE MISSION TO LEPERS.

THE origin and growth of the Mission to Lepers are ably and modestly described in an account of fifty years' work between 1874 and 1924, published at the price of one shilling by the mission's London office (33, Henrietta Street, London, W.C.1). The movement commenced in 1869, when Mr. Wellesley Bailey joined the American mission in Ambala in the Punjab, and came in contact with lepers in the leper asylum there. Through the influence of his wife, Miss Grahaime of Blackrock, Dublin, whom he married in 1871, he enlisted the sympathies of three sisters, the Misses Pim of Monkstown, one of whom, Miss Charlotte Pim, in 1874 promised to give or try to collect £30 annually in aid of his work in Ambala. At the end of the first year between £500 and £600 had been received, and with this sum a mission to lepers in India was definitely established. The funds increased year by year, and in 1905, after thirty-one years of development and with an income then of £21,005, leper settlements had been organized throughout India, Burma, Ceylon, and the Far East, chiefly in connexion with missionary stations of every religious denomination. In that year the number of the mission's leper settlements or aided settlements was 63, with 5,803 leper inmates and 317 untainted children, who were kept in separate compounds and brought up and educated by the mission's workers. During the next eleven years governments and local authorities co-operated in the work, and a great advance was made; in the remaining eight of the fifty years covered by the report much was done in developing the curative methods of treatment suggested by the researches of Sir Leonard Rogers and others. Some idea of the vast field of work in which the mission is labouring may be gathered from the fact that in the census of India for 1921 as many as 102,513 definite cases of leprosy are recorded, that in China alone the number of lepers is estimated to be 400,000, and that throughout the world there are between two and three million lepers. The improvement that has been effected by the mission in the conditions under which this vast suffering population, originally social outcasts and without hope, are living is inestimable. It is one of the finest examples of world-wide philanthropy that has been achieved in the last half-century. In connexion with the jubilee celebrations in London in 1924 of the Mission to Lepers, a deputation was sent from England to examine the existing conditions in various countries with a view to the extension of the work. The report of this deputation has now been published under the title of *Dawn and Gleam*, by W. H. P. and M. Anderson, which may also be obtained from the mission's London office for 1s. 3d. The report is fully illustrated, and contains a very interesting account of the work in progress in India, China, and Korea. Dr. Robert G. Cochrane, who accompanied the deputation to India, has now published a final report on the medical work of the Mission to Lepers in India, including Burma, which is similarly obtainable. Dr. Cochrane suggests that leprosy hospitals should be organized in future along the lines of a tuberculosis sanatorium, where hopeful cases alone would be admitted. In each province there should be one such hospital with a full-time physician as well as a medical superintendent. A good dispensary and a hospital for medical cases would also be required, and the asylums for chronic lepers would be co-ordinated in the whole scheme, which would involve the appointment of an additional six or seven full-time medical practitioners. Training would be given to medical practitioners and students in the

diagnosis and prevention of this disease, and propaganda work be organized among the general public. In a preliminary note it is stated that the council of the mission has accepted the suggested scheme, and, without making any change in the present general character of its work, will endeavour to give effect to the recommendations as rapidly as circumstances and the resources of the mission may permit.

### DICK PROPHYLAXIS OF SCARLET FEVER.

THE Dick prophylaxis of scarlet fever has now attained a considerable vogue on the North American continent. In the United States, alike in family practice and in the conduct of residential institutions, it is pretty extensively used. It is applied to children in schools, and also, by certain public health officers, to the general child population of areas. In Canada during 1925 the Provincial Board of Health of Ontario co-operated with the executives of several homes or reformatories to produce immunity in their inmates, and scarlet fever toxin figures have been issued in the returns of the provincial laboratories for that year. An account by Professor James Miller of procedure for the immunization of a Canadian city has been published (July) by the *Public Health Journal*, the organ of the Canadian Public Health Association. The city of Kingston, Ontario, which has 23,000 inhabitants, had during the four years ending March, 1925, been afflicted by a prevalence of scarlet fever which rose during each winter season to some 30 cases or more a month, and declined, but without disappearing, in summer. The notification of 38 cases in February, 1925, roused the authorities to action. Arrangements were made to apply the Dick method of prophylaxis, and in March, 1925, it was offered gratis to all comers. Some 1,200 persons, including both children and adults, were treated. Notifications at once began to fall off and continued low. For the first time in the four years since the outbreak began there was no winter rise. From January to May of 1926 the average case rate was less than four a month. At this point the record ends for the present. While the number of persons treated was small and the dosage employed is admitted to have been inadequate, it cannot be denied that a change ensued when the procedure was adopted; but, in the absence of information as to the ages of the persons concerned, the distribution of cases subsequently occurring as between the protected and the unprotected, and similar points, it is difficult to be sure of its causes. A coincidental factor such as spontaneous decline might possibly have been at work. The effort, however, was well devised, and the figures as they stand, if not entirely convincing, are of interest and value as a contribution to the study of scarlet fever prophylaxis.

### PUBLIC HEALTH IN GERMANY.

PROFESSOR ABEL, director of the Jena University Hygiene Institute, lately gave two lectures in London for the Chadwick Trustees on the development and present state of public health in Germany. The German Ambassador was present at the first lecture, and thanked the Chadwick Trustees. Professor Abel compared the origin and administration of public health work in the two countries. In England, owing to the earlier date of the industrial revolution and the consequent crowding into towns, the need of modern hygiene manifested itself before it did in Germany. English public health, in its origin, was inspired by ideas of humanitarianism and economy; German public health was born in the chemical and physical laboratory. The first hygiene institute was founded in a German university in 1855, but the active development of practical hygiene occurred after 1871; in Germany at the present day nearly 67 millions are living on an area almost as large as France, which only supports a population of 40 millions. In 1871

only 32 per cent. of the population was urban, in 1925 as much as 64.35 per cent. Professor Abel explained that there were few Reichs laws (laws applying to the whole of the empire), and no Public Health Act comparable with the English Public Health Act of 1875. The Ministry of the Interior is in the last resort responsible for the public health; in Prussia there is a Ministry of Public Welfare with a physician at its head; in other States the chief official is a lawyer. There are about 1,000 full-time medical health officers (Kreisärzte), all of whom are paid by the State; they do also all forensic medical work. In addition a fair number of large administrative units have appointed and are paying medical welfare officers, whose duties are largely clinical; they examine school children, attend maternity and child welfare, tuberculosis, and venereal disease centres. One of the subjects of examination in State medicine is psychiatry. There are no sanitary inspectors in Germany. The Imperial Health Office was founded in 1876 to assist the Ministry. There is now an advisory committee as well; and similar bodies exist in many of the States, but some are not much consulted. A census is taken every five years. In 1871 the crude death rates, which alone were available, were considerably higher in Germany than in England, but in 1925 the German rate was below that of England. The birth rate in Germany had declined greatly, especially in towns, but the decrease was beginning to be experienced in rural areas. He considered that deliberate limitation of the number of children was being practised for economic reasons. In Germany the last figures showed that the population had diminished in a year by half a million. To alter this better economic conditions must be secured for the working classes so as to enable them to afford to have children. This loss of population made eugenic considerations all the more important; people about to be married ought to avail themselves of the facilities for the official medical examinations now available in most of the German States. The group of infectious diseases caused one quarter of the deaths; the vaccination of babies and revaccination of children at 12 against small-pox was compulsory; although it had been proposed to recognize the "conscientious objector," the central position of Germany in the European continent, and its consequent liability to infection from all sides, would make this a more serious experiment than in other countries. Of the relatively few cases of small-pox which occurred in Germany, foreigners constituted a large proportion. Whereas Germany, with its vaccination laws, had 57 cases in the last three years, England had 11,630. No fees are paid to doctors and midwives for the compulsory notifications, which are generally required to be sent to the police. Tuberculosis, venereal disease, and alcoholism had been called the three national scourges of Germany; tuberculosis caused every seventh death. In addition to open-air and forest schools much sanatorium accommodation was provided for children; the advanced cases, so largely responsible for infection, are sent into hospital. There is no general obligation to notify tuberculosis; in Prussia, for example, only open pulmonary and laryngeal cases are notifiable to the medical officer of health. For venereal disease there is compulsory medical treatment, and penalties can be enforced against anyone knowingly spreading such disease. The consumption of alcohol is less than before the war, and the State gives subsidies to temperance societies; but a prohibition law is not now possible. The growing devotion to sport, Professor Abel thought, would diminish the desire for alcohol and tobacco.

We regret to have to record the death, on November 2nd, of Professor Francis Mitchell Caird of Edinburgh. He graduated in 1877, and was professor of clinical surgery in the University from 1908 to 1919.

## Nova et Vetera.

### A CASE REPORT BY RHAZES.

THE following clinical notes from one of the best known works of the old Arabian physician Razi is of interest as showing how the ancient medical men were confronted with the same bodside problems as we are at the present day, and solved them by much the same process as to-day, although the assistance of modern instruments such as the microscope was lacking.

Abu Bakr Muhammed ibn Zakariyya of Ray, known as Razi or Rhazes, was one of the greatest of all the Muslim physicians, and wrote a large number of works; one of the most interesting, as containing so much clinical matter, is the *Hawi*, or "Continens."

Rhazes did not start his medical career till he was of mature age. He attended the hospital at Ray, near Teheran, in Persia, and ultimately became chief physician to it. Later he became head of the hospital at Baghdad, an institution which he himself founded. There is a legend that when asked to select a site for the building he hung up pieces of meat in various parts of the town; and chose the place where the least decomposition had taken place. The dates of his birth and death are not accurately known, but the latter event took place about 900 A.D.

The following is a translation by the late Dr. E. G. Browne, Professor of Arabic in the University of Cambridge, of one of the cases recorded by Rhazes:

"Abdulla ibn Sawada used to suffer from attacks of mixed fever, sometimes quotidian, sometimes tertian, sometimes quartan, and sometimes recurring once in six days. These attacks were preceded by a slight rigor, and micturition was very frequent. I gave it as my opinion that either these accessions of fever would turn into quartan, or that there was ulceration of the kidneys. Only a short while elapsed ere the patient passed pus in his urine. I thereupon informed him that these feverish attacks would not recur, and so it was.

"The only thing which prevented me at first from giving it as my definite opinion that the patient was suffering from ulceration of the kidneys was that he had previously suffered from tertian and other mixed types of fever, and this to some extent confirmed my suspicion that this mixed fever might be from inflammatory processes which would tend to become quartan when they waxed longer.

"Moreover, the patient did not complain to me that his loins felt like a weight depending from him when he stood up; and I neglected to ask him about this. The frequent micturition also should have strengthened my suspicion of ulceration of the kidneys, but I did not know that his father suffered from weakness of the bladder and was subject to this complaint, and it used likewise to come upon him when it was healthy, and it ought not to be the case henceforth, to the end of his life, if God will.

"So when he passed the pus I administered to him diuretics until the urine became free from pus, after which I treated him with *terra sigillata*, *Boswellia thurifera*, and Dragon's blood, and his sickness departed from him and he was quickly and completely cured in about two months. That the ulceration was slight was indicated to me by the fact that he did not complain to me first of weight in his loins. After he had passed pus, however, I enquired of him whether he had experienced this symptom, and he replied in the affirmative. Had the ulceration been extensive, he would of his own accord have complained of this symptom. And that the pus was evacuated quickly indicated a limited ulceration. The other physicians whom he consulted besides myself, however, did not understand the case at all, even after the patient had passed pus in his urine."

This case presents an interesting diagnostic problem: was it an attack of malaria or of pyelitis? The reasoning of Rhazes would do credit to a modern medical man. The final opinion of Rhazes is probably one which often enters the mind of many of us, but, it is to be hoped, is expressed a little less bluntly.

## CHRONIC RHEUMATISM.

### CONFERENCE IN AMSTERDAM.

By invitation of the Dutch Committee of the International Society of Medical Hydrology a conference on rheumatism took place at Amsterdam on October 23rd. The guests from England represented the Ministry of Health, the British Committee on Rheumatism, the British Red Cross Society, the British spas, and the British Spa Federation.

The morning was spent at the Instituto for Physical Treatment, where the medical director, Dr. VAN BREEMEN, who is also secretary of the Dutch Committee, demonstrated the various methods of treatment by which heat, cold, light, electricity, and manipulation were applied in rheumatic and circulatory disorders. Among these methods were the Winternitz friction bath and hot-air chambers, the steam douche and radiation, followed in each case by immediate manipulation. As many as 300 patients from insurance societies were sometimes treated in one day.

The party were entertained by the Committee to luncheon, after which a public conference on chronic rheumatic diseases took place at the Colonial Institute, about 900 persons being present, Professor THORN, Chairman of the Dutch Committee, presiding. Letters were received from the Chairman of the German Committee, and from representatives of France, Denmark, Belgium, Sweden, and Austria. Statistics of the incidence of rheumatic diseases were being prepared in Vienna and a special conference was arranged.

The Minister of Labour, Professor SLOTEMAKER DE BRUINE, as chief of the Department of Public Health, officially welcomed the guests. He was glad that Holland should have a good place in this work. He hoped that in Holland statistics of the incidence of rheumatism might be prepared, similar to those published by the British Ministry of Health. The Dutch Government had every desire to support this movement.

Professor THORN said that the neglect of the study of common rheumatic disorders, and the absence of clear data, was bad alike for the patient and for the community. In Holland there were large numbers of workers suffering from rheumatic invalidity, and he was glad that the press was interesting itself in the question. Dr. van Breemen was the medical consultant to the new Dutch Committee, and they hoped to establish a special hospital for rheumatism in Amsterdam at an early date. These diseases affected the nation as a whole, and a national effort was needed to combat them.

Dr. FORTESCU Fox said that, visiting the health resorts of many countries, he had become convinced of two things: that their age-long popularity was justified, for modern medical observation had only confirmed the universal experience of the value of external treatment by baths and internal treatment by waters in chronic rheumatic affections; and that these natural physical remedies, if they were to be used with any advantage in our present civilized life, must be given by practitioners of special training and experience. The effects of baths, in particular, must be watched by the eye of the physician from day to day; even more than drugs they were edged tools in rheumatic disease. The recent reports on the incidence of rheumatism in northern European countries, and especially the British report, were the foundation of the present campaign against rheumatism. These had brought out, *inter alia*, the importance of the climatic factor in causation—that is, the dependence of the rheumatic diseases upon physical influences. The International Society of Medical Hydrology believed that investigation ought to go hand in hand with curative measures, as had been done in the clinics established for various forms of disablement during the war. The committees which the Council had set up in northern European countries had therefore recommended that the treatment to be provided for rheumatic industrial workers should be improved both in quantity and quality. Concurrent investigation and treatment under skilled medical direction was the watchword of their movement. The problem in England and Holland was similar, because natural baths did not exist in Holland and were insufficient

in England to deal with the large numbers of cases involved. In England it was proposed to develop the facilities for treatment at the spas, and also to set up clinics in the towns for systematic investigation and treatment by external and physical methods. During the last half-century physical treatment had been more developed upon the Continent than in England, and the British guests were glad of an opportunity of studying the methods employed at the Clinic in Amsterdam by one who was a European authority on this subject. Thanks to the courtesy of the German authorities, they were also visiting the great hospital for rheumatism at Aachen, directed by Dr. Krebs. England also had great spa hospitals, worthy of comparison with those of any country, and new and valuable methods of hydrotherapy had been devised in England during the war. They were dealing with a group of disabling diseases which were not only an opprobrium to scientific medicine, but inflicted the most serious economic losses upon all the communities of northern Europe, and it was essential for success that they should join forces in a common effort.

Dr. ALISON GLOVEN, British Ministry of Health, welcomed the opportunity of visiting the institutions for the treatment of rheumatism at Amsterdam and Aachen. Although uncertainty still surrounded much of the etiology and treatment of chronic rheumatic diseases, their serious incidence was everywhere admitted, and had been clearly shown sixteen years ago in the admirable statistics of the Leipzig Federation of Sickness Funds, and more recently in Sweden by Dr. Kahlmeter. The report of the British Ministry of Health showed that nearly one-sixth of the total sick pay for industrial invalidity was paid on account of these so-called rheumatic diseases, and this great incidence might be accepted as proved, at least for northern Europe. A second point upon which, at all events in England, most people were agreed was that at the present time, of these great hosts of patients only a minority were able to secure in full measure those forms of treatment which were highly beneficial if not essential. Only a minority were subjected to that thorough search for the focus of infection which was so often required. Again, only a very small minority, usually of the better class, in England at any rate, received proper and appropriate physical treatment. The Royal Commission on National Insurance had now recommended that massage and electrical treatment should be made part of medical benefit. Sir George Newman, Chief Medical Officer of the Ministry, had repeatedly urged the necessity for provision of further treatment, and more recently had foreshadowed a scheme which would include three different types of institution, the first being the physical treatment clinic. Such clinics would serve a threefold purpose: First, they would be clearing houses, directing patients to the form and place of treatment suited to their need, some to spa treatment, some for intensive study at an arthritis unit, whilst others would be greatly benefited by treatment at the clinic itself. Secondly, therefore, these clinics would be out-patient institutions, to supply those forms of physical treatment which were so often necessary for the re-education of muscles and joints, and generally for after-treatment when the active stage had passed. Thirdly, they should be organized in close co-operation with the arthritis unit and with the spa hospital, and provide continued supervision, observation, and after-care, following institutional treatment. Such clinics would be also of great service in diseases and conditions other than rheumatic, such as fractures, deformities, and diseases of the nervous system. The second type of institution foreshadowed was the arthritis unit, which should be in closest co-operation with a large teaching school of medicine or university, enabling it to fulfil the purposes of research and observation as well as teaching. It would also act as a place of preliminary treatment or preparation for spa treatment. Patients would be admitted at the earliest possible stage for thorough examination by modern methods. The focus of infection would, if possible, be found and removed; bacteriological and biochemical investigations would be completed and a diagnosis made before the patient was passed on to another institution, and orthopaedic surgery would if necessary be used. Such a unit would furnish opportunity



for team work in both research and treatment. The third type of institution was the spa hospital, organized in closest co-operation both with the arthritis unit and with the physical treatment centre. The hospitals at Bath, Buxton, and Harrogate suffered from the fact that many of their 650 beds were occupied by advanced cases. The patients having been thoroughly examined and the preliminary treatment completed at the arthritis unit, spa treatment would be much more beneficial and the duties of the spa physician simplified.

Dr. KREBS described the treatment of insured rheumatic patients at the Landesbad at Aachen, of which he is director.

Dr. VAN BREEMEN protested against the common opinion, even in medical circles, that the control of rheumatic diseases was impossible. Many facts had been published, and many results put on record by well known medical men, proving that successful treatment was possible, even with the present poor organization. He believed that when the family doctor had received in the university medical education in the diagnosis and treatment of rheumatism the results would be much better. But more was required than the family doctor in contending against these diseases. A special hospital for rheumatism was needed, with a laboratory for scientific study. It had been demonstrated, especially in America during the last twenty-five years, that hospitals for particular diseases were of great advantage to the patients and to science. Holland might have made an important centre for the study of the rheumatic diseases, but both energy and funds were needed for this purpose. Moreover, "every disease with a social significance must be fought at the beginning and not at the end."

On the following day the conference was resumed at Aachen, where Dr. KREBS and his assistants demonstrated the organization of the Landesbad, erected by the Friendly societies of the Rhine Provinces in 1912 for the use of their members suffering from rheumatic diseases. The cases, usually in an early stage of disease, are selected by a commission at Düsseldorf. There are 360 beds and a complete system of physical treatment.

## THE HEALTH OF SCOTLAND.

### REPORT OF THE REGISTRAR-GENERAL FOR 1925.

THE seventy-first annual report of the Registrar-General for Scotland, dealing with the year 1925, has just been issued. The population of Scotland in the middle of the year is estimated as 4,893,032—an increase of 11,395 over that of the previous year, and 10,535 more than the population of Scotland as ascertained by the census of 1921. Of the total population, 2,352,708 were males and 2,540,324 females. There was an excess of emigrants from Scotland over immigrants into Scotland of 28,430. The births registered during the year were 104,137; this number is 2,765 fewer than that of the previous year, and is less than that of any year since 1858, with the exception of the war years 1917 and 1918. The birth rate for the year was 21.28 per 1,000, the lowest yet recorded, with the exception of the two war years mentioned above. There were 6,831 illegitimate births registered during the year—the smallest number yet recorded, being 255 less than those of the previous year; they constituted 6.55 per cent. of the total births registered. The marriages registered during the year numbered 32,473, which is 145 more than in the previous year, but 5,107 fewer than the mean of those of the preceding five years, and less than those of all years since 1910, with the exception of 1911, 1916, 1917, and 1924. The deaths registered during the year numbered 65,507; this is 4,850 fewer than in the previous year, 2,650 fewer than the mean of the deaths in the preceding five years, and 6,114 fewer than the mean of those in the preceding ten years. This is the smallest number since 1851, with the exception of 1923. The annual death rate was 13.39 per 1,000, which is 1.02 less than that of the previous year. This is the third year in which the Scottish death rate has been less than 14, the two previous occasions being 1921 and 1923, with death rates of 13.56 and 12.91 respectively. The number of reputed centenarians whose deaths were recorded and verified during the

year was 8. The investigation of cases dying at a reputed age over 100 has now been made for sixteen years, and in all 224 reputed centenarians have been dealt with; in 103 instances the attainment of the age of 100 has been verified, in 29 contradicted, while in 92 no satisfactory proof of age was obtainable. Among the causes of death found to be more than usually prevalent during the year were cancer, puerperal conditions, whooping-cough, and violence, while among those causes which had decreased were measles, diphtheria, tuberculosis, syphilis, bronchitis, and pneumonia.

### Death Statistics.

Of the 65,507 deaths registered, 33,036 were of males and 32,471 of females. The death rate in the male population was 14.04, and in the female population 12.78 per 1,000. When the deaths are distributed according to the place of usual residence it is found that 34,046, or 52 per cent., occurred among the population of the larger burghs; 12,444, or 19 per cent., among that of the smaller burghs; and 19,017, or 29 per cent., among that of the county districts. In the larger burghs taken collectively the crude death rate of the year was 14.94 per 1,000, the corrected death rate 14.36; in the smaller burghs taken collectively the crude death rate was 12.14 and the corrected death rate 13.10; and in the county districts taken collectively the crude rate was 11.8 and the corrected death rate 12.1. Of the larger burghs the death rates of the year were 17.4 in Perth, 17.1 in Dundee, 16.1 in Edinburgh, 15.8 in Kilmarnock, 15.4 in Glasgow, 10.4 in Motherwell and Wishaw, 10.6 in Hamilton, and 7.6 in Clydebank. Of the smaller burghs, exclusive of those with populations of less than 1,000, the crude death rate of the year varied from 27.1 in Whithorn to 3.7 in Ballater. In the county districts the crude death rate varied from 23.1 in the western district of Ross and Cromarty to 6.3 in the Laurencekirk district of Kincardine. Out of the total 65,507 deaths, 14,249, or 21.7 per cent., were of children aged less than 5 years; 26,525, or 40.5 per cent., were persons aged 5 to 65; while 24,733, or 37.8 per cent., were of persons aged 65 and over. Compared with the previous year, the deaths of children under 5 were 2,767 fewer, those of persons from 5 to 65, 906 fewer, and those of persons of 65 and over, 1,179 fewer. The average age at death of all persons dying during the year was 46.64 years—that of males being 44.15 and that of females 49.17. Deaths of children aged less than 1 year numbered 9,430 (1,016 fewer than in the previous year). This is the third year in which deaths of children under 1 year of age have numbered less than 10,000, the previous occasions being in 1918 with 9,836 deaths, and 1923 with 8,825 deaths. The infantile mortality rate of the year was 99.6 per 1,000 registered births, which is 7.1 less than that of the previous year, 1.5 less than the mean of the infantile death rates in the preceding five years, and 8.7 less than the mean of those in the preceding ten years. It is lower than the Scottish infantile mortality rates of all previous years with the exception of 1921 and 1923, when the rates were 90.3 and 78.9 respectively. It compares favourably with infantile mortality rates from 1855 to 1915, which never fell below 100 and were usually over 110. Since 1915 the infantile mortality rate has been under 100 on seven occasions and above 100 three times.

### Causes of Death.

Of the 65,507 deaths, 65,009, or 99.2 per cent., were certified by a registered medical practitioner or by a procurator-fiscal. The remaining 498 uncertified deaths is the smallest number yet recorded. In 64,355 instances, or 98.1 per cent. of the total, the cause of death was definitely specified, while in 1.5 per cent. there was an unsatisfactory entry such as "sudden death," "heart failure," or "natural causes." With regard to the infectious fevers, deaths from enteric fever numbered 52. It is pointed out that from 1865 to 1882 deaths from this cause annually numbered more than 1,000, and from 1883 to 1903 more than 500. Since this time enteric fever as a cause of death has been diminished, the smallest number of deaths in any one year having been 34, in 1924. Typhus fever was responsible for 4 deaths, all in Greenock, and it is pointed out that from the year 1865 to 1871 the deaths from this cause

constantly numbered more than 1,000 annually. No deaths from small-pox were registered, and there had been no deaths from this cause since the year 1921. Measles was responsible for 512 deaths, which are 1,080 fewer than in the previous year. This is the smallest number of deaths from measles with the exception of the number 269 registered in 1921. Scarlet fever caused 404 deaths, this number being 6 fewer than in the previous year. It is pointed out that from 1855 to 1876 these deaths constantly numbered more than 2,000 annually, and were at a maximum of 6,321 in 1874. The smallest number in any one year was 168 deaths, registered in 1918. Whooping-cough caused 1,737 deaths, which were 112 more than those of the previous year. The deaths due to diphtheria numbered 505, being 63 more than in the previous year; before 1896 deaths from this cause constantly numbered over 1,000, but since 1897 the number has been gradually falling. Among the other epidemic diseases, encephalitis lethargica was responsible for 154 deaths, erysipelas for 150, cerebro-spinal meningitis for 83, infantile paralysis for 21, malaria for 9, and dysentery for 7. The deaths from encephalitis lethargica were 27 fewer than those of the previous year. Deaths from influenza in all numbered 1,246. This number is 1,244 fewer than in the previous year, and compares favourably with 11,111 deaths in 1918, 7,215 in 1919, and 3,706 in 1922. The number in the year under review is smaller than in any year subsequent to 1917, with the exception of 1923. Tuberculosis in all forms was responsible for 5,390 deaths. This number is 263 smaller than in the previous year, 418 fewer than the mean of the numbers for the preceding five years, and 1,228 fewer than the mean of those of the preceding ten years. It is the smallest number of deaths from tuberculosis yet recorded in Scotland. It is pointed out that in 1870 deaths from tuberculosis in Scotland attained a maximum of 13,027. The annual number fell below 11,000 in 1884, below 9,000 in 1910, and below 7,000 in 1919; the present is the fifth consecutive year in which these deaths have numbered fewer than 6,000. Of the 5,390 deaths ascribed to tuberculosis, 3,734 were due to tuberculosis of the respiratory system—153 fewer than the corresponding figure for the previous year, and the least number of deaths from this cause yet recorded in Scotland. In the larger burghs taken collectively the death rate from tuberculosis of the respiratory system was 91 per 100,000, in the smaller burghs 65, and in the county districts 62. The deaths due to malignant disease numbered 6,675, constituting a death rate of 136 per 100,000. Both the number of the deaths and the rate are the highest yet recorded, the deaths being 177 more than in the previous year, 528 more than the mean of the numbers of the preceding five years, and 862 more than the mean of those of the preceding ten years. The male death rate from this cause was 129 per 100,000, and the female death rate 144. Of the total number, 4,679 were ascribed to carcinoma, 266 to sarcoma, and 1,730 to other specified forms of malignant disease. The most frequent sites of malignant disease among males were: stomach 763, intestines 490, rectum 238, liver 193, oesophagus 155, prostate 136, and tongue 199, an order of frequency the same as in the previous year. The most frequent sites among women were: stomach 748, intestines 585, breast 566, uterus 461, liver 294, and rectum 186. Diabetes was responsible for 457 deaths, of which 168 were males and 289 were females. It is pointed out that deaths from diabetes in recent years have shown a considerable diminution, especially in the male population. Syphilis was the stated cause of death in 114 instances, a number 37 less than in the previous year. Pernicious anaemia was stated as the cause of death in 447 cases. The total number of deaths attributed to pneumonia during the year was 5,821, including 428 deaths from pneumonia associated with influenza. This number is 1,870 less than that for the previous year. Deaths attributed to violence numbered 2,817, which is 218 more than in the previous year.

#### Vaccination.

The report deals especially with the vaccination of children born in the year 1924, who in ordinary course should have been vaccinated during that year or during the first half of 1925. Of the 106,901 children born in 1924,

99,077 survived at the age of 6 months, when statutory vaccination should have been carried out. Of these, 62,382, or 62.95 per cent., were either certified as having been successfully vaccinated or were reported to be unsusceptible to vaccination. The number not reported to be vaccinated was 35,808, or 36.14 per cent., of whom 29,568 remained unvaccinated by reason of a declaration of conscientious objection on the part of the parents. It is pointed out that prior to the passing of the Vaccination (Scotland) Act of 1917, which made conscientious objection of parents a valid reason for avoiding statutory vaccination, more than 91 per cent. of the surviving children were successfully vaccinated. Since this there has been a gradual annual fall in the number vaccinated, with the exception of the year 1920, in which there was an epidemic of small-pox in Glasgow, when the percentage rose temporarily to 70.54.

## VOLUNTARY HOSPITALS IN GREAT BRITAIN.

### SEVENTH ANNUAL REVIEW.

THE seventh annual report on the voluntary hospitals in Great Britain, excluding London, for the year 1925 has just been issued. It has been compiled by Mr. R. H. P. Ord, acting director of hospital services, Joint Council of the Order of St. John of Jerusalem and the British Red Cross Society, and has an introduction by Sir Arthur Stanley, Chairman of the Joint Council. A summarized record of the work of 749 hospitals is given, and an attempt is made to define the position of the provincial hospitals of Great Britain in respect of the facilities provided for treatment, the extent to which they are utilized, the annual cost of maintaining them, and the sources of the funds concerned. These subjects are illustrated by fifty-one tables. Since the publication of the last report the area covered by King Edward's Hospital Fund for London has been enlarged to include twelve hospitals with a total of 332 beds, which were previously considered extra-metropolitan. The present report deals with 749 of the 791 provincial voluntary hospitals, the exclusion of the remainder being due to failure to issue reports, or to forward them in time to the Joint Council.

#### Financial Position.

During 1925 the total receipts of the hospitals under review amounted to £8,139,220; of this total the expenditure on maintenance and development accounted for £7,121,090, leaving a surplus of £1,018,130. More than 75 per cent. of the hospitals at the end of the year had a credit balance in their maintenance accounts. With the exception of 1924, there has been an annual improvement in the financial position since 1920, and the invested funds have increased during the same period by nearly £6,000,000. Taking the English provincial hospitals as a whole, the percentages of the income obtained from the three sources of interest from investments, voluntary gifts, and earnings was 15.1, 63.5, and 21.4; the corresponding figures in the case of 118 London hospitals were 21.8, 45.6, and 34.6. The support received in the form of subscriptions to the provincial hospitals was greater in 1925 than in any of the previous five years, and the level of donations was well maintained. The amounts derived from the various forms of contributory schemes have grown from £25.22 per available bed to £35.58. It is shown further that hospitals with highly developed contributory schemes have overcome their financial difficulties to a large extent, there being no apparent difference in this respect between industrial and agricultural areas. In the large hospitals this source of income was double that of any of the other principal sources. The amount derived from the public services has fallen to less than 10 per cent. of the total income; contributions in respect of military and pensioner patients have almost ceased, but with the increasing co-operation between the State and voluntary hospitals the income under this head is likely to increase. In Scotland, where receipts from legacies form a very important part of hospital income, there was a diminution in this respect during the year under review, but, nevertheless, there was a surplus of receipts over expenditure of £308,146. The financial stability of Scottish hospitals is further shown by the fact that, whereas in 1920 the deficit of ordinary income

amounted to £78,158, in 1925 it was only £17,397, and to meet this deficit there was available a sum of £227,537 from free legacies.

#### General Statistics.

In round figures over half a million in-patients and two and a quarter million out-patients were treated in the English and Welsh provincial hospitals during the year, the Scottish figures being 117,000 and 376,000 respectively. This represents an increase on last year of 40,000 in-patients and 150,000 out-patients. A complaint is made that the lack of uniformity in presenting the statistics in hospital reports, particularly in regard to the number of out-patients, is the cause of much confusion and even inaccuracy. It is suggested that the records of out-patients should include the numbers treated under such headings as medical, surgical, ophthalmic, and aural, while the out-patients' statistics should be tabulated to show the various departments, such as casualty, medical, surgical, and ophthalmic. The number of new patients should be recorded separately from the subsequent and total attendances. It is added that the volume of work performed by the voluntary hospitals is one of the fundamental factors in establishing a basis of defence for them as a system, and the details provided should, therefore, be full and accurate.

#### Evolution and Progress.

According to the practice established two years ago, the report contains special articles on matters of importance to hospital authorities. Mr. Thomas A. Pole, F.R.I.B.A., gives a very interesting account of one hundred years of hospital planning—1825 to 1925—illustrated by simple block plans. The general arrangement of the various component parts, such as wards, operating theatres, administrative blocks, and so on, is shown to have improved very obviously during this period, and the importance of making no initial mistakes in arranging the various blocks when planning a new hospital is emphasized. Thus an adequate and well placed store accommodation, for example, may easily be the means of reducing the annual wage bill. The recent increase in the number of small hospitals providing about thirty or forty beds has given scope for much ingenuity in construction, although such buildings are inevitably relatively expensive. On the other hand, there is some danger of an institution of more than 500 or 600 beds becoming too unwieldy for proper administration, and there is a tendency in the large towns to establish branch hospitals on the outskirts. Mr. Pole believes that in the future the original central buildings will function as emergency units, the real hospitals for treatment and convalescence being placed on the outskirts of the cities on ample and open sites free from encroachment.

Sir Basil E. Mayhew discusses the *Revised Uniform System of Hospital Accounts*, issued in January, 1926, and referred to in the *Journal* of May 8th and 15th (p. 873). Dr. G. F. Barham, medical superintendent of the London County Mental Hospital, Claybury, in a thoughtful account of the relation of mental hospitals to other medical institutions, appeals for closer co-operation between general hospitals, clinics, and mental hospitals. He advocates affiliation between a mental hospital and the nearest general hospital, if possible with a school of medicine attached, in order that the means of treatment of mental disease may be increased, research work organized, psychological medicine be taught more extensively, and better facilities be acquired for training nurses. He envisages the formation of homogeneous units within a scheme of hospital organization to include the clinic of a general hospital, a reception hospital, and a mental hospital. He asks for much greater freedom for the treatment of mental cases in clinics and private hospitals, together with the adoption of the voluntary system on the widest basis compatible with security. He also desires improved education of public opinion in regard to mental disorders and the need for early treatment; all semblance of compulsion and detention should be removed as far as possible. The subject of providing beds for paying patients in voluntary hospitals is dealt with in a series of short articles by twelve hospital secretaries. Reference is made to the paper by Mr. A. G. E. Sanctuary mentioned in the *Journal* on April 24th, 1926 (p. 740).

Sir John Robertson, medical officer of health for Birmingham, appeals for the establishment of maternity wards in general hospitals, and expounds the advantages of combining maternity work with general hospital treatment. He does not think, however, that there will be any very large call on hospitals for maternity beds until the public generally realizes the advantages of the hospital over the home, not only in complicated, but also in uncomplicated confinements.

## New Zealand.

[FROM OUR SPECIAL CORRESPONDENT.]

#### POST-GRADUATE OBSTETRIC TRAINING.

THE view that the post-graduate instruction of medical practitioners in obstetrics is necessary, even if only to combat the very prevalent belief that surgery is the cure for lack of obstetrical experience, is advanced by Dr. Henry Jellett of Christchurch, consulting obstetrician to the Health Department of New Zealand, in a report to the department on the subject of maternal welfare. He adds: "I refer particularly to the increasing tendency, not only in New Zealand but elsewhere, to perform Caesarean section for many types of obstetrical complications." A movement is on foot within the New Zealand Branch of the British Medical Association to establish a New Zealand Obstetrical Society. This society will be able to collect and collate valuable data. The maternal mortality in New Zealand is rather higher than it should be in comparison with several other countries, and assuming that statistics are to be wholly relied upon, there must be a higher incidence of obstetrical abnormalities in New Zealand or a not altogether satisfactory standard of technique on the part of doctors and nurses.

#### UNREGISTERED DENTISTS.

There is an excellent dental school at Otago University which should be the only avenue through which dental students proceed to qualification in dental practice. Already since the war special examinations of low grade have been granted to dental students, and indeed to dental mechanics, who had served in the war and whose course of training had been in that way interrupted. Political agitation, however, has been active to open further the door of easy access to the profession; it has been resisted not only by the Dental Association but by the medical profession. A Royal Commissioner was recently appointed to report on the whole matter, and his report has caused consternation to those who think that the standard of dental education should be under the control only of the Senate of the New Zealand University. The report is unjust to the students who incur the expense and labour of the regular statutory course in dentistry. The Commissioner recommends that fifty-seven unregistered dentists, whose names are listed should be allowed to sit for examination prescribed by the New Zealand University Senate, on the recommendation of the Dental Faculty of the University of Otago. The examination is to be as nearly as possible similar in character to, but not lower than, that prescribed in 1922 and 1923. The Commissioner recommends that one examination be held in December, 1927, and a second in December, 1928, for applicants who may not satisfy the examiners in 1927. It is also recommended that legislation be passed to allow the fifty-seven dentists named to practise until March 31st, 1929, pending registration. Thirty-two of the fifty-seven dentists are classified as returned soldiers, and six are discharged soldiers who served in New Zealand only. An Act to give effect to the terms of this extraordinary report was passed by the New Zealand Legislature.

#### TREATMENT OF LEPROS.

A leper station is established at Makogai Island in Polynesia, and 308 lepers are under treatment. New Zealand accepts liability for 63, including 12 from Samoa and 41 from Cook Islands and Niue. The number discharged cured since the station was opened in 1911 and up to June 30th, 1926, was 119. Sixteen others are under observation but have not yet been without signs of disease.

for two years. The medical superintendent includes in his methods of treatment moogral, pure chaulmoogra oil, urotropine intravenously, and sodium morrhuate by deep subcutaneous injection. Injections of neokharsivan are given for yaws complicating leprosy. It is exceedingly difficult, says the medical superintendent, Dr. Neff, to give any accurate estimation of the value of any specific treatment for leprosy. As a general rule cases of nerve leprosy tend to improve of themselves if under good hygienic conditions, which include their separation, as far as practicable, from the nodular cases. Many nodular cases also improve slowly; they are, however, liable to relapses, and on that account should not be discharged.

## England and Wales.

### ANTE-NATAL WORK AT THE BRISTOL ROYAL INFIRMARY.

The governors of the Bristol Royal Infirmary recently resolved to add to the honorary staff an assistant physician who should be in charge of the ante-natal department. This department began in 1921 with the establishment of an ante-natal clinic in the department of obstetrics, under Professor Walter Swayne. Dr. Lily Baker, then obstetric registrar, took charge of the clinic, and under her care it developed so rapidly that now 1,250 new cases attend annually. The benefits derived can be judged from the fact that the incidence of difficult and dangerous cases in the obstetric department has fallen by almost 50 per cent., and proper precautions can be taken to deal with those which may inevitably occur. On October 26th, the election committee of the governors, with the unanimous support of the honorary medical staff, elected Miss Lily Baker, B.A., M.B., B.Ch.Dubl., F.R.C.S.I., to occupy the new position on the staff, and in so doing created, we believe, an important precedent, for general hospitals with teaching schools, of appointing a woman to full membership of the honorary medical staff. Dr. Lily Baker took many prizes and honours as a student, and has had a distinguished career since qualifying. Soon after the beginning of the war she became acting obstetric registrar at the Bristol Royal Infirmary when the late Professor Walter Swayne was away on military service. On his return she joined the W.R.A.F. and served in France and Germany until the end of 1919. Since 1915 she has been an examiner and recognized lecturer to the Central Midwives Board.

### ST. THOMAS'S HOSPITAL DINNER.

Old students of St. Thomas's Hospital to the number of two hundred or more gathered at the Hotel Victoria at dinner on October 29th. Dr. R. Percy Smith was in the chair, and among the guests were Sir John Roso Bradford (President, Royal College of Physicians), Sir Arthur Stanley (treasurer of the hospital), Surgeon Vice-Admiral Sir Joseph Chambers (Medical Director-General R.N.), and Lieut.-General Sir Matthew H. G. Fell (Director-General A.M.S.). The chairman devoted his speech to personal reminiscences, extending back over half a century, of the hospital and school, and described some famous old figures at St. Thomas's during the last generation. Sir Arthur Stanley preferred to speak rather of the present and future, and referred to the developments which had been made possible by the generosity of the Rockefeller Foundation on the one hand, and the faith and courage of the medical school in rising to the occasion on the other. He mentioned that this was the last year, in all probability, in which the old students would meet for their annual dinner anywhere save in their own home, for the club opposite the hospital was approaching completion. Here, by the way, was already housed the finest collection of cups of which any hospital in the country could boast. Another benefactor to whom he had to allude in speaking of the new extensions was Lord Riddell, who, when he (Sir Arthur Stanley) was endeavouring to prove to his fellow governors that the proposition was not a sound one financially, promptly made it so by coming forward and lending a very large sum of money at a very low rate of interest. The

dean of the school (Sir Cuthbert Wallaco) made feeling reference to some outstanding St. Thomas's men who have passed away during the year. Among various matters of domestic interest on which he touched was the fact that forty sons of old students are in the school at the present time. Lord Riddell, in response to the toast of his health, proposed by Dr. J. S. Fairbairn, acclaimed the medical profession as the virtual rulers of society, in succession to the priests of ancient times and the kings of a more modern order. The whole object of civilization was to improve health and extend life. The doctor, he said, had surveillance over the individual from the cradle to the grave. A very successful evening ended with many compliments to the chairman, voiced by Sir George Makins.

### NOTIFICATION OF OPHTHALMIA NEONATORUM.

The new public health (ophthalmia neonatorum) regulations place the responsibility for the notification of ophthalmia neonatorum upon the medical practitioner in charge of the case, and the Ministry of Health is urging upon local authorities the importance of refraining from any action likely to deter midwives from promptly seeking medical aid in all cases of inflammation of or discharge from the eyes of infants. To that end it suggests that local authorities should not in future exercise their power to recover from the parents the fee paid to the medical practitioner called in by the midwife. Hitherto the London County Council has taken steps to recover such fees on a scale graduated according to the family income and the number of dependants. The Midwives Acts Committee reports that for a long time it has been impressed with the difficulties surrounding cases of inflammation of or discharge from the eyes of infants. Midwives have been reluctant to obtain medical assistance, in many cases because they shrink from involving their patients in charges for medical attendance. Often, when the onset has appeared to be mild, they have tried to treat the eyes themselves. The committee concurs in the view of the Ministry that nothing should be done which would be likely to deter midwives from promptly seeking medical aid in such cases, and therefore it recommends that no steps be taken to recover the fee paid to the practitioner. The amount hitherto recovered by the Council from patients or other persons responsible has been about £150 a year.

### OXEHAMPTON AND DISTRICT COTTAGE HOSPITAL.

The Okehampton and District Cottage Hospital, which has been built at a cost of £6,700, as a war memorial, was opened formally on October 20th. The site of the hospital was presented by the mayor and mayoress, Mr. and Mrs. Blatchford, and largely through efforts of ex-service men the greater part of the money required was quickly raised. The foundation stone was laid on May 27th, 1925. The building, which faces southwards, has a view of the moors across the valley, and the ground floor contains two wards for four beds, as well as the matron's room, surgery, dispensary, and the operating room. On the first floor there are two private wards, a staff common room, and bedroom accommodation for seven. A well planned sanitary wing with good ventilation is situated on the north side of each ward, and there is a possibility of extension of the main wards, if required at a future date. Dr. E. H. Young, chairman of the hospital, described how the ex-service men had urged five years ago that the war memorial should take the form of a hospital. In view of the long waiting lists of the hospitals at Exeter and Plymouth, he believed that a valuable service was being rendered by the provision of this new hospital, which would not compete with the larger ones elsewhere, but would be able to ease the pressure on their accommodation.

### THE SURGEONS' DEBT TO THE INSTRUMENT MAKERS.

The members of the Surgical Instrument Manufacturers' Association met at dinner at the Holborn Restaurant, London, on October 29th, with Mr. Ernest W. Mayer in the chair. Among the principal guests were Dr. Irwin Moore and Mr. J. Ferris-Scott, Financial Secretary and Business Manager of the British Medical Association. Dr. Irwin Moore complimented the industry upon its efficiency in design and production, and, speaking as a

laryngologist and aural surgeon, he traced the progress in his speciality during recent years. Removal of the enlarged and unhealthy tonsil had, he said, now been converted into practically a bloodless operation, thanks to the instruments which had made possible the improvement in technique. In early career of the larynx, thanks again to instruments of precision, cures could now be obtained in 80 per cent. of the cases, as contrasted with 14 per cent. operation mortality and 43 per cent. recurrences thirty years ago. For more advanced cases the instrument makers had supplied an artificial larynx, by means of which the patient was able to speak in an audible voice. With regard to operations on the mastoid and labyrinth there were most delicate and intricate instruments available for the restricted area. No greater development had taken place in the recent history of surgery than peroral bronchoscopy. The present-day oesophagoscope and bronchoscope had evolved from the endoscope of Richard Cruise and the auroscope of John Brunton, two pioneers to whom all homage was due. The case of the celebrated engineer Brunel illustrated the helplessness of the surgeon eighty years ago. Brunel accidentally inhaled a half-sovereign into the bronchus. In those days the recognized method of treatment was to hold the patient upside down and strike him on the back; if this failed tracheotomy was performed. Ordinary inversion failing in the case of Brunel, Sir Benjamin Brodie opened his trachea and made a number of unsuccessful attempts to reach the coin by inserting forceps through the wound. Brunel himself, however, being an engineer, came to the rescue and designed a revolving platform, hinged so that one end could be elevated or lowered, and, strapped prone on this, his head and trunk were suddenly depressed while he was violently struck on the back. The coin fortunately was shot out of his bronchus into his mouth and fell on the floor. This "inversion" period, Dr. Irwin Moore added, continued up to twenty-five years ago, when the practical utility of the direct method of bronchoscopy was first demonstrated. In the case of foreign bodies accidentally aspirated into the respiratory tract the mortality had been reduced from the 52 per cent. of the pre-laryngoscopic period to between 5.3 and 1.7 per cent., depending on the skill and experience of the operator. In the case of foreign bodies impacted in the food passages the mortality had been reduced to 3 per cent. Mr. Ferris-Scott, who also responded for the guests, recalled the tribute which a past President of the British Medical Association, Sir William MacEwen, had paid to the surgical instrument makers when he said that no matter what skill the surgeon might have at his command, unless he had proper instruments he was as helpless as a tyro. Other speakers were Mr. P. C. Maw and Colonel A. Young. The chairman emphasized the merits of the British industry, and referred regretfully, as did other speakers, to their inability as yet to obtain protection under the Safeguarding of Industries Act.

#### SIR JAMES BARR.

Sir James and Lady Barr were entertained by the Liverpool Ulster Association, of which Sir James is president, at a farewell dinner at the Exchange Station Hotel on October 26th. Dr. T. Clarke presided over a large gathering of the committee and ladies, and, in proposing the health of the guests, said that Sir James Barr had never forgotten his old country, but had always stood forth as an Ulsterman. Sir James Barr, who was received with musical honours, said he had always been proud that he was an Ulsterman, but never prouder than during the war, when Ulster did her duty, and even more. It was a painful thing, continued Sir James, for Lady Barr and himself to leave Liverpool, but after fifty-two years' hard work in the city he felt he was entitled to a little leisure. They were not leaving through ill health. It was far better to retire in the full enjoyment of life than to wait until a senile condition was reached. They were not going to lead an idle life; he could not be happy if he had nothing to do. As far as his professional work was concerned, he had taken a special interest in preventive medicine ever since he devoted himself to the subject as

medical officer at Kirkdale Prison in 1877 and 1878. He wanted people to look after their health just as much as they attended to their diseases.

#### PART-TIME MEDICAL OFFICERS OF THE LONDON COUNTY COUNCIL.

Assistant medical officers employed by the London County Council on part-time engagements for the school medical service are paid inclusive salaries of £360 a year and £180 a year for six and for three half-days' duty a week respectively. It has been found necessary to fix a basis of calculation in connexion with payments to such officers in respect of half-days worked in excess of the number indicated in the terms of their engagements, and with deductions from salaries in respect of leave of absence in cases in which full pay is not allowable. It has been reckoned that normally the two classes of medical officers work about 264 half-days and 132 half-days a year respectively, and the Council has decided to fix the basis of calculation of pay accordingly. A year's duty is therefore to be reckoned as 264 half-days a year in the case of officers appointed for six half-days a week, and 132 half-days a year in the case of those appointed for three half-days a week.

## Scotland.

#### VETERINARY SCIENCE IN SCOTLAND.

THE annual report of the Royal (Dick) Veterinary College at Edinburgh for its 103rd session, 1925-26, has just been issued. This shows the wide area from which students are drawn, as 22 counties in Scotland, 15 in England, and 5 in Ireland had been represented, while students also came from South Africa, India, Palestine, Peru, and the Malay States. The number of graduates attending advanced courses of instruction had steadily increased, and it had been found that the opportunities for post-graduate study had been a source of inspiration to students taking the ordinary professional curriculum. A centenary post-graduate fellowship of the annual value of £250 had been instituted as a permanent memorial of the 100th anniversary of the College's foundation; the first Fellow elected during the past session had been pursuing an investigation on animal tuberculosis, working both in the Dick College and in Paris. New buildings for classrooms, laboratory, and hospital had been opened by the Secretary of State for Scotland during the year, and a recent development had been diagnostic work in diseases of poultry; by an arrangement with the Scottish Board of Agriculture, poultry-keepers were now able to obtain information and advice regarding disease among their stock.

The Glasgow Veterinary College held its annual prize distribution on October 19th. Professor Glaister, chairman of the governors, who presided, drew attention to the fact that the College was now existing under some financial difficulty. The governors had determined to carry on the College despite the withdrawal of the grant from the Board of Agriculture in Scotland. The appeal for funds had brought in about £8,000. The certificates and prizes gained during the last session were then presented by Sir Charles Cleland, chairman of the Glasgow education authority, who remarked that the College was passing through a testing time; it was expected that the students, teachers, and governors would do all they could to increase the efficiency of an institution which had done excellent work in past years. While they felt respect for the institution housed in Edinburgh, they believed there was ample room for a Glasgow college as well, and he thought that the future was bright, as veterinary medicine was more and more being associated with the great subject of public health.

#### AFTER-CARE PROBLEMS OF MENTAL DEFECT.

A conference under the auspices of the Scottish Association for Mental Welfare was held on October 22nd in the Training College, Dundee. Miss Evelyn Fox, honorary secretary of the Central Association for Mental Welfare, London, read a paper on after-care of mental defectives, in which she referred to the fact that Scotland was in the



forefront in the scientific and humanitarian care of the insane, and expressed the hope that the after-care of the mental defective would shortly be extended. Mental welfare work fell into two sections—the care of defectives in schools and the care and protection of defectives in the community. Provision should be made to give defectives, on leaving institutions, amusement and recreation suitable for their limited mentality, and also for handicraft classes and workshops under conditions adapted to their temperament and physique. In a paper by Dr. Eichholz, chief medical inspector, Board of Education, London, it was stated that roughly 60 per cent. of the whole ascertainable number of educable mental defectives were at present receiving instruction. Under a well managed scheme of after-care it should be possible to place at work from 45 to 50 per cent. of these pupils; 20 or 30 per cent. of them would probably require custodial care, and the remainder would require close supervision in order to keep them at work. Dr. Jardine, medical officer of the Scottish Education Department, said that in 1919-20 the number of children attending special schools or classes in Scotland was 2,449, while in 1924 the number had increased to 3,440. In Glasgow the proportion was 114 per 10,000 children, in Edinburgh 64, in Aberdeen 60, and in Dundee 23. At the present time there was accommodation for 3,500 children in special schools in Scotland, but according to his calculation there was need for provision for 7,500. Professor W. W. McClelland, director of studies, Training College, Dundee, referred to the special classes for backward children which might be attached to ordinary schools. It was a mistake to condemn a child prematurely to the special school, because undoubtedly a certain stigma attached. Dr. Chislett, superintendent, Stoneyetts Institution, Glasgow, who read a paper on the institutional care of the adult defective, said it was a matter for regret that now, nearly thirteen years after the passing of the Mental Deficiency Act, Scotland had done very little towards providing colonies for adult mental defectives, especially when it was remembered how much had been accomplished by the various institutions for mentally defective children. All the dangers of mental deficiency to the community arose from the adult defective. After-care associations concerned with visiting defectives in their homes and with boarding them out in supervised private dwellings did some good, but there were many adults whose freedom was a menace both to themselves and to the community at large. The only suitable treatment for these was segregation and a continuation of the treatment they had received as children. Colonies where this could be carried out were imperative. The attention of the local authorities had of late been directed more and more to the mentality of the criminal classes, and prison medical officers had for many years been ready to admit mental defect as accounting for certain criminal propensities. Dr. Clarkson (Larbert) said that a State institution for criminal defectives in Scotland was urgently required.

#### INDUSTRIAL HEALTH.

The Industrial Health Education Council, which was formed in 1922 for the purpose of disseminating knowledge likely to prevent disease and accidents to people engaged in industry, held its first meeting for the new session in Edinburgh on October 27th. Originally this was a purely Scottish organization, but its activities, having recently been attended with considerable success, have been extended into England and Wales. In order to meet with growing demands from England the Council has now formed itself into an Industrial Health Education Society for the United Kingdom. Sir William Haldane, W.S., Edinburgh, who was in the chair, said that there had been a great demand from over the border for the work and help and guidance of the Council, and the Ministry of Health had asked it to extend its work in the south. Sir Malcolm Smith said that the success of the effort had been surprising: there was evidently a field in the industrial world awaiting development, for the people were very anxious to get information as to the means of maintaining their health and of avoiding illness. He believed that the organization would in time become of still greater importance and that it might be taken over by the Government.

## Ireland.

### ULSTER MEDICAL SOCIETY.

THE opening meeting of the session of the Ulster Medical Society was held in the Medical Institute, Belfast, on October 28th. The outgoing president, Mr. J. A. Craig, F.R.C.S., introduced his successor, Dr. M. J. Nolan, medical superintendent of the Down District Lunatic Asylum. After the minutes had been read, the President called on Dr. A. F. Hurst of Guy's Hospital, London, who read a paper on "The constitutional factor in disease." Dr. Hurst referred to the old conception "diathesis" in relation to disease, so popular in France many years ago, and to the disuse into which the term had fallen in England; this was due to the scientific methods in examination which had been more and more used as chemistry and, later, biochemistry were developed. Too much attention had been paid in modern methods to parts of the body, too little to the patient as a whole—that is, to a biological knowledge of the constitution. Taking the stomach as his first instance, Dr. Hurst said that great variations had been found in its anatomy, and its functioning or chemistry; the normal, average, or orthotonic stomach was, as regards size, found in 80 per cent. of healthy persons, but in 4 or 5 per cent. there was the short stomach, supposed erroneously to be due to hypertonic, and in 4 or 5 per cent. the long stomach, supposed to be due to want of tone, and called gastropotosis; as the transverse colon follows the lower border of the stomach, similar descriptions were given of it. In about 50 per cent. of individuals the quantity of hydrochloric acid in the stomach secretion was average or normal, but 4 or 5 per cent. had hyperchlorhydria, and 4 or 5 per cent. had no hydrochloric acid, yet these persons, above or below the average, were healthy people; short or long stomachs, and a degree of acidity above or below the normal, ran in families, and no difference was found in the mucous membrane. If the 80 per cent. average people suffered from septic teeth they escaped or had only some indigestion; if persons with hyperacidity had focal infection in the mouth, a high proportion developed a duodenal ulcer. If patients with hypochlorhydria had septic foci in the mouth the microbes escaped into the intestine, owing to the absence of the disinfectant action of free hydrochloric acid. Of cases of bacillary dysentery, 25 per cent. had no free hydrochloric acid, and nearly a third of patients with appendicitis and cholecystitis were hypochlorhydriacs. This achlorhydria also predisposed to Addison's anaemia and to subcutaneous combined degeneration of the cord. In three-fourths of the cases Addison's disease was a family disease. From this it followed that the gastric juice of the relations of a patient with Addison's disease should be examined, and if achlorhydria were found preventive measures taken. If a patient improved or recovered, relapse or recurrence was common, as the predisposition (the absence of free hydrochloric acid) was still there. In all cases of achlorhydria, free dilute hydrochloric acid should be given (2 drachms thrice daily)—one dose early in the morning on a fasting stomach, and two others with meals. The study of blood pressure, Dr. Hurst said, illustrated the same proportions: 80 per cent. of individuals had an average of 125 mm. (male) and 115 mm. (female); and the pressure was no higher at 40 than at 16, but some 3 to 5 per cent. of healthy persons had a pressure of 150 mm. (women 140) and 3 to 5 per cent. a pressure of 105 mm. An insurance company said that the best guarantee was a low blood pressure—the asthenic type; it predisposed to nothing, but the patients were more liable to suffer from fatigue. High blood pressure predisposed to changes in the arterial walls, and persons presenting it were more apt to suffer from septic foci, and from too much eating, drinking, and smoking. The symptoms were due to overwork and worry, and the toxins already mentioned. Another instance showing the importance of constitution was furnished by the predisposition of those with hyperacidity of the urine to contract nephritis in scarlatina. Of 100 patients with scarlatina, 20 had

hyperacid urine, and of these 14 developed nephritis; of the 80 of moderate or low acidity very few, and of those whose urine was systematically kept alkaline only 3 per cent., developed nephritis. Gall stones had been called a family disease; some 30 per cent. of patients gave a family history; this was due to a variation in the fat metabolism found in a certain number of persons; it tended to produce more than the average amount of cholesterol; and this excess when cholecystitis set in started the formation of gall stones. As a therapeutic deduction the yolk of eggs and cream should be debarred in any one with trouble in the gall bladder. Further illustrations were drawn from diabetics, 30 per cent. of whom were said to give a family history, and from asthmatics. People might have an idiosyncrasy for the exciting causes of asthma, but without the asthmatic constitution full asthma would not be developed; it was wrong to allow people to stay in a locality in which they were prone to be affected, and this especially held with regard to schoolboys. A boy ought not to be kept at a school where he was constantly suffering. Every asthmatic had some place where he was free, and in such a locality he should live.

A vote of thanks to Dr. Hurst, moved by Dr. Thomas House and seconded by Professor Fullerton, was passed with acclamation. In conveying it to Dr. Hurst the president said that Dr. Hurst had been elected an honorary Fellow of the society, in whose list there were now many distinguished names.

#### ROYAL VICTORIA HOSPITAL, BELFAST.

On the morning of October 29th Dr. Hurst gave two clinics at the Royal Victoria Hospital, Belfast—one on a case of pernicious anaemia, and the other on a case of achalasia of the cardiac sphincter of the stomach giving rise to enormous dilatation of the oesophagus. A large number of medical men attended, and all the students. At the end Mr. Mitchell, chairman of the medical staff, expressed the warm thanks of all present to Dr. Hurst for his clear and illuminating description of these two cases.

#### DUBLIN'S HEALTH AND BABY WEEK.

An educational health and baby week was organized in Dublin by the Women's National Health Association from October 16th to 23rd. In order that the campaign might reach every home in the city, instead of using one central hall for lectures and exhibitions, advantage was taken of the baby clubs, which are situated in the nine dispensary districts, and each club was a centre of activity during the week, special lectures, health talks, and demonstrations being given. The care of the teeth and oral hygiene was the subject of lectures at the local factories and national schools. That these lectures were very much appreciated was shown, not only by the essays which the school children wrote, but by the fact that some of the managers have asked that a course of lectures on health and hygiene should be given in the schools once a month during the winter. In the factories the management stopped work fifteen minutes before time in order that their workpeople might hear the lectures, and the workers voluntarily remained over time. The local authorities arranged for health talks in the public libraries during the week, and they also distributed leaflets. The week opened on Saturday, October 16th, with a display of folk-dancing by the children in the playgrounds. On Monday, at the Rotary Club, Mr. E. P. McCarron, Secretary to the Local Government Department, spoke on public health as affecting the State, and in the afternoon Dr. Falvey lectured on "What to do before the doctor comes." In the evening Mrs. Russell, M.B., broadcasted an address on public health. On Tuesday, in No. 1 West Dispensary District, violet-ray demonstrations were given, and great interest was shown in the lecture on artificial sunlight by Dr. Maurice Hayes. In the No. 1 East Dispensary District Mrs. Fegan Redmond lectured on vitamins, while in the No. 4 South City Dr. Alfred Boyd gave an interesting lecture on child welfare, which was followed by a lecture on Italian cities by Dr. Frank Dunne. On Wednesday, in No. 2 East, Dr. H. MacAuley gave a lecture on the open-air treatment of surgical tuber-

culosis. Dr. Stephenson, Dr. Lombard Murphy, Sir William Thompson, and Dr. Hennessy spoke of the advantages of open-air treatment as provided at Cappagh and Leysin. At Inchicore Dr. P. J. Keogh and Dr. Healy lectured on care of the mother and child, and Dr. McArey gave a special talk on the care of the eyes in school children. Miss Keogh, welfare superintendent in the factories of W. D. and H. O. Wills, gave her experience of the benefit of welfare centres to employers. On Thursday, at No. 2 South City, Dr. Freeman gave a talk on vitamins, and Dr. Crichton and Dr. Solomons lectured on the care of the mother and the child. On the same day, at No. 1 South City, Dr. Magennis, Dr. Keogh, and Dr. Keelan lectured to a large audience on child welfare. On Friday, at No. 3 South City, Dr. Devane gave a lecture on the care of the skin, and Dr. Gaffikin spoke on the school child. The week ended on Saturday with a health exhibition and demonstrations at the Mansion House. There was an afternoon lecture for the child welfare centres of County Dublin, and in the evening a public meeting, at which Mr. McCarron presided, and the principal speakers were Dr. Prudence Gaffikin, Dr. Hennessy, T.D., and Mr. Commissioner Murphy. At the end of the meeting prizes were awarded to the school children who wrote the best essays and to the babies who had come cleanest to the baby clubs during September. A prize is to be awarded subsequently to the mother who writes the best account of what she learnt during baby week.

## Correspondence.

### GOOD AND BAD DIETS.

#### *The Diabetic Diet.*

SIR,—In connexion with the recent contributions to the JOURNAL by Colonel McCarrison and Dr. Harry Campbell on "good" and "bad" diets in modern life, some of the effects noticed in the diietetic treatment of diabetes would seem to be strong evidence in support of their arguments. No one would, of course, advocate the diabetotic as the ideal diet, but some of the effects of the adoption of a diabetic diet, apart from the amelioration of carbohydrate metabolism, point a lesson of importance to normal individuals.

The diabetic diet is the antithesis of the usual modern "bad" diet, which is composed so largely of soft, concentrated carbohydrate foods, such as bread, which are entirely absorbed in the small intestine. The diabetic diet, on the other hand, consists largely of bulky vegetables, which leave a large residue in the intestines, and extras, such as bran biscuits and agar jellies, which pass unchanged through the alimentary tract, are often added as a sop to appetite.

After the adoption of a typical diabetic diet, it is very rare to find any digestive trouble. The change is most noticeable in patients who have suffered from dyspepsia or constipation for many years before the development of diabetes, and in whom these symptoms were therefore not due to diabetes. In a short time they are able to eat anything, and rough and bulky vegetables and "heavy" meats, which previously gave them dyspepsia, cease to trouble them at all. Their appetites are excellent, and they usually eat a far bulkier diet than before without inconvenience and with relish. Most of these patients probably eat at least one pound of green vegetables a day. One of my patients who is allowed 15 grams of carbohydrate for breakfast insists on taking it all as vegetables, and starts the day with 18 oz. of cabbage along with his bacon and egg! This is as close an approximation to the pre-agricultural diet of primitive man, to which Dr. Campbell drew attention, as modern man is ever likely to tolerate. I have never seen the constipation of a lifetime able to withstand such a diet.

It seems impossible to say whether this improvement in digestive power is due to the mere bulk of the food or to its richness in vitamins, particularly vitamin B, whose deficiency has been blamed for intestinal atony. I incline to the former view, because many severe diabetics eat no

fresh fruit, and in winter their vegetables are practically all cooked, and yet they suffer from no signs of intestinal stasis. Another factor which may be important in improving the digestion of these diabetics is the reduction of the total calories in their diet, with the result that their metabolism never suffers from a surfeit of food. When the digestive tract is offered little, it seems to make the most of it.

So this as it may, it appears that the diabetic diet has some points about it which may be applied with advantage to the normal individual.—I am, etc.,

London, W.1, Oct. 30th.

R. D. LAWRENCE.

### THE IMPROVEMENT OF HEALTH WEEK EXHIBITIONS.

Sir,—I quite agree with the protest made by Dr. Burton in your issue of October 23rd (p. 760) concerning the introduction of the commercial element into exhibitions promoted by public health committees.

The sole object of these exhibitions should be educational; there should be no solicitation to buy or even to try a sample, and if space is sold to trading concerns this is inevitable. The only excuse for the admission of the commercial stall is to pay for the hire of the hall and other expenses. I submit that it would be preferable to defer the holding of a health exhibition until the money to make it a real one is available.

I have been associated with several health exhibitions, in all of which each exhibit was selected with a view to demonstrating some item of practical importance to the health of a working-class (or indeed any other) family. No space was sold; no samples were given away; good advice was given, nothing else, except in some cases a leaflet on some point concerned with health; nothing was sold except booklets on health for those who asked for them.

At one such health week which finished on Saturday, October 23rd, the attendances in seven days numbered 43,667. This shows that the public appreciate, and will attend, an exhibition which is purely educational.—I am, etc.,

Hull, Oct. 25th.

W. ALLEN DALEY.

Sir,—The letter in your issue of October 23rd (p. 760) from Dr. Burton, medical officer of health, Ilford, on the above subject, opens a matter which I considered in a paper given on July 6th of this year at the Mansion House conference of representatives of sanitary authorities held in connexion with the Royal Sanitary Institute Congress, from which I quote:

"Prominent firms are quite willing to exhibit at such an exhibition, but of course it must be a *sine qua non* that the exhibition takes the form of an educational exhibition, and such firms are frequently quite willing to contribute according to the space occupied by them for their stand. This, of course, may very materially reduce the cost to the local authority. . . . It is, however, in respect of the assistance which may be drawn upon that care must be exercised. A generation ago there was a famous political satire, a story by name 'Ginx's Baby,' which depicted the use made of the working man by political parties. Likewise at the present day one might state that public health propaganda is becoming a 'Ginx's Baby.' It is used by insurance companies, who issue leaflets for distribution; pseudo health visitors visit from door to door, ultimately recommending some proprietary food or other article. It is because of these activities that the careful choosing of the exhibits accepted for health week or other exhibitions must be an important factor, and unless this is done judiciously the public will be unable to distinguish between the reasoned, well-balanced advice on health and the mass of camouflaged advertising propaganda with which the country is at present flooded."

I have noticed in the extracts from the paper which have been published so far that the warning and criticism part was generally omitted, while the practical aspects—for instance, the sources for material—were, perhaps quite naturally, given fairly fully. It may be that the income derived from the contributions of exhibitors and the reduction of expenses overshadow the care which must be exercised in the choice of exhibits, and the necessity for the health department of the local authority bringing into prominence their own health propaganda and arranging exhibits, demonstrations, and lectures directly in connexion therewith.

In 1921, building on my experience previously with such exhibitions, I arranged for one that year in Deptford, but while allocating free space in the hall to approved exhibitors, who were carefully chosen, these were allowed, still under such approval, to provide their own stands, but did not contribute in any other way. The control, therefore, was firm, and the public health department also provided exhibitions on diet, etc., and demonstrations, as well as lectures.

The whole point in my mind is one of adequate control by the medical officer of health.—I am, etc.,

G. CLARK TROTTER,  
Medical Officer of Health, Metropolitan  
Borough of Islington.

October 29th.

### PERSISTENCE OF TUBERCLE BACILLI IN BUTTER FROM TUBERCULOUS MILK.

Sir,—The opening observation of Dr. Cookson, the bacteriologist to the Sunderland sanitary authority, in his article published in your issue of October 9th (p. 637), is correct, but only states the case very gently and mildly. The danger due to the presence of tubercle bacilli in butter is only less than the danger arising from their presence in milk and cream.

Dr. Cookson does not seem to be aware of the work done on the subject on behalf of the United States Bureau of Animal Industry many years ago, and continued over a period of years—at least he does not make any reference to the investigation. One of the workers for the Federal Government—Dr. Schroeder—came to the conclusion that:

"Tubercle bacilli in milk are transferred to the cream, butter, and cheese made from it, and may occur in these products in greater concentration than they had in the milk from which they were derived."

And in April, 1910, the Bureau of Animal Industry reported that:

"The testing of infected butter has been continued, and in the later experiments of this nature the conclusions reached through former work have been confirmed. Tubercle bacilli will retain their vitality and virulence while in butter under common market conditions for at least five months."

(I may mention incidentally that typhoid bacilli also were demonstrated, in the course of the same investigation, to persist in butter for 151 days.)

I hope Dr. Cookson will forgive me if I suggest that when he next publishes an article, he read it over, with a view to making sure that he has written with precision and with lucidity. I experience a difficulty in understanding just what he means by the phrase "specimens of milk were collected from five tuberculous cows; three of these cows were afterwards shown to have extensive tuberculous lesions." I think I can guess what he wishes to express, but on first reading one wonders why he needs to state that three out of five tuberculous cows were tuberculous. I really do not know what he wishes to convey by the fourth paragraph in his article.

From Dr. Cookson's description of his experiments one is led to surmise that he is not *au fait* with the modern significance of the term "pasteurization" when it is applied to milk. He states that he heated samples at 55°, 60°, 70° C., and ingeniously describes careful stirring of the samples for thirty minutes, while the thermometer readings were carefully watched. Fifty degrees Centigrade (131° F.) is far below, and even 60° C. (140° F.) is below, the recognized minimum pasteurization temperature, whilst 70° C. (158° F.) is too high.

Pasteurization of milk involves its heating to a determined temperature, in closed vessels, for the appropriate period—most commonly 62.7° C. (145° F.) for thirty minutes—thereafter immediately cooling it to under 40° F., bottling it, and sealing the bottle. The freedom of milk, so treated, from tubercle, and all other pathogenic bacteria, has been demonstrated on innumerable occasions during the past thirty years, both by exact scientific experiments and by practical experience. The vital statistics of those cities in the United States where the very reasonable and moderate requirement is made that all milk sold for human consumption shall be safe—that is to say, either pure and

free from dirt and pathogenic bacteria if sold raw, or, in the alternative, pasteurized—are quite convincing. It is regrettable that so many people write, and speak, on this subject with inadequate information. The best modern dairy companies purchase the cleanest milk which they can obtain—and they pay more for clean milk than for less clean milk—and then they proceed to pasteurize it. Pasteurization is not intended to be a substitute for cleanliness, but it is a complementary measure. Even certified milk is always liable to contamination from human sources whilst being handled, as well as to that from tubercle bacilli arising from kine which have developed tuberculosis in the long interval of six months permitted between tests.

After reading the description of such crude experiments as Dr. Cookson describes; after learning from him that butter was made by using a "starter," with no reference to any test of the latter for freedom from bacilli, one is by no means surprised to learn that he came to the erroneous conclusion that pasteurization is not always a sufficient protection against the survival of tubercle bacilli, although one must demur at his description of his experiments as most careful pasteurization.—I am, etc.,

October 14th.

S. G. MOORE, M.D.,  
Medical Officer of Health, Huddersfield.

## SANATORIUM TREATMENT.

SIR,—I do not think that any careful reader of my letter (*BRITISH MEDICAL JOURNAL*, September 25th, p. 578) would find in it—as Dr. Stocks avers—a suggestion that "diagnosis without bacilli is valueless." It would be absurd to make such a suggestion. But to say of 2,794 consecutive cases of pulmonary tuberculosis that they were all cases of "undoubted" pulmonary tuberculosis, while admitting that "the number of cases in which bacilli were sought for and found" was as small as that stated in Dr. Stocks's statistics, is to leave out of account the effect of the personal factor in diagnosis. What might appear sufficient for a positive diagnosis of incipient disease to one observer would be held to be quite inconclusive evidence by another. This difference in the personal factor is well illustrated by the letter of Dr. E. E. Prest in the same issue of the *BRITISH MEDICAL JOURNAL*, to which Dr. Stocks himself alludes. Dr. Prest maintains that the diagnosis of tuberculosis "should be made by a study of the history of the patient and a careful inquiry into symptoms, and not by the presence of physical signs and the finding of tubercle bacilli in the sputum." (The italics are mine.) If this advice is followed, I make bold to say that the percentage of cases which would be wrongly diagnosed as tuberculous would be very considerable, and that any statistics based on figures so obtained would be valueless.

No group of symptoms is pathognomonic of pulmonary tuberculosis, but the presence of certain symptoms together with certain physical signs is practically diagnostic of the disease. To divorce the one from the other is inadmissible. Dr. Prest's system may perhaps result in the cure of some early cases which are thus taken in good time, but against this there have to be balanced some dangers which were very fully discussed in a recent correspondence in the *BRITISH MEDICAL JOURNAL* on "Common sense in relation to doubtful tuberculosis" (February and March).

In previous statistical studies (for example, those published by the King Edward VII Sanatorium) it will be found that separate tables are given for "sputum-positive" and "sputum-negative" cases, and the necessity for this has been generally recognized.

Dr. Stocks puts the question, "Had we not better frankly admit that there are small hopes indeed that any large group of patients are ever likely to be persuaded to spend more than an average of six months in a municipal sanatorium?" I cannot say what is the average length of stay in the Cheshire Joint Sanatorium, but I can say that a considerable proportion of patients sent in by me are retained for a period exceeding six months. To make a practice of sending patients to sanatoriums for a period of three months only was, I had hoped, a relic of the past in any well organized tuberculosis scheme.—I am, etc.,

Alderley Edge, Cheshire, Oct. 17th.

E. WEATHERHEAD.

## PREVENTION OF CORYZA.

SIR,—A recent article in a lay periodical about winter colds seems to me to be characteristic of many other articles of this type in being slipshod, while its directions are loose, indefinite, and might do harm. Toilet of the nostrils with soap and water is advised, but the author's conclusions as to the mode of action of the remedy are, in my opinion, quite incorrect. For fourteen years I have steadily advocated the use of soap as an almost certain preventive of "colds," if used regularly; it is also the most valuable part of the treatment for an established "cold." (I do not use "cold" vaccines, as they are apt to weaken the myocardium for long periods—due to the toxin of *M. catarrhalis*, I believe.)

As a preventive I advise patients to get a rather thicker soap lather than usual on the hands when washing, and smear it over the face in the usual way, but, further, to rub the lather across the nostrils half a dozen times or so, but not to attempt to push any up the nostrils, nor to sniff it up. They should then proceed to wash the upper part of the face with warm water, and then gently throw several handfuls of the water against the openings of the nostrils—again without sniffing. Then blow the nose, one side at a time, with the finger and thumb, when it will be found that quite a quantity of mucus, inspissated and fresh, mixed with dust and debris, will easily come away. Finally, swill off with a little warm water. When a person already has a "cold" in the nose the above method, along with a few tablets of aceto-salicylic acid, taken at intervals after food, will soon clear up the generalities of "colds" in a normal nose. If there is sore throat as well, then, in addition, a few formalin tablets are a great help. In persons who already have a "cold," their nasal, and often the pharyngeal, mucous membranes are already damaged, and the soap treatment does better with the additional remedies I have mentioned. I consider that all schools and works, and indeed the community generally, should be urged by the Ministry of Health to attend to this very simple measure as a routine for the prevention of "colds," which, in the aggregate, inflict an immense loss on the country. The soap should be good "toilet soap," not common soap containing free alkali. This latter soap injures the skin and so would injure the entrance to the nares, which is lined with skin. In the method I have described this is the only area touched by the lather, so that the soap does not act as an antiseptic, except at the very entrance to the nose, and this is unimportant, as water would do equally well almost. The rationale of the treatment is that the posterior and upper regions of the nose are normally sterile, and that it is better to wash the nose out from above downwards on this account, rather than from below upwards. The soap method thus does away with the certainty of microbes being carried into the upper regions, and also saves the delicate nasal mucous membrane from the insult of coming into contact with "foreign" antiseptics, which both occur with douches, sprays, and sniffing up the nose from the palm of the hand. This latter, by the way, is still advised to out-patients at nose and throat clinics.

The soap lather, used as recommended, stimulates the ciliated and globular nasal epithelium (and causes a flow of mucus from above downwards) reflexly through the terminations of the fifth nerve at the entrance to the nose. Further, the lacrymal glands are stimulated also, through the branch from the ophthalmic division of the fifth nerve which goes to the tip of the nose. This combined flow of mucus and lacrymal secretion, aided by forced expiratory efforts, cleans the nose effectively and safely, in a very short time, and in a very simple manner, so that a child can be readily taught to make a habit of it. The nasal mucus itself is antiseptic, and the increased flow deals with any remaining microbes by inhibiting (or possibly destroying) them, and neutralizing or weakening their toxins. In my long experience of this treatment I have found that if a person is not speedily benefited by it, further diseases are present, or there is need for rhinological surgery.—I am, etc.,

ANDREW S. McNEIL, L.R.C.P. and S.E.D.

Liverpool, Oct. 20th.

## BRITISH CHEMICAL RESEARCH.

SIR.—The recent merging of the outstanding British chemical companies into a single organization is hailed by scientific men as one of the greatest steps towards the economic prosperity of the chemical industry. For the first time in history, Britain will be able to bring to bear upon the problems of organic chemical research an adequate organization, and it would be an impertinence on my part to discuss in this connexion the general questions of research in industry. There is, however, one aspect of the question to which I would like to draw particular attention—namely, the application of research to medicinal and therapeutic organic chemicals.

The last twenty or thirty years have seen the advance of medicine in the direction of accurate recognition of the nature of disease, and the discovery of the infective agents causing it. While there is, undoubtedly, an economic advantage to be derived from the prosperity and advance of huge commercial organizations, one of their fundamental duties to humanity lies unfulfilled if disease and suffering are left for their suppression to the chance efforts of isolated investigators. Many diseases—syphilis, tuberculosis, malaria, sleeping sickness, to mention only a few—are among the scourges which exact an untold tribute of misery from millions every year, and although the cause of these troubles is accurately known, in only a few cases is any selective drug available. It cannot be too strongly insisted upon that the present condition is one which need not endure. Whilst congratulating the German investigators upon their achievement which has culminated in the introduction of drugs of the type of salvarsan and Bayer 205, we may envy the facilities and resources upon which they are able to draw; it should be realized that there is now no obstacle in the way of establishing such facilities for ourselves, and, quite apart from commercial rivalry, it should be a question of honour with us to push on in the same direction in an effort to free humanity from some of its scourges. In this connexion, too, I would recall the words of the president of the American Chemical Society:

"... synthetic organic chemistry will prove itself to be, perhaps, the most potent factor of all those that are working towards the advancement of civilization and the peace of the world. I refer to the use of chemical compounds in combating disease and, as a result, prolonging life... the modern science of chemotherapy... Malaria, spread in the most fruitful part of the globe, is incapacitating and destroying millions, and we have used but one drug—quinine—to fight it."

Thus, not only are British human resources concerned, but the whole untapped resources of Empire, now locked up by the spectres of malaria and sleeping sickness, might be released.

What is needed is the vision and broadmindedness of a commercial organization, such as that just formed, that will make possible the formation of a band of synthetic organic chemists, biochemists, and medical men, who, freed from the trammels of routine, will be able to work together upon chemotherapeutic problems. More, also, is necessary; the men concerned must be able, not only to place their hands upon every known compound, process, and method of treatment, but they must also be able to appreciate the difficulties of each other's craft. The medical men must realize that the task of building up the necessarily complex substances which alone seem to have therapeutic value is a matter for careful thought and patient experiment; the chemists must realize the intense difficulties of obtaining and correlating medical and clinical data, and, above all, the commercial organization which endows such a product must be prepared to wait, not months, but years for the fruitful results which must of necessity arise from such a combination of resources.

Finally, it appears to me to be a cogent argument that if, for economic reasons, the cotton industry found itself able to finance research on textiles, then the chemical industry should, for humanitarian reasons, finance research for the full utilization of the resources of chemistry.—I am, etc.,

ARNOLD RENSHAW, M.D.

Laboratory of Applied Pathology and Preventive Medicine, Manchester, Oct. 23th.

## Obituary.

FRANCIS WARNER, M.D., F.R.C.P.,  
Consulting Physician to the London Hospital.

WE have to announce with regret the death, on October 26th, in his eightieth year, of Dr. Francis Warner. He was one of the first to enter on a field of clinical research, which has since been very assiduously cultivated. He was physician to the East London Hospital for Children at Shadwell, as well as to the London Hospital, and at an early stage of his career he began to devote much of his time and energies to establishing a system by which the physical and mental defects of children might be scientifically estimated and recorded.

He received his medical education at King's College Hospital and graduated M.B.Lond. in 1872; in the following year he took the M.D. degree and became F.R.C.S.Eng. He was appointed medical registrar of the London Hospital in 1877, and assistant physician in 1879. In 1883 he was elected a Fellow of the Royal College of Physicians of London. He published a number of books and essays on his favourite subject, including works on the study of children and on the nervous system of the child. During the years 1893-96 he undertook a laborious investigation of the mental condition of some hundred thousand children in 106 schools; his results were published in the *Journal of the Royal Statistical Society*. In 1896 he wrote *The Children: How to Study Them*, and two years later made another contribution to this subject under the title *The Study of Children*. In 1887 he described his methods and researches in a Hunterian Lecture at the Royal College of Surgeons of England, and in 1892 gave the Milroy Lectures before the Royal College of Physicians of London. In them he described the methods and results of an inquiry as to the physical and mental condition of school children. In 1889 he had given evidence before the Royal Commission on Blind, Deaf, and Defective Children; the report of this Commission led to the passage of the Act which enabled the London School Board to provide special schools. In addition he made reports at various times to the Local Government Board, the Home Office, and the Education Department, on the condition of children for whose care and education these departments were responsible.

Dr. Warner retired from practice some years ago and the present generation knew very little of him; but he was a well known figure in London in the last twenty years of the nineteenth century, and was very greatly liked and respected by his fellow practitioners, although few thoroughly appreciated the importance of the pioneer work he was doing.

FRANK H. BARENDT, M.D.LOND., F.R.C.S.Eng.,  
Physician, Skin Department, Royal Southern Hospital,  
Liverpool.

WE have to record with great regret the sudden death at his home in Rodney Street, Liverpool, on the morning of Thursday, October 28th, of Dr. F. H. Barendt, the well known dermatologist.

Frank Hugh Barendt, the third son of J. H. Barendt, was born in Liverpool in 1861, and received his early education at Liverpool College (of which he later became a life governor) and St. Petri School, Danzig. At an early age he decided to follow the profession of medicine, and on leaving school in 1879 entered the University of Liverpool, where he had a distinguished student career, winning the Roger Lyon Jones scholarship in pathology, a subject which always attracted him. In 1885 he obtained the M.R.C.S. and L.R.C.P. diplomas; in 1887 he graduated M.B.Lond. with honours in materia medica, and in the following year proceeded M.D. He became a Fellow of the Royal College of Surgeons of England in 1890. After obtaining his first qualifications he travelled and studied for some time in France, Germany, and Austria, working in the Universities of Vienna and Berlin under Hebra, Kaposi, Neumann, Max Joseph, and Lassar. On returning to Liverpool he served as house-physician at the Royal Infirmary, senior medical officer to the Bootle



Borough Hospital, and assistant medical officer to the Rainhill Mental Hospital. When he had completed these appointments Dr. Barendt finally made up his mind to specialize in dermatology. He was appointed honorary surgeon to St. George's Hospital for Diseases of the Skin, Liverpool, and this was followed by election to the post of physician to the department of diseases of the skin at the Royal Southern Hospital. These two posts he filled with great acceptance until his death; he held appointments also as dermatologist to many homes for children in Liverpool. When the British Medical Association held its annual meeting in Brighton in 1913 he was vice-president of the Section of Dermatology, and he had been one of the local general secretaries at the Liverpool meeting in the previous year.

With a wide knowledge of his subject Dr. Barendt combined the power of clear and accurate exposition, and his literary skill found expression in numerous monographs on dermatology and venereal disease. Among these a paper in lighter vein on "Soap, its use, misuse, and abuse," which appeared in 1917, was reprinted in America and Australia. An article published in our columns in 1920, on scleroderma, is a good example of his writing; it reveals his scholarly approach to a medical subject and his attention to detail. In it he wrote: "There is a real danger that in coining new terms we may be misled to regard them as new knowledge. A great advantage would accrue to us if a short course on the history of medicine were instituted in our university. Nosological nomenclature alone would play an interesting part in such a subject." The subject, however, that perhaps interested him most was the diagnosis and treatment of syphilis. He was one of the first practitioners in Liverpool to make use of intravenous injections of arsenical compounds, and was officially appointed by the Carnarvon and Anglesey health authorities to take charge of the special venereal disease clinic at Bangor. In this work he laid special stress on the need for examining every case minutely and not depending merely on a laboratory diagnosis.

Dr. Barendt was interested in all European languages, and spoke French, German, and Russian, and his services as a translator were often called for. He was an enthusiastic member of the Liverpool Medico-Literary Society, before which he often read papers, and served on the committee of the local Czecho-Slovakian Society; he had held many offices also in the Liverpool Medical Institution, and had been editor of the *Liverpool Medico-Chirurgical Journal*. For some years he acted as the *Liverpool Correspondent* of the *BRITISH MEDICAL JOURNAL*, and could always be depended on for practical help at short notice, whatever might be the other claims upon his time. In this work his thoroughness and regard for accuracy were conspicuous. So it was, too, in his private and professional life: he shone most in matters of detail, and by countless little attentions won the esteem and affection of all who came to know him.

Dr. Barendt is survived by his widow—a daughter of the late Dr. Crow of Liverpool—three sons, and two daughters. The eldest son died in 1918; the second is studying medicine in London.

For the following appreciation we are indebted to Sir JAMES BARR:

The death of Dr. Frank Barendt has removed a very prominent figure from medical circles in Liverpool, a valued correspondent of the *BRITISH MEDICAL JOURNAL*, and personally I feel the severance of an unbroken friendship of nearly forty years. He was an excellent linguist, a great authority on orthography and etymology, so that when Barendt had expressed his views on any such point there were very few who would attempt to controvert him. As a classical scholar he had few rivals and fewer equals in the medical profession. He was a cultured gentleman in literature, but I can scarcely add in art, as his tastes were of a very modest character. He was a keen controversialist, and stuck to his views with great pertinacity, though he was always tolerant of those who differed from him. We often agreed to differ rather than bring a disputed point to a final conclusion.

He was a man of wide sympathies, and had he had the means I have no doubt those sympathies would have been freely and tangibly expressed. He had deep religious feelings, which were never paraded for public inspection, and he made no attempt to thrust his convictions on others. His German extraction often showed itself in his attention to the most minute details, so that he was apt to miss the wood for the trees. In scientific work he was an excellent researcher, but failed to correlate the work of others, and could never become a discoverer.

He had a very happy domestic life, except for some losses in his family, and he felt very acutely the early death of a son who gave promise of a brilliant career. Even in adverse circumstances he was always bright and cheerful. He could never afford the luxury of being ill, though it would now appear that in the preservation of health he must have neglected the prevention of disease. Little did I think when I recently received his congratulations that within ten days I should be writing his obituary notice. Dr. Barendt might have been considered an expert writer of obituary notices, and those from his pen which appeared in the *BRITISH MEDICAL JOURNAL* were always faithful representations of the characters portrayed; without any excessive colouring, and any failings were gently glossed over. He adhered to the adage, *De mortuis nil nisi bonum*. With him it is not now a question of *requiescat in pace*, but let his good work blazon forth and his memory be ever kept green by those who knew him. My deep sympathy goes out to his widow and family.

A COLLEAGUE closely acquainted with Dr. Barendt's work writes:

His knowledge of his specialty was profound, and his opinion was much valued. He wrote much on his subject, and these articles, as well as his numerous papers read before the Liverpool Medical Institution, were all characterized by sound clinical observation and a rich knowledge of the literature. At the clinical meetings of the Institution he could always be relied upon to show some rare and interesting cases, and he counted no trouble too great to make these demonstrations successful. He was an excellent teacher, and students followed his clinics with interest and profit. Carefully trained in the old school of Vienna dermatology, he recognized that treatment was, from the patient's point of view, the most important side of dermatology. His treatment was never empirical, but was based on pathology, and his success in this was great. His mature judgement saved him from the too early and indiscriminate adoption of every new and vaunted remedy; but when assured that there was good in any remedial agent he let his patients have the benefit of it. But he never allowed his appreciation for a new remedy to blind him to the virtues of the old. This attitude of mind largely contributed to his success in treatment, and to the high opinion he won from his professional colleagues. But it was for other qualities besides his great abilities as a skin specialist that he was so much beloved. He was gifted with a genial spirit and a quiet sense of humour that made him the pleasantest of companions. Kindnesses large and small were done daily by Dr. Barendt, and many a young member of the profession has had reason to feel deeply grateful to him, not only for professional help, but also for sound advice on some of those difficulties that beset the path of the newly fledged practitioner. A devoted father, he found his greatest happiness in his family circle, or in the company of a few chosen friends. He was universally liked, even by those who differed from him profoundly on professional matters or in politics. In a material age he preserved a cheerful idealism. The pursuit of wealth for its own sake, or the wild race for position or power, meant nothing to him. His aim was to serve his day and generation faithfully, and few men have achieved that ambition so completely. He will be greatly missed in Liverpool by a large circle of patients, rich and poor, and by all his professional colleagues. It seems only fitting that one who loved the classics should have a Latin epitaph. There are many that spring to mind—each in its way appropriate—but for him a timeworn one seems best, for of Barendt it was wholly true: *Integer vitae, scelerisque purus*.

# THOMAS CHURTON, M.D.,

Consulting Physician, Leeds General Infirmary.

We have to record with great regret the death, at the advanced age of 87, of Dr. Thomas Churton of Leeds. Born at Stafford in June, 1839, Dr. Churton lost his father during his infancy. His mother became matron of the old General Infirmary at Leeds, and the high character of her work is still remembered there. He was educated at Shrewsbury and subsequently at Leeds, where he entered on his medical curriculum and became a junior resident assistant at the Infirmary. After becoming M.R.C.S. he was for some years in private practice at Erith in Kent. During this period he spent a great amount of time in paying frequent visits to London, where he attended the practice of Guy's Hospital. He then threw up his general practice and went to Aberdeen, where he spent a year in most close and assiduous study, graduating M.B., C.M. in 1876, under the conditions which then prevailed, and proceeding to the degree of M.D. in 1877. Of this time in his life the writer of this notice, himself an Aberdeen man, has very often heard him speak with the greatest pleasure. He made many friends, and used to laugh at them when he was told that his bold expressions of determination to come back and see them all once more would come to nothing, though he had to confess that they were right.

Soon after settling in Leeds he was, in 1879, elected honorary physician to the Infirmary, having as his two senior colleagues the late Sir Clifford Allbutt and Dr. John Eddison, who now lives in retirement at Cuckfield, Sussex. At that time there were no assistant physicians, and Dr. Churton was unsparing in his work, not only in the wards, but in the out-patient room and in the post-mortem department. When Dr. Eddison retired from the full staff in 1892 Dr. Churton became senior physician, and he held this position till 1919, when he became a member of the consulting staff. He thus served the Infirmary in an honorary capacity for the long period of forty years. He was for many years on the staff of the Leeds Public Dispensary, and served the old Leeds House of Recovery as well as other charitable institutions. He was lecturer on medicine at the Yorkshire College when it was one of the constituent colleges of the Victoria University.

By many generations of Leeds students Dr. Churton will be remembered as a man of the greatest charm of manner and as having one of the most delightful of voices and one of the most infectious of laughs. His diligence and conscientiousness were beyond all praise, and his clinical investigations were carried out with unsparing zeal. If it has to be stated that his zeal sometimes outran his discretion and perhaps exhausted the patience of his colleagues, this can be put on record without in any way detracting from the high esteem and affection in which he was held by all.

Dr. Churton took great interest in the work of the British Medical Association; he was honorary secretary of the Leeds Division and representative in the Representative Body in 1903, vice-chairman in 1905-06, chairman in 1907, and a member of the Executive Committee for 1909-13. He was a member of the Council of the Yorkshire Branch for 1896-1908, was elected president of the Branch for 1912, and became vice-president in 1915.

Dr. Churton was a man of wide general culture, well read, and a charming conversationalist; he will long be held in affectionate remembrance by the profession in Leeds.

After prolonged ill health Dr. DAVID LLOYD, J.P., died at Denbigh, North Wales, on October 23rd, in his sixty-second year. Dr. Lloyd was educated at Ruthin Grammar School, Glasgow University, and the Middlesex Hospital; he graduated M.B., C.M. Glasg. in 1891. After practising for some time in South Wales he settled in Denbigh in 1892, where he built up a large practice and became very popular. His numerous appointments included those of medical officer of health to the borough of Denbigh and medical officer to Howell's School, Denbigh, honorary surgeon to the Denbighshire Infirmary, consulting surgeon to King Edward's Memorial Association, a member of the court of governors of University College of North Wales, and medical officer to the police force. He was a member, and for some time an alderman, of the Denbighshire County Council, which he represented on the board of

governors of the North Wales Counties Lunatic Asylum, Denbigh. He was a justice of the peace of the borough and county of Denbigh, and mayor from 1903 to 1905. Notwithstanding the many claims upon his time, he managed to attend post-graduate classes in Liverpool University and pay weekly visits to the Liverpool hospitals for special study. He interested himself actively in the progress of the North Wales Branch of the British Medical Association, being chairman of the Denbigh and Flint Division in 1912, a member of the North Wales Branch Council from 1911 to 1923, and president of the North Wales Branch in 1915. His death will be keenly felt by a very large number of friends and patients throughout North Wales. He leaves a widow but no children.

The death occurred at Birmingham, on October 16th, of Dr. JAMES HUGH SPROAT, in his sixtieth year. Dr. Sproat received his medical education at Queen's College, Birmingham, where he obtained the diplomas L.S.A. in 1891, M.R.C.S., L.R.C.P. in 1892, and graduated M.B. Lond. in 1893. After holding appointments as clinical assistant to the Birmingham City Asylum, assistant medical officer to the Exeter City Asylum, and senior assistant medical officer to the Somerset and Bath Asylum, he practised in North Birmingham for twenty-one years, and retired two months ago on account of ill health. He held the appointment of medical officer to the Jaffray branch of the Birmingham General Hospital for eleven years. He took an active interest in National Health Insurance from its commencement, and served as a member of both the Panel and Insurance Committees in Birmingham. He was a member of the British Medical Association and an honorary member of the St. John Ambulance Association. He married in 1912, and leaves a widow.

The death occurred on October 13th of Dr. CHARLES STENNETT REDMOND, in his eighty-fourth year. Dr. Redmond entered the Catholic University, Dublin, in 1856, and after being a scholar and exhibitor of the university he obtained the diplomas L.R.C.P.I. and L.R.C.S.I. in 1864. He then became resident medical officer of the Jervis Street Hospital, Dublin, and later, as surgeon to the P. and O. Steamship Company, spent three years in India. From 1871 to 1874 he was resident medical officer of the Gateshead-on-Tyne Dispensary, and in 1876 started private practice in that town, taking particular interest in the correction of improper feeding of young children, and, as a member of the Gateshead School Board, in improving the existing types of schools. He subsequently practised in London and Manchester. From 1918 to 1919 he was resident medical officer of the Trafford Hall Red Cross Hospital, Manchester, and when the hospital was closed he retired and went to live in Queen's County, Ireland. When the National University of Ireland was constituted he was granted the degree of M.D. honoris causa, as being the oldest survivor of the former Catholic University of Ireland. In 1886 he published a book on *Infant Feeding and Management*, and contributed many papers to medical journals on the diagnosis of scarlet fever, the treatment of infantile convulsions, and the cool-bath treatment of enteric fever. For many years he was a member of the British Medical Association. He is survived by his widow, three sons, and four daughters; his eldest son is a member of the medical profession.

We regret to announce the death, on October 7th, of Professor EMIL KRAEPELIN, who did so much to advance the scientific study of psychiatry. His seventieth birthday was celebrated only last February by his many distinguished pupils. During the last year of his life he had been occupied in arranging for the erection of a home for the German Psychiatric Research Institute, and in preparing the ninth edition of his well known textbook.

The deaths of the following well known foreign medical men have recently occurred: Dr. MARIA PARHOV of Jassy, a leading Rumanian neurologist and biologist; Dr. S. I. FEDYNSKY, professor of diseases of infants in the University of Moscow, and Professor SALOMON EHRLMANN, the Viennese dermatologist.

## Medico-Legal.

### TWO MEDICAL MEN CHARGED WITH MURDER.

A CORONER'S jury, at Bamber Bridge, near Preston, on October 29th, after an hour's retirement following an inquiry lasting two days into the death of Norah Elizabeth Marrison, aged 24, the daughter of a Penmaenmawr quarry owner, found that the deceased died from shock caused by criminal abortion performed by Dr. Arthur Stuart Holden and Dr. Frederick Langton Webster, and that Mrs. Constance Mary Holden and Major William Edward Blackburne and Mrs. Helen Blackburne were aware that criminal abortion was being meditated.

Thereupon the two medical men were charged with murder, and the other three persons with being accessories, all being committed for trial on a coroner's warrant at the next Manchester Assizes. In answer to the charge, Dr. Holden said: "I am not guilty of any such charge"; Dr. Webster said he had nothing to say; Mrs. Holden and Major Blackburne both said "I am not guilty."

It appeared that the deceased left the home of her sister at West Cliff, Preston, on October 7th, presumably to play bridge at Dr. Webster's house at Bamber Bridge, and later the same night Dr. Webster informed the police of her death, stating: "Dr. Holden has had an operation on a lady at my house to-night, and she has died under the anaesthetic."

Mrs. Elizabeth Smith, in her evidence, said she did the cooking and her husband cleaned the surgery at Dr. Webster's house. On October 7th she retired to bed shortly before 8 o'clock because she was not well. Dr. Webster being in his surgery with some patients at the time. She overslept the next morning, and on going downstairs at 11.30 a.m. she saw a note on the door of the telephone room in Dr. Webster's handwriting: "Smith, do not go in without consulting me." Her husband said to her: "Don't go in that room; there's a woman dead in it."

Alexander French, a single man, employed with a firm of sanitary engineers at Liverpool, in his evidence, said about twelve months ago the deceased told him she was engaged to a doctor in Waterloo. The engagement lasted about six months, and was then broken off. The deceased spoke to him about her condition on October 2nd, but did not allege that he was the cause of it. He offered to marry her, but she refused. The first he knew of her death was on the Friday morning, when Major Blackburne, her brother-in-law, telephoned the news to him.

Sir Bernard Spilsbury, who conducted a *post-mortem* examination, said that in his opinion death was due to shock consequent upon and following immediately after the use of an instrument; she was pregnant, probably two months.

The deputy coroner (Colonel H. Parker), in his summing up to the jury, said the deceased was perfectly well when she went to Dr. Webster's house, and, according to Sir Bernard Spilsbury, what took place there was criminal. They had to consider whether Dr. Holden or Dr. Webster was responsible, and, having regard to the facts, he did not see how they could separate the one from the other. Further, they must consider the responsibility of any other persons.

The jury returned a verdict as stated.

### A SPECIALIST'S FEES.

MR. E. J. DECK, M.R.C.S., L.R.C.P., of Welbeck Street, London, succeeded before Mr. Justice Roche and a special jury, in the King's Bench Division of the High Court of Justice, on October 27th and 28th, in establishing his claim against Captain A. G. Godwin Smith for the sum of £65, being fees for medical attendance.

The defendant pleaded that he consulted Mr. Deck for swellings on the side and back of his neck, but that the attendances were of no value to him by reason of the negligence of Mr. Deck, who, he alleged, wrongly diagnosed his ailment and directed treatment—ultra-violet rays and extraction of teeth—which injured his health. For such alleged negligence he counter-claimed damages.

The plaintiff, by his reply, denied negligence.

Mr. H. F. Dickens and Mr. J. M. Symmons appeared for the plaintiff. Mr. H. J. Wallington appeared for the defendant.

### The Plaintiff's Case.

Mr. Dickson said Mr. Deck before the war practised in New Zealand, and during the war he served with the New Zealand Army Medical Service. Becoming an authority on the ultra-violet ray treatment, which was coming into favour with medical men for its healing properties, he, after the war, equipped his consulting room in London with the necessary apparatus, and his whole-body ray bath was the first installed in England. Mr. Deck had personally administered the rays 25,000 times. On February 11th, 1925, the defendant was sent to him for consultation as to swellings at the side of the face and neck and back of the neck. He formed the opinion that the swelling of the face was an infection of the glands due to poisoning in the system, and an x-ray examination revealed that the condition of the defendant's teeth and gums was a sufficient cause, and between July 1st and 9th Captain Smith's teeth were extracted by Mr. Byrne, a dental surgeon, in Welbeck Street. Captain Smith's condition improved, and the swelling at the back of the neck decreased. In August he spent a holiday in Cornwall, but on his return in September the swelling at the back of the neck was found to have increased.

Blood tests showed that there was no poisoning, and it became clear that he was suffering from a tumour. The plaintiff advised him to undergo an operation, but Captain Smith was unwilling. Later, Captain Smith wrote that he had consulted Mr. Donald Armour, who had diagnosed the complaint as a tumour. Mr. Armour operated, removed the tumour, and Captain Smith recovered. When, however, the plaintiff demanded his fees, Captain Smith merely replied that if Mr. Deck desired to go into court he should welcome the opportunity of asking him a few questions.

Mr. Deck gave evidence in support of his counsel's opening. He had told Captain Smith he thought the swelling at the back of the neck was due to a tumour, but that in view of the history of varying size there was an element of doubt. Captain Smith was eager to have his treatment because he wanted to avoid an operation. In cross-examination, Mr. Deck said if the rays were applied directly there was no reason why they should provoke growth of the tumour as they did not act on fat, but through the blood stream. He did not think eight months an excessive time for him to take in making a definite diagnosis in this case. Captain Smith never said he would like a second opinion.

Mr. Ferdinand Byrne, dental surgeon, said the radiogram taken of Captain Smith's mouth showed marked absorption of the bones surrounding the teeth; in extracting the teeth he acted on his own, and not on Mr. Deck's opinion. Captain Smith still owed his fees for the dental treatment.

Mr. Eric W. Pedley, dental radiologist, who x-rayed Captain Smith's mouth, agreed that the extraction was necessary.

Sir Alfred Frigg spoke of Mr. Deck as one of the best known specialists in ultra-violet ray treatment, and said he considered the fees charged very reasonable.

Mr. Justice Roche: The moderation of most doctors with regard to fees always surprises me.

Sir Alfred Frigg said the rays had proved themselves valuable in cases where the reduction of inflammatory swelling was desired.

### The Defendant's Case.

Mr. Wallington, for the defendant, said the truth was that, as Mr. Deck had told Sir Alfred Frigg, he regarded the case as a very interesting one, and he was very eager to cure it with the ultra-violet rays, in which he specialized. It was not until September that Mr. Deck suggested that the swelling at the back of the neck was a tumour, and the operation, which would have been simple in February, 1925, was not so simple in the following October.

Captain Smith bore out his counsel's statement.

Mr. Donald Armour, F.R.C.S., who operated for the tumour, in cross-examination, agreed that the diagnosis of the tumour was not necessarily as easy in February as in October.

Mr. Dickens: If a doctor were in doubt, would it be proper to attempt to reduce swelling by ultra-violet ray treatment?—Yes.

Mr. Dickens: And, if the swelling subsided, the doctor would be justified in continuing the treatment?—Yes.

The jury returned a verdict for the plaintiff, and judgement was entered for him on the claim and counter-claim, with High Court costs.

## The Services.

### BELFAST UNIVERSITY SERVICES CLUB.

The eighth annual armistice dinner of the Belfast University Services Club will be held in Thompson's Restaurant, Donegal Place, Belfast, on Thursday, November 11th, at 8 p.m. All past Queensmen who served during the great war in His Majesty's Forces are invited to attend, and those who wish to do so should signify their intentions to the Honorary Secretaries, Services Club, The University, Belfast, before November 10th. The cost of the dinner (exclusive of wines) will be 12s. 6d.

On the morning of November 11th, at the conclusion of the "two minutes' silence," a wreath from the club will be laid at the base of the war memorial in the University, and all past and present Queensmen are invited to be present.

### DEATHS IN THE SERVICES.

SURGEON-GENERAL WILLIAM BUDD SLAUGHTER, Army Medical Service (ret.), died at Colchester on October 22nd, aged 77. He was born at Farningham, Kent, on December 31st, 1848, and was educated at St. Thomas's Hospital; he took the L.S.A. in 1870, and the M.R.C.S. in 1871. He entered the army as assistant surgeon on March 30th, 1872, and attained the rank of colonel after exactly thirty years, became surgeon-general on June 21st, 1905, and retired on December 31st, 1908. He served in the Afghan war of 1878-89 (medal), and in the Tirah campaign on the North-West frontier of India in 1897-98 (medal with clasp).

Colonel Bertal Hopton Scott, C.M.G., Army Medical Staff (ret.), died at Ealing on October 24th, aged 63. He was born at Gringley-on-the-Hill, Notts, and was the son of the Rev. G. H. Scott, vicar of that parish. He was educated at Toronto University, where he graduated M.D. and C.M. in 1883, and at the London Hospital, taking the L.R.C.P. Ed. in 1884, the M.R.C.S. in 1885, and the D.P.H. at Cambridge in 1902. He entered the army as surgeon on February 5th, 1887, became colonel in the long promotion list of March 1st, 1915, and retired on September 10th, 1919. He served in the Chitral campaign of 1895, with the relief force, receiving the frontier medal with a clasp; in the operations in Sierra Leone in 1898-99, the Karene expedition, when he was severely wounded in the chest and had his thigh fractured, and received the medal with clasp; in the recent war of 1914-18 he was thrice mentioned in dispatches (1915, 1916, and 1917) and received the C.M.G.

Lieut.-Colonel William Greyk, R.A.M.C. (ret.), died at Pango on August 19th, aged 87. He was educated at Aberdeen, where he graduated M.B. in 1860, taking the L.R.C.S.Ed. in 1861. He entered the army as assistant surgeon on April 14th, 1863, became surgeon major on April 28th, 1876, and retired on May 16th, 1888. During the old regimental days he served in the 4th Foot, the King's Own Royal Lancaster Regiment, from 1865 to 1871, and in the Royal Artillery in 1871-72. He served in the Afghan war of 1878-80, receiving the medal.

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

The following have been elected to the Board of the Faculty of Medicine for varying periods: T. S. Helle, M.D., E. D. Adrian, M.D., G. S. Graham-Smith, M.D., F.R.S., and W. L. H. Duckworth, M.D., Sc.D.

At a congregation held on October 29th the following medical degrees were conferred:

M.D.—L. R. Cole.  
M.B., B.Ch.—W. W. McLean, R. H. Motcalfe, A. T. Worthington.  
M.B.—J. H. Hauman.

### UNIVERSITY OF LONDON.

#### THE FACULTY OF MEDICINE.

SIR CUTHBERT S. WALLACE, K.C.M.G., C.B., M.B., F.R.C.S., of St. Thomas's Medical School, has been elected Dean of the Faculty of Medicine for the period 1926-28.

#### UNIVERSITY COLLEGE.

The first of a course of four lectures on insulin was given by Dr. C. H. Best at University College, Gower Street, W.C.1, on Wednesday last. The lectures, which are addressed to students and others interested in the subject, will be continued on succeeding Wednesdays in November at 5 p.m.

### UNIVERSITY OF EDINBURGH.

#### ADDRESS BY THE PRINCIPAL ON THE WORK OF THE YEAR.

AFTER the address on October 23rd, when 134 degrees were conferred, the Principal, Sir Alfred Ewing, gave an address on some important developments in the University during the past year.

He referred to the rectorial address delivered by the Primo Minister in his last year of office as Lord Rector, at which the Earl of Balfour had presided, and expressed his gratification that, as a result of the students' organization, these distinguished visitors had received a hearing worthy of the great occasion. Another example of student leadership had been afforded at the time of the general strike when the students voluntarily formed themselves into a Students' Emergency Council, whose activities found expression in many useful deeds and had been of real service to the community; the action then taken, and the manner of it, had brought the student body into a higher level of public esteem than it had perhaps ever occupied before.

After an allusion to the celebration in June, 1926, of the bicentenary of the foundation of the Medical Faculty, the Principal went on to instance, among the important developments of different departments, the provision of the laboratory in connexion with the clinic of surgery, which had been opened at the bicentenary celebration. This had been carried out with the assistance of the Rockefeller Foundation, which was providing also material assistance towards the erection of a clinical laboratory at present being built in the infirmary grounds. A new radiology department had been opened by the managers of the Royal Infirmary in that institution, which he believed had no rival anywhere, and in connexion with this the University had appointed a lecturer in radiology. Recent gifts had made possible the development of a department of animal breeding, and it was hoped that the University might soon be in a similar position with regard to the zoology department, for which a site had now been definitely selected. Minto House in Chambers Street had recently been acquired by the University to provide accommodation for the department of English and modern languages and so relieve the congestion in the Old Quadrangle.

An important aspect of university life was the number of matriculated students. There had been great congestion in all the universities of the country after the war, and in Edinburgh this had reached its height in the session 1920-21, when there were nearly 5,000 matriculated students. A gradual fall, amounting to between 200 and 250 a year, had thereafter taken place, until the number was approximately 4,000, about which it now appeared to remain steady. Last year the total number had been 3,953. There were indications, he thought, that the numbers were beginning to rise again. It was too early in the session to speak with confidence regarding the coming year, but the entrance of first-year students to date considerably exceeded the entrance of first-year students at the same date last year. There had been a very remarkable and sustained rise in the Faculty of Arts, which was now half as large again in numbers as it was in the pre-war years. Medicine and science had both experienced a rush after the war and then something of a slump, but even now science had one and a half times as many students as in pre-war years. An interesting feature in the statistics was the largely increased number of women who entered. Last year, out of 3,953 students, 1,191 had been women, and in the Faculty of Arts more than half of the

whole number were women. In the present year the number of students who had already matriculated showed a proportion of one woman to two men.

### UNIVERSITY OF DUBLIN.

#### SCHOOL OF PHYSIC, TRINITY COLLEGE.

The following candidates have been approved at the examination indicated:

FINAL EXAMINATION.—Part I (*Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology*).  
\* G. C. Dockray, S. Rogers, R. H. Blair,  
H. E. Knott, I. W. Pigott, In Com.  
Gamble, J. Horwich, E. K. Malone, C. E. G. Nunn.

\* Passed on high marks.

### NATIONAL UNIVERSITY OF IRELAND.

At the yearly meeting of the Senate, held on October 29th, the Senate had under consideration the reports of the examiners upon the results of the autumn examinations, and awarded passes, honours, etc., in connexion therewith.

The following awards were made in connexion with the Medical Faculty:—Dr. Henry Hutchinson Stewart Medical Scholarships: (1) Anatomy and (2) Physiology, J. F. O'Dea; Dr. and Mrs. W. A. Bragne Gold Medal and Prize: Mary B. O'Mahony (gold medal), Lily M. McDermott (prize).

The Senate decided that a special final medical examination should be held in January, 1927, in University Colleges, Dublin, Cork, and Galway, provided that not fewer than seventy-five candidates enter and pay the special entry fee of £5 on or before November 18th.

The Senate also decided that the Dr. Henry Hutchinson Stewart Scholarships in Medicine shall be offered for competition in 1927.

### ROYAL COLLEGE OF PHYSICIANS OF LONDON.

An ordinary quarterly comitia of the Royal College of Physicians of London was held on October 28th, at 5 p.m., when the President, Sir John Ross Bradford, was in the chair.

#### Membership.

After the minutes of the Censors' Board had been read, the following candidates were admitted as Members:

K. B. Alkman, M.D.Camb., R. D. Alexander, M.B.Camb., H. Cohen, M.D.Liverp., W. R. P. Collis, M.B.Camb., H. A. Colwell, M.B.Lond., Surg.-Com. J. G. Danson, R.N., M.D. (berd), I. G. Davies, M.B.Lond., Dinsbaw H. Dudha, M.D.Bombay, V. Feldman, M.B.Lond., G. Fletcher, M.D.Glasg., C. S. Hallpike, M.B.Lond., G. E. R. Hamilton, M.B.Lond., F. M. D. A. Hart, M.B.Camb., R. B. Hawes, L.R.C.P., R. Jeram, M.B.Syd., E. H. Kellie, M.D.Lond., J. E. Landreth, M.B.New Zealand, O. C. Moller, M.B.New Zealand, A. T. Nankivell, M.D.Lond., C. E. Newman, M.B.Lond., A. Pool, M.B.Liverp., A. D. Porter, M.B.Amb., E. A. B. Pritchard, M.B.Camb., E. Scott, M.B.Liverp., S. B. Simalka, L.R.O.P., Sir E. S. Taylor, B.L., O.R.E., M.D.Camb., P. B. Wilkinson, M.B.Lond., L. J. Witts, M.D.Manche.

#### Licences.

Licences to practise were granted to the following 185 candidates who had passed the Final Examination in Medicine, Surgery, and Midwifery of the Examining Board in England:

Y. Abdel-Messiah, A. Ali, G. E. Alling, J. H. Anderson, G. F. Andrews, M. C. Andrews, H. W. Applin, J. M. Ashton, H. Astwood, L. G. Backhurst, "Graco Batien," Rosie B. Becker, M. Behr, "Florence K. Bibby," G. Bidman, G. W. Black, E. J. C. Bockett, E. S. Bolton, "Susanna B. Boroman, J. W. Bottoms, H. W. Bowen, E. Bowen-Jones, H. Brown, F. W. Bradley, J. G. Brannon-Bravo, W. A. Briggs, M. Bryer, R. H. Burns," I. Caley, O. J. N. Cameron, S. Carnofsky, J. C. D. Carothers, W. H. Carr, J. R. B. Chatterton, J. A. Chalmers, S. L. A. Clarke, P. F. Cluver, A. Cohen, W. K. Coombes, D. H. Couch, H. T. Cox, E. S. Crittiss, R. P. P. Davies, "Winifred M. Do Kok, A. C. De Sousa, A. A. Digges in Touche, T. A. J. M. Dodd, J. Dywien, "Phyllis M. Edgar, H. M. Elliott, E. A. R. Ennion, H. K. Evans, "Leonora S. Evans, S. H. Evans, W. G. Evans, A. W. Fawcett, "Dorothy D. Forster, A. E. Fraser-Smith, E. G. Frewer, A. H. Gale, "Margaret E. J. Gashion, J. B. George, "Dorothy Gibbs, R. M. Gilchrist, H. K. Goadby, "Myrtle S. M. Goldrich, J. A. Gornall, J. Gough, R. A. Graff, E. C. Grant, T. L. Griffiths, H. L. Gulati, G. S. Hall, A. C. de H. Helme, G. F. Henderson, G. R. N. Henry, V. W. Hoak, O. Hooper, H. O. Hopkins, F. S. Hubberty, T. O. Hunt, O. B. Huss, A. B. Hyman, R. Illingworth, A. J. Johnson, E. O. Johnson, "Louise A. Johnson, O. W. Jones, W. T. Jones, F. E. Kingston, F. Knoyle, L. C. Lancaster, E. R. Langmaid, C. J. Laviers, H. W. Lewis-Phipps, D. G. Lloyd, "Effora W. Lloyd, G. E. Macdonald, J. R. Macdonald, J. MacFadden, W. H. S. McGregor, W. McLaughlin, H. E. McLaughlin, W. N. MacLay, D. H. Madge, P. O. Mallam, S. M. Mallick, O. Mani, "In M. N. Menon, R. J. Millbank, "Barbara A. Mitchell, E. R. W. Mons, Glaxier, H. W. Mori, "Morris, E. F. Morton, E. F. D. Owen, G. E. Parker, N. D. Patel, L. L. P. Paterson, R. H. Pearce, "Janet R. Phillips, R. A. Phillips, O. B. Picken, H. A. Pim, "Winifred A. L. Pice, "Lestley M. C. Probyn, "Hilda M. Richards, A. H. Irtson, A. P. Rose, A. W. Row, G. P. Roxburgh, J. A. Rushworth, B. F. Russell, N. A. Salt, F. G. A. Shabed, G. O. Shepherd, H. L. Shimmim, D. P. Smithson, J. W. Simpson, B. A. Smith, H. Smith, R. S. Smith, E. R. Smithard, W. R. C. Spicer, "K. Stephen, C. E. R. Stephenson, O. L. Stote, R. Stappell, F. J. Swinton-Ber, H. Syed, W. K. Taggett, J. E. Teale, J. G. T. Thomas, A. R. Thompson, O. L. Truscott, "I. Tuckett, F. B. Turner, "Almeo A. L. Vallant, L. S. P. Wakeloy, A. O. R. Walton, "Kathleen M. Ward, N. Wassef, R. Watson, T. O. S. Webb, W. N. Welch, "Beatrice L. Wilkinson, L. S. Williams, A. A. Wilson, A. G. Wilson, O. S. Wise, A. H. Wortman.

\* Under the Medical Act, 1876.

*Standing Counsel.*

Mr. F. H. Mangham, K.C., was appointed senior standing counsel on the nomination of the President, vice Mr. A. C. Clauson, K.C., appointed a Judge in the High Court of Justice.

*The Richard Bright Celebration.*

It was resolved that a conversazione should be held at the College in 1927 in honour of the centenary of the publication of Richard Bright's book, the date to be fixed so as to coincide with the celebration at Guy's Hospital.

*Final Conjoint Examination.*

On the motion of Dr. Fairbairn, it was resolved that the Committee of Management be asked to report to the College on the efficiency of the examination in midwifery and diseases peculiar to women in the Final Examination of the Conjoint Board.

*Committee of Management.*

Dr. H. L. Tidy was elected a member of the Committee of Management in place of Sir William Hale-White, who has resigned after eight and a half years of service. Dr. Raymond Crawford, who retired in rotation, was re-elected.

*Home Office.*

Two communications were received from the Home Office, the one inviting the College to lay its views before the Committee on the Poisons and Pharmacy Acts, and the other inviting the College to nominate a representative to serve on the tribunal for England and Wales under the Dangerous Drugs Act. Sir William Hale-White was nominated, with Dr. J. Fawcett as his substitute to act if necessary.

*Dr. Nathaniel Johnstone.*

Dr. A. J. Hall of Sheffield was thanked for the gift of a photograph of Dr. Nathaniel Johnstone, a former Fellow of the College, together with some biographical notes.

*Places of Study.*

In 1918 certain places in Austria and Germany were removed from the list of recognized places of study. The following places were deemed admissible to the final examination received for their restoration. The College has now received from the German and Austrian embassies assurances that British doctors are admissible to the Staats examen in these countries by the recognition of their studies and examinations in Great Britain. The following places were recognized:

*Austria:* Graz, Innsbruck, Vienna. *Czecho-Slovakia:* Prague. *Germany:*

*Science Abstracts.*

A report was received from Lord Dawson on his conference with the Medical Research Council in regard to the continuation of the publication of the *Science Abstracts*.

*Donations to the Library: Portrait of Sir R. Douglas Powell.*

Books and other donations presented to the library during the past quarter were received and thanks returned to the donors. The replica of the portrait of the late Sir Richard Douglas Powell, Bt., a former President of the College, given by the Dowager Lady Powell and by Colonel Sir Douglas Powell, was on view.

## Medical News.

At the annual meeting of Fellows and Members of the Royal College of Surgeons of England, to be held on Thursday, November 18th, at 3 p.m., a resolution will be moved by Dr. H. Wansey Bayly and seconded by Dr. Redmond Roche, on behalf of the Society of Members of the College, affirming again the desirability of admitting Members to direct representation upon the Council, and requesting the Council to take a postal vote of Fellows and Members on the general principle. The new president of the society is Dr. Ernest E. Ware, and the honorary secretary is Dr. S. C. Lawrence, 106, Richmond Park Road, Bournemouth. In a letter accompanying the notification Dr. Lawrence draws attention to the fact that the Council of the College has not yet altered By-law xxvi forbidding women to attend or vote at meetings, although the new Supplementary Charter, which grants women members the same privileges as men, was signed by His Majesty last July.

On November 11th, at 5 p.m., at the house of the Medical Society, 11, Chandos Street, W.1, Mr. Arthur E. Giles will give the sixth lecture in the series arranged by the Fellowship of Medicine on emergencies; he will speak on emergencies in gynaecological practice. On the same date, at 1 p.m., Mr. Mauricio Whiting will give a demonstration in clinical ophthalmology at the Royal London Ophthalmic Hospital. Mr. L. C. Rivett will give a clinical demonstration at the Chelsea Hospital on November 12th, at 2 p.m. The lectures and demonstrations are open to medical practitioners without fee. The Royal Waterloo Hospital will hold a course in medicine, surgery, and gynaecology from November 15th to December 4th, with special reference to endocrine deficiency, diseases of the blood, thyroid gland,

respiratory system, stomach and intestines, and modern methods of laboratory diagnosis. From November 15th for one month there will be a clinical course in dermatology at the St. John's Hospital, including two lectures a week, and also a series of practical demonstrations in pathology if desired. A week's comprehensive course in diseases of the rectum will start at St. Mark's Hospital on November 22nd, and will include the use of the sigmoidoscope. For four weeks from November 22nd there will be a course at the West End Hospital for Nervous Diseases, 73, Welbeck Street, W.1, commencing at 5 p.m. each day. A course for general practitioners will be provided by the London Temperance Hospital from November 29th to December 11th, and courses in obstetrics are available at Queen Charlotte's Hospital and the City of London Maternity Hospital; practical courses in anaesthetics can also be arranged. Copies of all syllabuses and of the general course programme may be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

THE Post-Graduate Hostel meeting to be held at the Imperial Hotel, Russell Square, W.C.1, on Tuesday, November 9th, at 9 p.m., will be addressed by Dr. S. Wright on the output of the heart in health and disease. On Thursday, November 11th, at 9 p.m., Mr. H. A. Harris, F.R.C.S., will discuss epiphyses. All medical practitioners are welcome. Dinner will be served at 8 p.m. (price 5s.) and coffee and biscuits at 10 p.m. (price 6d.).

THE National Council for Mental Hygiene has arranged a public meeting at the house of the Royal Society of Medicine on November 17th, at 4.45 p.m., when the chairman will be Lord Southborough, and an address will be given by the Right Hon. H. P. Macmillan, K.C., chairman of the Royal Commission on Lunacy and Mental Disorder, 1924-26. The third report of the National Council contains references to the report of the Royal Commission and to the inquiry into the value of psycho-analysis as a method of treatment. The latter subject was referred to a subcommittee for report, but it is announced that no decision has yet been reached. Three subcommittees of the council during the year under review dealt with the prevention and early treatment of mental disorder; the care, after-care, and treatment of the insane; and mental deficiency and crime. The evidence submitted by Dr. W. A. Potts to the Home Office Committee on the treatment of young offenders is published as an appendix to the report.

PROFESSOR W. W. C. TOPLEY will deliver the Harben Lectures at the Royal Institute of Public Health in the lecture theatre of the Institute (37, Russell Square, W.C.1) on November 15th, 18th, and 22nd, at 4 p.m. on each day. His subject will be quantitative experiments in the study of infection and resistance; no tickets of admission are required.

A SERIES of three lectures on the history of medicine will be given at the University of Durham College of Medicine, Newcastle-upon-Tyne, during the academic year 1926-27, by Dr. Charles Singer, of University College, London. The first lecture will be delivered on Friday, November 19th, at 4.45 p.m. All medical practitioners in the neighbourhood are invited to attend.

A FURTHER extraordinary general meeting of the Medical Sickness, Annuity and Life Assurance Society was held at the offices of the company, Lincoln House, 300, High Holborn, W.C.1, on November 1st. The resolution approving the new Articles of Association of the society adopted at the meeting on October 11th (BRITISH MEDICAL JOURNAL, October 16th, p. 693) was unanimously confirmed.

AT a meeting of the Hunterian Society of London in the Cutlers' Hall, Warwick Lane, E.C., on Monday, November 15th, at 8.45 p.m., a discussion will be held on medicine and the press. The speakers will include Sir Humphry Rolleston, Bt., Dr. Graham Little, M.P., Dr. Leonard Williams, and prominent persons connected with the newspaper press. Fellows may bring non-medical guests.

THE annual dinner of past and present students of the Royal Dental Hospital of London will be held at the Trocadero Restaurant on Saturday, November 20th, at 7 o'clock, with Mr. W. H. Dolamore in the chair. The staff will hold its annual clinical "At Home" at the hospital, Leicester Square, on the afternoon of the same day at 2 o'clock. Cases of special clinical interest which have come under observation and treatment during the past year will be shown and demonstrations given. The Medical Committee extends an invitation to any medical practitioners who may like to attend.

THE first of the Malcolm Morris memorial lectures will be given in the Barnes Hall of the Royal Society of Medicine, 1, Wimpole Street, W.1, on November 15th, at 5.15 p.m., by Professor H. J. Fleure, who will speak on racial characters of the human skin and racial types in relation to health problems. The fund for the lectures, which have to deal with dermatology and public health in alternate years, has been transferred by the Memorial Committee to the Chadwick Trustees for administration.



At the meeting of the Pharmacological Society of Great Britain at 17, Bloomsbury Square, W.C., on Tuesday, November 9th, at 8 p.m., a paper on "Some methods of biological assay" will be read by Dr. J. H. Burn, director of the society's pharmacological laboratories. Medical friends of members and student-associates will be welcomed.

The annual dinner of the West Riding Association of Graduates of the Edinburgh University will be held at the Midland Hotel, Bradford, on Wednesday, November 17th, at 7.15 p.m. Professor Kemp Smith, dean of the faculty of arts, will be the guest of the evening. Further information can be obtained from Dr. Donald Watson, 33, Manor Row, Bradford.

The annual dinner of the Society of Medical Officers of Health will be held at the Piccadilly Hotel, on Thursday, November 18th, at 7.30 p.m. Ladies are invited, and members, or candidates nominated for election, are asked to give early notice to the Executive Secretary of their intention to be present, with the names of their guests. A payment of 12s. 6d. for each ticket should be made with applications sent before November 15th; after that date the cost of tickets will be 15s. each.

The Continental Medical Graduates' Association (formerly the Brussels University Medical Graduates' Association) held its annual dinner at the Langham Hotel, on October 28th, with the president, Dr. H. Fielden Briggs, in the chair. In proposing prosperity to the association Sir Henry Jackson, M.P., M.B., coupled the toast with the name of the president, who, in his reply, gave an outline of its history and indicated the objects to be attained in the future. These, Dr. Fielden Briggs explained, were scientific and political; under the former heading would come the winter meetings, at which eminent men would be asked to read papers, and congresses in the summer to be held at various Continental cities; with regard to the latter, they would press for reciprocity of medical practice between this country and the European nations. Although millions of English tourists and residents were on the Continent, they were unable to be attended by their own British medical men because they were prohibited from practising in those countries. Mr. Hugh Edwards, M.P., agreed with the president's remarks, and instanced his own experience on the Continent, when, being ill, he was unable to avail himself of the services of his own medical adviser because it was useless to send to England for him as he would not legally be allowed to attend him. Dr. Leonard Williams, in a humorous speech, proposed the toast of "The Ladies," and Dr. Justina Wilson, in replying, contrasted the reception given to post-graduates on the Continent and that given in this country. Sir Thomas Corry-Evans proposed "Kindred Societies," and Mr. Mortimer Woolf, president of the Hunterian Society, and Dr. Ernest Young, president of the Obstetrical Society, responded. The president's health was proposed by Dr. Campbell McClure, and Dr. Fielden Briggs, in replying, paid tribute to the honorary secretary, Dr. A. D. Woolf, for his arduous labours on behalf of the association.

At the first general meeting of the League of National Life, held in the Caxton Hall, London, on October 29th, with Lord Fitzalan in the chair, the president, Dr. F. J. McCann, said that it was felt that contraception was becoming a great national problem, and that accordingly the league had been formed to influence public opinion along what they believed to be the correct lines, and to foster the perpetuation of family life. After a large experience Dr. McCann affirmed that the practice of contraception should be condemned because it was physically harmful to the female. The more complete the interference with the physiological character of the act the greater the harmfulness. The continued use of contraceptives had an important relationship to some of the major and many of the minor ailments whose cause was regarded as obscure. Dr. Halliday Sutherland (honorary secretary) said that the immediate policy of the league was to have the various fallacies of birth prevention exposed by experts—ethical, medical, statistical, and sociological. Dr. Letitia Fairfield said that perhaps the chief difficulty in propaganda work would be the fact that birth control was advocated as a panacea for every conceivable social evil, and these who undertook to oppose it were made to appear as reactionary or inhuman supporters of these evils.

Dr. F. J. BAILLON, well known to many members of the British Medical Association as a representative and committeeman, has been elected for the fourth time President of the Southampton Society of Natural Science. At the opening meeting of the thirty-seventh session of the society on October 21st, at which the Mayor and Mayoress of Southampton attended, Dr. Baillon gave his presidential address on "Some pioneers and prophets of science." In this he spoke of the great development which took place during the war in scientific matters, which compensated to some extent for the losses suffered. He traced the progress in art and science

and medicine from the days of the Egyptians, Greeks, and Romans, through the Middle Ages and down to the present time. His conclusion was that the development during the last fifty years in science and its application to life in commerce and industry has been greater than in all the preceding ages.

QUESTIONS of importance concerning the future of British spas were discussed at the autumn meeting of the British Spa Federation, held recently in London, and attended by representatives of all the leading spas in Britain. The organization is being developed for dealing with insured persons, so that when spa treatment for rheumatic diseases is made an additional benefit under the National Health Insurance scheme the patients may obtain the best results without any confusion or interference with the ordinary visitors to the spas. Other subjects discussed were the extension and co-ordination of scientific research into the chemical and physical properties of the mineral waters of Great Britain, and the relation of the spas with the "Come to Britain" Movement and other efforts towards meeting foreign competition.

AN x-ray apparatus and a new orthopaedic pavilion have been installed at the Warrington Infirmary. The x-ray apparatus, which cost £400, was presented by the employees of Messrs. Pearson and Knowles as a memorial to the late Mr. Gordon H. Fraser, managing director. The orthopaedic pavilion, which cost £1,800, is fully equipped with gymnastic apparatus and appliances for the administration of artificial sunlight treatment. It was opened by Mr. H. Wade Deacon, vice-president of the council of the British Hospitals Association, and chairman of the board of management of the Liverpool Royal Infirmary.

Dr. R. M. LITTLE, on his retirement from the post of medical officer to the Southport Post Office, has been presented by the staff with a travelling clock.

DURING the week ending September 25th 6 fatal cases of plague, 79 cases of cholera with 25 deaths, and 27 cases of small-pox with 10 deaths were reported by the Far East Bureau at Singapore, and during the week ending October 2nd 47 cases of cholera with 10 deaths, and 21 cases of small-pox with 11 deaths were reported.

PROFESSOR HENSCHEN of St. Gall has been appointed successor to the late Professor Holtz in the chair of clinical surgery at Basle, and Professor Ziemke of Kiel has been appointed professor of medical jurisprudence at Breslau.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to *The Editor, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.*

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *BRITISH MEDICAL JOURNAL* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *BRITISH MEDICAL JOURNAL* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *JOURNAL*, should be addressed to the Financial Secretary and Business Manager.

THE TELEPHONE NUMBERS of the British Medical Association and the *BRITISH MEDICAL JOURNAL* are *MUSEUM 9361, 9362, 9363, and 9364* (internal exchange, four lines).

THE TELEGRAPHIC ADDRESSES are:

EDITOR of the *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

## QUERIES AND ANSWERS.

### CHILBLAINS.

"C. P. J." asks for suggestions in the treatment and prevention of chilblains in a patient who suffers every year with the advent of frosty weather, both on hands and feet. She takes plenty of exercise throughout the year, and also takes cod-liver oil and extract of malt, together with calcium lactate gr. x t.i.d.s., but in spite of this the chilblains recur and persist. Local treatment consists in the application of counter irritants—iodine,

methyl salicylate ointment, etc. Our correspondent wonders if an injection of horse serum would be of benefit in increasing the coagulability of the blood.

#### INCOME TAX.

##### Schedule E: Expenses.

"C. R. G." has claimed to deduct from his salary expenses incurred for medical periodicals and upkeep of medical library. The inspector of taxes has refused the claim, referring him to the decision of Rowlatt, J., in the case of Simpson v. Tate.

"The refusal is in accordance with the law, as judicially laid down; 'C. R. G.' has no prospect of appealing successfully, unless he can show that the purchase of the medical literature (or membership of the societies distributing it to him) was a condition of his appointment to the office he holds."

#### Cash Basis.

"R. M. W." is being pressed by the inspector of taxes to render his firm's returns on the basis of actual bookings; past returns have been prepared by chartered accountants on the basis of actual receipts.

"It is officially agreed, we believe, that the basis of actual bookings is incorrect and also unfair to the practitioner unless it is modified by the deduction—authorized by law—of a carefully made estimate of anticipated loss by reason of bad debts. That estimate is almost impossible to prepare in such circumstances as 'R. M. W.'s,' except on the basis that the percentage lost in the past is likely to be the ratio of loss in the future. If the amount of debts outstanding does not differ materially from one year to another, the result of taking such an estimate will be the same as of preparing the returns on a cash basis. This is the reason why it is a well recognized custom on the part of inspectors of taxes to accept the cash basis in the case of medical practices. If our correspondent's gross bookings have been increasing, then the 'cash' returns are lagging behind the true earnings of the practice, and he has no answer (theoretically, at least) to the inspector's contention, but if bookings are not increasing, we think that an application to the Board of Inland Revenue, Somerset House, would probably receive sympathetic consideration."

"P., T., and R."—A, B, and C were in partnership until June 30th, 1925, when A left the firm, undertaking not to act as a general practitioner, but carried on as a surgeon and consultant. How should the assessment for 1925-27 be dealt with, and can A and/or B and C claim "specific cause"?

"The old ratio of division will, of course, apply for the first quarter of 1925-27. For the remaining three quarters the average should be reconstructed, separating A's specialized work from the general practice now carried on by B and C and dividing the remainder of the assessment accordingly. The question of 'specific cause' is, in the circumstances, somewhat intricate, and, as it is at present a hypothetical one, we suggest that it be referred again when the result of the next accounts—that is, for nine months to March 31st, 1927—is available."

#### ESTATE DUTY.

"M.D."—Dr. X. died in 1918, leaving a small estate. His will provided *inter alia* for payment of an annuity of £80 to a dependant. The annuitant has now died, and the Inland Revenue claim payment of a further estate duty upon the sum which had been invested to provide for payment of the annuity.

"The facts appear to be within the rule laid down in Attorney-General v. Watson and others [1917], 2 K.B., 427, in which it was held that the cesser of an annuity gives rise to a claim for duty. In dealing with the statutory provisions (Finance Act, 1894, Sec. 2 (1) (b), Lush, J., said: 'The object of the section is to make estate duty payable whenever there has been a succession, in fact, or that which is equivalent to a succession—whenever there has been a cesser of an annuity by reason of the death of the annuitant, which cesser causes a benefit to accrue to that party.'"

#### LETTERS, NOTES, ETC.

##### CHOLECYSTOGRAPHY.

Mr. G. P. B. HUPPY, M.S., F.R.C.S. (Dndley Road Hospital, Birmingham), writes: "The fatality following the injection of sodium tetraiodophenolphthalein, referred to in your issue of September 18th (p. 542) and again on October 2nd (p. 620), occurred in a patient under my care and was brought to the notice of the medical profession in the *Lancet* of September 4th (p. 509)."

The patient was a woman, aged 45, and her weight was 11 st. 12 lb. The dose given was 54 grams in 40 c.cm. of triple distilled water, this being the maximum dose used by Professor D. P. B. WILKIE (BRITISH MEDICAL JOURNAL, 1925, ii, p. 1048). I gave the injection myself, and it was carried out very slowly, during a period of over twenty minutes. During the injection the patient complained of abdominal pain, which was followed by vomiting and headache. Immediately after the completion

of the injection the pain became so severe that she rolled about and screamed. The body became rigid, there was frothing at the mouth, and then loss of consciousness. The pulse and respiration became more and more feeble, the pupils dilated, and death ensued in spite of all efforts at resuscitation.

The makers of the preparation were immediately informed and samples were tested, but no alteration in the compound could be detected. I should like to point out that, contrary to my previous practice, the solution had been made up the day before use. Another patient injected immediately preceding and under similar circumstances had a more severe reaction than is usual.

The amount of drug used by different workers has varied, and, in view of the above experience, I feel that some patients are particularly susceptible, and that the amount given in this case is too high for general use. This would seem to be confirmed by Mr. Stanford Cade, who, using a smaller maximum dose of 4½ grams, observed in two consecutive cases a very similar train of symptoms to that described above. In describing the cases he states "... the pulse at the wrist could not be felt for half to three-quarters of an hour" (*Lancet*, July 3rd, p. 5). The injection of the solution in two portions, with a short interval between, is a safeguard, for the symptoms develop rapidly, and by adopting this procedure the second portion could be omitted if advisable.

The value of intravenous injection of sodium tetrailodophenolphthalein is to be estimated by the increased percentage of correct diagnoses so obtained over that obtained by ordinary clinical and other means of investigation, including oral administration of the drug.

#### AN ACID DENTIFRICE.

DR. W. J. HENSON (London, W.) writes: Six years ago (*JOURNAL*, 1921, vol. i, p. 408) you published a letter from me under the above heading. I have had before me correspondence from doctors and dentists in all parts of the world, and up to the present not one has controverted my assertion that alkali and soap, forming the basis of the major part of the tooth pastes in modern use, depress the flow of alkaline saliva, which is Nature's preventive of pyorrhoia and dental decay. On the occasion to which I refer I gave the ingredients of a fruit acid tooth paste formula which I had used in my practice for a number of years, and now, after this lapse of time, I am in a position to confirm my former statement that I have never seen a recurrence of pyorrhoia or decay in any case in which it has been properly used.

#### PLUMBO-SOLVENT WATERS.

"HYDRAULIC ENGINEER" writes: The method advocated by Dr. T. D. Harries (October 23rd, p. 764) for safeguarding the public against dangers incurred by the use of lead pipes for the conveyance of soft water is as effective as it is simple, and can be applied with equal advantage to the water supplies of towns, villages, schools, and country houses. It is now for the authorities to broadcast the information given by Dr. Harries, which can justly be proclaimed as a most valuable contribution to the cause of public health.

#### GARLIC IN PNEUMONIA.

DR. C. J. HILL AITKEN (Kilnblur, Yorks), writing with reference to a Memorandum by Dr. F. W. Crossman (*JOURNAL*, 1924, vol. i, p. 519), in which it was stated that the use in pneumonia of a spirituous tincture of the garlic bulb brought about a rapid cure, relates that in two cases under his care in which it was proposed to employ this remedy the crisis occurred on the fifth and sixth days of the illness respectively, and before the drug was obtained. In another case the crisis came after a dose of castor oil, and in yet another after a change in the medicine. Subsequently to reading the article on garlic, he noticed a statement made at a medical meeting that pneumonia had changed its type and was tending to abort much sooner than the eighth day. In twelve months he had a series of thirty-six cases of pneumonia in which the treatment was on ordinary lines, without one death. He thinks that this recent justifies the continuance of the treatment of pneumonia in the usual way, and that the good results ascribed to garlic may be of the nature of *post hoc ergo propter hoc*.

#### CORRIGENDA.

THE writer of the review of the current issue of *Brain* in last week's *JOURNAL* (p. 793) calls attention to a sentence in which the insertion of the word "and" ... the review, and should read as follows: "... the drum is rotated in a clockwise direction viewed from above, nystagmus develops in an individual watching the drum," etc.

IN the report of the discussion on "Surgery and the Workmen's Compensation Act" at the Royal Society of Medicine (*JOURNAL*, October 30th, p. 788), by a reporter's slip the few remarks stated to have been made by Mr. Maynard Smith should have been attributed to Mr. Maynard Heath. Our sincere apologies are due to both gentlemen.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 47, 48, 49, 52, and 53 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 50 and 51.

A short summary of vacant posts notified in the advertisement column appears in the *Supplement* at page 207.

## THE CANCER PROBLEM.

A SUMMARY OF THE LLOYD ROBERTS MEMORIAL LECTURE.\*

BY

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PATHOLOGIST, MEDICAL RESEARCH COUNCIL'S FARM LABORATORIES,  
MILL HILL.

I DESIRE to express my thanks for the honour of being asked to deliver this, the fourth of the lectures established to perpetuate the memory of Lloyd Roberts. The subject which I have chosen for the lecture is not entirely within the special field of medicine in which Lloyd Roberts was an acknowledged master, but my hope is that what I have to say will be of sufficient interest to make the lecture worthy of the occasion.

I shall begin by indicating at once my general viewpoint on the subject of cancer, and I cannot do better than quote a few words from the introductory note of the first scientific report of the Imperial Cancer Research Fund (1904):

"The combined histological and clinical observations of the last fifty years have established the malignant new growths as a natural group related to each other by fundamental common attributes. The explanation of these common fundamental characters is bound up with the mode of origin of malignant new growths, and is the problem awaiting solution, to be followed by the specific explanation of individual variations as its natural corollary."

I do not know how far this would meet with general approval. There are some very distinguished pathologists who take the view that there is no common cause of the fundamental characters of new growths; to such the search for a cause of the disease is an irrational pursuit. This view I regard as simply obscurantist, and so, perforce, I leave it to time and the progress of knowledge to decide the issue.

My task is to tell briefly the essential story of the attempts which have been made to solve the problem set out in the quotation above. Naturally I shall advocate my own views of the solution of the problem, but I am more anxious to show—and if I fail the fault lies with me and not with the facts—that at least the problem has been defined and brought to a practical stage by the immense efforts of experimental pathologists during the last twenty-five years.

The earliest record of cancer experiments goes back to 1775, when Peyrilh attempted to transfer a human breast cancer to a dog. The experiment was a failure. It has been repeated, with variations, over and over again by numerous observers—by Dupuytren, by Langenbeck (1840), Lebert and Follin, Duplay and Cazin, etc.—and invariably without success. Roux and Metchnikoff, and also Jobling, have attempted to transfer human tumours to anthropoid apes, and failed. All this early work has shown the impossibility of transferring human tumours to the lower animals.

In 1889 Hanau described the first successful transplantation of a carcinoma within the same species. The tumour was of a rat, and in structure was a squamous-cell carcinoma. It was transplanted into two other rats and formed small nodules in both. Pfeiffer (1890) was successful in transferring a melanotic carcinoma of a mouse to other mice. Von Eiselsberg (1890) successfully transplanted a spindle-cell sarcoma of a rat to another rat. Morau (1891) was the first, by the method of transplantation, to cultivate a tumour. He was able to maintain a carcinoma of a mouse for seventeen generations over a period of three years by the inoculation of fragments of the tumour into other mice. Firkin (1882) and Velich (1898) were successful in transplanting a spindle-cell sarcoma and a subperiosteal sarcoma of the rat respectively.

These observations attracted but little attention, and it was not until Jensen, Loeb, and Borrel had turned their attention to them that the significance of such work began to be appreciated. The present era of experimental cancer research may be said to date from the publication of Jensen's paper in 1902. His work, which was carried out with a carcinoma of a mouse, confirmed the observations of the previous experimenters already mentioned, in showing

that a malignant tumour can be transmitted indefinitely within the species in which the tumour arises. Further, Jensen was unable to find micro-organisms in the transplanted tumours, and described experiments in which was tested the resistance of the cancer cell to different agents. During the same period Loeb studied a cystic sarcoma of the thyroid of the rat and obtained results essentially similar to those obtained by Jensen. Borrel, working with a mouse encephaloma, added further confirmation.

It will have been observed that the animals used by the experimenters mentioned were rats and mice, and the question now arose as to the occurrence of true new growths in other species. In the first scientific report of the Imperial Cancer Research Fund a list is given of the animal tumours examined in the laboratories of the Fund during the year 1903. Tumours of the most varied histological kinds, sarcomata and carcinomata, of the following animals are mentioned: cow, dog, horse, sheep, pig, mouse, rat, hen, Indian parakeet, giant salamander, cod, gurnard, and trout. Since that time observations of pathologists throughout the world have established definitely the fact that new growths occur commonly in all the lower animals, both domesticated and wild. Cancer is not, therefore, a purely human disease, and any explanation of cancer in man must also explain the phenomena presented by cancer in the lower animals. These observations are uncontested and are of fundamental importance; they rule out of account the all too frequent pronouncements that cancer is a disease of civilization and can be abolished by a return to a "natural" mode of living—whatever that may mean.

In the literature of twenty years ago may be found papers in which doubt was thrown on the neoplastic nature of animal tumours, but the question has now been most thoroughly studied, and the opinion among those most competent to judge is that the animal tumours are true new growths. It is therefore no longer necessary to discuss the point at any length. It is sufficient to say that in mode of origin, in age incidence, in clinical course, in mode of growth and infiltrative spread, and in the formation of metastases, there are no differences between tumours of man and of animals. The same range of tumours, benign and malignant, is met with in animals, and it is with this material that the greater part of experimental studies have been carried on.

The method by which a tumour is transferred from one animal to another consists in the implantation, usually subcutaneously, of a fragment of the tumour by means of a trocar or a syringe. From the implanted fragment a new tumour arises. Is the new tumour produced by infecting the cells of the host, or does it arise by multiplication of the cells implanted? This question was studied by Jensen by the following technique. A series of animals—mice—was inoculated, in the manner indicated, with a mouse carcinoma, and at regular intervals one of the inoculated mice was killed, the whole of the graft and surrounding tissues fixed and cut in serial sections. In this way the fate of the implanted cells could be followed. Jensen showed decisively for a carcinoma—and his results have been confirmed by numerous observers—that the daughter tumour is derived entirely from the cells of the implanted graft. The central portion of the graft dies, but the peripheral cells live; the fate of the implanted stroma of the graft is difficult to follow, but a new stroma is provided by the host, and it is this which nourishes the rim of neoplastic cells of the implanted fragment. The process, then, is a true transplantation and not an infection. Loeb, who studied the same problem with a rat sarcoma, was unable to come to a decided opinion. He inclined to the belief that the new tumour was derived partly from the malignant cells inoculated and partly, by a process of infection, from the connective tissues of the host. This difference in finding, however, may be merely one of technique and depending upon the difficulty of recognizing a malignant from a normal connective tissue cell. Wherever the cells of the implanted tumour are easily distinguished from the cells of the area in which the fragment is placed, the question at issue may be determined by early-stage examinations. The general result of an immense amount of investigation of this character has been to show that the inoculations of tumours are true

\* Delivered at the Royal Infirmary, Manchester, November 9th, 1926.

transplantations, that the daughter tumours are derived from the cells of the original new growths, and that the inoculated animals merely act as a medium in which the cells proliferate. By losing sight of these fundamental facts and by regarding transplanted tumours as new growths cancer research has often been led into blind alleys.

The failure of the earliest investigators of cancer to transfer the human disease to lower animals has been mentioned already. This failure probably played a large part in forming the opinion that cancer is essentially a human disease. But it was quickly shown by experimental research that the tumours of animals are transplantable only within the species in which they occur. Thus a dog tumour cannot be propagated in a cat, or a cat tumour in a dog. In the light of the discoveries of experimental histologists this is easily understood. It has been shown that inoculations of tumours are transplantations, and therefore it could not be expected that the cells of a dog, for example, would grow indefinitely in cats or any other species of animal than the dog. The cell of an animal carries the species specificity. Certain observations have been made which would appear to invalidate this conclusion. Murphy discovered that mammalian tumours can be grown in a developing chick embryo. This discovery has been confirmed by many observers, including myself. From a minute fragment of a mouse carcinoma a considerable amount of growth can be procured, and the astonishing picture is obtained of mouse epithelial tissue growing rapidly around a stroma provided by the chick embryo, new blood vessels in which course nucleated red cells penetrating the mass of growth.

The same phenomenon of heteroplastic growth can be obtained in mammals by inoculating a mouse sarcoma into new-born rats. The cells proliferate and form a large tumour, which can again be transplanted into new-born rats. In this way it is possible to maintain a mouse sarcoma for several generations in rats. But such work has no real bearing on the cancer problem. The implanted cells remain mouse cells, and the maintenance of the tumour for a few weeks or months in a series of new-born rats is merely a laboratory trick which leaves the main problem unaffected.

Since daughter tumours are derived from the implanted tumour cells it follows that living cells must be inoculated in order to obtain a second tumour. With epithelial tissues this is obvious indeed; inoculations are usually made subcutaneously into the connective tissues, and the formation of an epithelial daughter tumour could not be expected to occur from infection of connective tissue cells. It is, however, an experimental fact that when the cells of a tumour are killed, whether by heat or by drying, by means of antiseptics or by mechanical disintegration, the mass of dead material no longer possesses the power of giving rise to a tumour when it is inoculated into a suitable animal. Thus, coincident with the death of the tumour cell, there disappears the power of inducing a daughter tumour. The fact fits exactly with the logical deductions from the histological analysis of the changes accompanying the processes of transplantation.

Such beautiful interlocking of fact and deduction served to strengthen the already strong conviction that the tumour cell is itself, as it were, the parasite. Nothing, apparently, is separable from the malignant cell which can induce the formation of a new tumour, and the general opinion has been reached, and is now held almost as a dogma, that the malignant cell is one which, under the influence of many possible inciting causes, has assumed a character or quality which enables it to grow and divide steadily and persistently beyond the needs of the rest of the body. According to this view the cell itself is a parasite. The position is most clearly indicated by the following facts. It is now possible by following the brilliant work of Yamagiwa and Ishikawa to induce tumours in rats and mice by repeated applications of tar to the skin or subcutaneous tissues. The tumours thus produced are typical new growths and behave in every respect like spontaneous tumours which are caused in some way which we do not yet understand. A tar tumour of a mouse—carcinoma or sarcoma—can be transferred by transplantation to other mice, but living cells

are necessary for success. It cannot be successfully transplanted to a rat or to any other species of animal. It is as much an individual mouse tissue as a mouse is an individual mouse. In the same way a rat tar-tumour can be transplanted successfully only to other rats, and only by the inoculation of living cells. We thus arrive at the interesting position that one and the same irritant acting upon two species of animals will induce new growths in each species, but the new growth in each case is individual and particular to its own species. Clearly the extrinsic agent, the tar, has induced an intrinsic change in the cell. It is thus easy to understand why a microbial hypothesis of the origin of tumours is met with scepticism and indeed contempt. It would be strange were it otherwise. Nevertheless, I believe that these apparently conclusive facts merely conceal the truth.

And now I come to the exceptions in all this mass of tumours. I refer to the well known fowl tumours described by Peyton Rous. For the purpose of simplification I shall describe and discuss only one of these tumours, the first to be discovered, and the one which is in the hands of pathologists all over the world. It is a spindle-cell sarcoma, of primitive type, which occurred spontaneously in a Plymouth Rock variety of the domestic fowl. The tumour was first described in 1910, when it was shown to be transplantable in the usual way, but to exhibit an unusual degree of specificity for the variety of bird in which it originated. Indeed, the early transplantations were successful only in blood relations of the fowl which bore the spontaneous tumour. Now, after many years of artificial transplantation, the tumour grows in almost any variety of fowl, but, like mammalian tumours, it retains its species specificity strictly—that is to say, it will not grow in pigeons, ducks, or any other species of bird, or in any mammal. Now this tumour was found by Peyton Rous to differ from all other tumours examined up to that time in being transferable to fowls, not only by means of living cells but also by means of dried tumour tissue or by means of cell-free filtrates. The cell-free filtrates, therefore, contain the tumour's "cause." And, most surprising fact of all, the filtrate is infective only for fowls, and causes the reproduction invariably of exactly the same kind of tumour—a spindle-cell sarcoma. Thus the agent derived from the tumour cells has the power of exciting the formation again of a new tumour by transforming the normal connective tissue cell of the fowl into malignant cells, and this power is exerted only in one species. It is easy to believe in the specificity of animal cells, but here apparently the specificity is freed from the cells and is obtained in solution—or at least it passes through a filter.

Of such tumours half a dozen or so have been described; but it does not matter much whether the number be half a dozen or half a hundred: the problem to be faced is the same and is challenging to all of us. Before trying to make clear what I conceive to be the problem, I will state and discuss briefly the essential facts upon which there is general agreement.

First, the tumour is a true new growth as judged by the most rigid standards; secondly, filtrates through candles which hold back very small bacteria are able to induce sarcoma formation; and thirdly, some of the properties of the filterable agent are those which we usually associate with living organisms.

The general reaction to the discovery of these tumours was one of surprise that such a tumour should exist, followed by a half-hearted denial of the neoplastic nature of the growth. To-day most pathologists who have studied the tumour agree as to its neoplastic nature. There exists, however, an unwillingness to consider seriously the possibility of the filterable agent being an ultra-microscopic microbe such as we believe exists in certain animal diseases. Some of the more absurd explanations of the peculiarity of this tumour I will simply mention. It has been suggested that the filtrate of the tumour contains an ultra-microscopic cell which, when injected into the muscle of a fowl, enlarges and becomes a normal cell from which the new tumour forms. A modification of this view which has been put forward is that the active filtrate contains a part of the cell from which the normal cell can again regenerate. Such views, I hope, need no reply. They are stated merely.

Nov. 13, 1926]

# THE CANCER PROBLEM.

to indicate the extremes to which men will go to explain away a fact which runs counter to a strongly held opinion. Rous and his collaborators in their long researches into the filterable tumours came to the opinion that the balance of evidence was in favour of the agent being a living, filterable micro-organism. Now what is the evidence that such things exist at all? If we take the classical example, and the first discovered, of an animal disease believed to be caused by a filterable virus we shall consider foot-and-mouth disease.

The current belief that foot-and-mouth disease is caused by a filterable virus is founded upon the following evidence. When the vesicular fluid of a lesion in this disease is diluted and filtered through a good candle, and the filtrate is injected into a normal animal, this animal acquires the typical signs and symptoms of the disease. The vesicular fluid obtained from the second case may again be diluted and filtered, and once again the filtrate will reproduce foot-and-mouth disease; and so on *ad infinitum*. The filtrate when examined by ordinary microscopic and cultural methods is sterile; but since the causal agent reproduces itself indefinitely in the bodies of the inoculated animals it must be a living thing, and it is, as we have seen, of ultra-microscopic size. Upon this evidence almost all bacteriologists believe that the cause of foot-and-mouth disease is an ultra-microscopic microbe. The evidence produced by Peyton Rous with regard to the filterable tumours was of the same kind and quality, and is now more extensive. But opinion against a microbe cause of tumours is strong, and few are prepared to accept for tumours conclusions which, on similar evidence, are unquestioned in other fields of medicine.

Let me now state the problem which is before all of us. Thousands of tumours of men and animals have been studied. Large numbers have been cultivated by transplantations. A considerable number of tumours have been induced *de novo* by means of chemical and other irritants, and have been carefully studied. Almost all attempts to find an extrinsic cause—or a cause separable from the cells—have failed. But for about half a dozen tumours, of various histological kinds, a cause, a filterable virus, separable from cells, has been found. We may regard upon this astonishing difference? We may regard filterable tumours as a disease sui generis unrelated to other tumours; in this way we must suppose that a filterable virus plays a part in the causation of certain tumours which is comparable to the part played by tar or soot in others. This attitude to the problem has been general, but I think that it is a mere evasion of a very real difficulty. The problem exposed by the work of Rous does not consist solely in the isolation and cultivation of a virus. The true explanation of these tumours must, in the first place, decide whether or not a virus is present; and in the second place, equally important, must give us some understanding of the extraordinary specific character of active filtrates. For my part I agree most emphatically with Rous, Murphy, and Tylor that "the findings with the chicken tumours largely demolish the theoretical basis on which objections to an extrinsic cause for cancer have been built up." But can these positive findings of Rous be reconciled with the negative results of similar experiments made with the majority of other tumours? I think they can.

## The Filterability of the Rous Tumour.

It has already been pointed out that the exceptional character of the tumour lies in the fact that cell-free extracts are able to cause the formation of a new tumour. This property of the tumour must therefore be carefully studied, and we must know how far it is a fixed and constant property. It has generally been looked upon as constant, and the tumour has on this account been set in sharp contrast with the facts; they are not quite so simple. In accordance with one of his papers dealing with Peyton Rous remarked in one of his papers dealing with the filterability of his tumour that sometimes, and under the best conditions, cell-free filtrates are unaccountably innocuous. That, I am sure, has been the experience of all investigators who have worked for any length of time with the tumour. In my experience it has been unusual, for example, to obtain a potent filtrate from a tumour

which has been induced by the inoculation of dried tumour tissue, or from a tumour which has been caused by the inoculation of filtrates damaged by heat. But when failure to obtain potent filtrates is an irregular thing the most obvious explanation is that the failure is caused by some technical difficulty. Filtration is not a simple regular process, and it is easy to understand irregular qualities of filtrates. But it has now been shown that technical difficulties cannot fully explain such failures. Dr. Andrews and myself have described how a Rous tumour lost its property of filterability, and how this property remained absent for more than five months and then suddenly reappeared. During this long period the tumour was transplantable only by means of living cells—that is, it behaved like the recognized tumours of mammals. Clearly, then, this property of filterability is not fixed; all we can say is that generally a filtrate of the tumour is active—sometimes feebly, sometimes intensely; often it is quite inert. And since it has generally been accepted that a potent cell-free filtrate contains the cause is present in the filtrates to say that sometimes the cause is present in the filtrates and sometimes it is not? The solution of this apparently ridiculous dilemma will be shown later; at present I merely wish to point out that sometimes the tumour's cause gives no sign of its presence.

## The Effect of Heat on Filtrates.

It was shown by Rous and Murphy that tumour extracts are always robbed of their activity by exposure to a temperature of 55° C. for fifteen minutes. This statement I can confirm completely. It has been tested very carefully, and the method employed is as follows: Not more than 3 c.c.m. of the tumour extract is sealed up in a thin-walled, hard-glass test tube, which is then attached to the bulb of a standard thermometer and completely immersed in a water-bath kept at 55° C. The thermometer and attached tube are shaken gently during the period of heating. Tested in this way, tumour extracts, whatever their initial potency, are invariably inactivated. Rous and Murphy regarded this result as evidence that the causative agent of the tumour had been destroyed, and of course it looks very like it. Whatever the agent is that is destroyed in such a short time at 55° C. it is evidently very sensitive to heat, and judging by the effect of lower points of other viruses, it is not likely to be a virus. This view is supported by a study of the effect of filtrates of tumours. A filtrate, usually through a Mandl candle, temperatures than 55° C. upon a series of filtrates of tumours. A filtrate, usually through a Mandl candle, was made from all the routine tumours obtained during a period of more than six months—in all more than 150 tumours. Each filtrate was tested at temperatures from 45° to 55° C., variations being made from time to time. During the period chosen the tumour was not malignant, and as malignancy and activity of filtrates parallel with one another, the filtrates were not very potent. In a few tests made, it was found that 0.5 c.c.m. of Mandl filtrate was barely sufficient to induce a new tumour; 2 c.c.m. was in each case adequate. All the samples of such filtrates were inactivated by exposure to 55° C. for fifteen minutes; often 50° C., and sometimes the tumour became exceedingly malignant, metastasizing freely in liver, lungs, spleen, and elsewhere, and the filtrate became exceedingly active, inducing tumours in doses of 0.001 c.c.m., then it was found that 54° C. for fifteen minutes was insufficient to destroy all activity—the activity of the filtrate being merely reduced—but that exposure to 55° C. for fifteen minutes was effective. It is evident from this experience that the substance in the filtrate which is sensitive to heat is variable in amount or in quality in filtrates from different tumours.

## Effects of Antiseptics upon Tumour Extracts.

One of the reasons given by Rous and Murphy for their belief that the filterable agent may be a virus was that antiseptics destroy the agent. It is only fair to state that Dr. Murphy has since changed his mind; he now thinks that it is unnecessary to assume a virus. His opinion of 1912 seems to me to be sounder than his opinion of 1926. Carbolio acid, corrosive sublimate, toluene, chloroform and



ether, hydrogen peroxide, formalin, acriflavine and hydrocyanic acid are some of the antiseptics which have been tested, and they are all effective, each in its own way, in abolishing the activity of tumour extracts. I shall describe briefly the effects of two only of these substances—namely, chloroform and acriflavine.

Chloroform acts very rapidly at incubator temperature. This is shown very clearly in Chart 1, which represents the effect of 0.2 c.cm. of chloroform on 10 c.cm. of clear, cell-free, sand filtrate of a very malignant Rous sarcoma. The mixture of filtrate and chloroform was incubated in a large hard-glass tube in a water-bath at 37° C. After incubation for one hour a sample was removed, the chloroform pumped off, and 1 c.cm. then inoculated intramuscularly into the right breast of Bird 411; after two and a quarter hours a second sample was inoculated in a dose of 1 c.cm. into the left breast of the same bird; and after three hours 1 c.cm. was inoculated into the right leg of the bird. The control in this experiment was provided by incubating 10 c.cm. of the filtrate, contained in a hard-glass tube, for three hours in the same water-bath; of this incubated extract 0.2 c.cm. was inoculated into the left leg of Bird 411. It is shown by this experiment that in two and a quarter hours the activity of the filtrate has been enormously diminished by the chloroform; in three hours abolished. But since the fowl died in nineteen days it might be argued that there was not sufficient time allowed for the dose of filtrate treated with chloroform for the full three hours to manifest its activity. To provide against such a source of error a second fowl was inoculated with 2 c.cm. of such extract; in four months it has not developed a tumour.

Thus chloroform acts very rapidly. This, however, applies only to the ordinary impure chloroform used for common purposes in laboratories. When pure chloroform is used the action is much slower. I am indebted to Dr. Howard Mueller of Harvard for the intimation that this might be so.

Acriflavine acts slowly. The experiment represented by Chart 2 illustrates this very well. It will be seen from this that 1 in 5,000 acriflavine is unable in three hours to abolish the activity of an extract of a tumour. When such experiments are carried on for longer times—for example, six hours—it is found that the activity is further diminished but not entirely abolished. In order to inactivate a filtrate it is necessary to incubate the mixture overnight, and this often introduces a complication: simple incubation at 37° C. for eighteen hours frequently robs a filtrate of its power to induce tumour formation. In order, therefore, to utilize the action of acriflavine in experiments of an analytical character it is necessary to devise other methods the details of which are omitted here for the sake of clarity.\*

#### *Two Factors: Both Necessary for Cell Infection.*

We know that filtrates of the Rous tumour can be inactivated by heat and by antiseptics. By means of experiments such as that illustrated in Chart 3 it can be shown that the element destroyed by heat is not the same as that destroyed by acriflavine. The experiment shows that a tumour extract treated with acriflavine was quite inactive; an extract of the same tumour heated to 55° to 56° C. for eighteen minutes was also inactive. The two inactive fluids when mixed together acquired the power of inducing tumour formation.

The only criticism which can be passed upon experiments of this kind is that the chickens inoculated with acriflavine-treated extract happen to be naturally resistant, whereas the others are sensitive. This criticism, however, is not sound. The percentage of resistant birds cannot be determined absolutely, but it is, in any case, very small. Moreover, resistance is a graded quality. When the infective fluid is intensely active it is very rare to find a chicken resistant to its action. Only when the fluids which are inoculated are on the border-line of infectivity does one reveal differences in sensitiveness among any batch of chickens. The criticism, in any case, cannot

apply to the next series of experiments, which are illustrated in Charts 4 and 5. In these experiments the same bird is used as control to the experiment. In the first experiment (Chart 4) the dose of acriflavine-treated tumour extract is the same in both breasts; the only difference between the two sides is that in the right breast the diluent is horse-serum broth medium, while in the left breast it is heat-inactivated extract of tumour. The quantities in such experiments as this are measured with the most scrupulous exactitude.

In the experiments represented by Chart 5 the controls, both of heat-inactivated and antiseptic-inactivated extracts, are included on the same bird. Similar experiments, with similar results, have been made with chloroform and with hydrocyanic acid as antiseptics.

From results such as these I am satisfied that the production of a tumour with cell-free filtrates depends upon the conjoint action of two elements of the filtrate. One of these is rendered inactive by acriflavine or other antiseptic, and is therefore presumably a micro-organism; the other is readily inactivated by heat. As we have seen, it would appear probable that the agent which is destroyed by heat is variable in quantity (or in quality) in filtrates from different tumours.

Chart 6, which illustrates eight similar experiments, shows that innocuous filtrates (that is, filtrates from a "non-filterable" Rous tumour) have the same property of reactivating acriflavine-inactivated extracts as have extracts which have been heated to 55° C. for fifteen minutes. It follows that inert filtrates are simply filtrates which contain none, or an insufficient amount, of this heat sensitive but absolutely essential factor. This factor—which I have named the "specific factor," for reason which will appear later—may be present in variable amount, and it is only because of its activity that the presence of a virus can be shown in the Rous sarcoma. When it is absent the Rous sarcoma, like the average bird and mammalian tumours, cannot reveal its "cause." The peculiarity of the Rous tumour is that it manufactures in varying degree this accessory thermo-labile substance.

It is evident from these experiments that the agent which is destroyed by antiseptics (the virus) is unable acting alone, to induce sarcoma formation. This fact appears to me to be very simple. It has its analogies in general bacteriology, where the phenomena are more widely known and appreciated. But the fact, when established in research connected with the subject of cancer, is apparently regarded as a diabolical mystification of a plain and straightforward problem. It is but right to state here that Professor Borrel, the pioneer of experimental cancer research, has for twenty years held the opinion on general grounds that the essential cause of tumours is a virus which requires prolonged preparatory irritation of the tissues before its latent powers can be manifested.

The use of the word "cause" in medicine is unfortunate and is always liable to misapprehension. What is generally understood by the word is, I assume, a factor which must be invariably present in the etiology of a disease. We cannot, if this be the meaning understood, regard the specific factor as the cause of the Rous sarcoma, because it is sometimes absent. The virus—that is, the element which may be destroyed by an antiseptic—is, so far as my experiments show, always present in the tumour whether the tumour be very malignant or relatively benign. I regard the virus, therefore, as the cause of the sarcoma. Which of these two characters carries the specificity?

#### *Substitution Experiments.*

If an extract of the Rous fowl sarcoma be inactivated by heat and then there be added to it an extract of another tumour, the mixture does not induce sarcoma formation in the fowl or in the animal from which the second tumour was obtained—that is, a heat-inactivated extract of the Rous sarcoma cannot be restored to activity by the addition of simple extract of a rat or mouse tumour. But when an extract of a Rous sarcoma is inactivated by means of an antiseptic or by centrifugation, the activity can be restored by the addition of extracts of some other tumours.

\* The details and protocols of these researches will appear in a series of papers in the *British Journal of Experimental Pathology*.

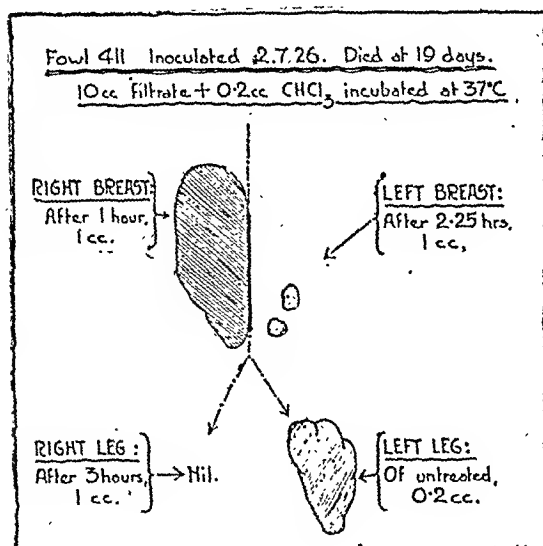


CHART 1.

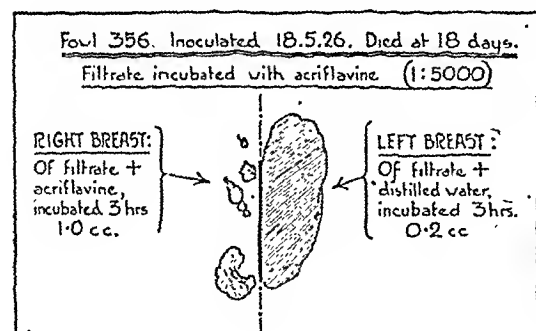
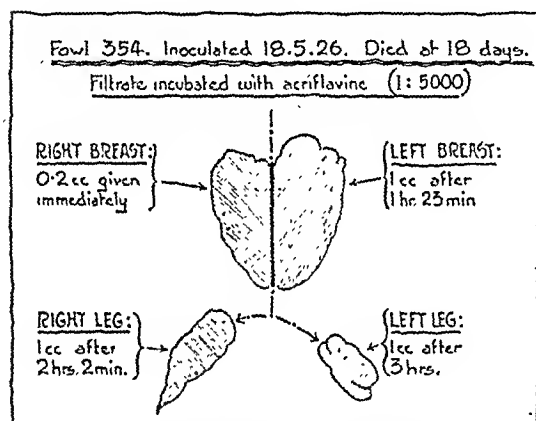


CHART 2

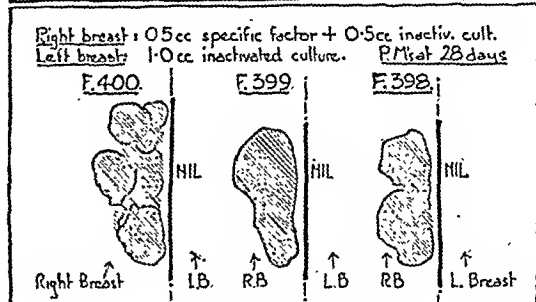
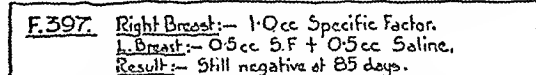
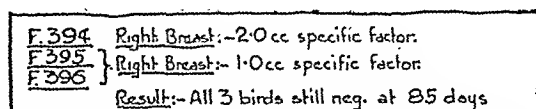


CHART 3.—All injections July 27th, 1926.

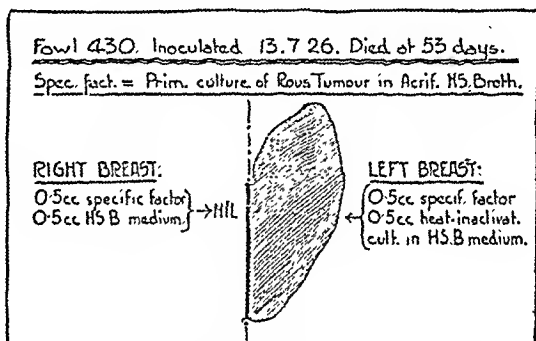


CHART 4.

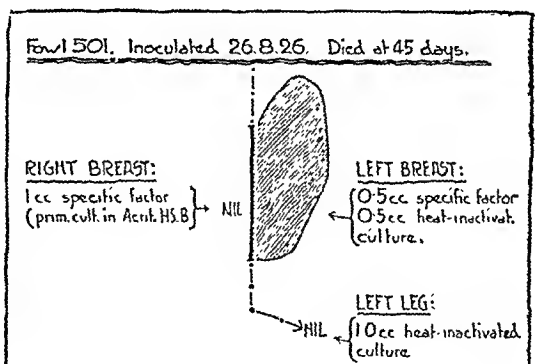


CHART 5.

Chart 7 shows this very clearly. In this experiment the fowl sarcoma filtrate was treated with chloroform, the chloroform removed, and 1 c.cm. of the filtrate was then injected into the right breast of a fowl. Into the left breast of the same animal a mixture of 0.5 c.cm. of this chloroform-inactivated filtrate and 0.5 c.cm. of an extract of a tar tumour of the mouse was injected. A tumour grew in the left breast; the right breast remained quite negative. Chart 8 shows the same result for a human breast carcinoma.

Experiments such as these have been made with a large variety of tumours and with normal tissues. Among the tumours which have provided an agent which can replace

that agent of the Rous sarcoma destroyed by antiseptics are carcinomata and sarcomata, both of man and animals. Normal tissues which have been tested are: embryonic tissues (chick, mouse, rat) more than 150 times; adult tissues of animals, including heart, lungs, muscle, brain, liver, and kidneys—and, in one instance, normal human uterus. Not once has it been possible with extracts of such normal tissues to replace the agent destroyed by antiseptic in the fowl sarcoma extract.

My interpretation of such experiments is as follows: In the experiment represented by Chart 8, for example, acriflavine has destroyed in the Rous tumour extract a micro-organism; this interpretation is in accordance with the

well known antiseptic action of acriflavine. The extract of mammary carcinoma has, as I conceive it, provided a fresh supply of organisms which are able, in virtue of the presence of a sufficient amount of accessory factor of the fowl tumour, to infect the cells of the fowl inoculated.

These experiments show very clearly that the specificity of the Rous tumour extract is carried by the heat-labile

is a criticism which has been applied, and quite fairly, to these results: it is that possibly we are here dealing with a phenomenon similar to that discovered by Twort and now known as the "bacteriophage phenomenon." It is possible to argue that successive inoculations into tubes which contain living embryo induce repeatedly the production of the agent from the cells of the embryonic fragment. This is not impossible, but it is very improbable. It must, of course, be settled before the last element of doubt has been removed.

### Conclusions.

Does this new knowledge bring us any nearer to the solution of the problem set forth at the beginning of this lecture? And further, is the answer compatible with the known facts of cancer structure and behaviour?

It seems to me, after considering the problem very thoroughly—and I hope with a sound knowledge of the accepted facts—that in the first place there is no incompatibility between new and old "fact"; and in the second place it shows that there is an agent contained in tumours of diverse origin and of diverse structure which has the supremely important property of reactivating an extract of the Rous sarcoma which has been inactivated by means of an antiseptic. The tumours in this respect are therefore linked together in a way which had never before been suspected; they are, indeed, a natural group. The agent which is common to these and which links them together

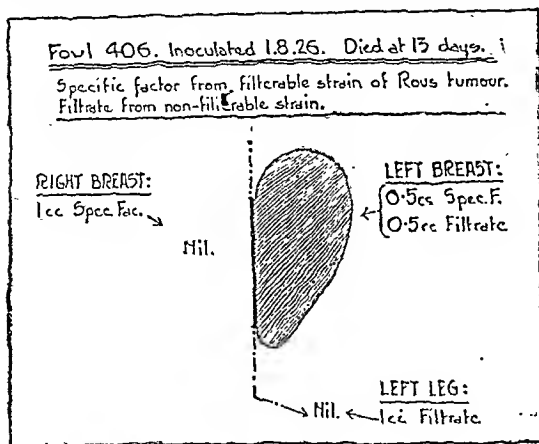


CHART 6.

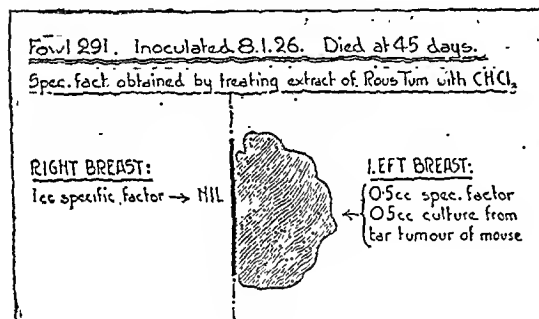


CHART 7.

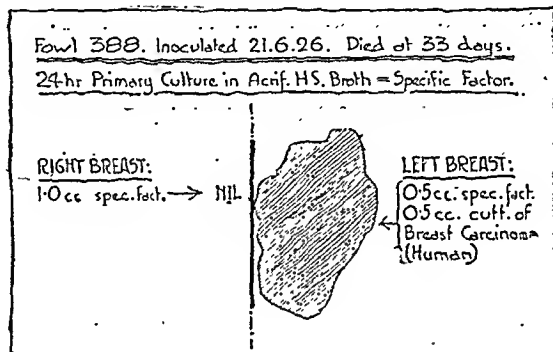


CHART 8.

agent, which has, for this reason, been called the "specific factor."

It has already been pointed out that extracts of normal tissues do not provide the agent which reactivates antiseptic-treated extracts of the Rous sarcoma. But certain tumours, one of which is a sarcoma of the mouse, have so far invariably failed also. This is one of the most puzzling facts yet met with, and I have no explanation which accounts for it satisfactorily.

The evidence that the agent which is extractable from many bird and mammalian tumours, and which has the power of restoring activity to inactive extracts of the Rous tumour, is a micro-organism is as follows: first the agent is killed by antiseptics, and secondly, it can be cultivated. The proof of cultivation is obtained by the method described in a recent publication—namely, by using as a medium serum broth to which is added a fragment of embryonic tissue. Chart 9 shows the method of experimentation adopted. Acriflavine-treated extract of Rous sarcoma is prepared; to measured portions of this are added in series: (1) a sample of serum-broth-embryo culture medium, (2) a sample of a subculture in the same medium, and (3) samples of a subculture in different media. Quantities are measured precisely. The result of the experiment represented by Chart 9 shows that the agent from a rat carcinoma survived in horse-serum-broth-embryo and in horse-serum broth, but not in broth-embryo; it was not present in the horse-serum-broth control tube, which had been incubated for the same period of time as the cultures. Continuing with subcultures in this way, tumours have been obtained with remote (seventh) subcultures in media which contain embryo tissue. But there

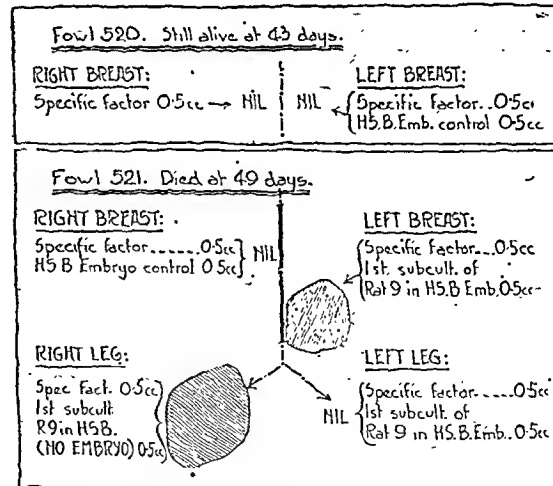


CHART 9.—All injections September 20th, 1926. Primary culture of Rous, in acriflavine. HS.B.=Specific factor.

in a group is killed by antiseptics and can be cultivated. Moreover, under special conditions it can be seen and photographed, as has been shown by my friend and colleague Mr. Barnard. I am satisfied that the simplest explanation of these observations is the correct one—namely, that the agent is a living, filterable microbe, and that it is the cause of new growths.

# THE RECONSTRUCTIVE SURGERY OF THE HIP.\*

ABSTRACT OF THE BRANSHAW LECTURE.

BY

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THE hip-joint, the largest and most important in the body, presents special difficulties and special displacements. It is more liable to serious disease and congenital dislocation than any other joint. Possibly this may be due in part to the evolutionary change from the quadruped to the biped gait and progression.

## FRactURE OF THE NECK OF THE FEMUR.

Fractures of the true neck of the femur—that is, of the bone proximal to the intertrochanteric line—present very special features. Unless impacted these fractures never undergo natural union, and yet if artificial impaction is brought about, bony union will occur just as certainly as in any fracture elsewhere. Non-union, which is the natural event in these cases, is due to four causes—namely, want of apposition, poor blood supply, interposed capsule, and the action of the synovial fluid. Of these, the first two are by far the most important. If efficient treatment is delayed for more than a few weeks marked atrophy occurs in the proximal fragment, and after such an event perfect restitution either of form or function is impossible. The three essential points in the treatment are: early intervention, accurate apposition, and firm fixation. If these points are observed, firm bony union can be secured in practically all cases, whether in old or young.

The method advocated by Whitman is a great advance on previous modes of treatment. Under an anaesthetic the leg is pulled downwards, inverted and abducted, thus impacting the fracture. The abducted limb is fixed in a plaster spica for three to six months. The objections to this method consist in its uncertainty, and the very great torture and tedium of keeping an adult in a plaster case for several months. The uncertain result is due to the facts that manipulation of the leg cannot correct a misplaced proximal fragment, or get rid of that portion of the capsule which may lie between the broken surfaces.

Fixing the fracture by means of a bone peg gives a much more certain and perfect union with less strain upon the patient and fortitude of the patient. The joint is exposed by an anterior incision, the capsule opened, the fractured surfaces laid bare, the fracture accurately replaced by manipulation, and a square peg  $4\frac{1}{2}$  in. long by  $\frac{3}{8}$  in. thick driven from the base of the great trochanter through the neck into the head. The limb is put up in moderate flexion and abduction, steadied by slight traction. In six weeks' time the patient can walk with a calliper, and in three to six months can resume a normal life.

Special modifications of the pegging operation are useful in certain circumstances.

The peg may be inserted from above. This is useful when the proximal fragment is very small and the line of fracture difficult to expose outside the hip socket. The head of the bone is dislocated and nailed on to the neck, after which the bone is replaced in position.

In old cases, where the fracture is of long standing, it may be useful to employ a living bone peg, taken preferably from the fibula, because this type of peg will substitute some new bone in place of that lost by atrophy.

The peg may be inserted blindly—that is, without exposing the joint at all. This method should be reserved for patients whose age or debility makes it desirable to avoid the more serious operation. The drill hole into the neck and the insertion of the peg should be made under the guidance of the x rays. Conditions of slipped epiphysis should also be treated by the pegging operation, which is capable of restoring the bone to its perfect original form.

## ANKYLOSIS OF THE HIP.

There is no entirely satisfactory method of treating an ankylosed hip. It is comparatively easy to cure the patient of pain and to correct deformity, but it is extraordinarily difficult to secure mobility and stability at the same time, therefore only those cases are operated upon in which double ankylosis of the hips or simultaneous ankylosis of the hip and knee makes some treatment imperative. The more complicated methods of arthroplasty tend to leave the patient with a very stiff hip. It seems better, therefore, to be content with some modification of excision of the head of the femur. Two suggestions are made in order to secure both mobility and stability after this excision. To attain mobility, the capsular ligament is used as an envelope for the end neck of the femur. To prevent the bone becoming dislocated the excised head of the femur is cut into two fragments and affixed to the upper margin of the acetabulum.

## CONGENITAL DISLOCATION OF THE HIP.

It is now generally recognized that early cases of congenital dislocation of the hip can be efficiently treated and cured by manipulation. But it is not realized that in older children when manipulative reduction is impossible a great deal can still be done by open operation to get firm and useful hip-joints. It is worse than useless to employ elaborate and difficult methods of manipulative reduction in these older cases. The main obstacle to reduction is the tight constriction of the capsule. No force or evining can compel the head of the femur measuring one inch in diameter to pass through a thick constricted capsule presenting a channel of about a quarter of an inch.

Open exposure of the joint through an anterior incision makes it quite easy to reduce the dislocation after the constricted capsule has been slit open. The problem then arises as to the best methods of retaining the femur in its socket. In one method the acetabulum is deepened until it affords a socket sufficient to take the whole femoral head. This gives a very secure joint, but one which is liable to become stiff. In another method, that which has been most frequently used, the cartilage of the acetabulum is left undisturbed and a new rim is added to the socket by turning down a part of the outer surface of the iliac bone. In a third method the capsule is cut from its attachment to the pelvis and tied round the head of the femur, the acetabulum is gouged out, the head of the bone wrapped in the capsule is placed in the socket and anchored there by stitches which fix the capsule to the floor of the acetabulum.

In the late or adult cases of congenital dislocation a great deal can be done to cure both the pain and the lameness by a subtrochanteric osteotomy, putting up the leg in full abduction. But this is only suitable for unilateral cases. When the dislocation is bilateral, the head of one femur can be brought down into the socket by removing about two inches of the shaft of the bone below the small trochanter. This will give a firm hip on one side and the two legs will be of the same length. At a later date, if necessary, an osteotomy may be done on the opposite side.

## INFANTILE PARALYSIS AFFECTING THE HIP MUSCLES.

Extensive infantile paralysis of the lower limb can to a large extent be made good by means of apparatus which fixes and controls the knee and ankle joints, but paralysis of the gluteal muscles leads to a complete inability to balance the trunk upon the leg and necessitates the permanent use of crutches. It has been suggested that the lost abductors may be replaced by using the tensor fasciae femoris or the erector spinae muscles. Neither of these muscles singly can make a very efficient abductor, partly because one lies in front and the other behind the required line of action, and, in the case of the back muscle, because of the difficulty in getting a necessary tendinous insertion. By combining these two muscles an efficient digastric abductor of the hip is formed. A long incision is made on the outer side of the thigh; the ilio-tibial band is isolated and cut above the knee; the fascial band forming the tendon of the tensor muscle is brought backwards through the base of the great trochanter; the erector spinae muscle is exposed by a vertical incision, and the lower portion

\* Delivered before the Royal College of Surgeons of England, November 11th, 1925. The full text of the lecture will be published in the January number of the *British Journal of Surgery*.

isolated by cutting through its lower origin and splitting this part of the muscle upwards for about four inches; the ilio-tibial band is brought backwards and upwards through a tunnel under the skin and fixed to the isolated part of the erector spinae muscle.

## British Medical Association.

### PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

#### SECTION OF NEUROLOGY AND PSYCHOLOGY.

E. FARQUHAR BUZZARD, M.D., F.R.C.P., President.

#### DISCUSSION ON MANIC-DEPRESSIVE PSYCHOSIS.

##### OPENING PAPER

BY

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Medical Superintendent, Maudsley Hospital, London.

THE task of introducing for discussion the subject of the manic-depressive psychosis has an engaging but spurious air of simplicity. The disorder arouses a natural sympathy and interest in normal people. The anomalies of the patient have none of that apparently meaningless and inexplicable quality which makes the schizophrenic so remote and renders so improbable the truth that he once thought and acted like ourselves. On the contrary, if the term "manic-depressive psychosis" is used in any but the narrowest sense it is obvious that in many cases we are dealing with a merely quantitative deviation, that the disturbance consists in a response similar in kind to that which like circumstances might provoke in us, but morbidly prolonged or disproportionate or disastrous in degree. Even if we were to confine the term to those cases showing apparently spontaneous mutations of mood and activity there are few of us without personal experience of analogous phases.

In handling the practical problems of causation, diagnosis, prognosis, and treatment it is impossible to be both comprehensive and detailed. I shall aim at raising points for discussion, but if at times I express myself dogmatically I hope this will be recognized as merely provocative.

##### *Delimitation of Manic-Depressive Psychosis: Relation to Neuroses.*

The primary problem is what meaning should be attached to the term "manic-depressive psychosis." There is no constant and specific cause, and no distinctive bodily change recognizable during life or after death. The range of the term is a matter of convention: at present there is no agreement, and no one with the authority to impose one. Yet all discussion, at least as to the problems of causation, diagnosis, and prognosis, must depend on delimitation. All would probably agree that under the heading of "manic-depressive psychosis" are included cases of functional mental disorder which show as their predominant features one of a contrasting pair of anomalous types of reaction.

I. The depressive reaction comprises (a) Morbid dissatisfaction (with the self or circumstances) in one of its varieties; colouring of thought and action thereby; persistence or hyperexcitability of various alternative reactions (psychomotor and visceral) expressive of the mood. (b) A sense of difficulty in thought, action, and feeling of all other kinds and a varying true incapacity for activity in relation to external reality.

II. The manic reaction comprises: (a) Morbid satisfaction (with the self or circumstances); colouring of thought and action thereby and objective expressions of this mood. (b) Fallacious sense of power and mis-directed hyperactivity.

The question, however, which immediately arises is

whether all or only some such cases should be included; whether it is necessary to limit the application of the term by reference to varieties of these symptoms, their intensity, time relations, and causes, or by such criteria as insight and amenability to treatment. It will be generally agreed that subdivision in virtue of details of the known (for example, of past course and present symptoms) serves little purpose unless the types discriminated are correlated with differences in the unknown—for example, in causation, prognosis, or treatment. The term originated in the attempt of Kraepelin to establish a correlation between certain syndromes and course, between transverse and longitudinal section in the severer psychoses. Hence Kraepelin's invention of the category manic-depressive psychosis as one of the standard types to which cases of grave mental disease more or less conform.

It was emphasized that cases of the manic-depressive type did not in most instances tend to dementia between attacks or even after a number of such. It is doubtful whether this is more than a truism which could be briefly expressed in more modern terms by saying that in a given patient there is no strong reason to anticipate marked and terminal schizophrenia in the absence of minor and early changes of the same kind. Nevertheless cases presenting the manic-depressive syndrome in absolutely pure form during their early stage do sometimes end as typical dementia praecox.

In earlier years spontaneous occurrence—that is, lack of traceable relation to any external causes—was one of the features ascribed to typical manic-depressive psychosis, but in fact the degree to which internal and external factors co-operate is infinitely variable.

It is unproven and improbable that any mental syndrome is due to a specific cause, and consequently there is no more likelihood of a constant course in mania or depression than in jaundice.

Kraepelin himself in later years has fully recognized that in addition to the striking cases of almost purely affective disturbance reaching the intensity to which we commonly give the name of a psychosis and showing a clear-cut phase course there are many others. We see cases in which chronic anomalies, like in kind to those of the attack though varying infinitely in degree, are present before or after. These cases merge into those where constitutional symptoms of one kind or the other are pretty constantly present and undergo mere fluctuations. Thus there is a complete gradation to certain minor disturbances which whether continuous or phasic, are usually termed neuroses.

Kraepelin, if anyone, has the right to settle what conditions the term "manic-depressive psychosis" shall connote. He has come to the conclusion that it is simplest to include all cases showing the affective excesses and also the "syntonic" types of intellectual and conative disorder to which I have referred, and this regardless of their intensity and time relations. He has not been followed by all who have borrowed their names and ideas from his earlier work, but personally I entirely agree with his later views in this matter.

The distinction between what are termed neuroses and psychoses has really grown out of practical differences, particularly as regards certification and asylum treatment. It has become customary to call those types and degrees of mental disorder which rarely call for such measures by the name of neuroses. I can find no other basis for the distinction; neither insight, nor co-operation in treatment, nor susceptibility to psychotherapy will serve.

I am aware that this view will probably be challenged. There is a small group who insist on importing animism into psychopathology. Most of these authors seem to propound the paradox that mental disorders are disturbances in the nervous functions and structures, while what we term neuroses are disturbances of an entity called mind without persistent physical basis, though others, including McDougall, would, I believe, include manic-depressive psychosis in the latter category. In spite of the profoundest respect for those who hold these theories, and in spite of the traditional upbringing during childhood, I confess that these views now convey no meaning to me. We admit the mystery of consciousness, but to assume that an enduring physical basis for habitually abnormal behaviour is probably non-existent because at present its exact nature is not



## MANIC-DEPRESSIVE PSYCHOSIS.

demonstrable seems to me a flat defiance of all relevant experience in medicine.

The view that neurosis and the depressive psychosis are continuous, and that both are associated with lasting bodily anomalies, is not, of course, in the least inconsistent with believing that the traces of unpleasant experience are one of the principal causes of both, and that other mental experiences may be curative. It is in fact a wider and less eclectic view of psychogenesis and psychotherapy—not in the least a denial of either. It would be the fact that in a very large proportion of the attack is directly related to stress, and as a rule the exact emotional anomaly corresponds to a morbid protrusion of what the circumstances would naturally cause. Often there remains undue susceptibility to the same emotion—for example, after one attack of anxiety with fairly adequate reason, a liability to terror from all sorts of trivial causes. Frequently one finds the topic of the first attack reproduced in later ones, though there is nothing common in the patient's circumstances at the two dates except his mood. Many cases, even in the first attack, show regressive prominence of events of the early life, tinged with the same emotion.

On the other hand, events justifying one depressive emotion—for example, grief—may cause relapse of another somewhat different depressive type—for example, fear, to which the patient has become habitually liable.

Attacks of mania and melancholia are very often obviously decontrol of tendencies just inhibited when the patient is at his best. On the other hand, many attacks of acute mania have become habitually liable. even when hypomania is temperamental. The phenomena seen in manic-depressive psychosis and allied neuroses are obviously related to those of habit, decontrol, and contrast, as otherwise exhibited in the nervous system. In view of this it seems to me a counsel of despair to urge contentment with conceiving them in terms of struggles between such entities as the conscious and unconscious mind except as a temporary expedient.

## VARIATION OF THE DEPRESSIVE SYNDROME.

(a) *In Ratio of Positive and Negative Symptoms.*  
In the depressive type of psychosis there is great variation in the ratio between the excess of affective response and the reduction of cognitive and intellectual activity in relation to the outer world. In many cases, at least in some depressive attacks, these negative symptoms are the salient feature. This state of things reaches its height in anergic stupor. At the beginning or end of an attack it is common to find as the main symptoms of loss of interest and concentration and of recollection, a sense of unreality in life and of all enduring feelings, lassitude, fatigue, of the world and strangeness of the self, lassitude, fatigability, and hatred of effort and responsibility. All these may be accompanied by perfect insight; usually there is some tendency to exaggerate the objective disabilities, but insight often into this tendency.

Many neuropaths show this syndrome in a single attack, repeatedly or chronically, and never exceed it. It then seems to correspond to what may best be included under the over-stretched heading of neurasthenia.

(b) *In Type of Emotion.*  
When depression is well marked its exact form varies greatly—grief finding causes for unhappiness in the past, fear which seeks them in the future, and a simple sense of wretchedness about the present seem the primary types. The melancholic is, of course, apt to experience all these varieties of depression; which type predominates seems in part a function of recent circumstances, if any, precipitating the present attack or the first of his life. In part, the mood expresses the individual temperament as determined by the interaction of inborn constitution with the sum of experience, remote as well as recent. Anxiety neurosis has achieved a persistent acceptance even among the large majority who reject Freud's views as to its causation. There seems no particular objection to isolating it if it be regarded as merely one of the numerous subdivisions of the manic-depressive group. But it merges

in the same patient, and by a perfectly continuous gradation in a series of patients, into agitated melancholia. Almost as much could be said for recognizing grief and wretchedness neuroses. It would be easy to construct a table of symptoms analogous to those seen in anxiety neurosis, but coupled with grief and associated with insight into their morbid nature. We have all seen the patient exasperated by tears for which he can ascribe no cause; and obsessed by sorrowful memories despite the fullest recognition of the futility of dwelling on these. Remorse, which provides at once a reason for depression past, present, and future, is about the commonest form.

(c) *In Intellectual Concomitants.*  
Grief, misery, or fear is apt to make the patient remember events, magnify perceptions, and anticipate prospects that are in keeping with itself. Insight is not only graded in various patients, but also varies immensely from time to time. It includes insight into the morbidity of the emotions and of the rationalizations to which these incline the patient. In a surprising number of even the severest cases of melancholia there are no delusions, merely a formless sense of one of the three types of distress which I have mentioned. Hallucinations and delusions in the melancholic are usually related to a foundation of fact, though it may be a frail one; they show chiefly a distorted sense of proportion and probability. Often there is merely a regressive prominence of some congruous memory without delusion. Obsessions are common in these cases, but, like the delusions, are as a rule of the readily intelligible type.

(d) *In Psychomotor Accompaniments.*  
Grief, wretchedness, and fear in the melancholic may alike find expression in mute prostration or in various forms of futile activity, exaggerating those seen in the normal affected by similar emotions. Such differences have formed the basis of much traditional subdivision of melancholia—for example, into agitated, resistive stupor, and so forth. The one patient is apt to vary in the course of a day in these respects.

## Transition between Manic-Depressive and other Syndromes.

Next we must recognize those cases which are mainly manic-depressive may from their beginning present certain features resembling dementia praecox or come to develop these. Other types of reaction than the schizoid may be combined with the syntonie. One may see the typical failure to recognize the outer world and liability to hallucinations characteristic of confusional states. The paranoid reaction may also coexist in varying measure with either mania or melancholia. In either case hostility is the keynote. The distinction from the simple melancholic reaction consists in the attitude to misfortune—acceptance as retribution or ill luck in the one, and resentment as injustice in the other. Modern psychiatry is at last losing its passion for multiplying descriptive categories, which has been so often parodied. We are moving towards a recognition of the fact that the task of psychopathology is to isolate a few fundamental types of anomalous reaction for which a physical basis can be sought. Among these are the syntonie types, the confusional, the schizoid, the paranoid, and the hysterical. These are not regarded as separate diseases comparable with measles and scarlet fever, or with tabes and disseminated sclerosis. Each may result from numerous causes, and generally does result from a combination which can give rise to several anomalies of reaction, and often initiates a mixture of them in one patient.

## Physical Basis of Manic-Depressive and other Functional Psychoses.

It is at least conceivable that some of the primary modes of abnormal mental reaction correspond to fairly definite bodily changes, perhaps to particular systems of neurons which we shall some day be able to identify. The combination of more than one type of anomaly in most cases would then be somewhat analogous to the situation in amyotrophic lateral sclerosis or in tabo-paresis. Attempts to conceive the physical basis of the various reaction types are of course purely speculative, but recognition of their nature at least saves us from the misleading

simplification called "making a diagnosis" as between various functional psychoses and neuroses. This does not exclude the possibility that the degree in which various reaction types are present may be empirically correlated with certain courses.

Such evidence as there is regarding the physical basis of dementia praecox and manic-depressive psychosis supports the view which I have put forward. Most of the earlier changes described in both are not peculiar to any disease, but accompaniments of the behaviour or emotion displayed, or secondary results of these. Such will, of course, be seen alike in manic-depressive psychosis and dementia praecox. Among these may be instanced the loss of weight due in many cases to insomnia, restlessness, and starvation, glycosuria, which may occur with all forms of normal or morbid excitement; and leucocytosis of the type associated with exercise. Blood pressure also is probably parallel to mood and behaviour.

Numerous physical changes have been described of late years by Sir Frederick Mott and Dr. Golla, and by Dr. Cabella Robertson working with them in the Maudsley laboratory, as occurring in the functional psychoses, which seem independent of behaviour. They are found in manic-depressive types as well as in dementia praecox. These changes include histological ones in the cortex cerebri, gonads, adrenals, and pituitary body. Specific relation to the functional psychoses seems fairly certain (though it has been denied), but differences between manic-depressive and dementia praecox are only questions of constancy and degree. This agrees with clinical facts such as that amenorrhoea is common in both. It is opposed to the alleged finding in dementia praecox alone of protective ferments against breakdown products of cerebral cortex and gonads by the Abderhalden reaction; but the value of these findings is very doubtful. It is likewise true that such intra-vitam reactions as the haemolysis crisis, absence of the alkaline tide, abnormalities in composition of the alveolar air after food, in gastric secretion, and in blood sugar, are common to both. Changes in basal metabolism peculiar to dementia praecox and in nitrogen excretion peculiar to manic-depressive have been described, but difficulties of technique make these results very questionable.

#### *Etiology of Manic-Depressive Psychosis.*

The problem is really the double one of tracing separately an exciting cause and a predisposition or susceptibility.

Of exciting causes shock in the absolutely normal is rarely sufficient, but even if we confine our attention to cases of certifiable severity a recent serious mental stress to which the attack is really traceable is found in quite 50 per cent. Probably the proportion would be much higher if slight cases were considered. In saying this I have due regard to alleged causal episodes that are symptomatic or results of the psychosis or coincidences or commonplace or merely untrue.

I hesitate to refer to such banalities as exciting mental stresses in these days when the quest of the obscure and the terror of the obvious has become a cult; when nothing can be too trivial to be of revolutionary importance if only it be sufficiently remote. Of these banalities the death of husband or wife seems far the commonest to me, probably because of the usual age of occurrence. Financial worries come next, and are often combined with the former cause. More romantic episodes, such as disappointment in love and illicit pregnancies, are a bad third. The insanity of a near relative is a very common determinant in my experience. I have seen seven instances in the last three years where sudden development of insanity in one patient has been followed by melancholia in a brother or sister, or in a husband or wife. This seems by far the commonest type of *folie à deux*.

Though shocks are more potent, I think the modern fashion of minimizing intellectual overwork as a cause of mental illness has gone too far, but separation of this from worry is generally more theoretical than real. As one would guess from experience of ordinary humanity, performances that might reasonably cause shame are less prone than misfortune to originate melancholia, and more likely to originate paranoid reactions. Remorse is common in melancholia, but mostly about remote or trifling episodes.

Now as to the fundamental susceptibility to experience or apparently spontaneous affective excess in which the disease consists. We have no knowledge of its essential basis or whether this is in or out of the nervous system, though this is an enormously important question. In considering causation of mental disorder we must always think of four groups of factors: (1) the innate structure of the whole organism and corresponding tendencies; (2) the stage of evolution reached and influence of physiological epoch; (3) mental experiences (recent and remote); (4) physical influences (recent and remote).

I fear we have not progressed far beyond saying that the essence of the manic-depressive diathesis in most cases is an innate and often inherited tendency. At least, we do know that the grouping of cases does not obey the laws of chance but shows family distribution, and that there are families in which the manic-depressive tendency occurs in extraordinarily pure form in numerous members, both in the same generation and in successive ones. These are the well known families where numerous suicides occur and often where exceptional ability is combined with insanity, which is never of deteriorating type. It is a relatively minor point whether such family disposition originates as a spontaneous variation in the germ plasm or, as Myerson suggests, is a heritable modification by injurious action upon the germ plasm of something external (blastophoria).

I wish to discuss briefly the relation of the susceptibility constituting the essence of manic-depressive psychosis to primary disturbances of internal secretion and to infection. Similar mental syndromes often occur with obvious endocrine diseases having bodily symptoms—particularly Graves's disease; they often follow febrile infections, especially influenza. Such neuroses and psychoses, however, are excluded by definition if one limits manic-depressive psychosis to functional conditions.

The attributing of neuroses and psychoses without characteristic bodily changes to primary endocrine disturbances, which has been so popular of late years, is pure speculation. Whether the demonstrable changes in glands are causes, concomitants, or consequences of the nervous lesions is unknown; treatment provides no clear evidence.

Of late years there has been a boom in afebrile focal infection as the cause of neuroses and psychoses. The sites from which it is alleged to be derived are chiefly nasal sinuses, and ear, mouth, teeth, tonsils, stomach, and intestines, the urinary tract, uterus, and vesiculae seminales.

So-called detoxication, including very drastic surgery and vaccine therapy, has had some vogue. The most prominent exponent of this view has been Cotton. He minimizes the effect of heredity and of remote experience, and, though admitting that recent mental stresses may precipitate psychoses, he maintains that "they are due to a combination of many factors, but the most constant one is the intracerebral biochemical cellular disturbances arising from circulating toxins originating in chronic foci of infection situated anywhere throughout the body, associated probably with secondary disturbances of the endocrine system."

Cotton claims astonishing results from detoxication, and a large proportion of these results are in the affective psychoses. It is certain, as Cotton says, that psychoses are generally due to a complex of causes, and probable that latent infection may be one of these in a group of cases, but there is little reliable evidence that it is a large group. Cotton's treatment, repeated by others with control cases, does not reproduce his results. Recovery occurs with the same frequency with and without special treatment directed to focal infection in two series of similar cases. Similar infections are also present in large numbers of people who show no tendency to mental abnormality. Proof that toxæmia is really occurring is almost absent. It proves nothing to show that there is intestinal stasis in melancholia by skiagraphing a bismuth meal. The stasis is more likely to be a symptom than the cause of melancholia. Goodall's review of work done in the examination of blood and cerebro-spinal fluid, of urine and faeces, lends no support to the infective theory of functional psychoses. Almost the only feature suggesting infective origin of manic-depressive psychosis is the leucocytosis sometimes associated with progressive phases.

*Course and Prognosis of Manic-Depressive Psychoses.*

Under this head I shall confine myself to principles and omit figures, which would need so much explanation and qualification as to be impossible here. I am aiming at a few hints for individual prognosis rather than statistics.

Many deaths occur which are mainly due to melancholic states; they are apt to figure in certificates under the heading of terminal complications. In some the death is almost inexplicable; the patient is taking an ample supply of food and not extremely restless or sleepless, but weakness and wasting progress. Investigation of these cases is badly needed. Their number is, of course, trivial compared with those of lives saved—a fact to be remembered in these days of abuse of the mental hospitals.

Seen at the beginning of an attack the questions quite reasonably asked by relatives are the following: its probable length; the chance of preliminary intensification; the likelihood of cure or persistent abnormality. In the event of persistent abnormality, what is likely to be the degree of this? Whether abnormality persists or not, what is the probability of further acute symptoms? To all these questions we can only give the vaguest answers. Though we cannot concede that there is any special spontaneous form of syntonie psychosis, yet it is certain that in many cases there is a phasic state of susceptibility to experience the basis of which is as mysterious as the readiness of a plant to respond to conditions in the spring and autumn.

Again, though it is impossible to discriminate groups in virtue of susceptibility to treatment, yet at times the emotional excess, even if started by shock, attains a sort of independence, and is as certain to persist and even get worse for a time despite all treatment as the symptoms of a case of typhoid in the first week. In recurrent manic-depressive attacks the duration of both attacks and intervals is usually quite irregular. Abrupt onset and termination are rare. So far as I have seen, cases in which excitement or depression approaches a possibly certifiable degree and lasts less than two or three months are also rare; possibly more such may get well in nursing homes and observation wards than is suspected. I should be interested to hear the experiences of others. Far more than half the recoveries occur in the first year, and the large majority of the rest in the second year.

In attempting individual prognosis three sets of facts must be considered: details of present symptoms, etiology, and course up to date.

The two elements of the melancholic reaction—the intellectual and conative reduction without disorder, and a fundamental affective disturbance capable of elaboration into grief, misery, or fear—seem the primary response in most mental cases to any noxious influence, whether a situation or a physical stress. Most other reactions are secondary, so that we can say that the major part of psychiatry is the study of morbid unhappiness and how people show it and mask it. Every future is possible in a young person seen for the first time in a manic and still more in a depressive state. If symptoms remain confined to the syntonie type then permanent recovery is more common than with any other type (except perhaps the confusional), and so is complete intermission with recurrence (both results, of course, may occur with any form of reaction). Estimation, therefore, of the degree in which the syntonie is mixed with paranoid and schizoid signs is very important. Such intermixture if absent at first may develop later. Pure chronic mania without any element of these reactions is a rarity; pure chronic melancholia less uncommon. It is necessary to consider the special significance (a) of the different types of emotion—grief, wretchedness, and fear; (b) of various motor accompaniments—stupor, restlessness, resistiveness; (c) of insight, delusions, and hallucinations. These features have relations to other factors, such as age and causation, which more directly affect the prognosis.

Bodily symptoms are often the best indication of coming recovery. Improved appetite and regularity of bowels, sleep, clearing of the complexion, increase of weight, and return of menstruation may be noted even before any increase of activity, and long before any admission of feeling better can be extracted.

In regard to the relation of prognosis to etiology, we recall that neuropathic inheritance decreases the probability that the attack will be a transitory isolated episode. But the chance that recovery and no dementia will follow a given attack is greater when it is known that the family disorder has usually been of the phasic type. This may be a fact of great practical importance. A personal history indicating mere emotional instability has the same prognostic value as similar family history. Abstraction, sullenness, or eccentricities suggest schizoid tendencies; suspicion and conceit, paranoid ones. The prognosis of periperal psychoses is good, but they are very liable to recur with childbirth. The idea that anything but mild disturbances which start about the menopause are specially likely to clear up with its completion seems to have little foundation.

The prognosis of recurrences even in advanced age is good in the absence of arterio-sclerosis and evidence of dementia. First attacks in the involutional period are apt to be more prolonged, but eventually clear up in two-thirds of cases. Again, excluding arterio-sclerosis, prognosis is ultimately only unfavourable if there are schizoid or paranoid features.

The graver psychoses precipitated by really severe mental stress are apt to be syntonie rather than schizoid. *A priori* one might expect that the resilience of a person thoroughly normal until broken by exceptional disaster would assert itself, and therefore that recovery would be exceptionally frequent in such cases. I have noted a statement to the contrary in Maudsley's *Pathology of Mind*, and there is, of course, an old saying about the effect of storms on oaks and reeds. I believe the chances of the weakling upset by trifles are the better.

It must be admitted that by far the safest recipe for the psychiatric prophet is a judicious use of the probability that what has steadily progressed until now will continue to do so; the outlook is good in proportion as the onset was stormy, bad when it was insidious. The proportion of ultimate recoveries will be much greater among a group of cases seen within one month of onset than in a group seen after six months, and this for natural reasons without regard to treatment. A patient who has recovered once will probably do so again.

**DIAGNOSIS.**

Having excluded organic disease, diagnosis includes:

1. Exact estimation of the degree in which all causes interact in production.
2. The problem of the exact proportion in which various reaction types are traceable.
3. Consideration of how far various kinds of syntonie anomaly are present.
4. Determination of practical probabilities—for example, in acute attacks the dangers of exhaustion and injury to self or others, the suitability for voluntary treatment; in quiet phases, fitness for work and likelihood of benefit from this.

For exclusion of organic diseases there are only two requisites—complete examination and a sound knowledge of neurology. Details of mental states are entirely unreliable. There are cases of general paralysis that no one, however expert, can distinguish from neurasthenia or from true mania without a Wassermann test of the cerebro-spinal fluid. Encephalitis is frequently responsible for aimless unemotional restlessness, but very rarely in my experience for true mania. Diagnosis, however, from functional melancholia is often extremely difficult. It should be made only on such grounds as history of a febrile attack with characteristic drowsiness or ocular palsies, or on presence of physical sequelae—most commonly Parkinsonism. Prolonged depression is very common after encephalitis, and many such cases are desperately suicidal; motives are sometimes, though not always, delusional. Parkinsonism may be very difficult to distinguish from the retardation of some types of melancholia. Motor restlessness like that of the senile is common in children after encephalitis, but emotional exaltation of the manic type is a very rare sequel.

The other organic conditions most commonly responsible for syndromes of the manic-depressive type are arterio-sclerosis, alcoholism, endocrine disorders (especially Graves's

disease), and obvious infections such as influenza. These will not be missed if the need to look for them is borne in mind.

#### TREATMENT.

Treatment of mania will naturally differ from that of melancholia. But there is more difference between the management of cases during attacks and exacerbations on the one hand, and in more or less stationary phases on the other.

The essence of an attack or exacerbation is the clinical fact that emotions for the time have lost enduring relation to current experience, and whatever their origin and intensity they have achieved a sort of autonomy. We must recognize that at present the length of such attacks is largely out of control, that treatment must be symptomatic rather than specific, its objects being to safeguard life, relieve distress, and provide the condition in which natural processes will have a fair chance to produce recovery. The situation is quite like that in tuberculosis or typhoid fever. If the attack is sufficiently severe to unfit the patient for ordinary duties, treatment at home is probably inadvisable. Although in attacks all active psychotherapy, especially analysis of any kind, is merely harmful, yet the loss of relation between current experience and emotion is never absolute; temporary effects are possible by separation from worries and distressing associations, reassurance, kindness, and firmness. The essential combination of these, and especially the last, is rarely obtainable at home. Apart from custom, it would hardly ever be necessary in the first instance for cases of manic-depressive type, whatever their severity, to be treated under a detention order. Both the manic and melancholic, however boisterous or suicidal, usually recognize their need of treatment. They may become intolerant of treatment or intolerable to other voluntary cases, but the practice of certification which has prevailed hitherto results on the one hand from a legal tradition which happily is now nearing death, and on the other from the lack of any place where poor cases can go for treatment apart from the unwilling and chronic.

Specific treatments designed to cut short attacks are many, but their effects unproven. The largest claims have been made for detoxication—that is, removal or disinfection of the foci already mentioned, together with vaccine therapy. Such measures should doubtless be adopted where any obvious physical indications exist, but rarely for mental symptoms in the absence of these, and always with due regard to risks. I have seen a large number of acute mental attacks and exacerbations clearly following extensive dental extraction; it is often difficult to decide in particular cases whether emotional stress or sudden toxæmia is the cause.

The effect of malaria in general paralysis and the way in which intercurrent disease sometimes aborts manic-depressive attacks has led to induction of artificial pyrexia in the latter with various substances. So far results are not definite, but I think the method might be worth further trial, especially in melancholics tending to become chronic. The results of intensive thyroid treatment have been disappointing in my experience.

In the main, treatment of attacks is hygienic. A patient with serious emotional disturbance should be kept in bed as in the case of a feverish tuberculous patient; open air and sunlight are nearly as important in manic-depressive psychosis, and massage is a useful substitute for exercise.

Feeding is the second main essential, and the supply of all vitamins should be adequate. Patients must take sufficient food, and when they are losing weight tube feeding should not be delayed even if only needed as a supplement. It renders possible gastric lavage, which is useful in many cases with atonic dyspepsia, and also the administration of aperients and sedatives without a struggle. Sleep by night and cessation of motor restlessness by day must be obtained. As to hypnotics, I believe, with Sir Maurice Craig, that we take too seriously the danger of habit formation, and too lightly the damage wrought by insomnia. Some success has been claimed for the attempt to cut short manic-depressive phases by induction of twilight sleep for a week with somnifen. I have no experience of its use quite early in an attack; later

I have seen it fail a good many times. Use of sedatives as "chemical restraint" during the day is an unfortunate necessity. It is certain that in some cases they are better for the patient than incessant restlessness; their use in practice cannot be avoided for the sake of other patients. If the interests of the latter and of the staff are not allowed to outweigh those of the patient there is no abuse. Most experienced persons would admit that, subject to the same proviso, there are cases where seclusion and even mechanical restraint would be preferable, but in the case of the latter at least the risk of abuse is so great that its practical abolition is best on the whole. Hyoscine has achieved a quite undeserved ill fame; it seems to me indispensable in many cases. Sulphonal and similar drugs, which have been described as specific for mania, seem to me far the worst of the sedatives, to be used only with every precaution to avoid accumulation and avoided if possible in recent cases. They may be the only drugs that will quiet the intolerable chronic manic, but of their deteriorating effect in some cases there can be no doubt. Prolonged baths are a useful adjunct in some cases, both to procure sleep and check motor restlessness. Often they need using in conjunction with a preliminary sedative, and will then reduce the use of drugs.

Prevention of injury to self and others is the last point in connexion with treatment of the acute attack. We are losing faith in mechanical precautions and in everything but knowledge of patients and observation. Even this should be unostentatious; the excellent principle of "safety first" can be overworked. Two good rules are to discredit the maxim that those who talk of suicide never commit it, and to remember that most suicides are surprises, often by the convalescent.

I can only just touch upon the question of treatment in those degrees of manic-depressive psychosis (in the broad sense) which are susceptible to psychotherapy. I disbelieve in all theories which single out special patients within this wide group as permanently fitted or unfitted for such treatment. Most are suitable at some time, some never pass the limit which disqualifies them. In tuberculosis it is not different varieties of the disease but varying degrees of activity that necessitate treatment by rest or exercise; the position is similar in emotional disturbances, but at present the indications are more obscure.

Practical treatment habitually ignores theoretical distinctions between suggestion, persuasion, and analysis, and utilizes a compound in which they are inextricably combined. Tracing the devious origin of symptoms and presenting them in a new light for review is often helpful, but some have exaggerated the degree to which repressed complexes are primarily responsible and benefit follows mere elucidation, while others overestimate the extent to which any analysis, however prolonged, achieves lasting reconstruction of temperament. Great practical benefits are obtainable by psychotherapy in emotional disturbances, but they generally seem to depend on getting the confidence of the patient and using this to influence super-added hysterical symptoms and various tendencies to shirk difficulties which the essential temperament multiplies and magnifies.

I hope I shall not be dubbed pessimistic if I express some doubt of the ability of psychotherapy to cure radically, in a large proportion of these cases, the lasting tendency to undue emotion of some type and to phases of reduced efficiency. There is quite a proportion of cases in which one should insist that minor attacks of depression and anxiety must be courageously ignored by some patients, as physical pain by others, or prevented from influencing conduct. The most spectacular effects in psychotherapy are of course achieved by those who believe in their powers to effect radical cures. It is doubtful whether equal good is not done in the long run by patient people who realize that some of these depressives are permanently inadequate in one way as the feeble-minded in another, and who recognize that many need sheltered conditions with occasional guidance, support, and control. Treatment often consists of the intelligent provision of these at the right time, and fortunately the results are at least equal to those achieved in any chronic disease.

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# MANIC-DEPRESSIVE PSYCHOSIS.

## DISCUSSION.

The President said that in choosing manic-depressive psychosis for discussion by this Section it was felt that the time was ripe for the subject to be reviewed by an authority such as Dr. Mapother. Those present had listened to a paper full of instruction, information, and suggestion, the additional merit of being controversial, and perhaps even provocative. Dr. Buzzard believed that this psychosis in its mild and moderate forms was a very common, if not the commonest, mental disorder, which it resembled in some practical importance in relation to prognosis and treatment, except by experts; but its recognition was a matter of great importance in the case of migraine, the etiological factor loomed large. As in the case of migraine, it was as common as migraine, which it resembled in some hereditary factor loomed large. As in the case of migraine, it was rarely met with except in families with definite psychopathic taint. Its manifestations varied greatly in their degree of severity and in their periodicity, but made their appearance chiefly during the years of active sexual life, with a tendency to exaggeration towards its close. As little was known about the exciting causes of its attacks as about those of migraine. There was no reliable cure, although a large percentage of patients recovered. Dr. Buzzard disagreed with Dr. Mapother's statement that anxiety neurosis had achieved a persistent acceptance even among the large majority who rejected Freud's views as to its causation, and that there seemed to be no particular objection to isolating it if it was regarded as merely one of the numerous subdivisions of depression, loss of energy, decision, interest, and concentration, and presented no signs of organic disease, the question which arose in a large majority of cases was the discrimination between a manic-depressive psychosis and an anxiety neurosis, although that the distinction between these two conditions, in regard to prognosis and treatment, as well as in the interests of sometimes difficult, was of fundamental importance in the recovery of a patient, as well as in the interests of academic accuracy. If he came to the conclusion that the patient was a manic-depressive, but at an uncertain date, he was concerned that the patient should be safeguarded against possible suicidal tendencies, that he should have constant sympathetic care and encouragement, and that he should be protected from any form of analysis. Help in regard to sleep, feeding, and environment might be necessary, but of direct curative measures he admitted complete ignorance. In short, he recognized that the patient was the victim of a disorder in which physical and mental symptoms were closely associated, and perhaps interdependent, and that he required all that his doctor could give him of time, patience, and assistance until Nature restored him to health. The doctor who was in charge of the patient when he recovered, and the treatment prescribed, would gain the credit of a cure—a credit which would all probability fail to survive the next attack. If, on the other hand, Dr. Buzzard came to the conclusion that the patient was suffering from an anxiety neurosis, he regarded his recovery and its date as dependent on the success of any measures directed towards its removal. He had little fear of suicide, and no dread of skillful analysis. In other words, he realized that the condition was a mental disorder which could be directly attacked, and that the disappearance of any physical symptoms of which the patient complained would coincide with the restoration of his peace of mind.

These alternative conclusions might be fallacious in conception and reached on inadequate grounds, but if they were a guide to prognosis and treatment, how could they be regarded as merely one of the numerous subdivisions of the manic-depressive group? The question of diagnosis was sometimes easy, sometimes very difficult. In the first place, a very careful and detailed history was as essential here as it was in the diagnosis of any disorder, physical or mental. In the second place, he would stress the loss of interest in all pursuits and of affection for all persons exhibited by the manic-depressive on the physical side and the change in his

appearance, colour, and smell on the physical side. Disturbances of sleep were less profound and less difficult to overcome in the manic-depressive. Last, but not least, it was always possible to find a cause for an anxiety neurosis, while it was often impossible to discover an adequate reason for a depressive phase in a manic-depressive.

Dr. Buzzard hoped that efforts would be made to popularize what knowledge they possessed about a very common malady, and one which was of as much interest and importance to the general practitioner as to the consultant in psychiatry or neurology. He had already contended that the name of this psychosis was a serious bar to its general recognition, and in conclusion he felt he could hardly do better than commend to the members of the Section as a holiday task the discovery of an alternative and less objectionable title than that of manic-depressive psychosis.

Dr. T. A. Ross (Penshurst) joined issue with that part of Dr. Mapother's paper in which he identified the psychoses with the psychoses. For Dr. Mapother to attempt to distinguish between them was a useless exercise, although he admitted that the attempt to do so had grown out of practical differences, particularly as regards certification and asylum treatment. Dr. Ross confessed that if he were suffering from a condition which might or might not at some future time lead to detention and loss of liberty he would be glad to have a physician who would engage in the useless exercise mentioned. He had long wondered how Dr. Mapother had been led to the conclusions he held, and he thought that to-day he had solved this problem. Dr. Mapother had said that details of mental states were entirely unreliable; the investigation of them was, therefore, to his mind a useless exercise. Dr. Ross thought that if Dr. Mapother would carefully study mental states he would find that they would lead him to perceive fundamental differences between the psychoses and psychoneuroses. It was rash to call any clinical examination a useless exercise. When the speaker was a student the plantar reflex used to be examined to see whether it was present or absent. It was then a perfectly useless exercise for most people, but one man at any rate had since made something of it. Dr. Ross wished to put forward some proof that their study did as a matter of fact lead to something demonstrable, something of value. He proposed to take as a criterion the fact of certification. Certification was a legal and not a medical question; it was only partly true. He proposed to take as a criterion the patient in question was so far removed from deprivation of liberty. Certification depended also on social status; it was not fair to compare the numbers of certifications of the poor with those of the rich; the poor required certification for less illness than the rich. But the figures he would put forward were all drawn from substantially one class—those who were not rich among them. Since the Cassel Hospital opened they had 66 patients who were definitely labelled by them as manic-depressives. They were not sent as such. Most of them were labelled neurasthenics: none were then certifiable. The diagnosis from a psychoneurosis was made on an examination of the mental state. Of these patients 12 had since been certified, and 3 others who unfortunately were not certified had committed suicide. During the same period 355 patients definitely diagnosed at the Cassel Hospital as suffering from one or other form of psychoneurosis were admitted: of these, 3 had since been certified. Two of these, had Dr. Ross followed his own rules, he would not have put him into that group. But if not was warned that he was making a mistake—that the patient was really a manic-depressive. In one case he ptom which certainly put him into that group. But if not allowed to transfer them, three errors of diagnosis out of 355 patients—less than 1 per cent.—were insignificant. Even if it could be shown that over 20 per cent. of those diagnosed as manic-depressives would need asylum treatment, the "useless exercise" seemed worth trying.

As regards the important points in the diagnosis. He would begin with a mental symptom, which Dr. Mapother



said was a common one—namely, remorse. He thought it might be said that this was a very great diagnostic symptom. No patient suffering from a psychoneurosis complained of remorse. If a patient suffered from this he was certainly in the depressive group, and one could not promise him immunity from loss of liberty. It should be understood that he was talking of a patient before he had had any sort of analysis; an analysis might reveal something which called for remorse. But while the psychotic-depressive on the whole tended to blame himself for his state, the psychoneurotic always blamed someone else, if, indeed, he was not praising himself in showing that his illness had been due to overwork and self-sacrifice. Here, then, a very striking difference was perceived in mental reaction between the two groups. This question of overwork led to a second point in diagnosis, for although the psychoneurotic often spoke of overwork, a critical estimation of what was actually done did not make the physician feel that the amount accomplished had really been great; the psychoneurotic did not do anything so foolish as to overwork himself at any time of his life. But a well authenticated history of overwork was often obtained in the case of a manic-depressive. He would not care to assert that the overwork was the cause of the breakdown; it might equally be true that it was a symptom of a mild manic phase when the patient thought that he was invulnerable. This led them to consider history a little more, and when this was done it would be found that the story of the intervals between the attacks was different in the two conditions: the psychoneurotic was never in quite good health; when he was well he was "highly strung" or dyspeptic, and was often consulting a doctor; the depressive when he was well was really quite well. He did not think that the opener had emphasized sufficiently the importance of history; in the diagnosis from organic disease Dr. Mapother said there were only two requisites—namely, complete examination and a sound knowledge of neurology. Dr. Ross thought history would be found more important even than examination, and the fact that Dr. Mapother emphasized neurology, and not cardiology, gastralogy, proctology, and all the other ologies of the body, made the speaker suspect that it was only a very small section of the psychoneurotic group that found its way to the Maudsley Hospital. He thought that if Dr. Mapother had seen a number of people whom he could not be sure about—for example, whether they were suffering from a psychoneurosis or from cancer of the stomach—he would be more willing to admit that there was really a difference between the former and the psychoses. There was a great difference in reaction to mental environment between the two conditions. If the psychoneurotic was in an environment where he was perfectly happy, he was better for the time being. This environment might be provided in many ways: an attentive doctor, an interesting treatment, a holiday with congenial companions might provide it. Such things usually had no effect on the psychotic, and if they had, it was never in so striking a manner. Equally, displeasure at once cast the psychoneurotic down, and affected the psychotic very little. In nothing was this shown better than when an attempt was made to give aesthetic pleasure. The psychoneurotic who looked on a beautiful garden obtained as much pleasure out of it as anyone else; the psychotic said he could see it was beautiful, but he could not feel it.

These, then, were some important differences; and if he had shown that the exercises were not wholly useless, had they any value in treatment? His answer was that appropriate treatment could not be undertaken in the absence of such a diagnosis. The psychoneurotic was capable of enormous improvement if his mental orientation was altered, and the physician could alter it by the various forms of psychotherapy in the large proportion of cases. The manic-depressive psychosis was a disease which ran a course; the physician had little power to make any striking alteration in orientation. He could take care of his patient, and thus indirectly could hasten, perhaps, recovery, but active therapy was out of the question. Dr. Ross, therefore absolutely controverted Dr. Mapother's view that the two states showed no difference in reaction to treatment.

Dr. R. D. GILLESPIE (London) considered that a definition of "manic-depressive psychosis" was certainly desirable, since there had been an inclination to give the term an application so wide that its meaning had become vague and its value doubtful. Before dealing with Dr. Mapother's definition, he wished to draw attention to the opener's preliminary remark, that the primary problem was what meaning should be attached to the term "manic-depressive psychosis," and that there was no constant and specific cause and no physical modification recognizable. The failure to mention clinical criteria Dr. Gillespie would have regarded as an accident, were it not for the remark later in the paper that details of mental states were utterly unreliable. This tendency, more or less unconscious, to depreciate clinical differentiation gave the key to Dr. Mapother's subsequent surprising classification of all psychoneuroses as a subdivision of the manic-depressive psychosis. In his definition the depressive phase was characterized as showing a "morbid dissatisfaction with the self or circumstances." That Dr. Mapother did not really consider this to be a good characterization was shown by his subsequent remark that in a surprising number of even the severest cases of melancholia there was a "formless" sense of one of the types of distress mentioned. This was precisely the point. The feeling that was called depressive in these patients was often "formless"—there might be neither "morbid dissatisfaction" nor "dissatisfaction with the self or circumstances," but only something vague and very unpleasant in tone. From this arose the difficulty that these patients so frequently had in expressing their condition to the physician. In the definition of the manic phase "misdirection" of activity should surely have been "continuous change of direction"; otherwise the definition could have applied almost to a full-blown paranoia. The truth was that the manic-depressive psychosis was essentially a clinical conception, and that an attempt to define something that had been differentiated on purely clinical grounds in terms of academic psychology after McDougall was likely to fail. It seemed probable that cases beginning as "pure manic-depressive psychoses" and ending as dementia praecox became very much fewer as more attention was paid to clinical differentiation. That was not the only type of dementia which occurred. Kraepelin himself recognized a tendency to dementia, not schizophrenia in nature, after repeated attacks. That there was a "continuous graded series" between the neuroses (or rather the psychoneuroses) and the manic-depressive psychoses was not a conviction that was generally held. If the question of the interrelationships of the psychoneuroses and manic-depressive disorders was placed on a broad biological basis very great differences were found, according to members of Kraepelin's own school, such as Lange and Cimbali. (1) The heredity of manic-depressive disorders was a similar one; while in the heredity of psychoneurotics occurred schizophrenia, epilepsy, and psychopathic states. (2) The type of pre-morbid personality was different in the two groups. (3) The physical types, if Kretschmer's work was accepted, were different in the two groups. The value of Kretschmer's work on physique and character, although widely confirmed on the Continent, was, of course, still *sub judice*. Certainly among sixty successive psychoneurotics recently seen by the speaker there was not one of the classical "pyknic" type. (4) The somatic morbidity was different in the anamnesis of the two groups. (5) The physical disturbances actually accompanying the mental conditions differed in kind as well as in quantity in one group as compared with the other.

That "obsessions were common in melancholics" was an original observation which he would have liked to see expanded. By "anxiety neurosis" it was presumably intended to designate also "anxiety hysteria," since here Dr. Mapother referred explicitly to Freud. When it was said that "anxiety neurosis" merged by a continuous series of gradations into agitated melancholia, presumably not melancholia agitata, which might have no anxiety, but anxiety melancholia was intended. Here it seemed to the speaker, on the contrary, that something entirely discontinuous was introduced—namely, the melancholia. There were numerous clinical differences between anxiety states

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in general and melancholia; for example, the former had frequently a brief episodic appearance; and they had often an immediate and complete dependence on external circumstances in a way unknown in "true melancholics." Who had heard of a melancholic of the manic-depressive type who was well and at ease while he sat in the garden, but was plunged in misery when he returned to the drawing-room? Dr. Gillespie had at the present time a patient with such an anxiety state.

Dr. Mapother had rightly described "sorrowful memories in melancholics"; he thus touched unwittingly on another distinction from psychoneurotics. In the latter it was precisely that the troublesome ideas were not sorrowful, and the problem before the physician was to discover why ideas apparently colourless in themselves should be so distressing. That the enduring character of the hysteric was the "persistent analogue" of the mixed manic-depressive was a statement that must also be challenged in the interest of clearness. If true manic and melancholic ailments were common in hysterics it would be expected to find both of two things: First, that hysteria was common in the anamnesis of manic-depressives. The general impression was that it was not. In the last twenty-one depressives he had treated and investigated extensively, only two had any symptoms that appeared hysterical, and one of these was a very problematical case. Secondly, they would expect to find a manic-depressive history commonly in hysteria; in his last thirty cases of hysteria Dr. Gillespie had not found one such.

The "useless exercise of making a diagnosis between functional neuroses and psychoses" would not be saved by the discovery *post mortem* of a patho-physiological basis for each of them. Further, the distinction between neuroses and psychoses rested not upon the problem of certification so much as upon the problem of treatment. The treatment that was suitable for a manic-depressive was fatal to a psychoneurotic, as Dr. Gillespie knew to his cost. He had not tried the converse process—the application of the methods for psychoneurotics to psychotics; but he had met the results of such an application and they had been among the most seriously ill patients he had seen. Blood pressure showed little or no correlation with mood, and very little with behaviour in mental patients. The changes in the cortex in dementia praecox described by the late Sir Frederick Mott awaited confirmation. The best controlled work on the subject (that of Dunlap) had in fact shown no cortical changes.

The task of psychopathology at present was not so much the discovery of a physical basis—that was not psychopathology, and smacked of the pseudo-physiologizing of the latter half of the last century which Meyer had well designated "brain-mythology"—but the unravelling of the meaning and origin of mental symptoms as such. That there was a "phasic state of susceptibility" in manic-depressive illnesses seemed not by any means proven. Statistics from the New York State hospitals showed that of about 12,000 manic-depressive cases, only 50 per cent. had a second attack, and only 25 per cent. had a third.

It was to be regretted that Dr. Mapother had made no mention of MacCurdy's work on the manic-depressive psychosis. Whether MacCurdy's views were accepted or not, his case material was clinically the best that had been published in this country on this topic. His work did much to upset what might be called the "psychiatrist's fallacy"—that thought always followed emotion. Emotion probably more often followed thought. The poets recognized this, if many psychiatrists did not—"My heart leaps up when I behold a rainbow in the sky." It seemed to the speaker that it might be more helpful to speak of "primarily affective disorders" and to subdivide them as follows: (1) manic-depressive disorders; (2) reactive mood-disorders (depression usually); (3) affective episodes in psychopathic personalities; (4) psychoneurotic mood-disorders; and (5) miscellaneous group. In this or some similar way a heterogeneous mass of material could be subdivided, the conception of the manic-depressive psychosis clarified, and all of the manifestly affective reaction types better understood.

Dr. R. H. Cole (London) believed that everyone was liable to manic-depressive psychosis as merely an exaggeration of this state. It was doubtful, however, if sufficient evidence existed for saying that a psychoneurosis could become a definite psychosis.

Dr. Mapother, in reply, said that discussion had centred almost entirely around the relation between the neuroses and psychoses. There had been some distortion of the views expressed in the paper, doubtless due to lack of time to consider it. Dr. Ross had suggested that it made light of the need to estimate the risk of suicide. On the contrary, this need was specially mentioned under diagnosis. It would be begging the question at issue to assume that the need was best met by labelling the words that speakers had detached from their setting as a basis for details of the mental state and had ascribed to him the exclusion of organic disease and such details was unnecessary in dealing with neuroses and psychoses. The real fact was that he took a wider view of the usefulness of such investigation than those who believed in two distinguishable syndromes—one due to mental causes and capable of mental cure, the other with a course quite independent of such causes and treatment. As Dr. Ross had raised the question of personal experience, he might say that he spent most of three years in various hospitals dealing with the war neuroses, and for the past three had been connected with the only hospital in this country where it was possible to get simultaneous experience of both extremes in mental disorder and of the intermediate cases that were the crux of this question. He could only express surprise when Dr. Gillespie and Dr. Gordon doubted the occurrence of cases that were at first indistinguishable from manic-depressive psychosis and ended as dementia praecox. He thought most of those with considerable experience as medical officers of a mental hospital would have seen such cases. Most of the speakers seemed still to adhere to the limited idea of manic-depressive psychosis as occurring entirely in clear-cut spontaneous phases. Dr. Gillespie's remarks regarding treatment probably ignored the fact that what he found so disastrous was only recommended for phases where the patient was inaccessible to psychotherapy. He did not question the ability of Dr. Ross to foretell correctly the chances of suicide and certification in a large proportion of cases, especially if they were mostly chronic. Whatever the exact form of symptoms there was a tendency in some cases to occurrence in acute attacks, in others to minor attacks or chronically; after years, of course, probabilities could be estimated. He thought that Dr. Ross consciously or unconsciously considered known course as well as form in making a diagnosis. The test would be his ability to forecast the course from the form just after the first beginnings of symptoms in the patient.

## SECTION OF ANAESTHETICS. SAMUEL JOHNSTON, M.D., President.

### DISCUSSION ON ANAESTHESIA IN RELATION TO CARDIO- VASCULAR AFFECTIONS.

#### OPENING PAPER BY

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In the course of my professional work I am sometimes asked to give an opinion regarding the risk of inducing anaesthesia, for the purpose of an operation, in those who are the subjects of some cardio-vascular affection, and also in a certain proportion of these, which is the safest anaesthetic to administer. I frankly confess that this is one of the responsibilities which I least like undertaking. The decision is often one attended with great difficulty, and in this connexion, at the outset of my remarks, I desire to

express most sincerely and warmly my great admiration for the courage and ability with which the anaesthetist faces and discharges his responsible and difficult task; and furthermore, I should like to bear my grateful testimony to much that I have learned from him, and—may I add?—from the surgeon also.

I feel considerable diffidence in addressing an audience of experts, such as this is, on this important subject. I can even understand it being stated that the cardiologist is seldom, if ever, able to render much practical help, and yet I venture to hope that it is possible for him to furnish something of value to the common stock of useful information on the subject.

As far as my experience and observation go, speaking generally—that is, taking cases as a whole—given adequate knowledge and skill and care, the subjects of cardio-vascular affections stand the induction of anaesthesia surprisingly well. Indeed, it has even been stated that if a person is able to undergo an operation it will not be impossible for him to stand an anaesthetic. It may be added that if a fatality should occur during the induction of anaesthesia in the subject of a cardio-vascular affection it may have been due to the choice of the wrong anaesthetic or the manner in which the anaesthetic was given. But, unfortunately, painful surprises do sometimes occur in the experience of even the most skilled anaesthetists. As I shall show you later, these are usually cases of unrecognized chronic myocardial disease. How to avoid so unfortunate an event is the main purpose of my remarks this morning.

Reduced to simple terms, an operation means, in essence, an added piece of work—an added load—of varying degree, depending upon the nature and duration of the operation, to an impaired heart, or an impairment of some other part of the cardio-vascular system. The fundamental question which has to be decided is whether the various parts of the cardio-vascular system can stand this. If this is doubtful it is a case of comparing this risk with the degree of urgency of the operation proposed. Questions of diagnosis, prognosis, and, it may be, treatment, are involved; and prognosis depends largely, if not almost entirely, upon accurate diagnosis.

It is generally recognized that within recent years there has been a great advance in our knowledge of cardiac disorders, and that this advance has been of vital importance with regard to diagnosis, prognosis, and treatment. I would plead the great advantage of a closer acquaintance, of a practical kind, on your part, with this advance. It is true that this progress has been mainly the result of the employment of the clinical polygraph and the electro-cardiograph. Let me, however, encourage you by pointing out that, the work of elucidation having been accomplished, it is not now necessary to employ either the clinical polygraph or the electro-cardiograph in the great majority of cases, the use of a sphygmograph being sufficient, and in a large proportion palpation and auscultation are all that is necessary.

It is obviously impossible, in the time at my disposal, to deal with the whole subject of the cardio-vascular system from the point of view of the induction of anaesthesia. I shall content myself by making some practical observations with regard to some of the more important points.

Passing to the clinical examination of the heart, I would emphasize that the rate and rhythm of the heart should always be determined at the cardiac apex, either by palpation or auscultation, preferably the latter—for two reasons: (1) the rate of the radial pulse does not necessarily represent the ventricular rate; and (2) in order to determine the type of irregularity, which is of great practical importance.

#### *Rate of the Heart.*

It should be remembered that the normal cardiac rate has a considerable range of variation in perfectly healthy individuals. Also I need scarcely remind you that tachycardia may be due to the excitement incidental to a medical examination. May I point out that by the term "bradycardia" is meant infrequent action of the heart, and that it must be distinguished from infrequency of the pulse rate at the wrist? Bradycardia also may be physiological,

especially in males. It is difficult, therefore, to decide when tachycardia or bradycardia in an individual is pathological. In both cases a record of the past history is of value. It is scarcely necessary to observe that there are many causes of the pathological form of tachycardia and bradycardia other than the various kinds of heart disease. The increase in the cardiac rate induced by physical exertion varies in healthy individuals. It is, therefore, difficult here also to determine whether an increase in rate is pathological. In this connexion, the presence or otherwise of accompanying subjective symptoms of cardiac distress is of fundamental importance. Other causes of an abnormal increase of the cardiac rate on physical exertion than cardiac disease proper, such as atony of the wall of the heart muscle the result of lack of physical exercise, and poisoning of the heart without structural damage, should not be forgotten. The time which may elapse before the cardiac rate returns to its former level after physical exertion is of greater significance than the degree of increase induced by the exertion.

#### *Irregular Action of the Heart.*

Irregular action of the heart is of great practical importance in regard to the subject-matter of our discussion. I mean irregular action in itself—that is, without reference to the cause or the condition with which it may be associated—and my remarks shall be used in this sense only. Formerly, this subject was a source of great perplexity and difficulty to the clinician. It was known that irregular action of the heart in itself might, on the one hand, be of even serious significance, or, on the other hand, that it might be of no practical importance at all. It was not possible, however, to determine the significance of the irregularity in any given case. We are now able to classify almost every case of irregular action of the heart into types, and we know what each type signifies; and, most fortunately, it is possible to determine the type by palpation and auscultation alone in the great majority of cases, and, in case of doubt, by the use of a sphygmograph in the vast majority of cases.

All cases of cardiac irregularity, apart from comparatively rare exceptions, fall into one of six groups: (1) What is called sinus irregularity; (2) irregularity due to premature contraction or extra-systole; (3) irregularity due to heart-block; (4) irregularity due to pulsus alternans; (5) irregularity due to auricular fibrillation; and (6) irregularity due to auricular flutter.

In sinus irregularity there is a variation in the length of the diastolic period of the cardiac cycle, while the systolic period remains constant, and this can be detected by the stethoscope. If a tracing of the radial artery be taken, the intervals between the beats will be found to vary, but the actual variations are not numerous, while the pulse beats are of equal, or nearly equal, size. When irregularity of the cardiac action is found to be definitely related to respiration it is in all probability of the sinus type.

By extra-systole is meant a premature contraction of the auricle, or of the ventricle, or of both chambers together, while the fundamental or sinus rhythm is otherwise maintained in most cases. Usually the extra-systole is followed by a long pause—the compensatory pause. On auscultation, in the vast majority of cases, two heart sounds are synchronous with each cardiac cycle; sometimes only the first sound; very rarely is there an absence of both sounds. Extra-systoles may appear at long or at frequent irregular intervals, or regularly after each normal beat, or after every second, or third, or more, normal beats, or in paroxysms. An extra-systole may be so feeble that no wave is felt at the wrist, so that there is simply an abnormally long pause, resulting in an "intermittent" pulse. If a single extra-systole, with its succeeding compensatory pause, occurs after every two normal beats, the pulse beats occur in threes, the condition being known as pulsus trigeminus; but if the premature contraction is so feeble that no wave reaches the wrist, the pulse beats are paired (pulsus bigeminus). If an extra-systole occurs regularly after each normal beat and the extra-systole fails to reach the wrist on each occasion, the rate of the arterial pulse is halved.

In the great majority of cases a correct diagnosis of the existence of extra-systoles can be made simply by palpation and auscultation, especially the latter. The normal rhythm of the heart is disturbed by the occurrence of a premature beat, followed by an abnormally long pause. The auscultatory signs are of great diagnostic value. I shall refer to the differential diagnosis between extra-systoles and partial heart-block in a moment. It is sometimes very difficult, if not impossible, to distinguish by palpation and auscultation alone between extra-systoles occurring frequently and at irregular intervals, especially if of auricular origin, and auricular fibrillation; but in such cases a sphygmographic tracing is almost invariably sufficient.

There are three degrees of auriculo-ventricular block: (a) There may be merely a prolongation of the interval which separates the commencement of the contraction of the auricle and that of the ventricle, each stimulus of the auricle reaching the ventricle, which duly responds. (b) The stimulus does not always reach the ventricle—in other words, the ventricle does not always respond to the stimulus from the auricle. (c) A condition in which no impulses reach the ventricle from the auricle, so that the auricle and ventricle beat independently of each other. The first two of these are referred to as "partial heart-block," and the third as "complete heart-block." The first grade can only be recognized by means of the polygraph or the electro-cardiograph. The second degree of heart-block may give rise to intermission of the pulse, pulsus bigeminus, pulsus trigeminus, and infrequency, including halving, of the pulse rate. Extra-systoles or partial heart-block account for the vast majority of such cases.

The differential diagnosis between these conditions, due on the one hand to extra-systoles and on the other to partial heart-block, can be readily made, as a rule, by means of palpation and auscultation. In the former case a premature beat can be detected at the apex-beat, and on auscultation one or two heart sounds will, in the great majority of cases, be audible during the early part of the pause, because the ventricle has contracted; whereas, in the case of partial heart-block, there will be an absence of an apex-thrust and of heart sounds during the pause, because the ventricle has failed to contract. In complete heart-block the pulse rate is usually not more than 36, though some cases have been recorded in which the rate has been even up to 60 or more a minute. It is sometimes difficult to distinguish between partial and complete heart-block without the aid of the polygraph or electro-cardiograph. Most cases with a ventricular rate of 36 or under, however, are cases of complete heart-block. When bradycardia is due to complete heart-block the ventricular rate is not increased by posture, physical exertion, emotion, or pyrexia.

A lesion of either the right or left main branch of the auriculo-ventricular bundle, and what is called intra-ventricular block (a condition in which there is abnormal conductivity of the subendothelial arborizations of the auriculo-ventricular bundle), can be diagnosed by the electro-cardiograph alone.

By pulsus alternans is meant a condition of the pulse in which, while the rhythm is perfectly regular, a large beat and a small beat alternate. In the vast majority of cases it is necessary to take a tracing of the radial artery in order to recognize the condition. It is of the utmost practical importance that the variety of irregular action of the heart indicative of auricular fibrillation should be recognized. This type of irregularity presents the following features: (a) It is continuous. (b) The irregularity is complete; the rhythm is irregularly irregular. In a sphygmogram it will be found that two beats of the same length or amplitude rarely follow each other. There is often no relation also between the length of a pause and the amplitude of the beat which follows it—that is, a short pause may be followed by a strong beat, and a long pause by a weak beat. We may be reasonably certain of the existence of auricular fibrillation from the mere presence of complete irregularity of the pulse. It is possible to determine complete irregularity of the pulse in a large proportion of cases by palpation and auscultation alone.

When, however, the ventricular rate is slow, or very rapid, the irregularity may be only slight, and it may be necessary to adopt careful measurements of the sphygmogram to detect it. It is necessary to exclude irregular action of the heart due to extra-systoles or to auricular flutter. In most cases of auricular flutter the rhythm of the arterial pulse is regular. Not infrequently, however, there is irregularity of the pulse rhythm, it may be even markedly so, and in some of these cases a sphygmogram may resemble that of auricular fibrillation. In this connexion, if a sphygmogram from a case of auricular flutter be carefully studied, it will be found that even if the ventricular rhythm is markedly irregular the pulse beats measure out into groups of equal length, whereas this is never the case in auricular fibrillation.

### Paroxysmal Tachycardia.

By paroxysmal tachycardia is meant a condition in which a marked acceleration of the cardiac rate occurs, which commences suddenly and abruptly and without apparent cause, lasts for a varying period, ceases suddenly and abruptly, and is due to an abnormal rhythm—the stimulus for cardiac contraction, instead of arising at the junction of the great veins with the auricle, having its origin at an abnormal point. A diagnosis of paroxysmal tachycardia is usually possible without having resort to instrumental methods. Thus: (1) The suddenness and abruptness of the onset and termination of the tachycardia is a characteristic feature—the maximum rate is attained within a few seconds, and the return of the cardiac rate to what it was prior to the attack occurs equally quickly; whereas in tachycardia associated with the normal rhythm the onset and termination are gradual. (2) A persistent rate of over 160 is almost invariably due to an abnormal rhythm. (3) With the exception of those cases due to transient attacks of auricular fibrillation, the cardiac rate is not influenced by posture, physical exertion, emotion, pressure upon the vagus, or pyrexia, as is the case in tachycardia associated with the normal rhythm.

What is the prognostic significance of the various types of irregular action of the heart in themselves—in other words, what practical bearing do they have upon the subject-matter of our discussion? Sinus irregularity may be entirely disregarded. The question of extra-systoles is of great practical importance; they constitute one of the most frequent causes of irregular action of the heart, and may give rise to very disagreeable symptoms. There is considerable diversity of opinion as to their prognostic significance. Further experience has not led me to change the opinion I expressed in 1911—namely, that there is so far no evidence for supposing that extra-systoles are either indicative of an impaired heart or that they add to the gravity of any existing morbid condition; so that with regard to the subject-matter of our discussion they may be disregarded. The occurrence of partial heart-block during the course of an acute infective disease is a sign, and may be the only sign, of myocardial involvement. Persistent heart-block of mild degree is also indicative of myocardial damage. The prognosis of bundle-branch block is usually very unfavourable. That of intraventricular block is almost always of grave import. From the point of view of the anaesthetist there are two kinds of pulsus alternans—namely, one in which the condition is associated with a severe grade of tachycardia, and the other in which it is not. In the former event it does not appear to have any serious significance in itself. In the latter, however, it is an indication of extreme exhaustion of the heart muscle, and should be regarded as an imperative call on the part of the heart for rest—complete and prolonged. Auricular fibrillation is in the vast majority of cases indicative of some myocardial change. Put briefly, the prognosis depends upon the ventricular rate, the degree of any existing cardiac failure, and the response to digitalis therapy. I shall refer to the last point later. With regard to the risk of inducing anaesthesia in an individual who is the subject of paroxysmal tachycardia, this depends chiefly upon (1) whether there is coexisting chronic myocardial or chronic valvular disease, and, if either be present, its nature and degree; (2) to a less extent, upon the average duration, the ventricular rate, and the degree

of cardiac failure during former attacks; and (3) the response to treatment—regarding which I shall say a word or two later on.

May I draw attention to the importance of examining the walls of other arteries than the radial, especially the brachial? How frequently is arterial disease excluded as the result merely of an examination of a short length of the radial artery alone! It is necessary to emphasize the great importance of accurately determining the size of the heart, more especially in cases in which the apex-beat is either faint or absent, and particularly in suspected chronic myocardial disease. I have been surprised at the comparative frequency with which these cases are overlooked—due, in my opinion, to a lack of appreciation of the great importance of determining accurately the size of the heart, and also to a lack of knowledge of the size of the normal heart in persons of varying size and physique. In any doubtful case the size of the heart should be determined by means of x rays.

Much valuable information may often be afforded by the cardiac sounds and the cardiac cycle. Thus: The first sound may be short, sharp, and clear, and diminished in intensity when the contractile force of the ventricle is reduced from any cause. What is called the tick-tack heart-beat or foetal rhythm signifies a greatly impaired vitality, and is often of grave omen. What is termed the gallop rhythm indicates either a failing heart muscle or a bundle-branch block, or possibly intraventricular block, and is almost always of very unfavourable import.

During recent years it has become rather the fashion not to pay much attention to murmurs, especially to those which are systolic in time. This is, I think, largely due to misunderstanding. As far as I am aware the older masters of clinical medicine were not accustomed to form a prognosis from the mere presence of a murmur. The point of practical importance is, What is the significance of the murmur? Thus, it is not justifiable to make a diagnosis of aortic stenosis from the mere presence of a systolic murmur over the aortic area, or of organic disease of the mitral valve from the mere presence of a systolic bruit over the apex of the heart, additional evidence being required in both cases. In every case in which an adventitious sound is audible over the precordium, the patient should be examined in the standing posture and on lying down, before and after gentle exercise, and during the various phases of respiration. In every case in which an adventitious sound is audible we should carefully consider whether it is exocardial or endocardial in origin, and, if the former, whether the murmur is organic or functional.

#### *Chronic Valvular Disease and Chronic Myocardial Disease.*

There is a tendency also not to pay much attention to chronic valvular disease. Now there are two points for consideration with regard to chronic valvular disease: (1) a valvular defect is a mechanical impediment to the heart muscle in its work; and (2) there are, as a rule, along with the valvular lesion, coincident changes in the myocardium, the aorta, or coronary arteries. I shall emphasize the great importance of the latter in a few moments. But that does not mean that a valvular defect may not be of great importance in itself.

In attempting to form a prognosis in any given case of chronic valvular disease, the nature, the extent, and mode of origin of the lesion, the condition of the myocardium, the amount of any existing degree of cardiac failure, the existence of complications, and the risk of sudden death are among those which require consideration. Of four varieties of chronic valvular disease, I should place in order of gravity aortic incompetence, mitral stenosis, aortic stenosis, and mitral regurgitation. With regard to aortic stenosis, however, a qualification is necessary; for although when due to a previous attack of acute endocarditis the prognosis is hotter than that of mitral stenosis, when primary chronic endocarditis is responsible it is not so good. Among the points which may be of assistance in trying to form an estimate of the extent of the lesion are: how far the character of the pulse and the blood pressure are modified, the size of the heart, and

whether the murmur merely accompanies or replaces the cardiac sound; and, in the case of aortic incompetence, the pulse pressure, and, in the case of mitral stenosis, the length of the presystolic murmur, and the presence and length of a diastolic murmur. Taking cases as a whole, when the lesion is due to a previous attack of acute endocarditis the prognosis is not so serious as when due to primary chronic endocarditis or to syphilis. With reference to the risk of the occurrence of sudden death in cardiac affections, a fatal issue in this way is most likely to occur in fatty or fibroid degeneration of the myocardium; it is also of not uncommon occurrence in angina pectoris; while of the valvular diseases it is most frequent in aortic incompetence, in which it is to be noted that sudden death may occur even when there are no indications of cardiac failure. Another cause of sudden death is complete and abrupt closure of the lumen of a coronary artery or one of its main branches. I shall deal with the myocardium and cardiac failure separately.

We now pass to the most important part of our subject. I have already remarked (1) that it is chronic myocardial disease, occurring *by itself*, which is so frequently missed, and (2) in the case of chronic valvular disease it is of the utmost importance that we should endeavour to ascertain whether the lesion which has invaded the valve has also affected the myocardium, the aorta, or coronary arteries. Now with regard to the investigation as to whether the myocardium is involved or not, and if so to what extent, I have referred to the significance of auriculo-ventricular block, branch-bundle lesion, intraventricular block, auricular fibrillation, auricular flutter, paroxysmal tachycardia, the size of the heart, and various modifications of the cardiac sounds and of the cardiac cycle. It remains to add and emphasize the extreme importance of ascertaining *how the heart responds to effort*; in other words, the amount of physical exertion in which the patient can indulge without experiencing symptoms of cardiac distress. I would urge that you should conduct a searching inquiry with regard to this in every case. In conducting this inquiry it is essential at the outset that three facts should be borne in mind. The first is that the natural standard of the heart's strength varies in individuals, each individual knowing the kind and amount of exertion in which he can normally indulge without producing symptoms of cardiac distress, and being aware when there is any departure from this, and to what extent. Our inquiry should aim at finding out whether the normal standard of a patient has decreased, and, if so, to what extent. The second fact which should be borne in mind is that symptoms of cardiac distress on exertion may be due to causes other than heart disease. Thirdly, the cardiac muscle may be merely temporarily exhausted, and this may occur whether the heart is diseased or not. But, provided extrinsic and temporary causes—such as anaemia, sleeplessness, temporary physical or mental strain, deficient tone due to lack of physical exercise—can be excluded, the fact of a departure from the normal standard of an individual, and its degree, may be taken as fairly indicative of the presence and degree of myocardial disease.

In the great majority of cases the first indications of heart failure are symptoms of cardiac distress on exertion, and it is only afterwards that objective signs—such as increased pulse rate, dilatation, or dropsy—appear. These symptoms occur as the result of less and less effort, until ultimately some or all of them are present, even during rest, and objective signs also become evident. The commonest symptoms are breathlessness, palpitation, fatigue, and precordial pain, on exertion. Breathlessness is perhaps the most important symptom of all. The most characteristic feature of pain due to heart disease is that it is brought on by exertion—though it should be noted that the pain may not come on until some hours after the exertion which has induced it. The site of the pain may be over any part of the precordial area. The pain of angina pectoris is felt most commonly in the retro-sternal region, next most frequently across the front of the chest, and occasionally in the precordium, the epigastrium, or over a wide area of the back of the chest, and has a tendency to radiate in certain directions. Cerebral symptoms may be due to cardiac causes. Among these



much hepatic  
of a severe grade of the  
prognostic importance of  
which the pain is provoked,  
when the patient is at rest.

I now pass to some therapeutic considerations. These are germane to the purpose of our discussion, for the following reasons: I am strongly of opinion, and would with great earnestness submit it for your consideration, that not infrequently fatalities occur during the induction of anaesthesia which might be avoided if advantage were taken of certain therapeutic measures which are clearly indicated. I am bound to say that I have been much impressed with the frequent lack of due preparation shown, as far as the heart is concerned, in the case of operations on the subjects of cardio-vascular affections. May I give you some examples of patients? Most unfortunately a considerable endeavour, or are compelled with cardio-vascular affections, with the strength, with the result that their hearts are constantly tired. I have merely to mention the inadvisability of operating on the subject of a cardio-vascular affection at a time when the heart is exhausted, and of the importance of postponing the operation until the patient has had a period of rest adequate for a full restoration to the normal level of cardiac strength whenever possible. Again, in the cardiac failure due to a rapid ventricular rate associated with auricular fibrillation or auricular flutter, the results of the administration of digitalis in the majority of cases are very good, in some cases extraordinarily good. This usually within a week, and sometimes in three or four days, the commencement of full doses; if the case is more than a physiological effect is usually obtained in from ten to thirty-six hours from the oral administration of full doses, while in still more urgent cases, or when the patient cannot tolerate any of the other preparations of digitalis series of drugs by the mouth, improvement comes within about two hours and becomes very pronounced ten hours later after an intravenous injection of 5 grains of phanthin. In paroxysmal tachycardia the administration of sulphate once daily in the intervals between the attacks is usually successful in preventing their occurrence. Adams-Stokes syndrome due to complete heart-block is often completely successful. Lastly, I would mention the value of venesection in certain cases of high blood pressure, for while its effects are usually

administration during the operation being completely under; and the patient should be under the anæsthetic quietly.

Lastly, the foregoing considerations apply to the cardiovascular affections in themselves. I am well aware that other considerations, such as the age of the patient, whether he is of a robust or asthenic type, whether he is of a nervous disposition or not, whether he is addicted to excess of alcohol, and the nature and duration of the operation, have almost always to be taken into account.

I venture to hope that, if the observations I have had the privilege of making to you are put into practice there will be fewer fatalities, and also that it will be possible to perform operations which are indicated on surgical grounds but which otherwise it would not be possible to undertake.

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BLOMFIELD, O.B.E., M.D.,  
Anæsthetics, St. George's

II.—JOSEPH BLOMFIELD, Senior Anaesthetist and Lecturer on Anaesthetics, St. George's Hospital.

LOOKING back on some twenty-eight years' experience as an anaesthetist and reflecting on the occasions on which cardiovascular affections have played a part in the ease which was being dealt with, two facts become prominent. The first is the number of times that patients have been encountered who had been told by medical practitioners that they "could not stand an anaesthetic on account of the heart," and the second is the minute space occupied by chronic valvular disease of the heart in any list that could be compiled of anaesthetic fatalities gathered from private and hospital work, both personal and that of colleagues. This is the more notable because there is scarcely a variety of chronic valvular disease which has not been present in one or other of the patients in such a series who have passed safely through anaesthesia and operation. Generally speaking, it can be truly said that patients with heart affections do not give difficulty to the anaesthetist, the reason no doubt being that with a poor circulation go a poor physique and feeble muscular development, and consequently a type of individual who passes easily into anaesthesia without undue spasm or excitement. Nevertheless, it would of course be foolish to underestimate the risk which may be introduced into a case by the presence

of chronic valvular disease. When what is called "compensation" has broken down and there is shortness of breath then the subject of chronic valvular disease, if he must undergo operation, offers perhaps as critical a risk as any the anaesthetist is asked to meet. Even in such cases, however, when an operation is urgently necessary and the surgeon wishes to perform it, the anaesthetist need, in my opinion, never refuse the risk. There is always some form of anaesthesia or analgesia which can meet the demands of the situation, and although the inhalation of an anaesthetic may not be possible with safety, it is rarely indeed that the requirements of the surgeon cannot be met either by a regional analgesia, by rectal infusion, or by some combination of hypodermic injection with a minimal inhalation of nitrous oxide and oxygen, supplemented possibly by a very small amount of ether. The anaesthetist is not expected or required to make a diagnosis between the various kinds of cardio-vascular affections. What is, however, expected of him is that, confronted with a patient who is affected in one of these ways, he will be able to give a confident opinion as to the propriety or not of administering an anaesthetic at all, and if one is permissible he must be able to decide what it should be, how it should be given, and also to give it with safety. For these purposes we may consider the chief symptoms exhibited by the class of patients with whom we are dealing, and how these symptoms affect the anaesthetist's decision and procedure.

The most important symptom in a cardio-vascular case, from the anaesthetist's point of view, is breathlessness. When the patient cannot lie in the ordinary supine position with one pillow beneath his head without becoming breathless, whatever the exact change within the circulation which causes this symptom, the anaesthetist has a dangerous case to handle. Exactly how to meet the circumstances must depend partly on the site and nature of the operation to be performed, but certain principles will have to be observed in any case. First, the patient must be given his anaesthetic in that position in which respiration is most easily carried on; and secondly, in the administration of the anaesthetic, either no air limitation must be practised, or else air must be substituted by a free supply of oxygen. The great danger in this class of case is the introduction of any asphyxial element into the administration. The avoidance of this entails the avoidance of all spasm during the early stages of narcosis, and it is here that the anaesthetist's skill will be most severely tested. It is the not infrequent appearance of spasm in the upper air passages during the early stage of "gas and oxygen" anaesthesia that makes this method not always applicable (as at first sight we would expect it to be) to the kind of patients who are now under consideration. So vital do I believe it to be to avoid spasm and anoxaemia in these people that I would rather give even pure chloroform, if I believed that a quiet narcosis without muscular excitement during induction could be obtained with it, than the "safe" nitrous oxide and oxygen, if from the patient's build and the configuration of his mouth and pharynx I believed that spasm would be sure to arise during the inhalation of the gases. Whatever anaesthetic is used, oxygen should be given with it if the operation is at all prolonged, and, of course, every means necessary must be employed to ensure a perfectly unobstructed oral air way throughout. In association with shortness of breath I should like to mention a simple test which is invaluable in estimating a patient's capacity to undergo general anaesthesia. Without being obviously breathless, if a patient cannot, after taking a deep inspiration, hold his breath for thirty seconds then that patient almost certainly has a heart muscle which is poor and likely to fail if exposed to severe strain by any operation and anaesthetic. The use of this simple test will often put the anaesthetist on the *qui vive* in cases of myocardial degeneration, in which the patient's general appearance and the character of the pulse might not have led him to suspect the presence of risk. Auscultation will in such a case perhaps confirm the suspicions aroused, the first sound of the heart being found short and high pitched, and weak, or having a tick-tack rhythm. In the presence of these signs and symptoms the anaesthetist will be well advised to avoid the use of chloroform and to include some ether in whatever inhalational method he

adopts. Poor quality of the heart muscle is the bugbear of the anaesthetist, whether it is due to fatty change or to myocardial degeneration of another kind. For this reason very these people are poor subjects for severe operation, and also those who have for long harboured some focus of septic infection. It is in cases of myocardial degeneration without marked symptoms that the anaesthetist needs the co-operation beforehand of the cardiologist.

Stress need not be laid here on the great advantage of always letting the anaesthetist examine the patient on a day previous to that of operation when circumstances permit. When he makes this examination on a patient with myocardial inefficiency he will discover the need for more accurate knowledge of the heart's condition, and this will be supplied to him by the heart specialist with his electro-cardiograms. In cases of advanced degeneration, when there is dilatation of the heart and swelling of the ankles, help is not so necessary, because the condition is obvious; but this is not so in the early stages of degeneration, when the anaesthetist may detect nothing but a small feeble pulse, and an altered first sound. When the anaesthetist has the opportunity of testing the effect of exercise on the cardiac rate he is greatly helped. When the normal increase in rate is exceeded and the return to normal delayed, the anaesthetist is put on his guard. Undue rapidity of pulse just before taking an anaesthetic is, of course, often merely due to nervousness; this rapidity diminishes as anaesthesia comes on. In other cases it is the effect of too much tobacco, and is then not steadied down by the anaesthetic. The rapidity associated with hyperthyroidism is evidence of a dangerous state, to meet which the anaesthetist has to take special measures, particularly beforehand, the details of which, however, do not rightly come within the limits of this paper. Generally speaking, slow pulses are favourable as regards inhalation anaesthesia. A fair proportion of perfectly healthy people, particularly males, have unusually slow pulses, a rate of 50 or less being not very uncommon. If with this slow rate of pulse there are no symptoms and there is no toxic condition present, the anaesthetist need take no unusual course; the patient will react favourably to the anaesthetic and there will be but little increase in the rate of the heart's action. When the slow pulse is due to heart-block the indication is more serious, but even in this condition long and severe operations have been safely carried out. A striking example may be mentioned in illustration of the capacity of a much damaged heart to stand operation when a suitable method of anaesthesia is adopted. These are abbreviated notes of the case.

A man, aged 60, was admitted to hospital in a state of collapse, and an injection of strychnine was administered in the surgery. Examined in the ward, he looked ill, and was found to have a temperature of 95° F., pulse 60, furred tongue, and pyorrhoea. There was a history of six months' constipation and indigestion, with intermittent pain about the umbilicus for the last five weeks. For the week before admission there had been hiccup and nausea; he had eaten nothing, and passed nothing by the bowel. He had attacks of a feeling of impending collapse, with numbness and tingling of the arms, but there had been no faintness, giddiness, or palpitation. The radial pulse was easily compressed; its rate was 60, with an occasional intermission. The heart sounds were soft and irregular, premature extra-systoles being superimposed on a triple rhythmic beat. The weak extra-systoles were followed by a compensatory pause. The jugular pulse showed numerous large and small pulsations. Later examination by electro-cardiograph showed an auricular rhythm of 75 and a ventricular of 40, with complete heart-block. The pulse had now settled down to an even rate of 36, which corresponded with the apex beat and the first heart sounds. The blood pressure was 145/58. There was an intermittent soft diastolic mitral murmur, and the first sound was accompanied by a harsh murmur, conducted towards the axilla. The abdomen offered some resistance to palpation in the low epigastric and umbilical regions. An x-ray examination showed some ballooning of the first part of the descending colon and a definite filling defect of the descending colon. The patient could walk a few paces without rise of pulse rate or feeling tired. The abdominal trouble continued, although occasional motions were passed, and a diagnosis of a growth of the sigmoid flexure was made. The surgeon in charge was anxious to operate, and the physician consented with reluctance, believing that the heart could not stand the strain of any prolonged anaesthetic. However, the abdomen was opened, a carcinoma of the sigmoid investigated, and a short circuit between the bowel above and below the growth was made. The anaesthetic employed was a mixture of two parts chloroform with three of ether for the first ten minutes of the administration, and pure ether for the remaining forty minutes. Both were given on an open mask under which a gentle stream

of oxygen was played throughout. The patient caused no anxiety during operation, and made a good recovery. The pulse rate did not rise above 50 per minute during the administration; it was 36 before this began.

Irregularity of the pulse is often met with, and in the absence of other symptoms need give the anaesthetist no concern. Generally the irregularity in otherwise normal persons persists during anaesthesia. When the irregularity has the form of *pulsus alternans*, or when the irregularity is extreme, or when there is undue rapidity of the pulse, the anaesthetist must mistrust the cardiac condition, and a special examination by a cardiologist is necessary.

We may now consider the bearing of the blood pressure upon the use of anaesthetics. With regard to excessive pressure, it is remarkable how few accidents have been attributable to this condition. It is often the case that persons with a blood pressure much above the normal have to be subjected to operation before time can be taken to reduce the plethoric state. These people are precisely those who are most apt to pass through a time of violent spasm and breath-holding during the induction of anaesthesia; at this time the blood pressure is, of course, enormously raised, and everything favours the rupture of a blood vessel. This accident, however, is of the rarest occurrence, and a search through the literature, as well as through personal experience, brings to light only two cases of positive haemorrhage and one case of hemiplegia which could reasonably be attributed to the action of an anaesthetic in patients who were the subjects of abnormally high blood pressure. When the pressure is unduly low the danger is, of course, that a still further lowering, produced by shock during operation, may result in syncope. In extreme cases it is desirable, whenever circumstances admit, to raise the pressure by intravenous infusion and by warmth before operation is undertaken. The use of warmed ether will generally then enable the anaesthetist to get any patient safely through operation; but these persons give great anxiety afterwards when the stimulation of the ether has passed off. It is with the people in the condition outlined above that the use of hypodermic injection of morphine before operation is particularly dangerous. In the subjects of abnormally high blood pressure, on the other hand, preliminary injections of morphine and of scopolamine are often of the greatest service.

In giving anaesthetics to patients suffering from aneurysm, as to those with unduly high blood pressure, the problem is how to induce anaesthesia with the least possible muscular excitement. It might seem that in these cases chloroform should always be chosen as producing so much less stimulating an effect on the circulation. It often happens, however, that nitrous oxide or ethyl chloride is preferred, followed by ether, because of their rapid induction. The patient must be regarded as a whole, and not simply as an example of aneurysm or of supernormal blood pressure. This general survey will often convince the anaesthetist that the safest mode of anaesthesia—that which is most quickly and most quietly effective, and therefore puts the least strain on the circulation—is just one which might often, *qua* circulatory system, be the least desirable. The newer anaesthetics, ethylene and propylene, appear to offer particular advantages in cardio-vascular conditions, for they can be used with large proportions of oxygen, and they do not give rise to great spasm. Experience, however, is as yet limited with these agents, and in the case of ethylene the appearance of irregularity with rapidity of pulse in several cases in which the heart has been normal make me chary of pronouncing as yet a very favourable opinion.

#### DISCUSSION.

Dr. ERNST VON DER PORTEN (Hamburg) said that the non-organic cardio-vascular diseases were of more interest to the anaesthetist than the muscle and valve diseases of the heart, which had often been called contraindications to general anaesthesia. The patient with a so-called organic disease of the heart was a bad risk patient in the wider sense of the word, but the degree and seriousness of his disease and his consequent danger from being anaesthetized could be estimated fairly exactly. On the other hand, the

patient suffering from cardio-vascular symptoms without organic basis was usually treated with particular respect by the anaesthetist, who was always afraid of surprise symptoms of collapse. In such cases there were two points to be watched with special care: The patients should come to the anaesthetic room carefully prepared and calmed by adequate doses of morphine; and secondly, in these cases anaesthesia should be as light as possible. Patients with a Basedow goitre should never, for instance, be so far under as to abolish the corneal reflex in both eyes.

Dr. A. L. FLEMMING (Bristol) joined issue with Dr. Blomfield as regards the necessity for the anaesthetist diagnosing the heart lesion. He maintained that the anaesthetist should know what type of lesion he had to deal with, and should make the examination and diagnosis himself. It was of the utmost importance in cases of cardio-vascular disease that plenty of time should be given for induction to avoid spasm and consequent heart-strain.

Lady BERRY (London) said she rarely gave an anaesthetic in cardio-vascular cases without a physician's report; patients with tachycardia and even with cyanosis could be prepared by rest and digitalis. She never gave a preliminary dose of morphine and always gave atropine. Slow induction was very important. She always gave open ether, and had a strong objection to nitrous oxide and oxygen in goitre cases. She always used the Rochester method of open ether, and the result of her inquiries from patients was that the induction by this method did not seem long. She kept the anaesthesia as light as possible all the time, compatible with real surgical anaesthesia, and carefully followed the respiration throughout.

Dr. H. M. COHEN (Manchester) raised the question of the relative importance of the systolic and the diastolic pulse pressure.

Dr. J. C. BRAMWELL (Manchester) said that the pulse was the most important indication of a patient's condition both to the anaesthetist and to the cardiologist. Irregularity of pulse was merely an outward indication of more profound disturbance in the circulation and heart mechanism. Syncope on the whole was due to a disturbance of the vasomotor mechanism rather than to a primary disturbance in the heart, and, excluding aortic disease, Stokes-Adams syndrome, and fatty and fibroid degeneration of the heart muscle, it was rare to find syncope due to heart disease rather than to disturbance of the vasomotor mechanism. Bradycardia was common in good athletes, and the pulse rate was often 50 or less. A man was a good athlete because he had bradycardia. If his pulse rate rose to 150 on exertion his recuperative power was as 3 to 2 compared with a rival whose normal heart beat was 75 increased to 150 on exertion. *Pulsus alternans* was of very grave significance when not associated with a rapid heart beat.

Dr. H. W. FEATHERSTONE (Birmingham) found that cases with extra-systoles went through ether anaesthesia well and in many cases the extra-systoles disappeared in the course of the anaesthesia. The choice of an anaesthetic was a responsibility in the case of a patient with a high blood pressure. Chloroform gave bad results; spinal anaesthesia was also undesirable.

Dr. H. P. FAIRLIE (Glasgow) stressed the importance of assessing the risk before giving anaesthetics. The bad risk patient gave less trouble on the table than afterwards. The anaesthetist in these cases should be guided by the physician.

Dr. S. R. WILSON (Manchester) advised co-operation between the physician and the anaesthetist, the choice of the anaesthetic to remain with the anaesthetist under the advice of the physician. Digitalization was useful, but he desired information as to the influence of morphine and atropine in cases of heart-block.

## THE EVOLUTION OF ANAESTHESIA.

Dr. S. R. WILSON (Manchester) prefaced a lantern lecture on the evolution of anaesthesia by emphasizing the great need that existed for improvement in the administration of anaesthetics for dental surgery, especially when the latter was carried out in the patient's home or in the surgery of the dental practitioner, where an operating theatre was not available. Preliminary preparation of the patient was not habitually possible. The surgeon was working against time, and there must be no risk of life to the patient either from the operation or the anaesthetic. Recovery must be rapid, and the patient, if not already there, able to go home in a short time. The case was complicated by the fact that the area of operation was common both to the surgeon and the anaesthetist. It had also to be borne in mind that suddenly and without warning the dentist might be faced with a situation of such difficulty as would require, if a general surgeon were dealing with the case, an anaesthetic lasting as long as two hours.

He noticed that a committee was now sitting to investigate the impurities in nitrous oxide gas as commercially provided, and the effects of these impurities on the patient. He would like to draw attention to a paper, published as far back as 1914, on this very subject by two Manchester dental surgeons, Hart and Minshall, which was full of information that had been practically ignored by the profession. The reports of the committee so far published were emptier of information than that of the two investigators he cited. However, the way of the pioneer was proverbially a hard one, and in his own experience twenty years had passed before the authorities awoke to the fact that there was need for a committee of investigation into the question of mule-spinner's cancer, a condition he had described when a house-surgeon.

There were three periods in the evolution of anaesthesia. The first, or pre-anaesthetic period, dated from 850 B.C. to A.D. 1776. The second, or "dawn of anaesthesia," dated from A.D. 1776 to 1844-46; while the third, or period of anaesthesia proper, dated from 1846 to the present day. Homer or Melissagenes, the blind poet of Chios, flourished in Greece circa 850 B.C., and the first reference to anaesthesia proper occurs in the *Odyssey*, the anaesthetist being Helen of Troy, who placed a drug in the wine whereof the soldiers drank. From this they might learn the lesson of pre-anaesthetic medication. Why had there been so much discussion on preliminary medication? Pavlov's work might eventually lead to the clarification of their ideas on this subject. Contrary to the usually accepted ideas, bromides act by brain stimulation and not by brain depression, and in the speaker's opinion caffeine would probably prove to be the drug they had been looking for all these years. Strychnine acted like caffeine. Orpheus was the first example of one who managed his patients by psychological methods, whereas when Elijah restored to life the widow's son he applied the excellent method used in anaesthetic overdose, and one which the speaker had employed with success on several occasions—oral insufflation by means of a tube, at the same time compressing the nostrils. This method could be employed at almost any place where surgical operations were done, as no elaborate apparatus was necessary, since all that was required was a couple of feet of rubber tubing, which was practically always at hand. Galen, who flourished between A.D. 130 and 200, and who for a thousand years supplied Europe with all that Europe knew of medicine, was practically silent on the subject of anaesthesia. He merely stated that mandrake had the power of paralysing sensation and motion. On the other hand, Dnartas (1544-1590) gave a perfect picture of anaesthesia in one of his poems. The speaker, when a youth, had a very poor opinion of poets as a race, but in his comparative old age he was being converted into thinking that, after all, they might have some use, and he almost admitted that he was able even to see beauty in some of their compositions. Shakespeare, in *Cymbeline*, Act i, Scene 6, depicted the queen, the wife of Cymbeline, in consultation with one Cornelius, a physician. She was a lady of racy language, who reminded him of the duchess who

hitherto had not taken part in the conversation. She says:

"Having thus far proceeded,  
(Unless thou thinkest me devilish,) is't not meet  
That I did amplify my judgement in  
Other conclusions? I will try the forces  
Of these thy compounds on such creatures as  
We count not worth the hanging, (but none human,)  
To try the vigour of them, and apply  
Allayments to their ael; and by them gather  
Their several virtues and effects."

Cornelius was, however, doubtful of the bona fides of the lady, and, after receiving his congé, said in an aside:

"I do not like her. She doth think she has  
Strange lingering poisons: I do know her spirit,  
And will not trust one of her malice with  
A drug of such damn'd nature. 'Tis she has  
Will stupefy and dull the sense awhile;  
Which first, perchance, she'll prove on cats and dogs,  
Then afterwards up higher: but there is  
No danger in what show of death it makes,  
More than the locking up the spirits a time,  
To be more fresh, reviving."

Here, then, they had an excellent definition of what an anaesthetic should be, and moreover the true spirit of scientific research, dependent on experiments on animals.

The dawn of anaesthesia commenced with Priestley, who, destined for the Church, renounced the idea and became a scientist. Possibly the emanations from a neighbouring brewery had something to do with the trend of his researches and led him to the discovery of nitrous oxide and other gases, for he was born near a brewery. Priestley was, however, apparently unaware of the anaesthetic properties of his discovery, and it was left to Sir Humphry Davy to suggest that the gas might be used to lessen the pains of surgery. The suggestion, however, lay buried in his works, and it was not until Henry Hill Hickman (1800-29) devoted his short life to researches into carbon dioxide gas, nitrous oxide gas, and asphyxia that Davy's suggestion was carried into practice. The inborn opposition of the profession as a whole to any novelty was as strong in those days as in any other period of the history of medicine, and Hickman's discoveries were neglected and almost laughed at. He went to Paris, where he was met with a little more sympathy, and a committee of the Academy of Medicine there was appointed by the King to inquire into his discoveries and to report thereon. But nothing further ever came of this second attempt of Hickman, and he died a few years later a disappointed man. Crawford Long took up the tale, and it is a remarkable fact that it was his good fortune to load a placid and happy life and to enjoy a contented old age. On the other hand, Horace Wells and William Morton both passed through a short, stormy, embittered career, and in fact it would appear as though the pursuit of anaesthesia by the pioneer workers in that art was dogged by a malignant and malevolently implacable fate, which eventually impelled those in search of the relief of pain during surgical operations to end their careers by a self-inflicted death, after a life of intolerable distress and disappointment.

## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## VACCINE THERAPY IN A CASE OF ACTINOMYCOSIS FOLLOWING EXTRACTION OF A TOOTH.

This case is of unusual interest, since on the one hand the intelligent observation of the patient led to the diagnosis, and on the other hand her intolerance of iodides led me to the use of vaccine therapy. I have also waited two years in case there should be any recurrence of the disease.

Miss P. L., aged 17, had her second left lower molar tooth extracted in July, 1924. She went on her holidays, during which period an abscess formed in the tissues around the region of the extracted tooth; this was treated by poultices and other fomentations, but as soon as the abscess had drained itself and healed this was followed by a further abscess formation and rupture of its contents. There being no cessation of these abscesses the patient consulted me in September, 1924, two months after the commencement of her trouble. I found a dusky red area, triangular in shape, the base of the triangle being below the

left lower mandible, about three inches in extent; the apex of the triangle extended to the lower border of the left malar bone. Within the left cheek I felt a hard mass about the size of a shilling, which I attributed to a metastatic pyaemic deposit.

During the following month I made periodically free incisions into the abscess-forming area, so as to allow for efficient drainage. On October 31st the patient noticed some small "grains" upon the dressing which she was about to discard, and brought it straight to me for examination. On examining the granules under the microscope the usual filamentous network of the *Streptothrix actinomyces* was revealed. I sent a specimen to Dr. White, the district infirmary pathologist, who confirmed the diagnosis.

The diagnosis thus confirmed, the patient was put upon potassium iodide, but unfortunately, after a month of gradually increasing doses, she became intolerant of the drug, and was looking ill and losing weight. I therefore resorted to vaccine treatment. Messrs. Parke Davis supplied me with a vaccine containing 100 million actinomycosis fragments per c.cm. Intramuscular injections were given as follows: November 10th, 1924, 0.25 c.cm.; November 17th, 0.5 c.cm.; November 24th, 0.75 c.cm.; December 1st, 1 c.cm. Up to this period great improvement took place, but after the 1 c.cm. injection the affected area became very dusky in colour, the surrounding tissues were very much thickened and infiltrated, and there was every appearance of a further abscess formation; the patient herself was feeling far from well.

Presuming this to be due to some reaction taking place, I reduced the dose to 0.3 c.cm. of the vaccine, and kept to this dose weekly, from December 8th, 1924, to June 11th, 1925, with very satisfactory results—abscess formation ceased and the whole inflammatory area cleared up. At the present time the patient has regained her health and weight, and at the seat of the lesion there are some small scars, which in time will become scarcely perceptible.

It appears that the nidus of infection was in the cavity of the carious tooth. The case illustrates the importance of examining microscopically the pus of obstinate abscesses and sinuses after tooth extraction, and indicates that on the diagnosis being made, early treatment by vaccine therapy should be resorted to, especially when the patient shows iodide intolerance.

Ash-ton-under-Lyne.

W. ROSSSELL JUDD,  
M.R.C.S., L.R.C.P.

# SUBARACHNOID HAEMORRHAGE AS THE FIRST EFFECT OF A CEREBRAL TUMOUR.

THE following case of cerebral tumour with unusual symptoms seems of sufficient interest to be placed on record.

A man, aged 39, was admitted to the General Hospital, Birmingham, under Dr. Stanley Barnes on July 23rd, 1926. He had a long syphilitic history, having first contracted the disease in 1918. He was treated at the venereal clinic of the General Hospital over the whole period of seven years. The Wassermann reaction of the blood had been negative from 1922, and he had attended once or twice a year since for examination. For some weeks previous to admission he had suffered from intermittent attacks of giddiness and headaches, the headaches usually being preceded by a smell of burnt milk.

On admission he was only partly conscious and had a total paralysis of the left arm and leg. Lumbar puncture was performed and the cerebro-spinal fluid was found to be uniformly mixed with blood. The Wassermann reaction, both of the cerebro-spinal fluid and of the blood, was reported to be negative in each case. He recovered consciousness the following day and then had a severe headache in the right frontal region, which caused him to keep his right eye closed. No abnormality of the optic discs was found except some venous engorgement of the left.

For the next fortnight his condition seemed to improve; the paralysis cleared completely. About a week after admission there appeared the first signs of an exudate on the left optic disc. A month after admission he began to lose ground rapidly; he became more drowsy, the headache was worse, he was incontinent, and the optic discs both showed increased oedema and swelling, with numerous haemorrhages and complete filling in of the physiological cup. Further Wassermann tests of both cerebro-spinal fluid and blood were negative.

He died seven weeks after admission, and at the autopsy a tumour about the size of a Tangerine orange was found in the left temporo-sphenoidal lobe; there was a small aperture in the under surface of the tumour through which blood-stained serous fluid was still escaping into the subarachnoid space. Around this aperture there was a yellow clot from which the haemoglobin had been absorbed. The tumour was a gliosarcoma into which a haemorrhage had occurred.

It is thus clear that the slight early symptoms of headache and giddiness were coincident with the development of the tumour; that the first notable sign (unconsciousness and left hemiplegia) was due to haemorrhage into the tumour and rupture into the subarachnoid space near the apex of the temporo-sphenoidal lobe. The syphilitic infection had presumably no relation.

Birmingham.

R. C. L. BURGESS.

## Reports of Societies.

### TREATMENT OF CARCINOMA OF THE OESOPHAGUS.

At a meeting of the Section of Surgery of the Royal Society of Medicine on November 3rd, Mr. V. WARREN LOW (President) in the chair, the subject for discussion was the treatment of carcinoma of the oesophagus.

#### Surgical Treatment.

Mr. F. J. STEWART, in opening, dealt first with palliative treatment. Since the outstanding symptom was dysphagia, due to mechanical obstruction by the growth, all forms of palliative treatment were necessarily directed towards the relief of this symptom. With this end in view the lumen of the stricture might be either enlarged by dilatation with bougies, or maintained of a size sufficient for the passage of fluids by tubes of various kinds, or increased by the destruction of the growth forming the wall of the stricture by diathermy or by radium. For many years now he had not used a tube of any kind for a case of carcinoma of the oesophagus; he had always advised gastrostomy. A Witzel's gastrostomy, if performed as soon as the diagnosis was made, was quite easy to manage after the first fortnight, so that the patient or his friends were able to administer the feeds without difficulty or discomfort and could soon learn to guard against leakage. He knew that gastrostomy for cancer of the oesophagus had a bad record and a high mortality. This was the result of the operation being done too late, and often as a placebo for a moribund patient after other treatment had failed. He pleaded for its early performance as a treatment *per se*. Perhaps the most definite advantage of gastrostomy lay in the fact that it was a source of real comfort to the patient and his friends as soon as they realized that it was a sure guarantee against death from starvation. This was more than could be promised when the stricture was treated directly, whether by tube or diathermy or radium. The consequent cessation of irritative symptoms resulted in a quite unexpected lengthening of the period of survival. Two of his patients had lived for five years, and there might be others.

Mr. Stewart next turned to curative treatment. Radium had been disappointing in so far as actual cure was concerned. That radium could destroy the carcinoma of the oesophagus was certain, for ulcers and tumours that had been seen through the oesophagoscope, and had been proved by histological examination to be carcinomatous, had completely disappeared after treatment with radium. But this complete disappearance resulted in only a small proportion of the cases treated, and even in these the disease, with very few exceptions, reappeared sooner or later. With regard to the future of radium treatment, to his mind the hope of improved results depended upon earlier diagnosis, more exact knowledge of the extent of the disease, and more powerful dosage. Next he discussed the question of the excision of a portion of the oesophagus as a method of curative treatment. The factors which had led to failure were: (1) rapidly fatal infection of pleura or mediastinum or both; (2) such straitness of the oesophagus that there was no slack when it was mobilized, while on the other hand it retracted longitudinally in section; (3) the peculiar structure of the oesophagus, in particular the absence of a serous coat, and the softness of its walls, which in consequence would not hold sutures at all well; (4) the great difficulty in reconstruction of the oesophagus after resection for carcinoma and for cicatricial stenosis. He believed that only three cases were recorded in which patients had recovered from an operation for removal of a carcinoma of the oesophagus; the first was recorded by Torck in 1913, the second by Lilienthal, and the third by Eggers. The study of these three cases led him to the conclusion that it would be justifiable to attempt operation in cases in which the growth appeared to be small, localized to the oesophagus, and devoid of complications, provided that the patient was in good general condition and free from visceral disease. He had explored an oesophageal carcinoma with a view to removal on three occasions, the



ages of the patients being 51, 62, and 53. All three cases ended fatally: the first rallied well from the operation, but died suddenly the next day, the *post-mortem* examination revealing nothing to account for death; the second patient lived nine days, and the third did not rally from the operation. Notwithstanding this melancholy result there were certain encouraging features in these experiences which led him to the opinion that as technique improved better results might be looked for. He based this view on the following considerations: (1) The symptoms of the carcinoma were straightforward and distinctive, so that correct diagnosis at an early stage was not difficult. (2) The disease remained localized to the oesophagus for a considerable time in all cases, and during its whole course in a large proportion. (3) The successful performance of other operations involving the mediastinal portion of the oesophagus, such as operations for fibrous stricture of the oesophagus, clearly showed that from the point of view of technique the excision of a carcinoma of the oesophagus was practicable. (4) Although so few cases had been successful, the reported cases proved the possibility of cure by operation. (5) It was perhaps not unreasonable to hope that the history of the surgery of other organs might be repeated in the case of the oesophagus. With regard to the choice of operation, he had formed the opinion that for a growth at the lower end of the oesophagus Lillenthal's would be the more suitable, while for a growth in the middle third he would prefer the operation as described by Torek.

#### The Intubation Method.

Mr. H. S. SOUTTAR said that he felt rather shy, after the brilliant work Mr. Steward had described, in bringing before the Section the very simple method of which he himself made use, the more so as he was afraid he entirely dissented from Mr. Steward's views as to the operability of these cases. The ground on which it was suggested that these cases were suitable for operation was that no secondary growths were found. But how often did one find a secondary growth within one year after the origin of carcinoma of the breast, and how many cases of carcinoma of the oesophagus survived a year? He had examined eighteen *post-mortem* records at the London Hospital, from each of which it was obvious that the growth had reached an entirely inoperable stage, and the condition found inside the thorax and around the oesophagus could only be described as chaos. It might be said that these were old cases; but they had died quite soon after coming into hospital, from various causes, some of them after gastrostomies. The average duration of the symptoms was 4.7 months. The speaker had just reached his own hundredth case treated for carcinoma of the oesophagus, and the average duration of the symptoms at the time he first saw these patients was 4.8 months. Surely this supported his contention that at the time when these cases were first seen by the surgeon they were already in the penultimate stage of the condition which was found *post mortem*. He did not believe that 5 per cent. of the cases which came to the surgeon were operable, from the purely pathological point of view, at the time he saw them. It might be said that these cases came late; but the man who could not swallow came at once. Many of the cases that he had seen had come to him within a few weeks or even days of the appearance of their first symptoms, and even then the condition inside the thorax revealed by the oesophagoscope was staggering. Not only that, but many of the cases examined *post mortem* had never had any oesophageal symptom of any kind—the cancer of the oesophagus was found by accident. The first symptom of this disease, interference with swallowing, appeared only at a very late stage, and by that time operation, pathologically speaking, was out of the question. In any case he did not think personally, much as he would like to do it, that it was worth attempting. Even supposing that a few completely successful results after removal of the oesophagus could be pointed to, was the operation as a routine procedure thereby justified? This was not a rare disease by any means. In a very short time he himself—and he was not a throat surgeon—had collected through the kindness of his friends one hundred cases. The annual mortality from this condition in England and Wales

was 1,600. Moreover, could it be described as a euro if a section of the oesophagus were removed and the patient made unable to swallow? Many would prefer death to existence on those terms. To make the patients able to swallow comfortably until the end of their lives was all that it was possible to do in very many cases.

Intubation (Mr. Souttar continued) by the methods ordinarily adopted aimed only at the swallowing of fluids. In his own method he had provided for the swallowing of soft solids, and, after all, in the normal person, given effective mastication, soft solids were all that the oesophagus carried. He exhibited three of his oesophagoscope tubes of different lengths, 10, 14, and 18 in., which afforded remarkable facility in handling the patient. With one of these in position, the next problem was to pass through the stricture, a delicate piece of work, in which one had to be sure that the stricture itself was entered. He used a modification of a Jackson bougie, and, controlled by the oesophagoscope, in the great majority of cases the bougie could be worked through. This accomplished, the surgeon's troubles were over. He then slid down dilators of increasing diameter, up to 11 mm., over the guide and through the stricture, after which one was in a position to pass a tube of reasonable dimensions. The tubes used were of German silver wire, flattened and twisted in a curious spiral so as to prevent regurgitation of the tube. Since this spiral twist was introduced he had not had a tube coughed up, which was a common event beforehand. The results in the great majority of cases were satisfactory, and the patient, exercising reasonable precautions, was able to sit down to dinner with his family. The patients were told to have everything minced because, as a rule, they had defective teeth. The average duration of life in twenty-six cases which he had followed up to a conclusion was 5.3 months. The prospect was melancholy, because these patients must be regarded as having a fatal condition. Most of them were persons of between 60 and 70 or over, and, after all, to enable them to swallow food for perhaps a year—one of his patients went on for two years, and several for eighteen months—and to make them comfortable was to do a great deal of good, and compared advantageously with the results of gastrostomy. But he certainly hoped that in time it might be possible, at least in a certain proportion of these cases, to resect the growth and obtain a complete cure.

#### General Discussion.

Mr. W. G. HOWARTH said that for the last sixteen years he had had the opportunity of looking after practically all these cases at St. Thomas's, and he had tried all the recognized methods, but particularly the radium treatment of the oesophagus, not only the method employed in this country (of small doses repeated at monthly or six-weekly intervals), but also the intensive method advocated by Guisez. He was profoundly disappointed with radium in this condition. He had also used diathermy, and once a suitable electrode was obtained the result was satisfactory for the time being, though, of course, neither radium nor diathermy was more than a temporary expedient. He favoured Mr. Souttar's method; to make the patients comfortable and able to swallow, at any rate for some months, perhaps longer, was no small achievement. One saw so many of these very advanced cases in the last stages that anything one could do to relieve their distress was of the utmost importance. Large numbers of them could not even swallow fluids, and to deal with their own saliva was one of their difficulties. On the day that Mr. Souttar published his paper in the *BRITISH MEDICAL JOURNAL* the speaker borrowed a tube from him and tried it in what proved to be his most successful case. It was that of an old lady, who lived for eighteen months with the tube in her oesophagus and had no difficulty in swallowing minced and semi-solid foods. With regard to Mr. Steward's observations about attacking the carcinoma externally, he had himself removed an oesophageal carcinoma from the upper end of the oesophagus and brought up the oesophagus to join the cut end of the pharynx. The patient was still alive after two years, and able with a minute aperture to get along fairly comfortably. His experience was that it

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was very difficult to say what was going to be an operable case and what was not. On looking down the oesophagoscope and passing the bougies it was not easy to determine where the carcinoma was springing from, and still more difficult to determine the lower end of the growth.

Mr. A. L. AMZ, referred to the difficulties arising from infected teeth. All the teeth should be removed (or, if the patient objected to that, all the infected teeth) before either a tube was passed or radium introduced or an operation undertaken. With regard to the question of anaesthetic had been performed under a local anaesthetic, with stomies had been performed under a local anaesthetic, with no immediate mortality, and in no case the development of so-called bronchopneumonia. The way to measure the length of the carcinoma or of the stricture was first to drink; afterwards the patient was placed on the right side and an x-ray exposure made during the act of swallowing a bismuth solution. In this way one got an indication of the stricture not only from above downwards but from below upwards. If the stricture was probably operable, He had operated on a few cases through the mediastinum, one of the patients living fairly happily for eleven months afterwards. He thought there was no shock, or very little, from this operation, and it was not conceivable that the passing of a skin flap under the growth should add to the shock or danger. He had used Mr. Souttar's tubes in eight cases, but in four they were swallowed straight away, and in the other four the result was not very satisfactory. He pleaded for another attempt at surgical cure. Mr. Souttar had said that these patients came early; but they did not come to the surgeon early, though they might go to their own practitioner. They came to have a gastrostomy done. If the patient was to wait until he had only when somebody else thought it was time to have the gastrostomy done. If the patient was to wait until he had only when somebody else thought it was time to have the gastrostomy done.

Mr. T. B. LARSON said that a very small number of cases were suitable for operation; he was inclined to agree with Mr. Souttar's estimate of 5 per cent. Mr. Souttar had seemed to suggest that operation was not worth while, but surely it was worth while. There were difficulties in if the patient was fairly young. Mr. Souttar had suggested selecting cases for operation. There were difficulties in that when one looked down at the top of the growth through the oesophagoscope one could tell much knowledge it was in. The speaker did not think that much knowledge could be derived from the narrow part of the oesophagus, but gave much information from the shadows around the growth. An enormous amount of shadow in the area around the growth was probably an indication that the case was not very suitable for operation. He agreed with Mr. Abel's remarks as to the importance of the teeth; these should be removed very gently under local anaesthetics.

Dr. G. E. VILVANDER spoke as one who had x-rayed a large number of Mr. Souttar's cases at the London Hospital—perhaps fifty during the last eighteen months or two years—and in only three or four had he found the tube phagel tube in the caecum or in any other part of the alimentary tract. In the great bulk of the cases the tube had proved quite efficient, to judge from the evidence of the barium meal.

Mr. E. D. DAVIS thought the dysphagia a very late symptom. Altogether he had done between seventy and eighty oesophagoscope examinations for carcinoma, and only one looked like an early case; all the others were advanced cases, and died within about eight months. With regard to Mr. Souttar's intubation expedient, he had had a certain number of successes in using the method, but those were cases in which the middle of the oesophagus was the part involved. At the cervical end of the oesophagus the patient would not tolerate this procedure, and at the cardiac end it was difficult and uncertain.

The PRESIDENT (Mr. Warren Low) said that his impression of these cases from the point of view of cure was rather gloomy; he would very much like to share the

enthusiasm of Mr. Steward and Mr. Abel. At the same time he could not help thinking that possibly they were right. Surgical experience with other organs had always started in this somewhat gloomy way, and then one or two pioneers had come along and had shown what could be done. But early diagnosis was essential. As it was not at first easy with difficulty in swallowing, and it was not at first realized that this was an advanced case of oesophageal carcinoma. When the patient was questioned about his condition during the previous few months he would confess generally to vague pains in his chest, usually put down as "indigestion." He might have seen his doctor for these pains, or he might have gone to the *Daily Mail* and obtained "a little more vitamin." Not until months afterwards was it discovered what was really the matter with him. If some frank symptom, such as the difficulty in swallowing, were awaited they would be landed with rather late cases. He had had no personal experience of Mr. Souttar's tubes, but he had seen a good many tubes used, and there seemed to him something essentially unsound in dilating a carcinoma with a carcinomatous surface there must be some irritation of that surface and some reaction, though at the same time undoubted relief was afforded so far as the difficulty in swallowing was concerned. He was in agreement with Mr. Steward that the best operative method was gastrostomy. Assuming that the carcinoma was inoperable according to present methods of examination, he was sure that an early gastrostomy was a wonderful comfort to the patient. The difficulty was the prejudice, not only of the public, but of the medical profession. He was constantly told of a doctor who had said, "I would rather die than have such a thing done to myself." But it must be remembered that the doctor was speaking from the point of view of a healthy man. The humanitarian value of gastrostomy was enormous. The high mortality of the oesophagus, he thought, was made too late. Carcinoma of the oesophagus, he thought, spread rather by implication of the surrounding structures than by the lymphatics. The patients died most often from invasion of the trachea or the aorta or general spread in the mediastinum. He had had several patients live for two years comfortably after gastrostomy. One patient of Sir Frederick Treves, many years ago, had a gastrostomy done for a large growth at the lower end of the oesophagus and lived for three and a half years afterwards. Mr. SERRAVALLO, in reply, said he was glad that the President had given him some support in his advocacy of gastrostomy. He had not used Mr. Souttar's tubes, but he had been impressed by what Mr. Souttar had told them, and he had no doubt that in Mr. Souttar's hands this was as good a thing as could be done for the patient suffering from inoperable carcinoma of the oesophagus. With regard to the operability of these cases, he did not want to suggest for a moment that every case should be operated on. No doubt it often happened that by the time the case came forward the mediastinum was in a state of chaos; but there were other cases in which the growth could be diagnosed while it was still limited to the oesophagus and with no signs of secondary deposits. He still maintained that if the gastrostomy were done early the patient would lead a more comfortable life than with the tube.

## MODERN ASPECTS OF SYPHILIS.

The first two meetings of the Royal Medico-Chirurgical Society of Glasgow were occupied with a symposium on the modern aspects of syphilis in special and general practice. The President, Dr. JOHN COWAN, occupied the chair. Dr. W. HENBERT BROWN, opening the discussion, limited himself to the earliest, or primary, stage of the disease in the male. In view of the amount of propaganda there had been, every member of the medical profession might have been expected to be familiar with the most important modern aspects, but this was not so, judging by the previous histories of some patients who came to venereal clinics. Patients sometimes presented themselves with secondary cutaneous and with tertiary syphilis, and it transpired that several weeks or months previously they

had had genital sores, which were treated by the physician in charge by local antiseptics, with or without mercury pills and potassium iodide. This was far removed from what ought to be done in such cases, since the sequelae were so serious. The key to preventing the ravages of syphilitic infection and the social and family calamities which followed was early diagnosis with early treatment. Few diseases were more amenable to treatment, if the diagnosis was made early and the best modern treatment undertaken. Every genital sore (venereal) should be considered as possibly syphilitic until the contrary had been proved. No one, however expert, was justified in assuring a patient, from one or even several examinations, that he had not contracted syphilis. There was still a prevalent impression among undergraduates and graduates that all syphilitic sores were hard, and that non-syphilitic sores, or "soft sores," were not infiltrated. This was quite wrong, since many characteristic syphilitic sores presented no induration and the Hunterian chancre was rather a rarity. The speaker divided venereal sores into three classes: those which were characteristic of syphilis from their clinical features, the doubtful sore, and those which were characteristic of the non-syphilitic, or soft sore. In the first instance the diagnosis should be clinched by finding the *Spirochaeta pallida*. In the doubtful sore, search should be made, not once, but several times if necessary, for the spirochæte, the patient be kept under strict supervision so as to detect further evidence of syphilis, and a Wassermann test be performed every week if necessary. All patients with non-syphilitic sores should be kept under observation for three to four months, and should not be dismissed as free from syphilis without one or more Wassermann tests. Dr. Brown then gave a brief outline of what he considered a satisfactory line of treatment. Comparing the common antisyphilitic remedies, arsenic, mercury, bismuth, and the iodides, he considered arsenic in the form of one of the salvarsan preparations as pre-eminently first, and the sheet-anchor for the great majority of cases of early syphilis, but it was desirable to supplement it by the slower acting remedies such as mercury, or its new rival, bismuth. For early syphilis the intravenous method of injection was the one of choice, but the intramuscular and subcutaneous injections of suitable preparations could be adopted if there were any contraindications to the intravenous route. The importance of a thorough general examination of the patient before starting treatment was emphasized, and the urine should be examined comprehensively before every injection throughout the course of treatment. The drugs used, their dosage, and the number of injections varied with each experienced worker. In this country the intermittent treatment was generally adopted, the patient being given a course of injections, next a period of rest for six or seven weeks, then another course, and so on until an adequate amount had been given. Dr. Brown described in detail the course of treatment he preferred, and said that practically every case of early primary syphilis with a negative Wassermann reaction should receive twenty to twenty-five intravenous injections of salvarsan and some sixteen or eighteen of mercury and bismuth, or mercury be given orally. The number of injections and mode of administration were determined by the general response of the patient and the serological tests.

Dr. MADELINE ARCHIBALD referred to her experience in a large industrial practice. She found the typical chancre of the textbook an uncommon phenomenon, and believed that syphilis was not so prevalent among manual labourers as among those whose occupations were sedentary. While the incidence of congenital syphilis in Glasgow had been variously estimated—as, for example, 10 per cent. (Findlay) and 8 per cent. (Elliot)—she had found the incidence of acquired syphilis to be at least 10 per cent., and possibly higher. While her conclusion might have been influenced by the fact that she was connected with a venereal hospital and a venereal clinic, she thought that her experience was not far removed from that of the average general practice in an industrial area. In the ordinary routine of practice, out of 400 patients who had had their blood tested 109 were discovered to have a positive Wassermann reaction; 70 of these were reluctant to admit the possi-

bility of syphilis and failed to recollect the existence of a primary sore. Only seven admitted the presence of a "text-book" genital sore. Throughout a period of ten or eleven months only five cases of primary chancre came under observation, though the case incidence in her practice was higher than that in Glasgow as a whole. Of these five, three were small macules occurring on the glans penis and discovered only because the patients, having been exposed to infection, had been conducting a daily inspection. Of the remaining two, one was labial with no induration and no glandular involvement, but with a snail-track mucous patch on the soft palate; the other was on the anterior lip of the cervix, with a macular rash on the chest.

The majority of observations of the primary sore had been made in the male, while the anatomical structure in the female rendered the detection of small sores difficult, and thus the disease in a woman might escape detection till the birth of a frankly syphilitic child, or even till the child-bearing period was passed and late symptoms suddenly manifested themselves. Dr. Archibald concluded by making a plea for the early administration of neokharsivan, even amidst the routine of a busy practice, providing always that the contraindications were kept in mind and brought to light by the ordinary simple clinical methods.

Dr. J. FERGUSON SMITH considered the situation where the infection was already generalized, as evidenced by a positive Wassermann reaction or a secondary rash. When it was remembered that the treponema could be detected in the blood of rabbits before even the primary lesion had taken clinical shape, they might well give late primary sero-positive and early secondary cases the benefit of intensive treatment. Although such intensive treatment subjected the patient to a definite risk, that risk was worth taking when the late results of uncured syphilis were considered. It was essential to keep a very close watch on the patient's general health so that signs of intolerance should be detected at once. Albuminuria in untreated secondary syphilis was an indication for caution in using neokharsivan, and not an absolute contraindication. Albuminuria developing during arsenical treatment was, of course, a very different matter. In recent syphilis the motto was, "Strike early and strike hard." Dr. Smith detailed the course of treatment for cases of tertiary syphilis, and gave statistics of 45 patients treated under the auspices of the Public Health Department of Glasgow for at least six months. Of the 45, 39 were clinically cured, 5 improved, and 1 unimproved. This last and two of the "improved" were cases of leucoplakia linguæ. Fourteen had a negative Wassermann reaction, 21 were strongly positive, 4 were positive, and 3 were doubtful. Of those with a negative Wassermann reaction, 10 had been negative for over one year, and 5 of these for over two years.

Dr. W. H. SCOTT dealt with syphilis from the congenital aspect; the cases could be divided into infantile syphilis and lues tarda (symptoms appearing at or after the second dentition). Both of these classes presented difficulties in treatment peculiar to themselves. In the adult the main curative agent must be one of the organic arsenic compounds, and intravenous medication was the method of choice. In infants the injections could be given into the scalp veins, and the drug was tolerated very well. The dose per kilogram of body weight could be much larger than in the adult, and toxic symptoms were very rare. No case of toxic jaundice in an infant had been encountered, and it was an interesting fact that, although the liver appeared to be affected in practically every case of congenital syphilis, the use of a drug which, in adults, was markedly toxic to the liver, and especially to a diseased liver, was not dangerous. In older children the problem was much more difficult, both as regards technique and the amount of treatment required to produce cure. The dose could not be much higher than in infants, as children at this age did not show the same tolerance to the drug. The parents of all cases of congenital syphilis should be treated if possible. The mothers rarely showed any signs of the disease, but all had positive Wassermann reactions. Treatment during pregnancy was safe and the results good.

Dr. ALLISON McLAUCHLAN supported Dr. Brown's plea for early diagnosis and for efficient and prolonged antisyphilitic treatment. The combination of antisyphilitic remedies was,

# PROBLEMS OF ETHER ANAESTHESIA.

he thought, unnecessary; he was, indeed, inclined to consider their combined use as predisposing to some of the untoward effects of therapy. He was surprised at the high incidence of syphilis in Dr. Archibald's general practice. After making a plea for closer collaboration of the physician, neurologist, bacteriologist, and others in dealing with the many problems of syphilis, the speaker discussed the treatment of nerve and cardio-vascular syphilis. His own experience of the treatment of such cases by the more modern methods had been disappointing, and he was forced to the conclusion that, in the more advanced stages of the disease in these systems, the results of older-fashioned methods showed little if any advance on those of the older-fashioned methods. While his experience had been limited, he was disposed to think that, if they excluded the group of cases presenting a positive blood reaction and little or no evidence of gross cardiac changes, but with subjective angina, irregularity, fatigue, and general respiratory distress, the use of salvarsan products did little good and might be distinctly harmful. In congenital syphilis he had found the results of salvarsan disappointing, not only in the infant born with active syphilis, but also in late congenital disease.

Dr. Douglas Adams referred to the very wide range of the subject under review. The necessity of remembering the biology of syphilis was emphasized, and also the importance of research with reference to the causal organism, in which little recent advance had been recorded. Prophylaxis was of supreme importance, and the necessity of prolonged treatment, with subsequent lifelong observation of the patient, was urged. The literature of the pyrexial treatment was then reviewed, and attention was drawn to the fact that artificial pyrexia had been tried solely in late neurosyphilis. The results published were conflicting, and the difficulty of drawing definite conclusions was not lessened by the limitation of its application to types of the disease in which spontaneous remissions were to be expected. If it was thought that hyperpyrexia possessed definitely spirochaetidal effect, would it not be logical to employ it in the primary stage of the disease rather than to defer its use until the patient was dying of general paralysis? Two aspects of neurosyphilis appeared to merit special consideration. In the first place, assuming that the original syphilitic infection had been either untreated or imperfectly treated, it was essential to recognize the earliest symptoms pointing to central nervous involvement, and to correlate these with the cytological and serological changes which, at this stage, were almost invariably found in the cerebro-spinal fluid. Energetic treatment could then be instituted before irreparable nervous damage had been done. In the second place, attention to the routine examination of neurosyphilitic material cut and stained by Jahnke's method revealed surprisingly scanty evidence of the presence of spirochetes. The experimental knowledge of the literature revealed two important facts. The number of occasions on which *Spirochaeta pallida* had been successfully transmitted to animals was very limited. In addition, the importance of *Spirochaeta cuniculi* as a source of error in experimental syphilis in rabbits had always to be borne in mind. Further research on the cultural and experimental properties of *Spirochaeta pallida* and of its distribution in the tissues held out the chief hope of a real advance in the knowledge of the subject.

Dr. T. K. MacLachlan said that in the treatment of syphilis of the nervous system, the older remedies, especially mercury, gave better clinical results than those of the salvarsan group. The best results were obtained in the varied clinical conditions grouped under the heading of meningeo-vascular syphilis. Assiduous mercurial inunction pushed to the limits of the patient's tolerance should be the routine; potassium iodide should be added after four to six weeks, but not before, as the iodine promoted the elimination of mercury, and prevented the maximum concentration in the body, which was the objective. It was advisable to give a course of neosalvarsan to stay the advance and to prevent fresh manifestations of syphilis. In the group formerly known as parasyphilis, since the main lesion was of the nervous tissue proper—the ganglion cells and fibres—tissue so specialized in function that when

damaged repair did not occur, it was not possible to recognize the possibility of a cure. In dementia paralytica though an associated meningitis and endarteritis might be treated and lead to some clinical improvement, yet from the vital nature of the cells and association tracts affected the outlook could not be good. In tabes dorsalis, on the other hand, the poisoned nerve fibres were not of such vital importance, so that if antisyphilitic treatment was instituted at an early stage the advance of the spinal disease might be stayed, and, by re-education of links, useful life might be made possible for years.

Dr. O. H. Mayon thought that Dr. Archibald's estimate of a 10 per cent. incidence was exaggerated. In two groups of medical wards at Stobhill hospitals the figures were: total number of patients obtained in 19. The test performed in all probable syphilitics, and in view of the part played by syphilis in so many "hospital" conditions the figures were remarkably low. The implication in Dr. Scott's paper that all infants showing a positive Wassermann reaction should be treated energetically with salvarsan preparations gave some cause for uneasiness. While no immediate toxic reactions were observed, late effects on the reticulo-endothelial and endocrine systems must be borne in mind, as must also the fact that a proportion of these children did not have syphilis at all, and merely gave the reaction of the maternal blood. On the question of advanced arterial syphilis he could not take Dr. A. D. McLachlan's view that asymptomatic cases ought not to be treated. Nearly all late cases of syphilis showed arterial disease. There was a strong body of opinion against treating patients with gross manifestations. The action of potassium iodide was not properly understood, and the commonly accepted ideas were probably wrong. He suggested that specific intramuscular medication was followed by undoubted benefit if the following criteria were accepted: (1) Disappearance of cardiac irregularity with consequent disappearance of dyspnoea, (2) disappearance of cardiac pain, (3) correction of cardiac irregularity with consequent disappearance of dyspnoea, (4) consistent fall in blood pressure, (5) increased sense of well-being, (6) diminution in size of an aneurysm.

Dr. W. G. Clark discussed the position of the Glasgow Medical School in connexion with instruction about venereal diseases. He thought it was a matter of regret that the material for the proper teaching of these diseases was passing from the general hospitals to *ad hoc* centres under the corporation, where teaching must become secondary to the speedy cure of the patient.

## PROBLEMS OF ETHER ANAESTHESIA.

At the opening meeting of the new session of the Section of Anaesthetics of the Royal Society of Medicine, on November 5th, Dr. Z. MENNELL, the new President, after briefly referring to the success of the Section during the past year and to the visits of fellow workers in the field of anaesthetics from the Continent and the United States, invited the meeting to discuss certain controversial issues connected with the administration of ether as an anaesthetic. Dr. Mennell asked first what depth of anaesthesia under unmixed ether were they justified in indicating as the ideal when teaching students. If the deepest possible degree of anaesthesia was to be desired he wished to know whether this was safe, and, if not safe, what was the depth of anaesthesia to be aimed at? What were the effects of over-oxygenation in the administration of ether? What was the cause of apnoea in the early stages of ether narcosis with the pupils widely dilated? He called attention to the valuable and interesting information that could be obtained from examination of the vocal cords during the administration of an anaesthetic. True abdominal relaxation could not be obtained until the abductor muscles of the larynx became paralysed. In the early stages of narcosis the cords were seen as white taut glistening bands, but when the abductor muscles became paralysed; it was bands became pink and the tightness disappeared; it was only then that a really free airway was established and the abdominal muscles became relaxed. He mentioned a phenomenon which he called late jactitation. This was

entirely different from the ether clonus so frequent in the early stages of ether anaesthesia, since it occurred late in the administration of the drug and was always a danger signal. Apparently it was not associated with the degree of purity of the drug, since in all cases the ether used had been subjected to analysis and found free from impurities. Some of these patients had died at a later period, a few hours after operation, and the phenomenon appeared to be of grave import in prognosis. The speaker attributed it to prolonged deep ether narcosis, and to him it was an argument against the employment of this method of administration. In this connexion he referred to an anaesthetic fatality in which peripheral dilatation of all the small vessels occurred under deep ether anaesthesia, and reported two other cases. He attributed the result to prolonged over-stimulation combined with a falling blood pressure, and mentioned in this connexion Dale's researches on histamine. Dr. Mennell described a case of death from fat embolism which occurred under ether. The operation was concerned with correcting the position of the tendo Achillis, so that there was no free fat at the site of operation which could enter the circulation. In his opinion the ether had nothing to do with the fat embolism, and the case was a surgical curiosity. Slides showed large deposits of fat in the circulation of the kidney and heart muscle. His own views were that prolonged deep ether anaesthesia was to be avoided as it was not safe. It was necessary to produce a preliminary deep narcosis with ether to ensure relaxation, but once this had been reached it was not necessary to maintain this great depth, and the pupils could be kept only moderately dilated. Over-oxygenation was to be avoided as it had undesirable after-effects.

Professor DUNNAN could not explain the mechanism of the case of fat embolism, as the operation had been performed on a part relatively free from fat. It was generally noticed in such cases that the patient was bedridden, as in the present instance. He deplored the fact that patients who died under anaesthesia were removed to a distant coroner's court, where a somewhat formal post-mortem examination was made. The case under review had been more fully examined than usual, the pathologist and coroner allowing material to be removed for a more extensive examination and so preserving much valuable material which was usually lost in other cases. In the patients who had died from peripheral circulatory dilatation, death occurred from shock due to dilatation of the vessels caused by the administration of ether. He asked whether such cases occurred frequently, and whether they were due to modern methods of administration. He also inquired whether cases of pulmonary thrombosis were more frequent nowadays than formerly.

Dr. L. POWELL said that it was his practice to teach that the least amount of ether should be given which satisfied the needs of the surgeon. On common-sense principles saturation with ether for prolonged periods must be had for the patient. Mr. PERCY SARGENT believed that death with great dilatation of the blood vessels was due either to the toxic effect of the anaesthetic or to failure of the vasomotor system. Dr. C. F. HADFIELD was accustomed to teach that the size of the pupil was relatively unimportant provided that the respiration and colour were satisfactory. He had had a case of convulsions at the end of a prolonged anaesthesia; this turned out to be due to uraemic convulsions. He called attention to the danger to the patient of removing a cancerous growth from the tongue and at the same time clearing away the glands of the neck. In his experience when the double operation was performed the patient was likely to die a few hours after operation. Dr. LANGTON HEWES described the case of an athlete who, in extremely hot weather, was under anaesthesia for two and three-quarter hours for the correction of a deformity of a joint and who exhibited the phenomenon of late ether spasm. He asked whether, when the other cases of ether spasm occurred, the weather was also hot. Dr. H. P. CHAMPTON declared himself an unrepentant advocate of deep anaesthesia. He gave all his patients atropine and morphine and was therefore unable to rely on the pupillary reaction, since, unless the anaesthesia was remarkably deep, his patients rarely showed much dilatation of the pupil.

## EVOLUTION OF LARYNGOLOGY.

At the meeting of the Section of Laryngology of the Royal Society of Medicine, on November 5th, Dr. ANDREW WYLIE, in his presidential address, gave an interesting collection of references to laryngology and rhinology, gathered from folk-lore, historical sources, and general literature. Dr. Wylie began with Peacock's *Maid Marian* and Father Prout on Dr. Tagliacotus, and passed on to Swift and Catlin's *Breath of Life*. He then considered Shakespeare, Thackeray, and Fielding, and referred to the historical half-sovereign which was impacted in the air passages of Isambard Brunel, the skill of Sir Benjamin Brodie, and the resourcefulness of the patient. He told interesting tales relating to Queen Elizabeth, James I, and Charles II. This erudite address was brought to a close with Barham's description in the *Ingoldsby Legends* of his own suffering from laryngeal cancer.

### Nerve Anastomosis and the Vocal Cords.

Sir CHARLES BALLANCE and Mr. LIONEL COLLEDGE demonstrated a cinematograph film illustrating the results of nerve anastomosis on the movements of the vocal cords. The film showed the normal movements of the vocal cords in a baboon, and the results of anastomosis between the recurrent laryngeal nerve and the vagus and between the recurrent laryngeal and the phrenic nerves. After the vagus anastomosis no return of movement was observed except on partial asphyxiation, but after anastomosis between the recurrent laryngeal and the phrenic the normal respiratory movements were seen to be restored. The last two sections of the film showed the larynx of a terrier dog and of a rhesus monkey in which an anastomosis had been performed between the phrenic and the recurrent laryngeal on both sides, and movement had been restored to both cords. The dog had regained the power of barking. The paralysis of the diaphragm had been overcome by anastomosis of the peripheral end of the phrenic nerve to the central end of the descendens noni, and the paralysis of the subhyoid and pre-laryngeal muscles by implanting the peripheral end of the descendens noni into the side of the hypoglossal.

## FRAGILITAS OSSIUM AND DEAFNESS.

At the meeting of the Section of Otolaryngology of the Royal Society of Medicine, on November 6th, Dr. DAN MCKENZIE, the new President, Dr. A. M. H. GRAY, and Mr. F. C. ORMEROD opened the session with a series of papers on diseases of the outer ear. The paper by Dr. Gray, dealing with affections of the skin of the outer ear from the standpoint of a dermatologist was especially valuable.

Mr. F. J. CLEMINSON, in a paper on deafness associated with fragilitas ossium, stated that in this condition there was a triad, the complete syndrome consisting of fragilitas ossium, blue sclerotics, and deafness of the type of oto-sclerosis. He displayed family trees in which 50 per cent. of the members were affected, but each element of the triad was not necessarily present in every case. He showed a section prepared by Professor Nager of Zurich from the temporal bone of such a case. This patient had been totally deaf from occlusion of both the oval windows, and the section showed areas of oto-sclerotic bone in the neighbourhood of the cochlea and oval window. Mr. Cleminson related the clinical history of a case under his own observation in which the right arm had been broken three times, the right leg once, and probably the left upper jaw. The sclerotics were greyish-blue, and a careful examination of the ears disclosed typical signs of oto-sclerosis, Gellé's test indicating fixation of the stapes.

Mr. G. J. JENKINS, in discussing the paper, referred to the relationship between osteitis deformans and oto-sclerosis; he made it clear that oto-sclerosis might exist histologically in the subjects of osteitis deformans without causing deafness unless the endosteum was affected. Deafness might therefore have a very late onset in the course of the disease, and appear in the form of nerve deafness instead of that commonly associated with oto-sclerosis.

Mr. J. S. FRISER described the clinical history and pathological findings in a case of congenital deafness, with mal-



# STERNAL PAIN.

formation of the bony and membranous labyrinth on both sides. This was illustrated by photographs and a series of histological sections from the temporal bones, showing the deformity of the cochlea and the rudimentary state of the semicircular canals, which scarcely existed. Mr. Fraser thought that the case was not syphilitic, the child being the last member of an otherwise healthy family of twelve, and in this opinion Dr. KERR LOVE concurred.

## STERNAL PAIN.

At a meeting of the Medical Society of London on November 8th, with the President, Sir HUMPHRY ROLLESTON, in the chair, a discussion was held on sternal pain and its clinical significance.

Dr. JOHN PARKINSON said that the term sternal pain was a better one than precordial pain, for patients usually pointed to their sternum with some degree of accuracy. He briefly mentioned several lesions of the comparatively limited number of thoracic organs which gave rise to sternal pain, such as acute tracheitis or bronchitis, and also added that smoking, for example, might cause it. Turning to cardiac disease, the speaker pointed out that in certain serious cardiac diseases pain was a comparatively subsidiary symptom, as, for example, in acute pericarditis, or in the patient with rheumatic valvular disease who felt discomfort below the left breast, or in patients with cardiac failure who walked about with pain at the lower end of the sternum due to a congested liver. The more important type of sternal pain was that associated with certain forms of serious cardio-vascular disease. If the sternal pain was definitely related to effort it was probably of serious import. There were various degrees of sternal pain, some patients complaining of discomfort and others of a severe sense of constriction. The pain was usually mid-sternal, but might spread to the left arm or to the back, shoulders, or neck. Pain in such forms of cardiac disease was rarely absent; it was induced by exertion and disappeared when the exertion stopped. It might come on after a meal or when meeting a cold wind, and later, might follow slight exertion, such as getting into bed. Nervous patients rarely included the sternum in the area of their pain, which was usually under the left breast, but might extend down the left arm. In such cases of so-called "pseudo-angina" the ache was more constant and not definitely related to effort. Coming more precisely to the subject of angina pectoris, Dr. Parkinson indicated the great differences between authorities on its pathogenesis. The symptom of sternal pain was present in the majority of cases of the left supramammary region alone, but never in the submammary region alone. Sternal pain on exertion was most characteristic of cardiovascular disease, which was usually one of four varieties. Syphilitic disease of the heart and aorta was a common cause of sternal pain in a man aged 35 to 50. There might be a clear history of infection, but the Wassermann reaction would be positive. Physical examination might reveal a blowing aortic systolic, or the second sound might be altered, diastolic, murmur, or the second sound might be altered. The prognosis could not ignore the risk of sudden death, but by early treatment such a variety of sternal pain might be cured. The second variety of cardiac lesion was atheroma of the aorta or coronary arteries, which was a common cause of sternal pain. The radial or brachial arteries might be thickened, but the diagnosis was usually by exclusion. The prognosis was uncertain, but in the absence of complications these patients might live for years. The third group was a subdivision of the second group, and consisted of cases of coronary thrombosis. The basis of this disease was rarely syphilis, but usually atheroma. Recent work in America had thrown much light on what used to be called the "status anginosus," which was of surgical interest in that it might simulate acute abdominal conditions. The pain usually seized the patient in the night and was like that of angina, but prolonged often for hours and accompanied by symptoms of severe shock. Later there appeared signs of cardiac failure, and the pulse became fast and perhaps irregular. This disease represented a breaking up in the entity of angina pectoris, and Dr. Parkinson insisted that the position of the profession with regard to

angina pectoris was unsatisfactory. The fourth group of cases were those with high blood pressure. A small proportion of such patients complained of sternal pain, due possibly to coronary disease or to a distended aorta. Dr. Parkinson concluded by indicating the help given in the diagnosis of sternal pain by certain modern methods of investigation. Radioscopy might show the bulge of syphilitic aortitis or a dilated aorta in cases of high blood pressure. The electro-cardiogram gave information as to the state of the myocardium, since the tracing was modified or grossly abnormal in most cases of true angina.

Mr. A. J. WALTON dealt with the surgical aspect of sternal pain under several headings. Lesions of the thoracic viscera were first considered, and the speaker referred principally to those of the oesophagus. Nearly all cases of carcinoma of the oesophagus gave rise to mid-sternal pain, which was no indication of the site of the growth. The pain at first was sharp and sudden, occurring during the act of swallowing, and passing directly through to the back. Later the pain became more constant, and only slightly increased by swallowing, and was generally made aching in character. The diagnosis was generally made evident by the presence of difficulty in swallowing and the regurgitation of swallowed saliva, while it could be readily confirmed by x-ray examination after a barium meal or by the oesophagoscope. Mr. Walton then passed to sternal pain due to cardiospasm. In the common variety of this complaint, he said, patients sought treatment at about the age of 50. In one group the chief symptom was a somewhat indefinite pain, increased by the taking of food, situated in the epigastrium, and passing through to the back. In a second group regurgitation of food was the chief symptom, and diagnosis was easier. As the condition became more established thoracic discomfort grew more marked, often intensifying towards evening; vomiting usually occurred and brought relief. Such cases might simulate cardiac disease, but careful attention to the history and x-ray investigation should make the diagnosis clear. Mr. Walton mentioned the absence of any area of referred pain in these cases of cardiospasm despite the extreme distension of the viscera which occurred. He next considered the frequency of the abdominal viscera suffering from lesions in the upper abdomen believed that they had cardiac disease, and with which patients usually no difficulty, but in early cases the ulcer there was usually no difficulty, but in early cases the pain might be referred to the mid-sternal region, and there might also be a band of hyperaesthesia reaching as high as the nipple on the left side. Later this disappeared and the sharply localized area of tenderness in the mid-epigastrium cleared up the shoulders or to the mid-ulcer which had penetrated into the pancreas pain might radiate widely up between the shoulders or to the mid-spinal region, but these areas were very distinct from those of cardiac or thoracic disease. Acute dilatation of the stomach might give rise to dyspnoea and cardiac distress, but the true nature of the complaint should be revealed by careful examination. The pain of viscerospasm might sometimes simulate cardiac pain, since it was increased by exercise and relieved by lying down; but here, again, a carefully taken history and examination of the abdomen should reveal the true nature of the trouble. Mr. Walton then dealt with lesions of the pancreas and gall bladder, since chronic inflammatory affections of these two viscera might give rise to pain which was in part referred to the mid-sternum. In cases of gall-bladder and liver disease there was the characteristic pain referred to the right shoulder, and in pancreatic cases the pain was usually in the back, referred to the left shoulder. Acute attacks of the colic ought not to give rise to any confusion with cardiac lesions. Coming lastly to local lesions, Mr. Walton described how a tuberculous focus in a rib or cartilage overlying the precordium, or the presence of a bony tumour in the same situation, might at first set up localized pain mistaken for a cardiac lesion. The existence of definite tenderness on pressure and a carefully taken skiagram should generally clear up the diagnosis, but the transmitted pulsation of the heart might lead to difficulty. Certain lesions of the cord, meninges, or vertebral column might give rise to hyperaesthesia over the cardiac region if the nerve roots were involved. Other signs of nerve disease were generally

present in such cases, and in tuberculous lesions the characteristic rigidity of the vertebrae should prevent any difficulty.

Sir JOHN BROADBENT stated that thirty years ago cases of angina pectoris were attributed to "fatty heart," but the modern tendency was to consider the condition as being due to coronary sclerosis. Sir James Mackenzie had taught that the pain was due to failure of contractility, and the speaker considered that there were two classes of cases: either the blood supply to the heart was affected, as in coronary disease, or the myocardium was at fault, and was leading to failure of contractility. He thought that cases of coronary disease with a positive Wassermann reaction were always fatal. Dealing with the so-called abdominal angina, the speaker said that epigastric pain coming on after exertion should not be looked upon as gastric in origin. He did not believe that syphilitic aortitis and severe aortic disease necessarily gave rise to pain.

Dr A. BLACKHALL MORISON referred to the close similarity between coronary thrombosis and acute abdominal lesions with regard to symptoms. He agreed with Dr. Parkinson's division of angina pectoris: the centre of stimulus could be in more structures than one, and he was heterodox enough to believe in "cardiac" pain. Even in cases of advanced syphilitic aortic disease pain might be absent. He thought that the pain in angina pectoris was due to "blood strokes," the sudden output of energy required by some sudden exertion. Angina pectoris might be divided into the direct and indirect types; a stimulus caused by some ulcerative changes in the aorta or coronary artery gave rise to the direct type. The myocardial type, on the other hand, might come on without exertion.

Dr. POULTON asserted that all types of dyspeptic sternal pain were produced mechanically in the oesophagus, and even the heart could produce such oesophageal pain. He described experiments in which a bag was swallowed and the contractions of the oesophagus recorded. When pain occurred there were usually large contractions shown, whereas if pain was absent there were no signs of high intra-oesophageal pressure. He thought the pain in "heartburn" was mechanical. Swallowing usually altered the pain in some way, and he showed illustrations of experiments in which the passage of a peristaltic wave abolished such pain, which was due to postural tonic contractions in the oesophagus.

Dr. J. A. RYLE said it was important to consider the site of production and cause of sternal pain. He emphasized the fact that a distended viscus was not painful, but pain occurred when a hollow viscus was trying to overcome some obstruction. The essential cause of pain was increased tension. He showed the striking analogy between the pain in intermittent claudication and in angina pectoris; the pain in angina pectoris was probably produced in the coronary arteries. "Heartburn" was a common variety of sternal pain, and it was peculiar in its burning character. It was wrong to assume that it was due to acid in the oesophagus. A similar burning pain occurred in tenesmus, and was probably due to the contraction of a hollow viscus with nothing to act against. The relief of "heartburn" by sodium bicarbonate depended on its action in causing relaxation of the cardiac sphincter.

Dr. PARKES WEBER thought that all cases of angina pectoris might be subdivided into those with gross coronary obstruction from organic change and those without. It was a mistake to regard syphilitic cases as a separate group, as those cases with gross coronary obstruction included the syphilitic. Such a differentiation was convenient for prognosis, but the difficulty was that patients in whom gross coronary obstruction had been found after death might have had no anginal pain during life.

Sir CHARLTON BRISCOE thought it was remarkable that so many different conditions produced the same type of pain. In every case one muscle could be found to be tender and in a state of tonic contraction. He showed slides to illustrate this. In one case of apical pleurisy the case of angina pectoris this same muscle was also tender, and an attack was produced while testing this muscle. In other cases one or other of the intercostal muscles was affected, or it might be one of the scalene group.

## Rebuelos.

### THE PARASITIC PROTOZOA.

In the two volumes of *Protozoology: A Manual for Medical Men, Veterinarians, and Zoologists*,<sup>1</sup> Dr. C. M. WENYON, director of the Wellcome Bureau of Scientific Research, has presented to scientists and medical men a work on the parasitic protozoa which will rank undoubtedly as one of the standard textbooks on this subject. The book is indeed a realization of the dreams of many teachers and research workers, in that it is an encyclopaedic compilation of the present state of knowledge of the unicellular animals which are parasitic in man and the lower animals. The two volumes contain nearly sixteen hundred pages; there are 565 figures in the text, and 20 coloured plates. The arrangement of the subject-matter and the distribution of the plates have been carefully considered and the convenience of the reader everywhere studied.

Since the discovery of the first protozoon in man, attributed to the Dutch observer Leeuwenhoek in the seventeenth century, zoologists of all nationalities have slowly built up a great edifice of knowledge; medical protozoology especially received an extraordinary stimulus in the latter part of last century by the brilliant discoveries of Laveran and Ross. During the last thirty years many more remarkable discoveries in this field of parasitology have been made. Schools of tropical medicine were founded in London and in Liverpool, and Wenyon was the first to be placed in charge of the Department of Protozoology at the London School. It therefore seems fitting that it is he who has accomplished the task of writing what might be described as the romance of the unicellular animals. It can have been no easy matter to collect, condense, criticize, and present the colossal mass of literature on the subject, but the task has been most satisfactorily accomplished. It is noteworthy that in this, a first edition, there are few typographical errors. At the beginning of each volume a comprehensive classification of protozoal organisms in general is given, and a further classification of the special groups at the beginning of each separate part, so that the student can readily study the systematic position before reading the chapter on any particular subject.

The first hundred and fifty pages of vol. i serve as an introduction. They are devoted to the definition, structure, division, physiology, organelles, and syngamy of the protozoa. Then follow sections on immunity, and the production of drug-fast strains, a matter of great importance in treatment. The remainder of this volume is concerned with the amoebae and flagellates of man and the lower animals, and with an account of those coprozoic animals which may be encountered in the examination of films during diagnosis. The section on the human amoebae contains the wonderful story of the difficulties encountered by early observers, and the final triumphal emergence of definite knowledge, so necessary in diagnosis. The subject is illustrated by a useful coloured plate showing the appearance of the various intestinal cysts of man in iodine solution.

Noteworthy sections are those on the genera *Leishmania* and *Trypanosoma*, and the description of the various problems concerned with morphology and transmission. In dealing with *Leishmania*, an account is given, accompanied by a plate, of certain vegetable organisms which may be confused with true *Leishmania*. The space devoted to trypanosomiasis is rightly very large; in addition to the classification and morphology, we have parts concerned with the pathogenicity, immunity, and the curative action of drugs and serums. It is difficult to convey in a few words to prospective readers the amount of information packed into these pages regarding the trypanosomes, but the clear manner in which these have been described, accompanied by such text figures as those on pages 470, 487, and 531, to mention only a few, will appeal to all who read the work. Then there is a useful account of the group of organisms known as the *Cnidosporidia*, which are important from an economic point of view, in that they are parasites of fish,

<sup>1</sup> *Protozoology: A Manual for Medical Men, Veterinarians, and Zoologists*. In two volumes. By C. M. Wenyon, C.M.G., C.B.E., M.B., B.S., F.Sc.Lond. London: Baillière, Tindall and Cox, 1926. (Roy. 8vo, pp. xxviii + 1563; 565 figures, 20 plates. 84s. net the two volumes.)

bees, and silkworms. At the end of the volume is a study of certain parasites of undetermined position—for example, the sarcocysts common in ruminants though rarely found in man.

The second volume, approximately equal in size to the first, begins with the sporozoa, and contains chapters on the malarial parasites of man and allied pigmented parasites of animals. In addition to two coloured plates of the parasites of human malaria, the author has introduced for the sake of comparison plates of the haemosporidia of birds, malaria of monkeys, and malaria of various mammals. The morphological resemblance of the parasites of monkeys to those of human malaria is a striking feature well brought out in these plates. Into the description of the development of this parasite in the anopheline the author has introduced a series of beautiful original drawings and coloured figures, which graphically tell the story of the life cycle in the mosquito discovered by Ross over a quarter of a century ago. The coccidia, haemogregarines, and piroplasms receive adequate attention, and the last two are depicted in colour.

In the third part of this second volume a group of non-protozoal organisms, the spirochaetes, are described. Although they belong to the realm of bacteriology, they have received so far scant attention in bacteriological works, so that their inclusion here will be welcome to medical men. The fourth part deals with methods of investigation, and with the rules of nomenclature, the latter a very apt addition to such a work. In the fifth part we find what is, in our opinion, one of the most complete extant lists of the blood parasites of vertebrates and the trypanosomidae of invertebrates. Finally, the book concludes with ninety-seven pages of references, which comprise all the most important papers, monographs, and books on the study of parasitic protozoa.

The book is, we believe, the best written on the subject in any language; it is certainly a very fine piece of work and a credit to the English school. It marks a great advance in the correlation of our knowledge of the protozoa. No medical man domiciled in the tropics or interested in the problems arising from diseases of protozoal origin should be without a copy.

#### ACUTE PANCREATITIS.

M. P. Brocq, inspired by Professor P. DELBET, started in 1913 to gather material for his monograph *Les pancréatites aiguës chirurgicales*,<sup>2</sup> which is based on 340 collected cases (20 now published for the first time), on his numerous experiments on dogs, and on a thorough survey of the literature. Although this abdominal catastrophe usually comes as a bolt from the blue, he shows reason to believe that it occurs in a pancreas already showing morbid changes, and admits that for this reason the results obtained by the experimental production of acute pancreatitis in dogs with normal pancreases are not absolutely comparable in every respect. Obesity, overeating, gastrointestinal disorders, and especially gall stones (in two-thirds of the cases), are the most frequent antecedents. The different forms of acute pancreatitis are all derived from the same fundamental lesion—namely, necrosis, usually partial, of the gland; haemorrhage is extremely common, but fat necrosis takes more time to appear and so may not be seen in fulminating cases.

A noticeable conclusion is that the initial necrosis is aseptic and due to the digestive action of trypsin when the protrypsin has been activated by cellular kinases. Of the two hypotheses as to its causation, that which ascribes it to vascular lesions, such as thrombosis, embolism, and chronic arteritis, is shown by the author's experiments to be less probable than that which refers it to damage inflicted by way of the excretory ducts of the gland. The problem what are the factors activating the pro-ferment is discussed in considerable detail, and illustrated by the results of many experiments. The influence of bile retrojected into Wirsung's duct as the result of obstruction of the orifice of the biliary papilla is considered; only eight

cases (of which one is published here for the first time with an illustration) of calculus blocking the tip of the biliary papilla are on record. But though the efficacy of bile in the pancreatic ducts to activate protrypsin is fully admitted, and Aréhibald and Brown's explanation that reflex spasm of Oddi's sphincter may cause reflux of bile into the pancreas is mentioned, the action of bile is regarded as one only of the possible causes of activation of protrypsin. The clinical and pathological features of aseptic forms of acute haemorrhagic, oedematous, sub-acute, encysted (pancreatic haematocoele), and attenuated pancreatitis are described with judicious use of statistics and personal cases. Suppuration and gangrenous pancreatitis, due to superadded infection, are dealt with separately. The sections on diagnosis, clinical and laboratory, and on treatment are full, and the usefulness of this valuable book of reference is increased by a good bibliography.

#### A HANDBOOK OF FORENSIC MEDICINE.

The place which Hofmann's textbook of forensic medicine<sup>3</sup> has attained in the literature of the subject is shown by the appearance of the eleventh edition in two large volumes comprising 1,234 closely printed pages.

The original book was recognized at once as a work of outstanding merit which placed forensic medicine on a more scientific basis than it had previously occupied. The fourth, and now the eleventh edition, have, in the able hands of Professor HABERDA, fully maintained the reputation of this great work. Forensic medicine has advanced during recent years, like other sciences, with rapid strides, and no more capable editor could have been employed. Indeed, Professor Haberdar has partly rewritten and greatly amplified the original. It is a complete textbook in every sense of the term, and the psychiatric part is ably dealt with by Professor Wagner-Jauregg.

Not the least valuable aspect of the present volumes is the very complete references to literature, brought down to the middle of 1926. Many new and striking illustrations have been introduced which assist the elucidation of the text.

It is a trite but eminently true remark that no one who professes this subject can afford to be without this edition of what we confidently affirm to be the most complete and accurate treatise on forensic medicine.

HARVEY LITTLEJOHN.

#### ECZEMA.

Dr. G. A. ROST has produced a useful textbook of dermatology.<sup>4</sup> Without claiming that he has exhausted the subject, he has dealt with all questions which concern the general practitioner, for whom his volume is primarily intended. He has rightly devoted most space to, and laid most emphasis upon, those conditions which are the more commonly met with, and has only briefly referred to the rarer affections of the skin. In his arrangement of chapters he has adopted an etiological classification of dermatoses. Some day, let us hope, it will be possible to do this with precision, but at the present moment we are regrettably in the dark as to the causation of so many of the pathological conditions of the skin, that to try to use the tempting and apparently logical method of etiological classification is to follow a scientific will-o'-the-wisp and only lands one in a tangle of contradictions. For practical purposes it still seems preferable, after disposing of the conditions definitely known to be due to external causes, to fall back on a morphological arrangement. Apart from this objection to his scheme of classification we have nothing but praise, for Dr. Rost is very practical and fully up to date. The matter which at present is chiefly agitating the dermatological world is the question of eczema—what is meant by the word itself and what conditions may fairly be included under the title. In the present book a large number of conditions which might

<sup>2</sup> *Les pancréatites aiguës chirurgicales*. Par Pierre Brocq. Annales de la Clinique chirurgicale du Professeur Pierre Delbet. Paris: Masson et Cie. 1926. (Roy. 8vo, pp. 188; 3 figures, one coloured. 4s. 2d.)

<sup>3</sup> *Hofmann's Lehrbuch der Gerichtlichen Medizin*. Edited by Dr. Albin Haberdar. Professor of Forensic Medicine, University of Vienna. Eleventh edition. Vienna: U. 1926. (Roy. 8vo, pp. 1200; 120 figures, 120 plates.)  
<sup>4</sup> *Hautkrankheiten*. By Dr. G. A. Rost. Leipzig: J. F. Bergmann. 1926. (Med. 8vo, pp. x + 405; 104 figures. R.M.27.)

possibly be included under this head are described as due to the "status exsudativus." The author is evidently a devoted follower of Czerny, to whom we owe this conception. It cannot yet be said that this statement of the position has been substantiated, but a fair discussion such as is here given is well worthy of the attention of dermatologists. The book is well printed, easy to handle, and the illustrations, both coloured and in monochrome, good and clear. Dr. Rost's textbook should by no means be without honour in his own country, but for the British student and practitioner there are several works produced at home which will serve his purpose equally well.

Eczema has been described as the most important subject in the whole of dermatology, and Dr. S. JESSNER, who is the author of a number of monographs on dermatological subjects, primarily intended for the general practitioner, has dealt very fully with it in a small book<sup>5</sup> on its diagnosis and treatment. Only a few pages are devoted to the nature and etiology of the eczematous reaction, rather more to the differential diagnosis of the condition, and the remainder, about two-thirds of the whole, to its treatment. He considers in some detail the internal treatment, including dietetics and spa therapy. Like most of us, he has not a very high opinion of the efficacy of such measures, and is quite free from the fads dear to so many German writers. He rightly lays the greatest stress on local treatment, and after giving general directions goes in detail into the modifications advisable in different types of the condition, and also as it occurs on differing parts of the cutaneous surface. His teaching is quite sound, but it is interesting to note the variations of fashion in therapeutics between this country and Germany. Perhaps they are greater now than they were before the war, when every German drug and unguent was eagerly snatched up by the medical public. The fashion has now swung over to favour the French pharmacist, hardly, however, to the same degree. One of the commonest German remedies, very seldom used here, is solution of aluminium acetate, another is tumenol (a tar preparation), another is mitin (a base for ointments). Dr. Jessner does not forget to mention the use in treatment of various forms of radiant energy, such as the Roentgen rays, which he finds extremely useful, and the various forms of artificial sunlight, which he considers to have only very limited application in the treatment of eczema; in fact, he only recommends it in scrofulous eczema, a variety of the condition which in this country is hardly recognized. This little book, now in its third edition, can be recommended to any practitioner desiring guidance in dealing with eczema, and even an experienced dermatologist may pick up some tips from it.

### NOTES ON BOOKS.

Dr. A. C. JORDAN has published a second edition of his monograph on *Chronic Intestinal Stasis (Arbutnot Lane's Disease): A Radiological Study*,<sup>6</sup> the first edition (1923) of which was reviewed in our columns (1924, i, 154). The work is much the same in substance and size as before; the preface tells us that the author has resisted the suggestion that the scope of the work should be enlarged so as to provide a complete treatise on the radiology of the digestive system, but that small additions have been made to the chapters on the pelvic colon, appendix, and gall bladder. In the case of the gall bladder there are seven lines on cholecystography and three new skiagrams, none of which, however, show the results of the new tetraiodo method. The remaining information on gall stones occupies six lines, and of them the three lines, "Gall stones are not very often seen in the x-ray picture, for cholesterin is perfectly transradiant, and a gall stone does not produce a shadow until it has existed long enough (years) to have become encrusted with lime salts," might be qualified or expanded with advantage. But in fairness to the author it should be borne in mind that this subject is rather outside the restricted field of chronic intestinal stasis. Criticism may also be excited by the statement that "a healthy appendix is never attacked by acute inflammation, and it does not become diseased

unless its environment is unhealthy"; for, though no doubt acute inflammation often supervenes on old, it is difficult to bring forward evidence that acute infection does not fall on a previously normal appendix. As before, the get-up of the volume is good and the radiograms generally are clear.

The scientific papers which have been contributed to medical journals during the years 1923-25 by the staff of the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne, have been bound together into a single volume.<sup>7</sup> We notice that the staff of the institute has given a great deal of attention to hydatid disease, and seven of the twenty-two articles deal with it. The diagnosis of this disease by clinical and laboratory methods has been the chief problem studied. The other papers deal with a great variety of subjects, ranging from tuberculosis to cancer. Most of them are reprinted from the *Medical Journal of Australia*, but one or two have appeared in the *Journal of Pathology and Bacteriology*. Dr. C. H. KELLAWAY, who was recently attached to the Medical Unit at University College Hospital, London, is now the director of this institute for research.

In the form of a novel entitled *The Factory King*<sup>8</sup> Dr. NORMAN PORRITT, who was recently awarded the Hastings Prize, has given us a vivid and poignant account of factory life in the middle of the nineteenth century, when Richard Oastler, whom he appropriately calls "the Danton of the factory movement," made it his aim to improve the lot of the factory worker. The avariciousness of the mill owner, who drove men into unemployment and drink by the substitution of cheap labour by women and children, and the brutality of the factory overseer, are drawn in lurid colours, but Dr. Porritt assures us in the preface that he has not drawn on his imagination for the facts, but has taken his description from contemporary records and writings.

In *Man not a Machine: A Study of the Finalistic Aspects of Life*<sup>9</sup> Professor EUGENIO RIGNANO of Milan brings forward many arguments to refute the materialistic view that the body is a purely physico-chemical apparatus on the analogy of the growth of a crystal, and contends for the existence of a form of energy peculiar to life. Examples of pre-established and of new adaptations with a purposive object are marshalled against the mechanistic explanation of life, and in the last chapter the social purposiveness of justice and morality is brought forward in support of his thesis.

<sup>5</sup> *The Walter and Eliza Hall Institute of Research in Pathology and Medicine*. Vol. II, 1923-25. C. H. Kellaway, Editor. (Demy 4to; illustrated.) Porritt. London: Jonathan Cape 1926.

<sup>6</sup> *Man not a Machine: A Study of the Finalistic Aspects of Life*. By Eugenio Rignano, Professor in the University of Milan. With a Foreword by Professor Hans Driesch. Psyche Miniatures. London: Regan-Paul, Trench, Trubner and Co., Ltd. 1926. (Pott 8vo, pp. 77. 2s. 6d. net.)

### PREPARATIONS AND APPLIANCES.

*Preparations of the State Serotherapeutic Institute, Vienna.*

We have received from the State Serotherapeutic Institute, Vienna, preparations put up in a convenient form for performing certain well known clinical tests.

They include "dermotubin" or skin tuberculin (Loewenstein). This is a concentrated glycerol broth culture of the tubercle bacillus. A drop is placed on the skin and rubbed in for a minute; a positive reaction consists in the appearance of nodules after one or two days. This is obviously a very convenient and safe method of carrying out tuberculin tests, and it has been subjected to extensive clinical trials. The safety of the test is proved by the fact that it was applied to 11,000 Viennese school children without any undesirable effects being observed. (Loewenstein: *Wiener klin. Woch.*, 1925, No. 5.) Extensive reliability tests have also been performed, and the tuberculin ointment test has been found to agree with the Pirquet injection test in 90 per cent. of cases. (Kundratitz: *Zeit. f. Tuberculose*, 42, 222, 1925.) The method seems therefore to provide a very safe and easy technique for applying the tuberculin test.

Another preparation, "haemotest," consists of a small box containing the simple apparatus necessary for determining the blood group to which any patient or prospective blood donor belongs. The essential parts of the apparatus are tubes containing serum from persons belonging to blood groups 2 and 3 respectively. With this apparatus the blood group to which any person belongs can be determined in five minutes. The apparatus is arranged in very convenient form, and a full description of the technique is provided. The letterpress appears, however, to be a literal translation of German directions, and it would be clearer if the English were improved.

<sup>7</sup> *Research and Therapy des Ekzems*. By Dr. S. Jessner. Third edition. Leipzig: C. Kalyeb. 1926. (Pott 8vo, pp. 175. M.6.20.)  
<sup>8</sup> *Chronic Intestinal Stasis (Arbutnot Lane's Disease): A Radiological Study*. By A. C. Jordan, C.B.E., M.D. Camb., M.R.C.P. Lond. Second edition. Oxford Medical Publications. London: Humphrey Milford, Oxford University Press. 1926. (Cr. 4to, pp. xv + 250; 315 figures. 21s. net.)

## THE VIRUS THEORY OF CANCER.

## British Medical Journal.

SATURDAY, NOVEMBER 13TH, 1926.

## THE VIRUS THEORY OF CANCER.

THE hypotheses put forward to explain the genesis of cancer have been legion, but for many years past there have been two that, owing to the numbers of their respective supporters and their inherent probability or plausibility, command pride of place. There is the irritation theory and there is the parasitic theory. According to the former, cancer is the result of chronic irritation: cells subjected to long-continued stimulation by some definite, or more often indefinite, means at last acquire a new property of limitless and destructive proliferation. It may be that the chief exponents of the doctrine nowadays would state it in more precise terms, but it is almost a necessary corollary that "cancer" is to them merely a generic word. According to the parasitic theory, some *contagium vivum*—protozoal, bacterial, or ultra-microscopic organism—gains access to cells and causes them to proliferate, itself multiplying within these cells and keeping up the constant division. In support of the irritation theory might undoubtedly be cited numerous examples of cancers in man where definite irritating substances had been present at their inception; and, above all, the experimental work of recent years in the production of tumours in animals by the use of various substances seemed to place the theory on a sound basis. It is one of the weaknesses of this theory that, in man at least, so very few of the subjects exposed actually develop cancerous growths, and it has been held that the irritants merely prepare the soil for the intervention of some other cause. Further, it has to be admitted that in the great majority of cases of cancer it is difficult to trace any definite sort of irritation. The ceaseless pursuit of a germ, on the other hand, had yielded no result. Some hoped that in process of time new staining methods would reveal it, just as Giemsa's stain revealed the organism of syphilis; some thought that novel cultural methods would be devised so that it could be obtained in a free condition; and some fondly believed that an ultra-microscopic parasite would be isolated from cancers. Cancer, according to them, would be a specific disease. The schools were sharply divided, and no common ground could be found.

In these circumstances the theory put forward last year by Dr. W. E. Gye attracted world-wide attention. It attempted to reconcile the two conflicting views without conceding to either all that their adherents had claimed, and to not a few it seemed as though the central problem in cancer had at last been solved. In the Lloyd Roberts Memorial Lecture, which we publish at page 865 this week, Dr. Gye traces the development over many years of experimental research that has cleared the ground for modern investigations, and he states again persuasively the original experiments he has performed and the conclusions to which these have led him. Briefly expressed, his theory is that cancer is a specific disease caused by the combined operation of an ultra-microscopic organism, or virus, and an

accessory chemical substance which determines the special characters of the resulting cancer. It would seem as though the virus were omnipresent but incapable of producing its effect until the chemical substance has been elaborated. Hitherto this accessory factor has only been obtained from pre-existing malignant tumours, but it has been suggested that it may result in the body from the action of irritants of various kinds. The experiments on which this theory is based are again set forth. It was known that a peculiar lesion in fowls, considered by Rous, its discoverer, and by many others to be a spindle-cell sarcoma, could be transferred from one fowl to another by the filtered and presumably cell-free juice. By heat and by certain chemicals the activity of this extract could be destroyed, but Dr. Gye gives reason for believing that the extract contains two different factors which may be separated. By treatment of the filtrate with chloroform or acriflavine he suppresses one of these (the virus) and leaves the other (the chemical factor) unimpaired. Then by cultivating a portion of the fowl tumour by special technique he obtains the "virus" alone. When this cultivated "virus" is added to the "chemical factor" the characteristic Rous sarcoma is obtained on injection into suitable fowls. Neither of the ingredients alone produces the condition. Does this Rous sarcoma stand by itself, something unique, quite unrelated in etiology to other tumours? So it had been regarded. All attempts to obtain active cell-free filtrates in mammalian tumours had failed, nor could Dr. Gye repeat successfully with them the method he had adopted in the case of the fowl tumour. However, by cultivating certain mammalian cancers in his special medium he obtained something which, when combined with the Rous "chemical factor" and injected into chickens, produced the fowl sarcoma. In other words, he successfully substituted for the Rous virus some similar, if not identical, "virus."

The proof, therefore, that mammalian cancers contain a "virus" is indirect, and it is only by inference, and not by experiment, that it is permissible to conclude that they contain an "accessory chemical factor." Nevertheless, the experimentation so far as it has gone is very attractive, and the deductions are ingenious. It may be remembered that in the week following the appearance of Dr. Gye's original communication we published an article by Dr. Archibald Leitch,<sup>1</sup> which, though highly appreciative, yet pointed out certain weaknesses in the argument and cast doubts on the claim that the chloroform treatment had quite destroyed the activity of the filtrate; and in the same issue Dr. Twort, in our correspondence columns, suggested that other substances besides malignant tissue extracts might restore the activity of the chloroformed filtrate. If it could be shown that the active agent of the Rous sarcoma was not destroyed by the chloroform, then the whole theory would fall to the ground. Since that time a considerable amount of critical work seems to have been performed in this country and abroad which tends to support these early criticisms. Murphy of the Rockefeller Institute and Flu of Leyden, in particular, have been able to restore the activity of the chloroform-treated extracts by "cultures" of normal tissues, although Dr. Gye in his own experiments has not succeeded in so doing. At the present moment, therefore, it would appear that Dr. Gye's attractive theory, so widely broadcast less than eighteen months ago and so authoritatively sponsored, is being subjected to an artillery fire that may destroy it.

<sup>1</sup> BRITISH MEDICAL JOURNAL, July 25th, 1925, p. 174.



## POPULATION AND PESSIMISM.

EACH year there is a net increase in the population of human beings and in the number of books on the growth of human population. Dr. J. Shirley Sweeney's spiritual child, an essay entitled *The Natural Increase of Mankind*,<sup>1</sup> saw the light in the Johns Hopkins School of Hygiene; Professor Raymond Pearl was the obstetrician and Professor William Welch is the godfather, and the child is not unworthy of such eminent protectors.

Dr. Sweeney has made a painstaking study of the changes in the "vital index"—as Professor Pearl terms the percentage ratio of annual births to annual deaths—in practically every country which furnishes any statistics. He has found that nearly all the countries studied possess high mean indices—that is, that population is almost everywhere increasing—although the magnitude of the index and the slope of the line indicating its secular trend are negatively correlated. Further, a study of the helligrent nations showed that "the birth-death ratios, although extraordinarily lowered during the war and influenzal years, resumed their pre-war and pre-influenzal levels within two years' time." It was therefore held that "war and pestilence serve only to cause a temporary disruption in the chief factors of population growth." It was held, furthermore, that "population growth was shown to be a steady, uniform, and persistent phenomenon."

Different statisticians might prefer slightly different methods of presenting the facts—we have never been able to convince ourselves that the ratio of births to deaths is a better index than the more frequently employed rate of natural increase—but all would agree that these are trifles, and that Dr. Sweeney has effectively and succinctly presented the essential facts. What is the conclusion to which they lead? They lead Dr. Sweeney to a gloomy one. He thinks, indeed, that absolute overpopulation, in the crude sense of the term—that is, in the sense that human population will reach a point at which there is literally not sufficient food to maintain it in existence—will never occur as a world phenomenon; but that there will be a relative overpopulation, evoking some of the positive checks of Malthus, such as wars. The only remedy he can see is in deliberate limitation, but, in preference to Mr. Harold Cox's suggestion of a "league of low birth rate" among European populations, he advocates a league of "stationary populations." Whether this would really be more acceptable, as he thinks, is doubtful. It is true that there is a differential racial fertility, and it is true that "a low birth rate is a relative term, whereas a stationary population avoids the issue of discrimination in the strictest sense." But since, apart from migration (and, of course, from changes in marriage rate and age constitution), the only way in which a population now increasing can be kept stationary is by increasing the death rate if the birth rate is maintained—and nobody would advocate that—Dr. Sweeney's practical proposal is not really different from Mr. Cox's. But, again, the point is hardly more than a verbalism if Dr. Sweeney is right in being without hope that what he has said "will make the slightest impression upon things as they now are. All that is hoped is that perhaps a few minds, heretofore closed to the consideration of the matters we have brought up, may be slightly opened, and that later discussions of the population question may experience

somewhat less resistance." This conclusion we take to be that of most sensible men, but if so, how is it that we are not all profoundly depressed by the prospect before the world—indeed, before our own nation? The population of England and Wales is certainly increasing. Dr. Major Greenwood's estimate<sup>2</sup> that by 1931 there will be three and by 1941 five millions more alive in England and Wales than in 1921 may be too pessimistic (or too optimistic, according to the point of view); but no serious prophet has budgeted for a decrease, and, if there be any truth in what masters and men are now saying, at least one industry is already employing a quarter of a million more men than economic "facts" justify, while no other industry is exactly clamouring for a quarter of a million recruits. We must, then, choose between a reduction of natural increase (whether by decrease of births or increase of deaths) and a lowering of the standard of life.

Why are we not alarmed? There are, perhaps, two reasons. One is summed up in the phrase, "It will last my time." Those who have to face the worst horrors of a war are seldom those who experienced the utmost rigours of its predecessor. And one may take that point of view without being purely selfish. How many of us have succeeded in passing on our experience of the common facts of life to our own children, in enabling our sons to avoid making precisely the mistakes we made at their age? If we cannot do this we shall certainly fail to convey our experiences of the uncommon events of 1914-18 to those born in or after 1900—that is, to those who would now form a majority, and will soon form a large majority, of the rank and file should Europe be so unfortunate as to become involved in another war. There is another factor: the religious man calls it the providence of God, the psychologist the unconscious mind. The apparently inevitable conclusion of logic has in economics, in politics, and even in medicine, so often been disproved by the event that, when the problem is a complex one, we distrust logical conclusions and assume that things will neither be so good nor so bad as reasoning would have us expect.

There is a great variety of reasons why the state of the people of England should be, on the average, much worse now than in 1914. Plenty of people assure us that it is much worse, and will shortly be worse still. Yet any one of the time-honoured tests—infantile mortality, mortality from tuberculosis, prevalence of the diseases associated with filth and misery—leads to the conclusion that the people are not worse but better off than before the war. Of course, these tests are not conclusive; we may be entering upon a period of increasing misery, we may even be upon the brink of some great calamity. But this at least is true, that those who, like Dr. Sweeney, have no belief in the efficacy of argument to influence the reproductive habits of mankind, even those who pay not the least attention to the jeremiads of the eugenicists and care not a jot for the survival of the unfit, are often neither ignorant nor selfish, but merely humble-minded. Perhaps *tout le monde* is really wiser than any individual, even a distinguished economist, a eugenicist, or a statesman.

THE Nobel Prize of the value of 37,000 dollars has been awarded to Dr. J. Fibiger, professor of morbid anatomy at the Copenhagen Faculty of Medicine, whose experimental production of carcinoma of the stomach in rats by a nematode is a milestone in the history of the study of cancer.

<sup>2</sup> *Metron*. V. 1925 (Part 2): The Growth of Population in England and Wales.

<sup>1</sup> *The Natural Increase of Mankind*. By J. Shirley Sweeney, M.A., M.D., D.Sc. Baltimore: The Williams and Wilkins Company; London: Baillière, Tindall and Cox, 1925. (6 x 8½, pp. 185; 1 plate. 18s. net.)

# STUDY OF MEDICAL HISTORY.

ARRANGEMENTS are being made for the formation of a History of Medicine Section at the forthcoming meeting of the British Medical Association at Edinburgh in July, 1927. A great deal of interest has been taken and research carried out on this department of medicine in the universities of the Continent, and at the present time few of the larger medical schools in America are without historical libraries. It is appropriate that the first meeting of a Section on History of Medicine should be held at Edinburgh, both because the 1927 meeting is, in a sense, historical, being connected with the celebration of the centenary of Lord Lister's birth, and still more because Edinburgh University was the first medical school in this country to recognize the importance to the practitioner of a certain amount of acquaintance with the history of his calling, by deciding to establish a lectureship on history of medicine in 1908. The course is a voluntary one, and has been held continuously every winter session since the institution of the lectureship, with the exception of four years during the war, and has been attended each year by from sixty to ninety students. The syllabus for 1926-27 shows that the course consists of twenty lectures, comprising an outline of medical history, beginning with Egyptian medicine and passing through the development of medicine among the Greeks and Romans. Hippocrates and Galen are dealt with in a biographical and critical sense, while accounts of Arabian medicine and of the medical aspects and politico-social effects of the mediaeval epidemics give pictures of medicine in the Middle Ages. The history of hospitals, including the activities of the Knights of St. John and of the foundations made by Pope Innocent III and St. Louis in the thirteenth century, together with an account of the rise of the universities and the formation of the medical guilds, outlines the Renaissance as it affected medicine. Other lectures then deal with the revival of the experimental method in connexion with medicine and its results. The early labours of Bacon and Harvey, followed by those of the group who, after the Civil War, were concerned in the foundation of the Royal Society, show the earlier stages of this movement; and the great light thrown upon bodily processes by the discovery of the microscope is demonstrated in connexion with its adoption by Malpighi, Leeuwenhoek, and others. The development of physiology is continued by an outline of the early work done and suggestions made by Van Helmont, Sylvius, Reaumur, Beaumont, and others, who turned their attention to the question of digestion and secretion, which culminated in the important researches of Claude Bernard, Karl Ludwig, and their present-day successors. The development of our knowledge of respiration, successively built up by Boyle, Hooke, Mayow, Black, Priestley, and Lavoisier, forms the subject of another lecture; while still another treats of concurrent developments of the knowledge of nervous phenomena through the researches of Willis, Haller, Bell, Magendie, Broca, and others. The later development of pathology and the progress of clinical medicine in the eighteenth and nineteenth centuries, as it took place in the various schools of France, Britain, and Germany, and the development of surgery in the eighteenth and nineteenth centuries, are also outlined. The course for the present academic year appropriately concludes with two lectures on the origin and development of the Edinburgh medical school and on the life and work of Lister.

## MILK REGULATIONS IN COPENHAGEN.

THE milk supply of Copenhagen is derived from some 3,400 farms in Zealand and elsewhere, with a total stock of about 54,000 cows. The daily consignment of milk to the city, exclusive of cream, buttermilk, and skimmed milk, is about 60,000 gallons, some 3,000 gallons of which are

described as milk for infants and 700 gallons as Jersey milk. The regulations for the sale of milk in Copenhagen, which are quoted in a recent publication by the League of Nations, are administered by the local health committee. They deal with all milk sold in the city from its production on the farm to its place of distribution. No business for the sale of milk in Copenhagen may be conducted without notice given to the sanitary authority. "Whole milk," according to the regulations, must not contain less than 3.25 per cent. of milk fat. The cows providing it must be inspected monthly by a veterinary surgeon, who on each occasion must carry out a minute examination of the udder, testing milk from each teat. The veterinary surgeon in his certificate must indicate whether the rules laid down by the health committee for owners of herds supplying whole milk to Copenhagen are being observed. These rules are concerned with cleanliness and other points. All milk offered for sale as milk without a specific designation is held to be offered for sale as whole milk. "Milk for infants" likewise must not contain less than 3.25 per cent. of milk fat. The herd providing it must be tested with tuberculin once a year, and animals which have passed the test ear-marked. Reactors must be isolated and disposed of. Any animal added to a herd must have passed the tuberculin test. Every animal in the herd must be inspected fortnightly by a veterinary surgeon, who must certify as regards observation of the rules applying to producers of milk for infants. The use of milking machines is forbidden. The milk, after milking, must be cooled at once to 8° C. and kept in a cold place till it reaches the consumer. It must be sold only in properly closed bottles of tinted glass, which must be sterilized or carefully cleansed and duly labelled. The sale of "pasteurized milk" is prohibited unless so described. Pasteurization is defined as heating to at least 85° C. and cooling immediately thereafter to 10° C. Milk heated in any other way may not be described as pasteurized, and may not be sold at all unless approved by the health committee. Repasteurization is forbidden. Containers must be sterilized or carefully cleansed. Bottles, if used, must be of tinted glass. "Mixed milk for infants" may be sold in bottles, mixed with boiled water and containing sugar, provided the exact composition of the mixture is stated on a label affixed. "Jersey milk" may be drawn from Jersey cows only, and must contain not less than 4.75 per cent. of milk fat. The regulations also include provisions as to sick cows and infective persons, and as to milkshops in Copenhagen, their cleanliness and lime-washing, their relation to sleeping-rooms and other goods which may be sold on the same premises, and the supply of water-spitoons of a serviceable type. Of the milks named under the Copenhagen regulations, "milk for infants" is apparently the equivalent in Copenhagen of the milk designated "certified" in this country, except that on the Danish plan the herd is inspected more often but tested with tuberculin less often, while the fat requirement differs from the usages here, and no bacterial standards are laid down. "Whole milk" may be regarded as broadly corresponding to a Grade A milk in this country, except as regards the fat content and the absence of bacterial standards. It has, however, a wider range. Grade A conditions here can only be applied to persons desiring to employ the designation "Grade A." Whole-milk conditions in Copenhagen are, on the other hand, not only applicable to vendors of whole milk by that title, but are imposed also upon vendors of milk *simpliciter*, since all milk not specifically otherwise described is held to be whole milk. The useful effect of this interpretation would appear to be that all unclassified fresh milk sold in Copenhagen is produced under the condition of a monthly inspection of the herds concerned. For "pasteurized milk" in Copenhagen no bacterial standard is laid down. The general powers contained in the Copenhagen regulations

as to infection, cleanliness, management, notices to sanitary authorities, and the like, are provided in this country either under statute or by rules and regulations. The supply of water-spittoons in milkshops, however, is not exacted here. Alike in their points of agreement and difference, the Copenhagen sale of milk regulations offer an interesting comparison with the methods current in this country for securing the great object aimed at in both cases—the purity of the milk supply.

#### "SOME HEART ONCE PREGNANT WITH CELESTIAL FIRE."

IN *A Nineteenth Century Teacher* Mrs. Liveing gives us a biography of her uncle, John Henry Bridges, sometime Fellow of Oriol College, Oxford, and medical inspector to the Local Government Board. Her story is full of pathos; for John Henry Bridges was a brilliant Oxford man who became an apostle of a lost cause. To those of us who remember in our youth the warfare of the Positivists with the Church on the one hand and with Professor Huxley on the other, a book about a disciple of Comte is bound to have an old-world flavour. It is easy to suggest that Positivist philosophy left its mark on English thought and life, and that the little band of men led by Frederic Harrison anticipated the trend of much modern action; but the fact remains that the philosophy made little appeal in the nineteenth century, and in the twentieth it has practically ceased to exist. But for his enthusiasm for the religion of humanity Bridges might have been a great historian, a great sociologist, a great doctor, or even perhaps a great administrator. As it was, Mrs. Liveing is forced to confess that the man "has not been forgotten, he has never been discovered." Bridges was a man of catholic interests, as his writings show. His *France under Richelieu and Colbert* made S. R. Gardiner deplore the sacrifice of a great historian to the Local Government Board. His work for improved Poor Law hospitals and for the control of ophthalmia and small-pox might have made the Local Government Board deplore his absorption in international politics. His views on dominion home rule, on China, and on Ireland, though really a part of his religious philosophy, might have made the internationalist and the League of Nations enthusiast of to-day jealous of his devotion to Positivism. It was this versatility and intense interest in many sides of life which caused the failure of Bridges to attain the eminence which his brilliance and accomplishments deserved. Yet who shall say that he was in any way less happy a man for that? His love of poetry, his powers of conversation, the devotion of his relatives and friends, and the knowledge of much sound work accomplished—surely all these things must have given peace and contentment to his mind. And added to this he had the satisfaction of faith in a religion of which, in England, he was in truth the spiritual head. Mrs. Liveing's study is a pleasing tribute to the memory of a great and noble, if little known, character.

#### SMALL-POX AND COMMERCE.

Dr. H. E. YORNG, provincial health officer of British Columbia, in the annual report of his department for the year ended June 30th, 1926, discusses the recent prevalence of small-pox in and around Vancouver, the chief commercial city of the province.<sup>2</sup> In the face of very active propaganda in Vancouver and in the capital city of Victoria, he and his colleagues managed to secure vaccina-

tion of 60 per cent. of the school children. This, with the large number of people who had been vaccinated during the war, and also those who realized the value of vaccination, placed the Provincial Board of Health in a much better position, with the result that there were only 98 cases in the period under review, compared with 1,014 in the previous year. In 1925 the United States insisted that all persons travelling south from Vancouver must show evidence of recent vaccination. The serious effects of this prohibition were not at first appreciated by the business world of the city. But its removal brought about a remarkable change in public opinion. "They realized in terms of money what the ban had meant, and they went to the other extreme and asked that the Provincial Board of Health would enact regulations that would prevent the employment of anybody unless they were vaccinated." Although this was asking too much, the Board has already gone some way in the right direction. Before the ban was raised it had urged upon the large mining interests in British Columbia the need for insisting that their employees should be vaccinated, and met with a ready and favourable response. Following this it approached the officials of the Canadian Pacific Railway, pointing out that their employees were probably more exposed than any others to small-pox, because they were in constant touch with the public and in greater danger of carrying the disease. The C.P.R. finally agreed to instruct its heads of departments that applicants for any employment which brings them into direct contact with the travelling public must either undergo vaccination or produce a certificate of successful vaccination within the preceding twelve months. Encouraged by this success, the Board persuaded the manager of Western Lines of the Canadian National Railway to take corresponding action. "We think," writes Dr. Young, "that this has been one of the greatest advances that we have made along the lines of preventing disease. The fact that these two large companies, the largest employers of labour in Canada, have made this ruling will be an argument hard to answer when other employers are approached."

#### INTERNATIONAL TUBERCULOSIS STATISTICS.

THE Health Organization of the League of Nations appears to have set Dr. S. Rosenfeld of Vienna a Sisyphean task in the preparation of a report on an international investigation of tuberculosis statistics. No sooner does Dr. Rosenfeld roll his ponderous statistical stone up the hill on a set of rails made in Germany, than down it comes again at the impetus of a fallacy manufactured in England or Japan. Dr. Rosenfeld thinks that international statistics of tuberculosis mortality, though still far from exact, do not prevent us from following the variations in mortality provided we take the precautions he advises. He hopes that the statistics may give a solid basis for researches tending to the discovery, not only of the causes of variation in tuberculosis mortality, but also of the causes of this mortality. The investigations would be much less difficult if all countries adopted a standard nomenclature, a universal system of death certification, and proper classification, and possessed a properly educated medical profession. At present in many countries deaths are often certified by laymen; and although Dr. Rosenfeld says that "the layman is generally able to recognize pulmonary tuberculosis," and that "tuberculosis is not often overlooked, as the diagnosis is generally easy," we feel that these statements require some qualification. Apart from the difficulties that occur in countries where non-medical persons give certificates of death, trouble arises on the certificates of medical men. Why, he asks, is the death rate in England from acute and chronic bronchitis extremely high, and the tuberculosis mortality extremely low?

<sup>1</sup> *A Nineteenth Century Teacher*: John Henry Bridges, M.B., F.R.C.P. By his Niece, Susan Liveing. With a preface by Professor L. T. Hobhouse, and an introduction by Professor Patrick Geddes. London: 1. Portrait. 10s. 6d. net.  
<sup>2</sup> See BRITISH MEDICAL JOURNAL, August 1st, 1925, p. 229.

Dr. Rosenfeld's answer is that there must be a transfer, intentional or not, from one group to another. He urges that in reporting meningitis, pleurisy, pericarditis, peritonitis, etc., the physician should be required to add the words "tuberculous" or "non-tuberculous." Dr. Rosenfeld is of opinion that the establishment of State insurance systems has introduced a fallacy into statistics, at all events in countries where notification of the cause of death is not confidential, as it is in Switzerland. He believes that out of consideration for the memory of the deceased, or of the susceptibilities of his family, or in order not to admit an error of diagnosis, the physician certifies the cause of death of an insured person as "chronic bronchitis" instead of tuberculosis. Dr. Rosenfeld dwells also on difficulties due to the interpretation of terms in death certificates. According to him, in England the words "primary" and "secondary" on certificates of death indicate the relative importance of the diseases, whilst in Germany the corresponding terms indicate only the order of succession. In making this statement he may find some justification in the writings of some of those who have previously dissented the point, but it may be well to recall the exact definition of "primary" given on English death certificates—"the disease which initiated the train of events leading to death, and not a mere secondary, contributory, or immediate cause, or a terminal condition or mode of death." We gather that Dr. Rosenfeld thinks that Virchow's pathological classification of diseases according to their localization, instead of according to their etiology, has prolonged certain errors in the records of causes of death. This does not prevent Dr. Rosenfeld from advocating a classification of tuberculous diseases according to their localization, though how he proposes to decide that tuberculosis of the lymphatic glands or of the genito-urinary system has not arisen from pulmonary tuberculosis, or vice versa, we have no means of deciding. Anyhow, though many of Dr. Rosenfeld's statements are interesting, we are by no means certain that they are of much practical value under the present chaotic system of death certification in the various countries he deals with. What we are certain about is this: that if the Health Organization of an important body like the League of Nations thinks a report worth translating into different languages, it should employ translators who can reproduce the ideas in the language appropriate to each country, and not incommode the reader by following too slavishly the phraseology of the author.

#### SILICOSIS IN POTTERS.

THE General Council of the Trades Union Congress asked the Secretary of State for Home Affairs in 1925 to take steps to schedule "potter's asthma," or silicosis, as an industrial disease under the Workmen's Compensation Act. The disease, however, could not be dealt with under this Act, but only by special powers obtained under the Workmen's Compensation (Silicosis) Acts of 1918 and 1924. Before deciding to apply these powers it was thought well to establish the facts as to the incidence of the disease; and an investigation has been carried out by Dr. E. L. Middleton, medical inspector of factories, with the help of Drs. C. L. Sutherland and S. Bryson, and of Dr. A. H. John of Stoke-on-Trent as radiologist. Their report<sup>1</sup> has now been published by the Home Office. For those who do not live in the Potteries the report seems in need of a glossary. Few people resident elsewhere will, we imagine, understand such terms as "slipmakers," "jiggerers," "jolliers," or "sagger makers." The observers are of opinion that silicosis exists in the workers in the pottery

industry to a very considerable degree, and they give a list of occupations practised in pottery work in which there is risk of the disease. We are left, however, to infer that the observers think a compensation scheme is desirable; we are only told that modellers, mouldmakers, and red marl workers, if subjected to special regulations, might be excluded from a scheme. Some interesting facts have been elicited by the investigation. Thus silicosis has been found, not only amongst those exposed to the inhalation of dry flint dust, but also in occupations such as the manufacture of earthenware, in which sand is used instead of flint; in flint-milling processes, in which the material is wet; and also in processes of manipulating the ware in the clay state before firing. Uncombined silica in the form of flint or quartz is the more important factor in causing serious respiratory disease in the industry. It appears that fibrosis of the lungs has been frequently diagnosed by medical examination earlier than silicosis has been found by radiological examination in the same occupational group. Apparently the great majority of cases were found to occur after twenty years' employment in the industry. In the report this assertion is followed by the statement: "It is significant that in the occupation where the incidence of silicosis is high it becomes evident at an early stage in the occupational history of the workers. This feature may be regarded as a true measure of the severity with which silicosis is likely to occur under given conditions." It is not clear whether this is meant to imply that silicosis in the Potteries is not a severe disease: the report gives no indication. Dr. Middleton writes that the report "should command the respect alike of those concerned with the conduct of the industry and of medical authorities who are interested in the health aspect of the subject"; nevertheless, we rise from its perusal without having acquired any precise idea of what it is thought ought to be done to remedy these disabilities to which it calls attention.

#### WEEK-END TUBERCULOSIS CONFERENCE.

A TUBERCULOSIS week-end has been arranged by the Tuberculosis Society and the Society of Superintendents of Tuberculosis Institutions from November 19th to the 22nd. Dr. Strandberg, of the Finsen Institute, Copenhagen, will read a paper on the first day, at 5 p.m., at the house of the Royal Society of Medicine, on treatment by heliotherapy and artificial light of tuberculosis, with special reference to laryngeal disease; the discussion will be opened by Sir St. Clair Thomson and by Mr. Somerville Hastings. This meeting will be followed by a dinner at 7 p.m., and in the evening a discussion will be held on Memorandum 37/T of the Ministry of Health. On November 20th excursions will be made to various sanatoriums and hospitals. A clinical demonstration will be given by Dr. L. S. Brerell on the morning of November 22nd at the Brompton Hospital, and this will be followed by lunch at the Welbeck Palace Hotel, where guests from foreign countries will be entertained. In the afternoon Dr. P. F. Armand-Delille of Paris will read a paper on the diagnosis of bronchiectasis and lung cavities by intratracheal injections of lipiodol. This paper will be illustrated by cinematograph films, and the discussion will be opened by Dr. F. G. Chandler. After tea Dr. George Schroder, medical director of the New Schöenberg Sanatorium, Würtemberg, will give an address with epidiascope illustrations on specific stimulant therapy and protective inoculation measures; the discussion will be opened by Dr. H. Hyslop Thomson, medical officer of health for Hertfordshire. Visitors interested in these discussions and excursions are cordially invited; further information may be obtained from Dr. J. R. Dingley, Darvell Hall Sanatorium, Robertsbridge, Sussex, or Dr. F. J. C. Blackmore, Tuberculosis Dispensary, Plumstead, S.E.18.

<sup>1</sup> Home Office report on the incidence of silicosis in the pottery industry. H.M. Stationery Office, or through any bookseller. Price 1s. 6d. net.

## Union of South Africa.

[FROM OUR CORRESPONDENT IN CAPE TOWN.]

MEDICAL ASSOCIATION OF SOUTH AFRICA (BRITISH MEDICAL ASSOCIATION), CAPE WESTERN BRANCH.

THE annual dinner of this Branch was held at Sea Point on September 29th. The occasion was noteworthy as being the first social function to be arranged by the Branch since assuming its new designation, and a company of close upon a hundred sat down. Dr. D. H. Wessels, president of the Branch, presided, and had on his right the mayor of Capetown, Mr. W. F. Fish, and on his left the chairman of the Cape Hospital Board, Mr. M. C. Vos, who is also mayor of the neighbouring township of Wynberg. Among other guests present were Mr. T. Lindsay Sandes, president of the Southern Peninsula Medical Society, and Mr. H. J. Barclay, president of the Dental Society of the Western Province, while not a few members entertained personal friends. After the customary loyal toasts had been proposed and duly honoured, Mr. M. C. Vos proposed the toast of the evening, "The Medical Association of South Africa (British Medical Association)." He heartily congratulated the medical profession on its newly obtained unity, and emphasized the point that from now onwards, on all matters pertaining to the public health and to its own interests as well, the profession could speak with one voice. The consummation of that very desirable ideal, the solidarity of the medical profession, was in large measure the direct result of the visit of Dr. Alfred Cox, Medical Secretary. In dealing with the Cape Hospital Board, a body which, rightly or wrongly, had fallen into disrepute both with the profession and the public, Mr. Vos foreshadowed that, with the reorganization about to be brought into effect, whereby the Board would be reduced in membership to exactly half of what hitherto had been its number, greater efficiency would be attained. In responding on behalf of the Medical Association of South Africa, Dr. Wessels thanked Mr. Vos for his good wishes, and called on Dr. C. L. Leipoldt, who, in a most admirable speech, drew attention to the fact that in the process of amalgamation both the British Medical Association and the South African Medical Association had made no little sacrifice. The toast of "The Medical School of Capetown" was given by Mr. H. A. Moffat, who pleaded for closer co-operation between the members of the university staff and the profession in general, and advocated the appointment of more of the younger men to subordinate posts on the teaching staff. Professor W. A. Jolly, dean of the Medical Faculty, replied in a speech brimful of dry humour, but dealt with Mr. Moffat's criticism in a serious vein, asking that more leniency be shown to a school of such recent birth. Dr. Royden Muir was allotted the privilege of proposing the health of the guests in a neat speech, to which Mr. Fish and Mr. Barclay responded. Thus ended a most successful function, which was thoroughly enjoyed by all present.

### PLAGUE MEASURES IN THE CAPE PROVINCE.

Reference has already on previous occasions been made here to the incidence of plague, more especially in the Transvaal and the Orange Free State, and to the investigation of the carrier problem, which is being carried out conjointly by the Department of Public Health and the South African Institute for Medical Research. In the Cape Province, plague infection in veld rodents is known to have existed in the Kenhardt district for some two years, and from time to time warnings have been issued that the disease in man might show itself south of the Orange River, the northern boundary of the north-western districts of the Province. Quite recently plague-infected rodents have been discovered in a more southerly direction—namely, the Williston and Calvinia districts, extending as far as a point some miles north of Nieuwoudtville. The first report of a suspected case in man in this area was made on June 11th last, and coincidentally suspected mortality among field rodents was recorded in the same tract of country. Since then further cases among human beings have occurred, and so menacing has the situation

become that a plague survey in the infested area has been instituted by the Department of Public Health. Dr. F. C. Willmot, assistant medical officer of health for the Union, has been actively engaged during the last few weeks in investigating what natural barriers exist to the southward, and how they may be utilized in any scheme directed to the prevention of the spread of infected rodents. There is a grave risk that enzootic infection in veld rodents may spread to the Van Rhynsdorp and Clanwilliam districts, and thence further south along the coastal belt through the areas of Piquetberg and Malmesbury to the Cape Peninsula. So far, however, no evidence of infection has been found in the Van Rhynsdorp and Clanwilliam districts. The north-western districts, to which reference has been made, are known to be heavily infested with the Namaqua gerbillo and hares. In three of the recent cases in man the patients are said to have eaten or handled dead hares. The results of the plague survey to date show that useful natural barriers against spread by field rodents to the country south of the Olifants River exist in the Bokkerveld and Cedarberg Mountains and the Doorn and Olifants Rivers with their irrigation canals. The value of such natural barriers lies in the fact that veld rodents, with one or two exceptions, will not cross water, nor are they likely to resort to high-lying ground. The authorities intend to supplement these natural lines of defence by clearing field rodents along a wide belt of country north of the Olifants River.

### A MEDICAL MAYOR.

Very general satisfaction throughout the profession is felt at the election of Dr. P. A. Euvrard as mayor of Malmesbury, one of the most progressive of the country towns, situated in the heart of a fertile grain-growing district some thirty miles from Capetown. Dr. Euvrard, who had previously acted as deputy mayor, has been in general practice at Malmesbury since his return from Edinburgh, where he graduated M.B., Ch.B. in 1907. It is only fitting that his term of office should coincide with the inauguration of the new water supply system, recently officially opened by the Administrator of the Cape Province, a forward step which must prove a lasting benefit and exercise a marked influence for good on the health of the community.

### THE LATE DR. JASPER ANDERSON.

There was unveiled recently, at the City Hospital for Infectious Diseases, Capetown, a tablet to the memory of the late Dr. A. Jasper Anderson, first whole-time medical officer of health to the city of Capetown, who held office for a period of many years, and who, on his retirement owing to ill health in 1923, was succeeded by Dr. T. Shaddiek Higgins. The tablet, which is of marble, with gilt lettering, is let into the front wall of the building on the left of the main entrance, and bears the following inscription: "1901-1923. In remembrance of A. Jasper Anderson, M.A., M.B.(Oxon.), D.P.H.(Cantab.), M.R.C.S., F.R.S.(S.A.), Medical Officer of Health of the City, who conducted this Hospital with marked ability and success." It is fitting, indeed, that the City Hospital should be chosen as the site of such a memorial, for it owes its establishment to Dr. Anderson's initiative, having been taken over by him from the military authorities on behalf of the city council, and having been his very special care for many years. Mrs. Councillor Walsh, chairman of the public health committee, in asking the mayor to unveil the tablet, said that it was to the memory of one of their most faithful and loyal servants, who had left behind him a record which was an example to all who were attempting to follow in his footsteps. The British Medical Association, Cape of Good Hope (Western) Branch, of which the late Dr. Jasper Anderson was a past president and one of its staunchest supporters, was represented at the ceremony by Mr. Cecil E. Jones-Phillipson, himself a past president and a member of council.

### NATIONAL AMBULANCE AND NURSING COMPETITION.

The annual competition in ambulance work and nursing organized by the South African Red Cross Society and the St. John Ambulance Brigade took place at Bloemfontein on October 1st and 2nd in the Rambler's Hall, where some hundred competitors paraded on the first day to take part



in the tests. The silver shield presented as a trophy by Earl Selborne in 1907 was won by the Pretoria Railway division, who scored 244½ marks out of a possible 310. The silver shield presented for competition to the nursing section by Dr. Bennis Hewat of Capetown was won by the Johannesburg Railway nursing division with a score of 251 out of 300. Thus both the honours of the first day went to the Transvaal. On the second day ten teams in the men's ambulance section competed for a trophy presented by the Central Mining and Investment Corporation, Ltd., being representative of the four provinces and Rhodesia. The test was to treat a man who had fallen from a balcony and had sustained a compound fracture of the left femur. The upper portion of the broken bone protruded from the flesh, and there was severe haemorrhage. In the nursing section the teams which competed for the Lady Hoy silver rose bowl were asked to treat a woman who, in an epileptic fit, had fallen on a stove, severely burning her face and sustaining a compound fracture of the left wrist.

At the annual meeting of the Central Council for South Africa of the Order of St. John of Jerusalem, presided over by Mr. Alpheus F. Williams of Kimberley, reference was made to the Salt River railway disaster, which occurred in June, 1926, at which most excellent work was performed by the railway members of the St. John Ambulance Brigade. A letter was read from a surgeon who was present at the accident, in which he remarked that he had never seen such efficient first-aid work; within forty minutes of the occurrence of the disaster all the injured, to the number of over fifty, had been treated and removed to hospital or their homes. In regard to development a number of new divisions of the St. John Ambulance Brigade have been formed, so that there are now seventy-two divisions and three sections of a division in the Union, and one division in Rhodesia. The translation of the St. John first-aid textbook into Afrikaans had been completed, and the first edition would soon be ready for issue.

#### UNIVERSITY OF CAPE TOWN: COMMEMORATION DAY.

The annual commemoration day of the University of Capetown took place on September 24th; it was celebrated by an at home given by Principal Sir Carruthers and Lady Beattie at the New University site, Groot Schuur. It was favoured by fine weather, and was attended by a large number of distinguished guests, who were received by the host and hostess on the lawn in front of the old summer house, where tea was served in the open to the accompaniment of music provided by the band of the Defence Force. The New University tennis courts, which number fifteen, were formally opened; they are built in terraces on the sloping ground, which rises gradually from the back of the principal's residence to the level of the university site proper, and should suffice for the requirements of tennis-loving students for many years to come. The opening ceremony was performed by Mr. Justice F. E. Watermeyer, a past student of the South African College, from which the university has developed. After the opening of the courts a match was played between teams representing the present students and the staff, together with past students; the result was a substantial victory for the older generation.

## England and Wales.

#### UNIVERSITY OF DURHAM COLLEGE OF MEDICINE, NEWCASTLE.

SIR THOMAS OLIVER, M.D., has been elected to succeed Sir David Drummond, M.D., as president of the University College of Medicine at Newcastle, and, as is customary, has been made also vice-chairman of the Court of Governors. Sir David Drummond has been a member of the council of the college for forty-seven years, and became president in 1918. His retirement from office is due to his home being now at a considerable distance from Newcastle. He will remain a member of the council. Members of the British Medical Association will recall that Sir David Drummond was President of the Association in 1921, at a time when his official duties included also the Vice-

Chancellorship of the University of Durham. A further change in the personnel of the college is taking place through the resignation of the honorary treasurer, Dr. Cecil Cochrane, after eighteen years' service. In that period the income of the college has increased from less than £10,000 to more than £30,000, while assets of £50,000 or £60,000 have grown to nearly £140,000. The year's deficiency of £487 has brought the total deficit in the working of the college to £2,111; but it is hoped that with improvement in industrial conditions the financial position will become better.

#### TUBERCULOSIS IN LANCASHIRE.

The economic and diagnostic value of the x-ray installations in each of the five tuberculosis dispensary areas of the administrative county of Lancashire is emphasized by the central tuberculosis officer (Dr. G. Lissant Cox) in his annual report for 1925. By frequent screen examinations and taking skiagrams during the course of the disease the tuberculosis officer becomes skilled in their interpretation, and early cases of infection are detected with greater facility and certainty. Help in determining the suitability of patients for institutional treatment is similarly available, and expense is thus reduced. An account of the radiological work during the year is contributed by Dr. J. Logan Steward, and, illustrated by radiograms, shows how effective this method of diagnosis has proved to be in the examination of contacts and in estimating the extent and nature of the disease. One interesting fact revealed by this routine radiological examination is that acute spontaneous pneumothorax, with partial collapse of the lung, is not uncommon in cases with pleurisy, the condition persisting only for a short time and expansion of the lung being completely restored. Research work has also proceeded with reference to the fate of young children of tuberculous households, comparison of home and sanatorium treatment, the circumstances attending the failure and lateness in notifying cases of tuberculosis, the proportion of cases diagnosed primarily by x-ray examinations and subsequently confirmed clinically, and the types of lamps and carbons most suitable for treatment by artificial light in dispensaries. In the last particular the long-flame carbon arc has so far been found to be the most effective, with the addition of a mercury vapour lamp for local treatment. During 1925 experimental artificial light centres were established at two dispensaries, and early in 1926 mercury vapour lamps were installed in Elswick Sanatorium and the Rufford Pulmonary Hospital. Dr. Lissant Cox gives reasons for disagreeing with the present tendency to reduce the size of the administrative areas in England and Scotland; he maintains that large units are necessary if provision is to be made for the adequate hospital, laboratory, and radiological accommodation, which, with well staffed dispensaries, should be co-ordinated in a really effective scheme for preventing as well as treating tuberculosis. To this may be added the important point that in larger areas the trial of new remedies can be made on a sufficiently large scale to be valuable, and overlapping of different authorities is avoided, while the proportion of cases notified is increased. Dr. Lissant Cox believes that it is impossible for a tuberculosis officer to become a real clinical expert if he is to deal with a population of under 150,000, taking on other kinds of work in addition. The average population of each of the five large dispensary areas in Lancashire is nearly 350,000. Another indication of the value of such concerted work on a large scale is afforded by the fact that the death rate for pulmonary tuberculosis per 100,000 of the population, which was 107 in 1918, has fallen almost steadily since then, and in the year under review reached the record low figure of 67. There are now eighteen voluntary care committees at work in the county covering a population of nearly 1,800,000. Co-operation with sanitary authorities and medical practitioners is very close, and the latter continue to send more than three-quarters of their patients to dispensaries for examination prior to notification. Dr. Lissant Cox mentions the need for better education of the public with regard to the symptoms and dangers of tuberculosis, and advocates instruction of the older school children in elementary hygiene and the laws of health.

## CENTRAL MIDWIVES BOARD.

The Central Midwives Board for England and Wales held a penal session on November 4th. Sir Francis Champneys, Bt., presided. In reply to a request for advice from the Joint Nursing and Midwives Council for Northern Ireland, the Board expressed the opinion that the fact that medical help became necessary to apply forceps did not prevent a case being counted to a pupil, provided that the pupil had made abdominal and vaginal examinations. The Board considered, however, that cases of Caesarean section should not count to a pupil. Dr. Harrison, resident medical officer, was approved as a lecturer to pupil midwives at Bagthorpe Infirmary, Nottingham, for six months pending the arrangement of a scheme with the authorities of the Collin's Trust Maternity Home, for the delivery of a single course of lectures in Nottingham. The report on the work of the Board for the year ending March 31st, 1926, was amended and approved, and signed by the chairman and secretary for transmission to the Ministry of Health.

## THE MEDICAL MAYOR OF EXETER.

The new Mayor of Exeter, Mr. Ransom Pickard, is a distinguished member of the medical profession. After studying at St. Bartholomew's Hospital he graduated M.S.Lond. in 1892, and M.D. in 1893, having obtained the diploma F.R.C.S. in the previous year. He commanded the 1st Wessex Field Ambulance from its formation until July, 1917, when he became A.D.M.S. of the 48th South Midland Division, holding this post until demobilization in April, 1919. He landed in France with the 8th Division in November, 1914, and left France for Italy with the 48th Division in November, 1917. He was engaged in repatriating prisoners of war from Bavaria and the Tyrol during the winter of 1918-19. He was mentioned in dispatches five times, and obtained the Mons star and the Italian Croco di Guerra. For his distinguished services he was awarded the C.B. and the C.M.G. For several years Mr. Ransom Pickard has been a member of the South-Western Branch Council of the British Medical Association; he was vice-president of the Section of Ophthalmology at the Annual Meeting in 1923, and he is a member of the central Ophthalmic Committee.

## Scotland.

## INFLUENCE OF FOOD ON HEALTH.

THE sixth annual conference of the Scottish Council of Women Citizens' Associations was held at Dumfries on October 30th. Lady Leslie Mackenzie, chairman of the council, presided, and Dr. Chalmers Watson (Edinburgh) gave an address on "Diet and sunshine," in which he said that the best results in regard to prevention of disease could only be obtained by intelligent co-operation between the educated public and the medical profession. He referred to the remarkable evolution in recognition of disease conditions which had taken place in the last twenty or thirty years, and expressed the belief that many diseases now commonly recognized as adenoids, appendicitis, pyorrhoea, and neurasthenia were largely dependent on changes that had taken place in diet. There had been a gradual diminution in the consumption of natural foods, which had been replaced by foods prepared or preserved by methods which interfered with their nutritive value. He believed that medical treatment required by children of middle-class families, which commonly involved operations for removal of adenoids, later for appendicitis, and later still regular dental attention for the development of trouble in the teeth, was directly due to the parents' ignorance of the fundamental laws of sound nutrition. The nation, he believed, had departed a long way from the system of nutrition which had reared in the past a race that was physically and mentally virile. In the past twenty years the nutritive value of bread had been enormously impaired by artificial methods of treatment in response to the public demand for a white bread. The consumption of oatmeal, which formerly entered largely into the national dietary in Scotland, had fallen. The amount of milk consumed

per head was very far behind the figure in America and Denmark. He believed that for the early periods of growth pure milk supplied from tuberculin-tested cows was the most valuable foodstuff available, and that its greater use could be advantageously extended to the young adult. At the present day large sums of money were annually spent in the purchase of proprietary milk foods, which were both more expensive and less valuable than the natural product. Most of the diseases of old age, also, he held to be preventable. At a later stage of life neurasthenia, rheumatism, high blood pressure, and kidney or heart disorders, and later still premature old age, were largely due to a defective system of feeding and drinking. It was important, too, to remember that sunshine entered largely into the formation of good milk as well as into the composition of vegetables and fruits, which could advantageously be eaten raw. Dr. Livingston, Convener of the Public Health Committee of Dumfries Town Council, emphasized the point with regard to the necessity for proper care of the teeth in the prevention of disease. He believed that if Robert Burns were alive to-day he might have modified his grace before meat to read:

"Some ha'e meat an' canna eat,  
An' some would eat that want it,  
But we ha'e meat and we can eat,  
God gi'e us teeth to munch it."

Dr. Joseph Hunter, M.O.H. for Dumfries, said that dietetic reforms had made less impression on the general public than was desirable, largely because there were so many faddists and cranks in regard to what ought and ought not to be eaten. Common sense should be applied to this matter, and articles of diet found unsuitable for individuals should be withdrawn from the daily diet. Mr. Allan W. Ritchie, chief sanitary inspector, Edinburgh, in a paper on food handling, urged that cleanly practices were necessary in every aspect of food supply, from the place of production to the home of the consumer. Progress had been made in regard to bread by the provision of many hygienic bakeries, but in the generality of bakeries there was still need for a higher standard. A system of medical examination of persons employed in certain sections of the food industry was urgently required. The exposure of food in shop windows and on counters and shelves, although intended to attract customers, should arouse repulsion, owing to the possibility of contamination by dust and flies, and shops connected directly with dwelling-houses were unsuitable. He thought that improvement could be achieved both by education and by legislation. The conference passed a resolution urging upon the Scottish Board of Health that local authorities should be provided with further powers to control by registration, regulations, or inspection all places where food is produced, sold, stored, and distributed.

## DAIRY RESEARCH.

At a special meeting of the governors of the West of Scotland Agricultural College, held in Glasgow on November 1st, the proposal of the Secretary of State for Scotland for the establishment of a dairy research institute for Scotland was considered. An offer was made about a year ago by Mr. John M. Hannah of Girvan to give a portion of the estate of Auchincruive, Ayr, including a mansion house, to the governors of the college, for the purpose of an agricultural college and dairy school. The offer, however, involved the transfer of the college in Glasgow to Auchincruive, and the governors, therefore, had rejected it. In the interval the offer had again been made to the Secretary of State for Scotland for the purpose of furthering agricultural education and research in the south-west of Scotland, with the special view of affording courses in agriculture and dairy research. At a meeting of representatives of the University of Glasgow and the Agricultural College on October 13th the Secretary of State had expressed the view that a dairy research institute should be promoted in the West of Scotland, that it should be in close relation to the Agricultural College, although under its own governing body, and that the estate of Auchincruive was suitable for such a research institute, where courses on dairy management might be given. A committee of the college had pointed out that Kilmarnock

was the recognized dairy research centre in Scotland, just as Reading was in England, and appeared to deprecate the formation of another dairy research institute largely independent of the College of Agriculture. It proposed the setting up of a joint university and college committee to carry out the work, but suggested that, subject to suitable arrangements being made, the college department now located at Kilmarnock might be transferred to Auchincrive. It was decided to defer consideration of the question.

#### DUNDEE EYE INSTITUTION.

The report presented to the annual meeting of the Dundee Eye Institution showed that 3,730 patients had been treated during the year—2,929 from Dundee and the remainder from a wide district in the surrounding country. During the ninety years of the institution's existence over 139,000 cases in all have been treated. Each patient made on the average about five visits to the institution during the course of the year. Greater financial assistance from country districts was needed; one district which had sent about seventy cases to the institution had contributed only 7s. 6d. There was a credit balance at the end of the year of £69.

#### GIFTS TO GLASGOW ROYAL INFIRMARY.

The gift of an area of land to the Glasgow Royal Infirmary by Mr. James Macfarlane, LL.D., one of the directors, and his brother, Mr. George W. Macfarlane, on which an auxiliary convalescent hospital is to be erected at Canniesburn, was announced some time ago. The donors have now arranged to present a still more extensive area, in the belief that future developments might make a larger site desirable. To the twenty-two acres previously given, nine and a half acres have been added, and the whole of the feu duty and other annual payments is to be redeemed by the donors. Towards the cost of building the auxiliary hospital, Miss Clark, a Glasgow lady, has given £10,000 in memory of her father, Dr. Samuel Clark. The building fund now amounts to £23,500.

## Ireland.

#### CRIPPLED CHILDREN.

DURING a recent visit to Dublin Sir Robert Jones addressed several meetings in connexion with the problem of the crippled child. He expressed his approval of the proposal to co-ordinate the various cripple institutions in the country, and said that the first thing to do was to ascertain the number of patients that would have to be dealt with. Where a census of cripples had been taken, as in America and some other countries, it had been found that there were five cripples to every thousand persons. If that ratio held in the Irish Free State it must contain 12,000 or 14,000 cripples. The chief diseases that caused crippling were tuberculosis and rickets. In addition there were the cases of congenital deformity and deformity produced by injury. In England at the present time cases of infantile paralysis were occurring in fairly large numbers, but there had been a serious epidemic in America which had produced 13,000 deaths; 25 per cent. of cases of deformity were due to rickets, and about 50 per cent. to tuberculous disease. About 50 per cent. of the cases of tuberculosis of the bones and joints were to be traced to milk, and about 30 per cent. to direct contact with the human consumptive. In England it had been found that one out of ten specimens of milk examined contained living tubercle bacilli. It was absolutely essential that there should be some real strict supervision, municipal or other, of the milk that was brought into every city. That supervision should be so effectual that it would be impossible for a dirty dairyman or a dirty cow to infect the children. It should be possible to prevent the conveyance of infection from a consumptive to his child or relatives. Sir Robert Jones went on to say that he had visited the Dublin hospitals and thought the work done there was absolutely splendid, but the conditions under which the surgeons in

them worked were really almost pathetic. The surgeons and physicians were struggling to make the best of a bad machine. These children's hospitals ought to be got out into the country. Little hospitals, with five or six beds, supervised by men who knew how to treat crippled children, should be started in the country, where the sun would get fair play. In England the cause had no better friends at present than the Minister of Health and the Minister of Education, not because of agitation, but because a good example had been set by voluntary effort. When the country hospitals were established in the Free State it would be possible to set up small after-care centres. In an address in the National Children's Hospital Sir Robert Jones said that in visiting a hospital like that, which had for long held a high reputation, it was sad to see the work being carried on in drab surroundings. The fact that there were from 12,000 to 14,000 attendances a year showed the tremendous amount of work being done. During investigations made many years ago he had found that out of a thousand cases of rickets 95 per cent. were due to mothers not suckling their babies. In twenty-two counties in England where sunlight hospitals had been tried it was found that sunlight and fresh air had been the salvation of the cripples. It was not necessary to go abroad to get sunshine, as with the ultra-violet rays cases could be treated during the winter months. Sir William de Courcy Wheeler, in proposing a vote of thanks to the lecturer, mentioned that three-fourths of the hospital's patients were cripples or potential cripples. It was melancholy to think that, although they did their best, it was almost impossible in the present conditions to carry on effective work with the hospital situated as it was. It had been resolved unanimously to move the hospital from Harcourt Street at the first opportunity. The Government in Ireland, he said, was thoroughly sympathetic with that voluntary movement; but the State could not be expected to do anything until the volunteers showed the way. Then the State would come to their assistance. Cappagh had set a good example, and was probably the best modern open-air hospital. The Governor-General, who presided, said that in coming to Dublin Sir Robert Jones had performed a noble act of charity. The intention to move to the country was one that would attract widespread attention. The motion was passed with acclamation. In proposing a vote of thanks to the Governor-General, Sir William Taylor said, with regard to the removal of that hospital to the country, that he felt the need for the amalgamation of another hospital doing similar orthopaedic work in the city. The move could not be made without money, and amalgamation with another hospital that dealt with crippled children on similar lines would encourage the public to help.

#### ULSTER MEDICAL SOCIETY.

At the second meeting for the session of the Ulster Medical Society, on November 4th, the President, Dr. M. J. Nolan, read his opening address on "Insanity: its protean aspects in relation to bodily disease." Dr. Nolan said that in his early days he had had experience of general practice which had been of great value to him when he became an alienist; it showed him the many relations between insanity and bodily disease, and how the two departments were constantly coming into contact with each other; in 159 consecutive admissions to the Down District Asylum nearly every one required some physical attention. The experience also pointed to the principle that an asylum was a hospital to treat body and mind. No scientific definition of insanity had been generally accepted, but, for himself, he had adopted that of Mercier in 1890, which was that insanity is a disorder of the process of adaptation of the individual to his surroundings; psycho-pathology must give, not merely a description, but an explanation of the bases of mental disorder. Dr. Nolan then showed some charts of the physical causes of insanity, as given on admission by patients, and pointed out that there were more contributory than primarily causative factors. The most frequent was heredity; it did not produce insanity, but a neuropathic tendency might lead in many directions—for example, to tubercle, exophthalmic goitre, as well as to insanity. The head of the sperm cell, with all its inherent

potentialities, was the greatest marvel in creation. Preventive measures in the propagation of the unfit dealt with the parents, and did not remove atavistic recurrences in apparently healthy parents. Prolonged mental stress, tubercle, alcoholism, syphilis, heart disease and cardiovascular affections, sexual excess, the practice of contraception, the climacteric, sexual deprivation, were then described in order and their relative importance considered; numerous illustrative cases were related, especially that of an alcoholic father and a weak-nerved mother, who had eight children, many of whom suffered from Friedreich's disease, while the others were more or less weak-minded. The duty of the alienist was to get as full a knowledge of the patient, body and mind, as possible; thus only would he discharge his duty to the patient and to the public. Some important principles of treatment were emphasized, and the evils that might be caused by psycho-analysis carried out by those not properly equipped and trained were mentioned. Colonel Dawson proposed a hearty vote of thanks to the President for his address, and congratulated him on the large and liberal views expressed; this was seconded by Dr. Calwell, and passed with acclamation.

#### TUBERCULOSIS MORTALITY IN DUBLIN.

Mortality from tuberculosis has been reduced considerably in recent years in Dublin. Earlier diagnosis, better treatment, and greater care exercised by the patients to prevent infection have contributed to this condition. The very high death rate, however, is sufficient to impress the necessity for still greater effort to stamp out the scourge. In Dublin the mortality from tuberculosis in the past ten years has shown a great decrease (more than 50 per cent.), as the following table shows:

All forms. Pulmonary.			All forms. Pulmonary.		
1916 ...	1,390	1,065	1921 ...	749	583
1917 ...	1,371	1,058	1922 ...	738	574
1918 ...	1,163	896	1923 ...	666	507
1919 ...	999	738	1924 ...	623	505
1920 ...	820	615	1925 ...	664	515

The present scheme for the treatment of tuberculosis in the county borough of Dublin only commenced in 1913. The number of cases occupying (with family) one, two, or three or more rooms was: one room, 746; two rooms, 319; three rooms or more, 229. This shows the effect of bad housing on the spread of the disease. Notifications of the disease decreased between 1916 and 1923, but in 1924 and 1925 there were sharp increases. The figures were:

1916 ...	750	1920 ...	583	1923 ...	505
1917 ...	761	1921 ...	527	1924 ...	701
1918 ...	814	1922 ...	511	1925 ...	690
1919 ...	734				

It is well known that among the poorer class and in congested areas the disease is more prevalent than in the outlying districts, and this is clearly demonstrated by the figures for last year, which show 1.45 deaths per 1,000 in the urban districts, compared with 1.98 in the city. Portions of the north side of the city are, and have always been, the most generally affected.

## Correspondence.

### A MEDICAL ASPECT OF MINERS' SHORTER HOURS.

Sir,—In addition to wages and hours there is another factor in connexion with the strike which seems to have been overlooked: I refer to the human factor, as one which cannot but be of great interest from the medical point of view.

Under the nine-hour day the miners worked steadily and quietly, and always had a reserve of power wherewith to make, if necessary, an occasional spurt: under the eight-hour day that reserve was reduced considerably, whilst under the seven-hour day not only was there no reserve, but at the end of the shift the men (and I refer to the good workers) were exhausted.

Previously the men used to partake of food when underground, but under the seven-hour day they worked the

whole stretch without any stop for food. Even had they stopped, the pace at which they had to work was such that their digestions were likely to suffer. Conditions such as these are not calculated to improve the physical or mental health of the men; in fact, the reverse is the case, as is evidenced by the smallness of the number of colliers at work over 50, compared with the large number of those over 60 who used to carry on under the old conditions.

The men, when they reach the age of about 50, look out for day-work as they cannot stand the strain of piece-work, and, as far as I can gather, this is due to their hearts being more or less seriously disturbed.

That workers in the prime of life and full of working experience should be obliged to give up is a matter of great national and economic importance, and should be properly investigated. Collected data showing whether or no there is an increase of heart trouble in colliers, and more particularly in those over 50, during the last ten years would be invaluable. Personally my experience is that colliers' hearts are not so good as they used to be, owing to the speed at which they work. It would also be interesting to know if this pace has something to do with the greater nervous upset of the men, as shown, for example, by the increasing number of cases of nystagmus which are brought into court for compensation.

The method of working the coal has altered during the last few years. Formerly a man of 50 (or more) and his son used to work a "heading" together on their own; but to-day a large number of men at the facings work on the conveyer system, and pool their earnings, with the result that the young men are always gibling at their elders because the latter cannot keep up the speed. Under the old system a man could miss a day and make up by a little extra speed on the other days of that week. Under the seven-hour day there is no chance of making up, and consequently no opportunities for getting days off.

All these things have an important bearing on this national industry, and whatever there is of truth in connexion with them should be brought to light, apart altogether from the political aspect of the matter. —I am, etc.,

Swansea, Nov. 2nd.

G. ARBOUR STEPHENS.

### GOOD AND BAD DIETS.

Sir,—As one interested in the diet of children I would like to express my appreciation of Dr. Harry Campbell's letter (October 30th, p. 808). It is very true, as he points out, that we owe a considerable debt to physiologists like Colonel McCarrison for putting the various diet deficiency diseases on a scientific basis. At the same time it must be realized that all their findings boil down to the fact that these diseases are caused by unnatural diet and unnatural circumstances—that is, diet and conditions entirely different from those in which the animal evolved. The experience of zoological gardens bears this out, and it is a fact that the less it is possible to feed an animal or bird in captivity on its natural food, the less will be its chance of survival for any length of time. Another fact that emerges from both animal experiments and the experience of zoological gardens is that the young animal and bird are much more susceptible to an unnatural diet than adults.

The diet on which man evolved is largely a matter of surmise. My own view is that he was very largely carnivorous and lived on the flesh of the beasts he hunted, the birds he trapped, and the fish that he caught, eked out when times were bad with fruit berries, roots, and the like. What, then, was the diet of the pre-agricultural baby? At first breast-fed; as soon as it became mobile this must have been supplemented by the food of its parents, like the young of any mammal in its natural state. The infantile instinct of "putting things into the mouth" is deeply rooted, and no great stretch of imagination is required to picture the Neanderthal baby sitting at the mouth of its parents' cave sneaking the meat off a horse-bone.

How far nowadays is the average well-to-do infant's diet from this, the natural one? I do not refer to those homes in which there are economic difficulties. It may or may

not be breast-fed for a few months. Bottles are then started of prepared cow's milk, with some highly manufactured carbohydrate patent food. At 10 months of age it gets white bread sop, rusks and biscuits added, and at a year vegetables put through a sieve. If lucky, it may get, soon after this, finely minced meat, though this advance is often delayed or a patent preparation of nuts substituted. The shelves of any modern nursery groan with tins of patent malted foods, pre-digested cocoa, patent rusks, patent preparations purporting to contain eggs in a highly digestible form, and curious substitutes for porridge; and the medicine cupboard is laden with bottles of syrup of figs, liquid paraffin, cough mixtures, and the like.

The results are often deplorable, and the physique of many children, whose parents want for nothing, is a disaster. They are nervous, suffer from obscure diseases, attributed to teething, and enlarged tonsils and adenoids are the rule rather than the exception. The remedy is to get back to nature, and as near as possible to the diet on which man has evolved from the ape. Let the baby be breast-fed till it no longer needs it. If this is really impossible the only adequate substitute is fresh Grade A cow's milk diluted suitably. Teach the infant to eat and drink from a cup, not a bottle, as early as possible, and supplement the breast milk with natural foods—fresh meat, fresh fish, fresh eggs, and fresh vegetables and fruit, without prepared or patent foods of any kind. A healthy breast-fed baby will take all the above-mentioned articles of diet well at 7 months of age, and by the time it is 10 months will be able to take all ordinary articles of diet and need only half a pint of milk a day. This is a fact that I have proved many times, and the results are infinitely better than by the older method.—I am, etc.,

Clifton, Bristol, Nov. 6th.

RICHARD C. CLARKE.

SM.—Dr. Harry Campbell suggests that "we can reach an even deeper level of truth concerning human dietetics by studying the diet of the pre-agriculturists" than by studying the diet of comparatively primitive agricultural peoples. In the sacred legends of the natives with whom I am best acquainted—the New Zealand Maori—the cultivators are regarded as improved man, and the hunters as unimproved man. Man is said to be an improved monkey, and the monkeys are termed "ancestral peoples." The diet of these ancestral peoples consists of the "wild" foods of vegetable origin; the diet of the hunters (the pre-agriculturists) consists of "wild" foods of animal and vegetable origin. In Maori philosophy cultivation was beneficial; conquest was deleterious—fatal ultimately to the conquerors. These who could not cultivate the dietetic means of life ultimately lost life itself.

If we take the four races of mankind—the black, the yellow, the brown, and the white—we find that the blacks have mostly remained in Africa; the yellows have mostly remained in Asia; the whites are mostly in Europe, and in recent times in America and Australasia; but the browns have increased and multiplied all over the earth, they form what Huxley termed a "belt of dark-whites." The founders of the British Empire went to so-called new countries, but these new countries had previously been discovered by the dark-whites, and cultivated to a greater or less extent by them.

The diet of these dark-whites consisted mainly of vegetable foods, with fish and bird. These vegetable foods were mainly the aroid roots, sweet potatoes, fern-root, cassava, etc., all of which were grown in terrace, pit, and surface cultivation; with sow-thistle, fern-shoots, etc., used as we use spinach; various fruits and nuts were also eaten. Vegetables as well as fish and bird were smoked and dried. From the Americas across to New Zealand the cereal was maize, roasted and ground, boiled, and sometimes germinated and then cooked. The cooking was a prolonged process of steam-roasting in the ground ovens, and foods—such as bitter cassava—which were unwholesome or poisonous raw were by cooking rendered palatable and nutritious. Purgative leaves or herbs were cooked with binding foods; or sacred earth (ashes or sand) was added.

The sacred legends taught that the bowels were the seat

of health, and that evacuation must occur two or three times a day; otherwise "the inner man" was regarded as out of order. The remedy then was rest from food and the taking of herbal beer (made from the sow-thistle), with exercises specially designed to facilitate evacuation. It is true that the peoples holding these views of life appear to have been "conquered" by the white race, but history and pre-history appear to reveal a succession of such conquerors, with the brown peoples or dark-whites ultimately again in possession in the long slow course of the ages, because the white race can conquer and exploit, but apparently cannot yet create and cultivate, and so ultimately it perishes of the so-called diseases of civilization. Our contact with the native races appears at first to be fatal to them. If they fail to be benefited by our superior accumulations of knowledge doubtless they deserve to perish. But, if we fail to be benefited by their superior wisdom in cultivation, we cannot survive—excepting in the sense that the ancient Greeks and the ancient Romans are still here.—I am, etc.,

ETTIE A. ROUT

(Mrs. F. A. Hornibrook).

London, W.1, Oct. 3rd.

#### THE DEVELOPMENT OF VAGINAL OPERATIONS FOR GENITAL PROLAPSE.

SIN,—I desire to thank Dr. R. H. Paramore for his courteous and thoughtful reply on August 21st (p. 360) to my letter in your issue of August 7th (p. 274), and to tell him that I read both reviews of his volumes of *Statics* when they appeared in the *Medical Journal of Australia*, as well as the volumes themselves, and was struck by the ability with which the subject was presented. It is therefore with much regret that I find myself unable to agree with the statement that the cardinal ligaments, "from their structure—in virtue of their non-striped muscle content—are not capable of sustaining the pressure which during life is continuously tending to depress the uterus." On the contrary, it is in virtue of this very fact, their non-striped muscle content, that they are the main supports of the uterus; and this view is emphatically borne out by Professor A. F. Dixon, as mentioned in my previous letter.

Your other contributor, Dr. J. W. Bride (August 21st, p. 361), cites the work of Cameron and Derry, quoting vaguely from Elliot Smith's article in the *Journal of Anatomy and Physiology* (April and June, 1908). But their work refers only to the pelvic fascia and says nothing whatever about the all-important muscle bundles, which radiate laterally outwards from the neck of the uterus and form the "non-striped muscle content" above referred to. So that, as far as the origin, structure, and functions of the cardinal ligaments are concerned, the work of Cameron and Derry is valueless. Professor Elliot Smith points out that his own work "deals mainly" with the pelvic fascia and the mesodermal sheaths of the pelvic blood vessels and viscera in the male.

Dr. Bride objects to the term "ligament" as applied to the structures under discussion. Perhaps they are not ligaments in the strictly anatomical sense. Neither are the infundibulo-pelvic, the utero-sacral, even the broad "ligaments" themselves, and quite a number of others in human anatomy, but the term is found useful and convenient by the operating surgeon and is justified by custom.

In the paper read by Dr. Fothergill before the Obstetric Section of the Royal Society of Medicine in December, 1907, to which attention is significantly directed, it is stated that the support of the uterus "is accomplished by the fibrous sheaths of the blood vessels and accompanying structures which supply the uterus." In closing the discussion, however, the President of the Section, Dr. Herbert Spencer, with his usual acumen, said that "anyone who had performed a total abdominal hysterectomy . . . would find it difficult to accept the statement that it was the sheaths of the vessels that kept the uterus in place." Probably the same difficulty will present itself to most of your readers.

In conclusion, it remains to be added that, from the facts adduced in this and my previous letter, it may be justly



claimed that the first accurate description of the anatomy of the cardinal ligaments was published by the late Arthur Nynlasy in 1914.—I am, etc.,

FRANK A. NYULASY, M.D.

Melbourne, Australia, Sept. 5th.

#### LEAD AS AN ABORTIFACIENT.

SIR,—Some time ago, in country practice, I had a message from a neighbour asking me to see with him a case of acute abdominal disease. The history was this: A robust young woman (married three months) had had pain in the stomach a few days previously, and again on the day before, when she was first seen. On inquiry her doctor was informed that she was regular every month. Next day she was fairly well till after tea, when she had agonizing pain and urgent vomiting, which continued till I arrived, about four hours later. Nothing definite was made out till rectal examination revealed an enlarged uterus; on vaginal examination it corresponded to a three months' pregnancy, and the state of the breasts confirmed this. Thinking it strange that she had been misleading everyone, I looked at her gums and found a blue line. Morphine followed by a course of mistura alba was successful. She went to full time without any bad result. She never revealed the truth.

Somo years after, in London, I had another case, which may be summed up thus: (1) Colic and vomiting; headache, albuminuria, constipation; (2) blue line on gums; (3) anaemia slight, yet films showed brisk pathological regeneration culminating in punctated erythroblasts and leucoblasts. Such a film is pathognomonic of lead poisoning, and the woman (married with three children) admitted that she had taken lead lotion because she had missed her period. She was very ill for some days, requiring morphine on several occasions. After a few weeks on mistura alba she was quite well. Three months from the beginning of her illness the conspicuous blue line had quite disappeared, the blood film was normal, albuminuria had gone, and pregnancy was well advanced. A small but healthy girl was born six and a half calendar months from the beginning of the illness. As the woman gave every information, I found that she had taken 60 grains of lead acetate in a fortnight.

This case proves that even marked blue lines may disappear within three months of treatment. In a series of cases in 1922 (*BRITISH MEDICAL JOURNAL*, January 20th, 1923, p. 103) I found that in about three months blood films became normal and lead disappeared from the urine. In recent cases, therefore, all three disappear together.—I am, etc.,

Ealing, W.13, Oct. 25th.

ROBERT CRAIK.

#### CLOTHING AND CATARRHS.

SIR,—In the *Daily Express* of November 1st is an article, announced as one of a series by famous physicians, on "Why have a cold?" by Dr. Leonard Williams.

He advocates the avoidance of excessive warm clothing, and I am not concerned with this contention. What interests me is the remarkable hypothesis which he uses to support it. He considers that the respiratory function of the skin is impeded by too much clothing, thereby throwing so much more work on the lungs and "air passages" that they soon "tire" and become liable to microbial infection.

Dr. Williams must be aware that the respiratory function of the skin in man is so small as to be almost negligible. Next there is no reason to suppose that increased respiration by the lungs lowers their resistance—or why do we advise people to take exercise? Lastly, the respiratory function of the skin is undoubtedly increased by hyperaemia and sweating, while ordinary clothes freely permit the interchange of gases so that its respiratory function, such as it is, is presumably increased by warm clothing.

I can only conclude that this hypothesis was introduced to give a scientific flavour to the article, and that it is not one which Dr. Williams would be prepared to maintain seriously amongst medical men, and this is my reason for writing this letter.

In the same newspaper there have recently been articles

by eminent men of science on such difficult subjects as relativity and the structure of the atom. All the writers have shown the utmost care to preserve accuracy of statement in a popular article, and to me the contrast with this sort of thing is most unpleasant.

I think for the credit of our profession that those who are now taking to medical journalism should endeavour to act up to the popular idea that they are also scientific men.—I am, etc.,

Dover, Nov. 3rd.

A. R. JORDAN, M.D., F.R.C.S.

#### MEDICAL PRIVILEGE IN THE COURTS.

SIR,—I was interested in the letter of Dr. L. A. Parry on "Medical privilege in the courts," published in the *JOURNAL* of October 9th (p. 665). I note that Lord Mansfield stated, "If a surgeon was voluntarily to reveal these secrets, to be sure he would be guilty of a breach of honour, and of great indiscretion." The secrets referred to are secrets of a patient entrusted to the medical man by virtue of his position as professional attendant.

I take this opportunity of stating that about two years ago I was called professionally to attend a woman who had been stabbed in the thigh by her husband a few days previously. The wound was healing excellently owing to the very able treatment given by the assailant, an ex-R.A.M.C. man. There was no danger whatever to life. I told the wife that she would be well advised to inform the police, her husband being present on the occasion. The wife indignantly refused to do so, telling me that she had forgiven her husband, and added that if he should go to prison she would lose the advantage of a pension that he was receiving. Consequently I let the matter rest. Ten days later the husband once again assaulted the woman, and the police were notified and the previous assault was mentioned.

The man was tried at Lewes Assizes in December, 1924. I was subpoenaed and gave evidence. The judge, Mr. Justice Swift, asked me to give my reason for not having informed the police of the original offence. I answered, "I did not and do not consider that I was under any legal obligation to do so." Mr. Justice Swift, with anger, replied, "No, it was not your legal obligation, but it was your moral obligation, and I consider it was most regrettable that you did not inform the police. It is the duty of every good citizen to inform the police when he becomes aware that a crime has been committed."

I should be glad to know if the learned judge was correct in his observations.—I am, etc.,

Brighton, Oct. 9th.

W. E. LEVINSON.

#### "RISING OF THE LIGHTS."

SIR,—With reference to the term "rising of the lights" given as a cause of death in the Bills of Mortality quoted in the article ("Nova et Vetera") in your issue of October 9th, and the suggestion that this may refer to emphysema, the following passages, quoted from *Domestic Medicine, or a Treatise on the Prevention and Cure of Diseases*, by William Buchan, M.D., Fellow of the Royal College of Physicians, Edinburgh, printed in London, 1798, are of interest.

##### "OF THE CROUP."

"Children are often seized very suddenly with this disease, which, if not quickly relieved, proves mortal. It is known by various names in different parts of Britain. On the east coast of Scotland it is called the croup. On the west they call it the croup or stuffing. In some parts of England, where I have observed it, the good women call it *rising of the lights*. It seems to be a species of asthma attended with very acute and violent catarrhal symptoms.

"It is attended with a frequent pulse, quick and laborious breathing, which is performed with a peculiar kind of croaking noise, which may be heard at a considerable distance. The voice is sharp and shrill, and the face is generally much flushed, though sometimes it is of a livid colour. . . .

"Dr. William Turnbull, in London, a physician of great experience, observes that he never found blistering of any service; but recommends cataplasms of garlic, camphor, and Venice treacle, to be applied both to the throat and soles of the feet."

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It would appear, then, that this complaint, with its high mortality, was diphtheria. It is not stated whether Dr. Turnbull's application to the soles of the feet was intended to draw the lights down again!—I am, etc.,

P. P. DALTON.

London, N.W.5, Oct. 30th.

## THE PREVENTION OF SCARLATINAL NEPHRITIS.

Sir,—In the excellent summary of my address to the Ulster Medical Society on "The constitutional factor in disease," which appears in your issue of November 6th (p. 855), the names of the authorities I quoted in support of my views are omitted by the reporter. I am anxious to draw attention to the fact that the underlying diathesis which predisposes to acute nephritis, and the means I described whereby this serious complication can be completely prevented in scarlet fever, are the discovery of Dr. A. A. Osman. His work, which constitutes what I believe to be one of the most important advances in public health of recent years, is still unpublished, but he has briefly summarized it in a paper which will appear in the forthcoming October number of the *Guy's Hospital Reports*.—I am, etc.,

ARTHUR F. HURST.

New Lodge Clinic, Berks, Nov. 7th.

## Medico-Legal.

### TWO MEDICAL MEN CHARGED WITH CRIMINAL ABORTION.

The preliminary magisterial hearing of the case against Dr. Arthur Stuart Holden of Preston, and Dr. Frederick Langton Webster of Bamber Bridge, near Preston, on charges of feloniously causing the death of Miss Norah Marmion, aged 24, the daughter of a Pennaenauwr quarry owner, at Bamber Bridge on October 7th, while performing an illegal operation, and on other charges of using an instrument and of conspiring together with the dead woman for the alleged purpose, commenced before the Bamber Bridge justices on November 5th and 8th. It was announced that the charges of aiding and abetting which had been preferred against Major W. Blackburne and Mrs. Blackburne and Mrs. Holden would be withdrawn.

The proceedings at the inquest on the deceased woman, which terminated in the two doctors being committed for trial at the next Manchester Assizes on a charge of murder, the other three accused persons being committed as accessories, were briefly reported in the last issue of the *BRITISH MEDICAL JOURNAL*, at page 869.

#### Case for the Prosecution.

Mr. Laski, counsel for the Crown, in his opening statement, said that prior to this unfortunate occurrence, the deceased woman was taken out a good deal by a Mr. Alexander French of Waterloo and a Mr. James Allman of Great Crosby, the latter of whom went abroad some months ago. The deceased woman was engaged to be married to a doctor from July, 1925, to July, 1926. It would be given in evidence that she had also been engaged to be married in evidence that she had intimacy with both Mr. French and Mr. Allman. On September 1st, 1926, she visited her sister, Mrs. Blackburne, at Preston. During the visit she met Mr. French and informed him of her condition, and, in consequence, he offered to marry her, but she refused him. On October 5th the deceased woman called at Dr. Holden's surgery, and on October 8th she went with Dr. Webster, Dr. and Mrs. Holden, and Major and Mrs. Holden's house for theatre, and afterwards on to Dr. and Mrs. Holden's house for refreshment. The following evening a visit was paid to Dr. Webster's house ostensibly to play bridge, but, in the view of the prosecution, an illegal operation was performed by one of the doctors, Miss Marmion dying from shock.

Mr. Peter Marmion, the deceased's father, said he did not at the time think there was anything unusual about his daughter's visit to her sister.

Mr. Alexander French, aged 23, employed by a firm of sanitary engineers at Liverpool, said he first became acquainted with Miss Marmion when living at Waterloo about five or six years ago. He took her about a great deal, but he had never been engaged to her. He saw her twice on her last visit to Preston, the last occasion being when he saw her at Southport two days earlier, when she made a certain communication to him, and, in consequence, he offered to marry her, but she refused him. He first heard of her death on that he was the cause of her condition, although, in fact, there had been intimacy between them.

## MEDICO-LEGAL.

the morning of October 8th, when Major Blackburne informed him over the telephone. He then went to Preston, saw Major Blackburne, and asked what had happened. Major Blackburne replied: "It's very terrible. All I can say now is that Norah died last night." When he saw Mrs. Blackburne earlier she said that Norah had died, but that she did not really know what had happened, adding, in reply to his questions, that that was the first she had heard of her sister's condition.

#### The Conspiracy Charge.

An objection by Mr. G. Ambler, solicitor, who appeared for Major Blackburne, against the admission of evidence of events prior to Miss Marmion's death was recorded by the court, but counsel pointed out that there was a charge of conspiracy against two of the defendants.

Mrs. Elizabeth Rome of The Grange, Euxton, said on October 7th she lunched with Mrs. Blackburne and Miss Marmion at Blackburne's residence, and later had tea with Major Blackburne and her own husband, she and her husband leaving at 5.45 p.m.

A further objection to a question tending to elicit what Miss Marmion said in the presence of do that night was recorded by the court, though it was allowed, counsel again pointing out that the answer formed part of the case of alleged conspiracy of the two doctors with Miss Marmion. Mrs. Rome then stated that what Miss Marmion said was that she was going that evening to play bridge at Dr. Webster's, and that Dr. and Mrs. Holden and Major and Mrs. Blackburne were going too.

#### Dr. Holden's Alleged Statement.

Police-Inspector Blenkinsop of Bamber Bridge said Dr. Holden came to his house at 1.45 a.m. on October 8th, and informed him of Miss Marmion's death at Dr. Webster's house under an anaesthetic during an operation. Dr. Holden also said that the girl was expecting to become a mother. Following a remark by the witness, Dr. Holden replied: "I have let Dr. Webster in. She was my patient."

Cross-examined by Mr. Lustgarten, for Dr. Holden, the witness said after his interview with Dr. Holden he wrote on a slate: "Staying temporarily with Dr. Holden. I have let Dr. Webster in. She was my patient," and other matters. He had allowed the writing to be rubbed off the slate since.

Questions were put to this witness tending to show that his evidence was unreliable, and, later, Detective-Inspector Fenton of the Lancashire Constabulary admitted, in cross-examination, that the police-inspector was not suffering from worry alone, but should not be required to answer the question whether Inspector Blenkinsop had attempted to commit suicide. Inspector Fenton further said that when he arrested the accused doctors, Dr. Holden and Dr. Webster replied that they were not guilty of the charge of causing Miss Marmion's death by an illegal operation. When further jointly charged with the offence, and also with conspiring with the deceased in its commission, each denied his guilt.

#### The Medical Evidence.

Dr. W. A. Simpson of Bamber Bridge, acting police surgeon, who conducted the *post-mortem* examination on October 9th in the presence of both accused and four other doctors, gave his findings in detail. He came to the conclusion that death was probably due to asphyxia following the administration of an anaesthetic acting on a fatty heart. He found circumstances which led him to think that an instrument having been used. He based his opinion as to the cause of death on the statement said to have been made to Police-Inspector Blenkinsop by the two accused doctors that an anaesthetic had been used. Cross-examined, the witness said his examination of the uterus did not go far enough to enable him to tell definitely whether or not the deceased woman was pregnant. Dr. K. M. Duncan of Preston, senior police surgeon for Lancashire, who also was present at the *post-mortem*, concurred with the findings of the previous witness, but he differed as to the actual cause of death, which, he said, he found difficult to give with any certainty. He did not think it sufficiently evident that there had been asphyxia, and thought the condition of the body more consistent with death from shock. He detected no trace of an anaesthetic.

Sir Bernard Spilsbury detailed the results of his examination of organs sent him. His definite opinion was that death was due to shock consequent upon the passing of an instrument used for an anaesthetic, and he would have expected to detect an odour. There was evidence that artificial respiration efforts had been made for some time after death. The stomach was dilated and empty, and he would not expect to find this under ordinary conditions at the time when the woman died—which he put at between 9 and 10 p.m. He also came to the conclusion that an ovum was removed from the body after death. It was customary as he believed had taken place. Cross-examined, Sir Bernard Spilsbury said, in his opinion, death occurred certainly within five minutes of the passing of the instrument. Before examining the organs he had received a copy of Police-Inspector Blenkinsop's statement.

The accused medical practitioners pleaded not guilty, reserved their defences, and were committed for trial at the next Manchester Assizes. Bail was refused.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

PARLIAMENT reassembled on November 9th, and the House of Commons commenced the Report stage of the Electricity Bill, which was expected to last most of the week. Replying to Mr. Clynes, Mr. Baldwin gave a long list of bills which the Government hopes to carry into law before the session ends. Among these were the Housing of Rural Workers Bill, Mental Deficiency Bill, Prisons (Scotland) Bill, London University Bill, Judicial Proceedings Bill, Lead Paint Bill, Legitimacy Bill, Smoke Abatement Bill, Coroners Amendment Bill, and Births and Deaths Registration Bill. The Prime Minister added that no progress would be attempted this session with the Factories Bill.

In the House of Lords on the same day the Earl of Plymouth, replying to Lord Asquith, said the new Factories Bill did not give special measures of protection to juveniles between 14 and 18 years of age in occupations not at present regulated by Statute. He did not think the bill could be amended to include them. Legislation on the matter would be premature until the conditions and hours of labour of young persons employed in factories had been settled.

**University of London Site.**—In reply to a question by Sir W. Davidson as to grants promised to the University of London, the Chancellor of the Exchequer said that he had promised in June that the Government would be prepared, within certain financial limits, to ask Parliament to make provision for improved accommodation for the University of London, subject to the approval by the Treasury of plans to be formulated by the Senate. The offer was not limited to a South Kensington or a Bloomsbury site. [The action of the Senate is mentioned below.]

**Inspection of Dairy Farms.**—In reply to a question on November 9th, the Parliamentary Secretary to the Ministry of Health said that fresh legislation to amend the Milk and Dairies (Consolidation) Act, 1915, was not contemplated. The proposal that all medical officers in any urban district to which milk was supplied should have the right to inspect the farm from which such supplies came would therefore not at present be considered. In reply to another question, he said that the Ministry saw no reason for exempting from the requirements of the Order farmers who sold milk only to farm workers and their families.

### Notes in Brief.

The Secretary for India has recently sanctioned a scheme which will provide certain passage facilities for Indian officers of the Indian Medical Service who desire to study in this country.

In reply to a question as to the increase of imports of condensed machine-skimmed milk, Sir Kingsley Wood said that the regulations required every tin of such milk to be labelled "Machine-skimmed" and "Unfit for babies."

The question whether the addition of certain chemical substances to flour, with the object of modifying its baking properties, was objectionable on grounds of health and what restrictions, if any, should be placed on it, has been referred to a Departmental Committee.

## Universities and Colleges.

### UNIVERSITY OF LONDON.

DR. R. D. LAWRENCE has been appointed Lecturer of chemical pathology at King's College, and has been admitted to the Faculties of Medicine and Science.

The University medal in Branch VI (Tropical Medicine) of the M.D. examination for internal and external students, July, 1926, has been awarded to Richard M. Morris, B.Sc., of the London Hospital and the London School of Tropical Medicine. A grant of £150 from the Thomas Smythe Hughes Fund has been made to Miss Kathleen Chervassat, B.Sc., to defray the cost of apparatus in connexion with her research on glycolysis in cerebro-spinal fluid.

The examinations will commence on April 19th and June 28th, 1927, for fourteen medical entrance scholarships and exhibitions of an aggregate value of £1,513 tenable in the Faculty of Medical Sciences of University and King's Colleges, and in the medical schools of King's College Hospital, University College Hospital, the London Hospital, and the London (Royal Free Hospital) School of Medicine for Women. Full particulars and entry forms may be obtained from the Secretary of the Board, Mr. S. C. Ranner, M.A., of the Medical School, King's College Hospital, Denmark Hill, S.E.5.

Subject to the consent of the Chancellor of the Exchequer to proposals put forward by the University, the Senate has authorized definite negotiations with the Duke of Bedford for the purchase of part of the Bloomsbury site.

### UNIVERSITY OF CAMBRIDGE.

H. W. FLOREY, M.B. Adelaide, has been elected to an official Fellowship at Gonville and Caius College for his physiological researches. After graduating in medicine at the University of Adelaide in 1920 he entered Magdalen College, Oxford, as a Rhodes

Scholar. In 1924 he became a member of Caius College on election as John Lucas Walker student in pathology, and in 1925 he was elected to a Rockefeller Research Fellowship.

### UNIVERSITY OF BIRMINGHAM.

THE Council of the University of Birmingham has decided to ask the Court to confer the title of Emeritus Professor on Professor O. J. Kauffmann, M.D., Joint Professor of Medicine in the University from 1915 to 1926.

Dr. T. L. Hardy, Assistant Physician to the General Hospital, has been appointed assistant to the chair of medicine; and Dr. C. C. W. Maguire, Physician for Out-patients at Queen's Hospital, has been appointed honorary demonstrator in the department of anatomy.

### NATIONAL UNIVERSITY OF IRELAND.

THE following degrees were conferred at a meeting held in University College, Cork, on November 2nd:

M.D.—M. Whelton.

M.Ch.—J. Kieley.

M.B., B.Ch., B.A.O.—J. F. Carr, E. Egan, Annie A. O'Connor, M. Ahern, A. Callaghan, T. F. Crowley, D. Duggan, D. McCarthy, D. F. McCarthy, J. L. MacSweeney, D. Mahony, F. D. Murphy, M. A. Neville, D. O'Connell, M. O'Donnell, J. O'Driscoll, D. J. O'Sullivan, E. T. O'Sullivan, J. M. Quinlan, T. Richardson, J. Roche, E. J. M. Scanlan, J. Scott.

D.P.H.—M. Harris-O'Connor, E. T. Callanan, W. J. O'Donovan.

### ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

A QUARTERLY meeting of the College was held on November 2nd, when the President, Dr. George M. Robertson, was in the chair.

Dr. L. S. P. Davidson and Dr. W. E. Foggie took their seats as Fellows of the College. Dr. R. G. Gordon (Bath), Dr. J. R. Drever (Edinburgh), Dr. A. L. S. Take, M.C. (Dunfermline), and Dr. J. F. Christie (Aberdeen) were elected Fellows of the College.

The Hill Pattison-Struthers bursaries in anatomy and physiology and in clinical medicine were awarded to H. G. Somerville and H. B. Martin respectively. The Wood bursary was awarded to J. P. Collier.

The licence of David William Anderson, which had been suspended on May 5th, 1925, was restored.

At an extraordinary meeting of the College held on the same date the licences of Edalji Jamsbedji Treasurvala, Bombay, and Kaikhushru Edalji Master, Bombay, were suspended *sine die*.

### ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

A meeting of the College was held on Friday, November 12th, when the necessary business was transacted. The necessary College: Shafik

## The Services.

### TERRITORIAL DECORATION.

THE Territorial Decoration has been awarded to the following officers of the Royal Army Medical Corps, Territorial Army: Majors William Cooper Gunn, Robert Harvey, and Frederic Edwin Hubert Keogh.

### NO. 14 STATIONARY HOSPITAL.

THE seventh annual dinner of the medical officers of No. 14 Stationary Hospital will be held on Friday, December 10th, at the Trocadero Restaurant, Piccadilly, at 7.45 p.m. Lieut.-Colonel J. R. Harper, C.B.E., will be in the chair. The price of the dinner will be 15s. (exclusive of wines). The honorary secretary is Dr. H. L. Tidy, 39, Devonshire Place, W.1.

### DEATHS IN THE SERVICES.

Lieut.-Colonel Thomas James Paul Holmes, R.A.M.C. (ret.), died at Hove on October 21st, aged 81. He was born on October 23rd, 1844, the son of the Rev. J. P. Holmes, rector of Gallen, King's County, and was educated at Trinity College, Dublin, where he graduated M.B. in 1866, taking also the L.R.C.S.I. in the same year. He entered the army as assistant surgeon on April 1st, 1867, attained the rank of brigade surgeon lieutenant-colonel on May 3rd, 1893, and retired on April 7th, 1897. After his retirement he was employed at Kingston from 1897 to 1902.

Major William Wallace Boyce, D.S.O., R.A.M.C., died suddenly in London on October 31st, aged 43. He was educated in Dublin in the school of the Royal College of Surgeons, and took the L.R.C.S.I. and L.R.C.P.I. in 1905. He entered the R.A.M.C. as lieutenant on July 30th, 1906, and reached the rank of major on January 28th, 1919. He served throughout the recent great war, was thrice mentioned in dispatches, and received the D.S.O. on March 8th, 1919.

Captain George Cuthbert Robinson, R.A.M.C., died in a nursing home, from illness the result of active service, on October 18th, aged 33. He was born on December 21st, 1892, the son of Surgeon Lieut.-Colonel G. S. Robinson, Scots Guards, and was educated at St. Thomas's Hospital, taking the M.R.C.S. and L.R.C.P. Lond. in 1916. He joined the R.A.M.C. as a temporary lieutenant on February 8th, 1916, took a permanent commission from January 1st, 1917, became temporary captain, after a year's service, on February 8th, 1917, and was confirmed in that rank from August 8th, 1919. He served throughout the war from 1916 on.

FRANCIS MITCHELL CAIRD.

Obituary.

F. M. CAIRD, M.B., C.M., F.R.C.S.E., LL.D., Emeritus Professor of Clinical Surgery, Edinburgh University. We announced briefly in our last issue the death on November 1st, in Edinburgh, at the age of 73, of Emeritus Professor Francis Mitchell Caird. Although he had had a few signs of cardiac weakness in recent years, his death took place with startling suddenness while he was in full mental and bodily activity. He was born in 1853, and was educated at the High School, and thereafter assisted the late Professor John Hutton Balfour in the Botanical Department of the University, and at a later stage adopted medicine as a career. He graduated M.B., C.M. at Edinburgh in 1877. As Lister had been professor of clinical surgery up to the preceding year, Caird came

greatly under his influence, having served both as a dresser and clinical clerk in his wards. This to a great extent determined his career, for, having an ardent love for surgery, he began to devote himself to preparations for work as a surgeon almost immediately after graduation. In the summer session of 1878 he became resident in the surgical wards of Mr. Chiene. In 1879 he took the diploma of L.R.C.S. Edin., and proceeded to the Fellowship in 1880. Caird thus became the living transmitter of the Listerian doctrines and practice in Edinburgh, and these were well summed up in a pamphlet entitled *Hints on the Antiseptic Management of Wounds, "Listerism,"* which he published in 1880.

With the object of gaining a fuller knowledge of pathology and anatomy he went to the University of Strasbourg, where he studied especially under von Recklinghausen and Joessel. On his return to Edinburgh he was demonstrator in anatomy for some three years at Minto House and in Surgeons' Hall under Dr. (later Professor) Cossar Ewart and Mr. C. W. Cathcart. At the same time he was invited by Professor Chiene, who at that time was one of the ordinary surgeons to the Royal Infirmary, to become his private assistant. In this capacity he not only assisted him in his private surgical practice, but helped him in the teaching of his large surgical class. This position he continued to hold until 1886; when Mr. Chiene was appointed professor of surgery in succession to Professor Spence, in the year 1882, Caird became the University assistant in the chair of surgery. In 1886 Mr. Caird was elected to the post of assistant surgeon to the Royal Infirmary of Edinburgh, and commenced to lecture on his own account in surgery as a recognized extra-mural teacher; for the next twenty years he continued to lecture with success on this subject, attracting large classes of students. He was distinguished for great clearness of exposition as well as forcefulness and brevity of expression, qualities which rendered him highly popular as a teacher. In 1900 he was appointed to full charge of wards in the Royal Infirmary, and here as a clinical teacher his popularity was even greater.

In 1908, following upon the death of Professor Annandale, he was elected to fill the Regius Chair of Clinical Surgery

in the University of Edinburgh, a post which he held till 1919, when he resigned and was succeeded by Sir Harold Stiles. On his retirement from this post he received, in 1920, the honorary degree of LL.D. from the University, and at the same time was elected by the managers of the Royal Infirmary a consulting surgeon to that institution.

At an early stage in his career Professor Caird had been greatly influenced by the work of some of the Continental surgeons, particularly of Professor Mikulicz of Breslau, and almost every summer he paid a visit to one or more of the great Continental medical schools, especially in Germany, where he came into personal contact with some of the eminent men by whom surgical science was being advanced. In this way he was one of the first to practise various operations in Scotland. Following his master, Lister, he was an early upholder of the systematic use of rigorous aseptic methods. The early introduction of

local and spinal anaesthesia in major operations at Edinburgh was also largely due to him. While still an assistant surgeon to the Royal Infirmary he had been greatly impressed by the advances taking place in German hospitals in regard to abdominal surgery. Billroth in Vienna had been the first, in 1881, to remove the pylorus successfully for cancer of the stomach, and during the years 1878 to 1883 had been a pioneer in performing a large number of intestinal resections and enterorrhaphies. Influenced by this work, Caird was performing gastric and intestinal operations at an earlier date and on a larger scale than any of his colleagues in Edinburgh. The results of this work were presented in various papers, published mainly in the *Scottish Medical and Surgical Journal*; among the subjects were operation for stricture of the large intestine (1901), enterectomy for tuberculous stricture of the intestine (1904), and operation for perforated gastric ulcer (1905). In 1906 he published in the *Medico-Chirurgical Society's Transactions* a series of cases of operation for perorated gastric and duodenal ulcer. He was also one of the earliest and most successful operators in the domain of excision of the rectum for carcinoma, and published a paper on the subject in 1903; his outstanding position in this department of surgery was recognized by his being invited in 1913 to deliver on it the William Banks Memorial Lecture at the University of Liverpool. Still another department of operative surgery in which he was a pioneer was excision of the tongue for cancer, and in 1911 he published a record of his work in the *Medico-Chirurgical Society's Transactions*.

Although Caird was recognized as possessing special ability and special interest in the domain of surgery of the alimentary tract, his opinion and his skill were no less valued by his colleagues in general surgery. In regard to the surgery of the limbs, he had published a valuable monograph on *The Shoulder Joint in Relation to Certain Dislocations and Fractures* as early as 1886. Professor Caird was joint author with Mr. C. W. Cathcart of *A Student's Atlas of Bones and Ligaments and A Surgical Handbook*, both of which have enjoyed a great measure of success. The latter especially found much favour with students, and has been the constant companion in practice of many general practitioners.



Photograph by]

PROFESSOR F. M. CAIRD.

[A. Siran Watson, Edinburgh.

In 1901 Professor Caird received the Victoria Liston Jubilee Prize from the Royal College of Surgeons of Edinburgh "for the greatest benefit done to practical surgery by any Fellow or Licentiate of the College during the quadrennial period ending June 20th, 1901." In 1906 he delivered the annual address on surgery to the Canadian Medical Association at its meeting in Halifax. During the great war he acted as one of the consulting surgeons to the British Expeditionary Force in France, having the rank of colonel in the Army Medical Service and being attached to the Third Army. At the last meeting of the British Medical Association in Edinburgh he was joint secretary to the Surgical Section. His interest in the Association did not diminish, and in 1915-16 he was president of the Edinburgh Branch. He was secretary of the Medico-Chirurgical Society of Edinburgh for a considerable time, and at a later date occupied the presidential chair of this society; those who attended can remember the skill with which he conducted its meetings and the admirably brief and lucid manner in which he was wont at the close of a discussion to sum up the points of interest and importance contributed by various speakers.

To the end of his life Professor Caird preserved the quiet, alert, and kindly manner which had characterized him in his relations with many generations of pupils. He was a man of tender sympathy, and had in a high degree the ability of inspiring confidence and affection among his patients. His energy and the amount of daily work he could accomplish were extraordinary. By his students he was held both in reverence and in affectionate regard, and no one ever accompanied him on a ward visit without picking up some important principle of diagnosis or prognosis or receiving some useful hints in regard to treatment. He maintained a voluminous correspondence both with foreign colleagues and with former pupils, and in this his width of interest and his memory were admirable.

Professor Caird had a great gift for delineation. This had been acquired in his early years in connexion with making sketches of plants. He had great facility with the pencil, and added to the value of his notes in surgical cases by making water-colour sketches; he has left a valuable collection of drawings and paintings illustrating cases and operations. His services in this respect were in great demand by his colleagues when some commemorative drawing or menu card for a medical dinner was required, and many ingenious and amusing drawings by him are preserved. Even the walls of his smoking-room in the house which he occupied for many years in Charlotte Square had been decorated by his hand with beautiful and vivid frescoes of scenes from ancient Egyptian life. At medical dinners and social gatherings in Edinburgh he was also a welcome guest; his talent for making amusing observations and his gift of song were in constant request.

The funeral took place at the Dean Cemetery on November 4th, and was attended by a large number of representatives from various medical bodies in the city. The pall-bearers included three sons—Dr. Karl Caird, Dr. Colin Caird, and Mr. Francis Caird. Among those present was Sir Robert Philip, President-Elect of the British Medical Association, Professor Russell, Mr. Alexander Miles, Mr. C. W. Cathcart, and Mr. Henry Wade. Professor Caird is survived by a widow, three sons, and two daughters.

The following appreciation has been received from Mr. C. W. Cathcart, C.B.E., F.R.C.S., consulting surgeon to the Royal Infirmary, Edinburgh:

It is with much diffidence that I respond to the request to add a few personal notes to the obituary record of my life-long friend, Francis M. Caird. He and I first met in the class of practical botany under Professor John Hutton Balfour in the seventies of last century. He was a demonstrator and I a student. In my efforts to cut sections of wood and leaves with a razor for the microscope, he helped me so kindly and successfully that I looked to him and to no other when any difficulties arose. Moreover, in our Saturday excursions for field botany he knew the names—popular and scientific—of all the wild flowers, and could tell us generally some interesting points about them. Before long other students besides myself used to

gather from him all the information we required. At that stage his ability, courtesy, and gift for teaching became well recognized in the botany class. Soon he and I became fast friends, and we remained so to the end, when the sudden cardiac failure last week carried him to the grave. The impression he made on his friends was that of a man of great energy and outstanding ability. In addition to his purely professional studies he read widely in history and general literature, and when such subjects were raised in conversation could emphasize his points by illustrations from his well stored memory. His ready wit and sense of humour added a spice both to his teaching and general conversation. Caird as a dresser and clerk in Professor Lister's wards was one of the many enthusiastic followers of his chief. It was an important part of his training while a student to come under the spell of a man who was as great in his devotion to the poorest patient as he was penetrating in scientific research. Looking back on Caird's career, one can see that he was always on the look-out for new ideas. He assisted the late Dr. Berry Hart in making the first frozen sections to illustrate human anatomy that were undertaken in Edinburgh. As operating assistant to Dr. Angus Macdonald, who practised gynaecological surgery after Keith went to London, Caird developed much skill in this department of abdominal surgery. From this he went on to the surgery of the intestinal canal, and became one of the pioneers in Scotland in this line of work.

Others, no doubt, will refer to Caird's success as a teacher when he attained full rank in the Infirmary and University. Those who knew him in his younger days recognized that this was only the fulfilment of his early promise.

Mr. HENRY WADE, C.M.G., D.S.O., M.D., F.R.C.S., surgeon to the Royal Infirmary, Edinburgh, writes:

Mr. Caird was undoubtedly a magnificent teacher, and for these qualities all his students owed him a profound debt of gratitude. At the same time, he won from all, in addition to an admiration for his genius, a deep and abiding love for him as a man—an unsought tribute earned by him unconsciously. Who could resist his fascination? He seemed to tell you daily what a fortunate man you were to have chosen so splendid a profession; what a joy it was to render such services to humanity; how happy you must be to be so trusted, and how hard you must work to merit truly such a trust. He seemed to tell you that some day even you would get your commission as an ensign and be allowed to carry the colours, and that he knew he could trust you to guard the honour of the regiment of surgery in the fight that never ceased. In the operating theatre he was never spectacular. He seldom spoke to his assistants or students. All his conduct told you that you were there as a privileged spectator. The interest of the patient then alone was considered, however grave the operation, or however trivial the service to be rendered. Mr. Caird's standard of surgical honour was equalled by his surgical courage. Especially as the pioneer of abdominal surgery in the Edinburgh Medical School he frequently accomplished what was looked on as a surgical miracle, and these patients never forget their saviour. Although the calls of surgery were ever so insistent and ever met, Mr. Caird never failed to find time for other interests. The secret of how this was achieved was revealed to those privileged to assist him in his private practice. The tedium of the long train journey to a consultation was lessened by a volume of his favourite Carlyle's *Frederick the Great*, or the most recent work on Egyptology or botany. To go with him on a holiday during the summer vacation was a joy given to some of us. In everything Mr. Caird was generous to an extreme degree; many suspected, but only those intimately associated with him in his private work knew, the extent of this. The honour of the service rendered was often insisted on as in itself a sufficient reward. To the wounded officer who had insisted on being treated as a private patient and who wished to recompense him, he said, "I have operated on you; you have fought for me, and I am still your debtor." Mr. Caird died as he had lived, quietly and happily. The cup that was at his lips so carefully replaced; his head sank forward, and he passed peacefully to his maker.



# WILLIAM EDWARD FOTHERGILL.

**WILLIAM EDWARD FOTHERGILL, M.A., M.D.,**  
Professor of Clinical Obstetrics and Gynaecology, Manchester University; Senior Surgeon for Women, St. Mary's Hospitals, Manchester; Consulting Gynaecological Surgeon, Manchester Royal Infirmary.

It was a great shock to his many friends to hear of the sudden death of Professor W. E. Fothergill, at the early age of 61, when he seemed to be enjoying excellent health and undiminished energy. He attended the annual dinner of the Glasgow graduates on November 4th, and was apparently in his usual buoyant spirits. After making a speech he complained of feeling ill, and when attempting to leave the room collapsed and died a few minutes later in the ante-room.

William Edward Fothergill was born in 1865 at Darlington. He came of an old Quaker family in direct descent from the elder brother of the famous eighteenth century Quaker physician Dr. John Fothergill. At the age of 17 he was sent to the University of Edinburgh, where he had a very distinguished career, graduating in the first place in arts, then in science, and finally in medicine, taking the degree of M.B. in 1893 with first class honours, and the Buchanan Scholarship. In 1897 he proceeded to the M.D. degree, which he obtained with first class honours and the gold medal; later he was awarded the Milner - Fothergill gold medal. After a period of study in Jena and Paris he returned to Edinburgh, and held resident posts in the Edinburgh Royal Infirmary and the Royal Maternity Hospital. He was then appointed assistant to the professor of obstetrics, Sir Alexander Simpson.

He had now decided to devote his life to obstetrics and gynaecology, and as Edinburgh seemed to be overcrowded, he looked around for a new sphere of action, and decided upon Manchester. To most people it would have seemed a hopeless task for a young man without a claim on any of the local hospitals to carve a position for himself, but by sheer dogged determination and his ability to make himself useful and indispensable to senior men he not only did this, but eventually obtained the highest appointments in this branch of medicine in his adopted city.

He was a skilled pathologist and a good artist, and this stood him in good stead in his early days, as he helped many of the senior men to describe and illustrate cases which they wished to publish; moreover, he established the first clinical laboratory at the Manchester Royal Infirmary.

He was soon appointed assistant lecturer to the professor of obstetrics, Sir William Sinclair, and later was put on the staff of both the Southern Hospital and the Northern Hospital as assistant surgeon for women. In these early days he published his well known *Manual of Midwifery*, which was used extensively in Manchester, Edinburgh, and other centres. Some years later the Southern Hospital was amalgamated with St. Mary's Hospital, and he became assistant surgeon to the combined hospitals; soon afterwards he was appointed assistant gynaecological surgeon to the Manchester Royal Infirmary.

At the university he held successive appointments for thirty years, first as assistant lecturer, then full lecturer,

and finally, in 1920, was elected to the chair of systematic obstetrics and gynaecology, which he exchanged for the chair of clinical obstetrics and gynaecology in 1925.

In these hospital posts, which he held for so many years, Fothergill acquired a large clinical experience and was recognized as a sound diagnostician and operator, but probably his greatest asset was his command of the English language and his ability to express himself both in speech and writing. Often has it happened at a board meeting when some subject had been discussed at length and agreement in principle finally reached though no one was able to find the exact words to express it, Fothergill would take a piece of paper and without hesitation write down the exact formula all had striven for in vain. This ability of easy expression stood him in good stead, and he poured out a steady stream of writing which contained good, sound material, expressed in language easy to understand and delightful to read.

Reference has already been made to his textbook on midwifery; at a later date he wrote a companion volume, a *Manual of Diseases of Women*, and published in a volume a series of lectures to midwives and maternity nurses; all ran into many editions. This gift was unstintingly placed at the disposal of any of his younger colleagues, and many of these, of whom the writer is one, gratefully acknowledge the help and instruction he so lavishly gave when they were preparing their first papers. This facility of easy expression, combined with a wonderful memory, which supplied an apt illustration for any point under discussion, made him a brilliant and arresting teacher.

In private life Fothergill was a delightful companion; endowed with a great gift of humour and a fund of stories which suited every occasion; it was impossible to be dull in his presence, and before the death of his wife he was always seen at his best when presiding at the happy little dinner parties they delighted to give, or surrounded by a group of friends he had collected in his house after some scientific meeting.

Fothergill always rebelled against some conventionality, and this sometimes made him express his opinion somewhat brusquely; but behind this manner lived a kindly soul ready to see the other side when put to him quietly. His hobbies were always spent in unfrequented beauty spots, where he was perfectly happy studying plant and animal life or in sketching, in which both he and his wife were very proficient, and he often spoke with pleasure of his beloved Yorkshire dales. Although he had no family of his own he was greatly interested in young people, and never happier than when he was stimulating the undergraduates' athletic activities. As president of the students' cricket and Rugby football clubs, and lately of the athletic union, he was no mere figurehead, but was a regular attendant at all matches and the subsequent suppers; he enjoyed them as much as any youth present.

In 1895, the year he settled in Manchester, he married Edith, the daughter of the late J. Dulton Wood of Chelsea. This proved an ideal marriage, for both had the same hobbies and pleasures; they were inseparable companions.



Photograph by]

PROFESSOR W. E. FOTHERGILL.

[Lafayette, Manchester.

When his wife died, six years ago, it seemed for a time that he would not recover from the loss; but lately much of his old buoyancy of spirits had returned, and he seemed to have many years of useful life before him when the blow suddenly fell, and in a few moments he had passed beyond the veil. Fothergill had a great personality, which impressed itself upon all who came in contact with him, and he will be greatly missed by a large circle of friends.

W. F. S.

### EMIL KRAEPELIN,

Formerly Director of the Psychiatric Clinic at Munich.

PROFESSOR EMIL KRAEPELIN, whose death was briefly announced last week, was one of the most distinguished psychiatrists of modern times, and his work has been the stimulus for a vast amount of research in the sphere of mental disorder.

Kraepelin was born in 1856 and grew up in Neu-Strelitz in modest circumstances. Under the influence of his elder brother, Carl, well known as a biologist, he acquired early an interest in the natural sciences. At the conclusion of his high-school education he determined to study medicine in order to become a psychiatrist. He commenced his medical studies in Leipzig in 1874, and in 1875 continued them at Würzburg, attending Rinecker's clinic, which was devoted to the study of dermatology and psychiatry. There he gained a prize for an essay on the influence of acute diseases on the origin of mental disorder. After passing his medical examinations he became assistant to Bernard Gudden, succeeding Forel, in the Munich Kreis Asylum and Clinic. Here he wrote his first treatise, which was on the abolition of punitive measures; it attracted considerable attention. Subsequently he went as assistant to Flechsig at the Leipzig Clinic, but left it to work in the Erbschen Polyclinic and in Wundt's laboratory. In 1883 Kraepelin returned to Munich, having shortly before published the first edition of his textbook. In 1884 he became head physician in the Lenbus Institution, and later director of the Medical Institution and Sanatorium in Dresden. After this he spent four years at Dorpat, attaining the position of professor of psychiatry at the early age of 30 years. His next move was to the University of Heidelberg, where he spent thirteen busy and fruitful years. He was here in a position to study the course and outcome of his cases, and thus to gain experience which enabled him in 1896 to formulate his conception of dementia praecox as a distinct disease entity.

In 1904 he assumed the directorship of the newly established psychiatric clinic at Munich. This clinic soon began to attract the attention of psychiatrists, who flocked from all parts of the world to attend his post-graduate courses of instruction, and also to gain insight into the administration of a mental clinic for uncertified and early cases. Kraepelin gathered around him workers of the highest distinction, and the team work which is so essential in any endeavour to solve the problems of mental disorder thus became possible. He always realized to the full the importance of the association of clinical and pathological work. At Munich he was able to correlate his clinical teaching of dementia paralytica, dementia praecox, and other psychoses with the important pathological discoveries of Nissl and Alzheimer, and also with the neuro-pathological and serological investigations of Spielmeyer and Plaut. Kraepelin's earlier associations with Wundt led him to concern himself with the elaboration of psychological experimental methods and their application to the problems of clinical psychiatry; in this way he obtained fruitful results from investigations into the psychical effects of poisons, alcohol, hypnotics, tea, morphine, etc., and also of the effects of protracted mental and physical activity.

Kraepelin was without question a great clinician, and his name will always be associated with his classification of the biogenetic psychoses. By applying the criteria of course and outcome to a mass of hitherto undifferentiated clinical material, he was able to formulate the two outstanding conceptions of the relatively benign manic-depressive insanity and the relatively malignant dementia

praecox group, and in thus producing order out of chaos he gave an impetus to psychiatry to which has been largely due its unquestioned progress in recent years. This is not the place to attempt a summary of the vast amount of work for which Kraepelin was responsible, and perhaps his great textbook of psychiatry affords the most striking evidence of his industry and genius.

In 1922 Kraepelin retired from the management of the Munich Clinic in order to devote his energies to the development of the German Institute of Psychiatric Research founded by him in 1917. The story of its founding reveals the astonishing fact, to use Kraepelin's own words, that a great enterprise, requiring millions of marks, and serving in the first instance purposes of pure science, had been carried into execution, even amid the tumult of war, in little over a twelvemonth. The preparatory work dated back to the pre-war period, but the scheme had to give place to the great task of the day, until, on January 6th, 1916, with the subscription of the first half-million marks, the possibility of its materializing came within reach. In 1917 was held the first public meeting at which the position of the institute with regard to psychiatry could be made plain, and in 1919 five of the seven departments originally projected had begun their work, each under the leadership of a well known man of science. The functions of this institute were outlined in a masterly summary of the problems of psychiatry and of the methods of investigation which were required for their elucidation.\* The conception of dementia praecox opened up a new vista to the younger psychiatrists in this country, though the older psychiatrists were less ready to discard the clinical ideas of their generation. Kraepelin was held in the highest esteem in Great Britain, however, and in recognition of his great services to psychiatry he was elected in 1909 an honorary member of the Medico-Psychological Association. Several of his works have been translated into English. On the occasion of the commemoration of his seventieth birthday the *Psychiatrisch-Neurologische Wochenschrift* published a number of articles appreciative of Kraepelin's career as one of the outstanding figures in the history of modern psychiatry, and it is a source of satisfaction that in this series one contribution appeared from the pen of the late Sir Frederick Mott, as President of the Royal Medico-Psychological Association, and another from that of Professor G. M. Robertson, who undertook this duty on behalf of the editors of the *Journal of Mental Science*.

By the death of Professor Kraepelin psychiatry has undoubtedly lost a great clinician, teacher, scientist, and administrator.

### JAMES ERNEST LANE, F.R.C.S.,

Consulting Surgeon to St. Mary's Hospital and to the London Lock Hospital.

THE death of Mr. James Ernest Lane deprives St. Mary's Hospital of the last remaining link with its founders: Samuel Armstrong Lane, his great-uncle, and James R. Lane, his father, were respectively surgeon and surgeon to out-patients to the hospital when its doors were opened in 1851.

Ernest Lane was born on July 24th, 1857, at 1, Grosvenor Place, S.W. He was educated at Laneing College and at Magdalen College School, Oxford. He entered St. Mary's as a student in 1875. He was a keen athlete, and his stalwart figure is familiar to St. Mary's men in the photographs of the hospital Rugby football team of his day. He won many events in the hospital sports, and on one occasion was the winner of the United Hospitals hurdles. He qualified as M.R.C.S.Eng. in 1880, and in the same year was resident medical officer to the hospital. In 1881 he was appointed demonstrator of anatomy, and this post he held until, in 1888, he succeeded Edmund Owen as lecturer. In 1882 he had obtained the F.R.C.S.Eng. diploma. For seventeen years he lectured for four days a week at nine o'clock throughout the winter, and never once during that

\* Reference should be made to an article, Ends and Means of Psychiatric Research, in the *Journal of Mental Science*, April, 1922.

OBITUARY.

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time was he late. Generations of St. Mary's men will remember Lane's nine o'clock lecture as their first introduction to the study of medicine, and many will call to mind the dry sarcasm which rewarded a particularly wild shot at answering the questions which always followed his lecture. The writer, when a student, was his prosecutor, and well remembers Lane's greeting when he arrived late one Monday morning. "I presume, Mr. X., your late arrival is a mark of contrition for the dissection on which I am to lecture." Lane was editor of the ninth and last edition of Heath's *Practical Anatomy*, which appeared in 1902.

In 1891 he was appointed surgeon to out-patients at St. Mary's. He had already become a member of the staff of the Lock Hospital, and his name rapidly became known as an authority on venereal diseases. It was with this sphere of work that most of his writings dealt, and many of the articles on this subject in "System" or "Index" were from his pen. His distinction in this respect was recognized when the Royal Commission on Venereal Diseases was set up in 1913 and he was made one of its members. His association with the London Lock Hospital lasted in all for forty-seven years, and the following appears on the minutes of the Board of Management, dated December 17th, 1925:

"That this Board having heard the letter addressed to the Chairman from Mr. Ernest Lane, resigning his position as honorary senior surgeon, owing to his prolonged illness, resulting from his serious accident in November, 1923, accept the resignation with deep regret.

"The association of Mr. Lane's family with the Hospital dates back to 1816; his father and great-uncle having held the position of honorary surgeon before him, while Mr. Lane commenced his connexion in 1878, ultimately rising, as they did, to the highest post on the staff.

"The Board, in grateful remembrance of these long family records, desire in particular to place on their Minutes an expression of their deep appreciation of the great services Mr. Lane has rendered."

After an unusually long spell in the out-patient department Lane was appointed surgeon to St. Mary's Hospital in 1904, and continued in office until his retirement in 1922. He was unfailingly generous and unselfish in his dealing with his juniors, who had much for which to thank him in the readiness with which he allowed them full opportunities for work in the beds which were under his charge. At all times he commanded respect by his absolutely straight and well balanced attitude in matters affecting the welfare and internal conduct of the hospital and medical school. His popularity was exemplified by his enthusiastic reception when he was chairman of the annual dinner of past and present students in 1910. He remained to the end devoted to the school which three generations of Lanes have served. In 1914, when war was declared, he was on the staff of the 3rd London General Hospital, and worked with that unit throughout as a major in the R.A.M.C., T.F. He examined in anatomy at the Conjoint Board and for the F.R.C.S., and was for many years a member of the Court of Examiners of the Royal College of Surgeons. He was elected to the council of the College in 1913 and served until 1921. He was one of the honorary secretaries of the Section of Surgery in Newcastle Meeting of the British Medical Association in Newcastleton-Tyne in 1895. He was a prominent Freemason, and was one of those chiefly instrumental in founding the Sancta Maria Lodge in connexion with his own hospital; for nearly twenty-five years he was its secretary, and to him, in greatest part, the outstanding success of the lodge is due.

Not long after his retirement from active work at St. Mary's he sustained a serious accident, being knocked down by an omnibus in Regent Street. This left him bed-ridden. For three years he endured his discomforts and disabilities with exemplary patience until he passed away peacefully on November 4th at the Star and Garter Home, at Richmond, where he was cared for by one of his former pupils.

In 1900 he married Miss Gertrude P. Woram, but leaves no family. Our deep sympathy is extended to his widow. The funeral took place at the Old Fulham Cemetery on November 8th, and was attended by many of his former colleagues, his old pupils, and other personal friends.

SIR CHARLES RYAN, K.B.E., C.B., O.M.G.,  
Major-General, Australian Army Medical Service.

MAJOR-GENERAL SIR CHARLES SKODGRASS RYAN died on October 24th on the Orient s.s. *Otranto*, which had just reached Adelaide from England. He was born on September 20th, 1853, in Melbourne, the son of Charles Ryan, of Derriwait, Upper Macedon, Australia, and grandson of Henry Ryan, of Kilferia, co. Kilkenny. He was educated at Melbourne Grammar School and at Edinburgh University, where he graduated M.B. and C.M. in 1875; he studied also at Paris, Vienna, and Bonn. He joined the Turkish army as a surgeon in 1876, and served for two years, first in the Turco-Serbian and later in the Russo-Turkish war, in 1876-78. He served with the Turks throughout the siege of Plevna, and was the only British officer present in these operations, when Ghazi Osman Pasha put up a magnificent defence of improvised earth-works, formerly unknown, while the regular Turkish forts fell easily before the Russian advance. For his services he received the Turkish Order of the Medjidie and Osmanli, as well as the Turkish war medal. After returning to Australia he became surgeon, and later consulting surgeon, to the General Hospital and Children's Hospital at Melbourne, a member of the Faculty of Medicine of Melbourne University, medical officer of the Governor-General of Australia, and principal medical officer of the Commonwealth Military Forces in Australia. When the late war began he came to Europe with the Australian Army, as P.M.O., with the rank first of colonel and later of major-general, and served as such at Anzac and Gallipoli peninsula, in France, and in England. He received the C.B. in 1916, the C.M.G. and K.B.E. in 1919, and the Volunteer Decoration. He was the author of a work, *Under the Red Crescent*, in which his war experiences in Turkey were described. In 1883 he married Alice, daughter of the Hon. Theophilus Sumner, M.L.C., of Victoria. She died in 1923, leaving one son, Lieut.-Colonel R. S. Ryan, D.S.O., and one daughter.

CUTHBERT BALFOUR PAUL, F.R.C.S., M.B.,  
Ch.B. (Eng.).

Surgeon to the Cumberland Infirmary.

WE regret to announce the death of Mr. Cuthbert Balfour Paul, who died on October 25th, in his fiftieth year, in a nursing home in Amsterdam, from erysipelas. In company with a party of English surgeons he had been visiting a number of the principal Dutch hospitals.

Mr. Paul was the third son of Sir James Balfour Paul of Edinburgh, for many years Lyon King of Arms, and was educated at Edinburgh Academy and University, where he graduated M.B., Ch.B. in 1900, and obtained the diploma F.R.C.S. in 1903. After holding the posts of resident house-surgeon at the Chalmers Hospital and the Sick Children's Hospital, he became private assistant to Sir Harold Stiles, and worked under him for six years. In 1904 he was appointed assistant surgeon to the Chalmers Hospital, and in March, 1910, assistant surgeon to the Hospital for Sick Children, having entire charge of the surgical out-patient department. In 1912 he was elected assistant honorary surgeon to the Cumberland Infirmary, and soon established a large practice in Carlisle. During the war he performed valuable service at the Cumberland Infirmary, and was visiting surgeon to the Red Cross Hospital at Murrell Hill House. He took an active interest in the progress of the Cumberland Infirmary, and two years ago was appointed one of the honorary surgeons; since there was no vacancy at the time, the statutes had to be amended to enable the committee to pay him this compliment.

Mr. Paul was associated with Sir Harold Stiles in translating into English the fifth German edition of Professor Kocher's standard *Textbook of Operative Surgery*. He was a member of the British Medical Association.

Dr. JOSEPH CANTLEY, who died suddenly on October 23rd, at his residence in Manchester, received his medical education at Trinity College, Dublin. He obtained the L.R.C.P., L.R.C.S.Ed., the L.R.F.P.S.Glasg., and L.M. in 1890, and the L.M. of the Rotunda Hospital, Dublin. Dr. Cantley had practised at Higher Crumpsall, Manchester, for more than thirty years, and was a well known figure at medical meetings, where his independent outlook was always much appreciated. He had been a member of the Lancashire and Cheshire Branch Council of the British Medical Association since 1915, and was chairman in that year. Since 1919 he had been vice-chairman of the Branch, and also a member of the Representative Body. He leaves a widow and four children.

Dr. CONSTANCE MURIEL MARRAT (*née* Willis), who died of pneumonia at Woking on October 10th, in her thirtieth year, received her medical education at the London (Royal Free Hospital) School of Medicine for Women and St. Mary's Hospital. In 1921 she graduated M.B., B.S.Lond., and obtained the diplomas M.R.C.S., L.R.C.P. She held the posts of obstetric officer and resident anaesthetist successively at St. Mary's Hospital. Her career was then interrupted by a long illness, but in 1924 she became assistant resident medical officer at Nayland Sanatorium for six months, and subsequently at Dagenham Sanatorium for more than a year. In 1925 she married, and shortly after was appointed deputy assistant medical officer of health at Woking, where her sympathy and skill with the mothers and children quickly increased the attendance at the clinics. She was a member of the British Medical Association. A colleague writes: Dr. Marrat had a wide circle of friends, who will miss her ever-ready interest and sympathy on all matters, small and great. She was keen, neat, and methodical; had she lived she would undoubtedly have built up a good general practice in Woking.

## Medical News.

THE next session of the General Medical Council will commence on Tuesday, November 23rd; the President, Sir Donald MacAlister, Bt., K.C.B., M.D., will take the chair at 2 p.m. and give an address. The Council will continue to sit from day to day until the termination of its business.

THE annual dinner of the Medico-Legal Society will be held at the Holborn Restaurant, London, on Friday, December 10th, at 7.15 o'clock, with the President, Lord Justice Atkin, in the chair. At the meeting of the society to be held at 11, Chandos Street, Cavendish Square, W., on Thursday, December 2nd, at 8.30 p.m., a communication will be made by Professor Harvey Littlejohn and Dr. Douglas Kerr on "Monoxide poisoning—its increasing medico-legal importance." Discussion will follow.

THE Glasgow University Club, London, will dine at the Trocadero Restaurant, Piccadilly, on Friday, December 3rd, at 7.30 precisely. The Lord Rector, the Right Hon. Sir Austen Chamberlain, K.G., will preside, and the Lord Chief Justice will be one of the guests. Any Glasgow University men who, though not members of the club, desire to attend are requested to write to the Honorary Secretaries, 62, Harley House, N.W.1.

THE half-yearly dinner of the Aberdeen University Club, London, will be held at Kettner's Restaurant, 29, Church Street, W.1, on Thursday, November 25th. There will be a reception at 7 p.m., and Professor William Bulloch will take the chair at 7.30 p.m. The price of the dinner, exclusive of wine, will be 10s., and Dr. W. A. Milligan (11, Upper Brook Street, W.1) will be glad to hear from any graduate (lady or gentleman) wishing to attend. Guests may be invited.

AT the meeting of the Post-Graduate Hostel to be held at the Imperial Hotel, Russell Square, W.C.1, on Tuesday, November 16th, Professor C. A. Pannett, F.R.C.S., will lecture on the treatment of gastric and duodenal ulcers, and on Friday, November 19th, Dr. Maule Hall will speak on the practitioner and the public health man. The meetings commence at 9 p.m.; dinner is served at 8 p.m. (price 5s.), and coffee and biscuits at 10 p.m. (price 6d.).

MR. V. Z. COPE will lecture for the Fellowship of Medicine on acute intestinal obstruction at the house of the Medical Society of London, 11, Chandos Street, W., on November 18th, at 5 p.m. On November 19th, at 1 p.m., Mr. Charles Goulden will give a clinical demonstration in ophthalmology at the Royal London Ophthalmic Hospital, and on the same day,

at 2 p.m., Mr. Clifford Morson will give a demonstration in surgery at St. Peter's Hospital. The lecture and the two demonstrations are open to members of the medical profession without fee. From November 15th to December 4th the Royal Waterloo Hospital will hold a course in medicine, surgery, and gynaecology, with special reference to endocrine deficiency, diseases of the blood, thyroid, respiratory diseases, cardiac affections, and rheumatism. St. John's Hospital will hold a four weeks' course in dermatology, commencing on November 15th; there will be clinical instruction and two lectures a week; for those desirous of studying the pathology a series of practical demonstrations will be arranged. At St. Mark's Hospital there will be a comprehensive course in diseases of the rectum from November 22nd for one week. Starting on November 22nd and continuing for four weeks there will be a late afternoon course in neurology at the West End Hospital, 73, Welbeck Street. The London Temperance Hospital will undertake a general practitioners' course (4.30 to 6 p.m.) from November 29th to December 11th. Courses in obstetrics can be provided at Queen Charlotte's Hospital and the City of London Maternity Hospital; practical courses in anaesthetics can also be arranged; and personal applications may be made to the Fellowship of Medicine for clinical assistantships at the Samaritan Hospital for Women. Copies of all syllabuses and of the general course programme may be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

Dr. A. BROWN KELLY of Glasgow will deliver the Semon Lecture in the Robert Barnes Hall, 1, Wimpole Street, London, on Thursday, December 2nd, at 5 p.m. His subject is "Nervous affections of the oesophagus."

THE Geoffrey E. Duvree lectures in otology will be given this year by Mr. Richard Lake, F.R.C.S., at University College Hospital Medical School. The first lecture (on the mastoid operation) will be delivered on Tuesday, November 23rd, and the second (on otitic intracranial abscesses) on Tuesday, December 7th. The lectures, which are open to all qualified practitioners and to medical students, will be given at 5 p.m. on each day.

THE following members of the medical profession are among the mayors elected in England and Wales on November 9th: Dr. E. Collingwood Andrews (Hampstead), Dr. H. J. Campbell (Dartmouth) re-elected, Dr. Douglas E. Finlay (Gloucester), Dr. W. E. St. L. Finny (Kingston), Sir Thomas E. Flitcroft (Bolton), Dr. J. R. Leeson (Twickenham), Dr. H. Malins (Warwick), Dr. J. H. Nixon (Chippenham), Dr. R. S. Pearson (Lambeth), Mr. Ransom Pickard (Exeter).

Dr. DAVID SHANNON, J.P., lecturer in clinical obstetrics in the University of Glasgow, has been appointed a deputy lieutenant of the county of the city of Glasgow.

Dr. CHARLES JAMES MARSH, who was honorary surgeon to the Yeovil Hospital from 1880 to 1926, since when he has served it as honorary secretary and treasurer, was honoured on November 3rd by the unveiling in the hospital of a bronze bust of himself. Dr. Marsh was a member of the executive committee of the West Dorset Division of the British Medical Association from 1908 to 1916 and again from 1919 to 1922. He was a member of the Dorset and West Hants Branch Council in 1908 and from 1917 to 1919, and president of the Branch in 1910. He has been a member of the Representative Body since 1923.

A MEMORIAL to Sir Richard Douglas Powell, Bt., M.D., a former President of the Royal College of Physicians of London and physician in ordinary to the King, was dedicated recently by the Bishop of Buckingham at Cheddington Parish Church. The memorial has been given by Lady Powell; it consists of a silver cross and altar candlesticks.

A STAINED glass window, erected in the chapel of the Holloway Sanatorium, Virginia Water, to the memory of the late Dr. W. D. Moore, for twenty-seven years medical superintendent of the institution, was unveiled by Sir Lindsay Smith, chairman of the Board of Management, on October 30th. The dedication service was performed by the Bishop of Guildford.

A BRONZE bas-relief in honour of the late Professor Weil, the eminent paediatrist, has recently been unveiled at the Hôpital de la Charité, Lyons, when speeches were delivered by the ex-Premier, M. Herriot, and Weil's successor, Professor Monrquand.

ON All Souls' Day (November 2nd) His Highness Maharaja Sir Chandra Shumsher Jung of Nepal had a wreath placed on the grave of Dr. A. C. Inman in Père la Chaise Cemetery, Paris, "in grateful recollection of skilful help and faithful friendship." Dr. Inman was pathologist to Brompton Hospital, and died last July.

THE French Ambassador in London has informed His Majesty's Government that the centenary of Laënnec will be celebrated in Paris on December 13th, 14th, and 15th next, and that Professor Chausse, of the Academy of Medicine in Paris, is in charge of the arrangements.

SIR HUMPHRY ROLLESTON, Bt., Regius Professor of Physic, University of Cambridge, has been elected as the representative of the University on the General Medical Council for five years, in place of Dr. W. L. H. Duckworth, resigned. Sir Humphry Rolleston has been the representative of the Royal College of Physicians of London upon the Council since November, 1922.

At the recent Clinical Congress in Montreal of the American College of Surgeons honorary fellowships were conferred on Professor Robert Alossandria of Romo, Professor Archibald Young of Glasgow, Sir Ewen Maclean of Cardiff, Professor L. E. Barnett of Dunedin, New Zealand, and Professors John Fraser and David Wilkie of Edinburgh.

THE Board of Trade gives notice that representations have been made to it under Section 10 (5) of the Finance Act, 1926, regarding the following articles: Amidopyrin, barbitone, cocaine, cocaine hydrochloride, guaiacol carbonate, hydroquinone, methyl sulphonal, oxalic acid, phenacetin, phenazone, piporazine, salol, sulphonal. Section 10 (5) of the Finance Act, 1926, is as follows: "The Treasury may by order exempt from the duty imposed by Section 1 of the Safeguarding of Industries Act, 1921, as amended by this Act, for such period as may be specified in the order, any article in respect of which the Board of Trade are satisfied on a representation made by a consumer of that article that the article is not made in any part of His Majesty's Dominions in quantities which are substantial having regard to the consumption of that article for the time being in the United Kingdom, and that there is no reasonable probability that the article will within a reasonable period be made in His Majesty's Dominions in such substantial quantities." Any person desiring to communicate with the Board of Trade with respect to the above-mentioned applications should do so by letter addressed to the Principal Assistant Secretary, Industries and Manufactures Department, Board of Trade, Great George Street, S.W.1, within two months from the date of this notice (October 27th).

THE British Social Hygiene Council (Carteret House, S.W.1) has published in one volume the proceedings of the Imperial Social Hygiene Congress, which was held at the British Empire Exhibition at Wembley in October, 1925. Opening addresses were given by the Right Hon. L. S. Amory, M.P., and by representatives of some of the Dominions. Discussion followed on venereal disease in the navy, army, India, the mercantile marine, the self-governing Dominions, and the Colonies and Protectorates. A paper by Dr. Kathleen Vaughan contained some lurid evidence on the organization of prostitution in Kashmir; and a good deal of discussion took place on the need of protection for sailors in seaport towns. The report of the proceedings furnishes a large amount of information for those interested in venereal disease.

THE International Labour Office has issued six further pamphlets, Nos. 46-51, dealing with acid burns, air of work rooms, dangers arising out of working in alabaster and alcoholic intoxication, anguillulosis, diseases due to the preparation of ethyl alcohol, and injuries by fluorine and hydrofluoric acid. When the series of pamphlets is complete, they will be published by the International Labour Office in a bound volume.

THE St. Andrew's Ambulance Association in Scotland has found its headquarters too small. An appeal made early this year for £30,000 to cover the cost of new premises has already brought in about half that amount. The main feature of the association's work is its motor ambulance service for the transport of cases of accident and illness. During the last year 27,410 calls were made upon the ambulance waggons, and of these cases 13,677 were conveyed in the Glasgow area alone. The patients conveyed to hospitals and other places since the formation of the association number 391,969.

THE first number of the students' journal of the Welsh National Medical School, entitled *The Leech*, contains articles on the importance of anatomy by Professor David Hepburn, on thyrotoxicosis by Mr. Lambert Rogers, on biochemistry and modern medicine by Mr. J. Pryde, lecturer in chemical physiology, and articles of clinical and general interest. An appeal is inserted on behalf of the Cardiff Royal Infirmary, the financial position of which has been seriously affected by the coal dispute.

THE November issue of *The Prescriber* is devoted to rheumatic diseases, with special reference to the economic aspect. The subjects treated include fibrositis, osteoarthritis, rheumatic heart disease, the relation of goitre to rheumatism, the treatment of chronic rheumatic diseases, and spa treatment. The journal may be obtained from the editorial publishing offices, 6, South Charlotte Street, Edinburgh, price 3s. 6d., post free.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

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**FINANCIAL SECRETARY AND BUSINESS MANAGER** (*Advertisements, etc.*), *Articulate Westcent, London.*

**MEDICAL SECRETARY**, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

### QUERIES AND ANSWERS.

"**MEDICAL MAYOR**" asks for advice in the treatment of a girl, aged 3 years, infested with *Taenia solium*.

**BEDS FOR PAYING PATIENTS IN SMALL HOSPITALS.**

DR. C. R. DYKES (Buckhurst Hill, Essex) asks for information with regard to country hospitals, with from thirty to fifty beds, providing accommodation for some private patients.

**WARTS AND EGGS.**

WE have received the following replies to Dr. Leonard Williams's question in the **JOURNAL** of October 22nd (p. 753). Dr. J. M. MACRAIL (Middlesbrough) writes: It was a common belief in West Argyllshire that warts could be caused by washing the hands in the water already used for the boiling of eggs, and in many parts of the East of Scotland and in Yorkshire they refuse such water to wash dishes or use in any way.

DR. A. MACMARTIN (Rusholme, Manchester) writes: The belief in the association of warts with freshly boiled eggs is fairly common. Some persons will not touch the shell of a warm egg, but use a napkin when transferring it to an egg cup.

**THE PLACENTA AFTER PITUITARY EXTRACT.**

"R. E." wishes to raise the question with which the following note concludes: After a prolonged second stage in a primipara, aged 27 years, 1 c.cm. of pituitary extract was given and delivery by forceps was then immediately effected. The third stage lasted three and a half hours, presumably owing to the uterus going into tonic contraction. The puerperium was normal. Should the placenta have been manually removed after an hour, according to most orthodox teaching?

**CHILBLAINS.**

DR. ERNEST A. MILNER (Kington, Herefordshire) writes: If "C. P. J." will give calcium chloride 10 grains thrice a day instead of the lactate—which is an unreliable salt—and parathyroid 1/4 grain once or twice daily, I think he will find the chilblains can be kept at bay.

DR. H. V. CANTOR writes: It may be advisable to try a method advocated by Leonard Mitchell in the *Medical Journal of Australia*, October 2nd, p. 449, which should be consulted for details; the treatment may be summarized thus: The bands may be treated by firmly fitting rubber gloves worn at night; the toes by a cuff of a rubber glove worn around the foot or by a thin piece of sponge rubber held in place by a piece of sticking plaster. The pressure must be firm.

DR. NORMAN HONGSON (Newcastle-on-Tyne) states that he has had good results in the treatment of chilblains from the following mixture, to be taken for three days during frosty weather: Calc. carb. 66 grains, acid. lact. conc. (sp. gr. 1.21) 144 min., aq. menth. pip. ad 12 oz.; 1 oz. thrice daily.

DR. MARY G. CANNWELL (Oldham) writes to suggest the following regime: The patient, sitting in a warm room, has two bowls, one of hot water, the other of cold, into which the hands or feet, as the case may be, are plunged alternately, care being taken to finish up with hot water. The part is then rubbed with a warm rough towel and afterwards with olive oil. This should be done twice daily and should be begun in early autumn. "Success depends on the conscientious carrying out of the treatment combined with vigorous friction. Cod-liver oil and malt is a useful adjunct."



## INCOME TAX.

## Partnership Assessment.

"DURHAM" has received a notice of assessment which he finds inexplicable in certain respects—for instance, £402 is deducted for personal allowance due to the two partners.

It is unfortunately the fact that the law does not provide for partners to be separately assessed, with the result that the joint assessment, which is really the sum of the liabilities of the partners, is not understandable by others. This is particularly the case in medical partnerships where the partners bear their locomotion expenses individually, so that the assessment, even before the allowances are deducted, is not properly divisible into the partnership shares. We advise "Durham" to write to the inspector of taxes asking him to state separately the partners' shares of the £842 gross assessment. As regards the £402 allowance, it may be that one partner has had £43 allowed from some private assessment—for example, on untaxed property or interest.

## Expenses.

"W. G. M." has been in partnership three years, and his locomotion expenses (owing to the substitution of a motor car for a motor cycle) have been very much greater in the last year than in the first two. The inspector of taxes refuses to allow more than the average of the three years.

This is correct. As the law stands the firm is assessable upon the average profits of the three years—that is, upon the average of the amounts by which the gross earnings for each of those years exceed the expenses of those years respectively. It would, of course, be incorrect to deduct average expenses from the gross earnings of a single year. This applies to the running expenses referred to in "W. G. M.'s" letter; the "depreciation" allowance, say 15 or 20 per cent., is a deduction from the average and should be claimed accordingly. A point which may be worth attention is that "W. G. M." may include in his claim for expenses the original cost to him of his motor cycle less the amount realized for it on sale—the claim to apply to the year in which the sale takes place—by way of obsolescence allowance.

## LETTERS, NOTES, ETC.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

DR. ALEXANDER THOS. SCOTT (Holloway, N.7) writes: I think that the attention of your many readers who are Fellows or Members of the Royal College of Surgeons of England should be drawn to a striking example of the dilatory methods of the Council. The new (supplemental) charter of 1926 gives women Fellows and members, and also licentiates in dental surgery, equal rights with men, not that this privilege amounts to much in the case of the last two classes. This charter was signed by His Majesty in July last—that is, four months ago; yet the Council has apparently not altered or amended By-law No. 26, which forbids women to attend meetings and vote at the College. The said result is that women at the annual meeting of Fellows and members on November 18th will not be allowed admission except into the gallery, and when there will not be permitted to speak or vote. Apparently the women will be denied their rights until November, 1927, at the earliest. It will be interesting to men Fellows and members to see in what manner the women will express their opinion of such treatment.

## RECOVERY AFTER APPARENT DEATH.

We have previously referred to the progress made by our contemporary, the *Kenya Medical Journal*, the clinical and scientific contributions to which are often of general interest. The September issue contains a brief report which almost inevitably recalls the old tag, *Ex Africa semper aliquid novi*, inasmuch as it relates to the temporary recovery of consciousness several hours after apparent death. Dr. H. M. Shelley relates how he found the apparently dead body of a native woman, whose throat had been cut; the floor of the hut was covered with blood, the woman was not breathing, and there was no evidence of any cardiac action. The body was transferred to the mortuary in the neighbouring town of Zomba, and three hours later preparations were made for a necropsy. It was then found that the woman was breathing slowly and deeply, and a rapid, thready pulse was palpable in the radial artery. The cut vessels were quickly ligatured, a tracheostomy tube inserted, the skin sutured, and intravenous saline administered. Within thirty minutes from the beginning of the operation the woman regained consciousness, and was removed into hospital, where she gave an account of the assault to the police. Four hours later she died from asphyxia, due to blockage of the trachea. The injuries included a linear incision in the neck, 4½ in. long, left internal and external jugular veins, the left superior thyroid artery, and the trachea completely. The woman had been apparently dead for nearly six hours before receiving treatment, and yet in the space of a few moments regained full consciousness. Dr. Shelley's explanation is that strangulation had preceded the injury, causing asphyxia, with the result that the blood remained fluid much longer than usual. In preparing the body for the necropsy, pressure was exerted upon the woman's chest, allowing the lungs to take in a fresh supply of air and at the same time

causing a flow of blood, which possibly reached the brain and stimulated the respiratory centre to action. The day was very hot, so that the woman could not have experienced any great loss of body heat.

## THE DETERMINATION OF SEX.

DR. N. McCONNELL BOYEE (Romford, Essex) writes: Some four or five years ago I read in the *JOURNAL* a letter from a general practitioner. He wrote on the determination of sex and suggested that, when conception took place prior to a menstrual period, a male child resulted and a female when conception was after a period. That letter aroused my interest in this matter, and I have lost no opportunity to verify the rule it laid down. I am convinced that the riddle of sex is no riddle at all, and that the simple rule propounded in that letter is the law of sex determination. During the past few years it has been interesting, when booking a maternity case, to try and find out exactly when conception took place with relation to the period. In the majority no help could be given by the patient, but those few who were able to state matters definitely produced at birth that sex which was expected. It has been my practice to broadcast the rule to all whom I thought it would help. Results have been hard to obtain, but I know at least three people who have been grateful.

## TREATMENT OF PRURITUS ANI.

DR. T. W. PRESTON (London, S.E.) writes: I was much interested in the letter by "J. S." published in your issue of October 23rd (p. 763) on the subject of pruritus ani, and particularly in his remarks about failure to wash the hands after defecation. It is a small matter, which many may perhaps consider unworthy of much attention, but I agree with "J. S." that its importance might with a advantage be emphasized more by those concerned with the public health. I would suggest further that facilities for washing the hands without extra charge should be provided in all public lavatories maintained by municipal bodies for persons who have made use of a water-closet. At the present time one cannot wash one's hands after defecating in a public water-closet without paying the full charge for "wash and brush up." It is unreasonable to expect everybody to do this, and thus dirty habits are indirectly encouraged by the public health authorities.

## MICROSCOPE LAMPS.

A CATALOGUE of illuminating apparatus for microscopes has been forwarded to us by Oglivy and Company (20, Mortimer Street, W.1), who bear a well known name in the British optical industry. Certain improvements have been made with a view to arriving at an ideal electric lamp for microscopical research. The lamp described embodies a hood (in the shape of a vertical brass cylinder), and so constructed that it gives the minimum reflection, thus lessening the experience of those who undertake observation for long periods. The iris diaphragm serves the double purpose of regulating the size of the light source as required and enabling the user to project an accurately focused image. The condenser system is fitted with centring screws, so that the condenser may be accurately placed in relation to the permanently fixed iris diaphragm, and the electric bulb is of the half-watt type, but made with a special mixture of glass, so as to present an exceedingly fine opal surface. This diffuses the rays from the filament, and when there is sharp focus no striae or granulation appears in the field of view. The catalogue contains particulars also of a new form of substage lamp in which the illuminant is directly on the microscope, and of a mercury vapour lamp for research workers who require light in the ultra-violet region.

## WATER ANALYSIS.

At the last meeting of the Society of Public Analysts Mr. J. W. Haigh Johnson, M.Sc., presented a critical review of the methods of analysing waters, sewage, and effluents, and made suggestions for their improvement. He found that present methods yielded results which were often unreliable and inconsistent. Recent modifications in sewage treatment have greatly increased the amount of nitrogen oxidation products in sewage treatment and have thus increased the difficulties. A comparison of the results given by the Wanklyn, Kjeldahl, acid chemical, and biological processes has indicated that, in its present form, the first is too vague, whilst the acid chemical test yields only a fifth of the result obtained biologically. Mr. Johnson described a method of combining the Wanklyn test and the alkaline oxidation method, and made suggestions for improving the Kjeldahl test and the biological determination of absorbed oxygen.

## A WARNING REPEATED.

IN our issue of January 3rd, 1925 (p. 56), Dr. Hubert Cox (Edgbaston) wrote to say that a man had been making use of his name and address in the Luton district for the purpose of obtaining money from doctors. He suggested that any practitioner receiving a visit from such a person should communicate with the police. He now learns that this man is "working the London area."

## VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 40, 41, 42, 43, 46, and 47 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 44 and 45.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 215.

**British Medical Association.**

**PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.**

**SECTION OF MEDICINE.**

F. H. JACOB, M.D., F.R.C.P., President.

**THE NATURE OF MALIGNANT NEOPLASIA AND TREATMENT OF THE DISEASE WITH LEAD.**

A SYMPOSIUM BY MEMBERS OF THE STAFF OF THE LIVERPOOL MEDICAL RESEARCH ORGANIZATION.

VICE-CHANCELLOR ANAMI, before reading the introductory remarks of Professor Blair Bell, said:

It is with profound disappointment on your part, and indeed on the part of all concerned, that I appear before you this morning in place of Professor Blair Bell. This packed audience has gathered here to hear him describe the methods and progress of his work upon the treatment of cancer. He himself appreciated acutely the action of the Nottingham executive in inviting him and granting a whole morning in this Section for the full presentation of the work accomplished by himself and his colleagues in Liverpool during the past five years. But, a little more than fourteen days ago, he experienced an acute septic attack with a temperature so high that for a time his life was in danger. When I saw him two days ago, while he was on the road to recovery, he was still in bed, and any idea of his coming to Nottingham was clearly out of the question. In these circumstances he asked me to deliver his introductory paper. Naturally I would greatly like to seize this opportunity to give you my own views regarding this work, and the arrest of cancer. You will understand, however, that in loyalty to Professor Blair Bell, this morning I cannot and must not break into the programme arranged by him. One thing, however, I may perhaps be permitted to say, and this with a full knowledge of the doubts and aspersions that have been thrown upon Professor Blair Bell and our work in Liverpool, and it is this: From the first moment when, more than five years ago, Professor Blair Bell told me in confidence what he was doing, I have been so impressed with his scientific method of approach to the subject that I have given him my whole-hearted support, nor have I ever once discovered any departure from the strictly scientific attitude during all these years. And, this being so, I have constantly helped forward the work, and particularly the co-operative method of attacking the many problems involved, being convinced that, where such a spirit of scientific approach towards every aspect of the problem was manifested by all concerned, despite temporary ill report the work must eventually redound to the credit of the University of which I find myself head, and of which so many members of the professorial body are co-operating in this investigation. I am sure that those who listen to the succession of papers to be given this morning can only come to one conclusion.

**THE LIVERPOOL CANCER RESEARCH ORGANIZATION.**

BY

W. BLAIR BELL, B.S., M.D., Hon. F.A.C.S.,

Professor of Gynaecology and Obstetrics in the University; Gynaecological and Obstetrical Surgeon, Liverpool Royal Infirmary; and Director, Liverpool Cancer Research Organization.

THE Liverpool Cancer Research Organization, which we hope in the future to call "The Liverpool Medical Research Organization," has been in existence for over three years.

I have never had any doubt as to the best way of attacking not only the problem with which we are now dealing, but also other complex pathological states, like the toxæmias of pregnancy, on which our present work promises to throw some light.

Our Organization was made possible in the first instance, and for over two years, by the generosity of a few Liver-

pool citizens who found the money required, and formed a committee, the support and sympathy of which have been assets of incalculable value. I have recorded elsewhere the names of those who have so loyally helped us.

During the last eight months our Organization has been in a measure self-supporting: all fees received from patients for consultations, operations, biochemical examinations, injections, and nursing-home accommodation are received by the committee, and this body defrays the expenses in connexion with both the clinical work and laboratory investigations. As far as it is possible to guarantee such a thing, it is the intention of the committee to conduct the work on the present lines for five years longer. It is, however, highly improbable that during the whole of that time enough will be earned in fees, year by year, to support the Organization in its present form, let alone endow it. It is sincerely to be hoped, therefore, that sufficient financial support will be forthcoming to relieve the committee from anxiety in this matter.

Let me now describe the constitution of our Organization and the way in which we are attacking our present problem.

First, it was deemed impossible with the money at our disposal to employ an entirely whole-time staff of the variety and distinction necessary for the work in hand. Secondly, careful consideration made it clear that for each principal investigator entire freedom of action and method was essential if we were to secure the interest, co-operation, and harmony we sought to promote.

The following plan, therefore, suggested itself. The heads of the various departments in the University of Liverpool, whose expert knowledge could be brought to bear on different aspects of the same line of attack, were consulted, and invited to take part in the work of the Organization in their own laboratories, with the aid of whole-time qualified research workers, laboratory assistants, and other facilities. There was a most generous and ready response, and, in spite of certain freely expressed forebodings, our belief that, in a serious effort of this kind, the personal equation of all would be reduced to parity has been completely justified; consequently goodwill, cordial co-operation, and some success in our common task have been the result. In this way, too, it came about that what I have called an "aggregate mind" was brought into being, to make up for the inevitable deficiencies that must be found in an isolated mind, however elastic, in respect of such a multifaceted subject as that of malignant disease.

Co-ordination was sought not only in regard to the purely scientific research investigations—that is, in physical and biological chemistry, pathology, pharmacology, and animal experimentation, but also in connexion with the clinical aspects of the subject.

The following is the present staff of the Organization.

Director: W. Blair Bell (P).

Assistant Director: L. Cunningham (P).

Chemistry—

Physical Chemistry: W. C. McC. Lewis (P), M. Jowett (W), H. Millet (W), J. Brooks (W).

Biochemistry: R. Coope (H), L. Cunningham (P).

Pharmacology and Toxicology: W. J. Dilling (P).

Pathology: E. E. Glynn (P), R. W. Brookfield (W).

Animal Experiments: W. Blair Bell (P), M. Datnow (P).

Clinical Work—

General Surgery: H. F. Woolfeuzen (H), W. R. Williams (P), J. B. Oldham (P).

Medicine: John Hay (H), L. Cunningham (P).

Anæsthetist: H. L. Patch (P).

Special Surgery:—

Gynaecology: W. Blair Bell (P), S. B. Herd (P), M. Datnow (P).

Throat and Ear: H. V. Forster (P).

Eye: T. H. Bickerton (P).

Radiography: R. E. Roberts (P).

Public Health Officer and Statistician: C. O. Stallybrass (P).

Secretary: Edward Carcy (P).

(W)=Whole-time. (P)=Part-time. (H)=Honorary.

In addition there are four assistant secretaries and six laboratory assistants, all whole-time. Financial obligations have been fairly and generously adjusted by the committee.

Such an arrangement resembles, of course, the general method adopted by the Rockefeller Institute and some of more famous American clinics, such as those of the Mayos and Crile. But I think we go even further in the solidarity, absence of friction and timing of our machinery, and also in the concentration of every unit of energy on the matter in hand.

In order to illustrate our methods of research and practice I must now discuss briefly the question with which we are immediately concerned and the difficulties encountered.

In the first place, long years of thought and study of every aspect of the problem, particularly perhaps the clinical side, forced me to the conclusion that it is of considerably lesser importance to seek to enumerate the many, as I believe, so-called "causes" (really predisposing factors) of cancer, than to discover the nature of the cancerous process itself—that is, the character of the change from normal growth to cancerous development. I do not, of course, wish to imply that such etiological information is of no importance, for it may be of the greatest value in the prevention of the disease, as I have stated elsewhere.<sup>1</sup> Nevertheless, we shall always be faced with existing malignant disease, and be called upon to treat it.

Now, my own views, often expressed, as to the nature of malignant neoplasia may be very briefly stated as follows:

There are many extrinsic and intrinsic factors which can produce the "precancerous condition" in, or in relation to, the cells concerned—radiations of various kinds, heat, trauma, infection, toxæmias, senescence, and the rest, all of which reduce the vitality of the cell—a condition which may terminate in recovery, death, or in reversionary development in order that the cell may live. It seems probable that the metabolic disturbance leading to the change may be one of oxygen starvation. The importance of this will be made apparent later.

The ancestral type to which the cell seeks to return in the reversionary process is that of the chorionic epithelium, which has the power of invasion and erosion of blood vessels in its search for nutriment. Malignant neoplasia except, *ipso facto*, in the case of chorion-epithelioma, is, therefore, a specific process of dedifferentiation from high specialization back towards or to the most distant ancestral type—the chorionic epithelium.

If this be so, we should expect on scientific investigation to find that the chorionic epithelium resembles the malignant cell in structure, function, chemical composition, and, therefore, also in toxicological affinities.

It must be clear from what I have said that the working hypothesis presented a formidable array of scientific problems for elucidation before a generalization could be formed. The energy with which each has been attacked, and the amount of convincing confirmatory evidence obtained, say much for the spirit that has prevailed.

In physical and biological chemistry Professor Lewis, and his whole-time associates, Dr. Corran, Dr. Jovett, Dr. Millet, and Dr. Brooks, have undertaken most arduous and difficult work, and have done a great deal to establish the similarity of chemical composition and function of the chorionic epithelium and malignant tissues, as you will hear directly.

Not only this: Professor Lewis and his fellow workers have done much research in connexion with the preparation of the material made by them for our use in the treatment of patients, and they have studied also the fate of lead in the blood stream.

In pathology, Professor Glynn has placed at our disposal his great experience, and has written full and illuminating reports on the tissues submitted to him. There is one matter I must mention concerning this work, and it is that it has been a revelation to us how many lesions are diagnosed as malignant by surgeons without the authority of a pathological report based on histological study. We ourselves rarely undertake the treatment of a case on clinical evidence alone; and our insistence on obtaining tissues for section has led to the discovery that cases are not always malignant as supposed. Any criticism that might be offered in respect of cases treated by us without a piece of tissue having been removed for section would be scientifically justifiable.

In addition Professor Glynn, working in conjunction with Dr. Brookfield, has endeavoured to ascertain the nature of the earliest effects of lead on malignant cells, for gross

necrosis gives no clue as to the character of the proceeding changes. Moreover, Dr. Brookfield has made interesting observations on the character of basophil stippling of the erythrocytes.

Professor Carter Wood, Director of the Crocker Institute for Cancer Research in the Columbia University, who has so cordially undertaken the investigation of the changes produced by lead on large transplantable rat tumours, has consented to-day to be regarded as a corresponding member of the Liverpool Cancer Research Staff, and he will lay before us the striking results he has obtained.<sup>3</sup> I wish publicly to thank him for his broad-minded, scientific, and generous support at a difficult time.

Dr. Hendry, Dr. Annett, and myself have described the action of lead on the chorionic epithelium of the rabbit.<sup>2</sup>

The toxicological action of lead on the normal growth of plants and animals, commenced by Mr. Patterson and myself, has been fully studied by Professor Dilling, who has, moreover, given us much valuable clinical assistance by his investigations into the action of lead on the gastrointestinal and vascular systems. Professor Dilling has, too, determined the toxicity of a variety of preparations of lead suggested for, or used in, the treatment of cancer.

Lastly, Dr. Cunningham will discuss at some length our work on the treatment with lead of malignant disease in the human subject. I may say here that we chose lead for our first attack because of its action on the chorionic epithelium—an action I observed first many years ago. Nevertheless, the mere fact that the chorionic epithelium and the cancer cell are similar in nature, and that lead is specifically toxic to both, is not enough; we have yet, as you will gather, either to improve and render consistent our results, and to protect our patients from the harmful effects of lead poisoning, or we must find some other substance that will act after the manner of lead on malignant tissues but be less toxic generally.

In spite of all this, I hope that when you have heard my colleagues discuss the various aspects of our work, and my summary of it, you will agree that our generalization concerning the nature of cancer is soundly supported in every direction, for the elucidation of the nature of cancerous development is the first step towards the successful treatment of malignant disease.

## REFERENCES.

- <sup>1</sup> Bell, W. Blair: *Public Health*, 1924, xxxvii, 217. <sup>2</sup> Bell, W. Blair, Hendry, R. A., and Annett, H. E.: *Journ. Obstet. and Gynaecol. British Empire*, 1925, xxxii, 1. <sup>3</sup> Wood, F. Carter: *Journ. Amer. Med. Assoc.*, 1926, lxxxvii, 717.

## SOME PHYSICO-CHEMICAL AND BIOCHEMICAL ASPECTS OF MALIGNANT NEOPLASMS.\*

BY

W. C. M. LEWIS, M.A., D.Sc., F.R.S.,

Professor of Physical Chemistry, University of Liverpool.

It is necessary to point out in the first place that what I have to say deals only with a particular phase of the general problem presented by malignant neoplasms. It may be well to emphasize that the object of my remarks is twofold—namely, to indicate the nature of those physico-chemical and biochemical results already attained which bear upon the problem, results as yet not very numerous, and still more to indicate the very much larger field in which future investigations are likely to lead to conclusions of value in connexion with the processes which underlie malignancy.

### Electrical Conductivity and Permeability of Malignant Tissue.

In the first place I would draw your attention to an almost purely physical property—namely, that of electrical conductivity. It has been shown that cancerous tissues, freshly removed from the body, have a higher electrical conductivity than normal tissues under the same conditions. Crile has succeeded in comparing the electrical conductivity of the outer growing part of cancers with the central non-

\* Abstract of a more detailed paper.

growing parts, and has found that the outer growing part has the higher conductivity. He quotes the following:

	Specific Conductivity.
<i>Carcinoma of the thyroid:</i>	
Centre of growth ... ..	0.00101
Periphery ... ..	0.00528
<i>Carcinoma of the uterus:</i>	
Centre of growth ... ..	0.00493
Periphery ... ..	0.00653

Now electrical conductivity depends on the presence and movement of electrically charged atoms or ions—which may be simple or complex in structure—and the increased conductivity necessarily means that the material now possesses an increased permeability to such water-soluble constituents on the part of any membranes or septa in the cells. Fricko and Morse (unpublished), who confined their measurements to cancer of the breast, find that the electrical conductivity is not necessarily raised in malignancy. They find a fairly large number in which it is lowered. These authors lay much greater stress on the value of electrical capacity as an indication of malignancy, the capacity in all the cases examined (55) being decidedly raised as compared with the normal. On the whole, in so far as evidence is available, the electrical measurements tend to indicate increased permeability as a definite feature of malignant tissue.

Let us now consider briefly the question of the alteration in the relative amounts of those substances part of the function of which is that of maintaining a certain degree of permeability or impermeability. It has been shown by Clowes and Frisbie,<sup>1</sup> and confirmed by others, that in actively growing malignant tissue the calcium content is markedly low, whilst that of potassium is high.

It has been known for a long time<sup>2</sup> that calcium tends to alter an emulsion consisting of water as the continuous phase with droplets of a fatty oil suspended therein into an emulsion of the reverse type in which water is suspended in droplets in a continuous medium of oil. The former type of emulsion has a high electrical conductivity and permeability for water-soluble substances, the latter type has scarcely any conductivity and will not permit water-soluble substances to pass through it. Clowes has applied these ideas to the permeability and impermeability of a cell. Naturally it is nothing more than a rather crude mechanical picture, and it might be improved perhaps if we regard the role of calcium, in so far as this function is concerned, to be that of preventing even temporary or incipient perforation of the cell membrane. If there is a deficiency in calcium—as seems to be beyond dispute in the case of malignant tissue—the increased permeability and electrical conductivity observed are to be expected.

#### Phosphatide and Cholesterol Content of Malignant Tissue.

But calcium is not the only substance involved in permeability. We have to take account of the phosphatides, lecithin with its congeners cephalin and sphingomyelin, together with cholesterol, which is not a phosphatide. These substances are usually found associated together along with other fatty material (glycerides).

In agreement with the work of Seifriz<sup>3</sup> and of Bhatnagar,<sup>4</sup> Dr. Corran, working in my laboratory, found that lecithin is an emulsifying agent which favours the formation and maintenance of an emulsion in which the oil is dispersed in water, the water being the continuous phase.<sup>5</sup> Such a system possesses high permeability for water-soluble substances. On the other hand, cholesterol is an emulsifying agent which favours the reverse type of emulsion—namely, one in which the water is dispersed in the form of fine droplets in a continuous medium of oil. This system has a very low electrical conductivity and is not permeable to water-soluble substances. Emulsification experiments were also carried out in which both lecithin and cholesterol were simultaneously present and a definite antagonistic action was observed. The type of emulsion was found to depend upon the relative amounts of lecithin and cholesterol present. An excess of lecithin gives rise to an emulsion in which water is the continuous phase.

It is obvious that the ratio of these two substances is a

highly significant one in determining which type of emulsion will be formed. The transfer of these considerations to the question of cell permeability appears legitimate, and we would expect to find that those cells in which the lecithin to cholesterol ratio is high should be those possessing marked permeability.

In this connexion mention may be made of a rather limited set of analyses carried out by Bullock and Cramer<sup>6</sup> on the lecithin-cholesterol content of malignant tissue in rats, from which it may perhaps be inferred—though the evidence in this instance is not conclusive—that the lecithin-cholesterol ratio is higher in rapidly growing tumours than it is in slowly growing tumours. A somewhat extensive series of determinations of the lecithin-cholesterol contents of human tissues and tumours has been carried out in my laboratory by Dr. Corran and Dr. Jowett, the results of which seem to leave little doubt but that in malignant growth the ratio of lecithin to cholesterol is excessive. This is shown by the following table, which gives the average values obtained. Further determinations are in progress.

Human Tissues.	Per cent. Water.	Per cent. Phosphatides (on dry wt.).	Per cent. Cholesterol (on dry wt.).	Phosphatide-Cholesterol Ratio.
<i>Normal Tissues:</i>				
Ovary... ..	75.8	5.22	2.16	2.4
Cervix ... ..	75.35	1.08	0.43	2.5
<i>Innocent Neoplasms:</i>				
Ovary... ..	80.9	1.48	0.52	2.8
<i>Malignant Neoplasms:</i>				
Cervix ... ..	80.8	3.32	0.92	3.6
Ovary... ..	81.9	4.52	1.12	4.0
<i>Chorionic Villi...</i>	89.9	6.8	1.47	4.7

The somewhat larger content of water and the high ratio of lecithin to cholesterol are, in the light of emulsification experiments with fatty oil, precisely what one would expect to go hand-in-hand with the increased permeability of such tissues. Incidentally also the analytical results obtained for the chorion are strong evidence in favour of the view advocated by Blair Bell regarding the fundamental similarity between malignant growth and the chorion itself—that is, in favour of dedifferentiation as characteristic of cancer.

#### The pH (Reaction) of Blood and Tumour in Malignancy.

In view of the marked permeability to water-soluble substances indicated above, it would be natural to inquire whether there is any departure from the normal behaviour on the part of cancerous subjects in respect of the pH (that is, the acidity or alkalinity) of the blood and the tissues affected. As regards the whole blood of human subjects there is no detectable deviation from the normal value. The effects, if any, are completely masked by the buffering action of the blood and by the ability of the liver and muscles to take up lactic acid. Any effects, if present, would probably only be detectable near the site of the growth in the blood issuing from that region. This condition has been realized by C. F. and G. T. Cori<sup>7</sup> in the case of Rous sarcoma in chickens' wings and also in one instance of a human subject with a large sarcoma in the forearm. In the experiments with the chickens the tumour, which was of about the size of an egg, was produced in one wing only, the other wing being normal. These authors found that the blood which had passed through the tumour contained distinctly more lactic acid than the blood which had passed through the normal wing. Whether this points to an acid condition in the growing part of the tumour itself is uncertain.

In experimental tar cancer (in rabbits), according to Remond, Sendrail, and Lasalle,<sup>8</sup> in the precancerous stage the pH of the plasma is considerably lowered (from an average value of 7.31 to an average of 7.17). Incidentally the authors find the ionic calcium of the blood diminished, and conclude, in agreement with others, that calcium has an inhibiting effect on tumour growth.

An altered reaction in either direction may be expected on general chemical grounds to alter—raise or lower—the activity of enzymes and the stability of certain chemical complexes. Experiments are in progress in my laboratory upon the pH of cancerous tissue, using the glass electrode technique worked out by Mrs. Kerridge in A. V. Hill's laboratory.<sup>9</sup>

Antitryptic Activity of the Blood in Cancer.

Antitryptic action is usually ascribed to the interaction (adsorption) of trypsin enzyme with some constituent of the serum. The blood of cancer patients usually exhibits an increased antitryptic activity.

That the antitryptic activity of the serum is due to lipoids appears first to have been suggested by Schwartz (1909), and later by Sugimoto (1913). Jobling and Petersen confirm this view, and as a result of their carefully carried out experiments generalize to the extent of attributing antitryptic action to esters of unsaturated fatty acids, the more unsaturated the acid radicles the greater the antitryptic action. It is necessary to point out, however, that the role attributed by Jobling and Petersen to phosphatide has been questioned by several workers.<sup>10</sup> Thus Tealo and Bach conclude that serum antitrypsin is protein in nature. It is quite possible that we have to do with a lecithin-protein complex. Nenberg<sup>11</sup> suggests that the antitryptic action is of the nature of a protective effect against excessive enzyme activity.

Unfortunately in most of the work considered here there is no record of the reaction or pH of the system having been determined, and, in view of the known amphoteric natures of enzymes on the one hand and of material such as lipoids and proteins on the other, it is to be expected that an alteration in pH may exert a profound influence on the effects produced.

Digestibility and Autolysis of Tissues, Normal and Malignant.

If the physico-chemical phenomenon of permeability is to be regarded as of biochemical significance we should expect that it would play a significant part in such a process as that of digestion of tissue by enzymes. It would be expected, in fact, that increased digestibility would go hand-in-hand with increased permeability, this condition being presumably a favourable one for the transport of enzymes and products of enzyme action in either direction. A comparison of normal living and dead tissue supports this. The permeability in the latter condition is regarded as being greater than that in the former, the increased permeability of dead tissue being ascribed to changes brought about by toxic substances such as acids.

At the same time the digestibility of living and dead tissue respectively is known to be very different. Thus Northrop, in a recent paper<sup>12</sup> on "The resistance of living organisms to digestion by pepsin or trypsin," finds that while pepsin or trypsin is quickly removed from solution by dead organisms these enzymes are not able to penetrate into normal living organisms. Since the presence of excess lecithin in the membranes and septa of malignant tissue has been regarded as one of the causes of the increased permeability of such tissues (to water-soluble materials), one would anticipate at first sight that dead malignant tissue would exhibit an even greater permeability and consequently greater digestibility than normal dead tissue. Present results are conflicting and the question is under investigation.

The lack of agreement serves to raise the question whether the permeability attributable to lecithin in living (malign) tissue is not something different from the permeability associated with dead material. Gurchot<sup>13</sup> speaks of the latter as irreversible permeability, due to the excessive action of acid. On the other hand, the permeability of living tissue due to the large phosphatide-cholesterol ratio is conceivably reversible. In fact, the lipid seems to have a dual function in this connexion. By its presence it endows the membrane with permeability to water-soluble constituents, but at the same time it reacts with proteolytic enzymes to inhibit their action. This mode of interaction has already been referred to in connexion

with the antitryptic action of blood in malignancy, and it is even more clearly brought out by the work of Biederman<sup>14</sup> on both plant and animal cells, to the effect that "during life both types of tissue are indigestible, but when dead the preliminary extraction of the lipid materials markedly increases digestibility." Biederman concludes that the failure of living animal tissue to undergo digestion is associated with its lipid content.

Glucolysis in Malignant Tumours.

We now turn to another aspect of malignant growth—namely, glucolysis. An examination of the literature available up to the present serves to show that of the chemical processes usually regarded as of importance for cell life—namely, oxidation, reduction, hydrolysis, proteolysis, glucolysis—the only one associated with cancerous tissue which exhibits outstanding divergence from the normal is that of glucolysis; that is, the conversion of carbohydrate into lactic acid—one molecule of glucose forming two molecules of lactic acid. This has been rendered very certain by the work of several independent investigators, and in particular by that of Otto Warburg and his co-workers.

In normal tissues (muscle) Meyerhof has shown that there is a "reversible equilibrium" between carbohydrate and lactic acid. The formation of lactic acid proceeds freely, but the reverse reaction requires a supply of energy and proceeds only when respiration is taking place, the latter providing the necessary energy for the re-synthesis of the sugar. One molecule of oxygen respired brings about the disappearance of from one to two molecules of lactic acid. Evidently the net amount of glucolysis observed under given conditions depends on the amount of respiration taking place. If the respiration is high compared with the glucolytic power—as is the case for normal tissue—there will be little net glucolysis; that is to say, under aerobic conditions in the normal tissue there is little observable glucolysis.

In cancerous tissues, on the other hand, the most important and characteristic feature is that appreciable glucolysis occurs under aerobic conditions, the glucolysis being in fact not much less than that under anaerobic conditions. Warburg's results have been confirmed by experiments carried out in my laboratory. Quantitatively, for Flexner-Jobling rat carcinoma the tissue converts twelve molecules of sugar into lactic acid for every one which it oxidizes, the metabolism being therefore predominantly glucolytic. The markedly glucolytic character holds good, according to Warburg, for all malignant tissues, whether human or non-human, carcinomata or sarcomata. The following table, due to Warburg, indicates the kind of result obtained. It will be observed that the ratio of aerobic glucolysis to respiration is very large for malignant growth. (The numerical values quoted denote the number of cubic millimetres of gas evolved (or absorbed) at normal temperature and pressure per milligram of dry tissue per hour.)

Tissue.	Respiration. I.	Anaerobic Glucolysis. II.	Aerobic Glucolysis. III.	Quotient. III/I.
(a) Malignant.				
Flexner-Jobling rat carcinoma...	7.2	31	25	3.9
Human carcinomata (mean of 15 various types)	5.1	21	14	3.1
(b) Innocent Tumours (human).				
Nasal polyps ... ..	5.2	14	4.8	0.9
Bladder papillomata ... ..	13.3	26	16	1.2
(c) Normal Epithelium (resting).				
Liver (rat) ... ..	11.5	3.3	0.6	0.05
Pancreas (rabbit) ... ..	4.6	3.4	0	0

The fact that it is glucolysis which is the predominant one in malignant tissue is significant in that glucolysis is a process which yields much more energy than do processes such as proteolysis or lipolysis. The heat liberated per molecule of glucose split to lactic acid is 24,000 calories.



The energy derived from glycolysis in Flexner-Jobling rat carcinoma is some 40 per cent. of the energy derived from oxidations,<sup>15</sup> and hence a considerable part of the energy developed by carcinoma cells is due to glycolysis. That this is useful energy is shown by the fact that supplying glucose to the cells when these were kept under anaerobic conditions increases their survival period.<sup>16</sup>

It is of interest to compare the behaviour of malignant tissue as regards glycolysis with that of embryonic tissues (chick)—which are already differentiated. It has been found that glycolysis under anaerobic conditions is large, and that under aerobic conditions it is small owing to the considerable respiration. This has led Warburg to the generalization that high glycolytic power is a general characteristic of growing tissue, but appreciable glycolytic activity under aerobic conditions is characteristic only of unordered growth. Warburg regards the chorion as analogous to embryonic tissue. On the other hand, Murphy and Hawkins<sup>17</sup> find that chorionic villi possess the high ratio of aerobic glycolysis to respiration characteristic of cancerous tissue, and use the phrase that "the type of metabolism was similar to that of frank malignant tissue"; a conclusion which supports the view advocated by Blair Bell regarding the fundamental similarity between malignant growth and the chorion.

Although it is a matter of the first importance to have shown, as Warburg and others have shown, that excessive glycolysis is a characteristic accompaniment of malignant growth, the still more fundamental problem remains unsolved as to the nature and origin of the conditions which have made excessive glycolysis possible, and as to the organ or organs involved in the production of such conditions.

To return to the mechanism of glycolysis itself, it is very generally believed that the transformation of glucose to lactic acid involves among other stages the formation of an intermediate compound between glucose and phosphoric acid—namely, lactacidogen—which is formed and decomposed as a result of enzyme action. Any chemical reagent introduced into the tissue which reacts and thereby modifies the rate of formation of this intermediate or its rate of decomposition to lactic acid would evidently exert a marked effect upon the rate of growth of malignant tissue. Whether part of the function of lead is to effect this is a problem upon which we are engaged at the present time. In this connexion it may be mentioned that, according to Warburg, Posener, and Negelein,<sup>18</sup> the presence of bicarbonate or phosphate ions is essential for glycolysis.

As regards a possible part played by lecithin in glycolysis it may be recalled that E. L. Scott<sup>19</sup> has shown by the boiling-point method that in alcohol solutions lecithin combines with glucose, and he concludes that union likewise occurs in aqueous media.<sup>20</sup> Such union will almost certainly alter the chemical reactivity of the glucose, and the high lecithin-cholesterol ratio in malignancy may therefore be a favourable circumstance in retarding growth by inhibiting excessive glycolysis. It is proposed to investigate this point experimentally.

#### Infiltration.

Probably the most outstanding characteristic of malignant growth is its capacity for infiltration into neighbouring tissues, a property which is likewise possessed by the chorion, this similarity constituting further evidence in favour of the view advocated by Blair Bell, to which reference has already been made. Any information upon the mechanism of infiltration is therefore of importance as a contribution to the study of malignancy.

At the present time little is known regarding this aspect of the problem. Reference may be made to the work of Bierich<sup>21</sup> and Bierich and Rosenbohm<sup>22</sup> in connexion with the spreading of cancer, induced in the epithelial tissue by the action of tar, into the underlying connective tissue, wherein certain characteristic changes are brought about in the collagen, such changes being the preliminary step in the act of infiltration. According to these authors, the characteristic changes in collagen consist of imbibition of the collagen fibres and the simultaneous appearance in greatly increased numbers of "elastic" fibres, produced mainly by the hydrolytic decomposition of the collagen

fibres, the elastic fibres possessing a marked affinity for resorcin fuchsin. On treating specimens of the normal dorsal skin of mice with various acids and bases, and mixtures of these with salts, changes are produced in the structure and nature of the collagen; but, according to the authors referred to, the reagent which brings about changes most closely analogous to those observed in the spread of cancer is lactic acid.

These authors conclude that the cancer cells in the epithelium by degradation of carbohydrate produce lactic acid, which diffuses into the connective tissue below, where it brings about the changes referred to, thereby favouring the infiltration. It is believed that the degradation products of the connective tissues themselves influence the course of the processes occurring in the epithelium. The role thus ascribed to lactic acid is significant in view of the marked glycolysis characteristic of malignant cells. This is pointed out by Bierich. It must be emphasized that these considerations apply only to the preliminary step in infiltration.

#### Lipolytic (Esterase) Activity in Malignancy.

There is a further point to which I wish to draw attention—namely, to lipolysis. Falk, Noyes, and Sugiura<sup>23</sup> have shown that the aqueous extracts of Flexner-Jobling rat carcinoma exhibit only a very slight lipolytic effect as tested by the hydrolysis of a series of esters. Results of the same order of magnitude were obtained for certain normal tissues—namely, aqueous extracts of heart, skeletal muscle, and brain. On the other hand, marked lipolytic activity was obtained in the extracts from normal liver and kidney, and to a less extent from normal testicle, spleen, and lung. Analogous results were obtained by Rona and Lasnitski,<sup>24</sup> using tributyrin as substrate.

It is very reasonable to suppose that the decreased lipolytic activity in malignant growth accounts in part at least for the characteristically high ratio of phosphatide to cholesterol found therein. The marked permeability of such tissues would then be logically related to the decreased lipolytic (esterase) activity, since permeability is mainly associated with the high lecithin content.

Turning from the tumour to the serum, it may be recalled that Bauer<sup>25</sup> found that every human serum examined contains fat-splitting enzymes which are greatly decreased in carcinoma and advanced phthisis. It has been recently pointed out<sup>26</sup> that "lipolytic activity is increased by calcium chloride, to which potassium chloride is antagonistic." In malignancy the calcium is decreased, and consequently it would be expected, in the light of the above statement, that lipolytic activity would be diminished in the case of malignancy—a conclusion in agreement with observation.

We have here followed the usual convention in using the term "lipolytic" as referring to any fat or ester hydrolysing enzyme. The necessity for a more exact terminology is indicated by Bloor:<sup>27</sup>

"It appears desirable to differentiate between enzymes which hydrolyse the fats readily—the true lipase—and those which work slowly on the fats but readily on the esters of the lower fatty acids and on lecithin, and which may be called esterases. Lipases appear to be present in significant amounts only in the intestinal secretions of the pancreas and other intestinal glands, while the esterases are of quite general distribution. In view of the importance of lecithin as an intermediate stage in fat metabolism the esterases are therefore to be regarded as potentially of considerable significance."

Returning to the malignant growth itself, we might be disposed at first sight to attribute the decreased lipolytic activity to an altered reaction of the growth. Since, however, the pH of the serum of cancerous subjects is normal, and at the same time there is a diminished lipolytic activity of the serum, it is evident that we cannot regard decrease in lipolytic activity as due simply to alteration in pH, although such may exert a secondary influence. It seems more reasonable to conclude that the diminution in lipolytic activity, both in tumours and in serum, is due to a real decrease in production of esterases.

Although reference has been made to esterases at some length, it is not suggested that these enzymes occupy any very unique position in the problem of cancerous growth beyond the excessive lipid-cholesterol ratio of tumours. To the chemist perhaps the most striking thing about metabolic change in general is the rapidity of the chemical

changes involved in spite of the absence of marked acidity or alkalinity. Purely chemical experience shows that hydrogen ion and hydroxyl ion are the two most active reagents, especially in aqueous media, and the fact that neither of these rises to any considerable magnitude (say decinormal) in biological material is a demonstration that numerous chemical changes involved in such systems must depend on the intervention of enzymes. Glucolysis itself is known to involve enzyme action. It is evident, with our present very rudimentary knowledge of the number, nature, mode of action, and source of biological enzymes, that attempts at correlation would be altogether premature. While this is so, it should not blind us to the fact that progress in such a problem as the present consists to a large extent in attempts at logical correlation—that is, in disentangling chemical causes from chemical effects. If we are to make any progress in this direction at all it must be by examining in the first place, and in some detail, those processes which exhibit the more striking departure from the normal.

## ADDENDUM.

## On Some Points in Connexion with Lead Suspensions.

The finely divided suspension of lead—actually a mixture of metal, hydroxide, and a little carbonate—as used at the present time in Liverpool is prepared electrically by Bredig's method. An aqueous solution containing 0.5 per cent. gelatin and 0.027 per cent. calcium chloride is poured over a layer of assay granulated lead and is sparked for about fifteen minutes, using metallic lead electrodes, the potential difference between the electrodes being about 60 volts. The resulting black suspension is decanted and centrifuged for two to three minutes at 1,700 revolutions per minute until the particles are not greater than  $0.3 \mu$ . After sterilization, sodium, calcium, and potassium chlorides are added to make the suspension slightly hypertonic. The final suspension contains 0.5 per cent. of lead.

The suspension turns white slowly on exposure to air (due to absorption of oxygen) and slowly settles. It can be used safely for injection over a period of about three days. An addition of gelatin (up to 2 per cent.) by increasing the viscosity adds to the permanence of the suspension, but excessive protein is not desirable from the clinical point of view.

The observation has been made by Dr. Brooks that the lead preparation is more permanent in presence of sodium phosphate, which presumably stabilizes it by adsorption of phosphate ions, thereby increasing the negative electrical charges which the particles possess. The concentration of phosphate employed was the same as that in blood. Similar stabilization is produced in serum, and no interaction involving precipitate formation has been observed *in vitro*. On injection, therefore, it may be anticipated that the finely divided particles will be carried to all parts of the circulatory system. Evidence was obtained several years ago by Blair Bell that the tumour exhibits a selective preference for the lead, which is held there in greater proportions than in neighbouring normal tissue. It appears likely that the lead thus localized is slowly converted into ordinary lead ion  $Pb^{++}$ , which is believed to be the really effective agent. It may be mentioned that the protected suspension described is almost entirely free from lead ion, which could not, of course, be injected into the blood stream as such at the concentration employed without producing fatal results. Prolonged dialysis of the lead preparation, however, against water over a period of twenty-four hours indicates the slow production of ionic lead. It should be noted that dialysis itself is a somewhat drastic treatment. Thus, taking the twenty-four-hour period referred to, the concentration of lead ion found by Dr. Millet in the outer water in dialysis amounted to 0.0006 per cent.  $Pb^{++}$ . On the other hand, on simply allowing the lead preparation to stand for twenty-four hours and then ultra-filtering, the amount of lead ion was 0.00004 per cent.  $Pb^{++}$ . The latter is the more significant result of the two for the actual amount of decomposition spontaneously occurring in the lead preparation.

From a chemical point of view the most characteristic reaction into which ionic lead enters is the formation of lead phosphate,  $Pb_3(PO_4)_2$ , the most insoluble salt of the

metal under body conditions. It has been definitely shown by Brooks that in serum the lead suspension is converted to the extent of 85 per cent. into this salt, the remainder of it into carbonate. In view of the presence of alkali phosphate in tissues, it is almost inevitable that this insoluble lead salt is likewise formed; it then may perform the function of rendering the tumour less permeable and tend towards the production of encapsulation, an effect which is sometimes observed.

Further, the great affinity of ionic lead for the phosphate ion suggests an affinity for the radiol  $PO_4$ , and consequently for any substance, such as lecithin, which contains this radiol.<sup>23</sup> Some determinations of the complex formed between lead ion and commercial lecithin showed that the complex contains approximately 12 per cent. of lead. It is not certain, however, whether this represents a true compound or an adsorption. It is self-evident, however, that the essential function of the lead cannot adequately be accounted for or described simply by postulating, or even by demonstrating, its capacity for union (either true compound or adsorption complex) with any given substance or substances. It is necessary to be able to show that such union or unions play a definite role in a process of significance for cell life. If union—say with phosphatide—were all, we would expect from a colloid-chemical point of view that most of the multivalent heavy metals would be similar in action—a conclusion which is apparently contrary to fact. The clinical value of lead is probably to be sought rather in the direction of causing the cessation of certain chemical processes due to enzymes, upon which the activity of the cell depends.

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## SOME PHARMACOLOGICAL EFFECTS OF LEAD.

BY

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THE reasons which led Blair Bell to formulate the hypothesis that lead had some specific retarding influence on the growth of the malignant cell have been frequently recorded by him,<sup>1</sup> and I may say that I regarded his views that the lead ion had a specific toxicity towards embryonic and rapidly growing tissues as unproven from the pharmacological standpoint.

An explanation of its toxic action on living cells might be sought for in the oligodynamic action of the heavy metallic ions—a term applied by Nägeli to their powers, in extremely dilute solutions, of inhibiting the growth of lower organisms.<sup>2</sup> This oligodynamic action is not confined to any one metallic ion, but is possessed in different degrees by each, while towards certain organisms some show relatively high toxicities, which have earned for them the title of specific—as, for example, mercury towards spirochaetes, and copper towards algae, etc. There was, therefore, a possibility that lead might be relatively more toxic to the malignant cell or to the agent which excites its rapid growth.

## EFFECTS OF LEAD ON GROWTH.

Blair Bell realized that many influences could act adversely on normal growths, but it seemed important at first to ascertain by simple tests if there was any proof that lead salts had unusual powers in this respect when compared with other metals. Blair Bell and Patterson had previously demonstrated that weak solutions of lead acetate inhibited growth and development of hyacinth bulbs,<sup>3</sup> and Griffith had also shown that lead retarded plant growth, especially of the Leguminosae,<sup>4</sup> but Miss Brenchley's work afforded evidence that other metals in weak solutions had a similar influence on seedlings.<sup>5</sup>

A comparison of the effects in equimolecular solutions of lead nitrate with the nitrates of copper, zinc, beryllium, thallium, and thorium upon the germination and growth of seeds, frogs' spawn, and plaice embryos was instituted to test the question, the last ion being selected on account of its genetic relationship with radium and lead.

In the seed experiments mustard and cress were utilized because they possessed only a small reserve of food. The general conception obtained from them was that lead seemed to be more potent as an agent retarding germination than the other metals tested with the exception of thallium, which killed the seeds, so that they did not germinate on transfer to a normal medium; it was also more potent as an agent retarding growth of the young plant, except copper solutions, in which the seedlings hardly grew at all. The strengths necessary to inhibit germination of seeds were, however, very considerable—for example, 0.1 per cent. lead ion.<sup>4</sup>

A series of experiments with frogs' spawn supplied evidence that where the spawn was laid in leaded water germination was generally inhibited in concentrations stronger than N/20,000, but, since partial germination did occur at and above this strength, the metal is apparently more toxic to the ovum than to the spermatozoon, although duration of exposure may have been a factor. Experiments with large batches of eggs showed that in N/100,000 lead salts only from 20 to 25 per cent. of the eggs germinate, as against 75 to 80 per cent. of the controls; that the free-swimming tadpoles emerge about four days late, and are in size 40 per cent. behind the controls at the end of one month. Comparative experiments with a colloidal lead preparation indicated that with almost equal percentages of lead ion the retarding effects on growth were similar. It should be mentioned that only with strengths above N/5,000 lead nitrate was any film of precipitation visible on the albuminous envelope of the spawn.

In experiments on free-swimming tadpoles supplied twice weekly with fresh food and solution in tap water, it was found that very young tadpoles with external gills were more susceptible to the lead than those with internal gills, and that N/100,000 solutions—or the equivalent of colloidal lead—reduced growth to about one-half the normal at the end of one month.

The other metallic solutions, tested in equimolecular proportions, showed certain differences in effects which may be summarized very briefly. Zinc, copper, and thallium had less effect than lead in checking development of the ovum but were more fatal to the emerged tadpole. Beryllium was relatively inert. Thorium, however, approached its relative lead to some extent in its power of checking germination, but it was much less active in retarding the growth of tadpoles.<sup>7</sup> These results resemble those obtained by Locke many years ago when he found, in comparing copper, zinc, tin, and lead, that copper was the most toxic to tadpoles, zinc less marked, tin devoid of effect, while lead had a very slight toxic action, if any.<sup>8</sup> The results indicate that, of the metals tested, lead has the most powerful action in arresting germination of the ovum, and, in strengths insufficient to kill, was most effective in delaying growth of the free-swimming tadpole.

From experiments on plaice embryos extending over a year evidence was obtained of the retarding influence upon growth of small traces (Pb 1 in 250,000) of colloidal lead in sea-water. The fish tanks, into which fresh sea-water flowed at a known rate, were "leaded" continuously from June to November—the period of growth. In November the leaded fish were 20 per cent. shorter than the controls, and this "setback" persisted through the winter months when, however, normal growth is slow. The test was designed to inform us whether lead had a permanent effect in retarding growth, but casualties occurred in the second year which completely upset the averages; hence it is impossible to say more than that the retarded growth and vitality persisted for at least seven months. Some control experiments on the weights of goldfish in the laboratory, while they afforded information on faunal depletion in lead-polluted streams, did not assist the main problem, as it was found impossible to maintain the weights of the controls.<sup>9</sup>

I may now refer briefly to the relevant literature on the effect of lead on growth. Paul, in 1860, noted among lead workers a high rate of abortion and infant mortality; subsequent writers have fully confirmed his general opinion,<sup>10</sup> although Leggo and Goadby regard the case for poisoning of the male germ cell as unproved,<sup>11</sup> but Weller<sup>12</sup> found with guinea-pigs that the offspring of "leaded" males by healthy females was 20 per cent. below normal weight, while "leaded" females had, by a healthy male, a high proportion of stillbirths and offspring about 15 per cent. below normal weight. Weller also found that retardation of growth persisted after birth—a feature noted by Oliver and Chyzer<sup>13</sup> in the children of Hungarian potters—but that when lead administration ceased the production of normal offspring returned. Facts of similar import may be obtained from veterinary reports on animal life in the lead-mining area of Wales; thus, Morgan noted that sheep removed from leaded pastures resumed the production of healthy lambs.<sup>14</sup>

The simple experiments which were instituted to provide evidence for or against a special action of lead on normal growing tissues have served to confirm many observations of others, and the following conclusions seem inevitable: (a) That lead is distinctly more toxic to germ cells and to embryonic tissues than it is to mature tissues; to such an action must be ascribed its sterilizing effect in males, and Weller's observation of aspermatogenesis with atrophy of the germinal epithelium resulting from lead in a guinea-pig<sup>15</sup> has been confirmed by Blair Bell in rabbits.<sup>16</sup> (b) That its adverse influence, in which, I think, the time factor plays a part, is more marked on the ovum and is responsible for temporary sterility and early abortion in females. From Blair Bell's work on pregnant rabbits it appears that the toxic action of the lead is exerted on the chorion epithelium, and that copper, thallium, and thorium, which were tested in view of my results with frogs' spawn, have not this characteristic effect.<sup>17</sup> This is probably the explanation why lead is the most active abortifacient among the metals. (c) That in non-lethal amounts its retarding influence on growth and vitality appears to be inversely proportional to the age of the animal and tends to persist; we may thus explain the undersized and weakly offspring of leaded parents. (d) That the power of inhibiting germination and retarding growth is more a characteristic of lead than of the other metals subjected to examination. It may be added that, from feeding pigeons with pure metals, Hanzlik and Preshe concluded that, as regards power of reducing body weight, the action of other metals was less than that of lead, which they regard as having a specific toxicity.<sup>18</sup> I consider it inaccurate to say that lead has a "specific" action on growth, if we use that term in the restricted medical sense of "peculiar" rather than the wider sense of "definite," because my results show that other metals can produce somewhat similar effects. The evidence is, strictly speaking, in favour of lead having relatively greater powers of inhibiting the germination of cells or of retarding growths of embryonic tissues in strengths which are not toxic to more mature tissues.

At this juncture it was evident that fuller investigation of the effects of lead on normal growing tissues would not further the main issue, and that investigation of the action of lead salts on malignant tumours in animals must be undertaken by a pathologist.

#### TOXICOLOGY OF LEAD.

Subsequent pharmacological work has been largely determined by demands for information about some of the untoward effects in human beings, or concerned with tests for toxicity in the various lead preparations.

#### Action on Intestine.

One complication of the intravenous administration was the occurrence of vomiting and colic. The literature on lead colic is very extensive, but many of the suggested explanations have been based on inadequate evidence. Aub and Miss D. E. Smith<sup>19</sup> must have commenced their investigation about the same time as I did, and their reported findings agree very closely with mine. Examination of the experimental work of Harnack,<sup>20</sup> Hirschfelder,<sup>21</sup> Wassermann,<sup>22</sup> and Siccardi<sup>23</sup> led to the view that the action must be a

local one on the bowel and that the colic was a spasmodic contraction of the muscle; such might be due either to stimulation of the vagus receptors such as is caused by parasympathetic stimulants like pilocarpine, or less probably to paralysis of the inhibitory sympathetic innervation, but more probably to a direct action on the muscle. Experiments were carried out with longitudinal strips of muscle from the intestines of various animals—guinea-pig, rabbit, hare, cat, rat, sheep, and man—kept contracting in a bath of 150 c.cm. of Tyrode's fluid at 37° C., through which a continuous stream of oxygen bubbles passed. The sodium bicarbonate in the Tyrode's fluid was a disturbing factor in that it precipitated a soluble lead salt as carbonate and the pH of the fluid decreased correspondingly. Theoretically the amount of bicarbonate in 150 c.cm. of Tyrode's fluid (0.075 gram) should completely precipitate 0.15 gram of lead nitrate—practically the amount contained in 1 c.cm. of N/1 lead nitrate—and, as the solubility of lead carbonate in water is 0.00017 per cent., negligible results, until all the carbonate ion had been precipitated, might have been expected, but chemical analysis showed that the amount of lead which exists in solution in the bath of Tyrode's fluid increases in proportion to the amount added, and it appears that as the hydrogen ion concentration increases the solubility of the lead increases. There arose then the problem of the fall in pH produced by the added lead salt; to control this factor a series of experiments was done in which Tyrode's fluid containing no bicarbonate was used; the results from these were found to be similar to those obtained with normal Tyrode's fluid.

The effect of adding lead to the bath is to cause first a diminution of the automatic intestinal movements and usually some lowering of the tone. The inhibitory action is first noticeable on the addition of 1 c.cm. of N/100, with which no precipitation occurs—roughly 1 in 150,000 lead ion. Following the inhibitory phase there frequently ensues, with weak lead concentrations, a period of increased amplitude in the contractions, and now the intestinal muscle does not usually respond so effectively to further additions of the same dose of lead.

The second type of effect may be a development of the first, and becomes apparent when amounts of 6 to 7 c.cm. of N/10 lead nitrate have been added—that is, 1 in 2,500 lead ion added and found in solution by colorimetric analysis from 1 in 16,000 to 1 in 12,000. The tracings now show that the inhibitory phase is followed by a wave of augmented tone with reduced or inhibited pendulum movements—a type of colicky contraction. The tone wave is at a maximum from ten to fifteen minutes after the addition of the lead, and then slowly declines, when the pendulum movements may again resume a more or less normal rhythm. Variations in the type occur, including one in which, during the tone rise, very rapid fibrillary contractions are just visible in the tracing. With still larger amounts of lead salt—namely, 1 c.cm. N/1 lead nitrate (Pb 1 in 1,500 added; 1 in 7,500 found in solution chemically)—complete inhibition of movement occurs, and this phase may last for from two to ten minutes; it is succeeded by a rise in tone, often commencing with staircase-like contractions which gradually diminish as the extreme tone is reached. Subsequently the tone declines, and the muscle may again resume good rhythmic movement although still immersed in lead solution.

These effects take place after atropine, hence the tone rise cannot be of vagal origin; after nicotine, hence they cannot originate in ganglia; addition of lead can counteract a pilocarpine tonus, and also a pituitrin and barium tonus, hence the primary inhibitory action might have been due to sympathetic stimulation; and, indeed, it closely resembles the action of adrenaline, but it has been found possible by repeated additions of adrenaline to render the intestine quite insensitive to this hormone—that is, the rhythmic movements can escape from sympathetic control; but even then lead can still inhibit the rhythmic movements and later induce its characteristic tonus. As final proof that the action is on the muscle the same effects have been obtained on a small scale with the nerve-free rings of circular muscle described by Gunn and Underhill.<sup>21</sup>

Such actions have been obtained from lead nitrate, acetate, and chloride, and from basic lead acetate in similar

molecular concentrations; controls have been made of variations of the pH at different periods of the experiment, but its variation does not apparently afford a key to the double action because (a) the fall in pH on the addition of lead tends to return within ten to fifteen minutes to nearly normal; (b) the effect of changing the fluid in the intestine from normal Tyrode with a pH of 7.2 to Tyrode without bicarbonate with a pH of 5.5 merely weakens the contractions; and (c) lead salts produce identical actions in Tyrode's fluid without bicarbonate, while serum solutions of lead and colloidal metallic lead produce similar effects, except that the inhibitory phase is less complete.

With regard to the inhibitory phase, this so closely resembles the action of adrenaline in type and evanescent character that one is inclined to view this action of lead as being on some rhythmic mechanism in or on the muscle peripheral to, but closely associated with, the receptor influenced by adrenaline, because lead acts when adrenaline fails, and yet the inhibition of rhythm by lead is generally so brief that it is obviously not a toxic effect on the muscle substance; again, the fact that adrenaline can act after recovery from lead shows that the latter has not injured the sympathetic receptors. The rapidity of onset indicates that the effect must be mainly a surface one.

The tonic phase is something entirely different; its onset is usually delayed and is gradual. Its commencement may be heralded by the re-emergence of automatic movements, but, as the tone increases, these decline or become fibrillary in type. During the stage of tone, which one believes to be comparable with an attack of lead colic, the effects of other drugs depend on the degree of tonus developed; in mild degrees, pilocarpine-atropine, nicotine, adrenaline, and nitrite reactions can be obtained, but a fully developed tonus remains uninfluenced by large doses of atropine, morphine, nicotine, adrenaline, nitrites, or chloral. Of the drugs named, adrenaline is most commonly effective, but its relaxing action is quite transitory. The addition of sodium phosphate to precipitate the dissolved lead in the bath is sometimes, but not always, effective in reducing the tonus; a change to lead-free Tyrode fluid relaxes the tonus. These results explain why atropine and nitrites have been recommended in the treatment of lead colic by some writers and their efficacy denied by others, and why Blair Bell found that the symptom of lead colic was not prominent until massive dosage with lead was adopted, and that no remedy seemed effective for its relief.<sup>22</sup>

This tonic rise is, I believe, comparable with lead colic because it takes the form of a temporary spasm lasting ten to thirty minutes, after which normal tone and movements may recur. It arises usually when the amount of soluble lead proved chemically in solution in Tyrode's fluid containing bicarbonate is between 1 in 16,000 and 1 in 12,000, and occurs regularly with 1 in 15,000 lead in Tyrode's fluid without bicarbonate; but, in the human jejunum, sheep intestine, and occasionally in young rabbits and hares, the tonic phase has occurred with 1 in 90,000 lead ion, so that certain species and young animals seem more susceptible. The analyses of Aub and his co-workers<sup>23</sup> show that in an unusual case the concentration of lead in the liver may be as much as 1 in 20,000, while the skeleton in an average of seven cases contained 1 in 16,000. These figures show that the concentration 1 in 90,000 capable of causing a tonic type of contraction in the human jejunum may exist in the human body, and the occurrence of intermittent attacks of colic merely requires the assumption of the mobilization of a portion of that stored in the bone and other tissues—probably as colloidal phosphate, as both Lewis and Aub have shown; this mobilization is facilitated by any increase in the H-ion concentration of the tissues which augments the solubility of the lead, as the analytical results have proved, and as Aub and his co-workers have demonstrated with greater detail and accuracy.<sup>27</sup>

We may now with some confidence explain lead constipation and colic. The constipation results from diminution or inhibition of the pendulum movements produced by small amounts of lead, and the consequent delayed transmission of the contents permits greater absorption of water and inspissation. If the lead salt be introduced by the mouth its astringent action will be contributory, and is probably the main effect in its therapeutic application. The

intermittent colic arises from increased tone of the intestinal muscle produced by lead ion in concentrations above 1 in 90,000, and is probably attributable to mobilization of lead from the storage tissues by intercurrent increase in the H-ion concentration of the blood. It has been shown that in mild cases only are nitrites or adrenaline of value during the attack.

Before leaving this subject I should point out that other metals have also been tested. Zinc inhibits intestinal contractions; copper inhibits and then causes a tone rise like lead; thallium slows and weakens the rhythmic movements; beryllium inhibits movements and causes a slight tone rise; thorium inhibits for a brief period, and then slow, irregular contractions reappear. The inhibitory phase may be developed by excess of calcium or magnesium, but not by strontium or barium.

#### Action on the Uterus.

The action on the isolated uterus is essentially similar to that on the intestine; it has been tested on the guinea-pig, rabbit, rat, and human uteri—the last in strips from pregnant and non-pregnant uteri at various ages obtained at hysterectomies and Caesarean sections. Lead causes a weakening or cessation of the rhythmic movements with or without fall in tone level and, after an interval of from ten to fifteen minutes, stronger solutions cause a powerful tone rise succeeded by a fall when normal contractions may resume. Since the effects on the uterus are the same in all the animals tested, the action, having regard to the variation in uterine response to adrenaline, must be peripheral to the nervous control. The uterine muscle, even in the same species, varies in its sensitiveness to lead, weak anaemic uteri being particularly easily influenced. The inhibitory phase—and slight forms of the tonic phase—have been produced by 1 in 150,000 lead ion as nitrate. A moderate tonic phase frequently follows in guinea-pigs and rats from 1 in 15,000 lead ion in Tyrode's fluid with bicarbonate (chemically estimated in solution 1 in 90,000), but, in the uterus of the rabbit and human subject, the true tonic contraction rarely occurs before 0.5 c.cm. of N/1 lead salt has been added to Tyrode's fluid with bicarbonate. This is estimated chemically to produce 1 in 16,000 lead ion in solution—the same concentration which causes tonic contraction of the intestine. As regards colloidal preparations, the partly colloidal lead iodide was inhibitory in dilution of 1 in 15,000 lead ion, and caused a tonic rise in strength of 1 in 7,000 lead ion, while the true colloidal lead produces tonic effects in concentration of 1 in 3,750 lead ion, its inhibitory effects being less marked than those of soluble lead salts. The figures found by colorimetric analyses are illustrative but not yet final.

It is impossible to discuss here the influence of other drugs on the action of lead on the uterus. Suffice to say that lead can relax pituitrin tone and then produce its own tone, which can sometimes be relaxed by adrenaline, while adrenaline can contract the rabbit uterus after lead has relaxed it, and yet lead at first can relax the adrenaline contraction in this uterus. The problem is complicated, but the inhibitory action of lead seems to be on some controlling mechanism intimately associated with the muscle itself; the essential is that excessive doses of nitrites only will relax a lead tonus in the human uterus.

In regard to the cause of lead abortion, I believe there are two factors in operation. The first is the unusual toxic action of lead on embryonic cells, which has been reviewed. The second is the production of tonic contractions of the uterus, which is probably a more important factor in the causation of premature labour and stillbirths amongst lead workers.

#### Action of Colloidal Lead Injections.

The effects of injecting 5 c.cm. of a 0.5 per cent. colloidal lead preparation intravenously in rabbits are practically none; there may be a little acceleration of respiration, but nothing beyond this with a reliable preparation. All colloids are, however, not equally safe—one tested recently, for example, in this dose was fatal in thirty minutes, the toxic symptoms commencing after fifteen minutes with paresis and ending with respiratory failure.

Direct evidence of the immediate effects in animals is afforded by injections into cats under ether anaesthesia.

The action is very transitory, even with large doses introduced rapidly into the jugular vein. Usually within five to fifteen seconds from the start of the injection there is acceleration and often increased depth of respiration, a marked acceleration of the pulse for five to ten seconds, followed by a drop in the pulse rate to the normal, or more often below it. The blood pressure may show a transient rise, succeeded by a fall of from 20 to 25 mm. for a 5 c.cm. injection. These changes occupy no more than two to five minutes, at the end of which time respiration and pulse are again normal and the blood pressure is normal or somewhat lower. Repeated injections of 5 c.cm. accentuate the phenomena, but recovery is always rapid except in the case of the blood pressure. Decided evidence of a weakening in the force of the pulse tracing was confirmed by direct records of the auricular and ventricular contractions, which show that the auricular beats are for a few seconds very decidedly weakened or rendered irregular in force, while the force of the ventricular beat is also reduced, but the rhythm, though quicker, remains regular. In one animal having an excessively rapid heart beat with occasional extrasystoles the injections did produce irregularity in the rhythm. These cardiac effects are quite transient; even with intrajugular injections of 20 c.cm. the period of cardiac weakness lasts only from thirty seconds to a minute.

The preliminary rise in blood pressure is due to the pulse acceleration, the fall in blood pressure partly to the subsequent slowing of the heart rate and partly to relaxation of the arteries, because the two effects are not synchronous. The acceleration in respiration seems to be reflex from the fall in blood pressure. There has been very little evidence of increased general blood pressure in these experiments, although lead salts do contract isolated arteries.

In conclusion, pharmacological tests have shown that the lead suspension prepared in Professor Lewis's laboratories is quite safe for intravenous administration; but, having regard to what I have noted of the immediate action of lead on the heart, I should advise slow injections in cases where there is any cardiac disorder or renal disease. If this preparation can be successfully stabilized to permit of commercial distribution, it will be a safe therapeutical material for the purpose required.

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## THE ACTION OF COLLOIDAL LEAD ON ANIMAL TUMOURS.

BY

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WHILE the therapeutic capacity of colloidal lead as regards human tumours has already been established by Professor Blair Bell, there are many problems connected with the use of so dangerous an agent which can best be attacked by studying the action of the material on animal tumours. A considerable series of such experiments have been undertaken in collaboration with Professor Blair Bell and his colleagues of the Liverpool Cancer Committee. The facts presented to-day will concern only the changes which are observed in the tumours and organs of white rats. The tumours employed are transplanted, not primary. One is a carcinoma, two are sarcomata. They are highly virulent, growing rapidly to one-twentieth or even one-tenth of the weight of the host. The animals used were all of the same strain and of approximately the same age and weight, 60 grams. Preliminary tests showed that an animal of this size could bear between 2 and 4 mg. of freshly prepared colloidal lead intravenously. After twenty-four hours the suspensions became more toxic; no difference could be noted in the action on the tumours between a large less toxic dose and a small highly toxic one. The total number of tumour animals treated was about nine hundred.

A short time after the injection of a sublethal dose of lead the tumour becomes intensely congested, and later oedematous. This change is due to the thrombosis of a certain number of vessels in the tumour. This is followed by the necrosis of a large part of the growth, often leaving only a thin shell of tumour cells enclosing a haemorrhagic sac. In a few instances the tumours went on to final absorption; but in general recurrence takes place after a longer or shorter time, despite the administration of sublethal doses of lead. Evidently the action observed is predominantly due to the thrombosis, and only to a secondary degree to the direct toxic action on the tumour cell. No thrombosis is observable in the lungs or other organs, unless we assume that the focal necroses found in the liver are due to such a change. After large and repeated treatments the liver may show extensive lesions, the spleen and bone marrow atrophy, with the production of an intense anaemia. The kidney of the rat seems to be less susceptible to lead, and severe lesions are only found after large doses.

The application to human pathology of the results so far obtained is not easy. The tumours are very large in size in proportion to the host, corresponding to a human tumour of 10 to 30 lb. in weight—a manifestly incurable condition in man, so that the infrequency of cure in the animals is not astonishing. Nor can it be assumed that the extensive thromboses are so frequent in human tumours. The pain which follows the treatment in man may, however, be due to a more limited process of the same sort.

The experiments are being continued on smaller tumours, and as far as can be judged from preliminary observations the thrombosis plays a more subordinate part. So far it may safely be concluded that colloidal lead in sublethal doses produces profound changes in animal tumours which in a small percentage may lead to a permanent cure; and that, moreover, the necessary dose also induces serious but not irreparable changes in the liver and blood-forming organs. The steps in the process seem to be as follows. The lead is rapidly removed from the circulation, being absorbed by and in consequence damaging the capillary endothelium, and chiefly in the tumour. Thrombosis follows in the tumour only; the lead thus fixed in the neoplasm then exerts its toxic action on the neoplastic tissues.

[The above remarks on the action of colloidal lead on animal tumours, by Dr. Francis Carter Wood, are an abstract of a paper the full text of which is published in the *Journal of the American Medical Association*, 1926, lxxxvii, p. 717.]

## OBSERVATIONS ON THE HISTOLOGICAL CHANGES FOUND IN CANCEROUS TISSUES TREATED WITH COLLOIDAL LEAD SUSPENSION.

(With Special Plate.)

BY

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### INTRODUCTION.

At first sight it appears easy to decide whether the colloidal lead treatment produces histological changes in the malignant growths of man. In reality it is very difficult, for reasons which will be given later.

According to Blair Bell, Hendry, and Annett,<sup>1</sup> non-lethal doses of lead suspensions administered to pregnant does produce abortion by causing coagulation necrosis of the trophoblast. This necrosis apparently develops within two or three days. Lead, when given in sufficient initial quantities, probably produces abortion in the human female in about the same time; exact data are clearly difficult to obtain.

Carter Wood<sup>2</sup> has found that the malignant tumours of his rats necrosed in two or three days after the intravenous injection of lead suspensions.

Most human patients with malignant disease complain of pain in the region of the neoplasm within a few hours of the intravenous injection; this pain may last three or four days. Temporary increase in the size of malignant nodules and glands may also occur in the first two or three days. Rapid diminution, which is sometimes observed, begins a little later, and is most marked in the first ten days. Thus the most favourable time to examine malignant tissues treated with lead, for histological evidence of regression, as necrosis or degeneration, seems to be within the first fortnight of the last injection.

The recognition of such changes in tissues removed several months after the last dose of lead should be much more difficult, because one would expect the damaged cells to disappear; the disappearance should, however, be associated with some degree of inflammatory reaction, and finally with replacement fibrosis.

There is another and a more serious difficulty. Regressive changes are a characteristic of untreated malignant neoplasms; they include atrophy, oedema, fatty metamorphosis, hyaline or myxomatous degeneration, etc. Necrosis, haemorrhage, and thrombosis, and various degrees of inflammation from slight lymphocytic infiltration to suppuration and ulceration; and lastly fibrosis, also occur. The same microscopical section of a malignant neoplasm frequently shows histological evidence of progression in one portion and retrogression in another.

### METHOD OF INVESTIGATION.

Portions of the growth were selected and removed by Professor Blair Bell or one of his assistants, and haematoxylin and eosin sections were prepared in the Department of Obstetrics and Gynaecology. These sections were sent to me for examination and report. Comparison was then made between the histological appearances before and after treatment—no patient received lead unless the clinical diagnosis of malignancy had been confirmed by the microscope. Special attention was paid to the clinical history, also the number of days elapsing between the administration of lead and the removal of the growth, the amount of lead in the last dose, and the total administered from the beginning.

It was necessary to omit from this investigation the following:

1. Cases in which, for various reasons, it was impossible to obtain tissues for study after treatment. Thus, in Mrs. B. the tumour disappeared. "The patient, a woman aged 60, was very ill with advanced cancer of the cervix—verified microscopically. Hysterectomy was performed on July 18th, 1925, but a considerable amount of the growth was left behind. This gradually disappeared, and there is now (August, 1926) nothing abnormal to be found. The patient is in excellent health. She has received 0.61 gram of lead."

2. Cases in which the last dose of lead was administered many months before the tissue examined was removed, or the doses had been very small.

3. Cases treated with radium or x rays as well as lead.

4. Cases in which the effects of lead on the neoplasm have already been discussed by Blair Bell.<sup>2</sup>

The results of the investigation were negative in the majority of cases so far examined; but in the six summarized below there is some evidence that lead has produced histological changes. The histories have been furnished from the patients' case-sheets. The photomicrographs, taken by me and my assistant (D. K.), have been selected to give as faithful a representation as possible of the essential features of the section.

#### CASE 1.

H. A., male, aged 46. Cancer of the right breast of about seventeen months' duration. Excised April 16th, 1926; the subsequent skin graft did not take. Lead treatment began April 21st. The total administered in eighteen days was 0.175 gram, the last dose of 0.075 gram being received eleven days before death. The lead produced no albuminuria and only slight stippling of the erythrocytes. On May 5th pyrexia began, followed by cough and dyspnoea. The patient died on May 9th.

*Post-mortem Examination* (thirty hours after death).—A granululating area marked the site of the excised breast; the edges of the wound were healing. There was bilateral acute diffuse pleurisy; the right pleural cavity contained a pint and a half of semi-purulent fluid. The spleen (weight 12 oz.) was diffusely enlarged. The liver (weight 61 oz.) was rather soft and pale. It contained about eighteen small homogeneous yellowish-white metastases; those on the surface, from one-eighth to half an inch in diameter, were quite flat; there was no umbilication. Some metastases were present in both adrenals and on the surface of the upper lobe of the left lung—the latter were also flat. One enlarged gland was found at the insertion of the right pectoralis major. Specimens from this case are in the museum of the Pathological Department.

*Section 1, of the primary growth.*—This was an ordinary spheroidal-celled cancer, medullary type. The nuclei, which measured from 8  $\mu$  to 12  $\mu$ , were round and possessed the usual nucleolus (Fig. 3); mitoses were moderately numerous.

*Section 2, of liver with two metastases* (the larger measures 1 cm. by 0.3 cm.).—The appearance of the metastases is remarkable. The epithelial nature of the majority of the cancer cells is unrecognizable; they are spindle, oat-, or even star-shaped, rather like those of a badly preserved sarcoma or myxoma. Their size varies greatly—from about 10  $\mu$  to 40  $\mu$  in length. Many are obviously dead, some are "ghosts" on the verge of disappearance (Figs. 1, 2, and 4). Few, if any, are "healthy" with round nuclei, also nucleoli, like those in the primary growth before treatment—or in parts of the infected pectoral gland after treatment (see Fig. 6, section 5). Some of the epithelial cells, less shrunken than the majority, are still arranged in cancer acini (Fig. 1, A); various transitions occur between them and the "sarcoma-like" cells and the ghosts—this is confirmed by their staining with van Gieson. The nuclei measure from 2  $\mu$  to 3  $\mu$  transversely and 4  $\mu$  to 5  $\mu$  longitudinally. The chromatin is condensed, and definite nucleoli are rare. Mitoses are very rare; only two were found in the whole section. The edge of the liver (Fig. 2). The small local exudates of lymphocytes are the only evidence of inflammatory reaction. The blood vessels are normal; there is no thrombosis. The liver shows considerable cloudy swelling, also a little fatty degeneration of the inner part of the lobules. The fat is deposited in small and medium droplets around a central nucleus. Cytolysis is present in the centre of some lobules. There is no haemosiderin.

*Section 3, of lung with two metastases* (the larger measures 0.8 cm. by 0.4 cm.). *Section 4, of the suprarenal with a metastasis* (the latter measures 0.5 cm. by 0.2 cm.).—The appearance of the metastases in both sections is practically identical with that of the liver metastases; no healthy spheroidal cells like those in the primary growth were discovered.

*Section 5, of pectoral lymph gland* (measures 1.2 cm. by 0.8 cm.).—This consists of regenerating loose connective tissue, containing scattered epithelial cells in various stages of regression (Fig. 5); many of the latter resemble exactly those in sections 1 to 4, while others are indistinguishable from connective tissue. It is noteworthy, however, that some of the epithelial cells appear healthy (Fig. 5, D). A few, definitely spheroidal, cells are grouped in acini like those of the primary growth (Fig. 6). Even mitoses are present (Fig. 6, B).

The remarkable histological appearances of the five metastases in the liver, lung, and suprarenal are unlike anything hitherto observed by the writer. Autolysis cannot possibly account for them; the body was uncomposed, for the weather was cold and the post-mortem examination took place thirty hours after death. The appearances must be chiefly, if not wholly, due to the action of lead—it is possible that the associated sepsis may have contributed in some obscure way. Their occurrence within eighteen days of the first dose is consistent with the clinical observation already alluded to—namely, that

the most favourable time to find histological evidence of regression should be within the first fortnight of the last injection.

The "sarcoma-like" change in the epithelial cells is not due to polymorphism, described by various writers—recently by Kettle<sup>1</sup> in cancer of the breast, and Dawson<sup>2</sup> in melanomata. Polymorphism could not develop in a few days; besides, in this case almost every cell is similarly affected. The change signifies degeneration or death; this is indicated by the shrinkage of the cytoplasm and nuclear pyknosis. It explains why a liver metastasis, measuring half an inch in diameter on the surface, was neither raised nor umbilicated as usual.

The change has affected to a greater or less degree nearly all, if not all, the epithelial cells in the five metastases. The same change was present in the lymphatic gland, but less marked. Some cells appeared "healthy," while a few were grouped in acini, like those in the primary growth. Even mitoses occurred.

This striking histological contrast in the two localities is most important. It is evidence that the extent of the regression chiefly depends upon a well developed and unobstructed blood supply, and perhaps lymph supply. Now the blood supply of the liver, lung, and suprarenal is unusually free, and there was no fibrosis of the metastases in these organs. On the other hand, lymphatic glands are much less vascular; further, the fibrosis was so extensive in the pectoral gland examined that some of it must have been present before treatment, and therefore have obstructed the entrance of the lead.

The cloudy swelling and fatty degeneration of the liver is due to the sepsis and to the lead. In my experience a fatty change is usual in the liver of lead-treated patients; in some haemosiderin is also present. Dr. Dilling's experiments of injecting intravenously large doses of lead suspensions into cats are interesting in this connexion; for it has been found in Professor Lewis's laboratory that at least 40 per cent. of the lead was deposited in the cat's liver within two hours of the injection. (Details will be published in a subsequent paper.)

Lastly, it must be pointed out that this is the only case of lead-treated cancer, with metastases in other organs besides the lymphatic glands, which has so far come to post-mortem in Liverpool. The importance of investigating similar cases is obvious, especially in view of the associated sepsis in the one just described.

#### CASE II.

M. E., a woman aged 36, with cancer of the left breast. First seen November 3rd, 1920. "Lump noticed for twelve months"; it rapidly increased to the size of an orange, and then ulcerated through the skin (see photograph, Blair Bell<sup>4</sup>). The axillary glands were enlarged. A child was born on October 27th, 1920. A piece of breast was excised for examination on November 3rd. Lead treatment was begun on November 9th; the total amount received being 0.32 gram in forty-one days. The tumour and glands rapidly disappeared, but the patient nearly died of lead poisoning. A piece of the hardest part of the left breast was excised on December 25th, 1920, five days after the last dose of 0.04 gram of lead.

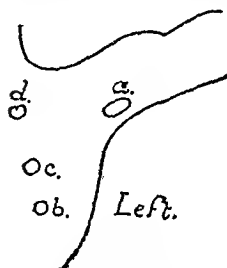
Present condition (July 20th, 1926): the patient is quite well; she has had two more children, which she suckled from the previously affected breast. Lead treatment has been stopped since December 20th, 1920.

*Section 1, of breast before treatment* (measures 2 cm. by 0.5 cm.).—The central and larger portion shows spheroidal-celled cancer, medullary type; the stroma is very scanty. The cell outlines are ill defined, the cytoplasm clear and finely reticulated. The nuclei are sometimes oval with a nucleolus and then measure about 7  $\mu$  by 10  $\mu$ , others are more irregular (Fig. 7); mitoses are present, but very rare. There is a little local lymphocytic infiltration, but no necrosis or other regressive change. The surface of the growth is ulcerated and covered with a layer of inflammatory tissue 1 to 2 mm. deep; the exudate is chiefly lymphocytic.

*Section 2, of breast after treatment* (measures 1 cm. by 0.4 cm.).—In one-third there are some normal breast acini with a few lymphocytes dispersed among them; in two-thirds there are no acini but a subacute diffuse interstitial inflammation which is rather less severe than that on the surface of section 1. The relative amount of lymphocytes and other inflammatory cells and connective tissue varies (Fig. 8). There is no trace of cancer.

So far as the writer is aware, no one who has examined section 1 has disputed the histological evidence of malignancy—the clinical evidence has already been alluded to. The unusual clearness of the cytoplasm and the ill defined outline of the epithelial cells may be explained by the occurrence of lactation. The histology is similar to that shown in a photograph of cancer in a lactating breast by

Greenough? (Case 47, Plate VI). The greater inflammatory reaction in the breast (forty-one days after treatment began) than in the liver metastases of Case 1 (eighteen days after treatment began) demands explanation. It is mainly due to a persistence of the original inflammation—for the growth was ulcerating. But the possible effect of the duration of treatment must be remembered.



CASE III: Diagram, from case sheet, of cancer recurrences a, b, c, d.

and (c) smaller" (June 1st, 1924). The site of nodule (b) was excised for examination on July 8th, forty-eight days after treatment had begun. The 0.19 gram—the last dose (0.02 gram) fourteen days before.

The patient died from abdominal metastases in November, 1925. She received between July 8th, 1924, when the nodule was excised, and April 29th, 1925, 0.58 gram of lead.

Section of nodule (b) fourteen days after treatment stopped (measures 0.9 cm. by 0.6 cm.).—It has been compared with sections of two subsequent subcutaneous recurrences from the same patient's breast removed on November 19th, 1924, also with a section of the skin of the breast of another woman about the same age. The epidermis is normal. The papillary layer of the corium is very loose for about 0.5 mm. below it throughout the whole length of the section; the elastic fibres stained with orcein are unusually conspicuous. The reticular layer is normal. The subcutaneous layer is unusually fibrotic for a depth of 4 mm.; below this there is normal subcutaneous fat.

The loose papillary layer may be due to previous stretching by a metastasis, which has subsequently disappeared.

The fibrotic subcutaneous tissue may be due to the persistence of a cancerous stroma after the epithelial cells have disappeared. This view is supported by the appearance of the two recurrences; for the deepest layers show a typical well developed scirrhous cancer, but as the corium is approached the epithelial cells gradually atrophy and finally become unrecognizable, so that the upper layer resembles exactly that in nodule (b). On the other hand, W. S. Handley<sup>3</sup> has pointed out that "the disappearance of malignant nodules has repeatedly been observed by various surgeons. Short of total disappearance, such nodules may shrink up, and may be found on section to consist entirely of fibrous tissue."

#### CASE IV.

E. H., a woman aged 48, with cancer of the ovary. Symptoms were first noticed in January, 1924; later there was emaciation and ascites. Laparotomy was performed on March 14th, 1925, and a large, cystic, extensively adherent, malignant tumour of the left ovary found. The greater part was removed, with the uterus and both appendages. Subsequently, on January 2nd, 1926, a "evidently from piece dropped at operation." Part of this was excised on January 11th, the remainder being adherent to the

rectum. Lead treatment was begun March 25th, 1925. The total lead received was 0.6 gram, the last dose (0.05 gram) being administered on August 21st, 1925—143 days before the second operation.

Present condition (August 10th, 1926): the patient is quite well; she has gained several stones; there is no tumour in the pouch of Douglas, and no recurrence. She has received—between January 11th, 1926, when the lump was excised, and June 22nd—0.3 gram of lead.

Sections 1 and 2 before treatment (measured 1.25 cm. by 1 cm. and 0.8 cm. by 1 cm.).—Both show a cystic adenocarcinoma which is proliferating irregularly; in some parts the epithelium is atypical, two or more layers are present, or the basement membrane is penetrated. One part is becoming solid. No mitoses were seen (Fig. 9). About one-quarter of the epithelial cells in section 2 contain more or less secretion, but definite goblet cells are exceedingly rare. Secretion is occasionally present in the lumen. The stroma is loose, the number of connective tissue cell nuclei being relatively few (Fig. 9). There is very slight inflammatory reaction and no necrosis or other regressive changes.

Sections 3 and 4 after treatment (measures 2.1 by 1.4 cm. and 1.8 by 0.5 cm.).—The greater part of both sections show an ordinary pseudo-mucinous cyst-adenoma, and no evidence of malignancy. The lumina contained much secretion, for goblet cells have developed in three-fourths of the epithelium in one section and in one-third of the other (Fig. 10). Some acini contain little epithelial lining. At the periphery of the growth the acini are also regressing; in one the epithelium is polymorphic, degenerating and almost unrecognizable—though its origin is proved by the presence of nuclei in two cells (Fig. 11, C). The outer cells are specially degenerate; they gradually fade into the surrounding stroma. Another regressing acinus is shown in Fig. 12; the stroma is denser and more fibrous than in sections 1 and 2 and connective tissue nuclei are relatively more numerous.

The clinical history, macroscopic and microscopic appearances of the primary growth, indicate that it was a cystic adenocarcinoma. The degeneration and absorption of the epithelium at the periphery of the nodule removed after treatment, also the very extensive development of goblet cells, are consistent with the diminution of malignancy, or perhaps with the disappearance of malignancy, suggested by the clinical history.

#### CASE V.

E. M., a woman aged 54, with cancer of the body of the uterus, verified microscopically. She was seen on November 25th, 1924, and stated that she had had haemorrhage for two months. The uterus, tubes, and ovaries were removed on December 15th, 1924. Several malignant nodules were present in the vaginal wall near the orifice, the largest being about half an inch in diameter. A small nodule was removed for examination; the others were left. Lead treatment was begun on December 31st, 1924. The vaginal nodules diminished to at least half their original size by January 28th, 1926, when one was removed for examination. The total lead received in 361 days was 0.77 gram—the last dose (0.075 gram) sixty-six days before removal of the nodule.

Present condition (August 7th, 1926): The patient is quite well; the vaginal nodules have disappeared. She subsequently received between January 28th, when the nodule was removed, and August 7th 0.075 gram of lead.

Section 1, of vaginal nodule before treatment (measured 1.5 cm. by 1 cm.).—In the deeper part of the vaginal wall, about 3 mm. below the surface epithelium, there is an area 5 mm. in diameter of an atypical infiltrating columnar-celled cancer; parts are almost solid. Mitoses are absent, regression is slight. The growth exactly resembles that in the uterus.

Section 2, of vaginal nodule after treatment (measures 1 cm. by 0.25 cm.).—It contains three small isolated acini of columnar cancer, the largest being 0.75 mm.; each acinus is dilated, and less solid than in section 1; the stroma is more inflammatory.

#### DESCRIPTION OF SPECIAL PLATE.

FIG. 1.—Case I. Liver metastasis of spheroidal-celled cancer after treatment; showing the ill formed acini of shrunken cancer (A). (× 320.)

FIG. 2.—Case I. Liver metastasis of spheroidal-celled cancer after treatment; showing the "sarcoma-like" and degenerated cancer cells, also the fatty degeneration of the liver. (× 190.)

FIG. 3.—Case I. Spheroidal-celled cancer before treatment; showing primary growth in breast. (× 750.)

FIG. 4.—Case I. Liver metastasis of spheroidal-celled cancer after treatment; showing the "sarcoma-like" cancer cells and "ghosts," also the nuclear pyknosis. (× 750.)

FIG. 5.—Case I. Pectoral lymphatic gland metastasis of spheroidal-celled cancer after treatment; showing less regressive change than in the liver metastasis, also one "healthy" cancer cell (D). (× 750.)

FIG. 6.—Case I. Pectoral lymphatic gland metastasis of spheroidal-celled cancer after treatment; showing cluster of "healthy" cancer cells and a mitosis, resembling those in primary growth before treatment (Fig. 3). (× 750.)

FIG. 7.—Case II. Ulcerating spheroidal-celled cancer in lactating breast before treatment; showing the cancer and a few inflammatory cells. (× 190.)

FIG. 8.—Case II. Ulcerating spheroidal-celled cancer in lactating breast after treatment; showing interstitial inflammation and absence of cancer cells. (× 190.)

FIG. 9.—Case IV. Cancer of ovary before treatment. (× 200.)

FIG. 10.—Case IV. Cancer of ovary after treatment; showing growth in the pouch of Douglas (which subsequently disappeared). Note the very numerous goblet cells. (× 200.)

FIG. 11.—Case IV. Cancer of ovary after treatment; showing a regressing acinus at the edge of growth in the pouch of Douglas (which subsequently disappeared). Note the mucin in two cells (C). (× 170.)

FIG. 12.—Case IV. Cancer of ovary after treatment; showing a regressing acinus at the edge of the growth in the pouch of Douglas. (× 170.)

FIG. 13.—Case VI. Cancer of the breast: axillary gland before treatment; showing large mass of cancer and little stroma. (× 100.)

FIG. 14.—Case VI. Cancer of breast: supraclavicular gland after treatment; showing small foci of cancer and much stroma. (× 100.)

Nov. 20, 1926]

ERNEST E. GLYNN: HISTOLOGICAL CHANGES FOUND IN CANCEROUS TISSUES TREATED WITH COLLOIDAL LEAD SUSPENSION.



FIG. 1.

FIG. 2.



FIG. 9.

FIG. 10.

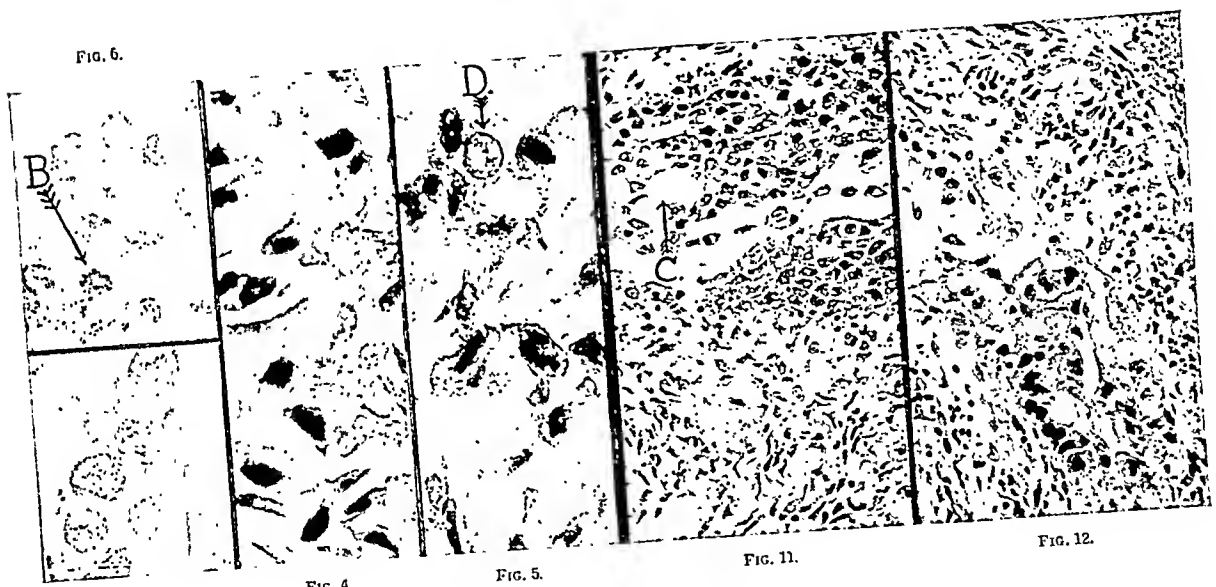


FIG. 6.

FIG. 3.

FIG. 4.

FIG. 5.

FIG. 11.

FIG. 12.



FIG. 7.

FIG. 8.

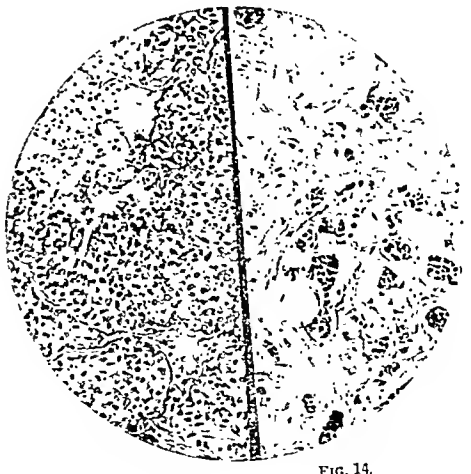


FIG. 13.

FIG. 14.

NOV. 10, 1926]

# W. BLAIR BELL: MALIGNANT NEOPLASMS: THEIR TREATMENT BY LEAD.

[THE BRITISH MEDICAL JOURNAL]



FIG. 1.—The left half of the illustration shows normal trophoblast in the rabbit. (Photomicrograph  $\times 400$ .) The right half shows a mass of syncytial cells in the human lung. (Section kindly lent by Mr. T. H. Storer.) (Photomicrograph  $\times 170$ .)

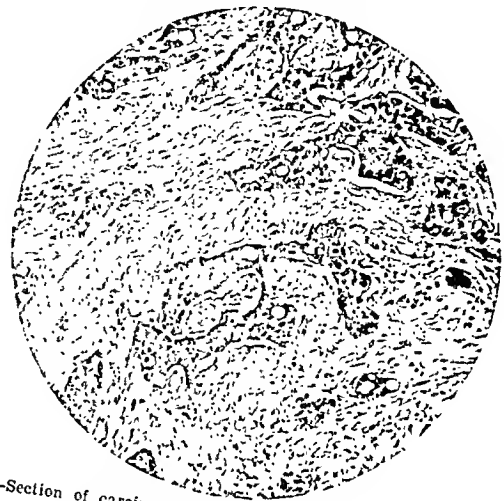


FIG. 2.—Section of carcinoma of breast, showing syncytial arrangement of the cells. (Photomicrograph  $\times 100$ .)

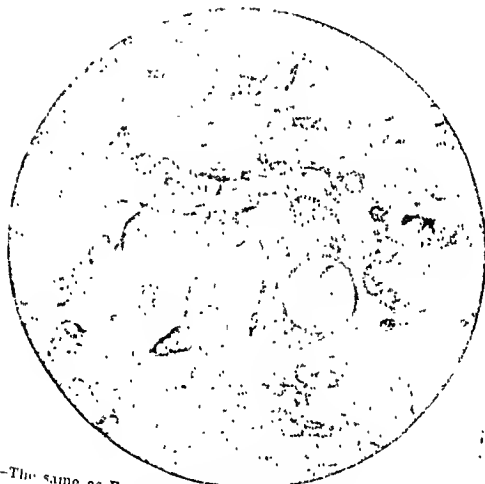


FIG. 3.—The same as Fig. 2 under higher magnification. (Photomicrograph  $\times 460$ .)



FIG. 4.—Section of sarcoma of ovary, showing so-called "giant cell," in reality a syncytial arrangement of cells. (Photomicrograph  $\times 500$ .)

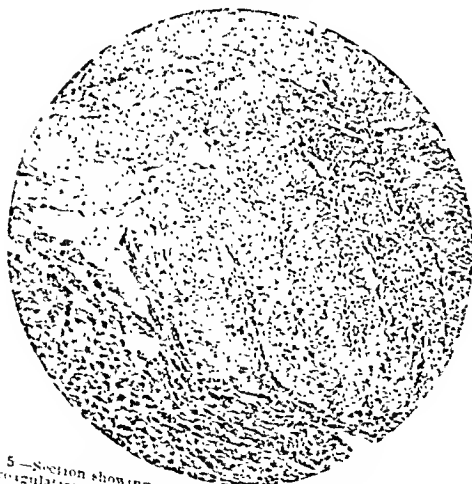


FIG. 5.—Section showing convolutions of trophoblast in the rabbit in which coagulation necrosis has been produced by lead. The maternal cells are unaltered. (Photomicrograph  $\times 160$ .)



FIG. 6.—The same as Fig. 5 under higher magnification. (Photomicrograph  $\times 225$ .)



The histological change in the neoplasm after treatment is rather less marked than one would expect in view of the diminution of malignancy, or perhaps disappearance of malignancy, suggested by the clinical history.

## CASE VI.

M. D., a woman aged 70, with cancer of the breast—"noticed one year." A radical operation was performed on October 20th, 1925. Lead treatment was begun on November 5th, 1925. Enlarged supraclavicular gland first observed and excised on July 21st, 1925. The total lead administered in the 623 days was 0.55 gram, the last dose (0.01 gram) being seventy-four days before gland excision.

Present condition (September 25th, 1926): The patient subsequently received, after the gland excision, 0.69 gram of lead, the last dose (0.1 gram) being on February 16th, 1926; at this date the right arm was swollen, "but had been more so." The arm is now so swollen that the patient is bedridden; there are two small subcutaneous recurrences.

*Section 1, of axillary gland before treatment* (measured 1.1 cm. by 0.7 cm.).—Five-sixths are completely infiltrated with medullary type of spheroidal-celled cancer; very scanty stroma and practically no regression (Fig. 13). Mitoses are moderately numerous, maximum number in a 1/6 in. field four or five.

*Section 2, of supraclavicular gland after treatment* (measures 1.2 cm. by 0.8 cm.).—It is infiltrated with scirrhus cancer; stroma unusually extensive, especially in the centre (Fig. 14). Nevertheless, there are many areas of apparently actively growing cancer, though mitoses are very rare. Towards the peripheral third of the section the cancer cells are increasingly distorted and atrophied; they finally become unrecognizable.

The gland removed after lead treatment shows very extensive and definite regressive changes, and is a striking contrast to the gland removed before treatment. On the other hand, it must be remembered that in lymphatic glands "evidences of retardation" of cancerous "growth by fibrosis and encapsulation are relatively common" (Ewing).<sup>6</sup> The areas of actively growing cancer also present in the gland are consistent with the development of the recurrence, and of oedema of the arm, while the patient was still under treatment.

## SUMMARY AND CONCLUSIONS.

This investigation is proceeding; still, the following tentative conclusions have been drawn.

1. In the majority of lead-treated malignant growths so far examined no histological evidence of its action could be detected.

2. In a case of ulcerating cancer of the lactating breast the cancer cells disappeared. In certain other cases of cancer there was histological evidence that lead had increased the regressive changes which usually occur in malignant neoplasms, and in one that it had slowed the rate of growth and so allowed the epithelium to become more differentiated.

3. In another case of cancer of the breast dying from sepsis, remarkable regression of the epithelial cells occurred in metastases examined from the liver, lung and supra-renal; this was less advanced in a metastasis from a fibrosed lymphatic gland, for some of the unaffected epithelial cells even showed mitoses. The changes were chiefly, if not wholly, due to the lead—it is possible that the associated sepsis may have contributed in some obscure way.

The lesser degree of regression in the relatively avascular, also, fibrosed lymphatic gland indicates that the action of lead chiefly depends upon a well developed and unobstructed blood supply and perhaps lymph supply. It is histological evidence of an inherent difficulty in treating cancer by lead or by any other drug or by serum. It must be remembered, however, that success or failure of lead treatment may perhaps sometimes depend upon idiosyncrasy of the patient, as in other diseases treated with other drugs.

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## THE CLINICAL EFFECTS OF LEAD IN THE TREATMENT OF MALIGNANT DISEASE.

BY

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## SELECTION OF CASES.

In treating malignant disease with lead one of the greatest difficulties with which we have had to contend has been the selection of those cases which present a reasonable chance of being benefited and which at the same time are likely to withstand the toxic effects of the therapeutic agent employed. There are, of course, certain obvious contraindications to treatment, among which must be mentioned gross pathological lesions of one or more important organs of the body, and serious cachexia of the patient. We have been brought face to face, however, with another problem, namely, the idiosyncrasy of the individual, which unfortunately disallows to a certain degree the investigations of the vital functions of the body, upon which, nevertheless, we lay considerable stress. We are unable to explain how it is that, other things being equal, some patients, for no apparent reason, are unaffected by large doses of lead, whereas others are made very ill, and may even die after a moderate dose.

It has been our practice before undertaking the treatment of cases to make a complete analysis of the blood and urine, apart from the careful medical examination of the important organs of the body. We also make use of radiological studies where these are likely to be of assistance in diagnosis and in determining the extent of the disease. These investigations are carried out from time to time in the course of treatment; in particular, observations are repeatedly made in regard to the blood and urine.

In the case of the blood, full counts are made of the red and white corpuscles, and the percentage of haemoglobin is estimated. The blood urea is also determined, and, in certain cases, the blood sugar. In the course of treatment we examine regularly blood films for stippling of the red cells, and this has been of great value in indicating, not only the dose of lead which should be given at any period, but also the interval which should be allowed to elapse before a further dose is given. We usually suspend treatment when there is more than one stippled cell per field, even in the absence of any other contraindication.

A complete analysis of the urine is made, and the simpler investigations of the renal function are also repeated from time to time. When there is reason to suspect liver involvement, a laevulose tolerance test may be performed.

## TOXIC EFFECTS OF LEAD.

The administration of lead is usually accompanied by a certain amount of reaction. This reaction may be either focal, general, or both. The patients generally complain of pain at the site of the tumour a few hours after the injection has been given. The constitutional reaction of the patient is very variable, and will depend upon which organ, or system of the body, the injurious effect of lead is most manifest.

The toxic effects of lead, as already recorded,<sup>1</sup> have been observed, not only on the blood and blood-forming organs, but also on the gastro-intestinal system, the kidneys, the liver, and, to a lesser extent, on the central nervous system.

## The Blood.

In the case of the blood all types of anaemia have been noted, varying from a grave secondary anaemia to the severest form of aplastic pernicious anaemia. We usually meet with the type in which the reduction of the haemoglobin is more marked than the reduction in the red blood corpuscles count. Other changes noted have been polychromasia, anisocytosis, poikilocytosis, the appearance of abnormal forms, and punctate basophilia, to which reference has been made. The presence of nucleated red corpuscles is not very uncommon; when present they are invariably associated with considerable anaemia, and with stippling of the red corpuscles. Since the nucleated cells

themselves may be stippled, it appears that degenerative processes associated with the formation of stipples, whatever they may be, can occur at a very early stage in the life of the red cells.

The opinion of authorities is divided at the present day as to the exact nature of the stippling of the red corpuscles. We do not consider that it is a regenerative process, because stipple cells have not been found in the bone marrow of animals which have had lead injections. Neither do we consider that the stipples are the result of the disintegration of the nucleus, for we have observed nucleated red cells showing a perfectly well defined and well stained nucleus, which have also presented coarse punctate basophilia. Dr. Brookfield, working with us, considers from data obtained from comparative counts and special staining reactions that the stippling of the red cells is almost certainly due to a modification of the basophil material in the young red blood cells—namely, the polychromatophil cells and reticulocytes. This modification results in the precipitation of the basophil substance into the familiar discrete punctate granules.

It follows that with such marked blood destruction all the symptoms of anaemia may be present. Among these may be mentioned pallor of the skin and mucous membranes, headache, lassitude, and muscular weakness; oedema of the ankles may even occur without evidence of cardiac or renal involvement. In several of our patients the anaemia has been so great that a blood transfusion has been considered necessary before treatment could be continued.

The rate of recovery from anaemia is of interest. Recovery following large doses of lead is rapid; whereas the anaemia produced by small doses administered over a long period may be very protracted.

Variations in the white blood corpuscles are not nearly so characteristic as those in the red corpuscles and haemoglobin, but we have observed the following changes: leucocytosis, relative lymphocytosis, slight eosinophilia, and leucopenia.

#### *The Alimentary Tract.*

The signs and symptoms observed as the result of the effect of lead on the alimentary system are variable. The most important of these are a blue line on the gums, nausea and vomiting, intestinal colic, constipation, and diarrhoea. The appearance of the blue line has been comparatively rare, and we feel that this rarity is due to the method of administration, and that the blue line which has been observed in cases of industrial lead poisoning is due to the fact that the lead passes through the mouth on its way to the lungs or gastro-intestinal tract; moreover, the state of the teeth is of importance. It is sometimes observed that a patient complains of nausea and vomiting immediately after the injection. This is undoubtedly an anaphylactic phenomenon, and is due to the proteins which are present in the preparation. Usually, however, these symptoms are delayed for a few days; indeed, as much as a week may elapse before they appear. Intestinal colic, which we have only observed since the administration of large doses of lead, is usually of the delayed type. We have seen very few cases of constipation or diarrhoea which could be attributed to the effect of lead.

#### *The Kidneys.*

The kidneys are often involved early in the treatment. Recovery from kidney lesions which have been produced by large doses of lead is generally rapid, whereas small doses of lead administered over a long period are liable to produce permanent damage. As a rule, after the initial dose of lead, clinical manifestations are not apparent. Occasionally, however, diminution in the secretion of urine and oedema may occur, together with changes in the urine. Cessation of treatment for the time being has always followed the appearance of symptoms, or of other evidence of renal involvement, with the result that further signs of renal failure have not occurred. Pre-existing renal disease has been regarded as a contraindication to treatment, or as an indication for treatment by small doses, according to the severity of the disease. We have not found the blood urea of much value in determining the onset of renal disease in the course of treatment, but it has been useful in determining the degree

of renal damage in patients prior to treatment. We have, unfortunately, had two disasters in treating our cases, the lead producing a condition of renal failure associated with tubular necrosis. In these we have invariably found a large and steady rise in the blood urea. The urea-concentration test has only been of value in the selection of cases. Diminution in the secretion of urine often precedes the appearance of albumin, and affords a valuable indication of early renal damage. Albuminuria has occurred in 23 per cent. of cases treated.

We have investigated the blood pressure of patients before treatment was adopted, at varying periods during the course of treatment, and subsequent to treatment. We have found no tendency to a rise in blood pressure. The changes observed in regard to the blood pressure have been so slight that it is difficult to establish any effect which is likely to be directly attributable to the lead. On the one hand, progressive disease and advancing cachexia would tend to lower the blood pressure, and clinical improvement would have the reverse effect. The average systolic blood-pressure readings of patients before treatment and after a course during which more than 0.3 gram of lead has been administered are 132 mm. and 130 mm. respectively.

#### *The Liver.*

It is probable that many such symptoms as headache, rigors, nausea, and vomiting are due to the impairment of hepatic function. Willcox<sup>2</sup> has pointed out that, in all cases of generalized poisoning, the liver is the first line of defence, and it absorbs most of the toxic agent from the blood stream. This has been proved to be the case after the administration of the arsenobenzol derivatives.

We have noted three types of jaundice in our cases. The first type is characterized by a slight icteric tinge of the sclerotics, associated with an increase of urobilin in the urine, and a positive indirect, or at least a delayed direct, van den Bergh reaction. The bile-secreting cells are probably unaffected, and the jaundice is due to the excessive production of bile pigments from the products of haemolysis by the Kupffer cells. These pigments are produced in too large a quantity to be taken up directly and secreted by the liver cells, with the result that a quantity continues to circulate in the blood, and slight jaundice follows—a similar state to that which occurs in pernicious anaemia and acholuric jaundice. In the second type there is apparently damage to the polygonal cells of the liver, for, in addition to the appearance of excessive urobilin in the urine, bile may also be present. The jaundice is deeper, and the van den Bergh reaction is biphasic, or of the direct type. In the third type of jaundice there is evidently a cholangitis in addition, perhaps, to the destruction of the polygonal cells of the liver. The jaundice is deeper, and a large amount of bile appears in the urine. There may or there may not be an increase in the urobilin of the urine, and the van den Bergh reaction is of the immediate direct type.

Lead thus appears to influence the bile-producing mechanism just like phosphorus, arsenic, and hydrogen, and toluylendiamine, partly through blood destruction, and partly through its direct effect on the bile-secreting cells of the liver.

An investigation has been made of the changes in regard to fragility of the corpuscles following an injection of lead, with a view to correlating this, if possible, with the blood destruction, and the appearance of an excess of urobilin in the urine. We have, however, been unable to detect any definite increase in the fragility of the corpuscles, even in the cases showing definite jaundice of the haemolytic type. There is perhaps a state of affairs produced similar in nature to that which occurs in pernicious anaemia, in which the fragility is either normal or slightly decreased.

#### *The Nervous System.*

Psychopathies may occur after the intravenous administration of lead, but are, however, rare.

Neuropathies had never been observed in any of our cases until recently, when we believe we saw our first case, in which there was paralysis of the lower limbs with loss of reflexes and absence of sensory changes. I shall refer to this case again.

We are now in a position to avoid all the more serious toxic effects of lead, although it is only to be expected that those of a less serious nature will occasionally be seen.

#### TREATMENT OF TOXIC SYMPTOMS.

In order to eliminate so far as possible the toxic effects of lead during treatment, we have always endeavoured to diminish the work of the kidney. The diet given is light, and all foodstuffs with a high protein content are restricted or forbidden. The patients are encouraged to drink two or three pints of imperial drink and barley water daily.

In treating anaemia we have made use of intramuscular injections of iron arsenite, supplemented when necessary by blood transfusion. Perhaps the most difficult symptoms to treat have been those associated with the gastro-intestinal system. Vomiting and colic in particular are often protracted. The former is frequently associated with ketosis, which tends to produce a vicious circle, and is greatly benefited by administration of glucose and insulin, together, when necessary, with salines. In the treatment of severe colic we have almost invariably had to resort to morphine and atropine. We hoped to find that sodium thiosulphate, administered intravenously, by rendering the lead salts insoluble might eliminate the toxic effects to a certain extent, but the results obtained are far from promising. Intravenous injections of a solution of calcium chloride (5 per cent.) appear, however, likely to prove beneficial.

#### The Method of Administration and Dosage.

The preparation of lead is almost invariably administered intravenously, as the best method of attacking malignant disease is obviously through the blood stream; this is undoubtedly the most rapid and inevitable way of reaching all the tissues of the body. To assist us in determining when the needle is in the vein we have made use of an "interceptor"; it is made of glass, and is fixed between the nozzle of the Record syringe and the needle. The surgeon is enabled thereby to see the ascent of blood when the vein is reached.

We have long used the method of ionization for the introduction of lead ions into superficial neoplasms. In certain cases where there is extensive lymphatic invasion, such as is seen in carcinoma of the breast, there may be a diminution in the pain and a softening of the parts. Dr. Annett, working with us, found that of all metals used for the ionization of rat sarcoma lead is by far the most effective. This has been fully confirmed by the work of Borrel,<sup>2</sup> Girard,<sup>4</sup> and others.

The dosage of lead naturally varies with the particular case under treatment; indeed, we are not yet satisfied that we are using the optimal dose, and are still experimenting in this respect. In the last six months, provided there were no untoward effects, we have given two doses of 20 c.cm. and two of 15 c.cm. of the 0.5 per cent. preparation, when possible at an interval of ten days between each dose. The patient is then given one month's rest. At the end of this time smaller doses, amounting to 10 c.cm., are given at varying intervals until the total of 120 c.cm.—that is, 0.6 gram of lead—is reached. In those cases where the tumour was of slow growth, and there was no great urgency for placing the patient under the influence of a large quantity of lead, we have given smaller doses from the first. In this way some of the more acute toxic effects have been avoided. This is a very important point, as many patients, having experienced these acute toxic effects, have refused further treatment. It appears that, provided there is time to administer the lead in this way, the ultimate effect may be as good as in those cases which have received the large doses. No definite correlation exists between the toxic effects of lead and the influence of this preparation on the malignant tumour. We naturally regard the case as being more favourable when the patient is able to tolerate the injections well.

#### RESULTS OF TREATMENT.

Up to last November, at the end of the first five-year period, 247 patients had been seen, and of these 227 received treatment. A complete account of these will be

found elsewhere.<sup>5</sup> In the current year our percentage of successes bears out our previous figures. Of these 227 patients, 50 have received benefit; they are either living normal lives, or the disease is completely arrested, or the disease is believed to be cured and treatment stopped. On the other hand, in the remaining cases we have met with failure. This latter group of cases may be viewed from two points: first, the lead had no action on the malignant growth present; secondly, our methods of treatment are imperfect. As there is little doubt that lead has a specific action on malignant neoplasia, it is probable that in some cases the lead failed to reach the growth in sufficient quantity to cause arrest or disappearance.

In some of the cases in which we failed to bring about the desired result many changes occurred in the growths which we regard as significant. Among these may be mentioned lobulation and the appearance of oedema. Some patients actually died as the result of the destructive action of lead on the growth.

It is impossible to define the cure of cancer. It is well known that the possession of a malignant growth successfully treated by surgical or other procedures does not confer immunity from subsequent development. Moreover, a malignant growth may develop on the site of a primary growth apparently successfully treated, or in the form of a metastasis very many years later. The five years' period, therefore, usually allotted to the demonstration of a cure is not valid. For this reason we think it proper to describe our patients who are now apparently well and give no evidence of disease, as "bolstered cured."

The fate of the 227 cases that were treated can best be made clear by a table already published.

#### Fate of Patients, November 9th, 1920, to November 9th, 1925.

Died before treatment could be completed	50
Died of intercurrent affections	3
Died after treatment (including two deaths from acute nephritis, the result of lead poisoning)	106
Died as a result of extensive destruction of growth by lead	4
Too recent for results to be estimated	14
Complete treatment refused, but patients are living normal lives	9
Disease completely arrested	10
Believed cured, and treatment stopped	31

227

The most interesting groups are those in which the growth has been completely arrested, or the patient is believed to be cured, and it is to these groups that I particularly wish to draw your attention.

In the course of treatment we invoke the aid of surgery and the administration of x rays where either of these methods of treatment is likely to supplement the effects of lead. The cases, therefore, in which we claim successes fall into three groups: (1) Cases that were treated with injections of colloidal lead only; (2) cases that were treated with lead and x rays; (3) the group in which an incomplete operation was performed, but the cases were subsequently treated with lead.

I shall now read to you brief notes of a few illustrative cases in each group. Most, if not all, of these cases have been described previously. I recapitulate them, however, in order to complete my presentation of the clinical aspects of the subject.

The following were treated with lead alone.

*Case 34.*—This patient was a woman, aged 27, who, in November, 1922, was operated upon for intestinal obstruction. A growth in the small intestine was found and a lateral anastomosis was performed, no attempt being made to remove the tumour; but a small piece was removed for section, and this showed the growth to be a lymphosarcoma. She received 0.44 gram of lead. Her general condition is very good, and there is nothing abnormal in the abdomen. Subsequently (March 26th, 1925) a gynaecological operation was performed, when the site of the lesion in the small intestines was identified with difficulty.

*Case 50 R.*—This patient was a married woman, aged 55. She complained of irregular vaginal haemorrhages. On examination she was found to have three small nodules of the size of the vagina and an enlarged uterus. The nodules were removed, and a portion of one of the vaginal nodules was removed for section. The growth in the uterus was found to be a columnar-celled carcinoma, and the piece of tissue removed from one of the vaginal nodules also proved to be adenocarcinomatous. She was treated, and in all received 0.52 gram of lead up to November, 1925. The masses in the vagina disappeared, and her general health is in every way satisfactory. It is now (July, 1926) eighteen months

since the treatment was commenced, and a section recently prepared from a piece of hard tissue on the site of one of the pre-existing nodules shows nothing but fibrous tissue.

**Case 1.**—This patient was a woman, aged 36, who was sent to us with a large fungating carcinoma of the left breast. It was attached to deeper structures, and there was a mass of glands in the axilla. Any operation was considered impracticable, but a portion of the edge of the ulcer was removed for section, and proved to be carcinoma. She received 0.32 gram of lead. The ulcer healed in a fortnight, and the whole tumour disappeared within six weeks. Subsequently a piece of breast tissue was removed, and histological examination showed fibrous tissues only. At present—nearly six years since the treatment commenced—the patient is quite well, and on palpation the breast appears to be normal. During this period she has had two babies, and has nursed them at this breast. She comes to see us periodically to report.

**Case 119.**—This patient was a woman, aged 50, who was first seen by us in July, 1923, when she had ascites and small nodules of adenocarcinoma in the liver and omentum. No primary growth was found. She had to be tapped each fortnight, and an average of 15 pints of fluid was withdrawn on each occasion. Subsequently she received 0.345 gram of lead. For the last twenty months the patient has been and looks very well. There is no sign of recurrence or of free fluid in the abdomen, and she is able to do her own housework.

**Case 129.**—A man, aged 68, came to us in an emaciated condition, having a few months previously had a gastrostomy performed subsequently to complete occlusion of the oesophagus by cancer. We have not a section of this case, but the Wassermann reaction was negative. He had been operated on by Mr. Thellwall Thomas, and was also seen by Mr. Somerville Hastings, both of whom had no doubt whatsoever of the nature of his disease, which was also demonstrated by x-ray examination. It is well known that few patients have ever lived more than nine months after gastrostomy in these circumstances, and even this period is rarely covered. This patient is still alive, two and a half years later, but changes are still taking place. He is anaemic as the result of haemorrhages from the oesophagus; only recently he was able to swallow for the first time.

The following cases illustrate the complete arrest of growth in the neoplasm without disappearance. The first is interesting also in that there is evidence of a lead neuropathy.

**Case 178.**—This patient was a woman, aged 38, who four months prior to admission complained of abdominal pain. A mass was discovered in the pelvis, and laparotomy was performed by a London surgeon, who found a very large vascular growth filling the whole of the pelvis and most of the lower part of the abdominal cavity. On account of the danger from haemorrhage no portion of the tumour was removed even for section. On admission there was a large soft central tumour extending above the umbilicus, irregular in outline and filling the pelvis. She came under our care in December, 1924. A further laparotomy was done, and a small piece removed for section. Examination proved the tumour to be a short spindle-celled sarcoma, probably arising in the ovary. She was given 0.15 gram of lead at one injection. This caused most distressing toxic symptoms, both gastro-intestinal and urinary. Vomiting persisted for over a fortnight. Twelve days after the injection the abdomen was quite flat and only a small lump could be felt above the pubis. We should have liked to give her a further injection, but in view of the very serious symptoms which developed after the first it was considered necessary to delay treatment for a considerable time, and during the latter part of this period the lump increased in size. She has had further treatment and a mass of moderate size is still palpable. Unfortunately, this patient has recently developed a lead encephalopathy, and is suffering from drowsiness, loss of memory, and inability to focus her attention. She has also developed paralysis of the lower limbs—the only case of neuropathy we have yet encountered. She has had no lead for some considerable time—that is, since March 5th, 1926—but the total quantity administered has been large (0.9 gram).

**Case 185.**—The patient was a woman, aged 20, who herself discovered a lump in the abdomen. She came under our observation in March, 1925, when a laparotomy was done. A large retroperitoneal sarcoma was found, which was too vascular to be incised; a lymph gland was removed for diagnostic purposes. This was subsequently reported by Professor Glynn to be sarcoma. Since that date she has had 0.75 gram of lead. Her general condition is very good. The tumour is considerably smaller, and is causing no symptoms; apparently growth has been completely arrested.

Of those treated with lead and x rays the following case is a good example.

**Case 190.**—The patient was a man, aged 34, with a large sarcoma of the scapula and a mass of glands in the axilla, one of which was removed for section and found to contain mixed-celled sarcoma. He was given 0.22 gram of lead and eighteen x-ray exposures, twice weekly, to the scapula only. In three months the scapula was normal. Altogether he has had 0.24 gram of lead, the last injection being given over eighteen months ago. He is quite well, two years and three months later, and there is no abnormality whatever of the scapula. His general health is good and he is able to follow his employment.

The following three cases are examples of the type in which the operation was incomplete, and which were subsequently treated with lead, with a satisfactory result.

**Case 9c.**—A woman, aged 34, with malignant disease of the rectum. The rectum was excised, and the sigmoid brought down to the anal orifice, but a large mass of growth was left in the pelvis. Section showed it to be a typical columnar-celled carcinoma. Subsequently, she was given 0.265 gram of lead. She is now very well and has gained weight, and there is no evidence of malignant disease.

**Case 24c.**—The patient was a woman aged 39. She had a large ulcer high up on the posterior wall of the stomach behind the pancreas, causing hour-glass contraction. Partial gastrectomy was done and gastro-enterostomy, but there was much infiltrated tissue left behind. Section showed it to be a typical spheroidal-celled cancer. She was given 0.585 gram of lead. This patient has done well; she has gained weight and her appetite is good. There is no sign of malignant disease.

**Case 51.**—The patient was a woman, aged 44, who, two and a half years previously, had had a radical operation on the left breast for carcinoma. On admission the abdomen was very distended and a mass could be felt in the pelvis. At the operation malignant ovarian tumours on both sides were removed. There were malignant nodules in the neighbourhood of the caecum and in the omentum, which were not removed. She was subsequently given 0.765 gram of lead. This was over two years ago; she is still quite well and has gained considerably in weight. There is no sign of recurrence.

These results lend substantial support to our views of the nature of malignant neoplasia, but much remains to be done in regard to the discovery of a more therapeutically active preparation with less toxicity. Lead is undoubtedly of value in the treatment of malignant disease, either alone or in conjunction with other methods, but we feel not only that something better may be found in the near future, but that our preparation is imperfect.

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## SOME OF THE VIEWS AND WORK OF THE LIVERPOOL CANCER RESEARCH ORGANIZATION.

(With Special Plate.)

BY

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Infirmary; and Director, Liverpool Cancer Research  
Organization.

To present a composite picture of the work of the Liverpool Cancer Research Organization is difficult of accomplishment in a short space of time; but I am desirous of co-ordinating, if I can, the essential points in the investigations that have been presented by my colleagues. It is necessary, also, that I should endeavour to be so lucid that none can fail to understand. It has been a source of regret to all of us that so many friends, as well as critics, have failed to read, or, if they have read, to appreciate the outstanding simplicity of our argument, and the nature of the confirmatory evidence obtained. Moreover, in spite of repeated contradictions and demonstrations, it seems almost impossible to eradicate the prevailing idea that the use of lead by us in the treatment of cancer is based on other suggestions that have been made in regard to the treatment of malignant disease with metallic ions. I have not time to go into the early history of my own work on the subject, but this alone would refute such a suggestion, for there is documentary evidence to show that it is now about twenty years since I elaborated the views I hold to-day.

It must also be understood that anything that has a poisonous effect on normal cells may have a similar effect on cancer cells. This is well seen in the action of other metals, and of such non-metals as selenium and tellurium. The inclusion among the metals of the last two elements by those whose chemical knowledge is misled as to their character by the termination "-ium" demonstrates the absurdity of the point of view to which I have taken exception.

It is the additional specific choriotropic action of lead that gives to this element its special value.

It will, however, be my aim to impress upon you the fact

that the use of lead, however successful, may be of comparative importance only at the present time, for we ourselves chiefly esteem its action as confirmatory of other evidence bearing out the correctness of our views.

#### THOUGHT.

Satisfied that the chorionic epithelium—the trophoblast—and especially the outer layer of syncytium, is normally malignant in character, in that it has the powers of eroding the blood vessels and other maternal tissues in the search for nutriment, of cellular multiplication and of forming metastases, evidence has been sought to support or negative the view that the cancer cell is a reversion on the part of the somatic cell to the chorionic epithelium—that is to say, dedifferentiation occurs because the process is reversionary.

No pathologist or cytologist to-day would deny that dedifferentiation in malignant neoplasia does occur; but the reason for this cannot be seen under the highest power of the microscope, and, therefore, it has hitherto received little consideration. The so-called undifferentiated character of the cells in malignant neoplasms has been noted in general; and in respect of the cultivation of somatic tissues dedifferentiation has long been described and regarded as a malignant development. But no explanation of this has been put forward, although Champy—one of the earliest workers in the field of tissue culture—associated dedifferentiation with reproductive activity—that is, multiplication of cells.

It would appear, then, that of recent years dedifferentiation and cellular multiplication have been regarded as factors associated with malignant development; but the chief feature on which I based my original argument is that the dedifferentiation is purposeful, in that the somatic cell is returning to the normally malignant ancestral type, and that metabolic disturbances force upon it this adaptation.

I have called attention elsewhere to the fact that the only malignant neoplasm in which dedifferentiation does not and cannot occur is chorion-epithelioma. We may therefore assert (1) that the chorionic epithelium is normally malignant; (2) that somatic cells when they become malignant have reverted to, or towards, this type.

Now, if this be so, we shall expect to find supporting evidence in the following directions:

- (1) The morphological characters of the chorionic epithelium will resemble those of cancer cells.
- (2) The essential chemical constitution of the two will be similar.
- (3) The physico-chemical state will be the same.
- (4) The discriminating functional activities between the cancer cells and the resting somatic cells will be represented also in the distinction between the somatic cells and those of the chorionic epithelium.
- (5) Resemblance in the above respects will entail similarity in the toxicological affinities of the chorionic epithelium and of the cancer cell.

With regard to the first point, it is easily to be observed that the more malignant a neoplasm is, the more syncytial is the arrangement of the cancer cells (Figs. 1 to 4).

Professor Lewis has discussed the chemical constitution of the different types of cells—namely, the resting somatic, that of benign neoplasms, the malignant cell and the chorionic epithelium.

Permeability, which is such an essential requisite of growth and multiplication, is dependent on the character of the emulsion of which the cell membrane is composed. An oil-in-water type of emulsion, like milk, is clearly more permeable than a water-in-oil, like butter, for solubility in water, rather than in oil, is usual in respect of simpler food-

stuffs (see diagram). Moreover, this constitution of malignant cells explains the findings of Crile and others that the electrical conductivity of the cancer cell—through the continuous water phase—is usually greater than that of resting somatic cells. The question of alterations in the electrical capacity of the cell—found to be an increase by Crile and Fricke in the case of the cancer cell—appears to be a very difficult one, and, in the present state of our knowledge, cannot accurately be interpreted.

Now, as to the function of the various types of cells, Professor Lewis and his associates are also working along the lines of Warburg's striking investigations. Warburg has demonstrated that the power of glycolysis instead of respiration (oxidation processes) as a means of obtaining energy constitutes an essential functional difference between the cancerous and the resting cell; that is to say, the normal resting somatic cell has practically no glycolytic power, but a high respiratory function. The cancer cell has little respiratory function, but a high selective glycolytic function in the presence of oxygen, and a very considerable glycolytic power in the absence of oxygen.

Now the chorionic epithelium, as shown by Warburg, by Murphy of the Rockefeller Institute, and by Professor Lewis and his associates, has a moderately high respiratory function, and in the presence of oxygen shows considerable glycolytic activity—not so great as in the case of cancer. In the absence of oxygen the chorionic epithelium has the highest glycolytic power of any, not excluding malignant, tissue. In the accompanying table a rough estimate of these activities is shown.

Glycolytic Power of Normal Resting Tissues and of Innocent and Malignant Tissues.

	Respiration.	Anaerobic Glycolysis.	Aerobic Glycolysis.	Ratio Aerobic Glycolysis: Respiration.
Normal resting tissues ...	++	+	—	—
Differentiating embryonic tissues	++	++	—	—
Benign neoplasms* ...	+	+	+	+
Malignant neoplasms... ..	+	++	++	++
Chorionic villi ... ..	+	+++	++	++

\* Papillomata of ... (Warburg.)  
+ "The type of ... to that of frank malignant tissue." (Murphy.)

Now, it may be asked why is it that the chorionic cell has not exactly the same glycolytic selective power in the presence of oxygen as the cancer cell, for it has been demonstrated that under anaerobic conditions the chorionic epithelium is the most powerfully glycolytic of any tissue. (I exclude the curious and possibly fallacious results obtained in regard to the retina.)

Warburg has shown, although the importance of the observation does not appear to have been fully realized, that if somatic resting tissues—which in both aerobic and anaerobic conditions have practically no glycolytic power—be first starved of oxygen for a considerable time, they take on a glycolytic action after the manner of the cancer cell, though, of course, much less pronounced. Here, then, we have a clear suggestion of the metabolic disturbance which may induce the change from normal to malignant tissue—namely, oxygen starvation.

The chorionic epithelium is singularly situated: it is only in its early life that it is really malignant, and that is before a suitable blood supply with oxygen abundance has been established. It seems probable that at first all the

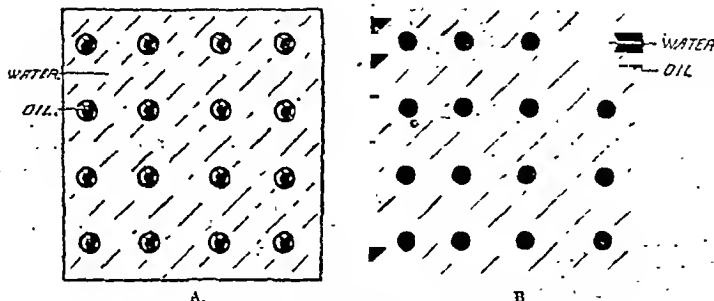


Diagram to illustrate the oil-in-water type of emulsion (A) favoured by a high lecithin-cholesterol ratio and permeable to water-soluble substances, typical of chorionic epithelium and the cancer cell; and the water-in-oil emulsion (B) favoured by a low lecithin-cholesterol ratio, which is impermeable.





satisfactory, but must be used fresh, as we have pointed out on many occasions.

There is still a considerable danger that if lead be used indiscriminately in the treatment of malignant disease many fatalities will follow, and the method itself, either from excessive caution or too much zeal, will be brought into disrepute. As we have already demonstrated, we ourselves have had disasters, and although our extensive experience has enabled us to avoid many more similar disasters, it is still quite possible for a patient to lose his life if incomplete investigations be carried out. Any person suffering with the slightest degree of renal impairment, or cardiac instability or disease, may die most unexpectedly as the result of a single dose. It is therefore incumbent upon us to protect the public as best we can, and at the same time to safeguard the reputation of our work. This we feel can best be done by placing the therapeutic agent, when it is available, in the hands only of those who have had some experience of the method and have ample facilities for biochemical and other investigations. This means that if there be a desire in any special clinic to try out the method, a biochemist and clinician should be sent to Liverpool to study, for, say, a week, the methods adopted, especially in regard to the selection of cases and their preparatory examination. Subsequently the experience of such men will be available for the whole clinic to which they are attached, but on them personally should rest the responsibility for the treatment and its results. "Choriotope," as we have called the preparation used by us, can only be bought with our permission, and this will not be unreasonably withheld.

At present centres have been formed in Harrogate, under the supervision of Mr. Frankling and Dr. Edgecombe, with the expert laboratory assistance of Dr. Miller. Dr. Spriggs and his associates at Ruthin Castle are fully informed of the whole procedure, and have practised it. Material made in Professor Lewis's laboratories has been supplied to these centres.

I mention these instances to give some idea of the way in which we think the method ought to be tried. We have no hesitation in saying that until the treatment has become more standardized and less dangerous, it is neither fair to the general practitioner nor to his patient that it be distributed broadcast. No doubt this statement will give rise to a considerable portion of the discussion that will take place. If this be so, we hope that it will be far removed from a personal question.

We shall, of course, be only too glad to consider any alternative or equivalent suggestions that may be put forward, for the problem is an extremely difficult one, in connexion with which we are only anxious to do what is right. At present the responsibility rests with us.

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#### DISCUSSION.

Dr. SINCLAIR MILLER (Honorary Pathologist, Royal Bath Hospital and Harrogate Infirmary) said:

By the courtesy of Professor Blair Bell and other members of the Liverpool Cancer Research Committee, a small group in Harrogate has been given facilities for visiting Professor Blair Bell's clinic in Liverpool and of studying his methods. He has given us many opportunities of becoming familiar with the work he is doing, as well as much advice in the handling of our patients.

Our series consists of eighteen cases—namely:

Recurrence after operation for carcinoma of breast	4
Carcinoma of rectum (inoperable) ...	3
Carcinoma of oesophagus (inoperable) ...	2
Carcinoma of stomach (inoperable) ...	2
Prophylaxis after removal of breast ...	3
One each of the following: Epithelioma of groin, breast (inoperable), ovary, and gall bladder ...	4

So far we have avoided any serious reactions due to the lead injections. In one case there was persistent vomiting for about ten days, which eventually subsided. In another

there was marked haematuria on the day following the first injection of lead, but as this cleared up on the second day and as there was at no time even partial suppression of urine, I think that this must have been an "accidental" haemorrhage somewhere in the urinary tract. A further injection of lead was given to this patient ten days later without any recurrence of haemorrhage. With these two exceptions, none of the cases has given us any anxiety, and on the whole there has been improvement rather than deterioration.

In most of the cases we have found it sufficient to limit the laboratory investigations to a complete cytological examination of the blood and the estimation of renal function. If the total urinary output over twenty-four hours is satisfactory and the chemical examination shows no abnormality we do not consider further renal tests necessary.

We have usually begun treatment by giving 20 c.cm. of the colloid lead in cases where there is a large amount of malignant tissue present, and 15 c.cm. in other cases where most of the growth has been removed. We repeat the dose in a week or ten days' time, unless there is some contraindication. In all cases under treatment the urinary output over the twenty-four hours is recorded and specimens are examined on two consecutive days following the injections. Prior to the next injection the blood and urine are again examined.

The haemoglobin percentage and the number of red cells per cubic millimetre are of prime importance. If the haemoglobin is much below 50 per cent. patients are given a blood transfusion, which is repeated if necessary.

Generally, after the second injection of lead and sometimes even after the first injection, the red cells show stippling or granular basophilic staining. This stippling is of importance as a guide to further dosage. In our cytological examination of the blood, we enumerate the granular basophil red cells per million red cells. If the granular basophil count rises much above 5,000 per million red cells, we delay the next injection or reduce the dose.

An interesting point that we have noticed is the appearance of a blue line on teeth affected with pyorrhoea soon after injections of lead. This has been particularly noticeable in two cases where the patients had a few teeth affected with pyorrhoea in otherwise perfectly healthy mouths; in both cases the diseased teeth showed the blue line soon after the first injection. Though the patients have had further injections of lead, the sound teeth still show no evidence of a "blue line" forming; one of the patients has had 0.475 gram of lead.

Mr. FRANK COKE (London) congratulated Professor Blair Bell on the theory which he originally evolved with regard to the similarity between the cells of the chorion and those of new growths. Each new fact since discovered with regard to the biochemical or other reactions of these two kinds of cells had strengthened his theory. From a practical point of view he was filled with even greater admiration for the way in which he brought the corollary of this theory to the practical test. Mr. Coke had been using lead for a long time with Dr. Cook of the West Middlesex Hospital, and, though not particularly nervous, yet they took two years, gradually increasing the doses of lead, to reach the large dose given by Professor Blair Bell to his first case. Most investigators would have given up the theory long before they had ever reached the large dosage necessary to kill the cancer cells. It was very fortunate that Professor Blair Bell had cured his first case, and they must not forget the pertinacity and boldness he had shown.

Mr. Coke then described his experience as a visitor to the Cancer Research Organization, where the theory of the treatment and the staff arrangements were explained in detail, and the manufacture of the lead colloid was shown. Later they saw a variety of patients in various stages of treatment, and finally a great number in whom the treatment had finished some months or years previously, the latter appearing to him to be completely cured, although Professor Blair Bell did not use that term. They were shown a young man who had had a large sarcoma invading the left scapula; a photograph of his original condition showed also a mass of glands in the axilla. When they saw

him he was entirely free from any visible growth of any kind and had been back at work for over a year. Another case was the first case treated—the woman with cancer in a lactating breast. With all these cases there were photographs of sections of the growths shown on the screen, and the actual slides were present in the room for any who cared to examine them more fully. Throughout the whole day Mr. Coke was immensely impressed by the entirely scientific basis on which the whole work was being carried out. Most of them came away, he thought, feeling that Professor Blair Bell had persistently understated his case; the benefit of the doubt was always given against claiming a cure rather than for it. Three weeks ago he spent another three days in Liverpool, when he was again shown some fifty cases in course of treatment.

While Dr. Cook and he had obtained a few striking results with the "lead M.A.," it was possible that the lead was too carefully protected in that compound. There was also mercury in it, which might or might not be an advantage. At any rate he was now using the metallic lead of Professor Blair Bell, and probably this would hold the field for the present. Fault had been found with Professor Blair Bell for not broadcasting all his work earlier, but Mr. Coke knew the months and months required to test any change in the experimental programme and to try variations in the colloids used. This treatment did not by any means cure every case, and a great amount of experimental work lay ahead; he hoped that all those who used these colloids would be willing to work with others in their neighbourhood, forming local centres which again could be in touch with Liverpool. They were endeavouring to do this in London, working on standard lines and pooling their experiences. As the committee grew they would get the team work perfected, and a demand for research was bound to follow. There need be no overlapping, and each could have the help of all. Such a combined effort in London and throughout England could at once claim public sympathy and support. What a dozen men working singly would take years to complete could be done by a team in a fraction of the time. They could thus hope to have in the near future a centre working in exactly the same way as that at Liverpool.

<sup>1</sup> BRITISH MEDICAL JOURNAL, March 6th, 1926, p. 415.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### A LOCAL ANAESTHETIC FOR THE EAR.

I HAVE no experience of the local anaesthetic for aural work mentioned in Dr. Pearce Sturm's note (BRITISH MEDICAL JOURNAL, October 9th, p. 638), but I have used with success a mixture advised by Dr. Caesar Hirsch, chief aurist and laryngologist to the Marienhospital, Stuttgart, and described by him in his *Lehrbuch der Lokalanästhesie des Ohres*. It consists of cocaine 3 parts, potassium sulphate (2 per cent. sol.) 20 parts, adrenaline (1 in 1,000) 10 parts, carbolic acid solution (1 2 per cent.) to 100 parts. A small mop of cotton-wool soaked in the mixture and applied to the part for five to ten minutes produces complete anaesthesia; it is even more effective than a 10 to 20 per cent. solution of cocaine. It is free from the disadvantages of setting up such complications as otitis externa, which the mixture referred to by Dr. Pearce Sturm appears to do. It is equally effective when complete anaesthesia of any mucous membrane is required—as, for example, in resection of the nasal septum.

Potassium sulphate appears to be the most efficient adjuvant in intensifying the action of cocaine (this was told me some time ago by Dr. A. R. Friel in connexion with certain methods of zinc ionization in chronic otitis media). Aniline oil also has a very marked effect in intensifying cocaine action, but is not without risk when used over a large area. For perfect anaesthesia of the larynx Dr. Hirsch recommends a 5 per cent. solution of tuteocain with adrenaline and phenol. This also I have found satisfactory.

F. P. M. CLARKE, B.Sc.,  
L.R.C.S., L.R.C.P.

Liverpool.

### DOUBLE UTERUS: PREGNANCY IN EACH CORNU ENDING IN ABORTION.

I WAS recently called to see a multipara, aged 35, on account of vaginal haemorrhage. Her last period was three months before, and she thought she was pregnant. She had been losing moderately for two days, and had passed "clots, but nothing else."

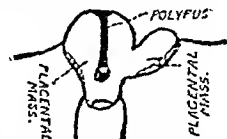
The patient was having intermittent slight colicky pains across the lower part of the abdomen, had not vomited, and her pulse and general condition were good. Her three previous labours had been prolonged, but otherwise uneventful, and she had never had twins or a miscarriage. The uterus was found to be enlarged to the size of a three months' pregnancy, and intermittent uterine contractions could be felt. The cervix, which was softened, would just admit the tip of the index finger. There was a small clot in the vagina, but bleeding had stopped. Nothing else abnormal was found. The woman was put to bed with the feet raised, and was given an opium mixture.

The next day, there having been further considerable haemorrhage without any sign of the uterus emptying itself, it became necessary to clear it out. The patient, who was now pale and whose pulse rate was going up, was anaesthetized with ethyl chloride and ether. The cervix now easily admitted one finger, which discovered the following state of affairs: In the main body of the uterus was a partially separated placental mass, together with a long pedunculated polypus. On exploring the left wall of the uterus about half an inch above the level of the cervix, the finger discovered a second cavity communicating with the main one by a foramen that admitted the examining finger easily. This cavity also contained a complete and separate placental mass. The relations of the accessory horn to the main body of the uterus could, when the patient was anaesthetized, be easily made out with the abdominal examining hand, and were almost exactly those portrayed on page 135 (diagram 65) of Eden and Holland's *Manual of Midwifery* (sixth edition), except that the accessory horn in my case was not rudimentary, but was functioning and communicating with the cavity of the uterus. Both cavities were cleared of their contents and douched, the polypus being twisted off at its base with vulsellum forceps. Convalescence was uneventful.

The fact that the accessory horn was functioning is of interest; as is the possible part played by the polypus in the production of uterine contractions.

Pontycymmer, Glam.

VERNON NEWTON, M.R.C.S.Eng.



#### MALDEVELOPMENT OF THE OESOPHAGUS.

I WAS much interested in the case of oesophageal maldevelopment reported in the BRITISH MEDICAL JOURNAL of April 10th (p. 652). I had a similar case in hospital practice in December, 1925, and I should be glad to know if there are any statistics as to the frequency of this phenomenon.

A married woman, aged 21, was admitted to the Matilda Hospital, Hong-Kong, on the morning of December 7th, 1925. She was in labour, and at 9.15 p.m. the same day a male child, weighing 6½ lb., was born alive. There was an excessive amount of amniotic fluid of dark green colour. The placenta was small and was easily delivered. The mother made a normal recovery.

On the second day my attention was called to the quantity of frothy fluid which the child was bringing up, and to the peculiar noise he made when attempting to take the breast. A spoonful of milk was given, and within half a minute this was returned in a frothy condition through the mouth and nose.

Suspecting some obstruction or malformation, I asked Dr. J. L. Shellshear, professor of anatomy at Hong-Kong University, to see the child with me. We tried to pass a fine rubber catheter into the stomach, but this was impossible, and under x rays the end of the catheter was seen to be coiled up in the oesophagus at the level of the fourth dorsal vertebra. A teaspoonful of bismuth and milk was given, and a skiagram showed a dark mass in the same situation. On December 13th, six days after birth, the child weighed 5 lb.; he died on December 15th at 4 p.m.

Professor Shellshear made a post-mortem examination and found complete atresia of the oesophagus. The upper part of the gullet ended in a bulbous dilatation, and the lower part was represented by an attenuated strand of fibrous tissue passing down to the stomach. There was no connexion between the trachea and the oesophagus. The stomach was dilated and empty. The arteries springing from the arch of the aorta were abnormal in origin. A single trunk gave rise to two common carotid arteries, and an abnormal subclavian on the right side passed posteriorly to the oesophagus at the level of the atresia.

I have stated the facts of the case without comment as Professors Shellshear and Anderson propose to read notes on it at the Medical Conference in Peking.

Matilda Hospital, Hong-Kong.

J. HERBERT SANDERS.

## Reports of Societies.

### BIOLOGICAL STANDARDIZATION OF REMEDIES.

A discussion on "The biological standardization of remedies" took place at a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on November 9th.

Dr. H. H. DALE confined himself, in some opening remarks, to laying down certain general principles, some of which in the past, he said, had been left out of sight. Everyone would agree as to the desirability of having the activity of every remedy which was potent in therapeutics indicated in some clear and intelligent notation. There was a large and rapidly growing class of important remedies to which chemical standards for one reason or another were not applicable, and in these the necessity for biological measurement had never been called in question. No one had suggested, for example, that diphtheria antitoxin should be measured simply by the quantity injected; insulin was in the same position. There had been, however, a tendency in some quarters to doubt the need for and even the value of a biological test in the case of remedies such as digitalis and its allies, which had behind them a long history of more or less successful application in therapeutics before biological methods of assay were available, and it was urged that as digitalis differed in its action with different individuals the value of a biological standard was impaired. That point of view was not likely to appeal to the experimental worker, who held that the thing to keep in view was the absolute necessity of being able to isolate one variable factor for observation while the others were maintained as rigidly constant as possible. When a remedy had a definite and specific action which could not be accurately gauged by chemical tests, but could be measured by a biological test, this latter ought always to be made. Another obvious principle was that the word "standardization" had no proper use except in relation to some generally accepted standard. Hitherto progressive manufacturers who recognized the need of controlling the activity of certain remedies by biological tests had had no official standard to work to. They had accordingly worked to standards of their own—no blame was imputed to the manufacturers—and the result had been to strengthen the resistance of conservatism and scepticism with regard to the desirability of general standardization. Already, however, the standards for diphtheria and tetanus antitoxins, insulin, and salvarsan, to mention no others, had been defined by international agreement at conferences attended by representatives of as many as nine nationalities meeting under the auspices of the Health Committee of the League of Nations, and much useful work had been done in that direction, and was continuing. Dr. Dale went on to urge that the proper basis of all biological standardization must be comparative. To lay down biological tests in absolute terms of some animal reaction was bound to lead to confusion—a point which he exemplified by the confusion which was threatened in the case of insulin when people in different countries tried to define its activity in terms of different animal reactions. The Edinburgh conference in 1923 declared that the activity of insulin ought to be evaluated by comparison with a stable standard, and this had now been prepared and was kept at the Institute at Hampstead. With regard to the methods of biological comparison, it might seem almost superfluous to demand that they should be reasonably accurate in measurement, and that what was measured should be the therapeutic activity of the substance under test; but experience had shown that it was really necessary to insist upon so elementary a point as that.

Dr. J. W. TREVAN gave details of certain well established tests for remedies not standardizable by chemical methods. The errors which came in were largely—almost entirely—due to the variability of the animal or isolated organ which was used for the test. He indicated the difficulty by describing an experiment in which 250 frogs had been injected with strophanthus, and it took three times as much per animal to kill all the frogs as it took to kill

a very small proportion of them. Similar variations took place with the isolated organs. The variations as between one frog's heart and another were of the range of 1 to 200. The first method of eliminating this factor of variability was to use some reaction of the animal or the isolated organ which was quickly reversible so that the test could be repeated within a comparatively short time. Not all drugs could be so tested, but the method had been used with adrenaline and pituitary extract and with some preparations of digitalis. If the action was not reversible the conditions of experiment were much more difficult. In that case the way to eliminate the errors due to variability was by using large numbers of mice or of frogs, as the case might be, so increasing the number of tests, and working out the values for the proportion that died. This applied to the testing of digitalis on frogs and on cats and the testing of insulin on mice. Not only did one animal differ from another in sensitivity, but the whole stock of animals showed periodical changes. The average lethal dose for insulin and digitalis and for a number of other drugs—though not for all—might vary. Until it had been demonstrated that any given lethal dose method did not suffer from the shift in the average lethal dose it must always be assumed that such a shift might take place. There was another way in which the disadvantage of non-reversibility in the action of a drug might be overcome—namely, the method of injecting digitalis tincture into the vein of an anaesthetized cat until the heart just stopped, and finding out the dose necessary to produce that effect. The statistical error in that method was rather less than in the method of injecting a large number of animals and working out the figures from the percentage of mortality.

Dr. J. H. BURN drew attention to the close relations which had now been determined between the results of laboratory and clinical methods in many instances. In a comparison which had been carried out between the laboratory method of testing insulin and the clinical method the agreement was extremely good. Certain laboratory tests with rabbits carried out at Hampstead by Dr. H. P. MARKS had been compared with certain clinical tests done by Drs. Lawrence and Harrison, and the results made it clear that the laboratory was measuring what the clinician wanted. The same was true with regard to digitalis. There had been one or two previous attempts to show that the variations in the testing of digitalis by the laboratory method were significant for the clinician, and such efforts had not always been successful; but certain figures which he showed, obtained in Baltimore, indicated that the effect of various preparations of digitalis on the cat and on the patient followed the same order. The workers in Baltimore, in their clinical observations, instead of using small doses maintained over a series of days, gave one single large dose and determined the effect. All the cases were of auricular fibrillation which had not had digitalis for some long time. While there was no close identification between the two sets of figures, there was a general measure of agreement, and that, in the case of an agent given by the mouth, was, he thought, all that could be expected. It was important that clinicians should realize that pharmacologists did work on the understanding that what they were measuring in the laboratory was what the clinician wanted.

Dr. GEORGE GRAHAM (from the chair) said that he did not think clinicians had any idea of the amount of work done for their service in the laboratory. He agreed that the fact that patients exhibited idiosyncrasies to digitalis was no ground for objecting to the standardization of the drug. There were no means of calculating for these idiosyncrasies, but he thought the original introducer of digitalis into medicine would be heartily with Dr. Dale in insisting on its standardization.

Dr. DALE, in reply to a remark of Dr. Trevan's on the difficulty of standardizing vitamin value, said that he thought the compilers of the United States Pharmacopoeia had been precipitate in introducing a test supposedly for the vitamin A activity of cod-liver oil, in view of the fact that the whole vitamin question was in a state of flux. If anything was going to be done along that line, the only sound principle would be to establish in this case also a stable standard by which workers in different

countries could standardize their animals, otherwise there would be nothing like real consistency. Mere consistency on paper which did not correspond to realities was worse than an acknowledged confusion.

### THE BIOLOGY OF HYDATID INFECTION.

A MEETING of the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine was held at the society's rooms on November 3rd, with Dr. J. B. CHRISTOPHERSON in the chair.

Dr. T. W. M. CAMERON, discussing some modern biological conceptions of hydatid disease, said that in the past it had generally been considered that only one species of *Echinococcus*—the adult parasite of the hydatid intermediate stage—existed, but Deising had described a second species from a puma. The speaker had found the same form in another species of South American cat, and also two other forms which he considered were new species—one from the wolf in Macedonia and the other from the Cape hunting dog. He believed that further species would probably be discovered. The development of hydatid had recently been studied in great detail by Dévé and Dew, and this was illustrated by drawings shown on the epidiascope. The normal hydatid only contained brood capsules and scolices. Daughter cysts were abnormal, and only occurred as a reaction against something which threatened the continued existence of the parasite. Daughter cysts were common in human beings between the ages of 20 and 40 when the parasite was relatively old. The majority of infections occurred in young people, and in them daughter cysts were seldom found. Endogenous daughter cysts developed from fragments of germinal membrane, from brood capsules, or from isolated scolices. In the past exogenous daughter cysts had been believed to arise by inclusions of germinal layer in the cuticle of the parasite. These inclusions were gradually passed to the exterior of the hydatid by exfoliations of the cuticular layer, when they became racculated and formed cysts. Dew, however, believed that these cysts, limited practically to osseous and osseous hydatid, were caused by herniations of both layers of the cyst through the adventitious wall. The necks were subsequently constricted off, and the cysts became more or less free from the mother. Granddaughter cysts could also be formed in the same way. The different types of hydatid in the various domestic animals and in man were then considered. The sheep was the optimum host, and in it the cyst was simple, and generally spherical, although multilocular forms were occasionally encountered. These were merely modifications of the simple cyst, caused by the sclerotic reaction of the host organ. The typical form in the ox was usually a sterile, encapsulated, multilocular cyst, which was surrounded by a peculiar trizonal arrangement of cells—an inner layer of columnar cells, a middle layer of round cells, and an outer layer of concentrically arranged connective tissue cells. In the pig and the horse the common form was a simple cyst, or one with a slight degree of sacculation. In man, in certain isolated regions, there was found a peculiarly malignant form called alveolar hydatid, which consisted of a network of small irregular cavities lying in a necrotic amorphous stroma. The development of this form was characterized by a double process—a peripheral infiltration of the liver (or other organ) by the parasitic elements, and a progressive excavation of the parasitized mass, often resulting in the production of a large central cavity filled with a sero-purulent fluid. It differed from the bovine multilocular form essentially in showing no tendency to become encapsulated, and by its infiltrations and metastases, resembling a malignant neoplasm. It could be accounted for by a dissociation of the functions of the germinal layer (as had been suggested by Dévé)—for example, the germinal layer did not lay down cuticle as fast as it grew, which into contact with the host substance and poisoned it. Dew considered that the study of the normal life-history, with its three successive stages, could explain the existence of the various forms found. The active newly implanted embryo caused toxic and inflammatory changes in the tissue; if, for some reason not yet known, this was exaggerated

a typical alveolar picture would result. In the second stage there was an active cellular reaction by the host and a trizonal arrangement of the cells; if this stage persisted the bovine multilocular form was seen. The final stage was an accurate balance between parasite and host with the production of the typical hydatid. While there was little doubt that more than one species of *Echinococcus* existed, there was no reason to suppose that the different forms were necessarily due to different species. That the alveolar variety was caused by a separate species had for long been the common opinion, but the discovery of isolated cases outside of the endemic areas militated against this hypothesis, and the fact that it was found only in man made its continued existence impossible. It had been suggested that the bovine form might represent the same parasite in another host (although the geographical distribution did not coincide), but the histology was opposed to this view, and, moreover, this form was invariably sterile. The trend of modern opinion was that all the forms were different manifestations of the same species, the variations being due to histological peculiarities or hypersusceptibilities of the hosts.

Dr. ALDO CASTELLANI read a paper on some aspects of chronic colitis, in which he discussed the classification and characteristics of the various organisms concerned. Illustrative examples of cases which he had treated were quoted.

Dr. R. J. ORTLEFF discussed the various species of the genus *Physaloptera* in man. Two human species of this roundworm had usually been considered to exist. A recent examination by Schulz of the type material of the older of these two species had shown that its original description was very poor; so far from being distinct from the other species, it was obviously very closely related to it. An examination of the type material of the second species by the speaker showed that no differences of a valid character could be found, and he was impelled to conclude that the name of the second species, *P. mordens*, must be suppressed in favour of the older *Physaloptera caucasica*; only one species was found in man.

Dr. S. ANNECKE read a paper on the number of male and female gametocytes in human malaria and in *haemoprotozoans* in birds. One important factor, he said, influencing the infection of the mosquito—whether under natural or experimental conditions—carrying human malaria was possibly the relative proportion of male and female gametocytes present in the peripheral circulation at the actual time of feeding. Most of the literature dealt only with subtertian malaria and contained little information regarding the other two species of human malaria. The most reliable counts obtained by previous workers in subtertian malaria indicated that there were about three times the number of female as of male gametocytes present. From his own cases, Dr. Annecke found that the ratio of female to male gametocytes in *P. falciparum* and in *P. vivax* was about 3:1; in *P. malariae* it was 4:1; while in *Haemoprotozoans* it varied from 1:1 to 1:1.5. From a detailed examination of his data he desired to emphasize two facts: the incidence of gametocytes in the peripheral blood at certain periods of the disease varied from day to day, and the percentage of the sexes also varied. That might result from an attempt to establish a correct balance in the numbers of the male and female elements circulating in the peripheral blood in order to give the most favourable chances for fertilization, and so for the propagation of the species. The proportion of sexes varied for the different species as had been noted above. In human malaria it was only when the right proportion of male and female gametocytes circulating in the peripheral blood was obtained that the most favourable conditions were present for the parasite to complete its life cycle.

Dr. P. MANSON-BAHR pointed out that the preponderance of female over male was not confined to the sporozoan parasites. Fairley had recently shown that female schistosomes were more especially affected by the parasitocides, and he thought that an investigation into this question in connexion with malaria would be fruitful. He had been much puzzled by the action of the new antimalarial drug *plasmoquine* on the gametocytes of malaria. It was possible that this could be explained by the rapid action of the drug on the young trophozoites, which would cause an apparent rapid destruction of the gametocytes.



# THE MANAGEMENT OF INFECTIONS IN BOARDING SCHOOLS.

A discussion took place at a meeting of the Medical Officers of Schools Association on November 12th, Dr. L. R. LEMPIERE presiding, on possible modifications of the rules hitherto observed in the management of infectious diseases in boarding schools.

Dr. A. I. SIMY (Rugby School) said that from the point of view of keeping schools free from infection, he did not think that the usually accepted rules of quarantine for those who had been exposed to infection during the holidays could be made less stringent, and indeed the rules might well be extended to cover the common catarrhal infections. Chicken-pox was now so mild that he thought it might be removed from the list of scheduled infections in boarding school regulations. He would also be prepared to remove rubella were it not that there was often considerable difficulty in distinguishing this condition from measles. With regard to the hospital beds to be provided for boarding schools, it would be unreasonable to expect accommodation in the school hospital for all cases of illness in big epidemics; this would mean making provision for 40 per cent. of the school population. But he thought the minimum percentage of beds to be recommended should be between 10 and 20 per cent., a certain number of these to be assigned for surgical and non-infectious cases. With regard to the treatment and prevention of spread when once infectious disease had manifested itself, the wards should be arranged so that, when two or more separate infections occurred simultaneously in the school, the cases in each category could be kept apart the one from the other, and also from non-infectious cases. During convalescence patients should be allowed one or two daily walks and at least one bath a day. Among disinfecting measures he considered that fumigation by formalin vapour, at least in such concentration as was usually adopted, did little or nothing more than give a sanitary smell and a false feeling of security. Fresh air, sunshine, and soap and water were the best disinfectants. In mild uncomplicated affections the boy was safely discharged when clinically fit to return to school. In the case of scarlet fever a minimum of six weeks' isolation was desirable, though a few cases were fit to be discharged at the end of four weeks, the difficulty being, however, to say which cases these were. A few cases continued to have a residual infection, located, he believed, in the nasopharynx, and possibly flaring up again if the convalescent developed a cold. The naso-pharynx in all these conditions was what really mattered. In the case of measles a boy was never fit to return to school until after at least fourteen days from the full development of the rash. Patients suffering from chicken-pox were nearly always detained too long. He saw no reason to alter the rules with regard to mumps and whooping-cough, though the actual period of infectivity was probably short. With regard to washing, he thought that the underclothes in infectious cases should be washed either at the sanatorium laundry or else sent to a special laundry. They should not be sent to the ordinary school laundry or to a laundry serving the general public, as infected school linen might possibly extend infection to the outside community. A great deal had still to be learned about infection, especially as to its passage from one individual to another, and school doctors had been prone to attack the infection too little in its initial stages and too much when it was gradually subsiding.

Dr. DUNCAN FORBES (M.O.H. and S.M.O., Brighton) agreed with much that Dr. Simey had said. In Brighton there was a hospital which dealt with young children suffering from surgical tuberculosis and also with those suffering from scarlet fever and diphtheria. All nurses in attendance on these cases mixed freely with each other, sometimes even sharing the same bedroom, and there had been no spread of scarlet fever or diphtheria to the tuberculous children. With regard to disinfectants, soap was probably as effective as any, and danger was at a minimum if thorough cleansing were carried out. At the sanatorium laundry, of course, care was taken that the clean linen went out at a different door from that at which the used

linen came in. Infected articles were immersed in water as soon as they reached the laundry. He did not think that special laundries were necessary for infectious cases if these precautions were taken. For the general prevention of infection in schools he was rather inclined to trust to the following by the pupils of instruction in such habits as covering the mouth when coughing, washing the hands before meals, and refraining from putting pencils or fingers in the mouth. With regard to "carriers," he was of opinion that if "carriers" were thoroughly examined some morbid lesion would almost invariably be found.

Dr. ELWIN T. NASH (M.O.H. and S.M.O., Heston and Isleworth) pointed out that in public schools it was necessary to play for safety. Much as they might wish to shorten the time of assumed infectivity, it would be rather drastic to start altering the code of rules in view of the large safety factor which was necessary in these cases where a young and growing population was massed together, not always under the best conditions. He scarcely shared Dr. Forbes's trust in the effect of hygienic discipline among boys. He had been surprised to hear Dr. Simey say that formalin disinfection was of little use. One important point was that, to be effective, it must be carried out in a moist atmosphere. Dry formalin disinfection was a poor thing to which to pin one's faith. He supported certain remarks which Dr. Forbes had made as to the lack of proof that disease was caused by drains. The nearest connexion he could trace between drains and diphtheria was that both began with "d."

Surgeon-Captain MAX, R.N., said that during the last six years at the Royal Hospital School, Greenwich, there had been only one epidemic, with 127 cases of scarlet fever and 107 of diphtheria. In the case of diphtheria the contacts were taken—the boy who had been next to the patient at meals, at desk, at games, and in the dormitory—and diligently swabbed, but very rarely was he able to say definitely that one boy had taken the disease from another by contact. During the last term there were nine cases of measles, but he was quite unable to say why the infection did not spread.

Dr. J. YOUNG (Bishop's Stortford) thought that more might be done when the first case of measles or other malady made its appearance. The first case should be rigorously dealt with and disinfectant measures taken. The dormitories appeared to him the most likely centre for the spread of the disease, and another danger-point was the scrimmage in Rugby football.

Dr. L. R. LEMPIERE (Haileybury College) said that any changes which were made in the code of rules would have to be made very circumspectly. At the same time, the position should be examined dispassionately and critically with a view to deciding how far the rules, which had now been in vogue for many years, had stood the test of experience. The waste of time and money involved in a long quarantine had to be considered. For all practical purposes one attack of these infectious diseases conferred immunity. Second attacks were so rare that they could be disregarded. From time to time he read correspondence in the BRITISH MEDICAL JOURNAL regarding a supposed second attack of measles, but the history given was absolutely typical of rubella. At his school the boys were seen only from the ages of 13 to 18, but during that period he was perfectly certain that second cases occurred only in the rarest instances. He had seen one second case of rubella—a typical attack occurring three weeks after the first. One could never be sure whether on the appearance of a first case of varicella or mumps an epidemic would follow or not. Over and over again varicella cropped up in the middle of winter, and there were a number of single cases. With regard to sending boys home, school authorities had to play for safety, and, to guard themselves from possible action, they had to practise disinfection perhaps on a scale which they might not consider really necessary. With regard to the length of the period of infectivity, the condition of wellness of the boy, practically speaking, was the guide. A case of measles was never fit to return until after three weeks, and then only when the condition was good. The patient with varicella should be kept in for ten days, and if his clinical condition

justified it and his face was clean aesthetically he might return to school. For mumps two weeks at least must be allowed in order to avoid orchitis, which might occur later on. Catarrhal conditions needed very careful consideration and more action than was at present taken upon them. He agreed that it was the naso-pharynx which needed looking after. In the first case he would deem it worth while to practise disinfection; after that he did not think it would be of the slightest use. Cleanliness—soap and water—was the great essential. With regard to the laundry, for the last twenty-five years the practice at Haileybury had been to soak in disinfectant the clothing from an infectious case, and then send it to the ordinary school laundry, and he had never known a case in which the laundry women or their families had caught any infection.

Dr. W. G. WILLOUGHBY (M.O.H. and S.M.O., Eastbourne) described how, when he went to Eastbourne, he persuaded the headmasters and headmistresses of the many schools in that town to let the local authority build sanatorium blocks for all school cases, which could thus be concentrated in one place instead of being spread over a number of little local fever hospitals, and this plan had worked well. With regard to the carrying of an infection by third persons, he remembered, when assistant medical officer at Plymouth, that certain small-pox cases were kept on board a ship in the harbour, whereupon small-pox broke out in the town, and it was discovered that in the dark some friend of the man in charge of the ship had gone ashore wearing a coat belonging to one of the patients on the ship and had called at a house in the town. A crop of scarlet fever cases occurring in ones and twos week after week had been eventually traced to a particular place in chapel, where every one of the boys affected had sat. The place was cleaned up and the prayer books destroyed, and no further cases occurred. In another school the source of infection was proved to be a book in the library, which had been taken out successively by boys each of whom took the infection. As a rule he thought carriage by third persons very unlikely. As for drains, while he did not believe that infection arose from them, he thought it important that they should be in good condition, as a bad odour might affect the general health, and so lower the resistance to infection.

Dr. H. W. ATTLEE (Eton College) said that the code had been of use as a means of reference for school medical officers, but he thought the time had come when general principles ought to be reviewed. He was convinced that all infections were very rarely carried, with the exception of scarlet fever and diphtheria. In public schools he was afraid they were too much inclined to play for safety.

Dr. J. LAMBERT (Wellington College) thought that before the boys left at the end of the term they should be examined to make sure that they had no infection. After the occurrence of the first case it was extremely difficult to stop an epidemic. Cases cropped up in various directions where no contact could be proved. Boys mixed with one another in all sorts of ways; in some cases a chance cough as one boy passed another in the "quad" might spread infection. Unless a boy was seriously ill in school he did not think his parents should be in the least encouraged to go and visit him.

Dr. G. E. FRIEND (Christ's Hospital, Horsham) said that his experience was that of the epidemics of infectious disease occurring during the last thirteen years at his school very nearly 60 per cent. occurred in term time after the lapse of such a period as proved that the infection could not have been incurred at home. About 40 per cent. occurred after the beginning of term within the possible incubation period of an infection originating during the holidays. There was very little doubt that the other epidemics were due to the introduction of visitors.

After further discussion, in which it was suggested that tonsillitis, influenza, and "pink eye" should be added to the list of maladies specially provided for in the code, it was agreed, on the motion of Dr. ELWIN NASH, to refer to the council the possibility of forming a joint committee with the Society of Medical Officers of Health in order to go into the proposed modifications of the code of rules.

## OBSTRUCTION OF THE DUODENUM.

At a meeting of the Liverpool Medical Institution on October 28th Mr. G. C. E. SIMPSON read a paper on some obstructions of the duodenum.

Mr. Simpson said that morbid conditions of the duodenum, apart from ulcer, were a frequent cause of indigestion, and probably often an exciting cause of ulcer. He alluded to diverticula, extension of growth or inflammation from neighbouring structures, tuberculous stricture and obstruction by bands, and adhesions from tuberculosis outside it. Cases of congenital malposition were mentioned, and in one of these he had met with an appendix which "controlled" the duodeno-jejunal flexure. Nagel's case of congenital diaphragm of the duodenum was mentioned, where the patient survived to the age of 72, and a personal case was quoted where a man aged 24 had a stricture 2 in. long and 1/2 in. in diameter in place of the pylorus. Morley's classification of biliary cysts was given, and a case mentioned in a man where the cyst invaginated the wall of the duodenum from the biliary papilla to the superior mesenteric artery and there caused obstruction. The cyst contained about thirty ounces of fluid, with elements from the bile and pancreas and a few stones; a duodenal ulcer was also present. In these cases the symptoms of indigestion were chronic, but slight, for years; they then became more acute with dilatation of the stomach. Flatus was troublesome. Passing to acute arterio-mesenteric ileus—post-operative and idiopathic—Mr. Simpson quoted a fatal case of the latter condition where washouts and posture failed to give relief, and the only operation possible was jejunostomy. Chronic duodenal ileus was then considered. A well marked case in a girl aged 12, treated by a belt, and other early cases, treated by colopexy, were mentioned, and then the treatment by duodeno-jejunostomy and by gastro-enterostomy. The last procedure had been used in cases where the symptomatology was particularly suggestive of ulcer, and where there was marked hyperchlorhydria; most of the patients were males, and the results were good. Of the fourteen duodeno-jejunostomies half were cured or with slight discomfort, two were recent, three were definitely failures. In view of the long-standing history and the other troubles, such as previous and associated operations, these results were satisfactory. All the cases showed enteroptosis, and a slide was shown recording the lower border of the stomach and the upper level of the hepatic flexure in these cases as contrasted with a similar number of cases taken at random. Mr. Simpson then passed to consideration of bands from the gall bladder and ducts to the duodenum and colon. Apart from adhesions definitely attributable to inflammation, such bands were common, and often the only lesion present in cases suggestive of duodenal ulcer or gall stones; their release was beneficial. The speaker considered that proliferative changes in reaction to strain were responsible for these, though in many cases the basis was of congenital origin. Again, most cases showed enteroptosis, of which disease he suggested Nebuchadnezzar was the first recorded victim. A case was then noted with duodenal delay and prolapse in which it would appear that the obstruction was at the duodeno-jejunal flexure, probably from the duodeno-jejunal band, but the case was still under observation. Slides were shown of very convincing radiographs by Dr. Oram. In general, obstructions of the duodenum tended to give a picture with periodicity. The pain was often relieved by food or by hot drinks. Both the intervals and the duration of the attacks were different from those of duodenal ulcer, the attacks being short. Flatulence was the other constant feature.

### Clinical Significance of Cardiac Murmurs.

Dr. T. W. WADSWORTH, in a note on cardiac murmurs, described the physical factors responsible for murmur production, and discussed the various theories held responsible for the presence of murmurs in cases in which no anatomical or pathological causes could be found. It was held that the term "accidental" should be employed when describing murmurs of this type, qualifying it by such distinctions as "haemic" and "cardio-respiratory," when the presence of these factors could be substantiated. The diagnosis of

"accidental" from "organic" murmurs was described, and also the estimation of the degree of stenosis and the functional condition of the iv bundle and auricle ns deduced from the character and presence of the presystolic murmur.

### TREATMENT OF FRACTURES OF THE MANDIBLE.

At a meeting of the Aberdeen Medico-Chirurgical Society on October 28th Dr. JAMES CROMBIE delivered his presidential address on the treatment of fractures of the mandible.

Dr. Crombie said that the treatment of fractures in this situation had undergone considerable advancement during his thirty years in practice. The commonest causes of fractures of the mandible were motor-cyclo accidents, blows with the fist, kicks from horses, and industrial accidents. The fracture was generally compound into the mouth, the usual position being in the bicuspid or canine region. Very often this was accompanied by a fracture of the angle or ascending ramus on the opposite side. Oblique fractures were the rule, although transverse fractures were met with occasionally at the symphysis. In addition to the usual symptoms of fracture there were several special features in fracture of the mandible—namely, a little haemorrhage into the mouth, inability to close the mouth and to articulate the words properly, and dribbling of saliva. The fragments could be seen to move when the patient swallowed, and there was usually a definite irregularity in the line of the teeth. In single fractures the smaller fragment usually overrode the larger; in double fractures the centre fragment usually dropped downwards. Dislocated teeth were very common, and care should be taken that a tooth had not dropped between the fragments. Fractures of the ascending ramus were usually accompanied by much swelling but very little displacement. Crepitus, difficulty in moving the jaw, and deviation to the affected side were the symptoms of fracture of the neck of the condyle.

The speaker then described the various methods of fixation of the fragments of the fractured mandible by bandaging, splinting, and wiring the teeth, each method being useful in suitable cases. An oblique radiograph should be taken before the treatment was commenced. Preliminary cleansing of the mouth was necessary, as well as a dose of antitetanic serum. In the region of the ascending ramus and angle very little in the way of treatment was required except the support of a bandage. Where there was displacement of the fragments of the mandible and splinting was to be used impressions of the upper and lower jaws should be taken in modelling composition. Impressions of these were cast in plaster-of-Paris, and, if the fracture was in the dentigerous area, the lower model was sawn through the site of the fracture, and articulated with the upper model, so that the condition of the jaws was the same as before the fracture occurred. Numerous types of splints had been devised for fixation, but most of them were modifications of the classical Hammond or Gunning splint, both of which were described. The original Hammond splint consisted of a piece of wire which was fitted round the inside and outside of the teeth in the lower jaw; after reduction of the fracture into this splint fixation was obtained by figure-of-eight wiring round the teeth. Iron wire had been originally used, but this, in practice, was too soft, had an unpleasant taste, and in addition stained the teeth. More recently gold, dental alloy, or German silver gilt had been employed. A modification of this had been devised by Dr. Crombie, bands being fitted round the necks of the second bicuspids, or other suitable teeth, and a band fitting the inside and outside of the intervening teeth soldered to these. The original Gunning splint was made of vulcanite; it covered both upper and lower teeth and part of the gum, with a hole in front for speech, and one at each side to allow the saliva from the parotids to enter the mouth. For cleansing purposes it was drilled all over with small holes. The fragments were reduced into the splint and the jaw was held up

by a four-tailed bandage. The modern splint was made of metal and only covered the teeth; the upper and lower cups were soldered together if the mouth was to be kept shut, and if the mouth was to be kept open they were joined by soldered struts. This splint was usually cemented on to the teeth, and an aluminium chin support was used for a day or two. The method of making these splints was described, and numerous models were exhibited to show the modifications required for various cases. Dr. Crombie thought that fractures in the dentigerous area of the mandible should be treated by a single Gunning splint, cemented on. In this way the temporo-maxillary joint did not stiffen, and after a few days ordinary food could be taken. It was possible to use this splint only when there were teeth on each side of the fracture, otherwise a double Gunning splint had to be used. He emphasized the point that shaky teeth should be left, as they often healed and became firm; if this did not occur they could easily be removed later. In cases of comminuted fracture with much sepsis a Payne's cradle splint was recommended—almost a double Hammond—the upper and lower splints being held together by cross-struts. Free drainage was thus obtained, and the mouth could be washed out easily with an antiseptic solution. The treatment of cases where there was much bone loss was described, including cup and bar splints and bone grafts. It was of the greatest importance in these cases to keep the fragments in their proper relation to the upper jaw. The method of wiring the teeth was demonstrated, and in edentulous people wiring or fixation of the bony fragments by kangaroo tendon was recommended.

In concluding his address Dr. Crombie stated that no matter how a fracture of the mandible was being treated absolute cleanliness of the mouth was essential. Syringing with a solution of liquor potassae and carbolic acid of 1 in 40 strength should be practised before and after each meal; if the splint was detachable it should be removed and boiled. The food must be soft, but with the aid of a mortar and pestle a varied menu could be given.

### JAMES MACKENZIE INSTITUTE.

In a lecture on disturbance of renal function in experimental nephritis given to the James Mackenzie Institute for Clinical Research, St. Andrews, on October 26th, Professor SHAW DUNN referred first to the object and scope of his research into experimental nephritis in animals. He pointed out the difference between the acute form of the disease as seen in the rabbit and in the human subject, and showed the essential lesion in the former to be in the first convoluted tubule, and not in the glomerulus. He made the interesting observation in this connexion, however, that albuminuria did occur, and hence it might be presumed that some functional change took place in the glomerulus also. He next proceeded to detail the results obtained in rabbits in which nephritis had been induced by a sufficient dose of exalates, showing the diminution in urinary nitrogen excretion and the increase in the blood urea, sometimes to high levels. There was also present, he stated, acidosis, and he drew attention to the probable additional function of the renal tubule in maintaining the body's alkaline reserve. The diminution in the percentage of urea excreted and the rise in blood urea showed a diminished power of concentration on the part of the kidney. There might be produced, however, by the injection of saline an artificial polyuria which washed out the urea in large quantity and brought down the blood urea level. The lecturer then put forward the view that the urea retention might be explained by the hitherto impermeable tubule cells being killed or damaged and hence becoming permeable and permitting urea to reabsorb. So also anuria might develop. The few experiments which had been possible on chronic tubular lesions confirmed the main conclusions, and showed the importance of an adequate supply of water to secure a sufficient excretion of urea and the danger of reducing this supply in cases in which the concentrating power of the kidney was permanently lowered.

## Rebels.

### METHODS AND PROBLEMS OF MEDICAL EDUCATION.

The fourth series of *Methods and Problems of Medical Education*,<sup>1</sup> brought out and distributed by the Division of Medical Education of the Rockefeller Foundation, is devoted entirely to an account of the method of taking, filing, and storing the notes of patients in the Presbyterian Hospital, New York, which, after an examination by Dr. R. M. Pearce of the Rockefeller Foundation of several other admirable and more or less widely known methods, appears to be the most suitable. Dr. W. W. Palmer, physician-in-chief to the hospital and professor of medicine in Columbia University, has been active in the preparation of this instalment of the series. There are three articles; the first is short, and describes the record room, with its seven record clerks under the direction of a committee of three members of the medical and surgical staff; it is responsible to the medical board, which in its turn is responsible to the board of management of the hospital. The position of the record room is important, though little consideration has apparently been given to the point in the construction of existing hospitals; it need not be near the wards, as is so frequently the case, for when a person is admitted as an in-patient his history is kept there until he is discharged; the record room should be easily accessible to the out-patient rooms, the follow-up and social service organizations, the laboratories, the museum, and the library. The rules for recording and filing medical and surgical histories are given in the second and longest article, on the unit history system. It is by Dr. H. Archinloss, visiting surgeon to the hospital, and contains illustrations of the history sheets, index cards, and of the letters and memoranda for patients. The methods used in the follow-up system, with reproductions of the letters sent to patients who fail to report, are also described in this article. The thorough character of the system is shown by the record that 91.6 per cent. of the patients were in some degree followed up. The methods of the surgical follow-up system are considered in a separate article by Dr. J. H. Corscaden, assistant consultant in gynaecology. Much the larger part of the pamphlet is the appendix containing facsimile reproductions of the charts and various kinds of notes taken in the hospital.

The fifth series contains no fewer than twenty-two articles describing different teaching and research departments in twelve centres of North America, China, France, and Holland. The majority of the departments described are concerned with the pre-clinical sciences, physiology being well represented by the laboratories of Washington University, St. Louis, Pennsylvania University, McGill, and the Peking Union Medical College. The pathological department of Washington University is described by Professor Leo Loeb, and that of Utrecht University by Professor R. de Josselin de Jong. The account by Dr. Béla Schick of the charting of clinical records at Mount Sinai Hospital, New York, serves as a supplement to the last series; a coloured chart of the weight, measurements, diet, and other details of a baby during nine months presents inset photographs of the patient before and after treatment—a graphic record from the children's clinic in Vienna. Dr. Ralph Pemberton, director of the medical division of the Presbyterian Hospital, Philadelphia, gives an account of the new dispensary or out-patient department, with its laboratories, post-mortem room, clinics, and research rooms. Professors E. Estor and J. L. Peeh of Montpellier explain by illustrations the mechanism and use of the surgical didactic lamp, by means of which onlookers either at a distance or even outside the theatre can watch operations. A specially interesting article on the prophylaxis of mental disorder is contributed by Dr. P. Toulouse, director of the laboratory of experimental psychology attached to the Asylum of St. Anne, Paris. About seven departments at McGill University and four at Washington University are dealt with successively; closer correlation of the various

subjects has been specially aimed at, and in many instances the various allied sciences have been collected under the same roof. Writing on the Students' Unit Medical Laboratory at the University of Wisconsin, Dr. Chauncey D. Leake, associate professor of pharmacology, points out the need for intimate friendly relations and the personal touch between the teachers and the taught, and the disadvantages of departmental barriers between anatomy, physiology, pathology, surgery, and medicine. In this system four students are allotted a room where they keep their books, read, work, and do experiments. For the average medical class of 100 students satisfactory accommodation is provided by twenty-five such rooms on one floor. The provisions made for research form a prominent feature in these articles—for example, all the whole-time members of the staff in Professor A. B. Macallum's department of biochemistry at McGill University are engaged in original work, and in the physiological laboratory of the same university the stimulus exerted by the M.Sc. has been successful. The volume is profusely illustrated by photographs and plans of the laboratories; Professor Robert J. Terry's account of the departments of anatomy, neuro-anatomy, and histology at Washington University contains twenty-six such illustrations, many occupying a whole page.

The value of these publications to teachers, especially those responsible for building or reorganizing their departments, is too obvious to need elaboration.

### RADIOTHERAPY IN GENERAL MEDICINE.

Dr. FRANCIS HERNAMAN-JOHNSON, in a small book entitled *Radiotherapy in Relation to General Medicine*,<sup>2</sup> has endeavoured to show, in a comparatively brief compass, the relation of this branch of therapeutics to medicine as a whole. The book is not a textbook, and contains very little on technique; it is not primarily written for the radiologist, but is meant to give a general idea of the scope and possibilities of radiotherapeutics to the non-expert. A comparatively large amount of space is allotted to the treatment of cancer and Graves's disease, and is based on the personal experience of the author; x rays are dealt with more fully than other forms of radiation.

The earlier chapters deal very simply with the physics of radiation and the effect of radiation upon normal cells. The two chapters on cancer deal with the principles of the treatment, and discuss the comparative value of radiation treatment in various forms of the disease. Many cases are quoted shortly, but in sufficient detail to show what effects are produced and what results can be obtained; other cases are related which tend to show the limitation of the treatment.

A chapter on uterine fibromata and tumours contains an excellent summary of radiation possibilities in these conditions, and again illustrative cases are quoted. He considers that during the next twenty years the use of x rays in uterine and ovarian disease will become much more general: the ease and complete safety with which sterilization can be brought about by measured doses of deeply penetrating x rays is mentioned.

The author is an enthusiast for x-ray treatment in Graves's disease and allied conditions, and states that "the patient acutely, even desperately, ill is the one in greatest need of radiotherapy"; this seems to be correct, for patients far too ill for operation may improve rapidly and immediately under the administration of x rays. There is a further chapter on tuberculosis and other disease.

This book is well written and full of interest, and the author, in a small space, has succeeded in giving a vivid picture of the great scope and importance of radiation therapy as carried out by modern methods.

### THE CARRIER PROBLEM.

As no handbook on the carriers of pathogenic micro-organisms has appeared for fifteen years, Dr. K. C. PAUL's succinct summary<sup>3</sup> will be of use to the general practitioner

<sup>1</sup> *Methods and Problems of Medical Education*. (Fourth and Fifth Series.) New York: Division of Medical Education, the Rockefeller Foundation. 1-2. Sent free by the Foundation on application.

<sup>2</sup> *Radiotherapy in Relation to General Medicine*. By Francis Hernaman-Johnson, M.D. Oxford Medical Publications. Oxford Medical Handbooks. London: H. Milford, Oxford University Press. 1926. (Fcap. 8vo, pp. ix + 211. 5s. net.)

<sup>3</sup> *The Carrier Problem*. By K. C. Paul, M.B., B.S. With a foreword by David Nabarro, M.D., F.R.C.P. London: Oxford Medical Publications. London: H. Milford, Oxford University Press. 1926. (Cr. 8vo, pp. xii + 102; frontispiece. 5s. net.)

in search of a clear and elementary account. The author divides carriers into contact and convalescent carriers, and each of these groups is subdivided into temporary and chronic; reference is also incidentally made to animal vectors of disease, contaminated food, milk, water, clothing, and dust; but the term "carrier" is confined to human beings. The various infections in which carriers play a part are described in successive chapters, each containing an account of the available treatment and a short bibliography. In the section on typhoid and paratyphoid fevers, McKendrick's test, and the autolysate-precipitin reaction, designed to detect the carrier state, are detailed. The carriers of streptococcal infections are divided into those of the *Streptococcus scarlatinae*, which are generally temporary—not lasting, it is said, more than two or three weeks after desquamation has begun—and those of other streptococcal infections, such as faucial, respiratory, purpural, erysipelas, and wounds. Among the diseases of unknown or doubtful etiology, influenza, epidemic encephalitis, small-pox, chicken-pox, measles, and mumps are briefly discussed.

#### LORD KNUTSFORD'S MEMOIRS.

SYDNEY HOLLAND, VISCOUNT KNUTSFORD, tells us in the "Apologia" of his autobiography that he has called the book *In Black and White*,<sup>1</sup> not because it is inspired by a well known spirit, but because he has set down his reminiscences of fact and of fiction in black and white, and because, by a curious coincidence, these were the "colours" he wore at Trinity Hall and as a member of the Magpie Cricket Club.

Born a twin, he and his brother, now the Hon. Mr. Holland-Hibbert, were often mistaken for one another, with amusing or perplexing results. He has also been mistaken for such striking personalities as Lord Rosebery and Mr. Arthur Roberts, the comedian. He comes of good stock. His grandfather, Sir Henry Holland (1788-1873), a physician well known in the society of his day, was the son of a medical practitioner at Knutsford. Henry Holland had for his maternal grandmother a sister of Josiah Wedgwood, the potter, and Mrs. Gaskell, the novelist, was a cousin. Sydney Holland was born in 1855 and succeeded his father, the second baronet and first peer, in 1914, so that he is better known to the passing generation as Sydney Holland. His mother was the granddaughter of Sydney Smith, from whom doubtless came his Christian name and probably his keen sense of humour.

We pass over his school and college days and his experiences at the bar and as a director of dock, water, and other companies, for it is as a hospital organizer, or we might almost say dictator, that he is most interesting to the medical profession. He tells us frankly that he "drifted" into this work. Having to visit a dock workman who lay in the Poplar Hospital for Accidents, he was disgusted and distressed by what he saw there, and in 1891, on taking the chair at an annual meeting as a dock director, he recommended drastic reforms. The committee did not support him, and ended by saying that if he thought he could put things right he had better do so. He accepted this challenge and became chairman, with the result that by 1896 the hospital was rebuilt, nearly trebled in size, its reserve fund raised from £8,000 to £54,000, and was not, and had not been, in debt. When in that year he became a member of the committee of the London Hospital those who knew him prophesied—in the words of one of the staff—that "he would make things hum." Certainly events moved fast as soon as he became chairman in the same year.

There is always a risk that one who has watched the carrying out of great improvements and reforms, or has had a large share in their institution, may exaggerate the bad state of things that preceded reform. We can hardly reconcile Lord Knutsford's description of the London Hospital in 1896 with known facts. He says that "aseptic surgery was just coming in and the staff were very dubious whether it would be a blessing, or the reverse. Whenever a surgeon went round his ward he was followed by the surgery beadle, who carried such instruments as he might

be likely to require. These instruments were used, put back, and re-used on other patients with the happiest disregard of germ existence." Lister's work had then been known for some thirty years, and even if we are to understand "aseptic" in its strict technical sense, antiseptic surgery had long abolished such practices as are here described. The visiting surgical staff of the London Hospital in 1896 included such progressive surgeons as Sir Frederiek Treves, C. W. Mansell Moullin, Hurry Fenwick, and F. S. Eve, while the assistant surgeons were Jonathan Hutchinson, jun., T. H. Openshaw, and H. P. Dean. It is incredible that they were so far behind the times as is implied by the above statement, or that the London can have lagged so very far behind the other general hospitals of the metropolis. We fear that Lord Knutsford's memory has here played him false and he has confused the stories he heard of earlier days with the events which came under his own notice. Nevertheless, there is no question that he achieved great things at the hospital in Mile End, and probably nobody but he could have collected the large sums needed for development. He tells us that he once received a cheque made out to the order of "The Champion Beggar," and that the bank accepted his endorsement without protest or even inquiry.

The medical and surgical staff of the hospital does not occupy much space in these memoirs and only a few of its members receive individual casual mention.

Lord Knutsford's vitality and keen zest for life are evident on every page of the book, and his cheery philosophy, despite two severe accidents and his almost total deafness, should be an example to all. He tells many good stories, some of which have stood the test of time.

His accounts of his relations with the Royal Family, and particularly with Queen Alexandra, show all concerned in the best of lights. He has been, nay, we believe that at the age of 71 he still is, a keen sportsman, and the account of his experiences with rod and gun will be full of interest for those whose joy it is to "go out and kill something." He was a distinguished oar at Cambridge, and a long-distance swimmer, and he appears to have appalled and exhausted Bernard Darwin by his methods at golf. Besides these activities his accomplishments include legerdemain and ventriloquism, and he is a proficient on that difficult instrument the clarinet.

This book is one of the few recent autobiographies which are likely to be readable in ten years' time. The concluding chapter is devoted to an eloquent and convincing defence of the voluntary hospital system.

#### THE BRITISH NAVY IN ADVERSITY.

Should the "Gentleman with a Duster" ever write his *Historia Providentiae*, it is hoped that the acts of Providence which saved the British Navy from destruction in the fateful years of the American Revolution will not be overlooked. Some such thought occurs to us on reading Captain JAMES's story of *The British Navy in Adversity*<sup>2</sup> during the War of American Independence. For if ever a providential hand guided our destinies and gave us Hood, Howe, Rodney, Kempenfeld, Barrington, and others to counteract the incompetence, corruption, jealousies, and interferences of those in high places at home, it was then. As told by Captain James, the story of the amphibious warfare against the American colonists from Canada to Georgia, and against the French and Spanish fleets from the Balearic Islands and Gibraltar to the English Channel, and in the West and East Indies during the years 1762 to 1783, is a thrilling page in the history of the British Empire.

The book's interest to medical readers lies in the occasional references to operations and to expeditions being abandoned on account of sickness on board the ships, not only in the unhealthy tropics, but also in home waters. The enemy allied fleets suffered severely and were prevented by epidemics from effectually undertaking operations against the British when the latter were more or less at their

<sup>1</sup> *In Black and White*. By Sydney Holland, Viscount Knutsford. London: E. Arnold, 1926. (Med. 8vo, pp. viii + 392; 3 plates. 21s. net.)

<sup>2</sup> *The British Navy in Adversity: A Study of the War of American Independence*. By Captain W. M. James, C.B., R.N. London: Longmans, Green and Co., Ltd. 1926. (Med. 8vo, pp. xvi + 459; 15 maps, 28 diagrammatic sketches. 25s. net.)



mercy. In 1779, for example, the French commander-in-chief, in bemoaning the misfortune caused by the failure of the Spanish fleet to join him in time, wrote that "a worse calamity still is this terrible epidemic which is weakening my ships." We are not told what the epidemic was, but three years later Howe's fleet was similarly incapacitated by "an epidemic disorder called the influenza," which caused great havoc amongst his crews while cruising off the Dutch coast. Other points of medical interest are the occasional references to Sir Gilbert Blane, Rodney's physician during the operations of the fleet in the West Indies, and his comments on the battles fought in these waters.

Although medical information is scanty and vague, Captain James's volume is one that should be read by everyone. It throws much light on the history of the period to which it refers, and teaches many lessons, over which statesmen, politicians, and the man in the street might well ponder. The graphic illustrations of the naval battles make it easy for the ordinary reader to follow the narrative, and add much to the interest of the book.

### NOTES ON BOOKS.

To write of a highly technical and specialized subject in such a manner as to be comprehensible to those who know little of the foundations upon which it is based is by no means easy, and the task becomes the more difficult when the writing has to form the basis of delicate and practical procedures, a true acquaintance with which can only be acquired through the experience of actual practice. Mr. M. H. WHITING, in his manual on *Ophthalmic Nursing*,<sup>8</sup> has succeeded in presenting his subject in a manner which should prove to be of considerable value to his particular audience, and should be not without its uses to the wider circle of students and practitioners of ophthalmology. No description has been given of the procedures common to all types of nursing; the book is confined to the special methods adopted in the medical and surgical treatment of diseases of the eye. The methods advised are without exception sound; their description is concise, explicit, and to the point; and each is treated with an amount of detail which is surprising considering the size of the book. The fact that they are based upon the practice evolved and adopted at Moorfields Eye Hospital, which has maintained its world position in all things ophthalmological for over a century, is guarantee of their value, and provides sufficient justification for their publication. In view of its purpose, and considering its price, the book is well printed, well indexed, and lucidly and profusely illustrated.

The first and second volumes of *Tabulae Biologicae*<sup>7</sup> have already been mentioned in the JOURNAL (1926, i, 832), and the third volume, which has just appeared, continues the useful task of collecting into a single work of reference as many biological data as are available. The first half of this volume is occupied chiefly with organic chemistry and biochemistry, and the common chemical and physical constants are given for some thousands of such compounds as are of interest to the biochemist and pharmacologist. Another large section of the book is devoted to anatomical data, and tables of lengths and weights of the human body and its parts are given. Towards the end of the volume are some useful pharmacological data. For example, the minimum lethal doses of some hundreds of compounds are given. These are merely samples of the data presented in the volume. It is needless to say that these data are of very varying value, for biological science is only slowly attaining to the status of an exact science, and reliable data are unfortunately scarce. The publication will, however, be found a very great convenience by all workers in the biological sciences.

Dr. J. T. KING's book *Basal Metabolism*<sup>6</sup> gives a short and straightforward account of the teaching of modern physiologists concerning the body metabolism in general and of the application to human disease of physiological methods of determining the metabolic rate. Within recent years a great volume of research into human metabolism has been contributed to scientific journals, but there have not been many attempts to

bring the new views to the notice of the general physician. This is one of the chief aims of Dr. King's book, and one he has succeeded in attaining, for he has given a very readable version of the problem. His eight chapters deal successively with historical questions, general physiology, the pharmacology of heat production, chemical questions, the anatomy of the thyroid gland, metabolism in hyperthyroidism and in hypothyroidism, and in other conditions. The book will be of more interest to readers who want information as to the meaning and value of metabolic tests than to those who wish to learn to do them, because the author does not go into much detail in his description of methods and apparatus.

*Practical Pharmacognosy*,<sup>9</sup> by T. E. WALLIS, is a textbook prepared for students in the School of Pharmacy of the Pharmaceutical Society. Professor GREENISH points out in a preface that it has been prepared with great care, and that a large proportion of the matter printed is based on original observations by the author. The book is divided into two parts. The first contains instructions for a course of seventeen practical classes in the examination of the macroscopic and microscopic characters of plants used in medicine, and the second a summary of the characters by which the medicinal plants may be recognized. The illustrations are an outstanding feature of the work. There are eighty-one excellent drawings of plants, of which many are original. The book provides a concise and clear introduction to the science of pharmacognosy, and is well adapted to the needs of the student of pharmacy.

We have received a copy of the fifth issue of *L'Année médicale pratique*,<sup>10</sup> edited by Dr. CAMILLE LIAN, supported by a staff of forty-five contributors. It contains in alphabetical order a concise account of the principal contributions to medical literature in the widest sense of the term. A new feature of the present issue is that representatives of the Argentine Republic, Belgium, Jugo-Slavia, and Switzerland figure among the contributors, with articles outlining the progress of medicine in their respective countries. The preface states that in subsequent issues similar contributions will be made by representatives from Holland, Italy, Rumania, Spain, and Uruguay.

The monograph on the stages of development of pulmonary tuberculosis<sup>11</sup> edited by Dr. CHRISTOPH HARMS, director of the hospital for diseases of the lungs at Mannheim, consists of three parts. The first, which deals with the recognition of the various stages of pulmonary tuberculosis, is illustrated by serial skiagrams of thirty-six cases. The second part is devoted to the prophylactic and curative treatment of pulmonary tuberculosis in the special welfare centre and hospital for diseases of the lungs at Mannheim. The third part is concerned with the administrative measures for combating tuberculosis in Baden generally and in Mannheim in particular. An appendix contains a list of the scientific publications of the Mannheim hospital and welfare centre.

<sup>8</sup> *Practical Pharmacognosy*. By T. E. Wallis, B.Sc. (Lond.), F.I.C., Ph.C. With a Foreword by H. G. Greenish, D. Sc., F.I.C., F.L.S. London: Baillière Tindall, 1926. Pp. x+115; 81 figures. 7s. 6d. net.

<sup>9</sup> *Practical Pharmacognosy*. By T. E. Wallis, B.Sc. (Lond.), F.I.C., Ph.C. With a Foreword by H. G. Greenish, D. Sc., F.I.C., F.L.S. London: Baillière Tindall, 1926. Pp. x+115; 81 figures. 7s. 6d. net.

<sup>10</sup> *L'Année médicale pratique*. Edited by Dr. Camille Lian. Paris: René Lépine, 1926. (Fcap. 8vo, pp. iv + 162; 117 figures. M.9.30; bound, M.12.)

### PREPARATIONS AND APPLIANCES.

*Camphefyl*. "CAMPHEMYL" is an ingeniously devised preparation of camphor, suitable for hypodermic administration. Each ampoule of 1 c.cm. contains 0.1 gram natural camphor dissolved in a mixture of methyl urethane, mono-ethyl urea and distilled water. The solution is clear and colourless and of low viscosity. The last property makes it possible to inject the solution through a fine-bore needle. The therapeutic effects of this preparation are of a character similar to those produced by solutions of camphor in oil, but the makers claim that camphefyl is much less irritating and does not produce camphor abscesses. The drug is recommended for intravenous as well as subcutaneous administration. The intravenous injection of any drug should, of course, be performed with reasonable caution, and such caution is particularly necessary in the case of "camphefyl," because the camphor is precipitated when the solution is diluted in the blood stream. Intravenous injections should therefore be given slowly to ensure thorough mixing with the blood. Clinical and pharmacological trials, communicated to us by the makers, show that, provided due caution is exercised, intravenous injections of camphefyl can produce a beneficial action in cases of shock, and do not produce undesirable after-effects. The makers are the Society of Chemical Industry at Basle, and the agents in this country are the Clayton Aniline Company, 40, Southwark Street, London, S.E.1.

<sup>7</sup> *Tabulae Biologicae*. By Maurice H. Whiting, O.B.E., M.B., B.Ch. (Camb.), F.R.C.S. With an introduction by Sir John Parsons, F.R.C.S., F.R.S. London: J. and A. Churchill, 1926. (Cr. 8vo, pp. xii + 173; 12 figures. 5s. net.)

<sup>8</sup> *Ophthalmic Nursing*. Edited by C. Oppenheimer and L. Pincus-son. In four volumes. Vol. III. Berlin: W. Junk, 1926. (8vo, pp. 8vo, pp. vi + 229. Half call, 13 8s.; sewed, 13 5s.)

<sup>9</sup> *Basal Metabolism*. By John T. King, Jun. Baltimore: The Williams and Wilkins Company; London: Baillière, Tindall and Cox, 1924. (Med. 8vo, pp. 113; 14 figures, 1 plate. 12s. 6d. net.)

# British Medical Journal.

SATURDAY, NOVEMBER 20TH, 1926.

## REST FOR ACUTE POLIOMYELITIS.

THERE are, unfortunately, unmistakable indications that the epidemic of acute poliomyelitis, which it has for some years been feared might occur in this country, is on the move. The disease has borne more than one name; it was originally known as infantile paralysis, but as it became recognized that it sometimes affected adults the pathological name of anterior poliomyelitis was substituted. Later still it was established that in some of the cases observed during epidemics the lesions were found in other parts of the central nervous system, including the cerebrum, and the eumbrous title of "anterior myelo-encephalitis" was introduced by Lovett. Usually, however, the stress of the infection falls on the spinal cord and the brain escapes, though it is probable that a large proportion of the fatal cases are due to its involvement. The disease is said to be more prevalent in the summer, but the present epidemic in this country seems to have gathered strength during the last three months. A table of notified cases prepared by the Ministry of Health is published in our Parliamentary Notes (p. 966); they are shown under poliomyelitis and polio-encephalitis respectively, but we have added them together to give a better view of the prevalence of the disease, for the infection of the brain and of the cord seems undoubtedly to be due to the same agent. It will be seen that the cases notified from the beginning of May to the end of October have numbered altogether 875, and have risen from 21 in the first month to 373 in October. Cases have occurred in greatest number in Thanet and in parts of the Midlands, including Leicestershire and Rutland.

The fear that an epidemic might occur in this country was in large measure due to the experience of the United States, and also of the Scandinavian peninsula and of Central Germany. In 1894 there was an epidemic in the New England State of Vermont, and at least thirteen epidemics, comprising over 18,000 cases, with an average death rate of 20.7 per cent., occurred during the next twenty years, culminating in the terrible outbreak in the City and State of New York in 1916; in it 13,223 persons were attacked, and the death rate was over 25 per cent. The Ministry of Health, in a memorandum issued at the beginning of 1925, puts the fatality rate much lower, and says that it is commonly 10 to 12 per cent. of the attacks. It is estimated that complete recovery occurs perhaps in one-fourth of the survivors, but the remainder are to a greater or less degree the victims of a lifelong disability.

The clinical stages of the disease have been divided into three: the acute, which has usually subsided within four to six weeks; the recovery stage, which extends approximately to the end of the second year; and the chronic stage, from the third year onwards. It is admitted on all hands that the diagnosis of the disease in the acute stage may be extremely difficult, unless helped by a knowledge that cases are occurring

in the area. If that be so, treatment should be instituted on suspicion, for a few weeks' rest can do the child no harm.

Of the signs which may be considered especially significant three have been found to be remarkably constant—stiffness in the neck, spontaneous pain in the back and limbs, and marked tenderness of the limbs; this last is held to be the most important. If the patient is carefully watched during the early irritative stage transient nystagmus, twitchings and paresis of limbs or of groups of muscles may often be recognized. At the onset twitchings and tremors are generally observed even in mild cases, and convulsions occasionally in young children. At this stage the knee-jerk may be exaggerated, but afterwards it disappears, as do other reflexes in the limbs. Definite paralysis, which is usually of the flaccid type, follows the primary symptoms and affects one or more groups of muscles, especially of the limbs, but it may involve any part of the muscular system. It is important to remember that the acute stage may not be very marked, and it is quite common for parents in the out-patient room to assert that the child has never been ill.

We have no specific, but Medicine is not helpless; a great deal can be done by wise treatment to mitigate the dire consequences of the attack. Treatment seems to be summed up in one word—rest. Sir Robert Jones, in an address published in our columns in 1922 (vol. i, p. 706), said that during the acute stage of onset we must trust entirely to rest to protect the muscles which are weak, and so prevent the oncoming of deformity. During the acute stage the two things to do were, he said, to keep the head and spine at rest in an apparatus so constructed that nursing was rendered harmless, and to allow nothing to happen which might conceivably frighten the child. The hip and spine should be kept absolutely at rest, in obedience to the general law applicable to inflamed structures. Rigid fixation of the hip and spine relieves pain; but even if the pain is slight rest is imperative for physiological reasons.

The deformities that usually have to be guarded against are contraction of the feet in plantar flexion, flexion of the hips and knees, adduction of the shoulder, and curvature of the spine. The next principle is that as recovery begins to take place the relaxation should be lessened by small degrees, regulated by the patient's ability to make use of the muscle in its extended range. A muscle over-exercised begins to lose power, and a weak muscle must not be over-taxed. While active mischief is present in the cord electricity and massage should be avoided, for it is not physiological to irritate and stimulate peripheral ends of nerves connected with inflamed centres. Such practice is irrational, cruel, and reactionary. Sir Robert Jones condemned also applications of heat and cold. Later on the principle to be observed was that a muscle submitted to stretching will lose its function and that a distinction must be drawn between a muscle paralysed by destruction of its governing cell and a muscle disabled and impotent from overstretching.

It has been established that the disease is infectious, though there are plenty of cases to prove that it may not be transmitted even by very intimate association. Though the micro-organism concerned has not been isolated, it is believed to be a filter-passer. The Ministry of Health expresses the general opinion when it says that it is important to isolate all patients in the acute stage, whether the manifestation of illness is

slight or severe. This offers the best hope of preventing spread; though it has to be remembered that the disease may be propagated by unsuspected carriers.

The need for isolation gives point to the warning Lord Dawson of Penn and Dr. James Collier have given in the public press against the action taken in closing Uppingham School, which has meant sending about 500 boys to their homes in all parts of the country. The school authorities and their medical advisers were in a very difficult position, but we fear that they have taken too sanguine a view in supposing that the expedient of closing the school for a fortnight will be sufficient, though possibly it may. The incubation period is said to be usually four or five days, but in very few diseases can the incubation period be rigidly defined, and cases are on record in which in this disease it has been much longer. Lord Dawson and Dr. Collier, both in their published warning and in the circulars which have been issued to parents of children at Broadstairs schools, lay stress on the fact that a boarding school can easily be made a self-contained community, can isolate itself from the outside world, and completely control the activity of its inmates. This policy has been applied at Broadstairs, where a number of cases occurred in the boarding schools for both boys and girls. It appears to have been successful there, for no fresh cases have been reported in that district for a fortnight. To send a whole school home for two weeks, Lord Dawson and Dr. Collier point out, does not mean that the problem will be over for the school when it reopens. The same precautions will have to be taken as were taken at Broadstairs from the onset of the outbreak. We entirely accept their opinion that to send several hundred boys to their scattered homes, where it is impossible to watch them with the same care as at school, is to run the risk of extending the disease throughout the country. In this connexion a very great responsibility rests upon parents. The disease is no respecter of classes, and parents, in the interests of their own children as well as of the public, should loyally abide by the policy determined by the school authorities on the recommendation of their medical advisers. Lord Dawson and Dr. Collier mention that an instance has just come to light of a girl being infected with the disease by a boy who was taken home by his parents from one of the Broadstairs schools. The sound policy from all points of view and in the interests of everyone is to isolate the patients, and to keep all other inmates of the school under systematic daily medical supervision, not forgetting that adults may be attacked.

### THE ADMINISTRATION OF DRUGS OF ADDICTION.

THE judgement of the Divisional Court of the King's Bench Division (the Lord Chief Justice, Mr. Justice Avory, and Mr. Justice Salter) allowing the appeal of Dr. G. C. Kingsbury, who is both a practising barrister and a registered medical practitioner, against a conviction by the late Lord Mayor of London (Sir William Pryke) is of great importance to the medical profession and the public. The hearing before the Lord Mayor was reported briefly in the JOURNAL of March 13th last (p. 509), and in the present issue we give a report of the appeal on page 964. Dr. Kingsbury was charged with failing to enter in a register or day-book the name and address of a patient whom he was endeavouring to cure of the morphine habit by a gradual reduction of doses. It was admitted that the

name and address of the patient had not been entered anywhere; but the defence was that Dr. Kingsbury had done all that the law required of him inasmuch as (1) the regulation and schedule relied upon were *ultra vires* as not being authorized by the section of the Dangerous Drugs Act, 1920, under which the regulation purported to be made; and (2) that, in any event, in this case Dr. Kingsbury did not "supply" the drug, but was protected by the proviso "that administration of the drugs by or under the direct personal supervision of a duly qualified medical practitioner shall not be deemed to be supplying the drug within the meaning of the regulations," and was therefore under no obligation to comply with the provisions attached to "supplying," including that which requires the entry of the name and address of the person supplied. The former of these issues was not determined by the court, as the latter issue was, by itself, sufficient for the judgement; but whether the particular regulation in question be *ultra vires* or *intra vires*, it is satisfactory to know that the courts will scrutinize closely the action of Government departments in their exercise of that power of making regulations under Acts of Parliament which modern legislation has a tendency to give them. To remove to the sphere of administration matters which ought to be the subject of legislation is an easy procedure which cannot be watched without some anxiety, and there is evidence to support the opinion that the method has already been carried too far.

The main importance of the judgement of the Divisional Court lies, however, in the interpretation of what constitutes "administration" of dangerous drugs as distinguished from their "supply," and of the meaning of the phrase, "under the direct personal supervision of a duly qualified medical practitioner." The Lord Mayor had held that the Director of Public Prosecutions was right in contending that the words "administration of the drug by a duly qualified medical practitioner" meant that the doctor must administer every dose by his own hand, and that "administration under the direct personal supervision of a duly qualified medical practitioner" meant that the doctor must be present and either see the patient administer each and every dose to himself, or see the nurse or other person administer such dose to the patient. A few searching questions from the Divisional Court, however, led the respondent's counsel to abandon this strict interpretation; he admitted, indeed, that such an interpretation would be in certain conditions "oppressive." Counsel contended further that the word "administration" was confined to cases of emergency, as contrasted with regular supply. The court, however, held that it was "as impossible to limit the words of the proviso to cases of emergency as it was to limit personal supervision to cases where the doctor was personally present," and declared that, once this limited meaning had gone, on the facts of this case there had been personal supervision and the proviso applied. Dr. Kingsbury's appeal was therefore allowed, with costs.

No opinion was expressed as to whether the regulations should be amended; that question was not one for the court, but for the Government department concerned. It is to be hoped that any proposed amendment will be very closely watched and very fully considered by all concerned. But there would not appear to be any good reason for disturbing the regulations as now interpreted, for it must be remembered that the court has not given any definition of

what constitutes "direct personal supervision" of drugs of addiction. It has merely destroyed the narrow interpretation put on these words by the Home Office, and has declared in a particular case that the facts showed that there had been such supervision. The facts appear to have been (1) that Dr. . . . had himself seen the patient every . . . that on each occasion he had given him only sufficient doses of the drug to last until his next visit. It does not follow that there may not be other cases in which, though the facts are different, it may still be held that there was nevertheless "direct personal supervision," but it would seem that such supervision must be recognized at any rate in cases where the facts are substantially the same. This at once makes the regulations in question less oppressive and less troublesome, and in a wide class of case preserves to the medical practitioner that right, which he rates so highly, of not being compelled to disclose the identity of those who have consulted him or the nature of any condition for which he is treating them.

#### SKIN, HAIR, AND EVOLUTION.

PROFESSOR H. J. FLEURE, who has established his reputation as one of the sanest and most stimulating thinkers and writers on anthropology, devoted his Malcolm Morris Memorial Lecture, which is published in an abridged form at page 953, to a consideration of the light that may be thrown on the evolution of man by a study of the special characteristics of the skin and hair in different races. The lecture may be said to deal with a special case of the general proposition put forward by him in his presidential address to the Section of Anthropology of the British Association at Oxford this year. Professor Fleure is aiming at encouraging the study of human race types, not according to the established differences of form and colour, but from the evolutionary standpoint. At Oxford he said that early modern man had provisionally been placed geographically in the zone from the Atlantic edge of the Sahara to Persia, and that there was a fairly large population not all exactly alike. He believed them to have been more or less brown-skinned, with blackish hair and brown eyes, with jaws and brow ridges much reduced from the conditions known in many of the early forms of man, and with heads almost balancing on the vertebral column, though the erect posture had not been attained in all cases. He supposed them to have lived in the days of the retreat of the ice sheets, after the last maximum phase of the Great Ice Age, and to have inhabited the Sahara, Arabia, and Mesopotamia, then rather cool grasslands. In the course of his Oxford address he elaborated the theory that the development of man depended on hereditary factors of a conservative nature and on environmental influences which have changed with climate, food, and equipment. Among the evolutionary changes which he believes to have had great influence is the lengthening of pre-natal life from about 220 to 280 days, with consequent continuance of growth of brain and delay of hardening of skull, permitting an increase in skull volume continuing during infancy, so demanding lengthened maternal care. The postponement of fixation of characters and the maintenance of more or less embryonic conditions, he thinks, resulted in the unfolding of new features in response to opening up of new possibilities, and thus became a cardinal factor for the human race. Further, the prolongation of infancy had probably contributed to differentiating women's work from men's, and may have accompanied the growth of the hunting habit in man, woman remaining more a gatherer. Men thus came to command two mutually supplementary

types of food; and this may have been a valuable step forward at that stage of evolution. It would involve also an enrichment of social life, though he did not think that human society had resulted so much from the coming together of individuals as from the liberation bit by bit of individual initiative within groups. In his Malcolm Morris Lecture he insists on the importance of variation of weather conditions, and observes that the best conditions for bodily efficiency appear not to be very different from those of our present British climate, and for mental efficiency our rather cool but not too bitterly cold spells. He supposes that from the Central Mediterranean communities in, say, the Sahara man drifted south towards Central Africa and eastwards into Asia, and eventually northward into Europe. Towards the south he found climatic conditions which made essential evolutionary changes favouring the dissipation of bodily heat. Towards the north he found climatic conditions developing as the ice retreated which by their variability, by the absence of extremes of temperature, and incidentally of the long winters of continuous frost and snow, favoured mental development. It will be seen how ingeniously he brings the skin and hair characteristics of different peoples to support his main thesis.

#### THE LEAD TREATMENT OF CANCER.

It was in the autumn of 1922 that Professor W. Blair Bell published his first paper on the results then achieved by him and his colleagues at Liverpool in the treatment of advanced cases of cancer by the administration of lead preparations. From time to time during the following three years we published notes on these investigations into the effect of lead in colloidal form upon cancerous tissues, and almost exactly a year ago the late Dr. J. G. Adami outlined for the benefit of our readers the story of the work so far as it had then gone (November 21st, 1925, p. 978). The occasion of his letter was the widespread public interest in a paper read by Professor Blair Bell to the Toronto Academy of Medicine. It may be convenient if we now recall some of the leading references to this matter during the present year. On March 6th (p. 431) we published a memorandum by the Liverpool Cancer Research Committee, answering criticisms in regard to disclosure of the method of preparation of the material used in these investigations, and defining fully the position of Professor Blair Bell, in anticipation of the address he was to deliver before the Medical Society of London on the use of lead in the treatment of malignant disease. That address and the discussion which followed were reported in our issue of March 27th (p. 568), and on April 17th (p. 687) we printed the full text, with microphotographs. The next event of importance was the third morning session of the Section of Medicine at the British Medical Association's Annual Meeting at Nottingham in July, which had been set apart for a full presentation of the work accomplished by Professor Blair Bell and his colleagues during the preceding five years. He himself was prevented by illness from attending, and in his absence Dr. Adami introduced the subject and read Professor Bell's opening paper, describing the constitution and methods of work of the Liverpool Cancer Research Organization, and concluding with a brief statement of his views on the nature of malignant neoplasia. The full report of this symposium, with illustrative plates, appears in our present issue, the material having been revised and amplified by the several authors. In the concluding paper of the series Professor Blair Bell has endeavoured to draw a composite picture of the work and to co-ordinate the main points brought out by his colleagues. It appears from the latter part of this that the situation with regard to the distribution of lead colloid is at the moment rather complicated. Some time ago

British Colloids Limited was authorized to make a suspension of lead after representatives of the firm had been to Liverpool to learn all that could be shown them. Unfortunately, a modification, suggested by the chief chemist to the company in order to prevent the formation of lead hydroxide, has been found to produce also a toxic substance (possibly a proteoso) giving rise to severe rigors, lowering of the blood pressure, and other untoward symptoms. In these circumstances (Professor Blair Bell informs us) the Liverpool committee has felt it advisable to withdraw the permission given to the company to issue any more supplies for the present. It is hoped, however, that before long the preparations of lead such as those made by Professor Lewis and his associates in Liverpool will be stabilized by the addition of gelatin and so made available for general distribution; in the meanwhile certain emergency measures are being taken to maintain supplies for patients outside Liverpool who are already undergoing a course of this treatment.

#### THE PREVENTION OF HEART DISEASE.

THE Children's Home Hospital at Strathblane in the West of Scotland, which was opened originally at Aberfoyle twenty-three years ago for the treatment of children suffering from tuberculous disease of the bones and joints, has carried on its beneficent work since that time with conspicuous success. The children received into the home come from Glasgow hospitals and invalid schools. The charges for their treatment may in some cases be defrayed by public authorities, and some parents sending their children by private arrangement make contributory according to their means, but these payments meet only a fraction of the cost of maintenance; the home is essentially a medical charity. Encouraged by what it has been enabled to do in the past on behalf of tuberculous children, the committee of management of the home has recently had it in mind to extend its usefulness in a new direction to which medical opinion is pointing. It has desired to undertake the care of boys and girls suffering from acute rheumatism and its complications, especially as affecting the heart. In entertaining this design it has had the sympathetic interest of Professor Leonard Findlay, professor of pediatrics in the University of Glasgow; Dr. A. S. M. Macgregor, medical officer of health for the city of Glasgow; Dr. E. T. Roberts, principal school medical officer of the Glasgow Education Authority; and Dr. George A. Allan, assistant physician to the Western Infirmary, Glasgow, and a member of the British Medical Association committee on rheumatic heart disease in children. The committee of management of the hospital announces that it is now in a position to realize its laudable ambition. By the generosity of a lady it has been placed in possession of £12,000, to be devoted to the equipment and partial endowment, at the home, of twelve extra beds for rheumatism and heart disease. The committee is now appealing to the public for a further capital sum of £10,000, to complete the endowment of the beds and to place the enterprise on a sure footing. The appeal should not be in vain. The new field of work is rich with promise; its importance, on both the preventive and curative sides, is of the first order, as has been urged in the pages of the JOURNAL. The home, as expanded, will be the first of its kind in the West of Scotland, and one of the first in the country generally. Professor Leonard Findlay will act as its consulting physician. It is pertinent to recall that at a symposium of medical officers held in Glasgow in February last on the prevention of heart disease, the principal speakers included Dr. Roberts and Dr. G. A. Allan, and Dr. A. K. Chalmers, Dr. Macgregor's predecessor in office, then medical officer of health of the city. It may perhaps be permitted to conjecture some degree of causal relationship between the words spoken by them in Glasgow at that

time and the facilities for the treatment of rheumatism and the prevention of heart disease now foreshadowed at Strathblane. Be that as it may, the West of Scotland is most substantially indebted to the generous and enlightened donor of the means by which treatment and prevention have been made possible.

#### EFFECT OF TREATMENT ON THE WASSERMANN REACTION.

THE Medical Research Council has issued this week a report on some investigations into the effect of treatment on the Wassermann reaction of syphilitic patients.<sup>1</sup> The observations were made at the venereal clinic of the Liverpool Royal Infirmary by Professor E. Glynn and Drs. R. E. Roberts and Phoebe M. Bigland, and extended over the period from April, 1918, to December, 1923. The course of treatment consisted of an admission treatment with 914 and grey oil, and, after an interval, continuation treatment with mercury. The Wassermann technique used was No. 4 of the Medical Research Council; and the reagents were distributed by a semi-automatic battery of twelve syringes devised by Professor Glynn. The observers regret that out of 3,429 patients only 711 were available for studying the effect of treatment. This was due to inadequate attendance at the clinic, due partly to the fact that 40 per cent. of the patients were "wanderers," such as sailors; it appears, however, that the attendance of people with fixed residence was not much better. The investigations confirmed the vital importance of treating syphilis at once and thoroughly, and led to some unexpected conclusions about routine treatment with mercury. The success of the standard admission course in producing a negative Wassermann test was found to depend on two factors: first, on the result given by the Wassermann test on admission, the success varying from 92 to 78 and 52 per cent. according as this test was negative, partially positive, or positive; secondly, the more prolonged the period between primary lesion and treatment at the clinic the less the success. The results of the admission course were apparently uninfluenced by the fact that some of the patients had received some measure of treatment elsewhere. It was found that novarsenobenzol was slightly less efficient, and also less toxic, than novarsenobillon and neokharsivan. There was an unexpected failure of the admission course to produce a negative Wassermann reaction in some patients. The negative or partial Wassermann reaction in early syphilis might sometimes become positive about the beginning of a salvarsan course, and negative again if the course was prolonged. Some of the failures may have been due to faulty brands of the drug, the existence of which was noted by Colonel Harrison in 1921. Standardization has now eliminated all faulty brands of British manufacture. The unexpected conclusions about treatment with mercury were reached only after an attempt had been made to eliminate all possible fallacies. The observers found that, in contrast with its usual success in the treatment of clinically active syphilis, mercury frequently fails in cases of Wassermann-negative "latent" or quiescent syphilis, and that this failure is due to the different pathological condition treated. Mercury attacks the spirochaetes when circulating in the blood, but not the inaccessible residual spirochaetes protected in fibrotic lesions or in indurated lymph glands, spleen, or testis. Not only so; mercury increases the Wassermann relapse incidence, partly, perhaps, because it produces mercury-resistant spirochaetes, and possibly subsequently provokes them into activity; this is most probably to be accounted for by supposing that it depresses the immunity of the patient, possibly in some instances by damaging his general

<sup>1</sup> Medical Research Council, Special Report Series No. 107. H.M. Stationery Office, or through any bookseller, price 3s. 6d. net.



health. The observers believe that salvarsan, while it is a more potent spirochaeticide than mercury, does not develop resistant strains of spirochaetes under prolonged administration. Consequently they consider that extra courses of salvarsan will be more successful than mercury in preventing relapses as indicated by the Wassermann reaction and in destroying any residual spirochaetes in Wassermann-negative "latent" or quiescent syphilis. The examination of the possible objections that may be brought against their views is developed in an interesting way; probably the general opinion will be that an investigation of a larger number of cases over a longer period is needed before the conclusions at which they have arrived are fully accepted.

#### WELFARE OF THE BLIND.

THE sixth annual report of the Advisory Committee on the Welfare of the Blind to the Minister of Health<sup>1</sup> deals with the years 1924-26. Full advantage appears to be taken of the provision of the Blind Persons Act of 1920 whereby pensions are provided for the blind over the age of 50 years; there are now 13,663 such pensioners, which number includes all the blind within the age group except 10 per cent., who are presumed to have private means. The moneys expended by local authorities on the welfare of the blind show a large increase: for the five years commencing 1921-22 the totals have been £14,671, £47,106, £71,805, £102,910, £127,593, so that it has been increased almost tenfold in this short period. Much of this money has been expended through voluntary agencies, and it is noteworthy in this connexion that the provision of public money has not diminished the flow of private benefactions; during the year 1922-23 the total income from voluntary sources of 130 agencies recognized by the Ministry was £378,535, while for the succeeding year it has increased to £401,701. This is taken as strong approval of the triple partnership of the State, the local authorities, and the voluntary societies in the care of the blind. Attention is called to the important provision of the Public Health Act of 1925 whereby local authorities have the power to make such arrangements as they may think desirable for assisting in the prevention of blindness, and in particular for the treatment of persons ordinarily resident within their area suffering from any disease or of injury to the eyes. This is an important provision, and the possibilities of exploiting it for the prevention of blindness, especially in industrial areas, might well be investigated. The register of the blind shows an increase in the totals and in the ratio to the general population. In 1919 the total number of blind known was 25,840, with a ratio of 1 to 1,396 of the general population. In 1925 the figures were respectively 42,140 and 1 to 911. The ratio varies widely in different parts of the country—for example, in Northumberland it is 1 to 2,301, whereas in Exeter it is as high as 1 to 422. Possibly the existence of a large blind school in a small city like Exeter will account for the latter figure. The steady increase in the number of known blind is accounted for by better information, much more care being taken to find out blind persons, both indigent and others; further, there is a higher average expectation of life in the general population, and this will mean an increase in the number of cases of blindness due to age changes. That there is truth in this is shown by the fact that in the age group under 21 there was an increase between 1923 and 1925 of only 128, whereas in the same period there was a total increase of 4,521 in the age groups over 50 years. The heavy losses made by some of the workshops for the blind is noted. The difficulty of running such shops at anything but a loss is admitted, but better results could, it is

thought, be obtained if there were better salesmanship, and especially co-operative selling. Experience has also shown that a judicious dilution of blind with sighted labour will secure substantial reduction of trade losses. Attention is drawn to the inadequate provision made for the training of myopia and partially blind children. It is estimated that there are at least 5,000 such in the country, and the available accommodation now existing in myopia classes is only 1,600, of which some 600 are in London. The committee expresses the opinion that any restriction in the development of myopia classes or sight conservation classes would be a very regrettable and in the long run an uneconomical measure, and it hopes that educational authorities will proceed to the full development of the facilities for the education of children with defective sight. A word in criticism of the "format" of the pamphlet may perhaps be permissible. Two pages conveying information to which it is desired to draw special attention are set up in italics. This type is much more difficult to read in bulk than ordinary type, particularly when the paper is so thin that the impress of the type on the reverse page is visible. Thus the attempt to give emphasis by printing whole passages in italics may defeat its own end.

#### GASTRIC AND DUODENAL ULCERS.

To the *Archives des Maladies de l'Appareil Digestif et de la Nutrition* for July last Dr. A. F. Hurst contributed an interesting historical study of gastric and duodenal ulcers. The first description of gastric ulcer he finds in the *De Medica Historia Mirabili* of Marcellus Donatus of Mantua (A.D. 1586). In 1670 Mme de La Fayette, lady-in-waiting to the Duchess of Orleans, daughter of Charles I, gave a vivid description of the symptoms of perforated gastric ulcer in her royal mistress. This description shows clearly the cause of death, and refutes the charge of poisoning alleged against the Chevalier de Lorraine. In 1729 Christopher Rawlinson brought before the Royal Society his observations on a case of perforated gastric ulcer; and towards the end of the same century further publications were made by Bleuland at Leyden, and by Matthew Baillie in London. In the nineteenth century researches were made by John Abercrombie of Edinburgh and by Cruveilhier, whose name is often given to gastric ulcer in French literature. Abercrombie's work has the merit of describing duodenal as well as gastric ulcer. Neither the memoir of Cruveilhier in 1856 nor the monograph of Brinton in 1857 contains reference to duodenal ulcer, though this variety had been found associated with gastric ulcers by Morgagni in 1737, and a case had been mentioned by Sir George Baker in 1772. Perforated duodenal ulcer was described in 1793 by Jacopo Penada of Padua. The case had been forgotten until Malloeh republished it in the volume issued in honour of the seventieth birthday of Sir William Osler; Dr. Hurst gives a full quotation of the description of the case. Abercrombie's suggestion that the symptoms of duodenal ulcer were sufficiently precise to render diagnosis possible during life was confirmed by Buequoy in 1887; and Dr. Hurst regards it as remarkable that the works of these two investigators have been almost entirely forgotten, so much so that at the beginning of the present century duodenal ulcer was still regarded as a rare disease, difficult of diagnosis. The first gastro-enterostomy for chronic gastric ulcer was performed by Doyen in 1892. Codivilla in 1893 performed gastro-jejunostomy for stenosis due to duodenal ulcer; but it was left for Moynihan, in 1901 and later, in publishing his surgical researches, to give for the first time a complete description of the characteristic symptoms of duodenal ulcer. After alluding to observations by Dieulafoy, Hale-White, and others, Dr. Hurst concludes his study with the remarks that for the first twenty years of this century we owed our great advance

<sup>1</sup> Ministry of Health. Sixth Report of the Advisory Committee on the Welfare of the Blind, 1924-26. London: H.M. Stationery Office. 1926. Price 9d. net.

in knowledge of gastric and duodenal ulcers entirely to the surgeon. In the last five years the biochemists and radiologists have come to our assistance; but it is to the general practitioner and the physician that we must look in the future for early diagnosis, and for preventive and curative treatment.

#### MEDICAL RESEARCH IN SOUTH AFRICA.

New departments for medical entomology and biochemistry have been added to the research division of the South African Institute for Medical Research at Johannesburg, and the department of bacteriology has been extended by the establishment of a branch for plague research. Field investigations into plague have also been instituted in a camp in the Orange, Free State Province. A survey of the mosquito and molluscan carriers of malaria and bilharzia respectively has been commenced. Sir Spencer Lister, who (as recorded in our issue of October 9th, p. 659) became director of the institute last August, when Dr. W. Watkins-Pitchford retired through ill health, has issued the annual report of the institute for the year ending March 31st, 1926. He states that the cost of maintenance was £35,768; this was an increase of more than £6,000 over that of the previous year, and was due to the process of enlargement, which is continuing. In the part of the institute concerned with routine pathological examinations for the Government, hospitals, municipalities, the mining industry, and medical practitioners, the expenditure was fully met by the revenue. A new arrangement with the Witwatersrand University has made the institute responsible for staffing and developing the department of pathology and bacteriology of the medical school, and the pathological and parasitological collections in the museum of the institute are being used for teaching purposes. The researches carried on by the staff of the institute during the year include an investigation into the susceptibility of various wild animals to plague, several of them having been found to constitute a possible source of the spread of this disease. Entomological studies are being made of the fleas and other ectoparasites of the small carnivora of the veld with a view to tracing their connexion with the spread of plague. Continuing the study of miner's phthisis on the Witwatersrand, evidence has been obtained suggesting that tuberculosis is now the dominating factor in the disabling and fatal type of this disease, and that environmental conditions have, therefore, to be taken into account. It appears probable that inhaled dust facilitates the occurrence of infections—tuberculous or otherwise—before a recognizable clinical silicosis develops. The work of the routine division has increased, 52,844 investigations having been made during the year ending December 31st, 1925, an advance of 11,011 on the figures for the previous year. It is added that medical practitioners are realizing to a greater extent the value of the hydatid complement fixation test, and there is growing appreciation of the importance of blood sugar and blood urea investigations.

#### THE HEALTH OF NEW ZEALAND.

The last annual report of the Director-General of Public Health in New Zealand is for the period from April 1st, 1925, to March 31st, 1926. It contains separate parts written by the directors of a variety of public health activities, and the Director-General, Dr. Valentine, provides a general survey. The part which is of most general interest is Dr. McKibbin's report, in which the vital statistics of the Dominion are tabulated. Exclusive of Maoris, for whom no vital statistics are submitted either in this part or in the part on Maori hygiene, the mean population of New Zealand was 1,329,756, an increase of 31,121 on the previous year. The birth rate was 21.17

per 1,000, a steadily falling rate since 1916, when it was 25.94 per 1,000. The rate of stillbirths for every 1,000 live births was 30.6, a rate that has remained continuously high for several years. The infantile mortality, on the other hand, is extremely low, being only 39.36 per 1,000 births in the year under review, the lowest on record in the Dominion. The rate has steadily declined since 1900, when it was 75.2. Nearly half the deaths of infants—337 out of 744—were attributed to premature birth. New Zealand suffers from a high maternal mortality, deaths from puerperal causes being as high as 4.65 per 1,000 births in 1925, and still higher in previous years; but the relatively high mortality is due less to puerperal septicaemia than to other puerperal causes. The number of notifications of septicaemia, however, is high—11.93 per 1,000 births being returned as cases of puerperal fever. Although New Zealand compares unfavourably in this respect with some other countries, probably in no other country in the world is the death rate from all causes so low; for the crude rate in 1925 was only 8.99 per 1,000 of the mean population, and the standardized rate 8.67. It should be noted that stillbirths are excluded from both birth and death rates in the report, and no doubt the extraordinarily low infantile mortality is an important factor in the low general mortality rate. As might be expected in a population showing this remarkable state of health, no disease, either epidemic or endemic, has attained any prominence in the year under review, but both the Director-General and the director of the division of public hygiene have allowed an awkward error to creep into their reports in dealing with tuberculosis, for each refers to the incidence of this class of disease as gratifying or extraordinarily low, whereas in the tabulated statement the death rate from tuberculosis is shown as 5.14 per 1,000 of mean population. Obviously the decimal point should be placed differently or the rate recorded as per 10,000 of population, as in the tables of notifiable diseases. The Director-General in his survey refers to the increasing prevalence of cancer, but statistics of the incidence of this disease are omitted, so that no comparison can be made of its incidence in New Zealand as compared with other countries. Special features of an outstanding character in the report are the expansion and influence of the health department's maternal welfare services under Dr. Jellet, Dr. Paget, and Dr. Elaine Gurr, as also the excellent account of the division of school hygiene under the direction of Dr. Ada Paterson. An inquiry into the geographical distribution of goitre in school children and its relation to the amount of iodine in the soil was conducted by Dr. Baker-McLaglan, and is of much interest, as it demonstrated in a striking manner the relationship of goitre incidence to low iodine content. Many other public health activities are recorded, and it may be of interest to note that the number of registered medical practitioners in New Zealand is 1,211, or 1 to every 1,098 of population, exclusive of Maoris.

Among those recommended by the President and Council of the Royal Society for election to the Council at the anniversary meeting on St. Andrew's Day, November 30th, the following are members of the medical profession: Sir David Prain (treasurer), Dr. H. H. Dale (joint secretary), Sir Hugh Anderson, Sir Archibald Garrod, and Professor Robert Muir. The Royal Medals this year are awarded to two distinguished physiologists: Sir William Hardy, for his pioneer work on colloidal chemistry and the theory of lubrication; and Professor A. V. Hill, for his distinguished work on the physical and chemical aspects of muscular contraction. The Copley Medal is awarded to Sir Frederick Gowland Hopkins for his distinguished and fruitful work in biochemistry.

# RACIAL CHARACTERS OF SKIN IN RELATION TO HEALTH.\*

BY

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PROFESSOR FLEURE said it seemed appropriate to devote the first Malcolm Morris Memorial Lecture to a consideration of the racial characters of the human skin and racial types in relation to health, because Malcolm Morris had been concerned in practice with the treatment of disorders of the skin, and also actively interested in hygiene—in the art of right living and the right use of environment, sunshine, fresh air, and cleanliness.

## Early Man and the Sahara.

While the poverty of body hair and the need for emitting heat are general features of mankind, differences exist between human groups in this respect and affect particularly the character of the skin, so that this has often been used as a basis for attempts to make a classification of mankind. The colour of the skin shows obvious differences in various regions of the world, and has been increasingly used as a basis of classification. Professors Leonard Hill and Ellsworth Huntington, from different approaches, have both reached the view that physiological efficiency is best maintained under cool temperate conditions with variability and storms as a feature. If we accept, broadly, the views of Hill and Huntington about bodily well-being and its weather conditions, we may argue thence that, at some stage before modern types of men had come to differ much among themselves, they were living in a fairly cool temperate, variable, and seasonally stormy climate. The earliest skeletal remains of men of modern type that we have were found in Europe, and belong to the days of the retreat of the ice sheets, after the last maximum phase of the Great Ice Age. It is reasonably certain that these men did not live in Europe during that maximum phase, and it is becoming ever more probable that they moved into Europe as climate began to improve. What are now the Sahara, Arabia, and Mesopotamia have, in the course of human history, changed from rather cool grasslands largely to deserts with long periods of great heat that dried their surfaces and led to pressure of their populations on the riverine belts of the Euphrates and the Nile and to drifting out of people in all directions. It is therefore more than likely that the early types of modern men had pigmented skins, the pigment being developed probably just after birth as the resultant reaction of the skin to influence of light in some way. Pigmentation is an almost universal reaction of skin to light. The rays of shorter wave-length—that is, the ultra-violet part of the spectrum—seem to be stopped in large measure by the horny layers of the skin; the rays of somewhat longer wave-lengths, but still towards the violet end, penetrate more deeply. They, like the ultra-violet, though to a less extent, have histolytic chemical influences. They are absorbed and converted into radiation of greater wave-length by pigment in the epidermis, and thus pigmentation may protect the dermis from deleterious effects of too much light. This gives a clue to the value of pigmentation, but, at the same time, we must not forget that the rays of short wave-lengths are invaluable in certain ways if in the right quantities.

## The Drift Southwards: the Dissipation of Body Heat.

Apocrine hair grows from roots deeply invaginated in the skin and the follicles have the form of fairly even lines at 50 to 80 degrees to the surface of the skin; the downy hair or lanugo, so abundant pre-natally in all human types, has roots of this kind and grows in similar fashion, and, in many races, the juvenile and adult hair grows quite similarly. It is thus probable that the skin of early modern men had hair of this type, and that other forms of hair, such as we now find among peoples of Mongolia, North China, etc., on the one hand, and among peoples of torrid

and South Africa, Papua, Melanesia, etc., on the other, are specializations. We are justified in arguing, both on grounds of general principles of climatology and on the grounds of Falconer's geological observations, that in the early days of modern man the African grasslands that are now the Sahara had a southern more or less desert fringe—an unfavourable environment for men at that stage. The early drifts southward in Africa were thus probable drifts of the less well equipped types, who were driven to face a climate that diminished their power of getting rid of body heat. They may be supposed to have been men with more than average pigment, though not very dark. The areas of very dark pigment in Africa are in some instances rather inhospitable, where poor food is characteristic and salt scarce.

Towards understanding the variations of colour in inter-tropical Africa, we may use the hypotheses:

- (a) That red and brown colouring are both fundamental, but that their relative proportions are liable to vary in different regions and among individuals, otherwise much alike, in one and the same region.
- (b) That regions with specially lowly societies, refugees of ancient types, societies on poor soil, apart from forest, tend to be specially dark.
- (c) That groups which have lived in the forest for generations are lighter than their relatives on open country. Forest regions of the north-east Congo appear to include groups that are almost olive.
- (d) The better lands usually have lighter coloured peoples.
- (e) There have been infiltrations from Algeria and Tibesti, and from people of the Nile, who have been red-brown from early times; infiltrations from that direction may have helped to produce the chocolate tint of the Berberines of Nubia, the Niam-Niam, peoples around Lake Rudolf, etc.

The shiny appearance of the skin, especially in Africa, due to sebaceous secretions from large and loose sweat glands with flabby pores, also promotes loss of heat. Yet another feature very widespread among the early drifts of men equatorwards appears to have been kinky, spirally curved hair arising from curved roots near the surface of the skin. These hairs do not appear much before birth. I associate this, and the extreme reduction of body hair that goes with it, with the need for getting rid of heat, this omission of heat being notably promoted by bringing the blood vessels nearer the surface. In some peoples, especially in Africa, the blood vessels are not only near the surface, but also highly developed, thus still further promoting cooling. It is not necessary to enlarge on further devices for cooling, such as the everted lips, the weakly developed nose, which lets air almost direct down to the pharynx, and so on.

Generally speaking, according to Dr. Shaxby's researches, the skin colour of intertropical peoples has brown and red constituents in varying proportions, the red being in part, but apparently not entirely, a blood effect. These brown and red constituents occur also in European skin, and it is impossible to get a line of demarcation between negro and white man as regards skin colour—every grade of intermediacy can be traced. The body skin of the forest pygmies of Africa often has a good deal of the downy hair of infancy on it, and a little is found among the head hairs of the Bushman, though he has little body hair. The forest pygmies are said to mature at 10 and to die of old age at about 40—a life-cycle of about the length found in apes—and their downy hair, their very feebly developed noses, their very prognathous mouths, their small stature, and other details all suggest that they are survivals from a far antiquity—that is, from very early variants of modern man, with very probably some degenerative features as well.

## The Drift Northwards.

As ice sheets diminished men were able to migrate not only to the south and east, but also to the north, and were presently pressed in this, as well as other directions, by the drying of the Sahara, etc. Some would spread across still-lingering land-bridges, such as that between Tunis and Sicily; others would spread into the grasslands of Turkestan and South Russia through the gaps between Elburz and Hindu Kush; others, probably, later would find Anatolia opening up ways into south-east Europe; and, finally, the ice sheets on the great central highlands of Asia would diminish sufficiently to allow such men as were inured to highland difficulties to enter them.

\* An abridgement of the first Malcolm Morris Memorial Lecture, given under the auspices of the Chadwick Trustees on November 15th, 1925, when Sir James Crichton-Browne, M.D., F.R.S., was in the chair.

With the passing of the ice sheets and the establishment of greenness and cloud in the European west, the evocation of pigment by glare during development became small, and this is a factor of the bleaching that in varying degrees characterizes the peoples of non-arctic Europe. A few individuals who still carry very ancient skull characters are found here and there in Tras-os-Montes, Sardinia, the Dordogne, the Welsh and Scottish moorlands, Norway, etc., and they are more swarthy than their neighbours: Where westerly winds rule in winter the blood vessels are often easily seen in the rather delicate skin, and we get the well known pink and white effect; but, in the regions of strongly marked winter anticyclones, such as the Alps and Carpathians and Poland, etc., a rather dead white is common. In a climate of fairly mild winters the blood vessels can safely lie fairly near the surface, and the coolness at the same time allows the superfluous heat, produced in the course of the active life appropriate to north-west Europe's climate, to be emitted easily. Exposure produces occasional local disorganization and consequent red blotching. With steadier winter severity seems to go a reduction of the superficial blood vessels. The relative hairiness that we have supposed to be a feature of early types of modern men is to a considerable extent maintained in European man, as we should expect in view of the general character of the skin, and the hair is typically wavy. The cool climate apparently prolongs the maturation phase, full maturity coming later than in most intertropical lands, but here social custom no doubt plays a part as well. The climate favours muscular activity, and this again helps to prolong growth and to delay full maturity; even some peoples of intertropical Africa who are very active hunters appear to mature relatively late.

#### *North-east Asia.*

The central highland of Asia, with its summer sun-glare and its winter snow-glare, and its very dry atmosphere, exposes the skin heavily to the action of ultra-violet rays, and brown pigment, probably fully ancestral, is general. We may look upon the North Chinese as, in a measure, depigmented, to some extent as we in Europe are depigmented. The north Chinaman is said to be darker in winter than in summer. In the types subject to the long cold winter anticyclone, whether they are brown or yellow, the skin is dry, sweat glands are scarce, and hair is scarce and coarse, the pores, being firmly outlined and tightly filled. We note also the lack of heating quality in the normal diets of the region except on the high plateau, where, in winter at least, heat is obviously the great need. The dry cold Arctic atmosphere is very transparent to ultra-violet rays, and their reflection from the snow also gives them great power in this region. This doubtless accounts for the evocation of pigment. America received the basic elements of its population through north-east Asia, so it would seem that a large part at least of the native American stock is descended from persons with dry, rather hairless skin and brownish (red or yellow with the brown) colouring. This physical endowment has apparently undergone various modifications in different parts of the New World.

#### *Europe.*

In spite, however, of the favouring climate after the end of the Ice Age European peoples did not easily rise to their present position in the world, for they found special difficulty in acquiring the art of food production invented by the dwellers on the banks of the Euphrates and perhaps the Nile. Wheat and barley are almost certainly of south-west Asiatic origin, and it evidently took time before races of these plants suited to Europe were fully developed. Moreover, most of the European soils needed more management than those near the Euphrates, Nile, and Ganges, which were seasonally fertilized by silt from river floods, or those near inexhaustible stocks of loess in North China. Not only cultivable plants and domestic animals, but also a fairly high grade of social organization, had to be acclimated in Europe before our continent could make real headway, and there has generally been a tendency in our quadrant of the world to seek imported supplies of at least some materials.

#### *Europeans in the Tropics.*

The bodies of Europeans, and especially of the fair Europeans with blood vessels showing through the uncoloured skin, are engines adapted to ensure emission of a large amount of heat and consequent performance of a large amount of work. If we go to intertropical lands we suffer in many ways, two of which concern us here. The fair skin allows the actinic rays to penetrate it, and they set up a disturbance within, and the sensitiveness of the skin makes these and other intertropical sunlight effects the more dangerous. Besides this, the emission of heat is less easy under the equatorial sunshine, and an organism adjusted to a great heat loss is thus apt to get below par in a very warm climate. Therefore, whatever the effectiveness of our skin character in our own region, it is apt to bring about nervous debility, and is especially harmful to European children beyond the infancy phase—that is, in active childhood—in intertropical climates. This implies that, even with improved sanitation and extirpation of the causes of notorious diseases, the warm lands will still present grave difficulties to would-be European settlers, and especially to the fair Europeans. These are the more serious because European women living under the tropical sun are naturally very apt to struggle to maintain their fairness of skin—in other words, to resist adjustment to their adopted environment. The compromise of a sheltered life along with employment of coloured native field labour is now being tried out in various ways in several regions, but the attempt to maintain separate European and native groups side by side in the same place is full of social dangers, which react on health in myriad ways, and which are specially troublesome in view of tendencies towards some measure of nervous debility. Types which can be said to "pass for white" but have other blood in them at present seem likely to be more successful, and there are those who think that such elements will increase in some intertropical lands in place of the pure whites, and that these "pass for whites" will tend to diverge increasingly from the white standard and to emphasize the colour element in their inheritance as time goes on. Social conventions among many of the Protestant peoples of Europe, however, militate against any rapid multiplication of "pass for white" populations except among labourers.

From what has been said it will be seen that the fairest-skinned Europeans with their high power of heat emission and their activity of body and mind are more suited to rural than to town conditions, and the essential rural specialization of the Nordics in Europe has been a factor of our continent's history. Some very detailed observations by Mr. Bowen, now in progress, are tending to show that this kind of constitution is comparatively free from serious tuberculosis in agricultural areas, but that it becomes rather prone to this scourge when depressed into industrial poverty. Its vigour and activity in rural areas have led populations in which it is abundant to maintain a good level of feeding, though resistance to disease is often lowered by alcoholism, which seems in many cases to be an expression of the Nord's inability to find or to take advantage of a full outlet for his capacities of body and mind.

#### *Town and Moorland.*

We need much more observation, but it seems probable that the short, dark, long-headed man, who forms such a large element in the population of our moorlands and our big towns, can get through on the basis of less emission of heat, and he often has less physical energy and initiative. He more readily acquiesces in poor feeding in his moorland home, and there, especially in regions socially depressed by decay of mining or of farming, he seems very prone to tuberculosis. On the other hand, under industrial conditions in large towns where he can get food, of sorts, easily, tuberculosis appears to be less fatal to him than to the fairer types. Thus the character of the skin and hair, both among ourselves in Europe and among the various races of the world, seems to be in some degree an indicator of the general constitution, and especially of the mechanism of heat regulation. And these differences of constitution seem to connect themselves, not only with adaptability to certain climates, but also with resistance

to various diseases, of which I have taken tuberculosis as an example.

I venture to think that there is a future for the study of the incidence of various diseases and of the prevalence of various activities among people of diverse types, especially types of skin, but if that line be pursued the worker must clearly remember that environmental influences are at work all the time, and that, for example, our British dark long head on the moorlands may show features of strength and weakness different from those of the same type in the poor quarter of a large city.

## THE THEORY OF DIAGNOSIS.

DR. CROOKSHANK'S BRADSHAW LECTURE.

THE Bradshaw Lecture was delivered on November 4th, before the Royal College of Physicians of London, by Dr. F. G. CROOKSHANK. The lecturer, after paying tribute to the wit, humanity, and sagacity of Dr. Vivian Poore (who gave the first Bradshaw Lecture in 1881), said he had chosen as his theme the Theory of Diagnosis, since none other could be more proper to medicine, or to the branch of medicine called surgery. Indeed, even therapeutics must yield pride of place to diagnosis, for, in the words of Hart, written in 1625, "This part of Physicke doth farre exceed the other, to wit the Therapeuticke, the which without the Diagnosticke is of small use and profit."

Dr. Crookshank proceeded to justify the attempt to give an account of the theory of diagnosis—namely, to explain diagnosis by appeal to first principles that were independent of medical doctrine—by a discussion of the relations between science and philosophy. These had been ignored for the most part during the latter part of the nineteenth century, but were now receiving eager attention by those who saw, with Hobson, that natural science was a conceptual scheme and not a perceptual intuition, and who deplored the domination of science, until quite recently, by the philosophical theory of knowledge known as physical realism, still unconsciously sustained by those who proclaimed the freedom of science and medicine from the thrall of philosophy. If thought was to be clarified, in respect of this as of other subjects, it was necessary, as Galen said, to distinguish between words and things, and as Ogden and Richards had shown, to discriminate between words, thoughts, and things, thus following the injunctions of William of Ockham, who, six hundred years ago, begged us to decide always in controversy and discussion whether a word was employed really: as expressing the intention of the mind; or representatively, for the object of thought.

The lecturer showed that the word "diagnosis" was generally employed in the Hippocratic Collection as indicating judgement, or cognition, and not as standing for discrimination between diseases, while Galen defined it as the "clear cognition of things present." It was not until the seventeenth century that the word appeared in the English language, and was then defined as meaning "dilucidation" or knowledge, while in the eighteenth century it was first used, in English and in French, as indicating the art of distinguishing between the diseases which the botanical physicians of that century, following Sydenham, defined and classified as if objects of perception, like plants or animals. It was only recently that an attempt had become obvious to restore the original usage of the word, and to realize that to "diagnose" in terms of diseases that were supposed to be entities was merely one method, or modality, of (in Dr. Christian's words) evaluating the signs and symptoms observed. Since the discard by medical men of general training in the theory of knowledge there had been, especially during the last hundred and fifty years, an increasing tendency to accept as of permanent validity and as corresponding to objects in nature, the conventions of diagnosis that had grown up, forgetting that, as Llewellys Barker had said, the groupings of signs of illness were conceptual, and to be changed when the purpose changed. Similarly, it had come to be believed that, in the process of diagnosis, physicians went through certain formal logical manoeuvres,

whereas psychological inquiry showed that, in diagnosing, some common faculty was exercised that satisfied both the intellectual and affective activities of the mind, "diagnosis" being just the name given to the first stage of the physician's work—the formation of those judgements arrived at by the interpretation of what was observed and expressed by the symbolization of the interpretations that guided him in his office of healing.

Thus considered, diagnosis appeared as a kind of reflex process which in a primitive, yet perfectly satisfactory, though purely selfish way, was exercised by the newt whose tail was cut off, and by the cat who sought the proper grass when ill, the "diagnosis" being in these cases symbolized by the growing of a new tail and the finding of the proper remedy respectively. It seemed possible that there might be ground for assuming the possession of some such instinctive power or ability by those "healers" who were able to express a diagnosis, for others, not in terms of orthodox convention, but therapeutically by manipulation or otherwise.

Discussion of the early philosophical trends amongst primitive man, led to the conclusion that, at a very early stage in human progress, natural medicine showed tendencies for division into two schools, the one considering disease as a falling away; the other, as due to something added—a demon or the like. The same trends had been indicated throughout the whole history of medicine, those vitalists who regarded disease as a falling away belonging to the Coan school; the others, or organicists, who saw disease as something added or attacking, being in sympathy with the Cnidians and all who sought, in disease, the evidence of entities, whether diseases or demons. This division into two camps—evident enough even to-day—was only understood when the history of medicine was considered in relation to that of philosophy, the two medical camps corresponding closely to two philosophies—those of the sensualists, or empiricists, and of the Platonists, or rationalists. Natural diagnosticians, who diagnosed in terms of experience, corresponded to the sensualists, or empiricists; conventional diagnosticians, who diagnosed in terms of some rationalized type, were among the Platonists or rationalists. The former, in Mr. Trotter's phraseology, thought directly or concretely; the latter indirectly or abstractedly. The types, or universals, of the conventional diagnosticians were not objects of experience, but were mental constructs, justifiable only by their convenience and not as expressions of reality.

The lecturer proceeded to illustrate his thesis by reference to two stages in the history of medicine—the first marked by the controversy between the Coan and the Cnidian schools; the next by the struggle, in the sixteenth century, between the Hippocratists and Galenists of the Paris Faculty of Medicine. The Coan and Cnidian methods of diagnosis were shown to correspond, practically and philosophically, to the methods and thought of the natural and conventional diagnosticians of all time; and the gradual approximation of Galen, despite his admiration for Hippocrates, to a Platonic form of thought was insisted upon. It was by reason of the subordination of Galen's medicine to a Platonic philosophy that he became, in the sixteenth century, the titular head of those who, relying upon the tenets of scholastic realism, opposed the Hippocratic physicians who were, philosophically, nominalists.

It was in this way that the medical squabbles of the sixteenth century had, philosophically, the same grounds as had the opposition between Aristotelians and Platonists, and, in the Middle Ages, between the realists who upheld the extreme doctrine of the Real Presence and the nominalists who were accused with bitterness of undermining that doctrine. The medieval nominalists were to-day represented by the physicians who cared little for formal diagnosis in terms of clinical entities; and the realists by those who insisted on hard and fast distinctions between "entities" to which they allocated real, if not material, existence.

The influence of these modes of thought upon present-day problems was discussed, and the lecturer suggested that dissatisfaction with the diagnostic conventions of the last century was everywhere manifest, these conventions



being no longer adequate to their purpose—the proper storage and utilization of experience, and knowledge. He suggested that a way of escape from the present difficulties, and from the apparent dilemma presented by the need for deciding between the two schools, might be found by attention to the method of thought known as conceptualism, first clearly put forward by William of Occam as a solution of the difficulties of the controversy between realists and nominalists, and, in these latter days, revived by such men of science and philosophers as Poincaré, Mach, and Vaihinger. Adoption of this conceptualism allowed escape from the illusions of realism and the limitations of nominalism alike, whilst permitting the freest use of helpful conceptions, or general notions, and liberty to observe, unhampered by an obstinate belief in the reality, or permanent validity of such notions as had already been propounded, in resumption of experience. In these circumstances the search for a correct diagnosis became rather a search for the best diagnosis possible—in the words of Hippocrates, that which enabled the physician to do what was right, and to constrain to his will, not only the patient, but the attendants and the circumstances.

Absolute diagnosis (said Dr. Crookshank, in conclusion) is a function of omniscience, and is exemplified only in the perfect restoration that it is the prerogative of omnipotence solely to ordain. It is not within our physical apprehension, and eludes us as does the absolute elude the physicist, the chemist, the mathematician, and the astronomer. But the idea of the absolute is necessary to every true science, and for the science of medicine is represented by the conception of the miracle of healing which, without verbalization, expresses, at one and the same time, the lesion of function and structure, and its effacement.

## MEDICAL MEN AND THE LAY PRESS.

### DISCUSSION AT HUNTERIAN SOCIETY.

A discussion on "Medicine and the Press" took place on November 15th, under the auspices of the Hunterian Society, at Cutlers' Hall, in the City of London. The chair was taken by Mr. MORRIMER WOOLF, president of the society, who said that the interest in this subject had become so acute that his council had thought it well to call a full and frank discussion in the hope of overcoming the misunderstandings which existed. He asked representatives of the newspaper press to bear in mind that so-called medical etiquette had been built up through many generations and had become a tradition which was cherished by medical men, not for their own advantage, but for the protection of the public.

LORD RIDDELL began by referring to the British Medical Association, and read in full the memorandum of the Ethical Committee approved by the Annual Representative Meeting last year. He said it was clear from this that any doctor who wrote for the press under his own name took his professional life in his hands. An inadvertent phrase, an extravagant headline, or an oily editorial comment might arouse the ire of the Association and land him in the clutches of the General Medical Council. It looked as if the General Medical Council reflected the policy of the British Medical Association, in view of the fact that the resolutions on advertising passed by the Council in 1905 and the amended Warning Notice of 1923 followed upon representations by the Association. He was himself a strong trade unionist, and the aims of the Association had his hearty sympathy—if he were a doctor he would be a member of it—but it should not be permitted to influence the policy of a body charged with the duty of exercising judicial functions, particularly when that body did not represent the whole profession. He thought also that the General Medical Council should report its policy, as displayed in its decisions on specific cases, in more precise terms. Again, to the onlooker it appeared that while the "big fish" in the profession could act with impunity, the smaller fry were caught in the net. He mentioned

as a form of advertisement for the most eminent members of the profession the signatures on bulletins regarding distinguished persons. He could not see why a doctor should be forbidden to write a newspaper article when he was allowed to publish the same matter without question in a five-shilling book. And apparently it was open to any medical man to advertise himself in the professional journals, not merely by the publication of papers, but by publishers' advertisements with extracts from reviews in praise of the authors. No one wanted a race of advertising doctors, but as an onlooker he could not help feeling that the British Medical Association took a somewhat narrow and prejudiced view. Let this matter alone, and a flood of signed articles on medical subjects in the lay press would soon kill the demand for them!

SIR HUMPHRY ROLLESTON said that in the widespread comment in the press on medical publicity there had been an undercurrent of suggestion that the profession was bound by some unreasoning etiquette or prejudice. While there was no serious contention that the profession was averse from health propaganda because the pockets of its members would suffer, there was an impression that it was obstructive. The well-being of the public as a whole was the commanding factor in determining the method of publication of medical matters in the lay press. Let it be agreed that some such public instruction in preventive medicine should be carried out. About the actual details of disease the public should be told little; the little that might be communicated should have reference to the initial symptoms of a serious condition, such as cancer, in order that persons so afflicted might be led to consult a doctor in the earliest stages. In general the less that healthy people knew about the details of disease the better for them. Information of every kind was, of course, available in books and professional journals, but there was a difference between what was intended for a professional audience and for an audience of possible patients. Medical men who signed articles in the lay press, however carefully and impersonally they wrote, were inevitably advertised, and thus directly or indirectly gained financially for a time, but not improbably estranged their more silent—perhaps more modest—brethren, whereby they were often eventually the losers. In the case of men not in practice and those in official whole-time appointments the objection did not hold. When, however, it was said that unsigned articles were poor "copy," the press seemed to forget that its own leading articles were unsigned, and their influence was not impaired. It seemed inconsistent that the press should have condemned Sir Thomas Horder's suggestion for an advisory board of medical authorities to guarantee the efficiency of writers of unsigned articles. In favour of the signed article by a well known physician or surgeon was his great authority and reputation, but where was the line to be drawn? And if everyone wrote, the door was open to self-glorification, the public would suffer, and the reputation of the profession would be lowered. The public also might easily be led astray by an honest enthusiast bringing forward a new and insufficiently tested cure for an old disease. Sir Humphry Rolleston objected to Lord Riddell's suggestion that the British Medical Association was a trade union. Certainly it had tried to protect medical men from being swayed by clubs and friendly societies, but the term "trade union" seemed to impute to it a course of conduct which elsewhere was responsible for industrial disturbance, if not war upon the community. Nor did he quite see the point of Lord Riddell's argument that the General Medical Council should have turned a deaf ear to the British Medical Association when that body made representations to it. The General Medical Council did not forbid the publication of articles or letters by medical men, but it had issued a Warning Notice against advertising for the purpose of procuring patients or promoting professional advantage, because this was contrary to the public interest and discreditable to the profession. An article which seemed to advertise the writer might bring a request to the writer to come before the Council and justify himself. The grounds on which a decision was reached in such cases, though clear to the Council, might not be so to the public.

and he noted that Sir Squire Spriggo had urged as a constructive measure that the Council should publish more details explaining the reasons for the decision in such cases. He added that the action of the Council was not influenced by the position of the alleged offender. In no case was a transgressor overlooked because he was a "bigwig," and he hoped that Lord Riddell did not really think that the Council was as snobbish as he had suggested. With regard to bulletins, the signature of these was very often in the nature of a command, and not at all on the initiative or at the wish of the doctors in attendance.

Mr. W. J. EVANS made some observations from the point of view of one who had been a working journalist. He asked what harm publication would do. He had read most of the articles of the New Health Society; they were most innocuous, there was nothing in them that he had not heard talked about at dinner-tables years ago. If newspapers liked to pay people for that kind of thing, well, it would mean a boom which would be followed by a slump. Leave the matter alone, and it would settle itself.

Dr. GRAMM LITTLE, M.P., said that the feeling of responsible persons in the profession was, not that communications in the press were improper in themselves, but that the difficulties of contributing information worth giving were almost insuperable. It was not the communications so much as their intrinsic worthlessness that troubled the profession, which was made ridiculous by some of these contributions. He doubted whether the columns of a newspaper were the proper vehicle for medical exposition. He did not think the public would read serious contributions even if the newspapers accepted them; in the report of a medical lecture it was generally the frivolous passages that were picked out. The better plan would be to use the professional papers, the *British Medical Journal* and the *Lancet*, for the exposition of medical advice to the public. These journals were accessible, and might advantageously be made more so. It would be a good thing for the medical writer to be compelled to express himself simply and clearly, as he realized that his remarks might be read by the general public, and it would also be extremely valuable for the public to have the wise censorship of the trained staff of a professional journal. He thought the editorial committee suggested at the meeting of the St. Pancras Division a month ago would be too cumbersome. One of the dangers of indiscriminate publicity was the premature publication of unsubstantiated discoveries. It was unfortunate that the Medical Research Council, which ought to be a bulwark against such publications, had been in fact one of the worst offenders. He quoted two recent instances—the Dreyer vaccine, which was demonstrated to be a complete "wash-out," but had an immense burst of publicity in the lay press, and the extravagant claims made recently in the lay press in connexion with the admirable work on cancer by Dr. Gye and Mr. Barnard. He quoted the leading article in the *British Medical Journal* for November 13th as to the possibility of destruction under criticism of Dr. Gye's attractive theory. The Medical Research Council was placed in a difficult situation because it received large grants of public money, and its activities might be explained by the necessity of showing some results. In favourable comparison was the action taken by the British Medical Association through its Science Committee, which had done real service to the public by frank and careful criticism of some so-called discoveries much boosted in the lay press. In the case of the Spahlinger vaccine, for instance, it had been the means of preventing a good deal of public disappointment.

Mr. J. M. BULLOCK, speaking as a journalist, said that if a medical man wished to advertise himself no association would stop him. It was impossible to prevent newspapers from dealing with such an interesting subject as medicine, and so far as signed articles were concerned, the whole tendency of the press was now towards signature. The anonymous book review, for instance, was going out of existence. The real check upon abuse would come from the medical profession itself. He noticed that men who

were constantly writing even in the medical papers appeared to fall in the estimation of their fellow practitioners, no doubt justifiably so, because to court publicity needed an expenditure of so much time that the scientific work must suffer.

Dr. LEONARD WILLIAMS said that the public no less than the profession had got into a state of militant hysteria on this question. There never was or could be any such thing as a law prohibiting medical men from writing under their own name in the lay press. What the General Medical Council said was that if members of the medical profession felt they must write—it did not say that they should or should not—let them remember that they were gentlemen and members of a gentlemanly profession. Nevertheless, he had two objections to the Council's Warning Notice—one that it went into the motives of people who were supposed to be offenders, and the other that it was sent at the instance of anybody to the medical author of any article in the lay press. The author who received such a Warning Notice had a feeling that some responsible person thought he had done something he ought not to have done, which was not the case. If anybody imagined that writing for the lay press brought patients to the consulting room he was much mistaken. To preach a gospel of moderation and restraint in eating and drinking was by no means popular, and prospective patients would say, "If this is all he has to tell us, why should we pay three guineas to hear him say it?" The speaker had great respect for the British Medical Association on its scientific side, but very little on its ethical. It was not the only body, however, which acted as a "common informer" against members of the medical profession. The two defence societies also preferred claims against practitioners before the General Medical Council. After expressing his personal opinion of the Ethical Committee of the British Medical Association, Dr. Williams said that on the press itself there were gentlemen just as capable of judging whether a thing was desirable from the public point of view as was that committee. He held that it was the duty of those who could do so to educate the public in matters of simple personal hygiene; the present generation had grown up in ignorance of elementary laws of health, and the result was a C3 nation. Another unfortunate consequence was that by remaining silent the profession opened itself to the disgusting imputation that it did so in order that people might remain ill. If members of the profession were not satisfied with things as they were there was a ready method of altering them. Those who governed the British Medical Association and the defence societies were elected persons; turn them out!

Dr. T. B. HYSLOP said that he belonged to the class of mental specialists who were never called upon to sign a public bulletin, and whom no patient ever acknowledged having consulted. Nevertheless, the press sought for their opinions with some persistency. He gave an amusing instance of how a frivolous remark of his about the multitude of diseases from which "Rima" appeared to be suffering brought him innumerable press inquiries, with his photograph in the newspaper, until he had in sheer self-protection to announce that he only gave an opinion on a patient when the patient was brought to him with an accrediting letter from a medical man, and that only to the medical man was the opinion given. Dr. Hyslop believed that this whole question would find its level. Certain it was that those who advertised went down in the estimation of their medical brethren. Even from the point of view of the papers, would it be wise to have much authentic medical information? How would it affect the yards of advertisement of remedies for uric acid, premature baldness, and ingrowing toe-nail? He felt that the time had come to lay down their arms and call a truce. This subject was being thrashed out *ad nauseam*.

Lord RIDDELL briefly replied, and Sir SQUIRE SPRIGGO and Dr. HALLS DAILY spoke to a vote of thanks.

## THE SCHOOL OF HYGIENE AND PUBLIC HEALTH OF THE JOHNS HOPKINS UNIVERSITY, BALTIMORE, U.S.A.

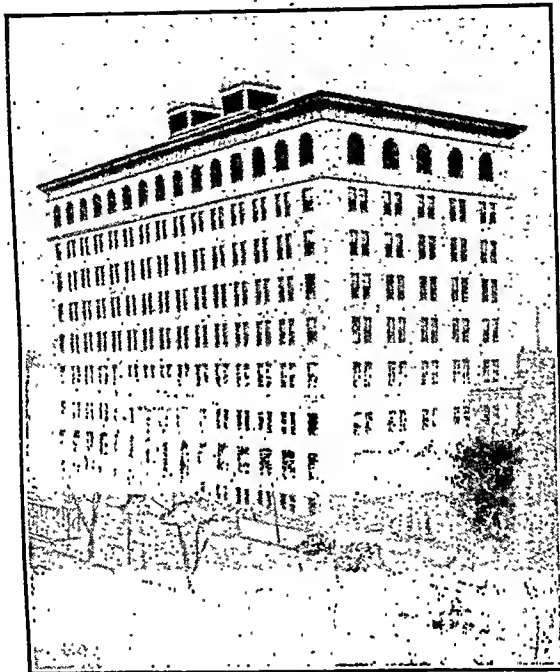
IN the BRITISH MEDICAL JOURNAL of July 10th (p. 75) an account was given of the new building planned to accommodate the London School of Hygiene and Tropical Medicine, which, it will be remembered, was rendered possible by a grant from the Rockefeller Foundation. Similar generosity on the part of this Foundation enabled the School of Hygiene and Public Health at Baltimore to be housed in an edifice worthy of its important work, and the following article describes the building in detail, here and there instituting a comparison between the arrangements made at Baltimore and in London. Save incidentally, it does not refer to the courses of study now given at the Johns Hopkins Hospital. For details regarding the curriculum the reader is referred to the Johns Hopkins University Circular, the catalogue and announcement of the School of Hygiene and Public Health, 1926-27, to the *American Journal of Hygiene* for September, 1926, which contains an excellent illustrated monograph on the school, or to a review of that monograph which will appear shortly in the *Bulletin of Hygiene*, one of the publications of the Bureau of Hygiene and Tropical Diseases.

The new building of the School of Hygiene and Public Health was officially opened on October 22nd, 1926, at the time of the celebrations commemorating the fiftieth anniversary of the Johns Hopkins University. The school itself, however, came into being in the autumn of 1918, and was at first supported by an annual subscription of 250,000 dollars from the Rockefeller Foundation. In February, 1922, the Foundation converted this grant into an endowment fund of 5,000,000 dollars, given to Johns Hopkins University, and made a further appropriation of 1,000,000 dollars for the construction of a suitable building for the purpose of the school. For seven years after its foundation the school occupied temporary quarters in laboratories used by Johns Hopkins University before the university moved out to Homewood, its new and magnificent home on the outskirts of Baltimore. Although plans for the new school building were prepared in the spring of 1912 by the architects, Messrs. Areher and Allen of Baltimore, in consultation with Messrs. Coolidge of Boston and Turner of New York, circumstances conspired to delay its erection, and it was not ready for occupation until the autumn of 1925. Since that date, however, work has been actively prosecuted in it.

The ceremony commemorating the opening was arranged to form part of the celebrations in connexion with the fiftieth anniversary of Johns Hopkins University, to which numerous guests from various parts of the United States, Canada, and also from overseas, had been invited. From Great Britain there were present Dr. Andrew Balfour, director of the London School of Hygiene and Tropical Medicine, and Professor R. T. Leiper, director of the Department of Helminthology in that school and also of the Institute of Agricultural Parasitology. To Dr. Balfour had been entrusted the delivery of the address: he chose as his subject "Hygiene as a world force," and the lecture, in an abridged version, was published in the BRITISH MEDICAL JOURNAL for October 30th.

The scene at the Lyric Theatre on October 22nd was brilliant, the body of the hall and the galleries being filled with an audience of about two thousand people. To the strains of a string orchestra the academic procession, headed by Dr. Goodnow, president of the university, and Dr. Balfour as principal speaker, entered the auditorium and proceeded to the platform. The varied hues of the different gowns and hoods representing Hopkins, Harvard, and other American universities, Paris, Oxford, Cambridge, several Scottish universities, and a number of Continental schools, supplied vivid splashes of colour in the seats reserved in the body of the hall, and upon the platform. A notable figure was that of Professor L. Lévy-Bruhl of the Sorbonne in the fine uniform of the Knights of Pythias.

The proceedings opened with an invocation by the Right Rev. John Gardner Murray, Bishop of Baltimore. In the unavoidable absence of the Governor of Maryland, an address of welcome was delivered by Adjutant-General Milton A. Reckford. He was followed by Dr. William H. Welch, the "good gray doctor," as one of the newspapers called him, who, despite his years, easily made himself heard in every part of the huge building. He told how the



SCHOOL OF HYGIENE, JOHNS HOPKINS UNIVERSITY.

school came into being, spoke of the 278 men and women who had been trained there in the principles of preventive medicine, acknowledged the debt of the school to the Rockefeller Foundation, and welcomed Dr. Vincent, its president. After paying a fine tribute to Dr. W. H. Howell, assistant director of the school and professor of physiological hygiene, Dr. Welch introduced Dr. Balfour, upon whom Dr. Goodnow conferred the honorary degree of Doctor of Laws of Johns Hopkins University. Dr. Balfour, after briefly returning thanks for the honour done him and the school he represented, delivered his address. In the afternoon the School of Hygiene and Public Health was open for inspection, and large numbers of visitors were conducted round it by Dr. Welch and members of his staff, after Dr. Welch had delivered an address explaining the objects and work of the institution. Later the Do Lamar lecture was given by Professor F. Neufeld, director of the Institute for Infectious

Diseases, Berlin, his subject being "Variability of bacteria, with special reference to infectious diseases."

This concluded the proceedings so far as the commemorative exercises for the opening of the School of Hygiene and Public Health were concerned.

The school is not a department of medicine, but a separate entity with an independent faculty, co-ordinate with the other faculties of the university. This faculty consists of 13 full professors, 7 associate professors, 9 associates, 3 instructors, 12 assistants, and 5 extra-mural lecturers. The director is Dr. William H. Welch, so well known for his activities in many fields, a man of world-wide reputation, and as renowned for his genial and inspiring personality as for his scientific and literary attainments. The school contains the following departments: public health administration, epidemiology, biometry and vital statistics, sanitary engineering, bacteriology, immunology, medical zoology including protozoology, helminthology, entomology and filterable viruses, physiological hygiene and chemical hygiene. This arrangement differs from that adopted for the London school in a few particulars. At the latter epidemiology will be combined with vital statistics to form one of the six divisions of the school. Similarly, bacteriology

and immunology will be united. At London there will be no separate division or department of sanitary engineering, although a laboratory is earmarked for the study of that important subject. The division of medical biology in the London school will contain a department of comparative pathology, and no arrangements have been made for a department of filterable viruses, the study of which will be carried out in the division of bacteriology and immunology. In other directions there is a close approximation between the two schools, but the fact that the London school is not only a school of hygiene but a school of tropical medicine has necessitated provision for the teaching of that subject, notably in the form of a laboratory for the study of tropical hygiene and pathology. Another difference is the large amount of space devoted to the museum in the London school—a museum intended to give a graphic representation of everything pertaining both to hygiene and tropical medicine. At present the school at Baltimore does not possess a museum, and the space allotted for museum purposes is comparatively small.

Turning now to a description of the new building in which the Johns Hopkins school is adequately and fittingly housed, it will be seen from the accompanying photograph that this new home of hygiene is of an impressive and dignified character. Unlike the London school, it is built upon an island site, and, in accordance with American tradition, it soars heavenward, having eight full stories above the basement, together with some additional rooms on the ninth floor.

The London school is H-shaped, the Baltimore school takes the shape of the letter E. The building is located at the corner of Monument and Wolfe Streets in East Baltimore, and is in close proximity both to the Johns Hopkins Medical School and the Johns Hopkins Hospital. It forms part of the medical centre which has been developed under the joint auspices of the university and the hospital. It houses all the work of the School of Hygiene and Public Health, except that in sanitary engineering, which at present is conducted in the engineering laboratories of the university at Homewood. The front of the building, adorned by a fine portico, faces west, and is 180 feet long. The main building has a width of 51 ft. 4 in. Three wings project to the east, forming the arms of the E. The central wing is 35 ft. 6 in. in length by 51 ft. 4 in. in breadth. The other two wings are 27 ft. by 37 ft. 6 in. The construction is of steel and hollow tile, with a facing of light-coloured brick, save in the case of the lower three stories and the eighth story, which are finished in limestone. The general effect is distinctly pleasing, and the brick and limestone harmonize admirably. The treatment of the large windows of the eighth story and of the cornice adds to the distinction of this notable pile. At the back there is a separate one-story structure which serves as a stable for large experimental animals, houses an incinerator, and provides storage for chemicals of an explosive nature.

(To be continued.)

## England and Wales.

### CONSULTANTS FOR LONDON MENTAL HOSPITALS.

The Mental Hospitals Committee of the London County Council has been considering the desirability of securing the affiliation of the mental hospitals to the general hospitals, and in the first instance, to facilitate the attainment of the object in view, it proposes to appoint certain consultants to the mental hospitals, leaving further arrangements to develop as may be found advantageous to the two classes of institution concerned. A consulting physician, surgeon, gynaecologist, ophthalmologist, and throat, nose, and ear surgeon are to be appointed, and as a first step arrangements have been made for consultants from London and Guy's Hospitals to attend the Claybury and Bexley Mental Hospitals at a fee in each case of £4 14s., inclusive of travelling expenses. During the first year of this arrangement the expenditure will be limited to £400, which will permit of forty-two visits being made at each hospital during the period.

### TREATMENT OF DIPHTHERIA CARRIERS.

At Guy's Hospital a special clinic has recently been opened, as an experiment for one year, for the treatment of children who are found in the course of medical inspection to be carriers of diphtheria germs, though otherwise in normal health. Such cases are not suitable for admission to the Metropolitan Asylums Board's fever hospitals, and there have been no facilities for their proper treatment at the general hospitals or school treatment centres. Twelve school children have already attended the Guy's clinic, which is open on one afternoon of each week. The London County Council has agreed to defray the travelling expenses of parents who take their children to such a clinic.

### HOSPITAL EXTENSION AT WESTON-SUPER-MARE.

A memorial to the late Queen Alexandra at Weston-super-Mare is to be erected in the form of an extension to the hospital, which was originally founded as a dispensary in 1857 and modified in 1865; the foundation stones were laid on November 11th. The new buildings consist of two ward blocks of two floors each; four main wards are provided, each containing fourteen beds. Wide verandahs will surround the ward blocks on three sides, and be capable of taking all the beds from a ward. Between the ward blocks is a central building comprising an entrance hall, a waiting room, and casualty and out-patients' departments, with a complete theatre unit on the first floor. The existing buildings are being extensively reconstructed and modernized and a new wing will be added, so that a complete new department for radiology and electro-therapeutics may be obtained. Rearrangement of two wards on the first floor will enable a number of private single beds to be installed, and accommodation is to be provided for two resident medical officers. Another building, originally intended as an isolation block, and at present used as an x-ray department, is to be converted into a maternity block, with beds for pre-natal and post-natal treatment as well as a small labour ward.

### DESTRUCTION OF VERMIN.

An institution known as the College of Pestology (Incorporated), and formed to encourage vermin destruction on scientific lines and to make known the havoc wrought by insect and other pests, held its annual dinner at the Hotel Cecil on November 11th, when Sir William Bull, M.P., occupied the chair. Among the company were Sir John Lynn-Thomas, Dr. R. A. Lyster, Dr. Clark Trotter, and other medical men. The chairman said that a recent enlargement of the council of the College had enabled various panels to be formed, one of which was devoted to field entomology, another to house hygiene, and a third to medical economies, the purpose of this last being to study and make known the wastage of human life caused by insects. He expressed the hope that the time might shortly come when this institution would be a constituent college of the University of London. It was hoped to make rat week next year an occasion more successful than previous efforts of the kind, and to that end it was intended to invite the co-operation of leading medical officers of health throughout the kingdom, also the heads of large businesses, in formulating measures which it was hoped would meet with the approval of the Ministries of Health and Agriculture. The chairman of the college, Mr. A. Moore Hogarth, in expressing acknowledgements to the press for the help it had given in making known the proper measures for the destruction of pests, remarked that not even fratricidal warfare, with modern engines of destruction, created such a shambles as did insect and other pests driven by the fight for existence to make war upon man. Other speakers were the Hon. Cuthbert James, M.P., President of the College, who urged every medical officer of health to equip himself with the classic work on the subject of the rat and its destruction, by Mark Hovell; and Mr. F. T. G. Hobday, who referred to the importance of the study of pestology to those engaged in veterinary work. Mr. Hobday instanced, among other matters, the havoc wrought by the little gadfly on the hides of cattle, to the detriment of the future leather, also the part played by the rat in the spread of foot-and-mouth disease. During

the evening the annual gold medal in honour of one of the founders of the college, the late Professor Maxwell-Lefroy, was presented by his widow to Mr. G. F. J. Toll, sanitary inspector, Bermondsey, for an essay on the bed-bug (*Cimex lectularius*). Next year's award will be for the best monograph on the house-fly.

#### DAIRY RESEARCH AT READING.

The National Institute for Research in Dairying is one of those curiously disguised modern institutions in which the State pays a large part of the cost of the piper, while the appearance of voluntarism in the tune is kept up by subscription. This is called the pound for pound principle; but the voluntary pounds are often in arrears. The institute was established in 1912, and is now a part of the University of Reading, and possesses a farm, a dairy, and laboratories at Sheffield; it was part of a scheme by which the field of research was divided up by subjects, each subject being dealt with at a particular centre, usually in conjunction with a university. The difficulties encountered at the Reading Institute in extracting money by public appeal have been tided over by the generosity of Lord Elveden. There can be little doubt that the institute is well worthy of support by the producer and by the consumer, both of whom benefit by the researches that are carried out in its three sections—dairy husbandry, chemistry, and bacteriology. Many of the experiments have been conducted in old farm buildings, so that the advice given to farmers was based on research work under ordinary conditions, without the advantages of convenient, easily cleaned, and well lighted buildings. From the reports of the institute the farmer may learn that hay containing *Anthonis cotula* (stinking mayweed) will taint the taste of milk. Marrow stem kale and tomato-seed cake will have the same effect when used as food in excessive amounts. "Ropiness" in milk has been shown to be due to two entirely different causes: there is a physical variety due to the formation of thin films of casein or lacto-albumin as the milk passes over the cooler, and there is a more common type in which milk in bulk becomes "ropy" from the growth of bacteria. Reports have also been issued by the institute on variations in the live weight of dairy cows, and experiments have been made on the yellow discoloration of Stilton cheese. From the medical point of view the discovery that liberal supplements of cod-liver oil in the winter food of stall-fed cows decreased the percentage of fat in the milk is of interest; so, too, is the proposal to use dried whey as human food. This product has already been shown to be a very valuable food for pigs. It is not stated whether a similar extension of consumption is proposed for dried whale-meal meal, another valuable pig food. The bacteriologist will be interested to learn that the "mechanical surface aggregates" in ropy milk are of importance in handling dilutions of milk in the course of bacterial enumeration.

## Scotland.

#### PUBLIC HEALTH WORK IN EDINBURGH.

DR. WILLIAM ROBERTSON, medical officer of health for Edinburgh, in a lecture delivered on November 12th, asked whether preventive medicine was making progress commensurate with the great outlays now being made. In returning an affirmative answer, he instanced the facts that the expectation of life had been prolonged, that infantile mortality had been lessened, that tuberculosis disease was within our grasp. The annual expenditure on public health in Edinburgh in 1910 had been about £35,000 and in 1921 had reached £120,000, though it now stood at little over £100,000. Better housing, saner feeding, and greater facilities for recreation had done much to fortify the individual against attack from infectious diseases. Scarlet fever was not now so severe as it used to be, and diphtheria was less malignant. New weapons for combating diphtheria had been placed at their command, and Edinburgh had taken a lead in fighting this

disease. In dealing with measles and whooping-cough, the lead given by Edinburgh was now being followed elsewhere, and children suffering from these diseases were being to a greater extent admitted to hospital. This had been rendered possible by the treatment of mild cases of scarlet fever in the patients' own homes. By shortening the stay of scarlet fever cases in hospital also, through recognition of the fact that the peeling skin of scarlet fever patients was not a source of infection, a saving of £3,000 had been effected in hospital treatment in one year. Tuberculosis, which had caused 30 deaths per 10,000 of the population in 1856, now caused 10 per 10,000, and this reduction had been largely due to demolition of slums and the admission of sunlight and air into the houses. Housing schemes, though slow, were making great changes, but it would be necessary to build 1,000 houses a year in Edinburgh for the next ten years.

#### GLASGOW "HEALTH BULLETIN."

The *Health Bulletin*, issued by the medical officer of health for Glasgow, for August, September, and October, 1926, shows that the prevalence of scarlet fever in the city has continued; the highest number of notifications was 163 in the week ended October 2nd. The disease in general has been mild, the case mortality being 0.8 per cent. The period of detention in hospital has accordingly been reduced, without untoward results. Treatment by antitoxin in severe attacks has lessened severity and shortened duration. One case of typhus fever has to be added to the seven reported in the previous issue of the *Bulletin*, making a total of eight cases. In all the cases the Weil-Felix reaction was positive. In one case the rash was extensive and haemorrhagic, while the constitutional disturbance was comparatively slight. There was one death among the older group of patients. Direct contacts in all instances were kept in a reception house under observation. Enteric fever was represented by 53 cases, of whom 29 reacted to *B. typhosus*, 1 to *B. paratyphosus* A, and 23 to *B. paratyphosus* B. The paratyphoid A case was infected in France. From several cases of illness presenting symptoms suggestive of food infection Flexner organisms were recovered.

#### CENTRAL MIDWIVES BOARD FOR SCOTLAND.

The examination of the Board, held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, has just concluded. Out of 101 candidates 86 passed; of the successful candidates, 15 were trained at the Royal Maternity Hospital, Edinburgh, 22 at the Royal Maternity Hospital, Glasgow, 5 at the Maternity Hospital, Aberdeen, 6 at the Maternity Hospital, Dundee, 4 at the Queen Victoria Jubilee Institution, Edinburgh, and the remainder at various recognized institutions. At a special meeting of the Central Midwives Board for Scotland for the hearing of penal cases, Dr. James Haig Ferguson in the chair, a report in regard to the practice of a certified midwife was submitted. In accordance with the decision of the Board, intimated at a previous meeting, the report being unfavourable, her name was *ipso facto* removed from the Roll, and the secretary was instructed to cancel her certificate.

#### NEW INFIRMARY AT FALKIRK.

The ceremony of cutting the first sod for the new infirmary for Falkirk and district was performed on November 10th by the Duchess of Montrose. The Duke of Montrose, in addressing the meeting, said that he and the Duchess were pleased to take part in this ceremony, because both their families—that of Hamilton and that of Graham—had been bound up with the affairs of Falkirk for hundreds of years. It was a curious fact that, while statistics showed the health of the country to be improving day by day, the need for infirmaries grew more and more. Some years ago Falkirk had had a hospital with 14 beds, then an infirmary with 70 beds, and now a new institution with 130 beds was required. This was due partly to the growing confidence of people in hospitals and partly also owing to the development of transport. Infirmaries were maintained very largely for the free treatment of the very poor. In America a large part of the income of hospitals



was derived from paying patients, and it would be to the advantage of infirmaries in this country to provide for paying patients as well as to give free treatment. This would be a suitable source of income, and in the end would enable the hospital to provide the best of medicine, surgery, and nursing for all those whom it served. The site of the new infirmary includes ground extending to 12 acres round the mansion house of Gartcows; the administrative, admission, and out-patient departments about on the public street, while the wards will be placed on the more retired portions of the ground. The administrative buildings, and also a building to afford accommodation for 130 beds (with an ultimate capacity of 250), are to be erected at once. Various annexes for eye, ear, nose, and throat clinics and for artificial sunlight and electrical treatment are also being erected, and accommodation for private patients and the provision of a maternity department are contemplated.

#### HOSPITALS AND MOTOR ACCIDENTS.

Following upon action taken by the managers of the Royal Infirmary at Edinburgh in regard to the treatment of motor accident cases in that institution, as mentioned in the *BRITISH MEDICAL JOURNAL* for October 30th, p. 207, Mr. J. Scott Riddell, C.M., LL.D., chairman of Aberdeen Royal Infirmary directors, drew attention at a meeting of directors on November 10th to the increasing number of patients suffering from motor accidents and the effect on the waiting lists. During the present year 92 motor accident cases had been admitted, involving a total inpatient stay of 2,449 days. The annual maintenance cost of these was about £650. The effect on the waiting list had been to keep out 120 extra surgical patients who otherwise would have passed through the wards during these ten months. It was suggested that the Aberdeen Royal Infirmary should ask insurance companies to accept responsibility for these accident cases. It was also mentioned that the erection of new accident wards for 30 beds was being pushed forward, that they would soon be ready for occupation, and would relieve the congestion.

## Ireland.

#### MEDICINE FROM THREE ANGLES.

DR. E. T. FREEMAN delivered the inaugural address at the opening meeting of the session 1926-27 of the Medical Society of University College, Dublin. The address was entitled "Medicine from three angles," and in the course of it he said that before considering how the recent advances in medicine affected either the practitioner, the student, or the man in the street, it was necessary to remember the character of the times in which they were living. They had lately passed through the greatest war in history, and were in an age of rapid transport and of quick dissemination of ideas. They had come to the end of a period of universal exaltation, and were sunk in universal disillusionment. They were at the mercy of the mass-producer, of the newspaper with the greatest circulation, of the publicity agent and the advertising expert. As medical knowledge increased and as the methods of investigation and treatment became more and more complex, it was gradually realized that no man could possibly have a complete knowledge of the whole. The result of this was specialization, and the dangers of specialization appeared to be a series of water-tight compartments on the one hand and the group system on the other. It was but a short step in this evolution from the private group, which was mass production, to the group controlled and paid by a public company. This was mass production with the aid of the modern business prospectus, advertising expert, and newspaper proprietor. This scheme had appeared in the United States. It meant the entrance into medical service of corporations dispensing diagnosis and treatment on a wholesale basis, employing groups of physicians for the purpose, remunerating them, and paying away the surplus in the form of dividends. This completely removed the personal element. If companies were open to the charge of being soulless as employers, they would hardly be less so

as doctors. A generation ago the chemist compounded medicines prescribed by the physician; now in many cases he merely provided the mixture, the compound, or the tablet put up by the manufacturer, and ordered as such by the practitioner. This result had followed the enormous growth of the commercial laboratory and its incorporation in the drug-manufacturing houses. It had had many advantages; many most valuable drugs had been introduced; preparations were now more accurately measured; drugs were of a higher standard of purity and activity; they were dispensed more attractively, and were standardized. Nevertheless, there was the danger that prescribing might be taken out of their hands without their realizing what was happening. At the present time there was a boom in endocrine and similar products. Many of these had neither physiological nor clinical reasons for being employed. Many, indeed, were not glandular products at all. A great number were inert. They were prescribed by some doctors because they had not the means to appraise their value, by others because their resistance had been broken by too formidable a bombardment of advertisements, by the rest because they had not read *Martin Arrowsmith*. The privately owned or controlled periodical was a latent source of danger, as was also the indiscriminate multiplication of semi-professional journals devoted to popular aspects of therapeutics, but really kept going by the makers and vendors of the apparatus advertised in them. How this evolution of medical practice affected the public could conveniently be considered under two heads—the first dealing with the direct effect of changing practice, and the second with the attitude of the public towards medical problems generally. As medical processes became more involved, and as scientific apparatus became more costly in purchase and maintenance, treatment and examination necessarily became more expensive. It had also become generally realized that nursing was a difficult and technical business which could not as a matter of course be safely entrusted to any one of the patient's friends, and that the patient's home was usually the worst place in which to treat any ailment other than the simplest. The recognition of these facts had brought about a great change in the personnel of hospital patients. The attitude of the public towards medical matters deserved the very close consideration of every medical practitioner. The public was at present vitally interested in medical topics. It followed with interest reports in the popular press of new discoveries and new treatments. It was disposed to find orthodox medicine too slow, and to seek short cuts in osteopathy, Couéism, and the like. The vexed and now prominent question of medical practitioners contributing articles to the public press was closely related to this point. It was quite obvious that the public was in need of instruction and enlightenment, and some contended that the signed article in the popular press was the best means of meeting this need. This was an innovation, wholly opposed to the rule of their profession against the advertisement, direct or indirect, a rule made and kept in the best interests of the public itself. Articles by medical men in practice might well contain views that were personal and in conflict with the opinions of the profession as a whole. The public was not fit to judge between opinions, and the medical press was clearly the proper place for such publications. The issuing of instructions and information from medical officers of health or from the medical officers of a Ministry of Health who were not in practice was, on the contrary, a very desirable thing. But the public did not want enlightenment; it wanted interesting paragraphs; hence the regular appearance in certain newspapers of medical material written up by popular journalists. A careful watch on these paragraphs showed that subjects of momentary topical interest very largely predominated. Dr. Freeman concluded, therefore, that the public needed to be saved from its own carelessness and indolence, and protected from cranks and cultists; and that it very badly needed instruction was well demonstrated by the recent history of small-pox.

#### TUBERCULOSIS IN BELFAST.

Reporting on the work during 1925 of the tuberculosis department of the county borough of Belfast, Dr. Andrew Trimble, the chief tuberculosis officer, states that there

has been a reduction of the death rate due to pulmonary tuberculosis in Belfast of 30 per cent. in the last ten years, 55 per cent. in the last twenty years, and 60 per cent. in the last thirty years. He refers to the question of the effects of tuberculosis on pregnancy, and concludes that the disease cannot be convicted of contributing in any marked degree to interruption of the normal course of pregnancy. He finds that if a tuberculous woman is not in an advanced stage of the disease, or acutely ill, is well nourished and lives in hygienic surroundings, pregnancy and child-bearing have little apparent effect on the clinical course. On the other hand, in advanced stages of the disease, or when the patient has an acute type of tuberculosis, pregnancy may be attended with very serious results. He emphasizes the value of *x* rays in the diagnosis and prognosis of pulmonary and osseous tuberculosis. He has frequently found that, even when a sinus has appeared to be firmly healed for many months, or even years, the *x*-ray film may still show much rarefaction of the diseased bone, indicating the need for further rest and treatment. With regard to the diagnostic importance of the albumin test in sputum, he states that out of 850 examinations for albumin or albumose, only 14 were found to contain tubercle bacilli and no albumin, while 127 which contained tubercle bacilli gave also a positive test for albumin. He adds that even if a negative albumin reaction is of uncertain value as indicating the absence of pulmonary tuberculosis, a positive reaction is an indication for the repeated examination of the sputum for tubercle bacilli. Dr. Trimble gives a short account of the visit of the medical commission from Belfast last year to Paris, Geneva, Frankfurt, Hamburg, and Copenhagen to investigate Continental methods of treating tuberculosis. He also gives a report on the work of the Belfast committee which has been investigating the value of sanocrysin, and concludes that, while the method seems to represent a distinct therapeutical advance, in definitely selected cases, further observation of the results for at least a year will be necessary in order to estimate the degree of permanence.

## Correspondence.

### OPERATIVE TREATMENT OF PYLORIC STENOSIS.

Sir,—I was rather hoping that someone more competent than I would remark on the two cases reported in your issue of November 6th (p. 835). I do not think that your readers should be left with the idea that pyloroplasty or gastro-enterostomy are nowadays operations worthy of even a passing thought for these cases.

The matter was reviewed in an article published in the *Annals of Surgery* in August, 1911 (p. 167), in which the pioneer work of Dr. Cantley and Mr. Clinton Dent was considered. Gastro-enterostomy was shown to have a mortality of 42 per cent., division of 50 per cent., and pyloroplasty of 27 per cent. The difficulties of pyloroplasty were discussed in this paper, and attention was drawn to the fact that "Cantley and Dent have pointed out—indeed, almost complained"—that there is plenty of mucous membrane. Further—and I look upon this as of the greatest importance—it was in this article advised to divide the pyloric ring "in a longitudinal direction down to, but not including, the mucous membrane. This was, I believe, the first time that the suggestion of not dividing the mucous membrane had been made, and the operation as suggested in this paper was carried out with success both in England and also, to my knowledge, in Australia.

Rammstedt, a little later on, effected a further saving of time by leaving the divided pyloric sphincter and peritoneum without any attempt at closure; he retained the essential feature of the operation above referred to, and neither divided the mucous membrane nor took the time required to sew it up again.

I notice your correspondent states that he considered it useless to perform Rammstedt's operation since the pylorus would "admit nothing more than a large probe." Surely this remark implies a failure to realize the essence of the operation advised in the article above referred to and adopted by Rammstedt—namely, that the mucous mem-

brane should not be divided. Your correspondent must have divided it before examining the pylorus with a probe. It also implies a want of knowledge of the work of Cantley and Dent, who "almost complained" of the redundancy of the mucous membrane. It is the hypertrophied muscle which causes the narrowing, and this is at once relieved by its division.

For further information I should like to refer your readers to the various papers which Mr. Tyrrell Gray has published on this subject.—I am, etc.,

Exeter, Nov. 14th.

RUSSELL COOMBE.

P.S.—I understand that in competent hands the present mortality of Rammstedt's operation for cases operated on within four weeks of the onset of symptoms is in the neighbourhood of 8 per cent.

### EPIDEMIC ORCHITIS AND MASTITIS.

Sir,—During this autumn the catarrhal epidemic started earlier than usual—namely, in the beginning of October. Up to the present the complications have not been severe. The cases of so-called "gastric 'flu'" have been many, with an acute onset of pain in the abdomen, accompanied by perhaps vomiting or diarrhoea, according to the site of infection. Some of the severer cases have been followed by jaundice or colitis.

One feature of the epidemic, however, which is rare is the complication of orchitis or mastitis.

In severe cases of influenza orchitis is not unknown, but is usually overshadowed by the severity of the disease itself. During this epidemic the cases of orchitis have not presented any severe influenzal symptoms, but have reported on account of the testicular condition itself.

Within the last fortnight I have had five cases of orchitis and three of mastitis, all uncomplicated by any other disease. The orchitis has not been very acute, and in no case have the parotid or any other glands been involved. There is a slight rise of temperature for twenty-four hours, and the condition has subsided within a few days. The cases of mastitis have followed very much the same course, and have been in no way connected with any generative condition. I have had no case of ovariitis.—I am, etc.,

Stratley, Berks, Nov. 10th.

LEONARD LESLIE, M.D.

### MEDICAL PRIVILEGE IN THE COURTS.

Sir,—Dr. W. E. Levinson, in your issue of November 13th (p. 908), asks if he was right in not reporting to the police that a patient to whom he had been called had been stabbed by her husband. He was quite right, and Mr. Justice Swift was quite unjustified in his hasty censure. If it were supposed to be at all likely that a doctor would in such a case divulge to the police what had come to his knowledge professionally he would not be sent for, and loss of life or health would often result. There are other reasons why Dr. Levinson acted rightly, but the one reason given amply justifies Dr. Levinson's position.—I am, etc.,

Blindley Heath, Nov. 13th.

HUGH WOODS.

### RESEARCH IN GENERAL PRACTICE.

Sir,—In an article upon this subject in your issue of November 6th (p. 844) you comment upon the advisability of a plan to secure continuity of treatment through co-operation between general practitioners and specialists, and you point out that neither the earliest beginnings of disease nor the real end-results of treatment are now adequately known or recorded.

A practical scheme, initiated by the late Sir James Mackenzie, which attains both of these objects has been in operation for seven years at the James Mackenzie Institute for Clinical Research, St. Andrews. The recording and study of the early stages of disease by general practitioners are the primary objects of the institute, and post-graduate teaching is attempted. The pathologist of the institution, whose laboratory is in the building, is medical officer of health for the burgh; he is thus in daily personal touch with all the general practitioners. The staff includes consulting specialists in various departments. A complete system of filing and indexing of all records is in use. It

OBITUARY.

Nov. 20, 1926]

was the hope of the distinguished founder that similar institutes affording facilities for research to general practitioners would in time be established throughout the country—a hope which Dr. Forrester-Brown's article and your comment bring nearer fulfilment.  
I will be glad to give detailed information to anyone contemplating the inauguration of a similar scheme elsewhere.—I am, etc.,

J. HUNTER P. PATON,  
Secretary, James Mackenzie Institute for  
Clinical Research, St. Andrews, Fife.

November 9th.

PERSISTENCE OF TUBERCLE BACILLI IN BUTTER  
FROM TUBERCULOUS MILK.

SIR,—In reply to Dr. Moore's letter of October 14th (BRITISH MEDICAL JOURNAL, November 6th, 1925), referring to an article of mine published in your issue of October 9th (p. 637), may I say:

(1) I was fully cognizant of the American work to which Dr. Moore calls attention, but cannot accept his view that in this country the persistence of tubercle bacilli in butter was generally recognized by those concerned with the epidemiology of tuberculosis. The variability in the results of investigations confirms my view.

(2) As regards pasteurization, "the modern significance" of this term varies with different operators as regards time, temperature, and technique. For example, under Danish law the temperature selected to which milk must be heated has been 80° C., and yet Dr. Moore regards 70° C. as too high. In view of this lack of uniformity of method I employed three different temperatures, and "ingeniously" described the method used; if it does not coincide with what pasteurization connotes to Dr. Moore's mind I cannot help it; it at least corresponds to pasteurization as employed in numerous instances, as well as probably covering the thermal death point of tubercle bacilli, the real point at issue.

(3) I would invite Dr. Moore to re-read the last paragraph of my communication, especially noting the reservation it contains.—I am, etc.,

H. A. COOKSON.

CLOTHING AND CATARRHS.  
SIR,—Most professions and callings tend to induce in their votaries a particular type of mentality. The study and practice of medicine tends to produce the pundit. Of this unfortunate fact the letter of Mr. A. R. Jordan in your last issue affords a striking example. If I understand him correctly, he accuses me of gross dishonesty in dealing with a scientific subject in a lay paper, because I therein expressed opinions which do not happen to coincide with his own. In support of this charge he says that I "must be aware that the respiratory function of the skin in man is almost negligible." I protest that I am aware of nothing of the sort. I am, of course, aware that such is the ordinary teaching; but I claim as much right honestly to differ from the ordinary teaching as I can afford sincerely to admit Mr. Jordan's right to embrace it. There is no such thing as a monopoly of knowledge in such matters.

Thirty years ago the pundits were solemnly informing us that the influence of the thyroid gland upon the human economy was "almost negligible." A little later they assured us that the appendix was a vestigial organ whose influence for good or ill was "almost negligible." But still they asserted that the effects of oral sepsis and intestinal stasis were both of them "almost negligible." Medicine being it is not necessary to multiply instances. Medicine being a progressive science, differences of opinion are not only inevitable, but desirable; but it is a sad discredit to the profession when they are not allowed to obtain without the imputation of unworthy motives. For no better reason than a perfectly legitimate difference of opinion as to the importance of the respiratory function of the skin, Mr. Jordan publicly impugns my scientific sincerity—an act of crude discourtesy for which it is difficult to find an excuse.—I am, etc.,

London, N.W.1, Nov. 15th.

MALIGNANT DISEASE OF THE UPPER AIR AND  
FOOD PASSAGES.

SIR,—In the course of the discussion upon malignant disease of the upper air and food passages (BRITISH MEDICAL JOURNAL, November 6th, p. 828) I am reported as having said that I "rather doubted the benefit to be gained from preliminary gastrostomy." It so happens that I expressed precisely the opposite view, and am, and have always been, an advocate of an early gastrostomy in obstructive disease of the oesophagus, just as I have been an equally ardent advocate of early tracheotomy in obstructive disease of the larynx where the course of pathological events indicates in unmistakable terms the advent of air hunger in the immediate future.—I am, etc.,

W. MILLIGAN.

Manchester, Nov. 12th.

THE CANCER PROBLEM.

SIR,—Owing to an oversight two errors occurred in one of the charts published in my Lloyd Roberts memorial lecture in your last issue. The mistake was discovered too late for correction. In Chart 9 an experiment is represented in which two fowls were used, Nos. 520 and 521. In the right breast of 520 1 c.cm. of acriflavine-treated tumour extract was injected and not 0.5 c.cm. as represented; in the left leg of 521 a mixture of 0.5 c.cm. of the same acriflavine-treated extract and 0.5 c.cm. of a first subculture of a rat carcinoma in broth-embryo medium. The remainder of the chart is correct.—I am, etc.,

London, N.W.7, Nov. 12th.

"RISING OF THE LIGHTS."

SIR,—When practising in North Worcestershire early this century I often heard "good women" speak of "rising of the lights," but was never able to discover the clinical onty so designated.  
A line of treatment of certain efficacy I did, however, manage to get confided to me: it is to get the patient to swallow liquid mercury. The mercury weighs the lights back into position, then all is well!—I am, etc.,

EDGAR L. COLLIS.

The Welsh National School of Medicine,  
Department of Preventive Medicine,  
Cardiff, Nov. 13th.

Obituary.

DR. ARTHUR WILLIAM SCATLUFF, who died on October 14th, was the second son of the late Dr. J. P. Scatluff of Sloane Street, London, and received his medical education at St. George's Hospital. He obtained the diplomas of L.S.A. in 1876, of L.R.C.P. Edin. and L.M. in 1877, of L.R.C.S. in 1879, and the D.P.H. of the English Conjoint Board in 1889. After serving as assistant to the medical registrar of St. George's Hospital he practised in Margate for twenty-five years, holding the post of medical officer of health for fifteen years, and also that of police surgeon. In 1904 he joined the Church Missionary Society as a medical missionary in China, and spent seventeen years in the province of Fuhkien, where he founded the large men's hospital in Futsing, and lectured on hygiene and bacteriology at the Medical College.

We regret to announce the death of Major CHARLES LOUIS WILLIAMS, I.M.S. (ret.), who died on October 31st at Banstead, Surrey, in his sixty-second year. He was educated at Liverpool College and Edinburgh, where he graduated M.B., C.M. in 1886, later taking his M.D., M.R.C.S., and D.P.H. He served for seventeen years in India, during which time he held the post of surgeon at Madras General Hospital, civil surgeon at various military stations, and other appointments. He retired in 1906, and on his return to England was appointed resident medical student of the Booth Line in Liverpool. In 1913, after four years of laboratory work at Liverpool University on tropical and cancer research, he was appointed resident medical officer to Glenalmond, one of Scotland's public schools, but left that to join the army in 1914 and resume his surgical work. To Major Williams's great disappointment he was not allowed to go overseas because of his health.

LEONARD WILLIAMS.

record in India, but from 1914 to 1920 he served as senior or divisional surgeon in various hospitals at home. After demobilization he held the post of resident operating surgeon in the Ministry of Pensions hospital at Birmingham until October, 1921, from which time until the end of 1924 he served on the Pensions Appeal Tribunals. The remaining two years of his life were devoted to the pursuit of his favourite hobby, ornithology, of which throughout his life he was an enthusiastic and devoted student.

## Medico-Legal.

### "ADMINISTRATION" OF DANGEROUS DRUGS.

#### JUDICIAL INTERPRETATION OF "DIRECT PERSONAL SUPERVISION."

A Divisional Court of the King's Bench Division (the Lord Chief Justice, and Avory and Salter, JJ.), on November 12th, allowed the appeal of Dr. G. C. Kingsbury, who is both a practising barrister and a registered medical practitioner, against a conviction by the late Lord Mayor of London (Sir William Pryke) for failing to enter in a register or day-book the name and address of a patient whom he was endeavouring to cure of the morphine habit by gradual reduction of doses.

The hearing before the late Lord Mayor was reported briefly in the BRITISH MEDICAL JOURNAL of March 13th at page 509.

#### The Home Secretary's Regulations.

By Section 13 of the Dangerous Drugs Act, 1920, as amended by Section 2 of the Dangerous Drugs and Poisons (Amendment) Act, 1923: "Any person (1) who acts in contravention of or fails to comply with any regulation made against this Act . . . shall be guilty of an offence against this Act." Under powers conferred by Section 7 of the 1920 Act, the Home Secretary issued a series of regulations on May 20th, 1921. Regulation 4 authorized the dispensing of drugs in pursuance of a prescription given by a qualified medical practitioner, and the supply of drugs by a qualified medical practitioner or registered veterinary surgeon, who dispensed his own medicines in accordance with the provisions of Regulation 9, "provided that administration of the drugs by or under the direct personal supervision of a duly qualified medical practitioner . . . shall not be deemed to be supplying the drug within the meaning of this and the following regulations."

Regulation 9 provides that every person supplying drugs must keep a register in the form, and containing the particulars shown, in Schedule I to the regulations, which has columns for "name and address of person, body, or firm to whom sold and supplied," and further provides that a qualified medical practitioner who records in a day-book particulars of drugs supplied, together with the name and address of the patient and date of supply, may, in lieu of keeping the register, enter in a book to be kept for the purpose references under the appropriate dates to the records in the day-book.

#### Case Stated by the late Lord Mayor.

The facts of the case stated by the late Lord Mayor showed that Dr. Kingsbury had never accepted a fee from any patient since his call to the Bar in 1902, and when since the passing of the Dangerous Drugs Act he undertook to try to cure two former patients by gradual reduction of doses he bought drugs at a cost of £25, making no charge to the patients. One of the patients he cured before the end of 1924. During the period covered by the summons—August 20th, 1925, to February, 1926—he was treating a City worker, and had succeeded in reducing the drug taken to one-fiftieth of the daily dose taken at the beginning of the treatment. He had seen this patient every other day, even during his own holidays, and on the days of his visits had left with the patient the necessary supply of morphine for the proper doses for that day and the succeeding day, with instructions as to time and methods of taking it. He did not actually see the patient take the drug, but stated that he would have known if the patient had been getting morphine from other doctors. He did not disclose the name and address of the patient in any book. The appellant's main contention was that the proviso to Regulation 4 completely exempted him from the requirements of Regulation 9 as to the keeping of records, as the administration of drugs by or under the direct personal supervision of a duly qualified medical practitioner was not deemed to be supplying dangerous drugs within the meaning of the regulations. Further, he contended that Regulation 9 was *ultra vires* as not being authorized by Section 7 of the Act of 1920. The late Lord Mayor, being of opinion that Regulation 9 was valid, and that the proviso to Regulation 4 did not apply to Dr. Kingsbury, found him guilty of an offence against the Act, and fined him £25 and £10 10s. costs.

Mr. Norman Birkett, K.C., and Mr. Arthur Davis (instructed by Messrs. Ashurst, Morris and Co.) appeared for the appellant, and Mr. H. D. Roome (instructed by the Director of Public Prosecution) appeared for the respondent.

#### The Appellant's Argument.

Mr. Birkett, in his argument, said that Dr. Kingsbury had merely been found guilty of a technical offence in not keeping records. There was no reflection whatever on his character. The prosecution had said: "You have not kept the record required," and Dr. Kingsbury had replied: "I have done all that the law requires of me." The Act of 1920 was designed to deal with the improper trafficking in drugs and not to interfere with the normal use of them by doctors or with the confidential relations between doctors and their patients. "Direct personal supervision" in no way

implied the physical presence of the practitioner. The course which Dr. Kingsbury followed of making regular visits at short intervals and of giving to the patient only enough morphine to last him in accordance with the treatment till the next visit was the normal ordinary practice, which the highest people in the medical profession had recommended in their report on drug addiction for the guidance of the Ministry of Health. If a doctor required the patient to take minute doses at frequent intervals it would need a millionaire to undergo treatment if the doctor had always to be personally present. There was no evidence to justify the finding that the administration of the drug had not been under the direct personal supervision of Dr. Kingsbury.

#### The Respondent's Argument.

Mr. Roome submitted that "direct personal supervision" were the strongest words that could be used. Here the patient had been supplied with a quantity of the drug intended to last two days, which the patient might have taken within a few hours.

The Lord Chief Justice: Suppose a doctor personally administers a dose of medicine to a patient at 11 a.m., and says: "If his temperature rises a degree give another dose to-night; otherwise wait till I see him again at 11 a.m. to-morrow." Would that be "direct personal supervision"?

Mr. Roome: It would be too oppressive to hold otherwise.

Mr. Justice Avory: Test it another way: If another doctor were called in in consultation, would he not say: "What have you been administering?" and would not Dr. Kingsbury reply: "I have been administering such and such doses of morphine." Suppose then the other doctor asked: "Did you personally supervise the administration?" would he not receive the reply: "Yes; I saw the patient every other day, and specified precisely how much he was to take, and watched the effect." Could you say that that would be inaccurate?

Mr. Roome thought it would be too high a description of what was done. Anyhow, it was for the appellant to prove he fell within the proviso. The regulations protected addicts from themselves, and were designed to prevent a double supply by more than one doctor. Surely it was no great hardship that a name and address should be divulged?

#### Judgement following Appeal.

The Lord Chief Justice, in allowing the appeal, said that at the close of the argument the question which really emerged was a simple one, capable of brief statement. It was this: Upon the true construction of the proviso to Regulation 4 was that which was here complained of "administration" of morphine "by or under the direct personal supervision of a duly qualified medical practitioner"? When the special case stated by the late Lord Mayor of London was examined no doubt was left of the contention made by the prosecution in the court below. He would read its *ipissima verba*: "That in Regulation 4 the words 'administration of the drug by a duly qualified medical practitioner' meant that the doctor must administer every dose by his own hand, and that administration under the direct personal supervision of a duly qualified medical practitioner meant that the doctor must be present, and either see the patient administer each and every dose to himself or see the nurse or other person administer such dose to the patient." Whatever else might be said of that contention, it was wholly free from ambiguity, and that contention was held to be right by the late Lord Mayor. His lordship then read the facts set out in the case stated, and observed that the respondent's counsel (Mr. Roome) now no longer contended that, subject to proper provisions and precautions, the actual personal presence of the doctor was necessary. But it was further contended that when the terms of the proviso were contrasted with the body of Regulation 4, the word "administration" was confined to a particular emergency as contrasted with regular supply. It was said that if that were not so great mischief might arise to the patient himself, because he might consume a quantity of the drug without a record being made, and have the opportunity of obtaining further supplies. But the court had to construe what the regulations made by the Home Secretary under Section 7 of the Dangerous Drugs Act, 1920, actually said, and not what they might have said. In Regulation 5 there occurred the words "in case of emergency," and it would have been easy to have put those words in Regulation 4. But the question of amending the regulations was not one for that court, but for the Government department concerned. It seemed to his lordship as impossible to limit the words of the proviso to Regulation 4 to cases of emergency as it was to limit personal supervision to cases where the doctor was personally present. Looking at the words of Regulation 4 as part of a much larger whole, his lordship did not think that it was restricted to the limited meaning contended for, and once that had gone, on the facts of this case, he thought that there was direct personal supervision. His lordship expressed no opinion as to amendment of the regulations, but the decision of the court below could not be supported, and the appeal must be allowed with costs.

Avory and Salter, JJ., concurred.

#### A DANGEROUS DRUGS PROSECUTION.

At the Central Criminal Court, on November 15th, the jury, on the direction of the Common Serjeant (Sir Henry Dickens, K.C.), found John Kynaston, retired constable, R.A.M.C., guilty of aiding and abetting, g Rowland Pawsey to attempt to obtain a (medicinal opium), contrary to a regulation under the Dangerous Drugs Act, 1920, a nominal fine of £10 being imposed. The proceedings before the Marlborough Street magistrate are reported in the BRITISH MEDICAL JOURNAL of October 16th, at page 716.

Mr. H. D. Roome, for the Director of Public Prosecutions, said the defendant was summoned before the Marlborough Street

magistrate, and had chosen to exercise his right to trial by jury. Under the Dangerous Drugs Act no one was allowed to be in possession of any of the drugs prohibited in the regulations issued thereunder unless he was licensed or got them on the prescription of a "duly qualified medical practitioner"—that had a simple meaning—a person on the *Medical Register*. The defendant was not now a registered medical practitioner, but he still practised as a doctor. His name was removed from the *Register* in 1922, but he could still practise subject to the loss of certain privileges, one being that he might not deal in dangerous drugs. Mr. Pawsey, registrar of marriages, Marylebone, on August 25th was suffering from nasal catarrh, and the defendant gave him a prescription, the first thing mentioned being "powdered opium." The prescription was signed "Lieut.-Colonel John Kynaston, R.A.M.C., ret., M.R.C.S. and L.R.C.P. (London)." He had not the right, as a matter of fact, to the letters "M.R.C.S." and "L.R.C.P.," because he had been deprived of both diplomas.

Mr. Norman C. King, Registrar of the General Medical Council, said the defendant's name was removed from the *Medical Register* in May, 1922, for advertising.

The defendant stated that the removal of his name from the *Medical Register* was illegal, because the Council had allowed Sir George Newman, whom the defendant described as "a tainted judge," to be present at the inquiry after he (the defendant) had challenged him.

The Common Serjeant pointed out that the question whether the defendant's removal was legal or not was irrelevant.

In evidence, the defendant said he had a perfect right to the titles of M.R.C.S. and L.R.C.P. until the colleges concerned gave him a definite assurance on what statutory authority they based their right to remove his name from their rolls. He had notified the colleges that he intended going on using the letters until they did. He claimed that under the Dangerous Drugs Act he was entitled, as a qualified man, to prescribe the drugs, and he submitted that "duly qualified medical practitioner" in the regulations did not necessarily mean registered.

The jury having returned a verdict as directed, Mr. Roomo said there was nothing whatever against the defendant, but the authorities brought proceedings because they were anxious to make it clear that only registered medical men could prescribe dangerous drugs.

The Common Serjeant said he imposed a nominal fine in view of the fact that proceedings were taken with the object of making clear the meaning of the Dangerous Drugs Act, and in view of the fact that the defendant was perfectly *bona fide* in his views. If he (the Common Serjeant) was wrong in his interpretation of the law, then the Court of Criminal Appeal would set him right. The defendant intimated that he would probably appeal.

#### TESTS FOR DRUNKENNESS.

A CASE, turning largely upon the question of tests for drunkenness, was tried at the Central Criminal Court before Mr. Justice Greer on November 15th and 16th. The accused was Henry William Franklin, aged 31, a chartered accountant, of London, who was committed from Epsom for having been drunk in charge of a motor car, and by negligence causing the death of one person and grievous bodily harm to three others, all of whom were in a motor-cyclo combination with which he collided on the road between Leatherhead and Kingston on October 9th.

One of the witnesses called for the prosecution stated that, on seeing the accused immediately after the accident, he came to the conclusion that he was drunk—his breath smelt of alcohol, and his manner was peculiar. The police sergeant who was called to the scene also testified that the accused was drunk, and when this witness was asked why he was of that opinion, he said it was because the man swayed backwards and forwards, was unsteady on his feet, and thick and slow of speech. The police inspector at Leatherhead also said that when brought to the station the accused was unsteady and smelt strongly of drink. The police surgeon examined him three-quarters of an hour after the accident and certified that he was drunk. The accused asked that his own doctor in London might be sent for; there was some delay in telephoning for this doctor; and when a call got through it was intimated that he could not attend owing to the distance and pressure of work. The accused then mentioned another doctor, Dr. A. V. Moberly of Surbiton, and Dr. Moberly, examining him two hours and five minutes after the police surgeon's examination, stated that he was not then drunk, and in the doctor's opinion could not have been drunk at the time of the accident. His Lordship called the police inspector back to the witness-box and questioned him as to the reason for the delay in summoning the doctor asked for by the accused. "It is your duty," said Mr. Justice Greer, "to help accused people to get their own doctor."

Dr. E. H. H. Granger, police surgeon for Leatherhead and district, testified that on examining Mr. Franklin he found him drunk and unfit to drive a motor car. He put Mr. Franklin through certain tests and also made a complete clinical examination. He got him to describe the journey he had just taken, in order to test his memory, and he got through this test fairly well. He showed, however, a certain lack of physical co-ordination. He was asked to walk along a board and along a line between two boards; he responded to the first of these tests tolerably, to the second badly. The whites of his eyes were bloodshot, and the pupils very much dilated. To test his powers of articulation he asked him to say "British constitution," and the response to this test was not well carried out. His pulse was very full in volume, and rapid, 120 to the minute. The whole examination took twenty-seven minutes.

Cross-examined by Sir Henry Curtis-Bennett, for the defence, Dr. Granger said that he took no account of the smell of the

breath. He was not aware that there was something wrong with the cartilage of the man's leg, which would prevent him responding successfully to the walking tests.

The test of walking along a line is one which a good many sober people could not manage?—It is a fair test for young and middle-aged men.

Did you put him through the Romberg test, in which a man stands with his heels together and closes his eyes, and it is observed whether or not he sways?—Yes.

That is a test in which a great many perfectly sober people fail?—No, I think not; but no test was considered by itself.

Do you think the Romberg test is of the slightest use?—It is a routine test employed.

Routine, whether a man has had an accident or not?—Certainly.

Do you take shock into consideration at all?—Yes, we take it into consideration.

Am I right in saying that a man who has suffered a shock will not be able to do the Romberg test?—I am not prepared to say whether you are correct or not.

How did he respond to the Romberg test?—He swayed.

The quick pulse is consistent with shock, excitement, anger, or even the strain of undergoing a medical examination?—Quite correct.

The pupils were dilated?—They were.

Dilatation of pupils is a very common symptom among people suffering from shock?—The dilatation of pupils occurring in severe shock tends quickly to wear off.

The eyes in shock react quickly to light?—They do.

But if the pupils are dilated as a result of drunkenness the reaction to light is very slow?—That is a question I am not prepared to answer. When light is allowed to fall on the pupil the pupil grows smaller. As to whether in drunkenness it grows smaller more quickly or more slowly I am not prepared to offer an opinion.

You examined his tongue?—Yes.

And even then you say nothing about the smell of drink?—I have said nothing about the smell of drink.

As to pronouncing "British constitution," is it within your recollection that the clerk at the police court, against whom there is not the slightest intimation, when he was reading over the depositions, stumbled badly over the words "British constitution," to the great amusement of the court?—You are quite wrong in making that statement.

Re-examined by Dr. A. D. Lney for the prosecution, Dr. Granger said that he considered the smell of the breath a very misleading test in drunkenness. Apart from the tests he had described, he could not think of any other recognized or regular tests for drunkenness which were of the slightest use.

Evidence was then called for the defence. The accused's own statement, which was borne out by the evidence of certain companions, was that all the alcohol he had had on the day in question was half a pint of beer at lunch, a few sips of whisky later in the afternoon just before leaving London, and a small glass of whisky at Kingston a couple of hours later, about three-quarters of an hour before the accident.

After corroborative evidence (non-medical) had been given on this point, and of his control of his car earlier on the journey, His Lordship suggested that it was obvious that, unless all these witnesses were lying, the man was not drunk. The burden of proof that he was drunk was on the prosecution. No man could meet such a charge except in the way that defendant had met it, by calling people who testified that he was sober. Sir Henry Curtis-Bennett said that he had medical evidence to call in defence—the evidence of Dr. Moberly and of a specialist.

The jury, after consultation, without calling for the medical evidence, found that the defendant was not drunk, and this was dropped from the charge. The other parts of the charge were proceeded with, and in the result the accused was found not guilty of criminal negligence, and was discharged.

At the opening of the Manchester Assizes, on November 16th, the Grand Jury, on the advice of Mr. Justice Branson, threw out the bill for murder against Drs. A. S. Holden and F. L. Webster, but returned true bills for manslaughter and felony. The preliminary magisterial hearing of the case was reported in our last issue, at page 909, and the proceedings at the inquest in our issue of November 6th, at page 860.

#### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons this week considered and approved a supplementary vote of £3,250,000 for extra expenditure by the Ministry of Labour in helping local authorities to relieve destitution. A vote was also passed for expenses of the new broadcasting corporation and a money resolution discussed authorizing expenditure under the Housing (Rural Workers) Bill now before the House. Consideration of the Smoke Abatement Bill was due to commence in a Grand Committee of the House on November 18th.

The Committee stage of the Lead Paint (Protection against Poisoning) Bill was set down for Thursday in the House of Lords.

#### Infantile Paralysis.

SIR KINGSLEY WOOD, in an answer to Captain Fairfax, on November 11th, said the number of cases of infantile paralysis notified at Leicester in the two weeks ended November 6th was 15, compared with 54 in the previous fortnight. There were no fresh cases in



Broadstairs in the week ended November 6th. Infantile paralysis had been prevalent in this country for many years. It was one of a group of epidemic nervous diseases of which our knowledge was still very imperfect, but research was being prosecuted, and it was hoped that means would be discovered which would lead to the exercise of more effective control over its spread. The Ministry of Health had closely watched the outbreaks, and a specially skilled member of its staff had visited the areas most affected to assist the local authority in providing for the supervision and control of the outbreaks. Sir Kingsley Wood did not think that the number of deaths resulting from the present outbreak was large. Replying to Mr. Everard, he supplied the following table of cases of infantile paralysis (acute poliomyelitis and acute polio-encephalitis) notified in England and Wales each month since May:

*Notifications of Infantile Paralysis (Acute Poliomyelitis and Acute Polio-encephalitis) in England and Wales (1925).*

Month.	Acute Poliomyelitis.	Acute Polio-encephalitis.	Total Cases of the Disease.
May ... ..	18	3	21
June ... ..	29	3	32
July ... ..	56	7	63
August ... ..	148	16	164
September ... ..	215	7	222
October ... ..	319	54	373
Totals ... ..	785	90	875

On November 16th Sir K. Wood, replying to Captain Fairfax, said that there had been no further deaths from infantile paralysis in Leicester since October 25th last. Three more deaths had occurred as a result of the Broadstairs outbreak.

#### Encephalitis Lethargica.

On November 16th Sir K. Wood told Captain Fairfax that the total number of cases of encephalitis lethargica notified in England and Wales during the present year up to November 6th was 1,946, and the approximate number of deaths up to the end of August was 935. The Minister of Health understood that the Medical Research Council would shortly publish a report on this disease, containing a statement of the progress which had been made in the search for its cause. Until this had been discovered, and means had been devised for controlling the development and spread of the disease, it was necessary to rely on those methods which had proved efficacious in dealing with other infectious diseases.

#### Destitution and Malnutrition.

Mr. Chamberlain, in replying to a short debate on the way in which boards of guardians had met hardships due to the strike, said that on the whole they deserved the highest possible credit. There had been no evidence of malnutrition, and repeated reports had been received to the effect that the children were actually better fed than they were when their fathers were at work. By a system of block grants, when it was possible to allocate them on a fair and proper basis, taking into account not merely population but also capacity to pay, as measured by rateable value, it might be possible to devise a scheme which would bring relief to necessitous areas without doing injustice to any other part of the country. That was the policy to which he looked for a permanent solution of the problem.

**Lead Poisoning.**—Mr. Rhys Davies asked the Home Secretary whether his attention had been called to three serious cases of lead poisoning during 1926 at one factory in the Potteries, affecting young women aged 19, 23, and 26, one of whom had died. Sir William Joynson-Hicks replied that no case of lead poisoning had been reported in this factory from 1913 till this year. The factory had been reconstructed in 1913, but it appeared that recently the exhaust ventilation had not been efficiently maintained. The case was a bad one and had been actively taken up by the Home Office.

**Disability Pensions for Lethargic Encephalitis.**—On November 15th Lieut.-Colonel G. F. Stanley (Parliamentary Secretary to the Ministry of Pensions) informed Mr. R. Morrison that disability pensions were being paid in respect of encephalitis lethargica due to war service. The statistical records of the Ministry did not enable him to state the precise number of cases.

**Report of the Lunacy Commission.**—On November 15th Mr. Chamberlain informed Sir W. Davison that the report of the Royal Commission on Lunacy was receiving careful consideration. Until the recommendations had been examined in all their bearings it was not possible to indicate the nature and extent of any legislation which the Government might be able to introduce.

**Committee on Nursing Homes.**—On November 15th Mr. Chamberlain informed Mr. Hurst that the report of the Select Committee on Nursing Homes was under consideration. He was not able to make any statement in regard to legislation to give effect to the committee's recommendations.

**Veneral Disease in India.**—On November 16th Earl Winterton (Under Secretary for India) stated that a committee was assembled in Simla, in October last, to consider whether any modification in policy in combating venereal disease among British troops was

desirable in the light of experience during recent years. The committee was composed of officers commanding the 2nd Battalion Lancashire Fusiliers and the 2nd Battalion Lincolnshire Regiment, the chaplain to the Metropolitan, the Consulting Dermatologist, Army Headquarters; the Deputy Director, Personal Services, Army Headquarters; and Deputy Assistant Adjutant-General, Army Headquarters. The report of the committee was under the consideration of the Commander-in-Chief.

**University of London.**—On November 16th the Chancellor of the Exchequer informed Mr. Campbell that the official reports of the deputations which he received from the University of London in June last had been communicated to the university authorities. He did not, however, think it desirable to publish them. Replying to Dr. Little, the Chancellor said that it would be unusual to lay on the table of the House of Commons reports of deputations to Ministers.

#### Notes in Brief.

In England and Wales during 1925, 4,054 persons were found by coroners' verdicts to have committed suicide. In England, 2,636 persons were males and 1,164 females; in Wales, 149 males and 55 females.

In England, Scotland, and Wales, 511,890 houses have been completed since the war with State assistance and approximately 296,900 without State assistance. The number of houses now completed, under construction, or authorized under the Housing Acts is 706,699.

In the six months ended September, 1926, £13,000,000 was distributed as out-relief in England and Wales, compared with £7,000,000 in the same period of 1925.

Inspection by the Ministry of Health has not shown that the refuse dumps near Purfleet and Tilbury are a menace to health, but possible improvements in the collection and disposal of London refuse are being investigated.

The number of steel or cast-iron houses authorized in England and Wales is 993, excluding those erected for demonstration purposes.

Mr. Chamberlain states that 491 new officials have been appointed in his department since January 1st, 1926, of whom 423 are established.

The Minister of Health is advised that there are no medical grounds to support a proposal to make it compulsory for the bodies of persons who died from cancer to be cremated.

## The Services.

### HONORARY SURGEON TO THE KING.

MAJOR-GENERAL J. S. GALLIE, C.M.G., D.S.O., late R.A.M.C., has been appointed Honorary Surgeon to the King, with effect from September 16th, 1926, in succession to Major-General D. J. Collins, C.B., C.M.G., late R.A.M.C., retired.

### DEATHS IN THE SERVICES.

SURGEON LIEUT.-COLONEL ARTHUR TOMES, Bengal Medical Service (ret.), died at Exmouth on November 1st. He was born on February 18th, 1851, the son of Robert Tomes of Alcester, Warwickshire. Educated at the Middlesex Hospital, where he gained the Broderip scholarship, he took the M.R.C.S. and L.S.A. in 1873, the S.S.C. of Cambridge in 1876, and the M.D. with honours at Brussels in 1885. He entered the I.M.S. as surgeon on March 31st, 1876, passing first into and out of Netley, and gaining the Herbert prize there. He became surgeon lieutenant-colonel after twenty years' service, and retired on October 13th, 1897. Nearly all of his service was spent in civil employ in Bengal, where he was recognized as being likely to rise to the highest appointments, when his career came to a most unfortunate end. He had the misfortune to inoculate himself while performing an operation, and suffered from blood poisoning so severely that, after a year's sick leave, he was unable to rejoin, and had to retire with only twenty years' service.

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

With Prize, for the best M.D. thesis during an awarded to A. J. Copeland (Pembroke).  
Hart Memorial Scholar of the British Medical Association in 1923-24.

At a congregation held on November 13th the degree of M.B. was conferred on F. R. Sandford.

### UNIVERSITY OF LONDON.

#### Lectures.

PROFESSOR H. E. ROAF will give two lectures on colour vision at University College, London, at 5 p.m., on December 1st and 8th. A course of five lectures on the influence of environment on bacteria will be given by Dr. F. W. Twort, superintendent of the Brown Institution, at 4 p.m., in the theatre of the Royal College of Surgeons, on December 6th, 7th, 9th, 13th, and 14th. As previously announced, the Semon Lecture on nervous affections of the oesophagus will be delivered by Dr. A. Brown Kelly, at the Royal Society of Medicine, on December 2nd, at 5 p.m. Admission is free to all these lectures, and tickets are not required.

### UNIVERSITY OF GLASGOW.

At the graduation ceremony held on November 13th the following were among the degrees conferred:

M.D.—Dorothy B. Thomson (with high commendation).  
M.B.—Ch.B.—Henry D. Matheson.

# NATIONAL UNIVERSITY OF IRELAND.

At a meeting of the University held on Saturday, November 6th, for the purpose of conferring degrees and other academic distinctions at University College, Dublin, Dr. Denis J. Coffey, M.A., M.B., LL.D., President of University College, Dublin, and Vice-Chancellor of the University, presided, and conferred the following degrees in the Faculty of Medicine:

M.D.—W. J. Coyne.  
M.Ch.—F. J. Morris, M. J. Smyth.  
M.A.O.—C. Martin.

M.B., B.Ch., B.A.O.—M. L. Kennedy, E. Keenan, A. T. McKay, W. H. Ashmore, P. J. Byrne, Louisa M. Cullen, J. V. H. Cusson, G. Davis, J. T. Eustace, M. A. Forrester, F. G. Friel, J. Glynn, P. Hennessy, E. Kilmartin, J. G. McGilligan, J. J. Maher, J. O. Manning, D. Moriarty, J. Mowbray, Jane A. M. Nagle, L. O'Connor, L. M. O'Hara, Margaret M. Partridge, Sarah Walsh.

D.P.H.—C. M. Stuart, I. D. Brady, C. F. Keane, M. F. Dodd, M. O'Sullivan.

DIPLOMA IN MENTAL DISEASES.—J. Dunno.

# ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An ordinary Council meeting was held on November 11th, when the President, Sir Berkeley Moyrhan, Bt., was in the chair.

## Deaths.

The death, on November 4th, of Mr. James Ernest Lane, past-member of the Council and of the Court of Examiners, was reported, and a vote of condolence was passed.

The death was also reported of Mr. Douglas Cahell, member of the Board of Examiners in Dental Surgery. The vacancy thus occasioned will be filled up at the next meeting of the Council on December 9th.

## Diplomas of Membership.

Diplomas of Membership were granted to 179 candidates. (The names were published in the report of the committee of the Royal College of Physicians of London (BRITISH MEDICAL JOURNAL, November 6th, p. 851).

## Revision of By-laws.

Alterations in Sections 4, 8, 20, 25, and 26 of the By-laws were approved, and the solicitor of the College was instructed to submit the new By-laws to the proper authorities for sanction and ratification.

## Court of Examiners.

It was decided to appoint two additional members of the Court of Examiners at the next meeting of the Council on December 9th, and the vacancy occasioned by the resignation of Mr. Pendlebury will be filled up at the same time.

## Portrait of Sir Henry Morris.

A portrait, by W. W. Oulless, R.A., of the late Sir Henry Morris, Bt., past-President of the College, offered to the College, in accordance with his testamentary instructions, was accepted with appreciation.

# Medical News.

PRINCESS MARIE LOUISE opened a new artificial sunlight clinic at the Midway Memorial Hospital, Newington Green, on November 13th. The clinic is equipped with carbon arc and mercury vapour lamps for general and local irradiation, and is associated with the maternity and child welfare organizations in the district; patients are received on the recommendation of medical practitioners.

THE long association of the late Dr. Frederick B. Hulke with the Victoria Hospital, Deal, which he served as senior surgeon from 1897 to 1925, was commemorated on November 6th by the unveiling of his portrait, presented to the hospital by the House Committee, and the naming of a ward of the institution after him. On the same day a flagstaff erected in the grounds of the hospital by the Deal and Walmer Volunteers Old Comrades' Association was dedicated to his memory.

DR. LÉOPOLD MAYER of Brussels has been elected general secretary of the International Society of Surgery.

THE Prince of Wales's Hospital Reunion Association will hold its annual dinner at the Troadero Restaurant on Friday, November 26th, at 8 for 8.15 p.m., with Mr. J. B. Banister in the chair. The price of the dinner will be 12s. 6d. (exclusive of wine) for members and their guests. The secretaries are Dr. Browning Alexander, 143, Harley Street, W.1, and Dr. S. O. Rashbrook, 7, Wellesley Road, Chiswick, W.4.

THE annual dinner of the London School of Medicine for Women will be held at the Savoy Hotel on Thursday, December 2nd.

THE annual dinner of the Royal Society of Tropical Medicine will be held at the Hotel Victoria, Northumberland Avenue, W.C.2, on Monday, November 22nd. The Earl of Balfour will be the principal guest, and the president of the society, Dr. Andrew Balfour, will take the chair at 8 p.m.

THE annual reunion dinner of the British Serbian Branch of the British Legion will be held on Saturday, December 4th, at 7.30 p.m., at the Victoria Mansions Restaurant, 24, Victoria Street, Westminster, with the president, Sir James Berry, F.R.C.S., in the chair. All who served in Serbia are invited, together with their friends. Tickets (price 7s. 6d.) may be obtained from the honorary secretary, Miss Marx, 24, Melcombe Court, Dorset Square, N.W.1.

THE annual congress of the Ophthalmological Society of the United Kingdom will be held at Liverpool on April 28th, 29th, and 30th next. Further particulars can be obtained from Mr. Charles Goulden, F.R.C.S., 79, Portland Place, W.1.

FROM May 16th to June 12th 894 fatal cases of plague occurred in Java.

THE Government of India has decided to make a donation of £250 to the funds of the Ross Institute and Hospital for Tropical Diseases, Putney Heath, S.W.

THE Fellowship of Medicine announces that on November 25th, at 5 p.m., Mr. Harold Chapple will lecture on the emergencies of pregnancy and parturition, at the house of the Medical Society of London, 11, Chandos Street, Cavendish Square. On November 23rd, at 11 a.m., Mr. B. Leggett will give a lecture demonstration at St. Mark's Hospital on radiological investigation of the colon and rectum. These lectures are free to members of the medical profession. A week's course will also be given at St. Mark's Hospital from November 22nd, including operations, demonstrations, and lectures. A late afternoon course (5 p.m.) from November 22nd to December 18th will be held at the West End Hospital for Nervous Diseases, 73, Welbeck Street, consisting of lectures and clinical demonstrations upon selected cases, and the London Temperance Hospital will hold a 4.30 to 6 p.m. course in medicine, surgery, and the specialties from November 29th to December 11th. Courses in obstetrics are available at Queen Charlotte's Hospital and the City of London Maternity Hospital. The Fellowship of Medicine has arranged with the Samaritan Hospital for Women for the provision of clinical assistantships, personal application for which should be made to the Fellowship. Practical courses in anaesthetics can also be provided. Copies of all syllabuses and of the general course programme may be obtained from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

AT the meeting of the Post-Graduate Hostel, Imperial Hotel, Russell Square, W.C.1, on Monday, November 22nd, at 9 p.m., Mr. H. J. Patterson, F.R.C.S., will speak on gastro-enterostomy: its role and ultimate results. On Thursday, November 25th, at the same hour and place, there will be a symposium on cerebral localization in the clinical subject, when Dr. Gordon Holmes, C.M.G., will take the chair, and the following will participate: Dr. W. J. Adie, Mr. Donald Armour, Mr. A. P. Bertwistle, Dr. Carmichael, Dr. Macdonald Critchley, Mr. L. Bathe Rawling, and Dr. F. M. R. Walshe. Dinner will be served at 8 p.m. (price 5s.), and coffee and biscuits at 10 p.m. (price 6d.). All medical practitioners are welcome.

A FILM for instructional purposes, showing the drill employed in applying the Thomas splint, has recently been prepared by the British Red Cross Society. A demonstration of the film will be given at the house of the Royal Society of Medicine, 1, Wimpole Street, W.1, at 5 p.m., on Monday, December 13th. Medical practitioners are invited to attend.

THE Australian Journal of Experimental Biology and Medical Science has been endowed with £5,000 by Sir Joseph Verco in order that it may become the property of the University of Adelaide, with whose medical school the donor has been prominently associated since its inception. Sir Joseph Verco, who received his medical education at St. Bartholomew's Hospital and graduated M.B.Lond. in 1875, proceeding M.D. in the following year, has held the posts of lecturer in medicine at Adelaide University for twenty-seven years, and has been president of the Royal Society of South Australia for nineteen years; he is also dean of the medical school, and an honorary curator of the section of mollusca of the South Australian Museum. He was president of the South Australian Branch of the British Medical Association in 1886-87.

AS town planning is a matter of importance, not only to local authorities and their officials, but also to private interests, the part of the Annual Report of the Ministry of Health for 1925-26 which deals with this subject has been published separately. In addition to other matters it gives information as to the attitude of the Ministry on a number of points in connexion with town planning and with appeals relating to proposed developments. Copies, price 6d., may be purchased from the Stationery Office at the following addresses: Adastral House, Kingsway, London, W.C.2; York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; or 120, George Street, Edinburgh; or through any bookseller.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

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### QUERIES AND ANSWERS.

#### FLIES IN BUTCHERS' SHOPS.

WE have received an inquiry from the London Retail Meat Traders' Association as to the best method of getting rid of flies from butchers' shops.

If the flies have been allowed to breed, screening is the best palliative, but the real remedy is prevention, by getting rid of their breeding places—offal and manure. An expert, to whom we have referred the matter, informs us that during the war in South Africa, where flies were a veritable plague (sharing, according to Kitchener, the first place with women), he found that sprinkling chloride of lime got rid of them from camps and messes. A good method for butchers' shops is as follows: After cleaning down the walls, etc., in the ordinary way, they should be treated with a solution of chloride of lime, and then sprayed lightly with paraffin. Of the last very little is needed, and if too much is used there is a risk of imparting smell and taste to the meat. Its action appears to be due to its preventing any flies that may enter from getting a foothold, but the chloride of lime will keep most away.

#### MAJORCA.

"D. F. H." asks for information about Majorca as a health resort, as to hotels, medical aid available, and the best route from England.

\* According to a statement in *Climatotherapy and Balneotherapy* by Sir Hermann and F. Parkes Weber (1907) Palma, the capital of Majorca, is built on a bay facing south, and is protected by the north-western mountain chain from the cold winds to which the Balearic Islands are exposed. It has a warm, moist, equable winter climate, with a mean winter temperature of about 52.5°. The accommodation at that date was limited, but the authors thought that at some future time the place might be visited by English invalids. It seems now to be believed that this time has come. The Spanish Travel Bureau, Ltd. (87, Regent Street, London, W.), inform us that a pamphlet on Majorca is in preparation and will shortly be ready. The best route is by Barcelona, which can be reached from London by way of Paris.

#### INCOME TAX.

##### Partnership—Succession.

"W. L. G." bought a one-third share in a practice as from October 1st, 1925, and has been assessed on the basis of his predecessor's earnings.

\* This is in accordance with the statute, Rule II applicable to Cases I and II, Schedule D, but if the new firm can show at the end of their first year (or part of a year) that the profits of the practice have fallen short from some specific cause—for example, because the practice is now worked from two houses instead of one—since or by reason of the change, then they can claim an adjustment of the assessment. It is, however, important to remember that the "profits" include the value of outstanding book debts earned by the new firm and not paid over; cash receipts are not a reliable basis of calculation where, as in this case, the old book debts are not being brought into the accounts.

#### Production of Bank-books.

"B. W." has been requested by the inspector of taxes to produce his bank pass-books for the six years ending June 30th, 1920; some of the books have been destroyed.

\* The inspector of taxes has no legal right to demand production of the bank-books, but the request is unusual, and the inspector may have, or may think he has, some special grounds for making it. In the circumstances "B. W." might usefully call on him and discuss the matter personally, inquiring what is the special reason for making so unusual a request, and write up more fully if he is unable to arrange a satisfactory settlement.

#### CHILBLAINS.

Dr. H. F. GIBSON (London) writes: As one who started this trouble when in the R.A.M.C. during the war, and has had it every winter since, I should like to suggest local treatment by ultra-violet rays. In my case it acts like magic, and is the only treatment I have found to any good. Possibly general light baths, with or without diathermy to the hands and feet, might prevent a recurrence.

SIR ROBERT ARMSTRONG-JONES also writes to recommend ultra-violet rays. "Cases of marked bullous erythema due to chilblains have been relieved by one application of the ultra-violet light, and this treatment deserves to be recognized and acknowledged."

Dr. A. E. R. RUTHERFORD (Westbury-on-Trym) writes: "C. P. J." can hardly hope, I think, for much success in his treatment of chilblains, with calcium salts especially, unless he warns his patient to avoid fruits and drinks containing citric acid—oranges, lemons, lemons, etc. Citric acid would, I believe, prevent the beneficial result which might otherwise be expected from the use of calcium salts, and perhaps from other forms of treatment as well.

### LETTERS, NOTES, ETC.

Dr. CHARLES PORTER (University of Witwatersrand, Johannesburg) asks us to say that he has recently been erroneously described in *The World's Health Book* (a Red Cross journal) as Lieutenant-Colonel, R.A.M.C. The initial letters should have been S.A.M.C.

#### MATÉ OR PARAGUAY TEA.

Dr. J. GWILLIM DAVIES (Histon) has sent us some dried leaves which he learnt were being sold under the trade name "Herven," and described as "the wonderful South American plant with marvellous tonic-restorative powers." The patient who first drew his attention to this preparation, and had been taking it (though not with his permission), told Dr. Gwillim Davies that the effect of the infusion was to "make her work and work; until she dropped with exhaustion." It occurred to him that the leaves might be those of the coca plant, or possibly maté. From personal experience he found that the leaves certainly had some stimulating property when drunk in infusion. The specimen forwarded to us has been examined on our behalf, and the analytical chemist's report is that it consists of the leaves of *Ilex paraguayensis*, the Brazilian or Paraguay holly, and contains no cocaine. The plant is used as tea in South America under the name of maté or Paraguay tea. Like tea it contains caffeine, tannic acid, and a volatile oil. Bentley states in his *Manual of Botany* that "its properties are similar to those of tea, but it is more exciting, and when taken to excess produces a kind of intoxication." It contains, according to Martindale's *Extra Pharmacopoeia*, 2.02 per cent. of caffeine, which is rather more than in coffee and rather less than in tea.

#### ENTERIC FEVER AND SEWAGE.

"M.O.H." writes: If enteric fever is caused by a specific bacillus, how does sewage matter, finding its way into drinking water or milk, cause the fever? I know of an outbreak in this locality some months ago: it was supposed to be due to drinking water which was polluted by sewage matter. The four families using the water from this well (being a country place) contracted the fever. None of the parties had been away; no case of enteric fever had been in the locality for years; no carrier could be traced. No doubt in a heap of decaying animal or vegetable matter we have numerous organisms (putrefactive), but can they be the cause of typhoid fever? Offensive smells may cause sick stomach headaches, etc., but they cannot cause a specific disease. In these cases I think we can account for the disease by what biologists call "variation" in organisms; for instance, the *Bacillus coli*, growing in a heap of decaying matter, may, in circumstances very favorable to its growth, undergo variation and become pathogenic, and even produce enteric. No biologist can, by observing the behaviour of germs in a test tube, give any guarantee as to variations which may take place in nature. As Professor Judd says: "The observer can never see all the glaucous in the test tube. This is a somewhat puzzling problem, and I would like to have the opinion of some of your readers on it."

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 43, 44, 45, 46, 47, 50, and 51 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 48 and 49.

A short summary of vacant posts notified in the advertisement column appears in the *Supplement* at page 223.

# British Medical Association.

## PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

### SECTION OF MEDICINE.

F. H. JACOB, M.D., F.R.C.P., President.

#### DISCUSSION ON BLOOD TRANSFUSION IN THE TREATMENT OF DISEASE.

##### OPENING PAPERS.

I.—**SIR HUMPHRY ROLLESTON, Bant., K.C.B., M.D., F.R.C.P.,**

Regius Professor of Physic, Cambridge.

**FROM:** considering the position of blood transfusion as employed at the present day it may be well, by way of introduction, to give a brief account of the history of the subject; for though it is only in recent years that transfusion has been employed to any extent, the idea is centuries old, an attempt having been made as far back as the middle of the seventeenth century. From that date down to the early years of the present century experiments were made at fairly wide intervals of time, as recorded in the following note.

##### Historical Note.

In his admirable monograph Geoffrey Keynes<sup>1</sup> has gone fully into all the aspects of transfusion, including the history, as would naturally be expected from such an eminent bibliophile. In his charming account of early science in Oxford R. T. Gunther quotes a letter of John Aubrey, the antiquary, to the effect that the idea of curing "diseases" by transfusion of blood out of one man into another "arose in the mind of Francis Potter, B.D., Fellow of Trinity College, Oxford, about 1639, from reflection on Ovid's story of Medea and Jason, and that about 1650 these two friends tried the operation unsuccessfully on a hen. Aubrey read a letter from Potter on the subject to the Royal Society, and had it entered in their books, "for Dr. Lower would have arrogated the invention to himself." The share of Sir Christopher Wren in bringing up the subject and Richard Lower's experiments at Oxford in 1665 (published in 1666) are historical. As to the priority of the first transfusion on the human subject, Keynes unhesitatingly gives the credit to Jean Denis of Montpellier, physician to Louis XIV, but Lower and Edmund King were close upon him in November, 1667, in transfusing Arthur Coga, an indigent Bachelor of Divinity of Cambridge, with the blood of a sheep. After enthusiastic imitations, catastrophes led to the abeyance of transfusion. "As in private duty bound" I should refer to the much later experiments of Sir Busick Harwood, which are briefly mentioned in a footnote (? by himself) in Hutton, Shaw, and Pearson's abridgement of the Philosophical Transactions of the Royal Society in connexion with Oldenburg's paper on blood transfusion in the *Philosophical Transactions* for 1667 (p. 517). This footnote gives an account of Harwood's experiments in 1785: a dog was transfused from the carotid of a sheep, and fever resulted after twenty-four hours, though the dog survived. Harwood ascribed this fever to "the preternatural degree of stimulus occasioned by the highly oxygenated arterial blood into the right side of the heart"; he accordingly repeated the transfusion from the jugular vein of the sheep, with the expected result that the animal did not suffer the least inconvenience. Harwood satisfied himself that the blood of a herbivorous animal can be substituted for that of a carnivorous animal, and urged it for man, though apparently he did not practise his advice; but it may be noted that Cruchet and Ragot have recently transfused eighteen patients with sheep's or horse's blood, with improvement in fifteen cases. Apart from small resuscitations of the method, chiefly by Blundell and obstetricians from 1818 to 1824, and between 1860 and 1880 in Germany, and by the Obstetrical Society in London (1873), terminating with von Bergmann's monograph in 1883, blood transfusion was practically abandoned; thus in 1889, in his conclusion to three lectures on the physiology, pathology, and practice of blood transfusion, William Hunter wrote: "For practical purposes all the advantages to be gained from transfusion may be equally well and more readily obtained by infusion of a neutral saline solution of common salt." Blood transfusion did not become popular until after the description of the four blood groups (Jansky 1907; Moss 1910), which rendered grave accidents preventable. During the war a great impetus was given to its employment, and it is now a very common method, especially in America.

In considering the value of blood transfusion in the treatment of disease, there are, in the first place, some general points to be mentioned before going into the indications for its use and attempting to estimate its

utility in various conditions. Like most remedies powerful for good, its employment may be attended by unpleasant or serious results, and this knowledge, combined with the difficulties of its technique in untrained hands, has necessarily tended to prevent its performance in acute cases, and to delay its adoption in chronic cases until the patient is past curative measures or even in *extremis*.

##### The Duration of Survival of the Transfused Blood in the Recipient's Circulation.

By the differential agglutination method Ashby determined that the transfused red cells persisted in the recipient's blood for thirty days or more, and that the period of survival is subject to much variation, the process of removal not being constant, but taking place in more or less cyclical crises; previous to this their life had been considered to be from ten to twenty-six days (W. Hunter, 1884). It might be anticipated that the duration would vary with the morbid condition of the recipient, and be shortened in haemolytic and toxic states, and longer in traumatic anaemia. But Ashby found that in four cases of pernicious anaemia the transfused cells survived as long as or longer than in persons without any blood disease. In contrast to this stability in pernicious anaemia was their rapid disappearance in myeloid leukaemia, aplastic anaemia, and haemolytic jaundice; Wearn, Warren, and Ames found that there was not any difference, as regards the survival of the erythrocytes, between pernicious and secondary anaemia, and that the average was 83 days, with 59 and 113 days as extremes. Jervell, also employing the differential agglutination method, found that in melaena neonatorum the duration was six weeks.

##### REACTIONS.

The incidence of post-transfusion reactions has been variously estimated, and probably the considerable divergences recorded depend on different views of what constitutes a reaction. Among 129 citrate transfusions Lewisohn observed a chill or fever up to 101° F. in 19 cases, or 15 per cent.; Souter and Duryea among 180 transfusions recorded subjective symptoms with or without fever in 49 cases, or 25.7 per cent.; Lindoman in 1914 met with an incidence of 33 per cent. out of 150, and in 1916, under improved conditions of technique, of 9 per cent. among 153 transfusions; Meloney, Stearnes, Fortune, and Ferry among 280 transfusions noted fever, over 100° F., in 178, or 63.6 per cent.; Kordenat and Smithies record only 4 per cent. of reactions in their 106 cases, but state that, if carefully observed, all transfusions are followed by a febrile rise of degree varying from 100° to 105° F. within three hours of the procedure. Their conception of a reaction would obviously greatly reduce the reported incidence of post-transfusional reactions.

**Etiology.**—Very severe reactions due to gross incompatibility, to air embolism, and pulmonary oedema, should be obviated by care in typing the blood of the donors and patients, and in technique; but reactions still occur, and it seems impossible to foretell when a reaction will or will not ensue. Presuming that the typing has been correctly done, it is conceivable that the blood groups are not so sharply marked off as they appear to be *in vitro*, and that transitions ("minor" agglutinations) or even changes occur, which are sufficient to cause haemic alterations and symptoms—in other words, that the tests *in vitro* are not sufficiently delicate to separate slight degrees of incompatibility *in vivo*. It is perhaps significant in this connexion that reactions are often seen, in spite of preliminary typing, in cases of pernicious anaemia in which, from the changes in the bone marrow, obscure alterations in the constituents of the blood may reasonably be anticipated. Indeed, in severe chronic anaemia it is occasionally difficult to find a suitable donor as the tests are not sharply defined (Thalhimer), and there is some evidence that in addition to the four recognized blood groups abnormal blood groups occur in certain conditions, such as pernicious anaemia, chronic haemolytic jaundice, and malignant disease (Keynes<sup>2</sup>; Kolmer; Jones and Glynn). It is remarkable that the decision as to the compatibility of the donor's and recipient's blood has been determined by the behaviour of the red blood corpuscles, and that the factor of possible changes in the leucocytes

and platelets has been almost entirely neglected. Doan has observed in some instances in which the bloods, as tested by the ordinary typing method, were compatible, that there was well marked destruction of the leucocytes, and that there was a greatly increased amount of cellular debris in the plasma, which distinguished it from the leucopenia of protein shock. In order to avoid reactions due to incompatibility between the blood plasma and the leucocytes, he advises and describes a method of testing for this before transfusion.

Reactions are more often seen after large transfusions than after small ones of 200 c.cm., and after repeated injections than after the first. But a fatal result has occurred after a single transfusion (Carrington and Lee). The addition of anticoagulating agents has been said to increase the incidence of reactions; thus Minot and Leo found reactions more frequent after citrated than whole blood in the proportion of 35 to 15; Unger (1917) febrile reactions in 60 per cent. of citrated transfusions as against 3.5 in 165 ordinary blood transfusions; and Lederer 49.5 per cent. reactions in 49 citrated infusions as against none in 40 transfusions of unaltered blood. Possibly the citrate renders the red cells more fragile (Unger, 1921), and so favours haemolysis. Keynes,<sup>44</sup> however, while admitting the possible influence of citrated transfusions in causing reactions, regards their occurrence as of little importance and as greatly outweighed by the advantages of the method.

*Influence of Repeated Transfusions.*—Many clinical observers (Keynes<sup>45</sup>; Bowcock; P. W. and M. C. Clough; Soutor and Duryea) have noted that after repeated transfusions, from donors originally compatible, the patients are likely to show reactions, and it has been suggested that anaphylactic shock from sensitization of the patient had occurred, and that therefore it may be advisable to change the donor. In 1917 Libman and Ottenberg insisted that after repeated transfusions from the same donor agglutinins and haemolysins for the donor's red cells develop and that it is therefore essential to repeat the preliminary blood tests before each transfusion. Peyton Rous and Oswald Robertson have proved that in experimental rabbits repeated transfusions from donors originally compatible lead to the formation in the recipient of antibodies (iso-haemoagglutinins and haemolysins) which cause massive agglutination of the red cells and even fulminant haemolysis *in vivo* with resulting anaemia.

*Forms of Reactions.*—Kordenat and Smithies have described three kinds of reaction after transfusion: (1) Acute and fulminant response due to agglutination and haemolysis, coming on immediately. These should be prevented by careful preliminary typing of the donor's and recipient's bloods. (2) Delayed or proteolytic response coming on from one to twelve hours after transfusion, and ascribed to bacteriolysis or to protein cleavage of damaged tissues at an infective focus, and not to haemolysis. This reaction is regarded rather in the light of a conservative process, inasmuch as the recipients are often benefited by it—just, indeed, as they are after protein shock therapy; death, however, is not unknown. (3) Systemic or constitutional reactions which, like the last group, are not haemolytic as there is not any evidence of blood destruction. The explanation of these frequent febrile reactions is obscure; Kordenat and Smithies again mention bacteriolysis and proteolysis, and also suggest that the reactions are analogous to protein shock and not necessarily specific. Lindeman (1916), however, argues that they are due to haemolysis occurring in the body, but not shown by the preliminary tests or, unless considerable, by haemoglobinuria or porphyrinuria; he compares it with the fever and rigor in malaria after haemolysis, and quotes some experiments showing that fever is produced by the injection of haemoglobin. There is, however, little clinical evidence that haemolysis alone does much harm; for example, in congenital haemolytic jaundice in which, though icterus is more obvious than in the minor reactions after blood transfusion, there is little in the way of acute symptoms; Karsner, while pointing out the lack of proof that haemolysis alone is responsible for these reactions, admits the possibility that accompanying the haemolytic process toxins capable of causing serious results may be

formed. Melency, Stearnes, Fortunino, and Ferry, by examination of the urine for urobilin and haemoglobin, failed to find any constant evidence of such haemolysis, and therefore could not accept this explanation for all the cases. Sodium citrate in citrated blood has been thought, either by causing haemolysis or independently, to be responsible for reactions. Other conceivable causes are similar occult agglutination of the transfused erythrocytes—although the preliminary tests did not show it—damage to the red cells or changes in the plasma protein during the process of transfusion, the formation of toxic split-protein, agglutination of the leucocytes, and changes in the platelets associated with incipient coagulation (P. W. and M. C. Clough). It is, of course, possible that these minor post-transfusion reactions may be due to different factors in different cases.

#### THE WAYS IN WHICH BLOOD TRANSFUSION MAY BE THOUGHT TO DO GOOD.

In emergencies it may merely make good the deficiency of the blood after acute haemorrhage, such as post-partum or traumatic, and some of the best results in the way of saving life have been obtained in such cases of haemorrhagic shock. The fear that by increasing the arterial pressure it may induce bleeding from the original source of haemorrhage (I. Bennett) is perhaps more than counterbalanced by the increased coagulability of the blood. In four observations Eyster and Middleton found that the rise in arterial pressure was slight and transient, the maximum being 20 mm. Hg in both the systolic and diastolic pressures.

In recurrent or chronic haemorrhage it may act as a styptic by supplying fibrinogen and thereby increasing the coagulability of the blood. But here its effect is palliative rather than curative, as the underlying cause is not removed.

In chronic anaemia, by supplying the deficiency of red-blood corpuscles. Here the problem is not so simple as in acute haemorrhage, for the etiological factors, such as infection, malignant disease, and disorder of the blood-forming organs, persist and must be taken into account. It may, however, enable a very anaemic patient, who otherwise could not, to stand an operation for the removal of the underlying cause of the anaemia, such as bleeding uterine fibromyomas (Williamson); in such cases transfusion may be done both before and during the operation.

To supply substances in which the blood is deficient, such as antibodies in acute infections and functionally active haemoglobin as in CO poisoning in which it is fixed by the CO.

To act on the bone marrow. In disordered conditions, such as leukaemia, it might, by supplying it with healthy blood, correct the disturbed functional activity, for it is obvious that the bone marrow must be efficiently nourished if it is to discharge its function in a normal manner. In chronic anaemia, especially pernicious or Addisonian anaemia, transfusion is often said to act by stimulating the bone marrow, because the improvement may be out of proportion to the amount of blood transfused; Hurst, indeed, suggests that healthy blood contains a hormone which specifically stimulates the bone marrow, and also that it may contain antibodies. On the other hand, loss of blood is in itself a stimulant, haemoglobin has not been proved to stimulate the bone marrow, and stimulation pure and simple might be thought to be harmful by tending to exhaust an already overworked bone marrow, as in ordinary pernicious anaemia. Theoretically it might also appear likely to be more useful in some of the cases grouped under the heading of aplastic anaemia, in which the bone marrow is paralysed by some "brutal" infection, or toxic factor, such as benzol, than in ordinary pernicious anaemia, in which the bone marrow is already hyperplastic; but in benzol poisoning the results of transfusion have been very disappointing according to McClure, who, however, reports one cure. It has been suggested that the transfused cells give the bone marrow a rest, after which it is able to respond to the stimulus, which previously it could not do (Opitz; Isaacs), and also that transfusion provides sufficient oxyhaemoglobin to enable the hyperplastic bone marrow, which had been comparatively



inactive on account of its poor blood supply, to manufacture the necessary quantum of red cells (Ryffel).

To remedy toxæmia. In acute hæmorrhage it has been stated that death is due to toxæmia from imperfect destruction of toxic products rather than to the diminution in the quantity of blood (Bätznor), and there is evidence that hæmorrhage is followed by increased nitrogenous metabolism, and blood transfusion by a return towards the normal; fresh blood might also facilitate destruction of these toxic bodies. Dilution of the blood in grave toxæmia by transfusion would have the theoretical advantage that the dilution would not be so rapidly diminished by the passage of blood plasma into the tissues as occurs in saline transfusion, in such cases a preliminary venesection is theoretically advisable.

In bacterial septicæmia. Healthy whole blood has bactericidal properties in virtue of the leucocytes acting in conjunction with the opsonic power of the serum, the serum having little direct effect (Wright, Colebrook, and Storer).

#### THE INDICATIONS FOR BLOOD TRANSFUSION.

These have been based on the general grounds of the degree of anaemia present, such as a fall to one million red blood corpuscles and 20 per cent. of hæmoglobin, and on evidence of hæmorrhage to 2,000 c.cm. with a systolic pressure falling below 80 mm. Hg, or according to the morbid conditions and diseases, lists of which regarded as suitable for transfusion have been drawn up by various workers. Dorrance gives twelve separate groups of diseases, Libman and Ottenberg (1917) seven categories; Keynes's<sup>42</sup> four inclusive groups are (1) acute hæmorrhage and anaemia; (2) chronic anaemia, to tide a patient over an operation or to benefit the condition, prolong life, and in the hope of cure, as in Addisonian anaemia; (3) in hæmorrhagic diseases; and (4) in general toxæmia, bacterial or chemical. That absolute contraindications exist has not been satisfactorily established. In a patient apparently moribund from acute hæmorrhagic anaemia transfusion may perform a miraculous transformation; in chronic anaemic states in which the underlying condition persists the circumstances are different, and in pernicious anaemia a stage may be reached when harm rather than benefit is likely to follow transfusion. Libman and Ottenberg (1917) very cautiously suggest that pneumonia or pulmonary congestion may be a contraindication, and mention an almost fatal febrile reaction (107° F.) in a child with pneumonia transfused for anaemia; but according to Bass this does not apply to pneumonia in anaemic infants. From the toxic effects of citrates on the kidneys the use of citrated blood in nephritis demands caution.

Acute anaemia due to hæmorrhage is most successfully treated by blood transfusion and is a life-saving procedure, as was proved in the war, for traumatic hæmorrhage; its value in post-partum hæmorrhage and ruptured ectopic gestation is also acknowledged. In ruptured ectopic gestation the blood free in the peritoneal cavity has been utilized for transfusion, and in this way time spent in obtaining and testing a donor is saved; Blain and Brines, however, deprecate such retransfusion from abdominal hæmorrhage. It restores the blood volume and provides the oxygen-carrying hæmoglobin. A distinction between shock, in which gum solution has been advocated (Menkins) on the ground that both the blood volume and the hæmoglobin are probably increased, and hæmorrhage may be difficult to determine, and Keynes<sup>42</sup> advises blood transfusion in both.

In gastro-intestinal hæmorrhage Izod Bennett disapproves of blood transfusion as it may excite fresh bleeding from an ulcer which had ceased to bleed as a result of the lowered blood pressure, and he approves of it only during laparotomy. Keynes, however, takes the opposite view. In addition it has been suggested that it may accelerate healing of a peptic ulcer by Horder (1923), who has also seen improvement in ulcerative colitis; in 1908 Hort advocated the treatment of ulcers by horse serum, which he believed favoured healing by its antianolytic action. Usually large transfusions (1,000 c.cm.) have been given, but W. J. Mayo has advocated the superiority of small repeated transfusions over a single one. Citrated transfusions are largely employed, and as the object is to

provide fresh red blood corpuscles and increase the blood volume, the question of the citrate impairing the bactericidal power of the blood does not arise.

In chronic anaemia due to repeated hæmorrhages and in debility blood transfusion, in order to render feasible an operation for removal or remedy of the cause, has been employed with gratifying results, especially in gynaecological cases (Souter and Duryea; Williamson), and also in gastro-intestinal hæmorrhage. In these cases it may be necessary to repeat transfusion during and after the operation. When the condition is not urgent Libman and Ottenberg recommend an interval of two days between the preliminary transfusion and operation.

As a prophylactic against post-operative shock transfusion has been much employed; Blain and Brines adopt this course in nearly all their goitre cases, and in infants with pyloric stenosis it has reduced the mortality (Cross).

In hæmorrhagic diseases and conditions with the loss of blood so continuous or repeated as to become serious, transfusion is useful by supplying the missing thrombogenic factors, such as the blood platelets in purpura hæmorrhagica. Paradoxical as it may appear, the addition of sodium citrate as an anticoagulant does not interfere with the hæmostatic effect of the blood transfusion.

Purpura hæmorrhagica is characterized by bleeding from mucous surfaces, a diminution in the number of blood platelets from the normal 250,000 to 40,000, 5,000, or even less, in the shed blood (thrombocytopenic purpura), a prolonged bleeding time often exceeding two hours (Dukes), but often no abnormality in the coagulation time. Though thrombocytopenia is usually regarded as confined to purpura hæmorrhagica and to be one of its essential features, this has been vigorously denied by Tidy. Blood transfusion, which had sometimes to be repeated, as the life of the platelets is said to be four days only, was formerly the chief form of treatment, but recently splenectomy has come into vogue, and has been found to give more uniformly successful results (Vincent<sup>43</sup>); Poynton, Thursfield, and Paterson regard transfusion as dangerous, but Tidy recommends transfusion before splenectomy.

In hæmorrhagic disease of the newborn, *melaena neonatorum*, the performance of blood transfusion presents technical difficulties, unless the superior longitudinal sinus, the external jugular, or the umbilical vein (Sidbury) be utilized. Citrated blood exerts a styptic effect, and according to Torii is the simplest and safest method; whole blood has been given hypodermically. In most cases a single transfusion is sufficient. Very encouraging reports of its efficacy have been made by Vincent<sup>44</sup>, who had four deaths only among thirty-one cases, and by others (Laurie; B. Robertson; F. W. Robertson; Eyres), and it not only arrests bleeding but augments the depleted circulating blood.

*Hæmophilia*.—Although the blood platelets are never diminished in this disease, the hæmostatic effect of the blood transfusion is ascribed to the supply of blood platelets, and as their life is about four days this influence is short. Minot and Lee's experience is that, in order to supply a sufficient number of platelets, fairly large transfusions are desirable; Keynes<sup>42</sup> on the other hand, states that 100 c.cm. is sufficient for the hæmostatic effect. It is useful both as a prophylactic to prevent bleeding during a necessary operation and to arrest hæmorrhage from slight injury; as its effect is transient further transfusions may be required, especially during the healing of a wound. In the severe anaemia due to loss of blood transfusion also does good service.

*Jaundice*.—From the prolonged coagulation time and tendency to bleed which, from the general oozing, becomes such a serious factor in operations on deeply jaundiced patients, blood transfusion appears to be the most effective prophylactic, but is not constantly successful and its effect is transitory. In some cases of deep jaundice the coagulation time is not abnormal and bleeding does not occur; as the coagulation time can sometimes be made normal by the administration of calcium, estimation of the coagulation time will determine whether or not blood transfusion is necessary. Recovery in grave familial jaundice of the newly born has followed venesection and transfusion (Hart). Its employment in chronic hæmolytic jaundice is open to

discussion, as it is hardly likely to effect more than temporary benefit; but it may be of value in connexion with splenectomy.

**Pernicious Anaemia.**—The value of blood transfusion in Addisonian or pernicious anaemia has been very variously estimated, and the irregular course of the disease and the tendency to spontaneous remissions make judgement difficult. Some regard it as undoubtedly of great value (Keynes<sup>42</sup>; Anders; Stetson; Hurst), others as merely a means of obtaining temporary improvement (Panton), and others as so inefficient and dangerous that they have abandoned it (Landis). It has been definitely stated to bring on a remission, though the remissions are not thereby prolonged. In Anders's collection of 362 cases a remission was initiated in 204, or 56.3 per cent. Libman and Ottenberg regard it as the best remedy for, but never curing, the disease, and Bloomfield, from an analysis of 57 cases, agrees that in patients who are not in a condition refractory to all forms of treatment transfusion is more often followed by a remission, but that the remission is not thereby lengthened or life prolonged. Recent acute cases seldom respond to transfusion; cases without remissions are rarely benefited, and patients over 60 years of age often fail to show improvement (Archibald). Chronic cases with remissions are more likely to benefit. Transfusion should be employed in early and not left to late stages, when not only may it fail to bring about a remission, but it may be followed by a serious reaction and even death. Small (200 to 500 c.cm.) rather than large transfusions seem to be more suitable, and are often repeated frequently; in 1924 Hurst reported very promising results from 20 to 25 c.cm. injected on every other day. It has been suggested that if benefit does not result from a transfusion another donor should be utilized; the change of donor has also been recommended in order to avoid anaphylactoid shock. As already mentioned, reactions are rather frequently noticed in pernicious anaemia; after repeated transfusions from the same donor, especially when there is an interval of three to six weeks between the first and a second transfusion, the reaction has naturally been regarded as anaphylactic (Böttner). Transfusions which are followed by improvement have been found to produce a fall in the amount of bilirubin in the plasma, either immediately, or gradually during two or more weeks (Broun, Ames, Warron, and Peabody).

Reed and Wyckoff, who, like Hurst, regard subacute combined degeneration of the cord as closely allied, add spruo to this group and recommend transfusions.

In their category of *anaemia gravis* of children Poynton, Thursfield, and Paterson include not only cases commonly labelled "aplastic anaemia," but others; as a whole these cases are regarded as occupying in children's diseases the place of, though presenting many differences from, pernicious anaemia in adults. In this condition transfusion is regarded as dangerous.

**Anaemias other than Addisonian.**—Infantile splenic anaemia, or von Jaksch's anaemia pseudo-leukaemia infantum, has a tendency to undergo spontaneous cure, Thursfield putting the recovery rate at 65 to 70 per cent. In this condition transfusion has been said to have a more dramatic and lasting effect than in any disease of children (Bourne). In acute febrile anaemia, described as a new disease by Brill, who refers to two other cases (Macintosh and Cleland; Moschowitz), there is pleiochromic anaemia with hyaline thrombosis of the terminal arteries and capillaries. In Brill's patient, who had one million reds, 5,000 leucocytes (polymorphonuclears 61, lymphocytes 36, eosinophils 2), and blood sterile on culture, recovery followed ten transfusions of 300 to 500 c.cm. of blood.

**Leukaemia** is due to a riotous growth in the leucoblastic tissues, mainly of the bone marrow, and discussion whether or not it should be regarded as allied to sarcoma or infection has lost much of its point in the light of Gyo and Barnard's description of a cancer parasite. Transfusion has been employed with two objects: (1) symptomatically to stop haemorrhages, and (2) in the hope of exerting a curative influence.

(1) To prevent haemorrhages. In three cases of acute leukaemia Libman and Ottenberg (1915) failed to obtain any positive result, but in one chronic case transfusion was followed by cessation of the haemorrhages.

(2) The attempt to correct the morbid process in the leucocyte-producing tissues by providing normal blood, or by stimulating them in the right direction, or by supplying a hypothetical antibody, is justifiable in such a desperate disease, and in a few instances has appeared to exert a beneficial effect. There is very little evidence that acute leukaemia is benefited by blood transfusion; in an interesting case of microlymphoid leukaemia lasting four months twelve blood transfusions probably prolonged the course of an illness which is usually of very short duration (Fineman). In chronic leukaemia, in which the course is not so steadily downhill, there may appear to be more in the way of results from transfusion. Thus out of five cases of chronic lymphoid leukaemia given one transfusion by Libman and Ottenberg (1915) four showed clinical improvement and a remarkable blood change, the picture becoming normal for a week to a year. Dr. Herbert French tells me that repeated transfusions certainly improve the patients, especially when they are started early in the course of the disease.

**Acute Septicemias.**—The general opinion is adverse to blood transfusion in acute haemic infections, as they fail to benefit, and may do harm from the formation of abnormal agglutinins and haemolysins. Eardley Holland has abandoned it in acute puerperal infections. It has been thought that transfusion may increase the patient's general resistance, possibly because the blood may happen to contain specific antibodies, as in a donor who has recently recovered from the same disease, a condition which is imitated in Wright's immuno-transfusion, when a donor is specially immunized against the patient's infection. According to Colebrook and Storer the bactericidal properties of whole blood for streptococci and staphylococci are impaired by the addition of citrates, and therefore citrated blood should not be employed in immuno-transfusion. Walsh and Harmsworth, while confirming Colebrook and Storer's conclusion that defibrinated blood is superior in bactericidal power to citrated blood, find that the bactericidal power of the blood is enormously increased by coagulation, that citrates inhibit the growth of staphylococci in the blood, and that citrated defibrinated blood has a greater bactericidal power than defibrinated blood. With unmodified blood Stetson obtained cures in 31 out of 57 cases, and reported 10 recoveries out of 19 cases of *Streptococcus haemolyticus* infection; he insists on the importance of early and repeated transfusions. Immuno-transfusion proved successful in cases of streptococcal septicemia reported by Fry in 1920. In malignant endocarditis Libman and Ottenberg (1917) obtained brilliant temporary results, but the 7 cases reported by Stetson all proved fatal. Horder (1926), though critical, considers it worth a trial, as improvement sometimes occurs, and appears to think better of it than of immuno-transfusion, which, however, has in exceptional instances been followed by recovery (Wordley). Thayer treated a case of streptococcal endocarditis for six months by repeated immuno-transfusions, but although the result did not appear superior to that of simple transfusion, he considers it worthy of further trial, and no doubt it is still in a stage awaiting final decision.

In chronic infections it has been employed with benefit in various conditions (Nathan; Brown; Hansen).

**Intoxications.**—In carbon monoxide poisoning the introduction of functionally active red cells to carry oxygen while the recipient's haemoglobin is fixed by CO has been long advocated and supported by experimental observations (Burmeister). A preliminary venesection has been recommended, and with this proviso Libman and Ottenberg (1917) spoke highly of it. J. S. Haldane, however, cannot see any scientific reason for the employment of preliminary venesection or for transfusion of blood. In illuminating gas poisoning other toxic factors may be concerned, and it has been thought that this may justify venesection.

In uraemia and diabetic coma blood transfusion has rarely been performed, and in diabetic coma insulin is, of course, the proper treatment. Blair Bell obtained a cure in puerperal eclampsia after one blood transfusion of 500 c.cm. Blood transfusion has been regarded as the best diuretic in oliguria with impending anuria (Martin); in a case of anuria following deapsulation for acute

nephritis recovery followed venesection and transfusion (Bowers and Trattner). Cross found it beneficial in intestinal toxæmia and in that following burns in children.

**Debility.**—In premature and congenitally weak infants who lose weight in spite of proper care, Guéniot obtained good results by transfusion of 10 to 20 c.cm. into the superior longitudinal sinus. Cross confirmed these good results in debilitated infants. In patients who, without any obvious cause, hang fire after operation, Brines found that improvement followed transfusion.

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## II.—G. LOVELL GULLAND, C.M.G., M.D., F.R.C.P.E.,

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I HAVE been practising transfusion or seeing it practised for over thirty years, mainly in pernicious anaemia, but of late years in other conditions with increasing frequency, and have reached definite conclusions as to its value in several of these. I cannot help thinking that the duration of survival of the transfused corpuscles is overstated by the American and Scandinavian authors quoted by Sir Humphry Rolleston. There are many possibilities of fallacy in the differential agglutination method—we inject many other things besides the corpuscles in transfusion—and in transfused cases which do not do well, even though there is no haemolysis, and even in some which ultimately do well, the blood counts after transfusion do not bear out the view that the corpuscles survive so long. The rule is to find an increase of corpuscles, but it is exceptional in the type of case of which I am speaking for the increase to be maintained for more than a few days. The count then drops back to its previous level, or below it if the case is doing badly, and it is, I think, permissible to conclude that the transfused corpuscles have largely disappeared from the circulation. I have followed these cases many times by daily counts, and daily examination of films, in the hope that I might be able to recognize some at least of the transfused corpuscles, or make out some change in the blood picture as the result of the transfusion. The transfused corpuscles are never recognizable; I think because there are, even in the worst pernicious anaemias, a sufficient number of corpuscles of normal appearance to mask the new ones, and the blood picture as a whole only changes if the disease is getting worse or better in the ordinary course.

I am impressed, in looking back on my earlier cases, by the luck which I seem to have had in escaping reactions in the days before blood grouping was known. I can recall only two, neither fatal, out of a large number of cases. I have not always been so fortunate of late, even when the grouping was most carefully done. A few days ago a patient suffering from carcinoma of the stomach, who was very anaemic, was transfused, with a view to operation, from a source which was apparently absolutely compatible. There was a fairly severe reaction with marked haemoglobinuria, and, as far as I could judge from the count, a complete loss of the transfused corpuscles. Not long ago I had a very severe reaction, threatening death, in a pernicious anaemia during transfusion with a blood which I had satisfied myself was compatible. In a sense I was prepared for trouble in this particular case, as I have never seen anyone who was so intolerant of drugs and remedies of every kind. He lived for about a year after the transfusion and gave me a useful lesson on the ups and downs of an untreated case. I have passed through all the various fashions in the methods of transfusion, whole blood and the various anti-coagulants, and, so far as the effect on the patient is concerned, I do not think there is any great difference. The citrate method is certainly the easiest for the donor and the operator. Probably I should have used transfusion even more often than I have were it not for the difficulty of getting suitable donors. I am under a deep debt of gratitude to a patient suffering from a polycythæmia who has many times given her blood for my cases. She is fortunately a universal donor, and her corpuscles have done good to many, abnormal though they may be in themselves, while the repeated bleedings have kept her in much better health

than she was previously. Following her example another patient with polycythaemia, a male and also a universal donor, has begun a useful career in that direction.

Sir Humphry's discussion of the ways in which transfusion may do good is excellent, and I have nothing to add to it from the general point of view. But I should like to consider more fully the case of pernicious anaemia. It is now so common a disease that the consideration of transfusion must come up frequently to every physician. My own experience has convinced me that arsenic given by the mouth is so immensely superior to all the other methods of treatment put together that every case should have a proper trial of that remedy; and, further, that cases that will not do with arsenic by the mouth will seldom respond to arsenic given in any other way or to any other form of treatment. I have seen many cases, apparently desperate, respond brilliantly to arsenic—of course conjoined with rest, proper diet, and nursing, and the treatment of their individual symptoms. I am always inclined, therefore, to try this first, though sometimes the cases are so bad that it is obvious that time is an important factor, and we are driven to a transfusion at once, generally with a justification of the bad prognosis already given. The blood count is always to be considered. A patient with a red count of 1,000,000 cells per c.mm., and a haemoglobin percentage of, say 25, is not in immediate danger from the anaemia. His declension to that level has been gradual, and he is in a very different case from the patient whose count has fallen suddenly to that figure as the result of haemorrhage. In the first case the organs have become accustomed to their anaemia; the patient may be in danger from his heart, his kidneys, his alimentary tract, or from intercurrent disease, but if these do not affect him specially, there is time for treatment with arsenic. Cases with evidence of cardiac failure, with chronic kidney mischief—which is much more common in pernicious anaemia than is usually recognized—with marked fever, whether apparently causeless or due to some complication, and patients with severe hepatic or gastric disturbance, are not good cases for transfusion.

Here I may interpolate a little theory. Pernicious anaemia is a toxæmia, caused by various poisons, which, so far as the bone marrow is concerned, have the common effect of interfering with the normal normoblastic reproduction of red corpuscles so that it passes more or less completely, but never entirely, into abeyance, and the marrow falls back on the megaloblasts for blood production. All, or at any rate most, of these toxins act in a cyclic manner, producing anaemia at first gradually, then more rapidly, but at last either exhausting themselves or producing antibodies which counteract them. When this point is reached, if the patient has sufficient vigour the normoblastic function resumes its work and reproduces a more or less normal blood, sometimes with astonishing rapidity, sometimes more slowly. If the source of the toxæmia is not removed the cycle may be repeated on several occasions. Very few patients come under competent observation until their blood has run down to a low level, and in many cases, though not in all, we cannot stop the process of declension by transfusion or anything else until the toxic process is exhausted. In every case the question which has to be answered is, "Can the patient live long enough to overcome or exhaust the toxin, and has he sufficient vigour to recover a normal blood-formation when the toxic process is over?" In no two cases is the answer to that question arrived at in the same way, for it depends on previous history, duration of the disease, presence or absence of general or special degenerative change, and so on, in addition to the actual blood picture and the symptoms of the disease itself. The great majority of cases of pernicious anaemia recover from their first attack, with or without treatment, and often in spite of wrong treatment. It is only in cases of exceptional severity that transfusion has to be considered in a first attack; usually it is in second, third, or even fourth attacks that it is considered and used. Its real value is to help the patient round the critical corner, to raise his low vitality, exhausted by toxæmia, and give him a chance to recover himself. It is not curative in the sense in which arsenic is curative. The transfused blood may

contain antibodies, but as it is not known what the toxins are which cause pernicious anaemia, it is mere chance whether the antibodies injected are in any way related to the toxins. It is, indeed, improbable that they will be, for we try to select as donors young healthy people who are not likely to carry the antibodies required by the older degenerated people who are the usual subjects of pernicious anaemia. The supply of healthy corpuscles and healthy plasma must be of value, and while there is in a sense no object in stimulating a marrow which is already hyperplastic, it is to be remembered that the hyperplasia is one of megaloblasts and not of normoblasts, and that it is quite possible that the healthy blood may stimulate the more or less dormant normoblasts and enable them to start proliferating afresh. It is much to be regretted that we know nothing of the condition of the marrow in the remission stage—we do not know whether the hyperplasia of megaloblasts disappears or not; when patients with pernicious anaemia die in the stage of remission, as they do occasionally, it is practically always when they are out of observation.

To sum up, transfusion is most useful, in my experience, in uncomplicated cases which are lagging, and failing to raise their blood count by their own and our efforts. If we had an unlimited supply of donors it might be worth while to transfuse every case when it first comes under observation, but I doubt very much whether results would be any better than at present. If a patient does not respond to one transfusion, a second will rarely help him. I remember one case in which the patient turned the corner with a transfusion, and went away, comparatively well, to another city. He and his friends were so much impressed by the result that they insisted on repeated transfusions at short intervals, until the blood was pushed up to normal, with the unfortunate result that his heart apparently could not stand the strain of repeated transfusion, and he died of cardiac failure.

The value of transfusion in acute haemorrhage and before and during operation is so well established that I need not emphasize it. In leukaemia it is necessary to distinguish sharply between the acute and chronic forms. At one time I treated several acute leukaemias in succession by transfusion. In no case was there any improvement, either clinically or in the blood picture, though there were no severe reactions; the course of the disease did not seem to me to be altered in any way, and I have not used the method recently in these cases. In the chronic leukaemias, granular and non-granular, the only indication I have adopted for transfusion has been intractable haemorrhage which would not respond to other treatment, and I have twice had good results. I am doubtful whether transfusion in the ordinary course is likely to give such good results as radiation.

In aplastic anaemia, owing to the hopelessness and inefficacy of every other form of treatment, we are sometimes driven to a transfusion. But it is never of any service in the acute forms, and sometimes causes sharp reactions; in the more chronic forms, in which I have sometimes transfused repeatedly, there was no effect beyond the short and temporary relief from the increased number of corpuscles.

During the past year my attention has been specially drawn to haemophilia. The starting-point was the admission to the ward of a haemophilic in whom the removal of several teeth had become urgent. This led to the study of the effect on his coagulation curve of all the substances reputed to be useful, and ultimately to the bringing into the ward of all the haemophiles and suspected haemophiles that could be found. I do not propose to foreshadow the results of this study—it would take too long to do so; it must suffice to state that transfusion was found to bring the coagulation curve nearer to the normal, and to do so more rapidly than any other method, while repeated transfusions seemed to start the patients off on a higher plane of health and resistance.

I have not yet made up my mind about the value of transfusion in purpura haemorrhagica. Some cases have done well with it, and have had no recurrence for long periods, but I have a patient at the moment who was transfused in the beginning of May. The haemorrhages

ceased and there was a definite improvement in the blood, but during this month the bleeding started again, and I propose now to give him a preliminary transfusion and then to give a large quantity during the course of a splenectomy. I have seen no bad results from transfusion in this condition.

Transfusion, if it is used discreetly, is certainly one of the most valuable remedies in a number of diseases, and is sometimes the only one which will save our patients.

### III.—RENE CRUCHET, M.D.,

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#### TRANSFUSION OF BLOOD FROM ANIMAL TO MAN.

##### General Considerations.

It is difficult to speak about transfusion of blood without recalling the name of Harvey, whose well known book on the circulation of blood, published in 1628, inspired by this immortal discovery therapeutic hope till then unimagined. Harvey made for the first time this fundamental observation: "It is evident that the principle of contagion which has reached part of the body has gone back to the heart with the circulation of the blood, and can from there infest all the body."

If the circulation explains the disease, it can also explain the remedy. From this sprang Harvey's other remark: "Is it not reasonable to say that the veins absorb the substances and introduce them in the blood?"

Thus some bold experimentors, such as the English scientists Christopher Wren, Boyle, and Clarke, between 1656 and 1660 injected into the veins of animals, and even human beings, opium, milk, and broth; it was the so-called "infusory surgery." But when they began to think about injecting medicines, they would naturally also have been expected to think of injecting blood: it was the "transfusory surgery." At first it was the transfusion between animals of the same species, then of different ones. Let us specially note the memorable experiments at Oxford in 1666, made by Richard Lower from dog to dog, and those of Edmund King and Thomas Coxie in 1667 from calf to sheep. These experiments having fully succeeded, the method was tried on men, and honour is due to the Frenchman, Denis of Montpelier, in 1667, who, the first in Paris, employed it in four human subjects. The successes obtained were remarkable; they showed in the most convincing way that the transfusion of lamb's or calf's blood to man was possible, as Richard Lower and Edmund King proved in the same year with full success.

Notwithstanding, transfusion was soon forgotten, and it may be said that no more attention was paid to it, apart from some interesting experiments, till about 1860. At that time Dr. Oré, professor of physiology at the School of Medicine of Bordeaux, began a series of remarkable studies on this subject, which he pursued all his life; they are published in his work, which became classical, and of which the second edition was published in 1876.

Oré, defender of the transfusion from animal to man, was able to show by experiments and with precise statistics that this way of transfusing blood was superior to man-to-man transfusion. Notwithstanding, the transfusion from animal to man, as from man to man, was still beset with practical difficulties, and accidents were too frequent. The most favourable statistics, in the method of animal to man, gave more than 16 per cent. fatalities, which was not at all encouraging; moreover, the reactions provoked by transfusion were often very acute: rigor, pyrexia, acceleration of the pulse, dyspnoea, sweating, lumbar pains, hæmaturia, headache, vomiting, and collapse.

Asepsis and antisepsis being unknown at that time, it was necessary also to take into account quick coagulation of the blood, which, as Oré had observed, might cause embolism.

It was only in 1917 that, following the works of Hédon and Jeanbrau of Montpelier, Agote (Buenos Aires), and Lewisohn (United States), it was found possible to stop the blood from coagulating by sodium citrate, rendering it possible for transfusion to be adopted practically. In the

meantime, after Pastour's and Lister's work, surgery had been completely transformed.

##### Clinical Observations and Results.

The moment seemed to have come to take up again, on a modern basis, the ideas of Oré—the transfusion of blood from animal to man. We have undertaken this study since 1921, and here are the results. We began by making numerous experiments of the transfusion of blood between animals of different species. We established that it was possible, without accident, to inject into dogs the citrated blood of sheep, ox, or horse in considerable amounts, proportional to the weight of the animal—100, 200, 300, and even 400 c.cm., which represent transfusions equal to two and three litres of blood for a man.

Encouraged by these observations, we then carried out the transfusion of the blood of sheep and horse to man, but in small doses.\* Blood was taken with aseptic precautions from the animal at the level of the jugular vein and received directly, either in a big glass syringe or in the apparatus of Jeanbrau, the two receivers having previously been filled with 10 per cent. sodium citrate solution (1 c.cm. for 100 c.cm. of blood). The blood was immediately injected into a vein of the arm of the treated patients. The quantity has varied between 25 and 40 c.cm. of citrated blood; once we went up to 80 c.cm. of sheep's blood. The transfusion was always conducted slowly (lasting about two to four minutes in the first cases, but still more slowly in the later ones).

Injections of sheep's blood have been given to eight patients (four tuberculous, one hemiplegic, one anaemic, one asthenic, one encephalitic); it has been repeated once in two cases, which brings the total to ten transfusions.

Transfusions of horse's blood have been used for twelve patients (nine tuberculous people, one insane, one septicæmic, one pyæmic); two of these received two injections, which brings the number of transfusions made to fourteen.

These transfusions of blood from the sheep or horse provoke very often the following reactions: pains in the loins (the most frequent phenomenon, 16 times in 24 cases), acute pain in the loins, "waist pains" radiating to the pubis, bladder, and abdomen, and provoking sometimes micturition and evacuation. Twice there was vomiting. More infrequently rigors were observed, often slight, but sometimes violent, with shivering and dyspnoea, followed by sensations of heat and abundant perspirations, a slight elevation of temperature, with parallel acceleration of the pulse. Twice we observed slight fall of temperature with lessening of the arterial tension; in two cases headache occurred. These different phenomena disappear quickly in about a quarter to half an hour.

Twice the urine was red and the reaction of Moyer positive (presence of hæmoglobin without red cells). Three times urobilin was found. The presence of albumin in small amount (0.1 to 0.2 gram per litre) is common. These urinary changes disappear in twenty-four hours. In two cases we have observed nettle-rash. The examinations of the blood and leucocytes in the transfused patient have given us contradictory results; but most frequently there is an increase in the number of the red cells and leucocytes after the transfusion.

Once in a case of pyæmia—considered desperate, it is true—sudden death followed the introduction of 1 to 2 c.cm. of the blood of a horse. Except in this case and in two others which remained unchanged, the state of our patients improved, and they have even asked urgently for repeated transfusion.

These results seemed to us most interesting; they show in the most evident way that the transfusion of blood from animal to man is possible with modern methods without bringing on more accidents than transfusion from man to man. It is clear that the small accidents which we have observed are exactly identical with those which we have seen in the transfusion of human blood, in the course of which sudden death may occur.

\* These are our first results, communicated to the Medical Congress of the Royal Institute of Public Health at Plymouth, June 2nd, 1922 (*Lancet*, July 15th, 1922, p. 149). Cruchet and Ragot, *Paris Medical*, January 27th, 1923, pp. 82, 85; Ragot, *Thèse de Bordeaux*, December, 1922.



But cannot these accidents, slight and temporary as they are, be avoided? That is what we have studied in the second part of our investigations.

#### Essentials in Correct Transfusion.

The great number of experiments which we made led us to the conclusion that bad technique was the usual cause of accidents in transfusion. The error is the too rapid transfusion, especially at the beginning of the operation. Here are the results of our observations.<sup>1</sup>

1. Whether the transfused subjects receive homologous or heterologous blood, the reactions seem exactly the same, and depend upon the rapidity of the flow.

2. The rapidity of the flow of the blood must be closely watched, if immediate or remote accidents, described long ago as occurring in transfusion, are to be avoided.

3. It is principally the flow of the first cubic centimetres which must be narrowly observed; for in the course of the transfusion the flow can be increased without resulting in any accidents. The flow goes on, following the oscillations of which we have established the curve.

4. This curve is divided into three successive periods, as can be distinguished in the following experiment: a dog of 13 kilos into which is transfused 260 c.cm. of a mixture of equal parts of citrated horse's blood and of physiological serum.

centimetre a minute when paraffin oil is used. These figures have not an absolute value, for they are governed chiefly by the curve already mentioned. The following curve, established for an infusion of gum arabic containing 80 grams in 1,000 c.cm. of physiological serum, is particularly typical.

7. Practically, it is enough to place the liquid to be transfused in a receiver on a level hardly higher than the heart of the patient who is to receive it. The essential condition of a good transfusion is that the heart of the receiver shall rule the flow, as is the case usually in the intravenous injections of physiological serum.

#### Other Factors in Transfusion Accidents.

Under the above conditions no accidents occur after transfusion, and the phenomena of agglutination, embolism, and haemolysis, so often incriminated in those accidents, do not seem to play an obvious part.

#### (a) Agglutination.<sup>2</sup>

Contrary to the classical view, mixtures of heterologous bloods do not necessarily produce agglutination. Thus, mixture of the blood of a guinea-pig or the blood of a horse with human blood can be performed very well without causing any accident. On the other hand, it is well to be aware that agglutination can occur, even strongly, without causing the smallest accident. The numerous transfusions of horse's blood we have given to the dog have always been without any danger, in spite of a positive agglutination, assuming, of course, that respect is paid to the laws of the rate of the flow already mentioned.

It is surprising, nevertheless, to think of the importance attached to this question of agglutination by modern advances in knowledge concerning incompatible bloods and blood groups, when we consider the numerous injections of different substances and serums introduced into the veins which lead, after all, to agglutination. We have shown, with Ragot, that arsenic ionoide, collargol, colloidal gold, and collothiol agglutinate human blood. The same occurs with iodine ionoide and of copper ionoide. The antipneumococcal, antidyphtherial, antitetranic, antistreptococcal, antidipterial, and antimeningococcal serums also have all shown a marked power of agglutination. Nevertheless, in certain circumstances we do not hesitate to introduce into the veins these chemical substances and serums.

These different reasons show how exaggerated is the danger attributed to agglutination. Going further still in this demonstration, we have injected into both the right and left ventricle of a guinea-pig mixtures of horse's and human blood (Ragot), of horse's and dog's blood, which, though causing strong agglutination, did not result in any accident.

#### (b) Embolism.

We can well admit that the agglutination is an embolism in miniature; then embolisms are not necessarily a cause of accidents. We have been able to obtain a more significant demonstration by introducing into the circulatory torrent some cellular debris, and even solid but friable particles of stone mixed with a physiological serum. Our cellular debris was obtained by haemolysing horse's blood as completely as possible with distilled and sterilized water. By filtering this there is obtained a very coarse and granulated residue, composed of destroyed red cells of cellular debris; the residue is carefully and repeatedly washed in physiological serum and transfused into the dog after dilution with an equal volume of physiological serum.<sup>3</sup>

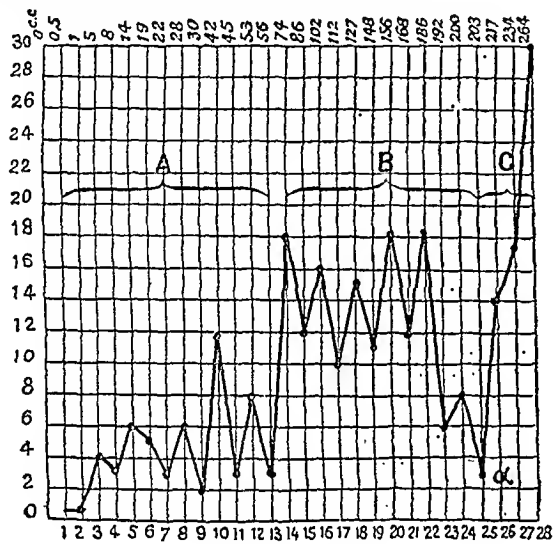


FIG. 1.

(a) The first period (A), the most important (the so-called "period of adaptation" or "dangerous"), is that in which the flow is slowest. At the end of the first minute hardly half a cubic centimetre of blood has passed; at the end of the second minute one or two cubic centimetres more have been transfused, to be followed by four more cubic centimetres of blood in the course of the third minute. The flowing then remains sensibly at the same slow rate for this first period, during which not quite a quarter of the total injected quantity flows in. The time is relatively long, as the length of it represents nearly a half of the whole length of time of the complete operation.

(b) The second period (B), so-called "constant rate," corresponds to the period during which the rate of flow is quicker than in the preceding period, and allows in a shorter time the passage of an amount of blood equal to or greater than that transfused in the first period. Towards the end of this second period the speed slackens so as to become equal to and sometimes less than the initial speed. This bend of the curve shows accurately the beginning of the third period (c).

(c) The third period (C), so-called "acceleration period," is that during which, in a shorter time still than in the second period, the rate of flow is quickened sharply and ends in full speed without any danger.

5. The heavier the animal, the greater is the increase in the rapidity of the flow, although there is no arithmetical progression, but the rapidity of the flow always presents the form of the curve described.

6. The rapidity of the flow also depends on the nature of the transfused liquid without the curve itself being modified. The greater the viscosity and density of the transfused liquids the slower the rapidity of the flow. If we take, for instance, a dog weighing 15 kilos the average of the flow can be 25 c.cm. a minute if physiological serum is used. If this serum is diluted one-half with horse's blood the rapidity of the flow will be from 12 to 15 c.cm. a minute; from 9 to 10 c.cm. if the horse's blood is pure or if milk is injected. It will be less than 9 c.cm. if a mixture of gum arabic is injected in quantities of 80 grams for one litre of physiological serum; lastly, the rate will be half a cubic

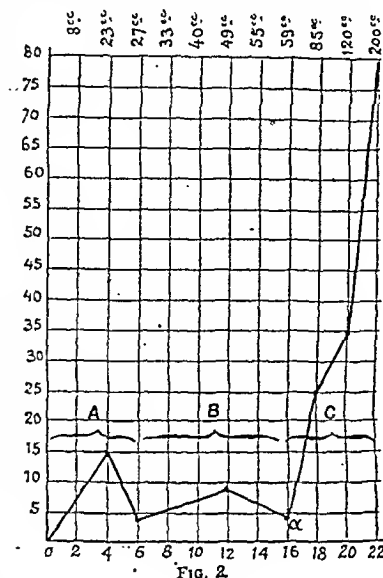


FIG. 2.

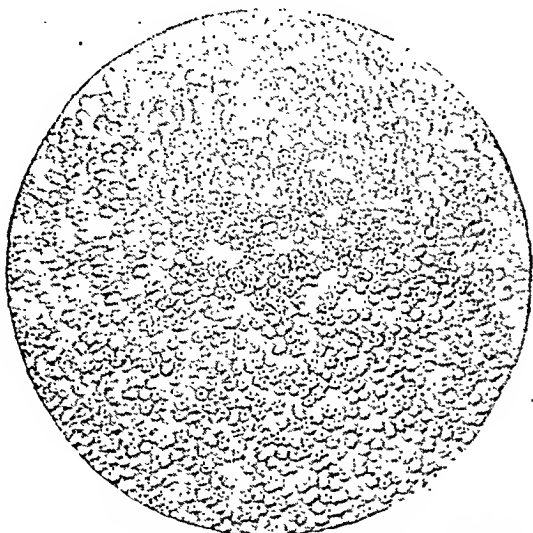


FIG. 3.—Human blood and blood of guinea-pig. No agglutination.

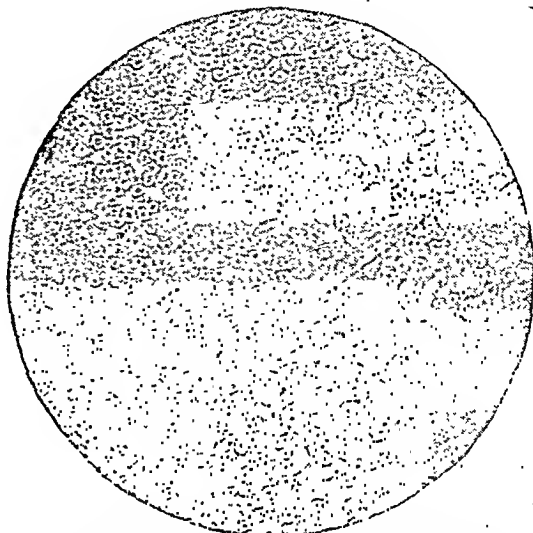


FIG. 4.—Horse's blood and human blood. No agglutination.



FIG. 5.—Dog's blood and horse's blood. Positive agglutination.



FIG. 6.—Human blood and colloidal iodine. Positive agglutination.

We were able to transfuse dogs with 100 to 200 c.cm. of this cellular debris in equal parts with physiological serum without perceiving the slightest accident. The introduction of cellular remains resulting from the haemolysis of red cells is not absolutely dangerous if the conditions of the rate of flow are fulfilled as we have indicated them.

Our experiments with particles of stone, which can be as large as from 15 to 20 $\mu$  across, are still more typical. So as to avoid accidents it is necessary to decrease the rate of flow in proportion to the number of particles in the injected serum. Thus a transfusion of 400 c.cm. of physiological serum containing 0.15 gram of stone has been made in a dog of 8 kilos at the average speed of 12 c.cm. a minute; but this rate was slackened to 3 c.cm. a minute for a transfusion of 130 c.cm. of serum containing 1 gram of stone.

The animal was killed five days later to determine what had become of the injected particles; they were found again everywhere in the blood, kidneys, lungs, and liver.

#### (c) Haemolysis.

We have shown that haemolysis is an independent phenomenon of agglutination. This haemolysis occurs nearly always in cases of transfusion of blood from animal to man. It is experimentally provoked in the transfusion of

blood from horse to rabbit or to dog; it occurs in mixtures whether *in vitro* or *in vivo*. This slight haemolysis does not result in any obvious accidents when the rate of the transfusion follows exactly the preceding established rules. The examination of the urines shows the presence of traces of albumin, with or without casts; the reaction of Meyer is positive. The presence of red cells is inconstant. There may be traces of urobilin. This urinary syndrome does not last a long time and its prognosis is good. It shows itself in the hours which follow the transfusion, reaching its maximum the next day and disappearing definitely after forty-eight hours.

#### Transfusion Accidents due to too Rapid Flow of Blood.

In contrast with what is believed, transfusion can be performed without any accidents, using homologous or heterologous blood, provided that the rules concerning the flow of the transfused blood are accurately followed. But if these simple rules are not followed and the injections are hurried we shall see these accidents happen, and the more rapid the transfusion the more severe they will be. When it is very rapid the animal quickly collapses and falls on its side in a few minutes. The beating of the heart becomes imperceptible, the rhythm of breathing is irregular,

accelerated, and even of the Cheyne Stokes type. Then come cries, shivers with tremors of the four limbs, trembling of the hind part, and contractures of the whole body; there are also nausea and vomiting. When the animal is unfastened it remains lying on its side, reacting no more to stimuli. Involuntary micturition and defaecation occur, and breathing ceases. The heart stops, the corneal reflex disappears, and the cornea looks glassy, the pupil of the eye dilates, and death ensues.

These accidents are sometimes only partial if the transfusion is slower. Nevertheless, when the conditions of the flow are not followed exactly as we have indicated them, the animal does not recover completely; it will be less bright, will not play, is somnolent and not hungry, at times passes blood in the urine and faeces; it is found dead twenty-four to forty-eight hours after the transfusion.

How are we to explain these accidents? Even when they are immediate, we do not think that this implies a real shock. We can, indeed, reproduce them at will, precipitate or slacken them according to the rate of flow towards the right side of the heart. Investigation shows that, in all these cases, the right side of the heart is dilated considerably, whether death be rapid or delayed for a few days.

Two forms are to be considered: the acute dilatation and the delayed dilatation.

(a) The very acute or primitive dilatation, which can be easily provoked with pure physiological serum if too quickly injected, is caused by a relatively considerable liquid mass pouring rapidly into the right cavities of the heart; it presses on the sides of the auricle and soon penetrates in the ventricle.

(b) The delayed or secondary dilatation appears when the accidents are postponed from two to eight hours, or even a little more. In that case considerable pulmonary lesions and infarcts are found. Sometimes a big clot of organized blood starts from the orifice of the pulmonary artery and reaches to its bifurcation. Then it may be believed that the dilatation of the right side of the heart is partly consequent on obstruction of the arteries of the lung. The too great speed of the transfusion has not allowed the too dense or too viscous liquid (blood, oil, milk, gum arabic) to pass in small portions through the capillaries of the lungs; consequently there is a hindrance more or less considerable, and a fatigue of the right part of the heart—an indication of a fatal sequel.

Thus we come back to a mechanism similar to that of the so-called pulmonary embolisms, those which happened formerly by the coagulation of the blood in the course of the transfusions in which sodium citrate was not used.

The pulmonary embolisms themselves are not necessarily harmful if they are made prudently and slowly. But as soon as the rate of the flowing is quickened, they might provoke, following the flow, an immediate or late death. So it was in our experiments with friable stone, particles of which, though larger than the red cells, had been perfectly tolerated by the organism so long as they were slowly transfused. Rapidly injected, they killed our dogs without exception.

The same remarks apply to the haemolysis which often happens during the transfusion. Haemolysis is insignificant and passes unperceived if the transfusion is made slowly. If it is done roughly it might provoke a certain disturbance of the kidneys, with pains in the loins and haematuria.

#### Conclusions.

The experimental and clinical researches which we have made during the past five years show that the transfusion of heterologous citrated blood is harmless in the following conditions:

1. It is necessary to make the transfusion very slowly; following the rules we have established.
2. The donor animal must be absolutely healthy and not have performed any great muscular work during the one or two hours previously.
3. The blood must be used immediately after its passing from the vein of the yielding animal.

4. As to the transfusion of blood from animal to man, we give the preference to horse's blood, which seems to be tolerated better than the blood of sheep or ox.

5. We do not advise the transfusion of pure horse's blood; it is better that it be diluted a third or half with physiological serum.

6. A good plan is to add adrenalin to the mixture to be transfused up to a strength of 1 in 1,000: five drops for 250 c.cm., or less.

7. Transfusion of horse's blood into man might be practised in the same way as intravenous injections of physiological serum.

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2. R. Gruchet et Caussimon: Loc. cit., April, 1925, p. 343.
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#### IV.—E. I. SPRIGGS, M.D., F.R.C.P.,

Ruthin Castle.

DR. E. I. SPRIGGS spoke of the practical aspects of transfusion (1) after haemorrhage from the bowel; (2) as prophylactic against post-operative shock in malignant disease; and (3) in pernicious anaemia; and quoted illustrative cases, with charts showing the effect upon the percentage of haemoglobin and the number of red corpuscles. He continued:

As varying directions are given, I venture to mention in detail the actual method used. With rare exceptions no incision should be made, the blood being drawn from and put into a vein through a needle. After making sure that donor and patient are of the same group the two bloods are tested directly, against each other. The veins of the donor's arm are made prominent by putting the air-bag of the sphygmomanometer on to the upper arm and raising the pressure to 60 to 100 mm. of mercury, the fist being closed. A bandage or tourniquet is less efficient and is apt to obstruct the artery. The needle of a 10 to 20 c.cm. Record syringe is then thrust into the median basilic vein of the donor, attached by pressure tubing to a Potain aspirator, and, after letting down the pressure in the air-bag, the blood is drawn into a 4 per cent. citrate solution, of which 100 c.cm. are used to each 500 c.cm. of blood. The vein of the recipient is similarly punctured by a needle and a little blood allowed to flow back through the needle so as to fill it. The blood is then passed in from a flask-shaped bottle, which is kept warm with hot cloths, making sure that the tube from the flask and its connexion are full of citrated blood before fitting it on to the overflowing needle in the recipient's vein. The pump of a sphygmomanometer is used to force the blood in gently if it flows too slowly. To transfuse a pint of blood takes as a rule about three-quarters of an hour to an hour. Should the blood clot in the tube or needle—a rare occurrence—the needle is taken out and washed through with citrate solution. Sharp needles are essential, and spare ones should be available.

Fig. 1 shows the details of the apparatus used at Ruthin Castle.

1. After haemorrhage of the bowel the tedious recovery from the resulting anaemia may be hastened by a transfusion. The following two cases may be compared in this respect.

CASE 1.—A man, aged 30; admitted May 14th, 1926. His height was 5 ft. 11½ in.; weight 12 st. 4½ lb. Gastro-enterostomy had been performed in 1922 for duodenal ulcer. He suffered in the following year from symptoms suggesting jejunal ulcer. In the spring of 1924 he had a severe haemorrhage. Melæna persisted

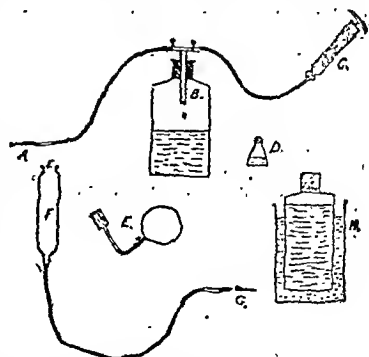


FIG. 1.—A, Needle to donor. B, C, Potain's aspirator. D, Needle to patient. E, Sphygmomanometer. F, Container. G, Needle to patient. H, Blood kept warm in jug of water.

for five to six days and has occurred at least twice since, the last time about October, 1925. On admission there was a secondary anaemia, the haemoglobin giving a Sahli index of 43°=51 per cent.

CASE II.—A man, aged 48; admitted May 5th, 1926. His height was 6 ft.; weight 12 st. 2½ lb. In October, 1925, and March, 1926, he vomited blood. Investigation led to a diagnosis of duodenal ulcer. There was severe secondary anaemia; haemoglobin 25° Sahli=30 per cent.

These patients were comparable as regards their anaemia and its cause. They were both big men and both were treated in the same hospital at the same time, and with the same objects—namely, to aid the ulcer to heal, or, failing that, to get the blood into a suitable state for operation. Treatment consisted of rest, light diet, and iron. The first patient also had arsenic.

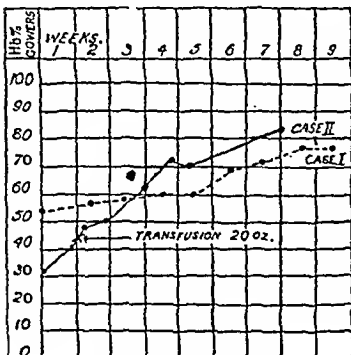


FIG. 2.—Cases I and II.

The only essential difference in the treatment in the two cases was that the older man (Case II) received a transfusion of 20 oz. of blood. The blood was of special value as it was taken from a patient with polycythaemia, fortunately a universal donor. The count of this blood at that time was 9,200,000 red cells with 128 per cent. haemoglobin.

The course of the recovery from anaemia in the two men is shown in Fig. 2, in which the percentages of haemoglobin during treatment are plotted out. The figures for the red corpuscles, which are not shown on the chart, showed similar increases.

The haemoglobin of the younger man, who was not transfused, rose in seven weeks from about 52 to 72 per cent.—that is, 30 degrees. That of the older man in the same time rose from 31 to 83 per cent.—that is, over 50 degrees. Of these it rose about 30 degrees in the three weeks following the transfusion.

2. The value of transfusion as a prophylactic against post-operative shock in those who are bad surgical risks is very great. Two cases may be cited.

CASE III.—A lady, aged 54, had had a gastro-enterostomy for gastric ulcer performed five years before admission. Ever since she had suffered pain and swelling to a degree which prevented her from taking enough food. She had been a complete invalid all the time and her weight had sunk to 6 st. 1 lb. Examination showed that the stomach let bile in but could not let food out. There was also evidence of distortion of bowel from adhesions.

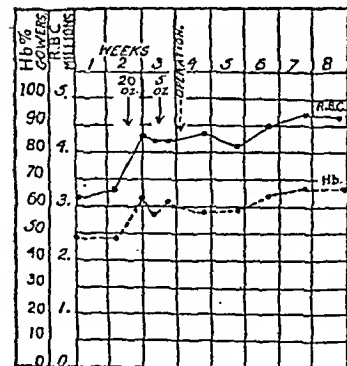


FIG. 3.—Case IV.

For two months every effort was made, by complete rest, diet, medicine, etc., to improve the nutrition and lessen the discomforts of the patient, but without adequate result. At the end of that time her weight was 6 st. 2½ lb. She was unable to walk and was in no state for such an operation as is required in these cases, where adhesions have to be patiently dissected and anastomoses unmade or made, or both. A transfusion of 9 oz. was therefore given. The patient felt much better for it. An ischio-rectal abscess developed soon after. When this was well the patient later was able to bear a long operation, with much subsequent benefit.

In this case the transfusion was not given for anaemia, as the patient's blood standard was not far below that of a normal woman, but in order to increase her general strength and resistance.

CASE IV.—A woman, aged 65, was found to be the subject of a cancer of the pyloric part of the stomach. The symptoms were

of a year's duration. In that time laparotomy, suggested earlier, had been refused, a course of treatment with E.R.A. having been taken instead. It was desired to open the abdomen to see (1) whether gastrectomy was practicable or, if not, (2) to relieve obstructive vomiting. As a preparation two transfusions were given, one of a pint of the erythraemic blood used in Case II, and another, a week later, of 5 oz. of ordinary blood. A rigor occurred after the second transfusion. At operation the growth was found to extend from the oesophagus to the pylorus and was adherent to the liver. A short circuit was done.

Fig. 3 shows the effects on the blood. Note the rapid effect of the first large transfusion. So far from the operation depressing the state of the blood, it will be seen that the haemoglobin continued to rise after it.

The way in which this weak and elderly lady bore the operation was remarkable. It was said at the time that she showed no more shock than a healthy young soldier after a simple laparotomy. The patient's symptoms were relieved. She died five months later, with jaundice, without suffering, and did not know the true nature of her illness.

3. In pernicious anaemia transfusion offers the most valuable means we have of improving the state of the blood in cases in which there is still a downward tendency after treatment by removal of septic foci, rest, good food, hydrochloric acid, and arsenic. It is suggested that small quantities of blood may be as useful as large. A conclusion on such a point must be formed on the results from a great number of cases. The greatest improvements we have seen have been from large transfusions of erythraemic blood; and the benefit to the patients' blood did not fall away in a few days. This suggests that it is advantageous to put in as much haemoglobin and as many red corpuscles as practicable—subject, of course, to adequate preliminary tests being made.

Here is a case in which no immediate benefit was received from two small transfusions from the patient's own sons.

CASE V.—A woman, aged 65. Two years' history. The first transfusion was followed by a mild rigor and herpes labialis. The appetite improved and fatigue was less, but the blood remained as before. Some weeks later improvement in the general state was reported.

In the following case great benefit was received from three successive transfusions.

CASE VI.—A man, aged 54, had been regarded as neurasthenic for some years. He had felt weak for a year and had lost weight, but four months earlier his blood counts had been normal. The nature of his illness, which was acute, was not evident until admission. He had septic teeth, glossitis, and achylia. Arsenic was administered under the skin, with total rest and suitable diet, but the patient's downward course continued, the haemoglobin falling to 20 per cent., and the red corpuscles to 1,000,000. His clinical state was serious. A pint of blood from a patient with polycythaemia was then given. The veins, like the tissues generally, were small and shrunken, and it was not found possible to puncture one through the skin. An incision was therefore made and a cannula tied in. After the transfusion the patient began to improve at once. A fortnight later 10 oz. of blood from an ordinary donor was given. At this, as well as at a later transfusion, a vein could be pierced, owing to the better state of the circulation; and the usual closed method was used.

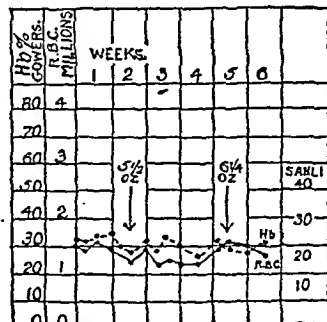


FIG. 4.—Case V.

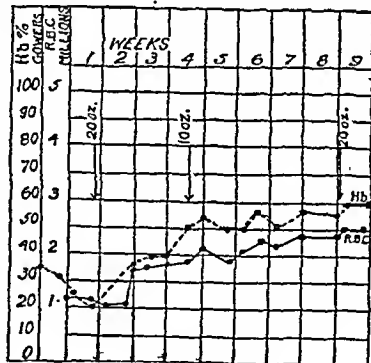


FIG. 5.—Case VI.

Fig. 5 shows the initial downward course of the blood in this patient and the great improvement after the first transfusion. When the patient became strong enough the offending teeth were removed, and as soon as the haemoglobin reached 40 per cent. he began to get up. He left taking regular walks. The haemoglobin was 60 per cent., red cells 2,500,000.

The procuring of donors is a real difficulty, especially as a proportion of those who offer are not entirely healthy or do not belong to the right groups. In a hospital there are often some patients who need venesection for severe hyperpneumia, or, more rarely, polycythaemia, and in a few of these the blood may be suitable to use for others. A general organization of healthy donors in each district is needed.

#### V.—GEOFFREY KEYNES, F.R.C.S.,

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#### BLOOD TRANSFUSION IN SURGERY.

THE contribution which I have been asked to make to this discussion is to deal with the surgical aspect of the question. It is difficult to set any precise limits to the surgical applications of transfusion, but I can at any rate avoid reference to the primary anaemias and to other diseases belonging as obviously as these to the province of the physician.

The recognition in this country of the value of transfusion in surgery has been of comparatively slow growth; it is, however, now very well established, and promises to become an operation performed almost daily in any large hospital. There was formerly some difficulty in obtaining an adequate supply of blood donors, and in a communication on this subject made to the Surgical Section of the Association in 1924, I suggested that these might best be supplied through the Red Cross organizations. A supply of voluntary donors to some of the London hospitals had, as a matter of fact, already been started by the individual enterprise of Mr. P. L. Oliver in 1922, and his organization has recently been recognized and taken over by the British Red Cross Society. This branch of the society's activities is known as the Blood Transfusion Service, and is now playing a large part in the development of blood transfusion as an adjunct to surgery in London. I have been permitted to use the reports received by this service during the last four years (June, 1922, to May, 1926) from all the London hospitals, and I think that information based on the comparatively large number of transfusions thus made available for analysis will carry more conviction than if based only on my own experience. Any favourable or unfavourable conclusion that may be reached will at any rate be free from the charge of personal bias.

The supply of blood donors has kept pace with the increase in the demands of the hospitals, which advanced from 13 in 1922 to 428 in 1925. The total number of calls for donors so far received by the Blood Transfusion Service is in the neighbourhood of 700, and nearly a third of these were received in the first five months of 1926. It is of interest to notice the proportions in which the transfusions actually performed were distributed between the various types of case:

No report received	...	...	...	...	144
Medical diseases	...	...	...	...	158
Surgical diseases	...	...	...	...	250
Gynaecological	...	...	...	...	69
					519

The gynaecological patients were divided between acute secondary anaemia, sepsis, and surgical operations, and may therefore be reckoned in the surgical score. If those cases in which no report was received be divided between medical and surgical in the same proportion as those which were reported, we arrive at the final figures of—

Medical	...	...	...	...	206
Surgical	...	...	...	...	411

or almost exactly two surgical for every one medical case treated by transfusion. This is some indication of the present relative value of transfusion in surgery.

I will now give a further analysis of the surgical cases in order to discover for what types of patient transfusion is chiefly used, and what the results have been. It at once

becomes clear that by far the largest group—no fewer than 121 out of a total of 221 in general surgery—falls into the category of "gastric or duodenal." The types and results are as follows:

*Gastric and Duodenal Type* (121 cases).—Ulcer, acute or chronic; or carcinoma of stomach, with or without haematemesis or melæna, or both, or preceding or following operation.

No benefit	...	...	...	...	18
Temporary improvement, but died later	...	...	...	...	13
Result good or very good	...	...	...	...	90

*General Surgical Type* (100 cases).—Including amputation of leg, splenectomy, carcinoma of colon, carcinoma of bladder, thoracic tumours, nephrectomy, street accidents, secondary anaemia from various causes, etc.

No benefit	...	...	...	...	4
Temporary improvement	...	...	...	...	6
Result good or very good	...	...	...	...	90

*Haemophilic (4 cases).*

No benefit	...	...	...	...	1
Result good	...	...	...	...	3

*Septicaemia and Pyæmia* (25 cases).

No benefit	...	...	...	...	22
Result good	...	...	...	...	3

*Gynaecological Type* (69 cases).

No benefit	...	...	...	...	7
Temporary improvement	...	...	...	...	4
Result good or very good	...	...	...	...	58

It is at once evident that the results in general are excellent, except in the group "Septicaemia and pyæmia," where very little benefit has followed transfusion. My personal experience on a smaller scale fully agrees with the results set out above. It is, of course, impossible to say of any given patient that he would have died had he not been transfused, but it is equally impossible to avoid the conclusion that transfusion has given a substantially increased margin of safety where so large a measure of satisfaction has been so widely expressed.

The value of transfusion in such surgical conditions as haemophilic haemorrhage, traumatic haemorrhage, and, indeed, most forms of acute secondary anaemia, is now fully recognized, and I need not emphasize this point. There is, however, one group of patients—namely, the "gastric and duodenal" group already referred to—in which the value of transfusion has been somewhat slow to receive its proper recognition, although my own experience seemed to show that it was very great. It was with special interest, therefore, that I discovered from the reports of the London Blood Transfusion Service how large a number of these patients are now receiving transfusion. I feel, as a surgeon, that it is here that blood transfusion is enabling a stride forward to be made, for lives are being saved which otherwise would have been lost. Transfusion in these cases may serve a dual purpose: it may prevent the death of the patient from actual loss of blood, and it may make possible a necessary operation which, without transfusion, would be impossible. It is therefore applicable to cases of bleeding from acute ulcers, in which operation is seldom necessary; to cases of bleeding from chronic ulcers, innocent or malignant, in which operation is often necessary; and to operations in general upon the stomach and duodenum, which tend to be very severe, and therefore to be attended by much "operative shock." Transfusion may, of course, be used with great advantage to give the patient an increased margin of safety in all operations of particular severity, but I shall confine my remarks to the gastro-duodenal group, and illustrations taken from this group will cover all the points I wish to make.

Transfusion used to be withheld in cases of gastric or duodenal haemorrhage for two main reasons: (1) It was stated by some authorities that patients never die from haemorrhage from a gastric or duodenal ulcer, and it was therefore said to be unnecessary either to transfuse or to operate. (2) It was believed that there was an actual danger in transfusion, and that the ensuing rise of blood pressure would result in further haemorrhage.

The first statement I believe to be untrue, the second to be based upon a fallacy. Working in a big general hospital, I have seen a large enough number of *post-mortem* examinations of patients who had died from sheer haemorrhage from a gastric or duodenal ulcer, to be convinced that



patients die fairly often from this cause. Furthermore, the necropsies showed that, without either transfusion or surgical intervention, death from haemorrhage was inevitable. I may illustrate this point by a drawing made from a specimen recently removed at necropsy (Fig. 1). In the centre of the floor of a large chronic ulcer is an eroded blood vessel which has bled and become occluded. At the edge is a second larger vessel standing up in the ulcer with a big recent erosion in its wall. It would have been almost

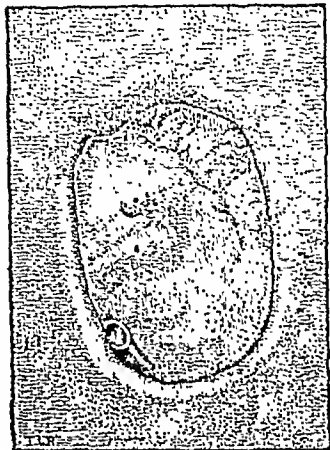


FIG. 1.—Drawing of a chronic gastric ulcer, showing healing of one erosion in a blood vessel (represented by the two black dots), with subsequent erosion in another place. The patient was transfused after the first haemorrhage and survived; he died from the second haemorrhage.

As regards the second statement, I believe that it is a fallacy to consider transfusion a potential cause of recurrence of haemorrhage. When a patient has had a severe haemorrhage he suffers chiefly from a depleted blood volume, and the heart is called upon to maintain the blood pressure necessary for of fluid in the circulation. The strain falls mainly, therefore, upon the heart, and the first effect of the transfusion is to relieve the heart of this excessive burden. The rise of blood pressure which follows transfusion is consequently neither so great nor so sudden as to be likely to dislodge a clot plugging the eroded vessel. There is also the very important effect of the transfused blood in promoting the coagulation process and, thereby, reinforcing the clot already formed. This is due partly to the properties of the new blood that is introduced, and partly, if citrated blood is used, to the paradoxical action of sodium citrate in actually increasing the coagulability of the blood when introduced into the circulation. The accompanying drawing (Fig. 2) will illustrate what happens if this clot formation is successful. The specimen was taken from a patient who had died



FIG. 2.—Drawing of a longitudinal section (x8) through an eroded blood vessel in the floor of a chronic gastric ulcer, showing the extent of the thrombus which has formed in the mouth of the vessel.

from another cause. The vessel is in the floor of a chronic ulcer, and is quite unable to retract. The clot extends for a considerable distance along the lumen and is organizing, so that digestion or further loosening is very unlikely.

Conditions in the individual patients are so various that more detailed statistical analyses of the reports of the London Blood Transfusion Service or from our own hospital records will not be of much value. The rapid extension of the use of transfusion in these cases is the best proof of its efficacy. It cannot, I think, be denied that there

is a certain proportion of patients who must inevitably die without the aid of surgery. It is, moreover, certain that operations on them cannot be undertaken without the aid of transfusion. The actual results of surgery have not in the past always been good because our medical colleagues have tended to offer us for operation those patients whose condition was already desperate. Even among those, as the reports of the Blood Transfusion Service in several instances ("patient moribund") show, lives have been saved by transfusion, and in the cases that have come under my own observation the results are improving with experience. I may illustrate this by an account of three patients recently treated in the wards of the Surgical Unit at St. Bartholomew's Hospital.

#### CASE I.

A dock labourer, aged 57, had had symptoms of gastric ulcer for six years, but had never vomited blood until May, 1921, when he was actually in a medical ward at St. Bartholomew's Hospital with Professor Fraser undergoing treatment with Lenhartz diet. He afterwards improved, but had a recurrence of haematemesis in August, 1923. He was readmitted to a medical ward at St. Bartholomew's Hospital and had a severe haematemesis on three consecutive days. He was then extremely anaemic, and appeared to be almost moribund when he was transferred to the Surgical Unit. A blood transfusion of 900 c.cm. was given at 5 p.m. on August 26th, and four hours later an operation was done by Mr. T. P. Dunhill. The stomach was opened and a bleeding point in the floor of an ulcer near the pylorus was cauterized. A posterior gastro-enterostomy was performed. The patient made an uninterrupted recovery, and there can be no doubt that his life was saved by the transfusion and operation.

#### CASE II.

A woman, aged 29, had had symptoms of gastric ulcer for over two years. In 1921 she had haematemesis while in hospital, and this recurred in 1923, while she was being given Lenhartz diet. She was then transfused with 500 c.c. of blood, but this did not arrest the bleeding, and haematemesis recurred on several successive days. She was transferred by Professor Fraser to the Surgical Unit on July 9th, 1925, when she was blanched, sweating, and restless. Her red blood cells had fallen to 2,000,000 per c.mm. and the haemoglobin to 35 per cent. An exploratory laparotomy was done on the same day by Professor Gask. The stomach was examined, but no lesion could be discovered from the outside. It was therefore opened through its anterior surface. A small ulcer with an eroded vessel in its base was then seen on the posterior wall. The mucous membrane was sewn over the ulcer, and the stomach and abdomen were closed as quickly as possible. A blood transfusion was begun about fifteen minutes after the operation had started and was continued through the critical stages, 850 c.cm. being given. The patient was in a very low state, the blood pressure being below 100 mm. at the beginning of the operation, and having fallen to 80 mm. when the transfusion was begun; it gradually rose from this point, and was 120 mm. at the conclusion of the operation (Fig. 3). The patient made an uninterrupted recovery. Two days after the operation the red blood cells had risen to nearly 4,000,000 per c.mm. and the haemoglobin to 65 per cent., and the improvement continued afterwards.

#### CASE III.

A man, aged 39, had had symptoms of pyloric ulcer for ten years. On May 23rd, 1926, he had severe haematemesis and melaena. He was transfused with 600 c.cm. immediately after admission to St. Bartholomew's Hospital under Dr. Morley Fletcher, his condition being extremely serious. On the following day he had improved; his red cells numbered 2,400,000 per c.mm. and his haemoglobin was 50 per cent. He was not, however, seen by a surgeon as the physicians regarded him as being too ill for any operation. He remained in the medical ward for the next month. He had no further haematemesis, but the bleeding continued in a lesser degree, as shown by occult blood in the stools and by an occasional melaena stool. On June 28th his condition was still very bad. His red blood cells and haemoglobin remained at almost exactly the same level as on the day after admission. He was then transferred to the wards of the Surgical Unit. On July 2nd Professor Gask performed a laparotomy and found an indurated mass at the pylorus with general oedema of the stomach wall. A posterior gastro-jejunostomy was done. During the operation the patient was given a massive transfusion from two

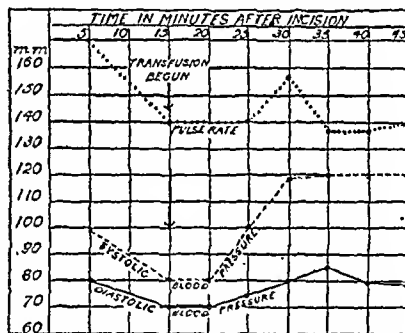


FIG. 3.—Case II. Blood pressure and pulse rate curves taken during operation and transfusion for acute gastric haemorrhage.

donors. First 700 c.cm. were injected rapidly during the initial stages of the operation. This was followed by a second 700 c.cm., given more slowly during the critical stages of the operation. The result is shown by the systolic blood pressure curve, which began at 120 mm. and finished at 140 mm. (Fig. 4); it never fell below 110 mm., this point being reached between the end of the first transfusion and the beginning of the second. The patient made a good recovery. On the evening of the same day his red blood cells had risen to over 4,000,000 per c.mm., and three days later his haemoglobin was still at 63 per cent. (Fig. 5).

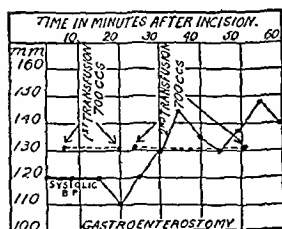


FIG. 4.—Case III. Blood pressure curve taken during operation with massive blood transfusion for chronic gastric haemorrhage.

operation for partial gastrectomy was undertaken by Professor Gask on June 8th, 1926. The patient was a thin, debilitated girl, and arrangements were made to transfuse her during the operation. The stomach was found to be involved in extensive adhesions and a partial gastrectomy was done, the operation reaching the extreme limit of what was technically possible and lasting for over two hours. The transfusion was begun towards the end of the first hour and 800 c.cm. of

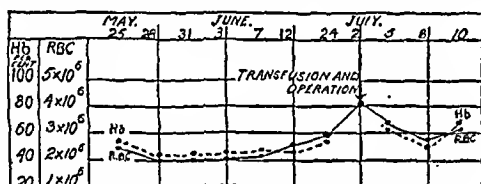


FIG. 5.—Case III. Red blood cell and haemoglobin curves showing the effect of operation with transfusion.

blood were given during the next eighty minutes at the rate of 100 c.cm. every ten minutes. The blood pressure fell gradually during the operation, but the systolic pressure never fell as low as 100 mm. and had risen to 120 mm. at the end (Fig. 6). The transfusion was believed to have played a considerable part in maintaining the patient's good condition during so long and severe an operation.

I cannot now add much under the heading of technique, but it is important to establish, if possible, the optimum time for the transfusion. Experience shows that if transfusion is given purely with a view to replacing blood lost

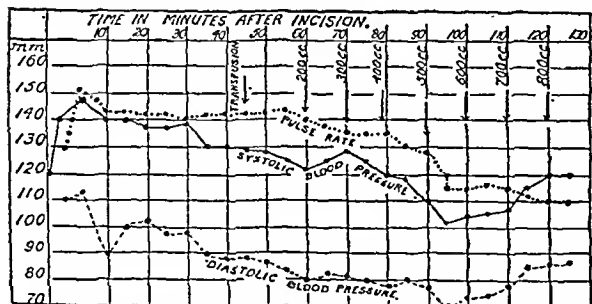


FIG. 6.—Case IV. Blood pressure and pulse rate (dotted line) curves taken during operation with blood transfusion for a difficult gastrectomy, the transfusion being spread over eighty minutes as indicated by the arrows.

and discouraging further haemorrhage, as in acute ulcer, it should be done without delay. If the patient be seriously ill with haemorrhage from a chronic ulcer which is to be dealt with by operation, I believe the ideal procedure is to give two transfusions, one a few hours before operation and the second while the operation is actually proceeding. As Professor Gask has remarked to me, an operation conducted in this way, with the blood being injected into one arm and the blood pressure being recorded in the

other, is like a physiological experiment. The team is disposed as in the accompanying diagram (Fig. 7), and the

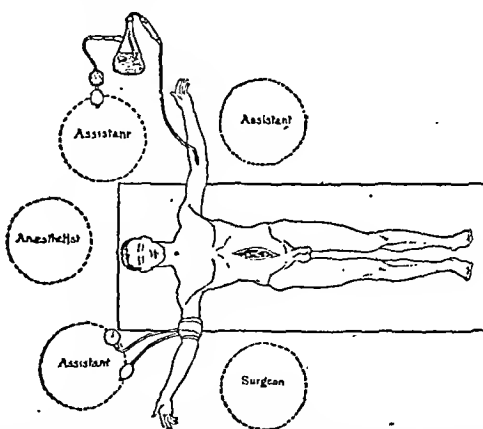


FIG. 7.—Diagram showing the disposition of the team during an abdominal operation accompanied by blood transfusion. The blood pressure and pulse rate are systematically recorded during the operation.

transfusion is timed to coincide with the stage at which the patient is likely to feel the maximum effects of the shock. If the transfusion is successfully carried out the shock never occurs at all.

Transfusion has, admittedly, not always succeeded in the past in saving patients' lives. The reason for some of these failures has been that either the transfusion was withheld for too long, or, having been given, was not pushed with enough vigour. Two or more transfusions may be necessary in the really serious cases, and hesitation will only stultify the treatment.

#### GENERAL DISCUSSION.

Dr. F. B. SMITH (Harrogate) wished to draw attention to the still present possibility of alarming reactions following transfusions, in spite of negative agglutination reactions between the cells and serum of both donor and recipient, tested reciprocally. Among forty transfusions this had occurred in one patient, who had altogether four transfusions for a prolonged and severe relapse in pernicious anaemia. Three of the transfusions had been within a period of ten days, the fourth about six weeks later. The two alarming reactions occurred after the third and fourth transfusions, each commencing about half an hour after the completion of the transfusion, and simulating a severe rigor and collapse, with disappearance of the radial pulse.

Professor GRAHAM (U.S.A.) expressed his gratification at the results of blood transfusion in well selected cases. He drew particular attention to its value in cases of severe burns where exsanguination followed by transfusion might be of great service in combating the toxæmia.

Dr. ROBERT PLATT (Sheffield) put in another plea for the use of defibrinated blood. Some of his cases had already been published (*Lancet*, January 23rd, 1926, p. 173), showing that far fewer reactions followed the use of this method. Sir Humphry Rolleston had said that in from 9 to 66 per cent. of cases reactions followed the introduction of citrated blood, but in 66 transfusions of defibrinated blood only 4 patients had rigors, and 3 of these were febrile cases of pernicious anaemia, which were the most prone of all cases to develop reactions. Colebrook and Storer recorded a similar freedom from reactions using defibrinated blood. He disagreed with the statement that citration was the easiest method, since nowadays defibrination was just as simple and did not necessitate an available supply of sterile citrate solution. In 13 cases of septicaemia and pyaemia transfused by this method there was a marked fall of temperature and great clinical improvement in 7, while in 4 others there was temporary improvement.

# OBSERVATIONS ON TWENTY-FIVE CASES OF PROSTATECTOMY.

BY

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DURING 1925 I had under my care in All Saints' Hospital 25 cases of enlarged prostate for which prostatectomy was performed. These cases I have subsequently followed up in the out-patient department for the ensuing two months or longer.

The average age of the patients was 60—the youngest being 49 and the eldest 73. The mortality was one; this patient died on the sixteenth day after operation from a pulmonary embolus. He exhibited the usual symptoms; he was taken with a sudden desire to defaecate, and while on the bed-pan fell back dead.

Of the 25 operations, 20 were by the one-stage and 5 by the two-stage method. In the selection of method I have been guided by three factors:

(a) *The Clinical Picture.*—Patients referred for tongue, persistent headaches, loss of meat, and the passage of scanty ur for a two-stage operation.

(b) *Cystoscopy.*—This I have done as a routine, and is, in my opinion, of the greatest value, in that it demonstrates the degree of sepsis within the bladder. A gross degree is only suitable for a two-stage operation. While the cystoscope is in position the kidney function can also be tested by intravenous injection of indigo-carmin.

(c) *Urea Concentration Test.*—Where the final concentration falls below the 1.3 mark I think the two-stage operation should be adopted.

As regards the actual operation, the first 8 cases of this series were treated by putting a large drainage tube (bore 1 in.) in the bladder, without packing the prostatic cavity. In two of these cases fairly severe haemorrhage occurred two hours after operation. In the remaining 17 cases I have packed the prostatic cavity for forty-eight hours. I find there is often a little bleeding on removing the packing, but it is never serious; and although the procedure causes a certain amount of pain this can easily be controlled by morphine. I always pack the cavity with two fingers in the bladder, and without widely retracting the edges of the bladder wall, as I consider that the latter procedure somewhat increases the shock of the operation.

The tube is removed on the sixth day, and the patient then rushed per urethram with a solution of 1 in 10,000 silver nitrate once a day. The average time taken for the suprapubic wound to heal has been twenty-four days—the quickest being sixteen, and the longest thirty-five days. The patients taking the longest time to heal have all been markedly obese.

Complications met with have been epididymitis in 7 cases: these all subsequently cleared up. There was one case in which the suprapubic wound reopened five weeks after discharge from hospital; this man had at the time of operation a stricture in the penile urethra which had previously been dilated; after operation he did not come up for treatment as advised, but on dilatation of his stricture the fistula rapidly closed. In one case the symptoms were not relieved by the operation, and by posterior urethroscopy I discovered that this man had developed an obstruction in the shape of a prostatic ledge. This I dealt with by diathermy through the urethroscope, and the patient is now in good health. The remaining patients made uneventful recoveries, and have since been quite well.

Sections of the prostates were made after removal. In one case an early adenocarcinoma was found to have commenced; this man is still quite well nine months after operation. Some of the glands after removal showed small areas of normal prostatic tissue around the adenomatous portion, and the fatal case showed normal prostatic tissue remaining around the cavity. These latter findings show that it is impossible to remove the prostate completely, and that the operator must leave sufficient normal tissue for a further potential adenomatous enlargement.

# THE INHIBITION OF INSULIN ACTION BY TOXAEMIAS AND ITS EXPLANATION.

A Preliminary Communication.

BY

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THE effect of toxæmias and different forms of sepsis in reducing insulin action in diabetes is one of its chief puzzles and the greatest weakness of insulin therapy. All workers are agreed that sepsis and infections make diabetes worse, are a common immediate cause of coma, and that their onset requires a greatly increased dosage of insulin to produce the same effect. The problem of this inhibition of insulin action is therefore of great physiological and therapeutic importance. It was thought that the cause that prevented the usual action of insulin in septic conditions would most likely be the production of a metabolic condition that failed to respond to insulin in the usual way, and the failure would not be due to direct chemical inhibition of insulin by the circulating toxins.

The easiest way to attack the problem seemed to be to try to produce an insulin-resistant condition in normal animals by toxins and to observe any accompanying changes which might account for the failure of insulin action. Various toxins have been tried on rabbits, and the clearest results have so far been obtained by diphtheria toxin. With this a condition has been produced in which the power of insulin to reduce blood sugar has been greatly diminished and sometimes abolished altogether. At the same time extensive pathological changes have been observed in the thyroid and adrenal glands which would appear to be the cause underlying the inhibition of insulin action. The details of these experiments and a number of curious observed facts in connexion with insulin action will be published soon in the *British Journal of Experimental Pathology*, but it is considered desirable now to give a summary of the work, as it is of clinical as well as experimental interest.

## Rabbit Experiments.

It has been found that when normal rabbits are given a dose of diphtheria toxin which kills them in about four to eight days, a dose of insulin which previously caused a considerable drop of blood sugar fails to do so. This usually does not take place on the first day, when the animal is at the height of its pyrexial reaction, but becomes most noticeable when the action of the toxin is fully established. On certain days, indeed, insulin has been observed to raise, and not to lower, the blood sugar concentration. These points have been repeatedly observed after the injection of diphtheria toxin.

Histologically, striking changes have been observed in the thyroid and adrenal glands of these animals, and to a greater degree than in the other organs examined. The thyroids showed great congestion, disappearance of the colloid, and destruction and confluence of many of the alveoli. In the adrenals congestion and signs of complete exhaustion and disappearance of the lipid were observed. Such changes in the adrenal are a well known result of death from diphtheria toxin, and are, indeed, used to distinguish true diphtheria from diphtheroid organisms.

## The Significance of these Experiments.

The thyroid and adrenal glands and their extracts are known to be direct physiological antagonists to insulin. This has been shown quite clearly in animals and in man by the simultaneous injection of adrenaline, which is found to prevent the usual action of insulin in lowering blood sugar. It has also been shown that thyroid feeding in animals greatly reduces the usual action of insulin. And, from the clinical point of view, the disturbance of carbohydrate metabolism and resulting glycosuria in hyperthyroidism and the hyperadrenalism of excitement is well known. It would appear clear, therefore, that an agent which stimulates the thyroid or adrenal, singly or together, would antagonize the usual action of insulin.

\* Working on insulin for the Medical Research Council.

qualified and reputable practitioner in the area. In a general hospital of a city such arrangements would be impracticable; it would mean disorder and injury to patients. The wise man knows his own limitations; he does not want to dabble with costly radiographic apparatus or attempt operations the like of which he has never seen. Nevertheless, there is still room for the expansion of our big hospital staffs. I read that in New York City a census taken on the 1921 directory showed that of 8,760 physicians practising in the city no fewer than 3,232, exclusive of consultants, had affiliations with hospitals in the capacity of visiting or assistant visiting physicians or surgeons. This constituted 36.8 per cent. of all registered medical practitioners in the city. Again,

"There exists no absolutely 'closed' staff, as every hospital (outside of purely research institutions) has a so-called 'courtesy' staff consisting of men who are given the privilege of sending in private patients and attending them at the hospital. . . . These privileges refer almost invariably to private or semi-private accommodation and very seldom to public wards."

The association of more doctors with hospital work is shown by this citation to be bound up with the enlargement of the hospital idea, that it should no longer be for the sick poor only but for all. The limited "house of pity" conception ought to be dead, but it dies hard. It is damaging to the hospitals, to the profession, and to the public. Osler wrote in 1908:

"It has always seemed to me a radical defect of the English hospital system that, as a rule, no provision is made for pay patients. Not only should the class . . . with moderate means be allowed to use the general hospitals on special occasions and pay what they could for services, but it would be an immense boon to extend the privileges of the hospital to the well-to-do classes by the establishment of pay wards."

Now, nearly twenty years later, there is a move, in a small way, to meet this radical defect. It should be our endeavour as a profession to foster it in every way. In the next few years the growth of such accommodation will, I believe, be rapid. Legislation is foreshadowed for the registration of nursing homes, with a view to the improvement of these places for the sick. Improvements cost money. It is likely, therefore, that some of these homes will go out of business from inability to meet now capital outlay. The existing accommodation, especially that which the middle classes can afford, will become more limited; and just at a time when domestic difficulties render the care of the sick at home less possible. The demand for hospital accommodation, pay wards, or special hospitals will certainly increase.

The out-patient department is still a blot upon our hospitals, albeit less now than formerly. It is a relic of the bad old times when pauperism was normal for the major part of the population. The caustic comment upon this indiscriminate medication to be found in the minority report of the Poor Law Commission is not too severe. It may be said that it should be banned in its present form, since it is in conflict with the principle of Florence Nightingale: "the very first requirement in a hospital that it should do the sick no harm." There is now no need for it except for consultation purposes, since insurance and provident practice is so thoroughly established and efficient in its working.

#### Questions.

There are certain questions that will inevitably arise when we consider this modern hospital conception.

*Will such a scheme increase hospital abuse?* I think it will end it. When the hospital receives all classes of patients—poor, part-paying, and wholly-paying—what is called hospital abuse will disappear. An efficient almoner system (such as we are developing) will place each patient in his proper category. Individual hospital abuse is, in my experience, declining. The grossest abuse now arises from the exploitation of hospitals by wealthy corporations; with this I will deal later.

*Will the larger hospital conception endanger provision for the poor?* By no means. I think it will enhance it. It most certainly will give the poor confidence in an institu-

tion to which all classes resort—themselves, the workers of all kind, and even the rich.

*Will such a scheme mean State control?* I think it will prevent it. Closer organization in the working of our voluntary hospitals would so secure them in their prominent position that State hospitals would be likely to be drawn into their wake for their own good.

*Will it mean a loss of local interest and therefore of benefactions, especially if the State helped such a scheme financially?* I do not think so. The better the scheme and its working the better the appeal it makes. It seems to be assumed by some that State grants mean the automatic loss of gifts and subscriptions. I should like to see the evidence of this. We do not find it true of the universities. Even county council schools have received benefactions! It is not true of the societies for the blind, for though in the last five years State grants have increased tenfold, private benefactions have steadily increased. It is not true of New Zealand, where a State hospital system, under semi-independent control, has received large benefactions.

*Will such a scheme mean the general remuneration of the staffs?* Yes, undoubtedly. You cannot have paying patients in a hospital, whether they pay in part or in whole, without depriving the staff of some of their means of livelihood. The medical members of hospital staffs must live, even as others, on their work. The proposition is no new thing. There is found among the records of St. Bartholomew's Hospital, in the time of Harvey, this minute:

"That Dr. Andrewes be now advanced to be also an immediate physician to this hospital, and to have the salary or yearly fee of £33 6s. 8d. for his pains."

There is a good custom in vogue in at least one New York hospital.

"The highest salaries are paid to the younger members of the visiting staff. The basis for this is that the younger members give more time to the institution; when they become older and their income from private practice increases, their salary is decreased. The other consideration is that it relieves the younger men to a certain extent from their bread-and-butter worries and makes it easier for them to apply their time to research and study."

#### Hospital Abuse.

Earlier I said the grossest form of hospital abuse was that due to the exploitation of hospitals by wealthy corporations. I will now justify this statement. There is an ever-increasing number of cases admitted to hospital as out- and in-patients because of industrial accident or disease. These patients are under the protection of the law as regards compensation for loss of wages during illness or loss of earning power thereafter. But there is no provision for their treatment other than by their insurance doctors. The gap has to be filled by the hospitals at the expense of the charitable and of the hospital staffs. Another group of cases come into hospital suffering from street accidents. In both groups of patients a third party is interested in, and benefits by, their speedy recovery—the wealthy insurance companies. But it does not seem to have occurred to them, or with rare exceptions, that they have a duty to the doctors who step into the breach and tend these patients. There is ample precedent for such an arrangement, and failing one arrived at by friendly adjustment we should seek an amendment of the law. In New York State it is provided by law that the party responsible for compensation shall also pay the hospitals and the medical staffs for the treatment of these cases. There can be no doubt that at the present time shareholders of insurance companies are profiting at the expense of the hospitals, and the private benefactions which we may hope these shareholders make do not indemnify them against the charge of exploiting charities and the medical staffs of those charities for business purposes.

Mr. Chairman, that concludes my address. My aim has been to present a conception of something better than we have to-day, wonderful as that is when it is compared with a past that is possibly within the memory of some here.

## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## PYLORIC STENOSIS.

The following case seems noteworthy on account of its comparative rarity and rapid recovery under diet and without operation.

A female infant showed all the clinical features of congenital pyloric stenosis. The child had been under other treatment, but the history of the earlier weeks is given by the father, who has proved himself a careful observer. The child, which was born on December 9th, 1925, and was breast-fed, began to vomit during the third week; at first this occurred occasionally, but later after every feed. The bowels became constipated and the child began to show signs of wasting. The treatment had consisted in starvation for a period of twenty-four hours, glycerin suppositories, and various medicines by the mouth. The weighings, though not accurate, are not without significance: Birth, 7½ lb.; 22 days, 9½ lb. (with clothes); 26 days, 8½ lb. (with clothes).

I saw the infant first during the eighth week and advised that it should be put to the breast for fifteen minutes every three hours (daytime) and four and a half hours (night-time). Grey powder thrice a day and sodium citrate between meals were given. During the first two days the child vomited every feed. Vomiting was explosive in character and contained much mucus. On examining the abdomen visible peristalsis was very marked after feeding and the pylorus was easily palpable.

The diet was altered to ten-minute feeds every two hours (daytime) and every three hours (night-time). Sodium citrate was continued, while the grey powder was substituted by maglaetis as being more easily given. The result was that vomiting became less frequent though more copious, indicating more than one feed. It frequently took place as soon as the child was put to the breast. The bowels were becoming less constipated.

On February 8th the weight was 8 lb. The bowels kept moving on an average thrice daily. During the following week vomiting was reduced by about one-half and the child had put on three-quarters of a pound in weight.

To satisfy the parents that the feeding was not at fault it was agreed to give alternate feeding, using as alternative cow's milk dilution. Sodium citrate and maglaetis were continued as before, but were given immediately before the feed. The result (a week later) proved that the patient showed no partiality towards artificial feeding, as vomiting was as frequent after the bottle feed as after the breast feed. During this week the child lost a quarter of a pound in weight.

On February 28th breast-feeding alone was adopted, being given for six minutes every two hours with two night feeds; during this week the child vomited on four occasions only and the weight increased by three-quarters of a pound. Thereafter vomiting gradually ceased, and the weekly weighing records were as follows:

March 7th, 10½ lb.; March 14th, 11½ lb. The diet was now changed to nine-minute feeds every three hours (seven feeds in twenty-four hours), with the following result. On March 21st the weight was 11½ lb.; on March 28th, 12½ lb.; on April 4th, 12½ lb.; and on April 11th, 13½ lb.

The giving of the slightly laxative antacid before feeds seemed to have most effect in allaying the discomfort in the stomach as well as counteracting the resulting constipation.

Saltcoats, Ayrshire.

A. SMITH GOUDIE.

PULMONARY EMBOLISM FOLLOWING  
CHILDBIRTH.

IN THE BRITISH MEDICAL JOURNAL of November 6th (p. 835) two cases of pulmonary embolism following childbirth were recorded. A case very similar to that reported by Dr. Young came under my care two years ago.

A strong, healthy primipara was delivered of a full-time healthy girl, quite normally, and exactly ten days after she had a small pulmonary embolism. Fortunately it did not prove fatal, but her life was in danger for several days. Unfortunately she developed a very bad bedsores through being kept perfectly still for a time in a half-reclining position.

Wolverhampton.

F. D. SPENCER, M.R.C.S., L.R.C.P.

The memorandums by Drs. McCulloch and Young may, in conjunction with the case described below, lead general practitioners to believe that pulmonary embolism following childbirth is perhaps not so very rare.

A perfectly healthy woman, aged 22 years, whom I had known all her life, was delivered of a healthy living female child on June 8th. On reaching the patient's house I found that the head was already distending the perineum, and the labour was over within forty minutes of my arrival. The perineum was not torn, the discharge at the time and on succeeding days was never profuse, the uterus behaved normally, the patient felt well and looked well. I intended to allow her up on the usual tenth day as her pulse and temperature remained uniformly normal up till the

ninth day. Between my visits on the ninth and tenth days the patient had complained to her attendant of a slight pain in the right thigh, but this had passed off within half an hour. On my visit on the tenth day I carefully examined the whole limb, but found no sign of any interference with the blood supply. As an extra precaution, however, I did not allow the patient to rise until the fifteenth day, by which time she was very anxious to get rid of me. On the fifteenth day she rose and remained up for almost an hour, feeling perfectly well and being actually unwilling to return to bed after what she was now considering an unduly prolonged rest. On the sixteenth day I saw her at mid-day; she was well in every respect and I allowed her to rise for two hours. At 2 p.m. she rose, and while in the act of dressing fell to the floor, and was lifted into bed, where I saw her at 2.20. I remained with her until she died at 3.45 p.m.

There could be no doubt of the diagnosis being pulmonary embolism. How many more cases within recent years could be quoted with this one and that given by Dr. Young?

Buelie.

J. A. DAWSON, M.B., Ch.B. Aberd.

## FRACTURE OF METACARPAL BONE.

A YOUTH showed me his hand. The distal end of his right fifth metacarpal bone was swollen and painful. He gave no history of injury. From external examinations and an antero-posterior x-ray photograph it was decided that there was no fracture. The part was rested, though not splinted. The opinion formed was confirmed when, a few days later, the swelling took on the appearance of abscess formation. Punctures were applied and the "abscess" cleared up, although one day I thought it was going to point. The pain and swelling thereafter varied from day to day, and tuberculosis of the bone was thought of. Then antero-posterior and side-to-side x-ray photographs were taken, and it was seen that the bone was broken. There is now union with deformity, but a useful hand.

I was puzzled as to the appearance of abscess formation until I read in Scudder's *Treatment of Fractures* (p. 378) that in fractures of the metacarpals "a suppurative process may complicate recovery even when the fracture is not an open one."

CHARLES J. HILL AITKEN, M.D.

Kilnhurst, near Rotherham.

## OEDEMA ARTEFACTUM.

NOTWITHSTANDING that a good deal of useful information is supplied in textbooks about dermatitis artefacta—and about graphodermia, which latter condition, as is well known to dermatologists, renders the production of a feigned eruption so easy—there occur cases so out of the common as to deserve record. Take, for example, this case about which I was recently asked to give my opinion:

A young girl presented on the back of each hand an almost symmetrically placed patch of oedema. After careful examination I came to the conclusion that the lesions were artificially produced by the mouth. The girl is the subject of graphodermia. The backs of the hands were puffy. The lesions were the size and shape of the half-opened mouth. The epidermis was slightly moist but otherwise quite normal. The abrupt margin of raised bleb-like centre was well defined, and around it was an area of reactionary redness, due to released pressure. This redness resembled the shape of a big letter "O"—that is, it was composed of two laterally placed crescents (lip-shaped) meeting in the longer diameter of the lesion. The swellings were disappearing rapidly to leave a normal condition of the skin. There could be no doubt whatever that the mouth had been used as a cupping instrument—that is, there had been suction by the mouth and pressure by the lips. No area of the body is more accessible to the mouth for such a purpose.

This case recalls to my mind a much more serious one of factitious oedema, which I saw many years ago.

I found a girl, well grown, aged 17, confined to bed with an enormously swollen left arm. When I took hold of the arm my fingers sank in. It was white, cold, and very heavy. There were several deep incisions oozing serum from pale pointing granulations. These incisions had been made for supposed phlegmonous erysipelas. Amputation of the limb had been talked of. On uncovering the shoulder I found a deep groove round the limb just below the deltoid. At several spots there were vertical streaks of subcutaneous haemorrhage. I asked for and procured the elastic band with which the constriction had been produced, called the girl's mother, and told her that, as self-mutilation was a crime, a policeman, not a surgeon, should be sent for, if the trick were repeated.

Not long afterwards the girl married, and in due course became a happy mother of healthy children.

London, W.1.

ALFRED EDDOWES, M.D.



## Reports of Societies.

### TUBERCULOSIS OF THE BLADDER AND KIDNEY.

At a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland, on October 29th, the President, Mr. ANDREW FULLERTON, read a paper on the investigation and treatment of tuberculous bladder and kidney, based on 150 personal cases.

Mr. Fullerton said that the existence of primary tuberculous disease of the bladder had been denied, but he had seen two cases of tuberculous bladder in which no evidence of disease in either kidney could be obtained. It had been stated that tuberculosis of the epididymis was an antecedent to tuberculosis of the kidney; he believed that the reverse process was the more probable sequence. He had been struck with the apparently healthy appearance of many patients with genito-urinary tuberculosis. Some had had antecedent disease elsewhere, such as tuberculous glands of the neck, pleurisy, hip-joint disease, spinal caries, and pulmonary tuberculosis. Some lived for many years, but others from frequency of micturition and loss of sleep soon became exhausted; in such cases a nightly rise of temperature was usual. Mr. Fullerton had found frequency of micturition the most prominent symptom; though remissions occurred, the course was progressive and eventually terminal haematuria supervened. Renal pain resembling renal colic might be the first symptom; it was present in about 50 per cent. of cases. In a very few cases severe renal haematuria had been noted, but more frequently the blood came from the bladder. The finding of tubercle bacilli in the urine was strong presumptive evidence of tuberculosis, but in a few cases the bacilli were found and a subsequent history entirely negated the diagnosis of urinary tuberculosis. If tubercle bacilli were present in the urine further investigation should be made. In males the testicles should be examined and rectal examination made to discover the condition of the prostate, the vesiculae, and the lower ends of the ureters. In females a thickened ureter might be discovered. The condition of the bladder and kidneys might be ascertained by cystoscopy, though sometimes this was difficult and not unattended by risk. Cystoscopic appearances varied. The affected ureteric orifice, at first showing slight redness or oedema or some change in shape, might be darker or more patulous. Later the "golf-hole" appearance might be seen. Systole and diastole might be abolished, the ureteric orifice advancing in inspiration and receding in expiration. In late cases ulceration had often been found. Grey tubercles, small papillomata, and small cysts were rare. The bladder wall might show general cystitis, isolated patches, a ringworm appearance, or typical shallow ulcers. The affected kidney could be detected, not only by ureteric mensoscopy, but by chromocystoscopy, and in most cases ureteric catheterization. Special stress was laid on unilateral diuresis and on tests for the specific gravity reaction. Slight albuminuria on the good side was disregarded after the diseased kidney had been removed. Where cystoscopy or ureteric catheterization was impossible the good ureter was exposed in the iliac region and catheterized through a small slit. Pyelography was useful as a confirmatory test, but was not devoid of risk.

Mr. Fullerton said that further experience had not altered his view that operation was the correct treatment; it convinced him that clinical cure was not impossible in certain cases. Medical treatment, including good hygienic surroundings, might cure a patient, but the outlook was much less satisfactory than that afforded by surgical treatment. He had removed seventy-one kidneys for tuberculosis with five deaths; the last thirty-six cases were without operative mortality. Details of several cases were given illustrating the excellent results obtained.

Sir ARTHUR BALF thought Mr. Fullerton had been fortunate in the number of cases of unilateral renal tuberculosis that he had met with. He himself believed that since the infection was generally haematogenous, both kidneys would be expected to be involved. He had found that in the early cases only one kidney was infected, but

in later cases both. If the infection was an embolic one this would account for the second kidney not being involved in early cases. He thought it was very hard to foretell the duration of life in cases of double renal infection. A patient of his own who developed typical tuberculous cystitis while homo on leave went back to India, became completely free of the disease, and remained so for nine years. After that time the epididymis and the prostate became affected and renal colic set in, during which the patient passed no urine for about five hours, till the colic had ceased. He thought that the presence of typical-looking tubercles in the bladder was commonly met with, but was one of the later symptoms of the disease. In some cases, cystoscopy was difficult and also risky.

Mr. SEYMOUR PRINGLE dealt with the value of tuberculin in renal tuberculosis. In earlier days he had used tuberculin for many conditions, but now, as the result of experience, he confined its use almost entirely to the treatment of tuberculous glands and tuberculosis of the genito-urinary tract. He had come to look on it as an invaluable aid in the treatment of the latter condition, and ordered it with absolute confidence of beneficial results. The preparation used was either the new T.R. or B.E., commencing with very small doses, about 1/10,000 mg., and gradually increasing until in six or nine months' time the patient was getting as much as 1/100 mg. a week. He divided cases into three categories: (1) where the disease was definitely localized to one kidney and nephrectomy was the treatment of choice; (2) where the disease was bilateral and the patient could only be treated on general lines and by tuberculin; and (3) where at the first examination it was impossible to give a definite opinion as to the extent of the disease, either because a very irritable contracted bladder precluded a satisfactory cystoscopic examination, or because, although a good view might be obtained, the inflammation was so widespread that it could not be determined whether one or both kidneys were infected. He did not catheterize the ureters in these cases, as he believed the passage of a catheter through an infected bladder might possibly carry infection up a ureter previously non-infected, and so, in deciding on the condition of the kidney, he depended on the appearance of the ureteric openings, and on the time taken in the excretion of indigo-carmin. In treating cases of bilateral infection and doubtful cases he depended on tuberculin; in the former there was usually a definite improvement in frequency, pain, pyuria, and haematuria, and also in the general health. In a few such cases he had had exceptionally good results. In the doubtful cases improvement almost invariably followed, and, as the inflammation decreased, the patients could be relegated to either the first or second class. In some cases it had become apparent that only one kidney was infected and therefore nephrectomy had been safely advised. In others undoubted evidence was found of double infection, and these were condemned to a long course of tuberculin. Mr. Pringle gave notes of two illustrative cases, and added that he now confidently looked forward to improvement, and possibly even cure, in all but the most hopeless cases. In his opinion renal tuberculosis was benefited by tuberculin to an extent not experienced elsewhere in the body, and he regarded it as being of invaluable assistance as an adjunct to, or substitute for, operation.

Sir WILLIAM WHEELER remarked that polyuria on the affected side was an early diagnostic sign; although the specific gravity of the urine from the diseased kidney was low, the increasing quantity resulted in the delivery of the same amount of urea as from the healthy kidney in a given time. He had never seen or heard of a pathological specimen of a healed tuberculous kidney. He believed the disease to be essentially unilateral, and that bilateral infection was a very late phenomenon. He agreed that bilateral disease was consistent with apparent health after a number of years, and that tuberculin was probably one factor responsible for holding the pathological process in check. The passage of micro-organisms through the kidney and their presence in the urine was not always a sign of disease; bacilluria might occur in health. He thought that one of the most satisfactory cases to deal with was the patient with a large tuberculous kidney in which the ureter had become blocked. If the urine was found normal

in every respect by simple examination and the general health was good, the condition of the other kidney and its power to function was assured. He reminded the meeting that the President had been the first to emphasize the importance of unilateral diuresis as a constant sign of renal trouble.

Dr. L. L. Cassidy referred to the difficulty of finding tubercle bacilli in the bladder, and said that in gynaecology not many cases of tuberculous cystitis were found, though watch was kept for it.

Sir William Taylor said that once the diagnosis of tuberculosis had been made, if the disease was unilateral, the kidney should be taken out, but he agreed that tuberculin was valuable when both kidneys were involved. In a case he had treated both kidneys had been involved; tuberculin was given, and the patient now had three healthy children, there had been no recurrence, and it was fifteen years since the first attack. He would always use tuberculin when both kidneys were diseased and when it was doubtful whether the second kidney was involved or not.

Dr. F. S. Bourke reported the case of a woman, aged 26, from whom the left kidney had been removed owing to tuberculosis eight months previously. Before operation she passed urine every hour, day and night. After the operation she obtained relief for three months, but the condition then became as bad as ever again, and the urine contained tubercle bacilli, pus, albumen, and *B. coli*. Caprokol had been tried and also tuberculin, but without benefit. Tuberculin even in small doses raised the temperature and caused pain. The patient was now having sodium morrhuate and ultra-violet rays, and only passed urine every two and a half hours.

Mr. H. S. Meade, referring to a case cured by Mr. Fullerton in which the bladder was very rigid, said that he would group this among cases of submucous cystitis. He himself had had two cases similar to that one reported by Mr. Fullerton, but there had been no tubercle bacilli present, and the main symptom had been frequency of micturition. In one case it was impossible, even under spinal anaesthesia, to dilate the bladder more than to hold four ounces of urine. The patient was subsequently examined in London, and told that the condition was one of healed tuberculosis. He had found tuberculosis of the bladder more common than ulcers of the bladder. In cases that were definitely tuberculous, the catheter should not be passed up to a kidney that was functioning normally. He used indigo-carmin for testing, and the results from it were just as good as those with any other test.

Mr. Fullerton, replying, said that he had removed the kidney in 71 cases in which the disease had been unilateral clinically. He never took away the kidney if pus was found on the other side. In addition to these 71 cases of which he had kept a record, he had removed tuberculous kidneys in a great many other cases, and this had confirmed the fact that in the large majority the disease was unilateral, though the absence of pus or tubercle bacilli was not positive proof of the integrity of a kidney. If the second kidney became involved it was not for some time, as he had seen cases going on for twelve years in which he had been satisfied that the other kidney was normal. Any examination of the bladder in a case of tuberculosis was attended with risk, but disasters did not happen very often in his experience. In emptying the bladder care must be taken that there was no pressure which would send up infected material into the kidney. Typical tubercles in the bladder were not very commonly found, and when definitely present the patients did not as a rule do very well. Ulceration might not be produced by tubercle bacilli but by their toxins. In Belfast the results obtained in these cases by the injection of tuberculin had not been very good. The thickened ureter in cases of tuberculosis was due to inflammatory fibrosis involving the mucous membrane. Where there had been hypertrophy of the bladder, the kidney on the opposite side became dilated because of the difficulty in entering the bladder. Unilateral diuresis was not mentioned in any textbook, and yet this condition was certain to be found in cases of tuberculous disease even in the very earliest stages, and

was, indeed, a way by which it was possible to diagnose a tuberculous condition. He himself did not depend on nephrectomy in cases of infection of the prostate, and thought it difficult to assess the value of nephrectomy against tuberculin in their treatment. When one kidney was sound, and yet the other kidney did not clear up, mild irrigation might be tried. He had tried indigo-carmin and found it useful, but it was necessary to get very accurate information about the kidneys; this could not be obtained by colour tests, since staining by pus or blood was likely to occur.

## SPASTIC PARALYSIS IN CHILDREN.

A MEETING of the Manchester Medical Society was held on November 3rd, with Dr. ALFRED A. MUMFORD in the chair; a discussion on spastic paralysis in children was opened by Dr. JOHN F. WARD.

Dr. Ward said that spasticity was difficult to define, but signified an increase of muscle tone, and was an indication of an upper neuron lesion. Such lesion explained easily the loss of voluntary power of muscles supplied by the affected nerves. Associated with spastic paralysis in children more frequently than adults were athetosis, choreiform movements, and perverse movements; these were explained by the unrestrained activity of extra-pyramidal tract owing to a pyramidal lesion. There had been much recent discussion as to the cause and control of muscle "tone," called "postural contraction" by Sherrington. It was certainly dependent upon the afferent impulses forming part of a reflex arc because division of the posterior nerve roots affected it. Tone was also influenced by the cerebellum, the corpus striatum, and, according to the work of the late Professor Hunter of Sydney, by the sympathetic nervous system. The following varieties of spastic paralysis in children were known: a diplegia group; a paraplegia group, including cases due to the same cause as that of diplegia, family and hereditary paraplegia, and paraplegia due to lesions of spinal cord and its membranes; hemiplegia; amaurotic family idiocy. The chief clinical manifestations of diplegia were spasticity of the legs, with adductor spasm, and often unrecognized until the child was several months old: some mental defect was present in most cases, but very variable in degree. The blindness in some cases was either cortical or due to optic atrophy. Convulsions might occur, but not so frequently as in hemiplegia; involuntary movements were also less common. There was a tendency to some improvement in a large proportion of cases. The two principal schools of opinion regarding etiology related it with intracranial haemorrhage or injury, and primary neuron degeneration. Little had believed asphyxia was the cause; later opinions assigned it to meningeal haemorrhage (McNutt, Gowers, and Osler), prematurity (Brissand), and intrauterine degeneration of neurons (Freund and, later, Collier). In 60 per cent. of cases it was associated with abnormal labour, whether difficult labour, asphyxia, prematurity, or precipitancy. The work of Herbert Spencer, Eardley Holland, and others showed the great frequency of intracranial haemorrhage in still-born infants and those dying shortly after birth; injury and asphyxia were frequently combined in difficult deliveries. The haemorrhage was chiefly intradural and most frequently diffuse; it might be only petechial. Many patients died soon, but those that recovered might not show evidence of involvement of pyramidal tracts for some months because the pyramidal tracts were developed later. Necropsy evidence of diplegia cases supported Collier's view, but Schwartz had shown that atrophic sclerosis might follow haemorrhage. Syphilis was not an important cause; the Wassermann reaction was negative in most cases, and other symptoms of congenital syphilis were absent. Infantile hemiplegia was probably quite different pathologically in most cases. The onset was most frequently later than diplegia, and was most common between the ages of six months and two years. Convulsions and febrile disturbances occurred at the beginning of most cases; the convulsions might be due to the same cause as the hemi-

plegia, but possibly hemiplegia might arise as a vascular lesion owing to the congestion during the convulsion. There was often some history of infectious disease shortly before the onset. The cases might be due to vascular lesions, atrophy or sclerosis, or porencephalus; atrophy and sclerosis were probably sequels of encephalitis. There was some indication that this was a polio-encephalitis due to the same organism as poliomyelitis, but the evidence was not complete; "encephalitis" was a rather loose term. Treatment of spastic paralysis might be non-operative, including massage and re-education, or operative. Re-education was the most important; massage might soothe hypertonic muscles, but its effect could only be very transitory. Electrical treatment was absolutely contraindicated. Operative treatment consisted of division of the posterior nerve roots (Förster's operation); operations on peripheral nerves (Stöffel), tenotomy, and sympathetic ramisectomy (Hunter and Royle).

Mr. E. S. BENTNALL dealt with the principles governing the treatment of the spasticity of childhood. He emphasized the importance, and in some cases the difficulty, of forming at the outset a fair estimate of the patient's educability. In very young children the treatment had to be left largely to the parents; it should consist of simple stretching of the tight structures and elementary postural training. The use of a foot splint during sleep was essential, but prolonged immobilization and splinting were undesirable. Activity and its educative results were of the greatest importance to these children. In older patients treatment should consist of physical training, and should aim at developing the sense of balance and co-ordination of the child. Both physical and mental improvement could be anticipated in patients who were educable. Operative treatment was directed almost entirely to the relief of contractures; it should only be undertaken in children with a fair degree of educability, and not before promising efforts to stand and walk could be made. The speaker insisted that operative treatment in itself did not improve the sense of balance, and might interfere with it if the child was immobilized for long. The most useful methods adopted were the division, lengthening, and transplantation of tendons, and the Stöffel operation. Different methods would be found necessary in different parts of the limbs. In the case of the lower limb the operative treatment of suitable cases could be expected to produce distinct improvement in gait and activity. In severe spastic affections of the hand he doubted whether any tendon operation or nerve section was of real benefit, or could restore any degree of functional capacity to the limb.

Professor STOPFORD confined his remarks to the investigations into the sympathetic innervation of striated muscle, and reviewed the researches of Hunter, Royle, and others in this field. He submitted proof of the existence of the sympathetic supply of muscle by histological and experimental methods, and then proceeded to discuss the functional significance of the fibres reaching muscle from the autonomic nervous system. It was pointed out that although the theory with regard to muscle tone propounded by Hunter and Royle had been severely criticized, their experimental results, and particularly those on the sea-gull, demanded further consideration and research. There was evidence from their work and that of others that sympathetic denervation had an effect upon muscular activity, and it was necessary to investigate fully what that effect was. It might be, as had been suggested, an indirect effect; the researches of Orbelli on the influence of the sympathetic upon fatigue were significant and might direct them to a correct interpretation of the experimental findings. Professor Stopford also called attention to the fact that several surgeons who had considered the results of the operation of ramisectomy to be of no practical value had admitted that some effect had been produced upon muscular activity in a proportion of the cases. There was a risk of confusing the two problems: the interpretation of the experimental findings and their possible clinical application. Failure to obtain a result of practical value after ramisectomy did not relieve them of the duty of following up the experimental researches. For the immediate future it would be wiser probably to confine attention

to a careful analysis of the effects of sympathetic denervation, and a review of the present position seemed to justify the belief that this might lead to far-reaching results.

### DIAGNOSIS AND TREATMENT OF COLITIS.

At a meeting of the Section of Medicine of the Royal Society of Medicine on November 23rd Dr. A. F. HURST opened a discussion on the diagnosis and treatment of colitis.

Dr. Hurst said that a diagnosis of colitis should never be made until thorough investigation had shown that inflammation of the colon—nothing less and nothing more—was present. Examination of the stools was more important than consideration of the symptoms, which were not characteristic. Each stool passed on two or three consecutive days should be inspected by the clinician, in addition to the microscopic and bacteriological investigations made by the pathologist. The stools must be natural, and not obtained after an aperient or an enema. In the colon mucus was normally secreted in order to protect the mucous membrano from mechanical and chemical irritants, and, consequently, hard faeces were likely to be coated with it. Since most aperients acted by irritating the mucous membrane of the bowel, it was natural that, unless the dose was very small, the soft or liquid stools to which they gave rise should often contain mucus, secreted with the object of diluting the chemical irritant and so protecting the mucous membrane from damage. A similar response frequently occurred after injecting fluid into the bowel. The old custom, still followed in some spas, of sending every patient for a trial Plombières douche if mucus was found in the ejected fluid, and diagnosing colitis as the cause of the rheumatism, eczema, or neurasthenia for which the patient had sought treatment, had no scientific foundation, because many healthy colons responded to the abnormal stimulation of the douche by secreting mucus, even though the secretion gradually diminished during the "cure," as the mucous membrane became accustomed to the treatment. Whenever possible Dr. Hurst examined patients with the sigmoidoscope without any preparation by aperients or lavage, which caused the mucous membrane to be slightly redder than usual and excess of mucus to be present, even though nothing more irritating than normal saline solution was used for the douches. The temporary congestion and the secretion of mucus under these conditions were the natural response to the irritant and were not signs of colitis. The mucus secreted with hard faeces and after the use of aperients or enemas contained no pus cells, no red corpuscles, and no excess of broken-down epithelial cells; evidence of inflammation was entirely lacking.

In the condition badly described as muco-membranous colitis, shreds or large membranes of mucus were excreted with hard faeces. Dr. Hurst had never seen the slightest sign of inflammation in patients with this condition, unless they had been treated with irritating douches. Nearly twenty years ago he had suggested that this condition was strictly analogous with asthma, and he still thought that the analogy held good. In asthma over-activity of the vagus led to spasm of the bronchial muscles and excessive secretion of mucus by the bronchial mucous membrano. Owing to the spasm the mucus was retained long enough to coagulate, and as it was slowly extruded along the spiral bronchi it was moulded into the characteristic Curschmann's spirals. In uncomplicated cases there was no bronchitis, and the mucus contained no pus cells or albumin; the secretion ceased abruptly when the spasm relaxed at the end of an attack, whether this occurred spontaneously or after an injection of adrenaline. In the colon the spasm and over-secretion of mucus, which had been shown experimentally to occur on stimulation of the pelvic nerves, were due to similar nervous influences; the mucus, which contained no albumin and no pus cells, was retained owing to the spasm, and was coagulated by a ferment, mucinase, which Roger had isolated from both the bronchial and intestinal mucous membrano. Just as asthma might be complicated by bronchitis as a result of treatment by irritating inhalations, so muco-membranous

colic, as it should be called, might be complicated by a mild form of true colitis as a result of daily irritation by injudicious local treatment.

In true colitis the mucus always contained pus cells, and in the severe forms small quantities of pure pus could often be recognized in the stools. The presence of blood recognizable with the naked eye generally indicated the presence of ulceration, but smaller quantities might be present in acute colitis without actual ulceration. When the source of blood and pus in the stools was the inflamed mucous membrane of the colon, the stools were always soft and generally liquid. In the typical stool of ulcerative colitis isolated patches of liquid faeces, mucus, pus, and blood could generally be recognized, in addition to muco-pus and pus stained with blood. The presence of solid fragments of faeces in such a stool would point strongly to the presence of a growth. When blood was passed alone or on the surface of lumps of solid faeces, together, perhaps, with a little mucus or muco-pus, colitis was certainly not the cause, and a local source in the anal canal or rectum should be suspected.

In most cases the bacterial abnormality in ulcerative colitis was not due to the infection, but to the fluid nature of the stools and the presence of excess of soluble protein, blood, and pus, which formed a culture medium especially favourable for the growth of certain bacteria at the expense of others. Dr. Hurst thought there was no conclusive evidence in favour of any particular organism in the stools being the cause of the colitis. He had been so impressed in 1921 with the resemblance between the appearance of the colon seen with the sigmoidoscope in bacillary dysentery and in sporadic ulcerative colitis that he had revived the suggestion made by Saundby in 1906 and Hawkins in 1909 that the latter might also be due to infection with the *B. dysenteriae*, but in no case had the organism been isolated from the stools or from swabs taken directly from the ulcers through the sigmoidoscope, and in no case had the patient's blood agglutinated any of the known strains of *B. dysenteriae*. Dudgeon, however, had isolated the Flexner bacillus from material obtained from the surface of an ulcer through a sigmoidoscope in two cases. In 1924 Barger had isolated a diplococcus from swabs taken through a proctoscope from the ulcers in 80 per cent. of 68 cases of ulcerative colitis, but in only 1 out of 20 healthy patients. Intravenous injections of the diplococcus had produced similar lesions in rabbits and dogs. In a few cases the same organism was isolated from apical dental abscesses and from infected tonsils in patients suffering from the disease. Dr. T. Houston of Belfast had recently isolated a similar organism, but he was not yet convinced that Barger was correct in regarding it as the specific infective agent in sporadic ulcerative colitis. There was some doubt whether the ulcerative colitis from which Barger had isolated his diplococcus was the same disease as that in England. The sigmoidoscope should be considered as much within the province of the physician as the ophthalmoscope. Unfortunately, however, it was still often looked upon as a surgical instrument, with the result that numerous cases of cancer, which could not be recognized without its aid, were diagnosed too late, and a totally wrong conception of colitis was still widely prevalent. Ulcerative colitis could be recognized at the first glance through the sigmoidoscope, but its appearance was indistinguishable from that of bacillary dysentery. Amoebic dysentery presented a quite distinctive picture. When the mucous membrane of the rectum and pelvic colon was healthy, ulcerative colitis could be excluded, as the disease seemed always to begin in the most distal segment of the colon and to persist there longer than in any other part. When, therefore, stools containing blood and pus were passed by a patient in whom the sigmoidoscope had revealed no evidence of ulcerative colitis a growth of the colon was almost certainly present; if situated within ten inches of the anus it should be recognizable with the sigmoidoscope, even if it could not be felt by either rectal or abdominal examination.

When the sigmoidoscope revealed nothing abnormal and the symptoms pointed to the presence of some disease of the colon a barium enema should be given. By this means alone was it possible to recognize diverticulitis, a com-

paratively common disease, which generally involved the iliac and pelvic colon, and which was formerly almost invariably mistaken for either a new growth or colitis; it was, moreover, the only common cause of pericolicitis sinistra. An opaque enema also often showed the presence of a growth at a stage when it was still, impalpable and caused no delay in the transit of an opaque meal. An x-ray examination after an opaque enema should always be made in long-standing cases of ulcerative colitis which were not responding satisfactorily to treatment, as this might be due to the development of a stricture, the exact position and extent of which could be recognized in no other way. By this means the need for a short-circuiting operation had been discovered in two of his cases, although there was nothing in the symptoms to suggest that obstruction was developing. The extent of the ulcerative process in the earlier stages could also be recognized with the x rays after an opaque meal by the disappearance of the normal haustration and the mottled appearance of the shadow.

The high recovery rate following improved methods of treatment had resulted in the occasional development of late complications, which were formerly rare or unknown. Thus the autopsy records of the London hospitals for the twenty-five years ending in 1908 did not contain a single example of stricture following ulcerative colitis. Dr. Hurst had watched this develop in four cases; in two the strictures, which were multiple, were so severe that short-circuiting operations had to be performed before complete recovery could occur. He had also on three occasions watched the development of polypi as the ulceration healed. In a case of polyposis of the colon now under observation there was a long history pointing to a similar origin, and the polypi were still accompanied by severe colitis. It would probably be discovered that most cases of polyposis of the colon originated during the healing of ulcerative colitis. As the polypi showed a definite tendency to become malignant, an intermediate stage of polypus formation was the probable explanation of the development of a growth of the pelvic colon two years after complete recovery from ulcerative colitis in one of his pre-war patients and of cancer of the rectum following chronic dysentery in two others. In one of his cases innumerable small polypi had developed by the time the ulcers had healed; the stools were normal, and the patient felt perfectly well. All the polypi disappeared as a result of treatment with deep x rays.

In spite of the complications described most cases of colitis healed completely, healthy mucous membrane developing where at one time confluent ulceration was present. There was often much scarring, but with a magnifying eye-piece the sigmoidoscope showed that this was situated in the submucous tissue, where widespread white scars might alternate with deep red patches of dilated and sometimes stellate blood vessels; the mouths of new-formed crypts of Lieberkuhn could be seen to be evenly distributed over the whole surface of the mucous membrane. Dr. Hurst had recently had an opportunity of observing this condition four years after recovery from an exceptionally severe attack of ulcerative colitis which had lasted for three years.

#### Treatment.

The patient should be kept in bed until the sigmoidoscope showed complete recovery. As this might require many months a greatly restricted diet, such as one of milk and milk foods, was likely to lead to anaemia and other undesirable complications, which could be avoided by a generous mixed diet, from which everything leaving any solid residue had been removed. When much blood had been lost transfusion was of great value, not only in combating the anaemia, but also apparently by directly increasing the patient's power of overcoming the infection.

In 1919, in the belief that the disease was really an aberrant form of bacillary dysentery, Dr. Hurst had tried the effect of the intravenous injection of large doses of polyvalent antidysenteric serum. In the first case the result was little short of miraculous; a young man, who was almost moribund after being very ill for over a year, and in whom no improvement had followed an appendicectomy, recovered completely in a fortnight. Five days after the first injection the sigmoidoscope showed that the innumerable ulcers seen a few days before had vanished,

and nine days later the appearance of the mucous membrane was absolutely normal. In the eight years which had since elapsed he had had no recurrence. Since 1919 Dr. Hurst had used antidyenteric serum in every case, often with excellent results, though occasionally with little or none. He realized that the treatment might really be non-specific and nothing more than a form of protein shock, although in one case it had proved very effective after a series of injections of ordinary horse serum had failed. The dose of serum he now used was 40, 60, 80, and 100 c.cm. injected intravenously on successive days, and then 100 c.cm. for a few additional days. The reaction was occasionally somewhat alarming, but it was never really dangerous. Vaccine treatment did not seem to have any definite influence on the course of the disease. The persistent ulceration presented the chief difficulty in treatment, and it was far from clear what effect the vaccine could have if such ulcers persisted after a course of inoculation. Such infective foci as teeth with apical abscesses and inflamed tonsils should be removed, though severe local reaction had been known to follow the operation. Local treatment of the colon was undoubtedly of use, and Dr. Hurst generally used tannic acid (grs. i or ii to 1 oz.). It was most important that the fluid should be introduced through a soft catheter, which should not be passed more than an inch beyond the anus, as otherwise the rectal mucous membrane was likely to be injured. He gave half an ounce of charcoal and kaolin two or three times a day in the hope that they would absorb toxins; the former certainly absorbed gas, and so relieved colic, and it also deodorized the stools. There was no evidence that any so-called intestinal antiseptic exerted any action in the colon when given by the mouth.

It was of the utmost importance that the stools should not be allowed to get hard during convalescence, and therefore a saline aperient or paraffin should be taken regularly; the former might also reduce the frequency of defaecation in the early stages, and in this way might help to give the patient a less disturbed night. Every patient who had ever had ulcerative colitis should for the rest of his life keep his stools soft and should avoid all food leaving any solid fragments which could irritate the mucous membrane of the colon. The danger of relapse was, however, largely due to the fact that patients were allowed to get up and discontinue treatment when they felt well and the stools looked normal, which was often many weeks before the sigmoidoscope showed recovery. Apart from an occasional short-circuiting operation to overcome the obstruction caused by the development of a stricture in the process of healing surgery was very rarely required, and the results of medical treatment in his series of cases compared very favourably with the statistics of appendicostomy.

The PRESIDENT (Dr. Hugh Thursfield) thought that Dr. Hurst's views on the minor importance of bacterial abnormality in ulcerative colitis applied also to nearly all the other intestinal conditions except such specific infections as dysentery and typhoid fever. The prevalent wild views of this causation needed correcting. He believed that infantile diarrhoea in the autumn was possibly dysenteric, and good results had followed the prompt administration of antidyenteric serum without waiting for a bacteriological report. Many lives had been saved in this way.

Dr. W. EDOECOMBE (Harrogate) believed that "mucocolonitis" was not a true colitis, but a colonic mucorrhoea; it was a neurosis occurring in psychasthenics, and was comparable with asthma. The patients formed a well known type at the spas, being querulous and with their attention fixed in a morbid way on their abdomens. The treatment included stopping aperients, ordinary diet without coarse fibrous vegetables, and colonic lavage on alternate days with twenty to thirty ounces of isotonic saline solution under low pressure and at a temperature of not less than 102° F.; two douches were given at each session. After the first session or two large quantities of old mucus came away, and the general progress of the patients was striking. After the douche an immersion bath was given and a subaqueous douche to the abdomen. Other treatment included massage, exercise, psychotherapy, and the administration of bromides, belladonna, and full

doses of the ammoniated tincture of valerian. The results were very good, but occasionally the treatment had to be repeated.

Professor L. S. DUDGON mentioned the importance of taking swabs directly from the ulcers, and agreed with the views of Dr. Hurst as regards the bacteriology of ulcerative colitis. With the possible exception of the *B. mucosus capsulatus* and the haemolytic colon bacillus no bacteria were concerned, and he denied that streptococci could be incriminated. The prevalent therapeutic intestinal bacteriology reminded him forcibly of the practices of Chinese medicine. He had seen two cases of ulcerative colitis in which there was a very high blood agglutination titre for the Shiga bacillus, though there was no other evidence of such infection. He could not understand how the serum treatment could be effective.

Dr. J. A. RYLE had seen about ten patients treated with serum who had improved very much, but he agreed that it was difficult to explain the mechanism of this treatment.

### BRONCHIECTASIS.

At a meeting of the Medical Society of London on November 22nd, the President, Sir HUMPHRY ROLLESTON, in the chair, there was a discussion on recent advances in the diagnosis and treatment of bronchiectasis.

Dr. CLIVE RIVIERE, in opening, attributed the protean character of bronchiectasis to the many causative factors. It might attack many or few bronchi, and these might be large or small, unilateral or bilateral, while the surrounding lung might be healthy, inflamed, or fibroid. The dilated tubes might be healthy, catarrhal, or the seat of great suppuration. For severe cases with suppuration new methods of treatment were urgently required. The recent advances in diagnosis comprised the use of the bronchoscope and of bismuth or lipiodol injections to render the diseased portion of the lungs opaque to x rays. In a large number of cases treatment by postural drainage and by the creosote chamber was quite successful. Only when these methods failed should other means be employed. The easiest of these was bronchoscopic treatment: aspiration, lavage, and removal of obstructions, granulations or strictures, through the bronchoscope. If "bronchial drainage" failed altogether other more radical measures should be considered. These included improvement of drainage, closure of cavities by collapse or compression of the lung, and extirpation of the diseased area. Only a small proportion of cases of bronchiectasis were suitable for surgery. Dr. Riviere dealt first with pneumotomy, but external drainage by such means was only useful when a single cavity or a "bronchiectatic abscess" was present. In a few cases where the cavities were capable of collapsing, artificial pneumothorax should be considered, but it was usually of little use, especially as adhesions were extremely common. There was also the danger of producing a pyo-pneumothorax. Such treatment was best for developing post-pneumonic cases in early life. Phrenic evulsion was only of use in strictly basal cases, especially on the right side, but it was even then only palliative at the best. Dealing next with thoracoplasty, the speaker stated that the older paravertebral thoracoplasty had done little good in cases of bronchiectasis. Recently Hedblom had introduced a more complete basal operation with greater success. Dr. Riviere thought, however, that this was a very severe measure to gain in most cases only a palliative effect. Ligation of the pulmonary artery had been tried for bronchiectasis, but without good results. Lobectomy or "cautery lobectomy" was a method of removal of a lung or lobe of a lung. It had usually been associated with a very high mortality, but more recently Evans Graham had urged the use of the cautery for lobectomy, whereby the diseased area was destroyed piecemeal with the actual cautery. During the process the diseased bronchi were cut through and massive drainage was thus obtained. At the end bronchial fistulae were left, but these as a rule closed spontaneously at a later date. Air embolism and haemorrhage were the main dangers encountered. Of thirty-one patients of Graham's series 55 per cent. were reported cured and 13 per cent. improved, while the



mortality was 22 per cent., but most of these were cases of lung abscess, and the mortality of the operation in bronchiectasis would probably be much lower. Important recent work had shown how large a part aspiration of septic mouth secretions, of vomit, and of various extraneous bodies during anaesthesia, especially for operations on the throat and nose, played in the production of suppurative processes in the bronchial tract. Only by keeping the head downwards until the patient had regained his cough reflex could such accidents be avoided. Dr. Riviere referred to the valuable team work at the present time of the "Association of Thoracic Surgery" in America, and added that an annual congress devoted to chest diseases as a whole, and including physicians, surgeons, laryngologists, radiologists, and anaesthetists, would do more than anything else to forward this branch of medical work in this country.

Mr. J. E. H. ROBERTS thought that the surgery of pulmonary infections was in the position of abdominal surgery thirty or forty years ago. Cases were not seen by the surgeon until the larger bronchi were affected and the patients were enfeebled by chronic toxæmia, hæmorrhage, and even amyloid disease. He hoped that by closer co-operation of physicians and surgeons it might be possible to treat cases at an earlier stage. Diagnosis was the province of the physician, and it was often difficult, especially in affections of the upper lobes. In cases of swallowed foreign body or of new growth of the lung obstructing a bronchus diagnosis was often impossible for a long time; he mentioned one case in which a swallowed collar-stud had been present for twelve years. There were to-day two methods of exact diagnosis. Direct bronchoscopy was most useful, and probably when more and more cases came to the surgeon the need for a general anaesthetic, usually demanded in this country, would disappear. The more recent advance was due to the work of French colleagues, in particular Dr. Armand-Delille, and consisted in the injection of substances into the bronchi which were opaque to x rays. There were three methods of using lipiodol, the substance generally employed: by injection through a bronchoscope, by injection through a long tube with a metal end, introduced into the trachea and guided under x-ray examination, and by puncture of the crico-thyroid membrane. Mr. Roberts then described in detail the last method, dealing also with the dangers attached to its use. Coming to the question of treatment, he stated that except in the case of children medical treatment was purely palliative. By active medical treatment life could be rendered tolerable, but relapses were frequent, and no continuous employment was possible; there was also the risk of complications occurring, and the expectation of life was not great. Such considerations, said the speaker, rendered the more severe surgical procedures justifiable, but in every case a course of medical treatment should be tried first. Extensive drainage could only be of use if one or a few cavities were present, and it was therefore limited in its application. Collapsing operations were important; artificial pneumothorax was particularly of value in the early case, and it should be used as a routine in cases of pneumonia where the physical signs persisted. Suppuration was controlled and fibrosis limited, and the good results could be made permanent by some form of thoracoplasty. Phrenic evulsion was sometimes useful as a preliminary to other surgical procedures; it rarely sufficed by itself. Thoracoplasty gave the best results when the lower lobe was affected. Removal of ribs should be free; paravertebral resection was not enough, and anterior resection or complete decostalization should be performed in stages. There were two classes of case in which this operation gave beneficial results: those already benefited by a preliminary artificial pneumothorax, and those in which a great degree of contraction of the affected lung had occurred. Mr. Roberts then quoted cases to illustrate his remarks. He concluded by describing lobectomy and cautery lobectomy, and pleaded for earlier co-operation between physician and surgeon so that collapsing operations could be employed in the earlier stages.

Dr. P. F. ARMAND-DELILLE (Paris) said that after lipiodol injections patients certainly improved, but they usually relapsed. He had succeeded in doing artificial

pneumothorax in some cases, and in one case he had performed a bilateral pneumothorax. He raised the question of the possibility of bilateral thoracoplasty operations.

Dr. G. SEMMELROTH (Würtemberg) said that in Germany bronchiectasis was essentially a disease of childhood, and treatment should therefore be commenced early in life. Good results had been obtained by phrenic nerve evulsion in cases of bronchiectasis of the lower lobes. The results in thoracoplasty were also good; but the operations performed were more extensive than those already mentioned by previous speakers: full collapse was obtained by taking away all the ribs below the scapula on the affected side.

Dr. L. S. T. BURRELL agreed with Dr. Riviere as to the importance of medical treatment. He stated that a patient could be kept alive and healthy for the rest of his life by early medical treatment, and surgical intervention appeared to be only justified in the later and more desperate cases. It was important before beginning treatment to look carefully for the cause of the condition—as, for example, a foreign body, aneurysm, syphilis, or a neoplasm. The throat and sinuses should also be carefully examined. Attention to posture and the use of some form of creosote were very successful in many cases. If improvement did not follow and the trouble was localized to one lobe, artificial pneumothorax or washing out the cavities through the bronchoscope should be tried. This latter method gave good results, and in skilled hands was not painful or very inconvenient. It was found that the cavities thus treated tended to dry up eventually, and the patients were rendered comfortable and able to work. Surgical treatment should not be thought of until the bronchoscopic lavage had been tried. Dr. Burrell thought that thoracoplasty was not so successful as in pulmonary tuberculosis. He knew of one case in which the pulmonary artery had been tied successfully in 1916. Cautery pneumectomy appealed to him strongly as a satisfactory method.

Mr. TUDOR EDWARDS agreed that the value of lipiodol was well established, especially when surgical procedures were contemplated. He thought that artificial pneumothorax would not cure established cases of bronchiectasis, but if good results were obtained thoracoplasty should be employed to render the collapse permanent. He had performed phrenic evulsion in twenty patients with bronchiectasis, obtaining some improvement in almost every case. The cough was diminished, dyspnoea disappeared, and there was more complete evacuation of sputum. He had tried thoracoplasty in eleven patients with bronchiectasis with variable results; in four of these cases the condition of the patients was excellent. He had used cautery pneumectomy in one case, but was not very satisfied with the operation. He thought that cases of post-pneumonic fibrosis should be treated before dilatation of the bronchi was allowed to occur.

Dr. F. G. CHANDLER dealt with some of the difficulties in diagnosis. A patient might have a cough with morning expectoration for some years: evidence of bronchiectasis would be found in recurrent hæmoptysis, constant sticky râles in some part of the chest, and absence of tubercle bacilli from the sputum and faeces. The speaker then showed by slides how the differential diagnosis of the condition could be established by lipiodol. He pleaded for better treatment of unresolved pneumonia and for prolonged convalescence of cases after whooping-cough.

Sir PERCIVAL HARTLEY said that bronchiectasis appeared to be altering in its character, and the very severe cases were not common now. Preventive treatment was most important, especially after bronchopneumonia and whooping-cough. He thought that evulsion of the phrenic nerve was harmless, often did good, and should be used. Artificial pneumothorax might be tried in some cases, but he thought thoracoplasty should only be used in a very desperate case. Mr. ZACHARY COPE inquired about the expectation of life in certain cases which had been quoted as living for so many years after certain forms of treatment. Sir JOHN BROADBENT raised the question as to the way in which a bronchiectatic cavity might become infected. It appeared that such infection was more likely to occur after acute pneumonic processes than in cases of bronchiectasis due to pressure on a bronchus.

## Reviews.

### DISEASES OF THE HEART.

THE title *Facts on the Heart*<sup>1</sup> well expresses the contents of the book by Professor R. C. CABOT. The material round which it is written consists of 1,906 necropsies, covering all the cardio-vascular material in the 4,000 necropsies done at the Massachusetts General Hospital between the years 1896 and 1919; starting from the *post-mortem* diagnoses, the author has worked back to the clinical records. He modestly says that his own task has been the putting together and editing of material recorded by others, but it is essentially the editing which makes the book interesting and stimulating. It is not a textbook in the accepted sense of the word: the usual arrangement is departed from, the writings of the past are hardly referred to, and the whole text is a common-sense and realistic discussion and interpretation of the facts presented by various groups of cases during life and after death. The value of the book lies not so much in the new observations it contains as in its clear presentation of familiar material along modern lines. At the outset there is a statement to the effect that many terms used in discussing heart disease refer to imaginary conditions, and that we no longer need to consider and search for fatty degeneration, fatty overgrowth, brown atrophy, and myocarditis, or the senile heart. Clinical inquiry, the author remarks, is thus simplified and a correct diagnosis rendered easier; this promising start will perhaps dispose the reader to listen to what he has to say on other matters, and to withstand the shock of the question, "Does it exist?" with which the section on mitral regurgitation begins; the answer is that if it does it is extremely rare and that even then there are no physical signs by which it can be recognized, so that a diagnosis of mitral regurgitation without stenosis is never justified. Similarly a diagnosis of myocarditis is held never to be justified as a statement of the main cause of death, unless verified by necropsy. These opinions are not entirely new, but they are expressed with cogency and emphasis and will doubtless command attention. The cardiac condition most commonly recorded in this series is enlargement without valvular lesions, and the cause, though not established in all cases, is thought most probably to be hypertension, however produced. An interesting point made is that when once syphilitic aortitis becomes known it kills in most cases within two years from the first symptom—a prognosis of graver import than would be given in this country. While the discussions on the whole are concise and to the point, the numerous detailed clinical and *post-mortem* records tend to make tedious reading, especially with their "question and answer" additions: straightforward statements might have served the purpose equally well. The book offers much that is of interest and will fully repay careful digestion; it is clearly printed and contains numerous statistical tables; the various lesions are illustrated by photographs.

With Dr. G. F. LAIDLAW's translation of a book by Professor HENRI VAQUEZ, published under the title of *Diseases of the Heart*,<sup>2</sup> there is added yet another to the list of orthodox textbooks on this subject in the English language. It is a large book of over seven hundred closely printed pages, and is an excellent statement of French views from the days of Laennec and Potain to the present time. A detailed review of such a book is unnecessary; the main outlines of its arrangement and material do not differ from those of its predecessors. It is in this light perhaps that the volume is disappointing, for while the observations of recent workers in our own and other countries are freely referred to, yet there is little evidence that the spirit of dissatisfaction with traditional views expressed in these observations has to any considerable

extent influenced the beliefs of the author. Thus, though in speaking of auscultation it is remarked that the difficulty is still at the point where Potain left it—namely, to distinguish organic from extra-cardiac murmurs—yet in the chapter on mitral insufficiency there is no reference to the views of those who hold that it is doubtful whether such a clinical entity exists and that it is rarely if ever that such a diagnosis is justified. Again, the major syndromes of heart failure are considered under the headings of failure of the left ventricle, failure of the auricles, and failure of the right heart. On the other hand, in another place there is a good discussion on the causes of heart failure, and throughout the book the clinical pictures are faithfully presented. The closing chapters are devoted to the treatment of heart disease in general. It is of interest in this connexion to note that the author is of opinion that quinidine may be tried even in the presence of heart failure by taking the precaution to give a preliminary course of onabaino or digitalis. Lists of references are given at the close of the principal chapters, and there is a good index.

The *Manuel de Cardiologie Pratique*<sup>3</sup> by Professor SCHUMPH-PIERRON of the medical clinic of the Kasr-el-Aini Hospital at Cairo is a complementary volume to his *Diagnostic Cardiologique*, published about five years ago. In it he addressed more particularly the cardiologist who was interested in the newer graphic methods; the present handbook is prepared specially for students and practitioners, and in consequence has a more immediately practical bearing. The presentation of the subject in general follows stereotyped lines. After chapters dealing with anatomy, physiology, and physics of the circulatory apparatus the different methods of examination are explained in detail, more attention being paid to physical methods than to graphic records. In discussing diseases of the heart too much stress is laid on valvular lesions as such, and in many cases no mention is made of etiological factors in connexion with them. A special chapter is, however, devoted to syphilis, and some useful figures are presented. Thus of 417 cases of visceral syphilis in a series of 4,280 patients, 60 per cent. had cardio-vascular lesions, and of 992 patients in the same series who had cardio-vascular disease, 46.7 per cent. had syphilis of the heart or aorta. Angina pectoris and diseases of the blood vessels are also dealt with, and treatment is discussed in the closing chapter. The book will no doubt serve a useful purpose, and it gives the author's views in the lucid style characteristic of the best French writings. We do not, however, observe any outstanding merit which would make it likely to displace books on the same subject in our own language.

The second edition of *Modern Methods in the Diagnosis and Treatment of Heart Disease*,<sup>4</sup> by Dr. F. HEATHERLEY, has been increased in size, and the price has risen from 5s. to 8s. 6d. The author has added a chapter on infections, and one on blood pressure, largely derived from the results of French investigations. The appendix includes a form of instructions which has been found very useful at the Manchester heart clinic in securing the intelligent co-operation of patients suffering from functional disorders of the heart. This form of instructions has now been published separately as a pamphlet, which may be obtained from the publishers at the price of 3s. 4d. a dozen.

### BRAINS OF RATS AND MEN.

PROFESSOR C. J. HERRICK's book entitled *Brains of Rats and Men*<sup>5</sup> deals with the subject of the mechanism of control of animal behaviour and the light thrown upon it

<sup>1</sup> *Facts on the Heart*. By Richard C. Cabot, M.D. Philadelphia and London: W. B. Saunders Company. 1925. (Roy. 8vo, pp. 781; 163 figures. 3s. net.)

<sup>2</sup> *Diseases of the Heart*. By Dr. Henri Vaquez. Translated and edited by George F. Laidlaw, M.D. Introduction by William S. Thayer, M.D. F.R.C.P. (Hon.). Philadelphia and London: W. B. Saunders Company. 1925. (Roy. 8vo, pp. 743; 135 figures. 42s. net.)

<sup>3</sup> *Manuel de Cardiologie Pratique*. Par Professeur P. Schumph-Pierron, Cairo. Paris: N. Maloine. 1925. (7 x 8½, pp. vii + 333; 67 figures, 1 plate. 28 fr.)

<sup>4</sup> *Modern Methods in the Diagnosis and Treatment of Heart Disease*. By Francis Heatherley, M.B., B.S. Lond., F.R.C.S. Second edition. London: Baillière, Tindall and Cox. 1925. (Extra post 8vo, pp. xii + 269. 8s. 6d. net.)

<sup>5</sup> *Brains of Rats and Men*. By C. Judson Herrick, Professor of Neurology, University of Chicago. Chicago: University of Chicago Press; London: Cambridge University Press. 1926. (Post 8vo, pp. xiii + 382; 53 figures. 15s. net.)

by the fundamental experiments of Lashley on learning-processes in rats. Among other experiments Lashley showed that rats would, after a certain number of trials, learn to press a pedal-board in order to open the door of their food-box. They would learn to do this even after removal of almost the whole of the cerebral cortex; but if the habit was acquired before removal of the cortex it was lost after the operation and had to be relearned. It appeared, therefore, that although the cortex played a part in the formation of new habits, its participation was not absolutely essential.

Professor Herriek addresses himself to the question of the function of the cortex in the light of these experiments. Setting aside the current methods of objective psychology, he proceeds on strictly biological lines, describing the gradually increasing complexity of cerebral mechanism, from the brains of fishes and amphibia upwards, and indicating its bearing on mental capacity. In the lower animals the greater part of the cortex is occupied by projection centres, each connected with some particular thalamic reflex apparatus—visual, somæsthetic, etc. Each centro is surrounded by a zone of associational fibres concerned with the correlation of the cortical centres. In an animal provided with a nervous mechanism of this kind, if the usual simple reflex resulting from stimulation does not result in a response adequate to the circumstances, nervous impulses pass over into the thalamus and cortex and a number of other behaviour-patterns are brought into play; if an adequate response should result from one of these, the re-activation of the corresponding behaviour-pattern is thereby facilitated and a habit is formed. This seems to be the nature of the learning-process in the rat. In higher brains the cortical associational zones are separated by secondary association centres, which are not dominated physiologically by any one system of projection fibres. With the elaboration of these centres, emancipated as they are from the domination of subcortical sensorimotor systems, a mechanism is available for the recombination of habitual behaviour-patterns in hitherto unexperienced ways; in other words, imagination becomes possible, and the animal acquires insight, not merely looking at a problem, but looking through it to the solution. Further, the associational centres are so organized that a similar structural change or cortical set may be preserved, even in those cases where a cortical association does not result in overt action; and reactivated cortical patterns (memories), knit in with the lower sensorimotor systems at the moment in action, serve as deciders of conduct.

In the rat the association centres are poorly represented and there is little evidence that the animal possesses anything in the nature of insight. In learning it has to trust to some behaviour-pattern chanceing to be adequate to the occasion; it does not foresee the solution of the problem. That which is most characteristic of human cortical activity is a plasticity of organization which facilitates the formation of innumerable transient associational patterns which have no enduring quality. In advance of any overt act we think through many provisional solutions, discarding one after another until the right course is discovered. It is the capacity to do this that most sharply differentiates men from rats. Professor Herriek's work is an interesting piece of close reasoning.

#### MATERIA MEDICA FOR DENTISTS.

WE are impressed by the fact that a sixth edition of COLEMAN'S *Materia Medica for Dentists*,<sup>6</sup> which first appeared in 1914, has now been called for, and we take this as evidence of appreciation by a great number of students. Our opinion that students are collectively good judges of the merits of a textbook is confirmed by a perusal of the work. The descriptive notes on materials are neither unduly curtailed nor so much laboured as to make heavy reading, but are neatly expressive of the facts and adapted with good judgement to students' needs. Notes on pharmacology and therapeutics which are

appended to the description of drugs and chemicals convey a clear account of their properties. The pertinent facts of physiology are also summarized in illustration of principles of treatment; and toxicological data are given in ample detail regarding those substances which in overdoses exert untoward effects. The book appears to contain all that is needed to equip the practising dentist with adequate knowledge of the *materia medica* that he may have occasion to use.

#### DISEASES OF THE PROSTATE.

IN his *Traité des Maladies de la Prostate* Dr. GEORGES LUYSS deals with the various diseases affecting the prostate and with modern methods of treatment. The author's name is particularly associated with direct-vision urethroscopy and cystoscopy, and with the treatment of enlargement of the prostate by means of diathermy; it is natural, therefore, that these subjects should take a prominent place in his book. Those who have departed from the routine practice of prostatectomy for all cases of enlargement and have advocated the use of less drastic methods in cases of minor enlargement have been subjected to considerable adverse criticism, and in the portion of his work devoted to the subject of *forage*, or removal of the obstructing portion of the prostate by means of diathermy applied through a posterior urethroscope, the author has dealt at length with the objections that have been brought against this method of treatment. Naturally he writes with the pen of an enthusiast, and it may be that his enthusiasm has carried him too far in the direction of advocating *forage* for some patients in whom total prostatectomy would be a more suitable operation. Unjust criticism is very apt to produce this reaction in those against whom the criticism is directed. However, although such a large portion of the book has been devoted to *forage*, the author has wisely obtained the collaboration of an exponent of total prostatectomy, and Dr. VICTOR PAUCHET has contributed the chapters on the surgical treatment of enlargement and of cancer. Dr. Pauchet is a partisan of the perineal route and, after describing the method employed by Young, deals with his own, which appears to be a combination of certain points from Young's and some other surgeons with that of Proust. This portion of the work has been very clearly written and, what is still more important, has been illustrated with such a profusion of diagrams that it is possible for the reader to follow each step in the perineal operation without even referring to the text.

In the section dealing with prostatitis, written by Dr. Luyss, the author advocates the use of a Frank's dilator, and states that this instrument (which in England is known as a Kollmann's) exactly fits the posterior urethra and allows of its dilatation. In our opinion, however, no instrument has yet been constructed that is capable of bringing an equal pressure to bear on the walls of so complicated a cavity as that of the prostatic urethra; in the hands of the average surgeon any form of mechanical dilator may do more harm than good when used in the prostatic urethra. It may be said, therefore, that the most noteworthy features of Dr. Luyss's book are an apologia for endoscopic methods of treatment, a full account of the technique employed by the author, and excellent chapters on perineal prostatectomy and the surgical treatment of cancer by Victor Pauchet. The book contains much that is peculiar to the author, and will not therefore meet with general favour, but at a time when medical books are turned out in great profusion without any particular reason for their appearance, originality is a welcome quality. In his preface the author states that he has gone to considerable pains to ensure that the book should be well illustrated, and he has succeeded. It is a pleasure to read a book in which surgical technique can be followed so clearly by reference to the diagrams. It is by skillful use of line drawings rather than of half-tones that the greatest assistance is given to the reader, and the text of *Traité des Maladies de la Prostate* is excellently served in this respect.

<sup>6</sup> *Materia Medica for Dentists*. By Frank Coleman, M.C., L.R.C.P., M.R.C.S., L.D.S. Sixth edition. Oxford Medical Publications. London: Hafford, Oxford University Press. 1926. (Cr. 8vo, pp. xvi+248. 10s. 6d. net.)

<sup>1</sup> *Traité des Maladies de la Prostate*. Par Georges Luyss. Prostatites, tumeurs et tumeurs malignes, par Victor Pauchet. Paris: G. Doin, 1926. (67 x 21, pp. 680; 457 figures, 5 plates. 80 fr.)

## NOTES ON BOOKS.

IN volume vi of MELLOR's *Comprehensive Treatise on Inorganic and Theoretical Chemistry*<sup>\*</sup> the subject of carbon is continued, the sections dealing with carbon dioxide, carbon sulphides, and related matters bringing the chapter to a conclusion. The cyanides are not touched on, academic authority having decreed that these belong to the subject of organic chemistry; a note by the author, however, conveys a hint that they may be discussed in a supplementary volume. The subject of silicon follows carbon in order of treatment here, as does the element in order of periodicity. It is concerned with a vast number of minerals and compounded silicates; though many of them possess only isolated points of interest, the pages present a wealth of information to the mineralogist, and there is much readable matter under the headings of the better known substances, such as talc and meerschaum. The latter, we are told, is used as a building stone in Spain and as a soap in the Moorish baths of Algeria. Ceramics, glass, hydraulic cement, and materials used in the arts furnish so much matter for discussion that nearly seven-eighths of the whole volume are devoted to the chemistry of silicon. The compilation has been done in the same satisfying manner that we have had occasion to eulogize in noticing preceding volumes of this edition.

If the dead languages are as dead in America as some people would like to make them in this country, then Mr. ARTHUR L. TATUM's little book *Prescription Notes*<sup>†</sup> is justified. For he tells the student how to write a prescription, the meaning of the Latin terms used, how *recipe* governs the accusative, that a portion of a drug is in the genitive case, and that orders to the pharmacist are given in the subjunctive mood. But directions for the patient must be written in English, says Mr. Tatum, so the cochlear of Celsus appears nowhere in the glossary. For the rest the student is given a few general rules about incompatibility, some weights and measures, the dosage of the more important drugs in the *United States Pharmacopoeia*, and many blank pages for recording prescriptions. "Verbatum" is, we presume, a misprint for the word coined from the dead language Mr. Tatum teaches.

*Folia Japonica Pharmacologica*<sup>‡</sup> is a new journal containing papers on pharmacology from the Japanese laboratories. Most of them are in Japanese, and only a minority are in European languages, but summaries in German or English are given of the Japanese papers. Two volumes of about 400 pages have appeared during the past year—a fact which bears testimony to the activity with which research is being prosecuted in Japan. The papers are on a great variety of subjects, but a large proportion deal with the analysis of the action of drugs by the study of their effects upon isolated organs.

Following the practice of their previous edition of the animal parasites of man,<sup>§</sup> BRAUN and SEIFERT have divided what would have been an extremely heavy and cumbersome volume into two parts. The first or zoological part is by Dr. Max Braun, and has already been noticed in these columns (*BRITISH MEDICAL JOURNAL*, November 14th, 1925, p. 909); the second or clinical part is by Dr. Otto Seifert, and has just been published. It is a volume of 600 pages devoted entirely to a consideration of the clinical and therapeutical aspects of protozoology, helminthology, and entomology—eloquent testimony to the advance in our knowledge of the animal causes of disease. This volume has been considerably revised since the previous edition in 1920, but the new matter is mainly of German origin; the account of foreign work is sketchy and often incomplete. Some new chapters have been added; others have been considerably revised. The illustrations are few in number, and on the whole poor in quality. It is unfortunate that a volume which occupies such an important position in the standard literature of tropical medicine should not be better provided with clear and adequate drawings and photographs. In spite of these defects, Dr. Seifert still maintains the high standard of usefulness and the comprehensive encyclopaedic character of his book, and renders available for those who read German a useful synopsis and compendium of such diseases of man as are caused by animal parasites both in tropical and temperate countries.

\* *A Comprehensive Treatise on Inorganic and Theoretical Chemistry*, Vol. vi. By J. W. Mellor, D.Sc. London and New York: Longmans, Green and Co., Ltd. (Roy. 8vo, pp. x + 1024; 205 figures. 43 5s. net.)

† *Prescription Notes*. By Arthur L. Tatum. Chicago, Illinois: University of Chicago Press; London: Cambridge University Press, 1926. (Pott 8vo, pp. 22, and many blank pages. 6s. 3d. net.)

‡ *Folia Japonica Pharmacologica*. Vol. I; Vol. II, Fasc. I, II, and III. Kyoto Imperial University: Pharmacological Institute.

§ *Die Tierischen Parasiten des Menschen*. Bearbeitet von Dr. Max Braun und Dr. Otto Seifert. Zweite Teil. Klinik und Therapie der Tierischen Parasiten des Menschen. Von Dr. Otto Seifert. Dritte Auflage. Leipzig: C. Kabitzsch, 1925. (Sup. roy. 8vo, pp. vi + 574; 21 figures. M.27; bound, M.29.50.)

## IMPERIAL CANCER RESEARCH FUND.

AT a meeting of the General Committee of the Imperial Cancer Research Fund held on November 23rd, with the DUKE OF BEDFORD, President, in the chair, Sir HUMPHRY ROLLESTON, Bt., chairman of the Executive Committee, in moving the adoption of the annual report, including that of the director, Dr. J. A. Murray, said nothing was more striking than the way in which progress in scientific work was characterized by a series of successive periods of great activity, with periods of relative quiescence between. Each period of activity was started by some salient discovery or fruitful conception, the working out of which engaged for a longer or shorter time the energies of those employed in that field. He instanced the application of the spectro-scope to stellar astronomy by Huggins, the discovery of radio-activity, and, in the biological sciences, the rediscovery of Mendel's laws of heredity and also insect transmission of tropical protozoan diseases, the bacteriophage, and the discovery of hormones. The same might be said of the era opened up by Ehrlich's brilliant achievements in chemotherapeutics, and the isolation of insulin still more recently had started the wave of activity in the study of the physiology of carbohydrate metabolism and the therapeutics of diabetes which was in full career at the present time. Cancer research exhibited the same phenomenon in a striking manner. The first period was that following the discovery by Jensen and Borrel of the transplantability of the malignant growths of the mouse. Although there was a tendency for the achievements of that period to be overshadowed by more recent work, it should be recognized that the insight into the properties of cancer cells which was owed to Jensen and his successors had given a precision to conceptions of the cancer process as essentially a cell problem which dominated the attitude to all attempts to elucidate its causation to the present day. The work of this first period dealt with the cancer cell already fully developed and the attempts at explanation based on it of the etiology of the disease were in the nature of inferences, more or less happy. In the second period the interest shifted to the study of the conditions under which cancer arose in the individual primarily attacked. The work of Fibiger, Ynmagiwa and Ichikawa, and Tsutsui gave the primary impetus to an enormous amount of work, which still continued, on the actual production of cancer anew, starting with normal animals. The part played by chronic irritation in the causation of cancer, the relation of the duration and intensity of the irritation to the time necessary for the effects to be produced, and the mutual reinforcement which different agencies give to each other, had put a rational, sequential faces on many of the features of the natural history of cancer which, till these investigations had been carried out, still appeared mysterious and capricious. Much remained to be done along these lines, and work proceeded in the laboratories of the Fund in continuation of the investigations mentioned in last year's report. If the interest and activity aroused were taken as an indication, the work of Gye and Barnard on cancer causation by ultramicroscopic microbes, published eighteen months ago, could be regarded as starting still a third period in cancer research. A number of papers had appeared in Europe and America, and, as was to be expected, agreement had not yet been reached. Both the facts and their interpretation were in dispute, and in these circumstances it was necessary to exercise patience and continue the investigations. Of the various lines of work bearing on the validity of Gye's conception at present in progress in the Fund's laboratories, that of Dr. Begg was furthest advanced. His results confirmed the existence of two factors, as advanced by Gye, in the successful transmission of these tumours.

Sir ANTHONY BOWLEY, Bt., seconded the motion to adopt the annual report, and this was carried unanimously.

Sir HUMPHRY ROLLESTON then moved that an annual general meeting be not held in future, with the understanding that the General Committee would be summoned to meet when there was business to transact, and that the annual report would be issued to the General Committee and to subscribers as heretofore. This was seconded by Sir FREDERICK ASHMEWES and carried.

The PRESIDENT, after paying a tribute to the memory of Sir Henry Morris and expressing gratitude for the work he did for the Fund, said it was an experience common to all charitable institutions at the present time that the amount received from legacies and donations was declining, no doubt on account of the increased cost of living, continued pressure of taxation, and the very heavy death duties—a combination which left people but little margin to give for even such subjects so important to mankind as cancer research. A satisfactory point disclosed by examining the statement of receipts and expenditure was that the office expenses, including salaries, printing, stationery, and advertisements, worked out at less than 7 per cent. of the total expenditure. On behalf of the vice-presidents and other members of the General Committee, he expressed to the chairman and members of the Executive Committee, the subcommittees, and the honorary treasurer (Sir George Makins) their appreciation of their honorary services in the cause of the Fund.

A vote of thanks to the President was adopted on the motion of Sir JOHN ROSE BRADFORD, P.R.C.P.

## THE SCHOOL OF HYGIENE AND PUBLIC HEALTH OF THE JOHNS HOPKINS UNIVERSITY, BALTIMORE, U.S.A.

(Concluded from page 959.)

In our last issue we reported the opening of the new buildings of the School of Hygiene and Public Health at Baltimore, and gave an account of its general character, with a picture of the elevation. We now give an account of its departments and the manner in which they are housed; for the information on which it is founded we are indebted to Dr. Andrew Balfour, director of the London School of Hygiene and Tropical Medicine. We mentioned last week that Dr. Balfour, whose address at the opening ceremony was published in the *BRITISH MEDICAL JOURNAL* of October 30th, received the honorary degree of LL.D. from Johns Hopkins University. Dr. Balfour, on his way back, delivered an address at the scientific medical conference held at the University of Rochester, New York, on October 26th, and received from that university the honorary degree of D.Sc.

The general plan was to give a separate floor to each department and to place the administrative offices and the rooms for general purposes in the first floor and basement. This was the scheme which it was intended to carry out in the London school, but unfortunately it could not be realized in its entirety. Even at the Baltimore school there is an exception, for the department of public health administration shares the second floor with the department of epidemiology.

A special feature of the building is the arrangement for animal quarters. A separate elevator and a service stairway are provided so that animals, food, and supplies can be brought to each department without entering the main building. The animal quarters are built vertically in such a way that each department has access to its animals on its own floor. The animal rooms, while continuous externally with the rest of the wing, are separated internally by a wide air-shaft provided with double doors and a ventilating fan. Special extra provision has been made for a rat colony in the department of chemical hygiene. It is interesting to note that in the plans for the London school a somewhat similar provision has been made in the biochemical department of the chemical division. With this exception the quarters for the experimental animals have, in the case of the London school, been placed upon the roof, occupying two recessed floors, the fourth and fifth.

More reliance is placed on artificial ventilation in the Baltimore than in the London school, where, with the exception of the large lecture theatre, natural ventilation is the rule. To some extent this is no doubt explained in terms of the different shape of the two buildings. The school at Baltimore has some other features not seen in

the London building—as, for example, a large kitchen and serving and dining rooms in the basement; it has the advantage over the London school of drawing its steam heating and water supplies from a central plant. Hence there has been no need to provide boilers and furnaces in the basement, and much space has thereby been saved.

On the first floor the administrative offices, together with a rest room, locker room, and toilet for women students, occupy the front of the building. In the central wing, on the eastern side, is the main auditorium, with seats for 310. The north wing contains the general library and the librarian's office, while a similar room in the south wing, originally intended for a museum, is at present used as a lounge and reading room for students. This floor is connected with the basement and the upper stories by two fire-proof stairways and two passenger elevators. The first floor answers to the ground floor of the London school, and has much in common with it so far as the general lay-out goes, for in both are the administrative offices, student rooms, and a large lecture theatre. Here, however, the resemblance ceases, for in London the division of sanitary science and public health administration occupies this part of the school building, which contains also laboratories for the director, for sanitary engineering, and for tropical hygiene and pathology. In the London building the library, a very large and handsome room, runs nearly the whole length of the front on the first floor. It is a much more important feature than the library in the Johns Hopkins School, where, however, the arrangement is temporary, as there is a scheme to concentrate all the library facilities of the medical centre in a building adjacent to the school of hygiene.

### *Public Health Administration and Epidemiology.*

The second floor at Baltimore is shared by the department of public health administration and that of epidemiology. The former does not require elaborate or special equipment, and accordingly the rooms assigned are, for the most part, offices and classrooms. The same is true of the corresponding division in the London school. At Baltimore certain rooms along the west front are occupied by the office of administrative information of the United States Public Health Service, and a somewhat similar arrangement holds good at the London school, where, on the first floor, a series of rooms is allotted to the Bureau of Hygiene and Tropical Diseases, at present an activity of the Colonial Office under the direction of Dr. A. G. Bagshawe. At Baltimore a room of the second floor is assigned to the local office of Shellfish Sanitation of the Public Health Service. Of the remaining rooms in this department mention may be made of that used for the preparation of the large amount of mimeographed material employed for teaching purposes, the seminar room for advanced classes, and the workroom for special students. Much of the teaching of this department is carried on by field demonstrations and conferences.

The department of epidemiology, which also requires no elaborate arrangements for its intramural work, occupies a little more than half of the floor and shares a lecture room and seminar room with the department of public health administration. In addition to general office rooms and a departmental library, there is a room for mimeograph work and the filing of records, a storeroom and a dark-room for photographic work, which, however, is at present done by commercial photographers. In the south-west wing is the general students' laboratory, a large, well lighted and well ventilated room equipped for a class of at least forty. Each student has his own work table, and is supplied with a ten-inch slide rule to assist him in his calculations. There is a laboratory for special students, where Monroe calculating machines and a drafting table are available. A seminar room permits of informal conferences with small groups of students.

At the London school, where the teaching of epidemiology is combined with instruction in vital statistics, the special provision, though not so extensive as at Baltimore, is on very similar lines, but both at London and Baltimore it is recognized that epidemiology, properly defined in a broad sense, is a science much too comprehensive to be taught in any single department of the school. Hence, in that bearing its name, the consideration will be limited to certain aspects of the subject, some of which are best studied in the field.

### *Biometry and Vital Statistics.*

The department of biometry and vital statistics fills the whole of the third floor, and it would seem that the large amount of space at its disposal is somewhat disproportionate, considering, for example, that the large department of medical zoology, embracing a number of highly important subjects, possesses similar accommodation, if we exclude the section of filterable viruses, which does not really belong to it. The strong position



of biometry and vital statistics at Baltimore is doubtless traceable to the influence of Dr. Raymond Pearl, formerly the director of this department and now head of the Institute of Biological Research, with which his old department is in close association.

The department has a general lecture room, a general student laboratory with its seminar room, staff offices, the graduate student library, the departmental library, the general laboratory rooms, and storage rooms. The department is specially well equipped, containing a complete Hollerith outfit for analysing statistical data by the use of punched cards, a drafting and photographic section with a photostat machine for duplicating work, and a supply of drawing instruments, together with planimeter and integrator. Practically all types of modern computing and adding machines are in use in the department, and each student has a computing machine.

One room is fitted up as a probability laboratory and contains a sampling machine designed and built by the department. The departmental library is a special feature, for it collects and stores the raw data in the field of vital statistics. At the London school good provision has been made for the study of vital statistics, at least by the ordinary D.P.H. student. With facilities available at the Galton Laboratories of University College there was no need to have such a large and elaborate department as the Johns Hopkins school can boast.

#### *Medical Zoology.*

The fourth floor at Baltimore corresponds to the third floor of the London school, for it houses the department of medical zoology, including protozoology, helminthology, and medical entomology. A large room consisting of four units is used as a lecture room and laboratory for courses in these subjects and in parasitology and filterable viruses; it is used also for the weekly meetings of the Research Club in Medical Zoology and for various special meetings. A two-unit room adjoining the students' laboratory serves as a students' reading room, and also for seminary meetings and also for the weekly luncheons of the department; in it are the Samuel Taylor Darling Library and the departmental library. A number of other rooms for general use by both students and investigators include a refrigerator room, a centrifuge room, and rooms for instruments, glassware, chemicals, and technical assistants.

A group of seven rooms is provided for protozoology, and a similar group of eight rooms for helminthology; there are three rooms for medical entomology, and one for filterable viruses. A large three-unit room is used for students carrying on special work in medical zoology. This division of the floor space enables the students of each subject to maintain constant relations with each other, and supplies a common meeting place in the seminary room, students' laboratory, and general supply rooms.

There is a general resemblance to the arrangements at the London school, where, however, the general students' laboratory is much larger, as all the students studying tropical medicine have to be accommodated, and provision is being made for an insectarium and an aquarium.

#### *Bacteriology.*

The department of bacteriology, which is on the fifth floor at Baltimore, has been organized along somewhat special lines. A large media preparation division has been established; though expensive to run, it saves both time and effort on the part of instructors and students. There is a teaching laboratory easily accommodating forty students, and in it courses in what are called sanitary bacteriology and public health bacteriology are given. The former embraces the bacteriological examination of air, soil, water, sewage, milk and other foods, while the latter is concerned with the study and identification of the pathogenic organisms responsible for disease in man and the differentiation of the pathogenic bacteria producing disease in man and animals from similar organisms which play no such part. A smaller laboratory is devoted to work on food bacteriology and spirochaetology, and graduate students have a room to themselves. There is also a small laboratory for the chemical work which is necessary, from time to time, in any bacteriological department. There are rooms in addition for single workers and for two workers, and a seminary or lecture room, shared with the department of immunology.

#### *Immunology.*

The importance now attributed to the study of immunology is shown by the fact that the sixth floor is devoted to the department bearing that name. Its needs have been met by the provision of a laboratory for general class work, quarters for special and advanced students, private laboratories for members of the staff, a centrally placed preparation unit, and quarters for rather a large number of laboratory animals,

because the nature of the class work necessitates the use of a number of animals by each student.

At the London school bacteriology and immunology form one division. It is well housed, but cannot be given such a large amount of space as is available for the two departments in Baltimore. In London it would not be possible for each student to carry out the immunization work with animals which is found so useful in the training at Baltimore.

#### *Physiological Hygiene.*

On the seventh floor is the important department where is studied the application of physiology both to personal and public hygiene. In addition to research and general laboratories and a dark-room for photometric and visual experiments, there is a lecture room accommodating seventy-five students so planned that it can be utilized for experimental and demonstrational exercises in two special directions. Lighting fixtures permit a study of the relative efficiencies of different methods of illumination, while communication by appropriate inlets and outlets with an elaborate air-conditioning plant in an adjoining room enables observations to be made upon the classes of different combinations of temperature, humidity, and movement in the air supplied to the lecture room. This is certainly a novel and presumably also an effective method of impressing upon the students the lessons it is desired to inculcate. The air-conditioning plant is also connected with a special cork-lined experimental room fitted with double windows, a refrigerator door, and ventilating fans. Here the physiological effects of change in atmospheric conditions upon man and animals can be studied. Each member of the staff is provided with an office and a private laboratory, and other rooms are equipped for research work by advanced students. The large laboratory for class work accommodates fifty students.

In the case of the London school it was originally intended to give physiological hygiene a floor to itself, but considerations of cost rendered this impossible, and it now occupies a large part of the first floor. Its general laboratory in size and position compares not unfavourably with that in Baltimore, and, speaking generally, it presents many of the same features. The x-ray section and air-conditioning room had to be placed in the basement, and it is at least doubtful whether the London school can afford to install an air-conditioning plant of the type in use at Baltimore. The question of lighting fixtures for comparing different schemes of illumination has not been considered in connexion with the plans for the London school, and it is doubtful whether the cost would be justified.

#### *Chemical Hygiene.*

In the department of chemical hygiene, which is on the eighth floor, five courses are given:

1. Analysis of food and water, the detection of adulterants, and the exercise of Government control over food products.
2. Analysis of blood, urine, and tissues, designed to familiarize students with methods used in the study of metabolism.
3. Metabolism and diet, covering the more important researches in the field of nutrition.
4. Technique of animal experimentation, designed to meet a demand for workers equipped to enter the field of research in nutrition.
5. Sanitary production and handling of food. During the course industrial plants are visited.

The department has a large student laboratory and fifteen rooms, four equipped as private offices, ten for chemical work, and one for histological study. Eight of these are private laboratories, and each has a shower bath as an emergency in case any student sets his or her clothing alight. One has already rendered timely service in such a case. On this floor also are provided a polariscope and a photographic and a constant temperature room. At the London school the division of chemistry with the department of biochemistry will occupy part of the second floor, which it shares with the division of bacteriology and immunology. It is not so large as the department at Baltimore, but resembles the latter in having a large animal room set apart for biochemical work.

#### *Filterable Viruses.*

A small floor up in the roof houses the department of filterable viruses, which is at present part of the department of medical zoology, but will doubtless before long become an independent unit. The study and laboratory of the head of the department are on the fourth floor, but on the ninth there are two research rooms, a room serving as a secretarial office both for the department and for the *American Journal of Hygiene*, which is here edited, and a room for animals. There are also facilities for photographic work.

It will be seen that this great building has been very carefully designed. It is well built, attractive in its layout, pleasant as a working place, and admirably adapted to the purposes which it has to serve. The Johns Hopkins University is to be heartily congratulated on this accession to its research and teaching resources, and all interested in public health development in the United States and elsewhere will wish the School of Hygiene and Public Health at Baltimore a continuance and enhancement of the success it has already achieved.

## RACIAL DECADENCE.

DAVID LLOYD ROBERTS LECTURE BY THE DEAN OF  
ST. PAUL'S.

BEFORE the Royal College of Physicians on November 18th, Sir JOHN ROSE BRANFORD presiding, the Very Rev. W. R. INGE, D.D., Dean of St. Paul's, delivered the David Lloyd Roberts Lecture, taking for his subject racial degeneration.

Dean Inge began by remarking that eugenics was a branch of science in which he had been keenly interested for many years, ever since he was a near neighbour of Sir Francis Galton in Rutland Gate, and learned from that fine old man to fool some of his own enthusiasm about the possible improvement of the human stock. For him (the Dean) it had been, of course, a hobby rather than a rigorous study, and he could not suppose that any utterance of his on this abstruse and difficult subject would have any value as a contribution to knowledge. It would deal rather with the borderland between strict science and practical social hygiene. Politics ought to be a branch of social hygiene, though at present social hygiene was hardly even a branch of politics; but the subject of racial decadence was one of supreme public interest, and he wished he were better equipped with technical knowledge to state the problem.

He had taken the negative side of eugenics rather than the positive—racial degeneration rather than racial improvement—not because he had any natural tendency to dwell on the dark side of the changes which were proceeding in the human race, but because at present negative eugenics was far more important than positive. Natural selection in a humane and highly specialized country like our own had almost ceased to operate, and if some rational substitute were not provided for it, Nature would punish us for interfering with her methods of social hygiene without providing anything to take their place.

### *The Effects of Specialization.*

All science was based on the belief that in natural laws there was neither variability nor shadow of turning. Biological progress meant increasing complexity of structure and function, increasing specialization and co-operation of parts, but what was called human progress was more than this. Specialization always meant limitation in some direction (fortunately there were physiological limits to specialization itself); we could not, for example, have both wings and arms until we became angels, and if our limbs were good for running we could not swim like a fish. Highly differentiated organisms were fit only for certain conditions, and when those conditions were changed the organism must either perish or return to a less differentiated type. It was only the least differentiated organisms like the gorm cells which were potentially immortal.

In the human species there had been three stages of evolution: increasing complexity of bodily structure, increasing intelligence, and increasing social organization. It was broadly true that when a new stage began the evolution of the earlier stage became less active. To judge from other living organisms on the earth, stability seemed to be the rule, change the exception. It was probable that the four ice ages, divided by long interglacial periods, had had a great deal to do with the evolution of humanity. Perhaps Nature had expended nearly all her ingenuity. There had been no new classes since the appearance of mammals and birds in very early times. Even social evolution seemed to have come to an end. State socialism could no further go than towards a "Socialist Utopia governed and run by maiden aunts." Man had been a distinct

species for probably more than a million years, but anything like specialization was a matter of the last ten thousand years or so, and this was a very short time for him to adapt himself to revolutionary changes in his habits. It was not to be wondered at that disharmony, bodily as well as mental, existed to plague us in our health and conduct. He supposed pathology was mainly concerned with such disharmonies, and it was instructive to notice how small a part disease played in the lives of wild animals, which were better adjusted to their environment.

### *Degenerative Changes in Human Structure.*

It was sometimes said that evolution was rapid to start with, when some climatic or other change set it going, and then it came to a stop; but it seemed possible that physical changes were going on in our bodily structure as rapidly as ever, though, unfortunately, they seemed to be degenerative. It had been pointed out that the foot was altering, the little toe decreasing and the big toe increasing in size, the teeth were decreasing in size and strength, baldness in middle life was perhaps increasing, and something seemed to be happening to that apparently useless organ the appendix. He could not help thinking that eyesight had deteriorated rapidly. Very few middle-aged men could read a closely written or printed mediaeval book without glasses, though the ancient Greeks went on reading and writing without mechanical assistance till extreme old age. Nearly all the aptitudes which distinguished the handy man from the simploton were now becoming superfluous. We might some day have a generation which could neither walk nor write, relying on the car in the one case and the typewriter in the other. Nature would leave us just enough intelligence to "press the button."

Had human intelligence advanced during the last five thousand years? It seemed very doubtful. Look at the ancient Egyptians living in large and well ordered communities, with all the facilities of a complex civilization. He would not go so far as Sir Francis Galton in estimating the comparative intelligence of the ancient Athenians, but there could be little doubt that the Greek was our superior. Civilization was mainly the result of accumulated knowledge and experience; each generation stood on the shoulders of the last, and had the chance of climbing higher from that point. Most of our acquisitions were in the custody of very few persons. Some of them were trade secrets, others could be mastered only by long years of application, and this explained why the arts and structure of civilization had occasionally disappeared. Some calamity might break the tradition. In medicine Celsus and Galen were far in advance of the superstitious and ignorant practice of the Middle Ages. It was unlikely, but not inconceivable, that such a disaster might occur again. There was a contemporary example in Russia, which, when it recovered, would have to go to Germany and other countries for the arts and sciences which had been almost extinguished at home.

### *An Industrialized Civilization.*

Analogy suggested that where the weight of sustaining civilization was thrown upon tradition other faculties by which man slowly raised himself from savagery were likely to become partially atrophied. Whether such atrophy could be inherited was a vexed question into which he, an outsider, would be wise not to enter. It could not be disputed that those qualities which were once essential to progress had no longer the same survival value under civilization of the modern type. An industrialized civilization skimmed off the cream in each generation and then threw much of it away. In some societies a highly cultivated minority had flourished and produced achievements which were the wonder of posterity, but the remainder of the population were still quite uncivilized and uncared for. There had been biologists who accepted this type of State as the best. Benjamin Kidd also thought that cut-throat competition resulted from deep-seated physiological causes, the operation of which was inescapable. But unlimited competition exhausted the competitors, and, whether voluntarily or involuntarily, sterilized them. So severe was competition in the United States that 1,750,000 policy-holders of insurance companies gave an average life of 46 years for males and 52 for females. But in all the higher faculties

competition was not the chief motive force. The millionaire was not the supreme human product.

Altogether the lecturer did not think that those who wished to keep the masses in a servile state—if there were any such left—could appeal successfully to biology in support of their views. A society with well marked castes might be successful, partly because by encouraging good traditions of skill in the element of specialization it but not if it included an ignorant and wretched proletariat. The plan of developing to the utmost a small selected class had been tried several times, but it had not been proved that equally good results might not have been obtained by other methods involving less injustice.

#### *The Relative Importance of Nature and Nurture.*

It had now to be considered (Dean Inge continued) whether civilization was working towards the degeneration of the national stock. It was necessary to take into account, not only the parasitism of persons or classes on the community, but the new danger that human beings might become parasitic to the machines which they had made for their own use. This last was obviously a problem which belonged to the human race alone. It would be generally admitted that social science had been too exclusively environmental, though it was not necessary to minimize what could be done by external means, such as education, sanitation, and increased opportunities for leading a healthy life. Sometimes the diseases which were supposed to be hereditary could be eliminated by scientific treatment, instancing the freeing, almost, of the Swiss valleys from goitre, which had been endemic there ever since the time of Juvenal. It used to be supposed, again, that Europeans were constitutionally unable to keep their health in a tropical climate, but it seemed now that in the absence of tropical diseases, such as malaria and yellow fever, which were being brought under control, even northern Europeans could live healthily in climates as hot as that of North Queensland. Still, when all had been said in favour of concentrating attention on the environment, the best authorities were unanimous that nature was far more important than nurture. Professor Karl Pearson had come to the conclusion that if the relative importance of nature and nurture in determining bodily and mental character were compared it would be found that nature was at least five times—perhaps even ten times—more decisive than nurture.

#### *Hereditary Transmission of Characters.*

Transmission of characters was now seen to be far more complex than was once supposed. Much might still be learned by collecting families and observing what qualities tended to reappear in the second and succeeding generations. Galton hardly allowed sufficiently for the good stock which the son of an able man possessed—the stimulating influence of the home circle in which he was brought up, the ambition to follow in his father's footsteps, the opportunities of good education which his father's success enabled him to procure, and, in some professions, such as politics, the opening which he secured into the profession by virtue of his father's prominence in it. It would also be found, if the literature of the subject were studied, how frequently striking pedigrees, such as the Bachs, the musicians, and in our own country the Darwins, made their appearance. A much larger number of pedigrees was needed, including not only five-talent but two-talent men. Inheritance of high stature and other physical qualities could not have escaped notice, and if matings were made with a view to preserving some particular character there was no reason why that character should not be secured. The qualities which led to distinction in human letters appeared to be strongly inherited; the inheritance of skill in mathematics appeared to be more sporadic. The history of many professional families would be well worth tracing in detail.

The lecturer went on from this to speak of the falling birth rate among the professional classes. The higher races and classes were using the resources of scientific knowledge to reduce the death rate of the inferior and the birth rate of the superior. If 1170's 1170 were opened at random and

the number of children in fifty or a hundred consecutive entries were counted the average would be found to be slightly less than two for each entry, so that these families of moderately successful men were not keeping up their numbers. This relative sterility of the professional classes was a new thing; so was the sharp decline in the infant mortality of the slums; so was the feminist movement, which, according to some, was the most dangerous factor of all because it made the most intellectual women decline marriage or motherhood. Beyond all question the classes best endowed intellectually, and, in this country, the best endowed physically as well, were passing into a relative or even an absolute decline. Taking the country as a whole, the lowest birth rates were in the families of members of the medical profession, teachers, and ministers of religion; yet no more desirable parents could be found than the members of those professions. Before leaving the subject of good heredity, he called attention to one of the most remarkable examples of how a country might be permanently enriched by a very small accession of racial stock. To judge from the claims of some prosperous Americans, it might be supposed that the *Mayflower* was as large as the *Olympic*! But in fact only thirty-three pilgrim fathers founded families. The names of some of the most distinguished of their descendants included many Presidents of the United States, and other distinguished men in American politics, arts, and letters. Nearly half the distinguished men in America were descended from those thirty-three pilgrim fathers.

#### *The Propagation of Bad Stocks.*

Finally the Dean turned to the injury done to the national stock by the unchecked propagation of bad stocks. The feeble-minded were about 50 per cent. more prolific than the normal. The researches of Tredgold were decisive on that point. It was not generally known that although the death rate had declined rapidly, this decline had been entirely in the earlier periods of life. The expectation of life at 60 was no higher than it was two generations ago. From the age of 45 cancer began to levy a cruel toll on both sexes. Was the national physique improving or deteriorating? On the Continent it had been found that the stature of Danes had risen appreciably during the last fifty years. The average height of the Dutch had risen during the last third of a century. In France the average height of women was said to have increased by 3 cm. during the last eighty years. There were no figures, apparently, available for England, but recently in the *English Review* certain statements were made suggesting that there had been a marked deterioration among the people of this country. It would be interesting to know whether those statements could be challenged. The matter was serious, especially if, among Continental peoples, the tendency was the other way.

There was another means, besides dysgenetic selection, by which the stock might be impaired. Modern workers were parasitic to the machine which had ousted them from natural human occupation. Apart from the machine they would be helpless, even in the presence of abundant material. A company of such men, left to themselves without their machines, would most likely perish.

Nevertheless, he was inclined to hope that it was not too late to stop the mischief, which had not yet had time to go very far. We must hope for the generation of some social antitoxins. We were not yet a degenerate people. We were a race to which any man might be proud to belong. But society was not at present in a healthy condition, and unless the problem of racial decay were taken in hand it might be too late. All they could do at present was to persuade their countrymen what were the pressing problems—so very different from those in which politicians interested themselves. The great medical societies could do much if they would speak out. They did not realize how eager the public would be to listen to them. The modern man might deny that he had a soul, and forget that he had a mind, but he was acutely conscious that he had a body, and accordingly he had a great respect for the doctor. Personally the Dean wished that the medical societies would testify, for when they spoke he nearly always agreed with them.

# British Medical Journal.

SATURDAY, NOVEMBER 27TH, 1926.

## THE UNIVERSITY OF LONDON: A NEW PHASE.

DURING the past few weeks two incidents of great importance have occurred in connexion with the University of London. It will be remembered that in 1920 the Government purchased a site of eleven acres to the north of the British Museum, and offered it to the University on certain conditions. One of these conditions postulated the removal of King's College to a portion of the site. After prolonged negotiations between the University, the Treasury, and King's College, King's College determined, at the end of 1925, not to remove itself to the Bloomsbury site. Under these conditions it was impossible for the University to accept the site on the terms on which it had been offered. Although communications were made to the Government with the object of having the site conveyed to the University so that it might be utilized for various University purposes, the Government, in view of the inability of the University to accept the site on the conditions under which it was offered, invited the Duke of Bedford, in accordance with the terms of the original sale, to take it back at the price at which it had been purchased—namely, £425,000. The Duke of Bedford accepted this offer for repurchase, and consequently for the time being the site, as a whole, was lost to the University.

Recently, however, the Chancellor of the Exchequer indicated that he would be prepared to give a certain capital sum to the University, part of which should be used for the purchase of a portion, or as much as possible, of the Bloomsbury site. The Senate, at its meeting on October 20th, decided to enter upon negotiations with the Bedford Estate for the purchase of the blocks of land on either side of the British Museum Avenue between Keppel Street and Montague Place. These negotiations are now proceeding, and, we trust, will come to a successful termination.

The exact University purposes for which this land will be utilized have not yet been settled. The main principle, however, decided by the Senate is that the central administrative offices should remain at South Kensington in the buildings known as the Imperial Institute. The University institutions which it is considered possible may be placed on the land which is acquired at Bloomsbury are the Institute of Historical Research, the School of Oriental Studies, the Architectural Atelier, the Students' Union, the General University Library, the headquarters of the University contingent of the Officers' Training Corps, and so on. It will not be forgotten that on a site immediately adjacent to that indicated above the building of the London School of Hygiene and Tropical Medicine is being erected. We have also heard it suggested that if arrangements can be made Birkbeck College is very desirous of acquiring a portion of the Bloomsbury site. As is well known, the buildings and accommodation of Birkbeck College are extremely cramped, and from their position cannot be readily enlarged so as to meet present requirements.

If the negotiations of the University are successful, and it acquires those portions of the Bloomsbury site

which it desires, there is no doubt that an important movement towards the establishment of a University centre in London will have been brought about.

The second point of importance is the fact that the University of London Bill passed its second reading in the House of Commons on November 19th, and that the money resolution required for the bill was agreed to in Committee. The bill, which has already passed through the House of Lords, was introduced in the Commons by the President of the Board of Education, Lord Eustace Percy. He stated that the object of the bill was to appoint statutory commissioners to draw up statutes for the University of London in general accordance with the report of the Departmental Committee, issued in March, 1926. He said that the bill, in the main, followed the lines of the measures which had already been introduced for the Universities of Oxford and Cambridge. If reference is made to our analysis of the report of the Departmental Committee in the JOURNAL of May 22nd, 1926 (p. 875), it will be seen that the chief recommendations of that committee consisted of two things. First, to modify the present constitution of the Senate so as to give representation on it to the constituent schools of the University. At the present time the only constituent schools which have direct representation on the Senate are King's College and University College. Secondly, the departmental committee proposed the establishment of a Finance Council to deal with all questions of finance. It is not recommended in the bill that the Commissioners should alter the representation of the faculties or the body of graduates on the Senate. It does, however, entail a reduction by the removal from the Senate of certain nominated members, such as those who in the past have been appointed by the Royal College of Physicians, the Royal College of Surgeons, the Incorporated Law Society, and the Inns of Court. The reason the Departmental Committee gave for the elimination of these nominated senators was that they could not get any proper organic representation of the schools of the University without eliminating some of the present members. Lord Eustace Percy stated that it was not proposed to interfere with the rights of either theological colleges or external students. Dr. Little, in moving the rejection of the bill, based himself on the lines of the now defunct Haldane report. The arguments he used, however, were mainly in favour of reform coming from within, and of ensuring that there should be no interference with the supreme authority of the Senate in all matters financial and academic. These arguments, however, did not convince the House of Commons, and the bill was read a second time without a division.

Most of those who have had experience of the detailed working of the University, especially as regards its administration, entertain no doubt that the establishment of a new Finance Council and the modification of the constitution of the Senate on the lines proposed will tend in the future to great improvements in all branches of University work in London.

As regards the work of the Finance Council, it is proposed that the Government grant of about £360,000 (at present given through and allocated by the Universities Grants Committee) and the grant from the London County Council of £70,000 shall be paid to the University as block grants, and it will be the duty of the Finance Council, after receiving recommendations from the institutions concerned, either direct or through the Academic Council and the Senate, to allocate this grant. The creation of a Finance Council

on the lines proposed will enable men of great experience in finance and public and municipal work to take an active part in the promotion and advancement of University matters in London. In the past, owing to the constitution of the Senate and the method of administration such a constitution entailed, it has not been possible to any great extent to appoint men to the Senate who had such experience.

### HOSPITALS AND ROAD ACCIDENTS.

It is of some interest to recall the forebodings of disaster and danger that heralded the coming of the railway train, and to note how amazingly safe the railroad has proved. The motor car did not arouse similar fears at its coming—merely popular curiosity. The red-flag-to-the-fore of its early days was a relic of the fear of the locomotive. The automobile has increased local mobility in astonishing fashion. No one thinks anything of a fifty-mile run; it will be done on the spur of the moment, with no more preparation than securing a can of petrol. But it has brought more problems than did the revolutionary railroad, for the car has penetrated our common life, and not been built up alongside it like the railway. Local mobility has increased to such an extent that it has almost choked itself. Hence the problem of the city streets, and of by-passes and of parking. Road accidents on the highways, at crossings and bends, are in a different category. Here the primary cause of accident is speed. When cars were unreliable machines half of the driver's consciousness was absorbed in listening to the sounds of his car; such speed as his car could accomplish he dared not attempt, because of that dubious sound which might threaten a breakdown. Now smooth, almost inaudible, swiftness is the common measure of the least of cars. Fifty miles an hour can be touched on a fair road, and the high average of thirty miles an hour for long journeys is within the compass of a car costing a hundred and fifty pounds. The ease of speed makes speed easy. Driving becomes monotonous; slackness and rashness are engendered. At the moment of stress the driver is at fault. He is too late in slackening speed, too eager to seize an advantage, too sudden with his brakes, and there is a crash. The consequences are recorded daily in the press.

The frequency of these road accidents is causing a serious disturbance of hospital bed accommodation. Beds that were intended and are needed for the sick poor are occupied by the victims of motor cars. We hear of hospital wards where there is no room for appendix cases because all the beds are occupied with accident cases. Again, the finances of the hospitals are disturbed. Funds that were given by benefactors for the sick poor are diverted to the relief of those well able to pay for their treatment or for whom insurance should provide. The doors of the hospitals are rightly ever open to the call of the injured, whether he has fallen amongst thieves or been mangled by a car. But, unlike the good Samaritan, who paid his two pence to the innkeeper for the care of the injured stranger, those concerned with the victims of motor smashes too rarely remember the cost to the hospital, and the skill and care of the hospital doctor. Mr. Bishop Harman, in his paper on "The modern hospital conception," read at Windsor (p. 984), calls this exploitation of the hospitals and their staffs "modern hospital abuse," and roundly charges the wealthy insurance companies and their shareholders with exploiting charity for the business of earning

dividends. Part of the blame for this lies with the hospital boards and medical staffs; they have not readily asserted their just claims. But there are signs of an awakening. In recent issues of the JOURNAL we have quoted reports of action or projected action by hospital boards coming from widely separate parts of the country, the latest from Edinburgh and Aberdeen. New accident wards are being provided, and the cost of these and their upkeep should be met by the recipients of the treatment or by those who act on their behalf. We hear of one such ward to be opened shortly at the West London Hospital, where the munificent donor of the ward and its equipment stated that he was prepared to meet the deficit on the upkeep of the ward provided the patients paid such share as they were able. That stipulation is a sign of the times.

The subject of the attitude hospital authorities should take up with regard to cases of accident admitted to their wards when the injured person is insured was considered by the Annual Representative Meeting of the British Medical Association in 1925, and again this year. The opinion was unanimous that in all such cases where medical attendance is covered either directly or indirectly by insurance, the hospital authorities should recover from the insurance company the full cost of maintenance and treatment of such patient. The Representative Body also recorded its opinion that where patients who would ordinarily be considered as private patients are admitted to hospital solely on account of accident or emergency, they should be considered "private patients." Members of the staffs of hospitals will no doubt be glad to quote this expression of opinion by the Representative Body to reinforce advice they may themselves think it proper to give to the boards of their hospitals. It is to be anticipated that the members of such boards will appreciate the equity of the suggestion, and the directors of the Aberdeen Royal Infirmary have already resolved to ask insurance companies to accept responsibility, while at Edinburgh the matter is to be raised again at the beginning of next year, when a return of the number of cases admitted to the Royal Infirmary owing to motor accidents will be available.

### ANALOGIES AND CRITICISMS.

AFTER-DINNER speaking is a difficult art, and unless it reaches the high level attained at the annual dinner of the Royal Society of Medicine last week listeners are apt to be disappointed. At a medical dinner it is customary for a speaker not belonging to the medical profession to seek for some ground of analogy or comparison between it and his own. We have all appreciated the generous attempts of clerical speakers to recognize an alliance or similarity of purpose between Medicine and the Churches, and some of us think we have detected an increasing disposition to answer the question, Who shall minister to a mind diseased? by saying, "Both of us working together." Evidence is increasing that the wiser among the clergy are learning one of the lessons which medicine has to teach—namely, that really bad people are very few, and that much of the irritability that spoils domestic life and leads to deeds of cruelty and violence is due to physical causes which medicine can alleviate or

<sup>1</sup> The resolution was approved at the Annual Representative Meeting in 1925. At the meeting this year it was formally adopted and became the policy of the Association. The full text will be found in the SUPPLEMENT of July 25th, p. 55.



remove. The lawyer finds it a little more difficult to draw a parallel, for he—the barrister at any rate—sees for the most part the seamy side—the evil passions, the obstinacy, the falsehood, and the cunning, by which the good in human nature is so commonly perverted when it gets into the law courts. Though we may agree that the Bar has been and is one of the chief bulwarks of our liberties, the change in mentality which comes over the better sort of advocate when he reaches the Bench is one of the curiosities of psychology. Some other professions—the chemical and engineering, for example, which have to do with bodies possessing properties which can be exactly measured and controlled, and their actions and reactions foreseen—do not venture on a comparison, and all that Sir William Bragg, speaking at the dinner as a physicist and chemist, could claim was that chemistry and physics were able to help medicine in many ways, and thus in part to repay the debt general science owed to the physician at the time of the great renaissance of science which marked the close of the seventeenth and the opening of the eighteenth century.

The Prime Minister had an easier task when he compared medicine with his own profession of politics. Both are attended by the uncertainties and surprises inseparable from the idiosyncrasies of man, the variations between individuals and in the same individual at different times. *Varium et mutabile*, though said of woman, is true also of the other sex. It is one of the conditions the politician must accept, as it has to be accepted also by medicine—with this difference, that the patient is perhaps on the whole more loyal to his doctor than the voter to his party leader. Possibly that is because, as Mr. Baldwin admitted, legislation so seldom produces immediately the result desired. Sometimes the law courts decide that Parliament has not said what it meant; sometimes the results sought, though they are attained in the end, are long in coming, and the voter, growing impatient, seeks another opinion and installs new rulers; sometimes changes at home or abroad alter entirely the nature of the problem to be solved. Perhaps Mr. Baldwin made his best point when he likened the community to the living body, for his description of the State might be applied without alteration to the living body—an infinitely complex assembly of growing structures, the cells that compose it being always born and always dying, while throughout the change a moving equilibrium of the whole is maintained. Sir Berkeley Moynihan worked out another happy example of an analogy, suggested by Dr. Robert Hutchison, and ingeniously sustained it in light and humorous vein.

Sir James Berry's speech from the chair afforded an instance of a quite other sort of purpose an after-dinner speech may be made to serve: it may be used, as he used it, to raise on an informal occasion a matter of serious import. His point was that one after-effect of the war had been the spreading over this and other countries of a wave of enthusiasm for operative surgery. When he said that major operative surgery should rest on a solid foundation of pathological anatomy, and that war surgery, mainly the surgery of injuries in healthy men, was not in itself alone a complete school for the surgery of civilian practice, he no doubt only expressed an opinion to which the majority of the profession would subscribe. His further statement that many difficult and dangerous operations are being undertaken by those whose training, experience, and judgement are often insufficient was, we readily believe, made from a stern sense of duty and with reluctance. It needed, as Sir Berkeley Moynihan afterwards observed, some courage

to say such a thing. Of the extent to which it is justified we have no means of forming any reliable judgement. That it will cause some resentment our correspondence columns already afford evidence. If it gives rise to a temperate and reasoned discussion within the medical profession it will probably have done good, but it has already been seized upon by some of the less responsible newspapers. This is unfortunate, though no doubt inevitable.

#### ACUTE POLIOMYELITIS.

THERE seems, we are glad to say, to be some reason to believe that the crest of the wave of the epidemic of acute poliomyelitis has passed, for we understand that the notifications, which reached a total of 319 in October, numbered only 65 in the two weeks ending November 13th. If this happens it will be in accordance with previous experience, as the disease in this country has usually reached its greatest prevalence in the summer and declined at the beginning of the winter. The statistics of the incidence of acute poliomyelitis and polio-encephalitis given to the House of Commons by the Minister of Health on November 23rd (p. 1026) indicate that though the disease in other countries as well as in this did not disappear during the first half of 1925, its incidence was much lower than in the second half of that year. In England and Wales the contrast is of 132 to 290. In the Scandinavian countries, including Finland, the number of cases notified in the first six months of 1925 was 136; in the second six months of 1925 it was 578. The figures for Norway apply to the towns only. The number of cases in England and Wales in the first six months of this year was 136; since the beginning of July the number of cases notified of acute poliomyelitis (alone) has been 738. That we must not assume we are yet out of the wood is shown by the facts mentioned in another column this week (p. 1019) by Dr. J. E. O'Connor for the Leicester-shire and Rutland Combined Districts, and by Dr. Clapperton as to Oakham. The first two cases occurred in Oakham during the week ending October 9th, and there were two cases—one each in the urban and in the rural district—as late as November 6th. The outbreak at Grays Thurrock, so carefully studied by Dr. Boul, medical officer of health, occurred at the usual season. It will be seen from the abstract of his report, published at page 1007, that the chief prevalence was in July and August; the number fell from 31 in August to 6 in September, and there has been, we gather, no case since. The details of the Grays epidemic, so fully obtained by Dr. Boul, afford strong evidence that the disease is communicated either directly by association between one person and another, or; as other observations have made pretty certain, by carriers. Dr. Boul was able to discover 58 cases, and of these 11 died; this is a death rate of approximately 19 per cent., and therefore rather less than that observed in the great epidemic in New York in 1916, when it was 25 per cent., but higher than that of 10 to 12 per cent. commonly assigned. This, however, is only part of the toll taken by the disease, for 28 of the persons attacked at Grays are left with a greater or lesser amount of paralysis. The position with regard to Uppingham School appears to be satisfactory; since the school was disbanded only one case has occurred, in a boy who was attacked in his own home. It will be remembered that, owing to the occurrence of two cases of poliomyelitis, the school was closed on November 13th, and the boys sent home by the authorities for sixteen days, and told to return on November 29th. The wisdom of this decision was challenged by Lord Dawson of Penn and Dr. James Collier in a letter published in the *Times* of November 16th. On November 18th the school

authorities for the first time consulted Sir Humphry Rolleston, and as a result the above decision was reconsidered. The parents were informed that, as it was impossible to give an assurance that no further cases would occur when the school reassembled on November 29th, it had been decided that the boys should not return to school this term. The advice not to reopen before Christmas was based on several considerations, such as the desirability of allowing for a fully ample period of incubation and accompanying quarantine; the short duration of the remaining term (just over three weeks from November 29th); and the possible untoward influences of travelling in winter on the boys' resistance, and of a return to the environment where two cases had already occurred. We feel that we are absolved from now discussing further the policy of disbanding Uppingham School by the letters which, in response to our requests, we have received from Dr. Miller and Dr. Dunn; they are published at page 1019.

#### MERCUROCHROME.

DURING the last decade an intensive search has been pursued for some drug which will act as an internal disinfectant in cases where bacteria have established themselves in the body. Numerous new drugs have been prepared by organic chemists, but in most cases the clinical results have been disappointing. In the case of the dye mercurochrome-220 there is, however, a very considerable quantity of favourable clinical evidence, which has come from several different countries. Mercurochrome-220, or di-brom-oxymercuri-fluorescein, was introduced in 1919 by Young, White, and Swartz. The name attached to the name indicates its place in a series of disinfectants examined by these workers at the Brady Urological Institute, Baltimore. The drug has been found to be a general disinfectant of high value, and when applied in 2 per cent. solution to open wounds or mucous membranes it exerts a powerful and prolonged disinfectant action and produces little local irritation. The action of the dye as an internal disinfectant has, however, attracted especial attention; it is given intravenously in 1 per cent. solution in doses up to 5 mg. per kilo body weight. The drug has been tried in a large number of different types of infection, and some very remarkable results have been recorded. In a recent communication Young<sup>1</sup> gives records of 680 cases treated with mercurochrome-220. His records show that in 173 cases of septicaemia a cure was effected in 63 per cent. Successful results are also recorded in leprosy, anthrax, and malaria. In acute encephalitis his records show that five cases were treated and that all were cured or improved, but that in residual cases no improvement occurred. The drug was used by Dr. Dunn in the second case of polio-encephalitis at Uppingham School. A single intravenous injection, given within a few hours of the onset of symptoms, was followed by an immediate improvement, and on the fourth day the boy was convalescent. Young did not find much benefit to follow the use of mercurochrome in ten cases of meningitis. Others have given rather less favourable reports than Young of its action in various diseases, but most observers are agreed that the drug often produces remarkable benefit, even in severe cases of generalized infection. The clinical reports are supported by extensive laboratory experiments. Young, for example, tested the drug in pneumococcus septicaemia in rabbits and in anthrax in guinea-pigs, and found that practically all the untreated controls died, but that mercurochrome injections saved about 50 per cent. of the animals. The drug is, of course, a powerful agent, and therefore can produce undesirable side-actions. The most unpleasant side-action is a painful colitis due to the

action of mercury on the gut. Some workers also have accused the drug of producing kidney injury—an effect that is likely to follow the intravenous injection of any organic mercurial drug if given in large doses. Young denies, however, that this is a serious danger if proper care is exercised. Time is of course needed in order to arrive at a final estimate of the value of any new drug, but the evidence existing regarding mercurochrome-220 is sufficient to entitle the drug to the careful consideration of the medical profession in this country.

#### ERRORS IN DIAGNOSIS.

If there is one thing the doctor would like to repress into his "unconscious mind" it is the remembrance of his errors in diagnosis and treatment. The repression, however, might cause some dreadful complex of depression; so that perhaps it would be better if the peccant practitioner sought help against future blunders by reading Sir David Drummond's article in the October issue of the *Newcastle Medical Journal*, now edited by Dr. F. J. Nattrass, on "Our mistakes and how they are made." We all make mistakes, Sir David Drummond says truly; whether everyone acknowledges all his mistakes is, perhaps, debatable. Unfortunately, we must agree with him that most of our mistakes in diagnosis are avoidable; and that the commonest explanation of a diagnostic error is carelessness. To plead, as an excuse for carelessness, overwork or lack of time is, says the author, no vindication, since no man is justified in undertaking more than he can perform. This, however, is a hard saying, because some doctors have more work thrust upon them than they would wish to undertake. Sometimes trouble in diagnosis arises because the doctor is looking for a complete clinical picture, and fails to recognize a case in which some usual symptom of the disease happens to be absent. In other cases a careful history of the patient has not been taken; or all the possibilities in a difficult and doubtful case have not been reviewed. Many of our profession, it is said, have fallen into a bad habit of postponing the investigation of a new case until a more favourable season, with the result that a mental impression of the condition, based upon nothing substantial, is accepted as diagnosis. Sir David Drummond objects to the "snapshot" diagnoses of the man who relies on his clinical instinct; and he calls attention to two curious psychological sources of error—the tendency in some men to seek an unusual diagnosis while overlooking the commonest cause, and the habit of others of allowing the mind to be influenced unduly by the findings in a previous case. Several of these causes of error are illustrated by cases which have been met with by Sir David Drummond during his practice as a consultant; but he has not gratified our curiosity by confessions drawn from his own soul.

#### PUBLIC HEALTH IN THE INDUSTRIAL REVOLUTION.

POLITICAL economists do not as a rule interest themselves to any great extent in medical science, but Mr. Buer, the lecturer on economics in the University of Reading, must be regarded as an exception. He has written an essay<sup>1</sup> on health, wealth, and population in the early days of the industrial revolution, which deals almost entirely with vital statistics, town improvements, water supplies and drainage, British pioneers in public health, hospitals and dispensaries, general hygiene, and midwifery during the period 1750 to 1815. He discusses also rickets, scurvy, antiseptics, leprosy, plague, small-pox, typhus, fever hospitals, and malaria.

<sup>1</sup> *Health, Wealth, and Population in the Early Days of the Industrial Revolution.* By M. C. Buer, B.Sc.(Econ.). London: Routledge and Sons, Ltd. 1926. (Penny 8vo, pp. xi + 290, 10s. 6d. net.)

<sup>1</sup> *Journ. Amer. Med. Assoc.*, 1926, 87, 1926.

He advances reasons for rejecting the common view that the great increase of population, during the years when industry began to feel the influence of the discovery of the steam engine, and with it the development of factories and machinery, was due to an increase in the birth rate consequent on the promiscuous herding of families in industrial towns; he attributes it to an astonishing decrease in the death rate, consequent on town improvements and on a raising of the standard of social hygiene and public health. He points to the increased wealth of London, where the commerce and foreign trade of the country were concentrated. Ship-building and other industries developed rapidly; and the demand for agricultural products to feed the growing population of London and of the industrial cities stimulated agricultural improvements, and led to increased facilities for transport by land and water. Food became cheaper and abundant; and sugar and tea were added to the national food supplies from our oversea possessions. With these the "grim spectres of famine and pestilence, which were never far distant" in previous years, were laid. Better building materials were brought to the towns owing to better transport facilities and the increase of capital; streets were widened and paved, drains were covered in, water supplies were improved, and easily washable cotton took the place of woollen clothing, leading to greater personal cleanliness, while iron bedsteads in place of the old wooden constructions diminished vermin. To the wealth of London is also attributed developments in medicine and in social philanthropy, such, for instance, as the great hospital movement of the eighteenth century. All of these factors had, Mr. Buer considers, an astonishing effect on the death rate. The sources of information regarding vital statistics of the period are limited, and consist mainly of parish registers, bills of mortality, certain taxation returns, and estimates of population by Rickman and Fiulaison, and of the Carlisle tables compiled by Dr. Heysham in 1815. Mr. Buer discusses their value in a lucid manner, and points out certain errors and false deductions which have been made from them. He exemplifies the influence of individuals of force and character in bringing about the changes in public health to which he attributes the rapid fall in the death rate. As Arthur Young, the agriculturist, said at the end of the eighteenth century, "Everything is well done in England except what is done with public money," and he instanced the practical results of individualism as opposed to bureaucracy. In his chapter on the pioneers of public health Mr. Buer enunciates a truth when he states that "war was a great stimulant to advance in medical practice, and that the origin of modern public hygiene must be sought in the departments of naval and military hygiene." The outstanding naval and military figures of the period were Pringle, Lind, and Gilbert Blane—incidentally, Mr. Buer omits Jackson, who was probably greater even than these—while Pereira and Ferriar in Manchester and Currie in Liverpool are mentioned as the prime movers in public health reform in civil life and in the organization of civil hospitals and dispensaries in these cities. Mr. Buer's essay is a valuable addition to the history of medicine and social hygiene, more especially as it comes from the pen of one who has studied closely and accurately the social and health conditions of the latter half of the eighteenth and early years of the nineteenth century from a political economist's point of view.

#### AWARDS AND DECORATIONS.

THE Royal Society of Medicine has honoured itself by presenting its gold medal to Dr. J. S. Haldane, F.R.S., of Oxford. It is a suitable recognition of a long life devoted with singular, but hereditary, ability to the study of some of the most fundamental problems of physiology.

There can be no more fundamental problem than that of respiration—its smooth working in health so that we are unconscious that it is going on night and day, and its disturbances by abnormal conditions in the environment. While his outlook on life is that of the philosopher, he has never lost touch with practical medicine, and of this his many contributions to our columns are evidence. His researches have elucidated the physiological conditions of respiration at high elevations as well as those which arise in the vitiated atmosphere of mines. The medal was founded by a gift from the late Dr. Robert Murray Leslie, and previous recipients have been Sir Almoth Wright (in 1920) and Sir F. Gowland Hopkins (in 1923). The society has also received a most welcome gift from Sir StClair Thomson, consisting of a chain to be worn as a decoration by its president on formal occasions. It is of 20/22-ct. gold, and has forty-nine links. It is unquestionably at least 300 years old, being described by the experts who have seen it as "circa 1600." Its authenticity and artistic value have been vouched for by experts at the South Kensington Museum and by well known artists, and Royal Academicians have expressed the opinion that there is no more beautiful chain of office in London. The colour of the gold is very deep, and the patina is of an exquisitely mellow quality. The form of the links is interesting, as each is composed of two delicately pierced concave discs placed rim to rim, the appearance of one link very much resembling a flattened pomander ball. There are two designs of link, one having eight cusps and the other four cusps on its circumference, alternating with radial arms. There is no history obtainable as to the original purpose of this chain. It is doubtless of Italian workmanship, and is such a chain as may frequently be seen in pictures of statesmen and princes of the Cinquecento. The Royal Society of Medicine has decided that its present badge is out of harmony with the chain. This badge is, in fact, that of the Royal Medical and Chirurgical Society, to which it was presented by Sir Edward Sieveking in 1890. The council intends to apply for a grant of arms, the shield of which will no doubt be reproduced in a suitable badge, and has accepted Sir StClair Thomson's offer to defray the expenses connected with this so that the chain and badge may be complete.

#### AMERICAN IMMIGRATION LAWS.

THE effects of United States immigration laws are engaging the attention of American sociologists. Dr. Clifford Kirkpatrick has published a detailed examination of the effects of immigration upon the intelligence of the population as measured by modern psychological tests. He gives an account of the methods of study, the work of previous investigators, and of an extensive investigation of his own, in a work entitled *Intelligence and Immigration*.<sup>1</sup> He concludes that there was at one time a supreme opportunity for developing a population of the highest quality in certain respects by the careful selection of immigrants, but that the opportunity was little appreciated. In general the findings of his study give little credit to the immigration policy of the past. He owns that intelligence is not the only trait of social significance, and that innate traits do not altogether dominate cultural considerations. Italians may have musical ability that goes far to balance deficiencies in other respects. Nevertheless, the findings indicate that there is a serious tendency for groups, apparently of lower intelligence, to be the very groups that in the last two decades have entered the country in the greatest numbers. There are exceptions. Some of the Jewish peoples are possessed of considerable ability. The Finns compare favourably with some Americans. It is

<sup>1</sup> *Intelligence and Immigration*. By Clifford Kirkpatrick, Ph.D. Baltimore: The Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1926. (Med. 8vo, pp. 128; 5 figures, 18s. net.)

thought probable, on the other hand, that the Italians, the Poles, and the Russians have a depressing effect on the average of American intelligence, and that the French Canadians have not raised it. Since much of the evidence is derived from the achievement of school children rather than from the immigrants themselves, even making due allowance for the influence of a language handicap, the findings are such as to raise grave doubts as to the success of the "melting-pot." There is another aspect of the matter which it is considered makes the shortcomings of the past immigration policy more serious—differential birth rates. The data collected appear to show that the higher birth rate is associated with inferior qualities. The author criticizes the "group selection" put into force by the law of 1924; there is, he says, no doubt that tremendous overlapping occurs, and that the best of the Southern Europeans are far superior to the poorest of the Northern. He would have an individual selection of immigrants based on scientific measurement and evaluation made as completely objective as possible, and the selection, he considers, should be made in the Eastern hemisphere. The effects of such a fine-tooth comb may be imagined. So far as it was effective its tendency would be to denude Europe of its best for the benefit of the United States of America. Possibly there would be a revolt on this side against such a policy, and it is conceivable that the States might be made to pay in cash for the value of the immigrants they receive.

#### SOCIETY OF MEDICAL OFFICERS OF HEALTH.

The annual dinner of the Society of Medical Officers of Health was held at the Piccadilly Hotel, London, on November 18th, with the President, Dr. E. H. Snell (M.O.H. for Coventry), in the chair. In proposing the toast of "Prosperity to the Society," Sir Robert Bolam said that he brought a message of goodwill from the British Medical Association. Isolation of the medical officer of health was not in the interest of the common health, and reciprocity of ideas and knowledge between the Society and the Association was most beneficial to all. He coupled the toast with the name of the President, who during twenty-eight years of good work for his city had given much help on committees of the British Medical Association. Dr. Snell, in reply, spoke of the increasing intimacy between the Society and the Association that had grown up during Sir Robert Bolam's term of office, and gave a most entertaining retrospect of the progress of hygiene in the seventy years of the Society's existence. The health of the visitors was proposed in warm phrases by Dr. Charles Sanders, whose text was: "A society is known by the guests it entertains." The toast was responded to by the Duchess of Atholl, M.P., Parliamentary Secretary of the Board of Education, the Right Hon. Philip Snowden, M.P., formerly Chancellor of the Exchequer, and Sir John Rose Bradford, M.D., F.R.S., President of the Royal College of Physicians of London. The Duchess of Atholl expressed the opinion that the greatest development in the past twenty-five years had been the inception and growth of the school medical service. Another gain had been the assistance given to the cause of health by women members of Educational Committees. She ended with a tribute to the work of medical women in school hygiene. Mr. Philip Snowden said that he long ago came to grasp the importance of the public health side of local government. Whereas in Parliament one saw little if anything of the results of weary hours of debate, in local government one could see things being done. He paid a high tribute to the permanent officials of the country, and medical officers not least among them, for their loyal, enthusiastic, and able work. Speaking of the great attractions and opportunities of the public health service, Mr. Snowden declared that good salaries for good men were good economy; the

country, he said, could not afford to retrench in its expenditure on health services. Sir John Rose Bradford said that his presence at that gathering in the capacity of President of the Royal College of Physicians would show that there was no separation between curative and preventive medicine, and that the branch with which the Society was associated was one that every physician had at heart. The only thing that made him a little unhappy was the fear that if preventive medicine continued to forge so rapidly ahead, his present office might in time become obsolete!

#### ROYAL MEDICAL BENEVOLENT FUND'S CHRISTMAS GIFT.

It has been the practice of the Royal Medical Benevolent Fund for many years to present to the annuitants and some of the most necessitous grantees a Christmas gift of 25s. The Treasurer now makes an appeal for £370 to keep up this practice. The committee has not in hand any special fund to draw upon to meet this Christmas gift, to which the recipients in former years are no doubt looking forward. It is a gracious and friendly act, and we have no doubt that many readers will wish to make the continuance possible. Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, at the offices of the Fund, 11, Chandos Street, Cavendish Square, London, W.1.

An Association of Special Libraries and Information Bureaux has been formed in London, and is preparing, with the assistance of the Carnegie Trust, a directory of sources of specialized information in the British Isles. Membership is open to all interested bodies, and the subscription is two guineas a year. A copy of the directory will be supplied to members as soon as available. Further details can be obtained from the secretary of the association (38, Bloomsbury Square, London, W.C.1). In order to ensure the establishment of the scheme on an adequate scale it is hoped to obtain not fewer than five hundred members by March, 1927.

#### ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the Committee fifty-eight cases were considered and £784 9s. voted to fifty-two applicants. The following is a summary of some of the cases relieved.

Widow, aged 59, of M.D. 1889 who died in 1914. She has three children. The son, aged 26, is in a mental hospital. The younger daughter, aged 23, is a probationer nurse, and the applicant is dependent on the elder, aged 23, who earns £2 a week as a clerk. Until three years ago the applicant maintained herself. Voted £26 in twelve monthly instalments.

M.D. Glas. 1885, a widower, aged 68, who retired on account of ill health and deafness. He now lives with a son who is a minister with a small stipend. A daughter earns £75 a year as a secretary. He asked for a grant to enable him to contribute towards the board of himself and his personal attendant. Voted £40 in twelve monthly instalments.

Widow, aged 58, of L.R.C.P.I. 1898 who died in 1904. Only income is rent from a house £65 per annum net. Has one room at a cost of £31 4s., including coal. No children. Insufficient income to cover necessities and clothing. Voted £10 in two instalments, and clothing.

Widow, aged 73, of L.R.C.P. Edin. who died in 1920. Her eldest son allowed her £20 a month until his death in January last. The second son is not in a position to make a regular allowance, but helps to the best of his ability. She has no other income. Voted £36 in twelve monthly instalments.

Widow, aged 54, of M.R.C.S. who died in 1924. Owing to ill health she is unable to work. She lives rent free in a cottage and receives the rent, 5s. a week, of an adjacent one. She has no other means, but has received poor relief. Voted £26 in twelve monthly instalments.

Widow, aged 55, of L.R.C.P. who died early this year; he was in receipt of an Epsom pension, the old age pension, and an annuity from the Fund, all of which ceased at his death. The applicant is now looking out for work. The Fund has voted £17 since May, and £18 in twelve monthly instalments from November 1st next.

Subscriptions may be sent to the Treasurer, Sir Charters Symonds, K.B.E., M.S., F.R.C.S., at 11, Chandos Street, Cavendish Square, W.1.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 58, Great Marlborough Street, W.1.

# AN EPIDEMIC OF POLIOMYELITIS IN ESSEX.

REPORT BY DR. BOUL, M.O.H.

THE town of Grays Thurrock, on the north bank of the Thames below London, has suffered during the present year from an outbreak of anterior poliomyelitis. There were 58 cases in all, and 11 of these have died. The population of the area affected is about 25,000. We are indebted for the following particulars to a report Dr. W. T. G. Boul, medical officer of health for Grays and Tilbury, has placed at our disposal.

It would appear that four patients sickened in Grays with poliomyelitis on widely spaced dates in May, 1926. Two of the four were not notified; they were discovered about two months later. During June and the early days of July no cases are known to have occurred. On July 6th a more active phase began. Two patients fell ill on that day and one on the day following. Then cases sickened on July 9th, 10th, 13th, and 18th—two on each; and there were single cases on six other days up to the end of the month, making a total of 17 cases for July. On August 3rd the outbreak reached its acme. On that day four patients sickened. On each of three other days in August three persons became affected. The total number of cases in August was 31. There were 6 cases only in September; the last fell ill on September 21st. The dates of sickening of the 58 cases, and the number on each day, are shown in the following table, which has been prepared from data contained in a report on the epidemic by the medical officer of health of Grays and Tilbury.

*Poliomyelitis at Grays, May 3rd to September 21st, 1926. Number of Cases and Dates of Sickening.*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals.
May ... ..			1							1															1						1	4
June ... ..																																
July ... ..						2	1		2	2			2				1	2				1	1		1		1				1	17
August ... ..	2	1	4	3	1			2	3	1			1		2	2	1		3					1		1			1	1	1	31
September ...					1					1		1	1			1					1											6
Total ... ..																																58

## Missed Cases.

Of the 58 cases, 11 were missed, or delayed in notification. Of the 4 cases in May, 2 were missed; of the 17 in July, 6; of the 31 in August, 3; and of the 6 in September, none. The ratio of the missed to the total cases fell progressively month by month—a frequent experience during the currency of an epidemic when the public become alive to its danger. One missed case, a child which sickened on July 7th, was out and about in the town for ten days until isolated by the health department. During this time it infected one of its playmates, also a missed case, by whom the disease was distributed, directly or indirectly, to many.

Missed cases played a part also in keeping infection alive in a detached group of houses, which is situated at cross-roads on a building estate now in course of development in a new part of the town. Two cases here in July were followed, after an interval of three weeks, by three others. The gap, on investigation, was found to be bridged by two missed cases in adjacent houses, both of whom, when they came under notice, exhibited marked paralyses. As the missed cases were in the habit of playing with other children at the cross-roads there was ample facility for the transmission of infection. A similar localization, with one missed case, was observed in the old part of the town. Out of nine houses standing in a row three became infected, with 3, 3, and 1 case respectively in the several houses. The missed case, one of three in the family, was in the centre house of the row. The father of this family had himself suffered from poliomyelitis three years before, and showed permanent paralysis of one leg in consequence.

## "Real" and "Abortive" Cases.

The cases in the outbreak are divided by the medical officer of health into two groups, entitled "real" and

"abortive" respectively. The real cases, 39 in number, are those which developed the forms of paralysis characteristic of poliomyelitis. The abortive cases, numbering 19, had the symptoms of invasion only, such as fever, vomiting, and pain in the neck. The proportion of abortive to real cases was in May as 1 to 3; in July as 6 to 11; in August as 11 to 20; and in September as 1 to 5. From these figures no significant conclusion can be drawn. In view of the association of abortive cases with real cases to which they led up or on which they followed, their inclusion as cases in the sum total of the epidemic would appear to be warranted. Of the 11 fatal cases, 9 died after less than three days' illness; of the remaining 2, one died later of bronchitis, and one of a relapse of poliomyelitis with extension of the paralysis. The fatal cases remained fully conscious until near the close. "A peculiar movement of the muscles of the throat and floor of the mouth" was noted as a sign of impending death. Three patients who presented symptoms polioencephalitic in type recovered. None of the deaths occurred in July or in the early days of August, by which time 32 of the 58 cases had sickened. The maximum virulence of the disease, therefore, was not coincident with the period of rising infection.

## Age Incidence and Mortality.

Dr. Boul, in his report above referred to, comments thus on the age incidence and mortality of attacks:

"Of the 58 cases, 4 only occurred in adults, at the following ages: 17, 18, 22, and 36. Two of the adults died, a mortality rate of 50 per cent., but the numbers are too small for impor-

tance. The principal age affected was 2-3, where 13 cases occurred. The periods 0-1 year and 10-15 were comparatively free from cases. Whilst the general mortality rate is 19 per cent., the mortality rate at the age of 2 is 38 per cent."

## Signs and Symptoms.

The percentage frequency of the signs and symptoms observed was ascertained to be as follows: Fever 100, twitching 66, vomiting 62, pain in neck 48, pain in back 10, retention 10, pain in limbs 16, drowsiness 39, headache 20, diplopia 8, Kernig's sign 2, nystagmus 2, diarrhoea 4, sore throat 2. On symptomatology Dr. Boul remarks:

"With regard to the actual symptoms shown, a careful history of each case was kept by myself. The most constant symptoms are in the following order: (1) feverishness, (2) twitching, (3) vomiting, (4) pain in the back of the neck. The twitching may be general or confined to one portion of the body only. The vomiting usually occurs on the first or second day only, and it is rare for the patient to vomit more than three times. The speech was affected in three cases only, in one case of which the child had also sore throat and may possibly have been a diphtheritic paralysis, although a swab taken gave a negative result. Vesicles resembling varicella were seen upon the limbs of three of the children, but not until some few weeks after the initial illness. Prodromal symptoms occurred in two cases only."

## Diagnosis.

Dealing with diagnosis, Dr. Boul writes:

"The differential diagnosis is extremely difficult in the early stages. Cases of feverishness with vomiting are common enough in children of the age 2-3. An important point is the lack of intestinal signs. Apart from the limited amount of vomiting, pain in the abdomen and other signs pointing to an illness of intestinal origin are conspicuous by their absence. The most valuable symptoms are undoubtedly pain in the neck and back



and twitching, symptoms which do not occur in other childish disorders. The temperature is not usually high, and the lack of throat symptoms is important. The tongue is usually furred, but the breath not offensive as in complaints of intestinal origin. Very much has been written concerning the value of exaggerated knee-jerks. As a point of early diagnosis I am convinced that they are valueless. Exaggerated reflexes are common in many feverish disorders of childhood. The knee-jerk is often extremely hard to elicit in young children, a fact which may be confused with their absence, but two things are important: (i) exaggerated knee-jerk upon one day followed by lack of knee-jerk upon the next; (ii) a difference in the two legs. The knee-jerk is undoubtedly exaggerated in the early stage and lacking at a later date. Constipation was usual, but, contrary to the general opinion, nasal or pharyngeal catarrh was extremely uncommon. Retraction of the head occurred in about 10 per cent. of cases."

#### *Measures taken to Check the Epidemic.*

The methods adopted for the control of the epidemic were vigorous and comprehensive. Local practitioners were circularized and adjacent medical officers of health warned. The Ministry of Health was notified, and sent a medical officer to view the situation and advise. The throats and noses of contacts were sprayed with 1.5 per cent. hydrogen peroxide. Of the children sprayed one only contracted the disease. As the schools closed for the summer holidays the question of preventive closure did not arise. One case only was traced to school contact. Information and advice were given through the local press and by means of placards. Provisions of notable value were the opening of special wards in the isolation hospital for the reception of the sick and the reservation of beds in orthopaedic hospitals for them after-treatment where necessary.

#### *Conclusion.*

The Grays epidemic of poliomyelitis observed the rule of summer prevalence to which the disease generally conforms in England. It made no discrimination as between the new housing estate and the more crowded old quarters of the town. It was no respecter of social conditions or up-to-date sanitation. On the contrary, it struck hardest at the more well-to-do families. In 34 of the 58 cases the source of infection is believed to have been traced. Multiple cases in houses and streets were common, and the distribution of infected foci was general over the area concerned. The type of the outbreak was that of a communicable disease, spreading from person to person by contact or association through direct or intermediary channels. It has left in its track, at the date of Dr. Boul's report, 11 dead and 28 paralysed persons, with degrees of paralysis ranging from slight to complete. The dead and the maimed together amount to 39 out of 58 who fell sick; it is a casualty rate of 67 per cent. Happily this rate may yet be reduced by the orthopaedic treatment provided. There may be relief of the severer cases and cure of some of the milder. But in the end a residue must remain with varying grades of permanent incapacity—the usual aftermath of epidemic poliomyelitis, and its most formidable feature.

## EPIDEMIC ENCEPHALITIS IN SHEFFIELD.

### THE OUTBREAK OF 1924.

During the spring of 1924 a severe outbreak of epidemic encephalitis commenced in Sheffield as part of a pandemic which affected Western Europe, the United States of America, and Japan, as well as Great Britain. In this country, while every great town and many rural areas were affected, the highest attack rates were in Glasgow and Sheffield, the former city having 398 confirmed cases and Sheffield (with a much smaller population) 301. In London during the same year there were 541 cases, a figure greatly in excess of that of the previous year, though the case mortality fell from the high figure of 45.9 per cent. in 1923 to 22 per cent. in 1924.

On the suggestion of Professor F. E. Wynne, medical officer of health for Sheffield, and Professor A. J. Hall, the Sheffield Division of the British Medical Association convened a meeting representing all branches of the profession with a view to the institution of an investigation into

the local epidemic; a subcommittee was formed, including Professors A. J. Hall, J. S. C. Douglas, and F. E. Wynne, and Drs. J. Clark, H. Leader, J. McKinnon, J. Russell, and H. J. Egerton Williams, Dr. A. Gurney Yates being the honorary secretary. A wider scheme of investigation was also considered, as we mentioned on December 13th, 1924 (p. 1132)—namely, the formation of a permanent advisory committee to deal with any future outbreaks of epidemic disease, and such other conditions as cancer of the breast, in which the correlation of reports of the incidence and response to treatment might result in an advance of knowledge. The subcommittee which dealt with epidemic encephalitis met under the chairmanship of Professor Hall, who, with Dr. A. Gurney Yates, took charge of the clinical side of the investigation; the epidemiological inquiry was entrusted to Professor Wynne, and the pathological work was in the hands of Professor J. S. C. Douglas.

The report of this subcommittee has now been issued by the Medical Research Council.<sup>1</sup> The reports on the epidemiological, pathological, and clinical aspects of the epidemic are supplemented by an appendix by Dr. J. R. Perdrau, in which the problem of etiology is considered in the light of recent researches. A grant was made by the Medical Research Council towards the expense of the pathological work.

Although the critical study of this particular epidemic and the close and prolonged observations of individual patients have not directly solved the problems of etiology or indicated the lines on which effective preventive control may be established, yet valuable information was obtained, and it is clear that further work of this kind, in which the infection is studied from all available points of view by workers acting in close collaboration, will probably achieve success in the future.

#### *Epidemiological Report.*

Professor Wynne calls attention to the difficulty of drawing conclusions from the statistical reports of such a disease as epidemic encephalitis, in which the epidemiology varies so widely and the proportion of abortive or missed cases is therefore so high. The total number of cases notified as encephalitis during 1924 was 317, but sixteen of these were proved later to have been wrongly diagnosed; this represents an incidence rate of 0.57 per 1,000 of the population. In 45 cases death occurred, giving a mortality rate of nearly 0.09 per 1,000, the case mortality being 14.9 per cent. Of the total cases 58.4 per cent. occurred in males, but the fatality rate was slightly greater among female patients, in the proportion of 15.08 per cent. to 14.77 per cent.; these figures agree with those reported in other outbreaks of which accurate figures were available. There appeared to be an increased susceptibility to infection in males between the ages of 15 and 30 years, and Professor Wynne adds that if this is confirmed elsewhere it will tend to show that there is a greater susceptibility to infection in the central nervous system of the male as compared with the female during the period when sexual maturity is attained and is most active. No evidence was obtained pointing to any relation between the disease and social conditions, such as overcrowding, poverty, or insanitary dwellings, or of any association with topographical factors, or with the supply of water, milk, or any kind of food.

#### *Encephalitis and Influenza.*

The possibility of there being some relation between influenza and encephalitis received careful consideration. So far as the comparative incidence of the two diseases since 1918 is concerned there appears to be no very obvious connexion, and 1924 was not a period of exceptional prevalence of influenza in Sheffield. In the previous year there had been a slight recurrence of influenza, but the notifications of encephalitis were only about one-half of the numbers for 1920 and 1921. A definite correlation, however, emerged during the period of prevalence of the encephalitis epidemic; influenza deaths increased rapidly from the middle of January, 1924, while encephalitis began to become epidemic some six weeks later, reaching

<sup>1</sup> Special Report Series No. 108. H.M. Stationery Office. 1s. 9d. net.

its peak, as a chart in the report illustrates, fourteen days after the influenza peak. From this time to the end of the year there is shown to have been an approximate parallelism between the curves, the encephalitis maxima occurring generally from one to three weeks later than the influenza maxima. Professor Wynne remarks that these results are particularly interesting in connexion with the suggestion of Mr. Lowndes Yates that influenzal infection of the accessory sinuses precedes the infection of the central nervous system by the encephalitis virus. On the other hand, it was found that, whereas there was a history of previous influenza in sixty-four cases of encephalitis, there was a history of sore throat in only nineteen. No reliable evidence was obtained that the disease was spread by direct contact, nor did any data emerge for computing the incubation period.

#### Pathological Report.

Investigations by the pathological department of the University of Sheffield included attempts to transmit the virus or toxins of the disease to rabbits and mice, necropsies, and the examination of specimens of the cerebro-spinal fluid collected during life. Professor J. S. C. Douglas reports that animals were inoculated with cerebro-spinal fluid from ten cases of epidemic encephalitis without showing during life any symptoms which could be ascribed to this disease, while *post-mortem* examination and histological investigations of the brain were similarly negative. Brain emulsions from patients who died were injected into animals without causing any symptoms of encephalitis or any specific histological change in the brain of the animals, thus confirming the common experience that the virus of this disease can only be conveyed to laboratory animals with great difficulty, if at all. The nasal cavities of thirteen patients were washed out with normal saline solution and bacteriological investigation was combined with animal inoculations. No symptoms of encephalitis resulted in any animals and no histological changes in their brains. Filtrates of faecal cultures were similarly negative. As regards *post-mortem* findings in thirteen patients who died from encephalitis, the associated lesions observed were: terminal recent infections of the lungs in ten cases; swollen mesenteric glands in six; recent slight infections of the alimentary canal in four cases; swollen spleen in four cases; granular kidney and pyelitis each in one case only. Professor Douglas regards these lesions as being accidental concomitants in the encephalitis, though in one case the lobar pneumonia appeared to be the actual cause of death. No important change was discovered in the brain except the frequent occurrence of slight congestion of the grey matter and less commonly oedema, but microscopic examination showed the presence of a small-celled infiltration, principally perivascular, in all cases except one. This change was very patchy in its distribution, and though not absolutely specific of encephalitis lethargica, is thought by Professor Douglas to be highly suggestive of it in the absence of other gross disease. In one patient, however, no small-celled infiltration was detected, although numerous sections from different parts of the brain were examined microscopically; the clinical manifestation of the infection extended over two months, and the absence of the typical small-celled infiltration is tentatively attributed to the healing of the original inflammatory changes in the course of time, the patient ultimately dying from lobar pneumonia. Cerebro-spinal fluid from thirty-six cases was examined and found invariably to be free from acid-fast and other bacteria, and to be sterile on culture; in only three cases was the albumin content increased, and in these the rise was explained by the presence of blood. The fluid reduced Fehling's solution in each case, but no quantitative determination of the reducing agent was made; in nearly every case the number of white cells was below 6 per c.mm. The epidemic had, therefore, the same pathological characters as those reported elsewhere.

#### Clinical Report.

Professor A. J. Hall and Dr. Gurney Yates preface their report with the statement that the 301 cases considered do not represent by any means the real extent of the epidemic. Many cases of encephalitis, even of a severe character, were otherwise diagnosed, and so were not

notified. A still larger number of very mild or abortive cases were so indefinite as to preclude diagnosis. The primary attack was mild in about half the cases notified and severe in one-fifth. Complete recovery was more common in the milder cases, though Parkinsonism was a more frequent sequel of attacks of the mildest character. The death rate rose above the average when there was definite fever and vomiting, and fell below it when vertigo was the prominent symptom. It was highest when acute disturbance of the respiratory mechanism was present, particularly polypnoea, and also in cases with acute mental symptoms. Headache was the most common symptom, and sleep disorders, ocular palsies, and various motor phenomena were frequent.

The initial symptoms included slight pyrexia, sore throat, lethargy, insomnia, diplopia, vertigo, and attacks of disorderly breathing, sometimes of the asthmatic type. In the more severe cases the clinical features varied widely, positive motor phenomena often dominating the picture, and frequently simulating those of chorea gravis. The rapidity of their succession and their violence often led to extensive excoriation of the skin of the trunk or limbs, and exhaustion. As a rule they did not last for many days, but were followed by lethargy; myoclonus, however, continued sometimes for weeks or months. Epileptic convulsions occasionally ushered in the attack. In cases which proved fatal from the acute onset the positive symptoms usually changed to negative manifestations, such as lethargy, stupor, gradually increasing coma, profuse sweating, and a rising temperature. In a small number of cases a scarlatiniform rash appeared in the first few days, more commonly in young children. The primary attacks are grouped in the report into mild, moderately severe, and severe. A distinction is made between general symptoms, such as pyrexia, headache, vertigo, and vomiting, and indicator symptoms, including lethargy, with ocular palsies; insomnia with delirium; severe pain other than headache; and abnormal muscular movements.

#### Sequelae.

A questionnaire was issued in August, 1925, at the instance of the Medical Advisory Committee of the Sheffield Division of the British Medical Association in regard to those patients who had survived, and the results obtained include the following.

Ocular palsies rarely persisted, except in minor degree, but speech defects, though rare, might remain troublesome for a long time. Ocular palsy in association with sleep disorder seemed to have a favourable prognostic significance. Vertigo, when present in the primary attack, tended to disappear, but occurred first as a sequel on several occasions. Severe neuralgic pains only persisted in one-sixth of the cases in which they were present, and mental disorders continued in a modified way in half the cases in which they were acute in the primary attack. On the other hand, more cases are recorded as having mental residua at the end of the 1925 than the few in which they had persisted from the start. The form of sleep disorder present in the primary attack was found likely to be the form in which it persisted, if it did so at all. When insomnia occurred alone in the primary attack it tended to persist, but sleep disorder, in the form of nocturnal insomnia usually, might first appear as a sequel. No definite conclusions in respect of moral changes were reached: as a rule they were not clearly noticed until the patients resumed ordinary life after the conclusion of the primary attack. Respiratory disorders occurring during the onset did not persist; those appearing as sequels were very varied and not infrequently associated with nocturnal restlessness and Parkinsonism. They were more common in males than females, and the average age of the patients was about 15. This is in marked contrast with primary respiratory disturbances, which were found more often in females than males and had an average age of 28. Parkinsonism was much more common in males than females; it occurred chiefly during the age period 15 to 35, but did not seem to have any tendency to produce sterility in women. In more than one case pregnancy occurred during the disease, the patients usually having normal children after an easy, straightforward

labour. Pregnancy, however, appeared to have a very prejudicial effect on the course of the disease. In the male complete impotence was not uncommon. Parkinsonism usually commenced about six to twelve months after the primary attack, and there was no evidence that the prognosis was better if it occurred early. The facial mask was the most common symptom and usually the earliest to appear; next to this came involvement of the upper limbs, in approximately equal numbers on the right and left sides. The conjugate movement of the eyes was sometimes disturbed, recurrent attacks occurring in which the eyes were involuntarily turned upwards, usually to one or the other side, and remaining fixed for a variable time, perhaps several minutes. Spasms of the jaw muscles also sometimes occurred and interfered with eating. Those attacks came on without obvious cause at irregular times. Five out of 64 patients with Parkinsonism died, and of the remainder 19 appeared to be getting steadily worse, while about 23 were at a standstill. Of the 43 fatal cases in the whole series, death occurred in 40 within two months of the onset of the disease; of the remaining 3, 2 died of pneumonia several months after the primary attack, while one boy died eight months after a mild attack, which was followed by what appeared to be a recurrent acute attack with profound lethargy.

#### *Etiology of Encephalitis Lethargica.*

Dr. J. R. Perdrau of the National Institute for Medical Research contributes a short report of parallel work in London in close association with the Sheffield outbreak. He supports the contention of Levaditi and others that the causal agent of epidemic encephalitis is identical with that of herpes febrilis, except that the former has a greater affinity for the central nervous system. He admits that this theory of the herpetic origin of epidemic encephalitis is not universally accepted, though no other theory has so far been propounded on experimental grounds. A detailed account of his work was published in the *British Journal of Experimental Pathology* last year.

### THE CARE OF CRIPPLED AND INVALID CHILDREN.

A joint conference under the auspices of the Invalid Children's Aid Association and the Central Committee for the Care of Cripples took place in the Great Hall of the British Medical Association House, Tavistock Square, on Thursday and Friday, November 18th and 19th. The conference, which was very largely attended, had for its general subject the care of crippled and invalid children, and in four sessions the particular phases of the subject dealt with were (1) a general survey of the work for invalid and crippled children, (2) the preventive side of cripple work, (3) the need for unity of effort on the part of local authorities and voluntary workers, and (4) the question of the physically defective child in school and after school.

Lord EUSTACE PERCY, President of the Board of Education, delivered the inaugural address in the absence of the Minister of Health, who, as Mrs. Neville Chamberlain told the conference, was detained by his work on the smoke abatement measure, which he was pressing through the parliamentary committee. Lord Eustace Percy remarked that at most only one-quarter of the crippled children of this country were provided for in the special schools and clinics, and there were 200 areas in which no provision was at present made. The key to the whole position was the provision of new hospital accommodation for orthopaedic cases, and the main burden of such provision, though not necessarily the whole, must, he thought, fall on voluntary effort.

Mr. R. C. ELMSLIE, who opened the first discussion, gave a rapid survey of the work in this country on behalf of the crippled. He said that of the forty English counties practically all had been considering the formation of schemes for the care of cripples; in 13 there was as yet no definite scheme of any sort, and in the remaining 27 some sort of scheme was in hand, often, however, incomplete. In Wales the National Memorial Association had set aside a considerable number of beds for surgical tuberculosis, and Sir

John Lynn-Thomas was intent upon organizing a general scheme for the care of the non-tuberculous cripple, the central hospitals being the Prince of Wales's Hospital at Cardiff, for South Wales, and the Oswestry Orthopaedic Hospital, for North Wales. In Scotland much was being done by local authorities and voluntary bodies, but there was an absence of central organization.

Mr. HARRY PLATT of Manchester followed with some account of what is being done in America and on the Continent. He described particularly what is known as the Vermont organization in America for the early treatment of infantile paralysis in epidemics. This organization, he said, included adequate measures to control the spread of infection, and the institution of early treatment for children who showed actual paralysis, with the establishment of special clinics in infected areas, and arrangements for home visitation and for operative treatment in hospital.

Sir ROBERT JONES, Bt., chairman of the Central Committee for the Care of Cripples, in speaking of future developments, described at some length the work of that organization in the directions of prevention and cure. He said that the national scheme included the provision of open-air orthopaedic hospitals, with expert staffs and modern equipment, and, surrounding these, orthopaedic clinics in the smaller towns, by which it was hoped to ensure continuity of treatment. He advocated an intensive publicity campaign, especially with the object of making it known that tuberculosis and rickets were preventable, that crippling diseases were not hereditary, but acquired and gradually progressive, and that generally they were curable by well organized, early, skilful, and thorough treatment. Future developments should not disregard the claims of the adult cripple. At present if the cripple was over the age of 14 or 16 it was next to impossible in this country to afford him adequate help. The desire to help and the requisite knowledge were available, but the facilities were absent. The adult cripple had a right to expect from the State equally considerate treatment to that which was given to the child, and beds should be available for him. Sir Robert Jones pleaded for more optimism with regard to this whole subject, and an end to the despair and consequent lethargy which had shrouded it.

Dr. VETTER CLARK of Manchester said that 33 per cent. of children had some defect on entering school, not always, of course, of the crippling variety, but leading very often to incapacity, partial or complete, later on. In Manchester last year he received notification of about 500 new cases of tuberculosis in children under 15 years of age, at least one-half of them of the surgical type. The conditions which produced rickets also operated most seriously in the great industrial centres. Dr. ALFRED GREENWOOD described the successful inauguration of a scheme which, as medical officer of health for Kent, he had brought forward in that county, and the way in which he had allayed certain misunderstandings among the local practitioners who were a little distrustful of what they regarded as a new special service.

At the second session papers were read on rickets, on rheumatism, chorea, and heart disease, and on tuberculosis from the preventive point of view. Dr. STUART J. COLWELL of Sheffield, in discussing rickets, said that it had been stated that rickets was a rare disease in London, but recently published statistics hardly bore out that optimism, and certainly in most industrial centres this crippling disease was still rampant. The measures of treatment were a proper supply of antirachitic vitamin, and, alternatively, or in addition, treatment by ultra-violet radiation, and, of course, attention to general health. Dr. ANTOUR STEPHENS, chairman of the Swansea Education Committee, said that there were from 80,000 to 100,000 cardiac cripples under 14 years of age for whom little or nothing was being done. Bad feeding and malnutrition were the predisposing causes. A family history of bad cookery was of far more serious import than a family history of supposed hereditary rheumatic disease. Cardiac cripples could be treated to the best advantage, alike physically, mentally, and economically, in conjunction with orthopaedic cripples. The ultimate solution of the problem of prevention was bound up largely with the land-problem

and the homo cultivation of food, with less complete reliance on imported food products. Dame AGNES HUNT, of the Shropshire Orthopaedic Hospital, also read an interesting paper on tuberculosis, discussing the subject from the point of view of district nursing.

At the third session, under the chairmanship of the Hon. Sir ARTHUR STANLEY, the advantages of official and voluntary effort were compared. Dr. C. E. TANGYE, medical officer of health for Wiltshire, discussed the role of local authorities in an orthopaedic scheme, and related the events in his own county. While himself warmly supporting official health work, and rebutting the criticisms that it was unsympathetic, niggardly in action, and extravagant in administration, he agreed that it would be folly to ignore the freely offered services of voluntary workers, and there was also a third partner—namely, the general practitioner—without whose collaboration the best results could never be obtained in any official scheme. Mr. G. R. GIRDLESTONE of the Wingfield Orthopaedic Hospital, on the other hand, advocated the voluntary hospital and clinic, with a staff honorary or paid on a part-time basis. One advantage was that members of such an honorary staff would in the ordinary way hold specialist orthopaedic appointments at the general hospital of the district, and this would mean close co-operation between the orthopaedic and the general hospitals. One of the great drawbacks of the purely official scheme, in his view, was that when the patient was over school age, unless he was tuberculous, the doors were closed to him. There was a good discussion, but no great cleavage of opinion developed, the idea being that every means, official and voluntary, should be adopted as far as possible.

At the final session the question of the physically defective child in school was considered from various points of view. Mr. K. J. ACTON DAVIS, of the L.C.C. physically defective schools, gave the point of view of the surgeon. The aims with which he set out were: (1) to improve the physical condition of the child; (2) to produce persons capable eventually of earning their own living; (3) to protect the children from getting damaged by accidents. He also pleaded for the linking up of the welfare centres and the schools. There was a gap at present between the age at which a child was taken by its parents to the welfare centre and the age at which it arrived under the care of the education authorities, and it was in that gap that the maldevelopment was often missed.

Papers on the same subject, from the point of view of the school manager, the matron, and the teacher, were read by three ladies, and the question of the physically defective child after school was discussed by Sir MONTAGU BURROWS, chairman of Wingfield Orthopaedic Hospital. The discussions throughout the two days were very fresh and stimulating, and will be of great service to the two organizations which called the conference, but the constitution of the conference itself precluded any effective resolutions.

## ROYAL SOCIETY OF MEDICINE.

### THE PRIME MINISTER AT THE ANNUAL DINNER.

THE annual dinner of the Royal Society of Medicine took place at the Hotel Victoria on November 18th, when a company of 450 sat down at the tables under the Presidency of Sir JAMES BERRY, F.R.C.S. The society was honoured by the presence of the Prime Minister (the Right Hon. Stanley Baldwin), and among the other principal guests were:

Sir Berkeley Moynihan (President, Royal College of Surgeons), Sir StClair Thomson (Immediate Past-President of the society), Sir Ernest Rutherford (President, Royal Society), Sir Humphry Rolleston (President, Medical Society of London), Mr. R. G. Hogarth (President, British Medical Association), the Master of the Apothecaries Society, Dr. Christine Murrell (President, Medical Women's Federation), the Presidents of the Geological Society and the Royal Geographical Society, the Presidents of the Hunterian, Harveian, West London Medico-Chirurgical, and Chelsea Clinical Societies, and Professor J. S. Haldane, F.R.S. (the Society's Gold Medallist).

The PRIME MINISTER, in proposing the toast to the society, said that he had been impressed by the extraordinary way in which all medical knowledge and practice

was embraced under the single title of the society. He had read with much interest the society's calendar, and he could not help thinking how proud Sir Andrew Clark would have been had he lived to see the day when the society took its present shape, for Sir Andrew had desired to bring together the profession, for their common help in all investigations in the various departments of medicine, and to provide a common centre for the collection, co-ordination, comparison, and criticism of their respective researches. Nearly twenty years ago seventeen separate medical societies went to sleep for a moment, and when they recovered consciousness found themselves thirteen separate sections of the Royal Society of Medicine. Since then the thirteen had grown to twenty-four. The names of most of them conveyed no clear idea to his mind, though one of them struck a responsive chord, for it bore the name "Parasitology"! He compared the constitution of the society to that of the British Empire, with autonomous parts, bound together, not by a crown, but by a library, which he trusted was more interesting than that in the House of Commons.

Mr. Baldwin went on to discuss certain points of similarity between the medical profession and the profession of politics. Both professions owed a most profound debt to the Greeks. He had lately read a fascinating little book in which there was an article by Dr. Charles Singer, and it had been a revelation to him, interested as he had always been in Greek thought, to be told by a scientific man what a debt his own branch of science owed to that great and remarkable people. Dr. Singer stated that the teaching in the wards of a modern hospital was based on that of the Greeks, and that Greek medical literature was full of evidences of really fine scientific effort. To most the great Hippocrates had been only a name, but he was evidently a personality who stood to-day as he stood then for learning, humanity, gravity, and—a quality which the speaker held in the highest esteem—reticence; in these respects Hippocrates must ever remain the type of the most perfect physician. (Applause.)

Throughout his life (Mr. Baldwin continued) he had been singularly unfortunate in having seen so little of members of the medical profession. But a great deal of the doctor's work stood a close comparison with that of the politician. Both the medical man and the politician were physicians, though he preferred the medical man's patients to his own. He himself had been trying to prescribe for some time, with complete failure. The goal which they shared was a very simple one—to try to attain perfect health, involving a normal balance of the functions, a harmonious co-operation of all the organs, whether of the State or of the body. The State was an infinitely complex assembly of growing structures never at rest. The cells that composed it were always being born and always dying, but throughout the change there was a moving equilibrium of the whole. It was subject to considerable variations in temperature. Had a clinical thermometer been applied to the constitution in the early weeks of last May it would have registered a temperature of 105° or 106°, and though this had abated, there were symptoms of fever still in the body politic. A very virulent epidemic was abroad which might perhaps be diagnosed as Russian influenza. (Laughter.) It was not endemic, but epidemic, and yet epidemics lasted for a few seasons, though he believed they had a tendency to become less severe. A Harvey was wanted in the political world to find out the mysteries of the cyclical ebb and flow of unemployment. He did not think that surgery was needed, though there were people in politics who were always willing to resort to the knife, and would remove the House of Lords like an appendix. At the other extreme there were quacks and charlatans who sought to heal the sick by magic formulas, which they called slogans, exactly as the Romans used to try to set fractures by reciting meaningless phrases over the broken bones. One other thing he would say, with bated breath, that physicians, like politicians, sometimes had trouble with those members of their honourable profession who would not, or constitutionally could not, keep out of the press! This was a malady that broke out in the most unsuspected quarters. The profession of medicine had one advantage over that of politics. The medical man received emolu-

ments appropriate to the confidence reposed in him by the public, but the politician did not. If any politician did, his salary would vary remarkably with events and seasons.

"One other personal confession I should like to make," said the Prime Minister in conclusion. "I have sought some medical assistance in the course of the year, and I should like to give you my own experience. I expect you all know your Samuel Butler pretty well, and you may remember the physician in *The Way of All Flesh*, who prescribed for Mr. Pontifex—whose symptoms somewhat resembled mine, he was feeling tired—a course of the larger mammals at the Zoological Gardens. This physician, 'one of the most eminent doctors in London,' said:

"I have found the Zoological Gardens of service to many of my patients. I should prescribe for Mr. Pontifex a course of the larger mammals. Don't let him think that he is taking them medicinally, but let him go to their house twice a week for a fortnight, and stay with the hippopotamus, the rhinoceros, and the elephant, till they begin to bore him. I find these beasts do my patients more good than any others. The monkeys are not a wide enough cross; they do not stimulate sufficiently. The larger carnivora are unsympathetic. The reptiles are worse than useless, and the marsupials are not much better. Birds again, except parrots, are not very beneficial; he may look at them now and then, but with the elephants and the pig tribe generally he should mix just now as freely as possible."

"During the long and weary months of the coal stoppage I more than once escaped into Regent's Park, and became aware of a feeling which I had not experienced during my conferences—in Mr. Pontifex's own words, I received an influx of new life, or derived new ways of looking at life, which is the same thing. I found the doctor quite right in his estimate of the larger mammals as those most beneficial. As for the elephants, especially the baby elephants, I seemed to be drinking in large draughts of their lives to the recreation and regeneration of my own. I mention this in the hope that one or other of my hearers may find the hint useful."

Mr. Baldwin then gave the toast, saying what profound respect he had for the medical profession—a profession in which more was freely given to the people of this country out of the largeness of its heart and out of its wisdom and experience than from any other profession in the world, and those who rose up and called it blessed were beyond all enumeration.

Sir STCLAIR THOMSON then invested the President with a gold chain of office which he presented to the society. It was, he said, some three hundred years old, of the Elizabethan period, and doubtless wrought by some Italian artist, some Bevenuto Cellini of the Renaissance. He had had the benefit of the expert advice of the South Kensington Museum and of his friends Sir Frank Dicksee and Sir George Frampton, who had agreed as to its period and its artistic value, and that it was worthy of being offered to the Royal Society of Medicine, and the Council had honoured him by accepting it.

Sir JAMES BERRY expressed thanks to the Prime Minister for the felicitous terms in which he had proposed the society's health, and to Sir StClair Thomson for the valuable gift of one of the most beautiful chains in London. The chain would serve to remind them of their immediate Past-President, whose generosity was equalled only by his brilliance and wit. Sir James Berry then gave some account of the work of the society during the year. Many useful discussions had taken place, and improvements had been made in the internal arrangements of the society's house, especially by the provision of a new epidiascope (or episcope, as the makers called it), superior to any instrument of the kind hitherto known. The balance of the money subscribed as a memorial to the late secretary, Sir John MacAlister, had been expended on its purchase. Sir James Berry also referred to the value of the society's library, and in view of the lending and other facilities offered by the library made an appeal to general practitioners, especially those in the provinces, to become Fellows. He concluded with a few words on the present state of surgery. One of the many evil after-effects of the war was that a great wave of well-meaning enthusiasm for operative surgery had spread over this and other countries. Many difficult and dangerous surgical operations were being too lightly undertaken by those whose training, experience, and judgement were

insufficient, and who were not devoting themselves exclusively to the practice of surgery. Those who were behind the scenes in the surgical world saw only too much of what was going on. Successful major operative surgery in civilian practice must depend upon a solid foundation of pathological anatomy and clinical experience. The limited field of war surgery, necessarily concerned mainly with the surgery of injuries in more or less healthy individuals, was in itself alone but an indifferent school for the surgery of civil practice. The only remedy for this state of things was an increase of knowledge among would-be operating surgeons. One way of obtaining this increase of knowledge would be by joining the Royal Society of Medicine, attending as often as possible the debates and demonstrations, and making full use of its library.

The only other toast was that of "The Guests," which was proposed by Dr. ROBERT HUTCHISON. In a happy reference to the Prime Minister Dr. Hutchison said that Mr. Baldwin might have been even more in his element as a country doctor than as a politician. He would not have made a good specialist—he was too honest for that!—but with his love of the country and of country people and things, and his sympathy for the common man, he would have made an ideal country practitioner. He coupled with the toast the names of Sir William Bragg, Fullerton Professor, Royal Institution, and Sir Berkeley Moynihan, describing the latter as a sort of surgical "Pooh-Bah." Sir Berkeley, he said, must find it, as President of his famous College, somewhat of a bore to attend so many official dinners, but in his private capacity it must afford him a certain satisfaction to see laid broad and deep before his eyes the foundation of those dyspeptic disorders which brought so much grist to his mill. (Laughter.) In Yorkshire, a county whose people were supposed to be somewhat addicted to the pleasures of the table, they had two gifts of Providence—the waters of Harrogate and Sir Berkeley Moynihan. If the first failed, the best they could hope for any patient was that he might fall into the arms of the other.

Sir WILLIAM BRAGG said that it was the greatest happiness of any man doing research work in science to feel that he was of any help to those who were responsible for the health of the nation. Science on his side had to thank medical men for assistance. Indeed, medical men and scientific men—that is, chemists and physicists—had been in partnership for the last 250 or 300 years. They were, so to speak, boys together during the last half of the seventeenth century, when the times were full of scientific experiment, when wonderful theories were abroad, and when the Royal Society was founded. In these days, when it was possible to look more deeply into Nature's secrets than ever before, he hoped that they might still render one another great service.

Sir BERKELEY MOYNIHAN took up Dr. Hutchison's allusion to him as "Pooh-Bah," and amusingly pictured himself occupying the various offices of that distinguished gentleman, and said what he would do in each, until at last he recalled that Pooh-Bah was also commissioner of police, and in the exercise of that office he arrested himself for loitering. Sir Berkeley Moynihan went on to pray for a closer understanding between the lay public and the members of the medical profession. There was not a gregarious profession, and they were apt to be silent under attack. But they were wounded in the house of their friends when those who knew them took distorted views of their work and ideals. How little they were sometimes understood was shown in the earlier months of this year when the profession was bitterly assailed in private speech and in the public press. Prejudice seemed then inordinately bitter against them, but prejudice was nothing but the emotional reaction of ignorance to truth, and truth in the end had a way of surviving. But he pleaded that members of the profession should do all in their power to present the plain truth acceptably to the public on due occasions, to play a larger part in municipal and national affairs, and to endeavour to saturate public life with the ideal of service and sacrifice.

The last event of the evening was the presentation of the Gold Medal of the society to Dr. J. S. Haldane, F.R.S. This medal is awarded every five years to a



scientific man or woman who has made valuable contributions to the science and art of medicine. It was the gift of the late Dr. Murray Leslie, and the first award was made in 1921 to Sir Almroth Wright. The medal bears on its obverse a representation of Hygieia, daughter of Aesculapius, bestowing a wreath upon Research, while the reverse represents Cheiron teaching Aesculapius the art of healing.

Dr. HALDANE, after thanking the Council for the bestowal of the medal upon himself, said that though his life had been given to physiology he had never failed to retain a keen interest in clinical medicine. As a physiologist he had very early in life discovered that the best subject of experiment was a human being, and that of human beings the best subject was either oneself or a brother physiologist.

## ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

### LORD BALFOUR AT THE ANNUAL DINNER.

THE annual dinner of the Royal Society of Tropical Medicine and Hygiene was held at the Hotel Victoria, London, on Monday, November 22nd. Dr. ANDREW BALFOUR, President of the society, was in the chair, and the principal guests were the Earl of Balfour, K.G., O.M., the Hon. W. Ormsby-Gore, M.P. (Parliamentary Under Secretary for the Colonies), Sir Joseph Cook (High Commissioner for Australia), Sir John Roso Bradford (President, Royal College of Physicians), Sir James Berry (President, Royal Society of Medicine), Sir John Bland-Sutton, Sir Walter Fletcher (Secretary of the Medical Research Council), Surgeon Vice-Admiral Sir J. Chambers (Medical Director-General, R.N.), and Lieut.-General Sir Matthew Fell (Director-General, A.M.S.). The company of 200 was representative, not only of tropical medicine, but of all branches of medical science.

The EARL OF BALFOUR, in proposing "The Royal Society of Tropical Medicine and Hygiene," referred to the problems presented to the country by the tropics, in which the expert and the inexpert alike were deeply interested. Looking at the problems from their national and imperial aspects, he was profoundly struck by the growing closeness of intimacy between all forms of human activity. Not many years ago the spheres of human activity were separate; in practice the man of science was either a physicist, an astronomer, or a chemist; the word "biologist" had not become fashionable at that time. A doctor who was a man of observant habits visiting Africa, for instance, came back with much useful knowledge, but things were not considered in their interrelation. If everything had to be regarded in the light of modern knowledge, interconnected and getting more and more interconnected every day, how were problems of such increasing complexity to be dealt with? Anyone who followed what had occurred at the Imperial Conference would agree that the section which had been entrusted to it the consideration of such problems showed the keenest appreciation of the need for growing intercommunication in all scientific branches of study. One important problem was that of the tsetse fly in Africa. It was an appalling reflection that, looking back over the history of mankind, people should have to say that the greatest of all prehistoric discoveries, the discovery or creation of the domestic animal, over a vast area of Africa was rendered impossible because such animals could not be used for transport owing to the all-conquering tsetse fly. It had been said by our ancestors that man was the crown of creation, but man was having a very hard fight of it with organisms which were certainly not the crown of creation, and it was not perfectly clear to him as yet that man was getting the best of the fight. There were aspects of medical science which almost indicated that at the present moment the battle was not going in favour of the superior animal. If that was true what was needed was a combination of all branches of science, and the work of a society such as this was a necessary part of the machine. A man who took a medical degree and went out to a remote part of the Empire found himself face to face with tremendous problems, not only strictly medical

problems, but also problems of anthropology, which could not be ignored by anyone who tried to deal with the native races. He found himself forced by his own sense of the necessity of the situation to do research, while at the same time often overloaded with routine work. He discovered very few companions who either understood the objects for which he was working or his methods, and therefore the society was of immense advantage to him, not only by furnishing him with its transactions, but because he could feel himself part of a great machine which was attempting to deal, in a broad spirit, with all these problems, and that when he came home he would find in the society those who could help him in his troubles. Lord Balfour wished the society long life, great success, and an increased sphere of usefulness.

In replying to the toast, Major E. E. AUSTEN, of the Department of Entomology in the British Museum, made a strong plea for funds to enable the society to have a house of its own in London, and so develop its activities in a way which it could not do now in its cramped temporary abode.

The toast of "Britain in the Tropics and its Defenders" was proposed by the Hon. WILLIAM ORMSBY-GORE, M.P. He said the outposts of the Empire, the Dominions, and Colonies, stretching from the torrid zone, had ever before them the special problem which interested the workers associated with this society. But it should be remembered that the British Empire would never have existed, and could not exist, were it not for the physical defenders typified in the other guests who were to respond to the toast. In the past our young men went out to the tropics carrying their lives in their hands, and even to-day the odds were not quite what they ought to be, and the risks were great both to health and life. It was being realized to-day that the health of our garrisons, of our civil servants, and of traders in the tropics could not be maintained, apart from the health of those teeming millions who were living in those countries. Where problems of science and disease had to be considered it was not possible to draw national boundaries. The health of the British in the tropics was bound up with the health of their coloured fellow-subjects. Britain would never bring to the use of civilization and to the advancement of mankind as a whole the enormous resources of the tropics unless she could forward in quality of civilization and in health the interests of these coloured peoples. The task was only just beginning. It was due to the teachings of Manson and Ross that it was realized that garrison service was not enough, that the duty of Britain in the tropics was to the whole population. Above all, what was wanted in the great fight of man against insect was speed and mobility. Delay was dangerous, and foresight essential. What was needed in the tropics was the application of science, science, and more science. It was necessary to take a long view, such as the navy took when they said they were going to lay down a programme for many years ahead. The great fault in the past in dealing with British tropical possessions had been timidity, the short view, and the neglect of science. We had the greatest tropical Empire the world had ever seen, but it was difficult to get people to realize it.

Sir JOSEPH COOK, in reply, referred to the situation in Australia and the Pacific, and said that the problem of civilization in the tropics seemed to him essentially one of health, and if that were solved economic problems were solved straight away. Nothing hindered economic success in the tropics but the question of disease and insects, and he wondered whether it would not be possible to develop a type of manhood which would acclimatize itself to the tropics of the world.

The toast was replied to also by Sir JOSEPH CHAMBERS, who paid tribute to the successes of the professors of tropical medicine in London and in other places, and also to the work of the great Colonial Secretary, Joseph Chamberlain. Lieut.-Colonel W. P. MACARTHUR proposed the toast of "The Guests," which was responded to by Sir JOHN BLAND-SUTTON, who thought there had been a slight mistake in labelling the toast "Guests," because in such a society the toast should have been "Hosts and Parasites"! "The Chairman" was proposed by Sir MATTHEW FELL, who paid a tribute to the work of

Dr. ANDREW BALFOUR, especially in connexion with the Advisory Committee that visited Mesopotamia in 1916. The CHAIRMAN, in responding, referred to the good work done for the society by its honorary secretaries, Dr. Wenyou and Lieut.-Colonel Clayton-Lane.

## Canada.

[FROM OUR SPECIAL CORRESPONDENT.]

### TUBERCULOSIS IN CANADA.

DURING the present year great activity has been shown in connexion with tuberculosis. Some figures of a general nature may be of interest. Canada is made up of nine provinces, whose population in 1925 was 9,352,000; all the provinces possess regular death registration bureaux. In 1925 the total number of deaths from pulmonary tuberculosis was 6,257, and in the same year, for all forms of tuberculosis, 7,468. The death rate for tuberculosis per 100,000 was 79.8; the corresponding rate in 1924 was 83.28. This is a record which may well cause gratification, especially when it is recalled that at the time of the organization of the Canadian Association for the Prevention and Treatment of Tuberculosis, in 1901, the death rate from tuberculosis was 180. Acknowledgement is made, however, of influences both from Great Britain and the United States, the most recent being the visits by Sir Henry Gauvain and Professor Lyle Cummins. These two outstanding authorities addressed medical groups of eight provinces, and I can testify to the interest with which they were followed. Professor Cummins, in particular, brought out his experience in connexion with sanatoriums. Work in the maritime provinces (Nova Scotia, New Brunswick, and Prince Edward Island) has been given an extra stimulus by a gift from the Canadian life insurance companies of 45,000 dollars. The degree to which the Provincial Governments are ready to co-operate with the various provincial tuberculosis leagues is one of the most encouraging features of the situation; in New Brunswick, for example, there are hopes that the Provincial Cabinet will give its sanction at an early date to the addition of sixty-five beds to the Jordan Memorial Sanatorium. The Sanatorium Commission has over 100,000 dollars available for this work, but the Government's approval is required, because the Government becomes responsible for the increased maintenance. A committee from the Cabinet has visited the sanatorium, and has instructed the architect to revise the proposed plans. The medical profession of the province entirely support the tuberculosis movement, and many of them in the rural districts personally see that their municipalities provide institutional care for needy cases.

In Nova Scotia the Tuberculosis Commission has been granted 10,000 dollars by the Government for this year, and the money is being used to provide an extra diagnostician, a secretary, and a bacteriologist. The press has been giving hearty support, and the profession generally is entirely in accord with the plans. One of the first moves was made by the agricultural group, whose aim it is to rid the province of bovine tuberculosis. To this end an education train traversed the province last summer with exhibits and literature, and carrying speakers on the subject.

A special study is being made by Professor H. W. Hill of conditions among the Indians in British Columbia, the association having been given a grant for this purpose. The statistics for tuberculosis in this province have been showing in the last four years a grave increase, especially in comparison with other provinces, but it has been pointed out that this is due chiefly to the increasing percentage of deaths registered among North American Indians. In 1924, for example, they contributed 24 per cent. of tuberculosis deaths. Dr. Hill's work, therefore, is of great importance. The field covered by him is very extensive, and his report should be interesting. Apparently, sources of tuberculous infection are not hard to find, but cow's milk is not an important factor, as it is not used at all. Dr. Hill, in addition to his researches, addresses the Indians, and in some instances has induced them to vote as to the methods of care they favour.

### RESENTMENT AGAINST LIQUOR SYSTEM.

A forcible protest has appeared in a recent issue of the *Nova Scotia Medical Bulletin* with regard to the control of liquor in that province. The ground taken is that the profession has been imposed upon (he speaks colloquially of "being made the goat") by the local Government, in being made the sole medium through which the public can obtain their supplies of spirits. He describes the all too familiar scene of streams of visitors at his office, each one pulling out his dollar fee and making the laconic demand "Serip, Doc." It is, he says, to be deprecated that money could be made out of it—even, if so desired, large quantities of it. However, those apparently acute troubles are over, since supplies of alcoholic liquors are much more freely obtainable from "bootleggers," leaving the doctors fewer prescriptions to write. But further aggravation has been caused by the recent instructions from the Liquor Commission to the medical profession making it necessary for those issuing prescriptions to make affidavit every quarter of the number issued. The point is well taken. It illustrates one of the less obvious results of prohibition. Each province in Canada has its own method of controlling the sale of liquor, and it is to be presumed that each separate plan is the expression of the majority's desire, but there seems to be little doubt that the method of controlling the sale in the province of Quebec is producing the most orderly distribution. There is in Quebec a Government liquor commission at whose shops alone liquor may be obtained (with the exception of licensed establishments for beer and light wines), and this relieves medical men of having to make special prescriptions for alcohol, with all the undesirable features that this involves. The profit made by the province is naturally high—enviously so in the eyes of some other provinces; but certainly no more excess is seen in this province than in those with complete prohibition of alcohol.

### RABIES IN QUEBEC PROVINCE.

An outbreak of rabies occurred in the region of Ottawa last winter, initiated by the bringing of two infected dogs from the State of New York. In spite of the prompt measures taken by the health authorities, the disease reached the island of Montreal. The efforts made to control its further spread from here were at first extremely vigorous; a muzzling order was issued, and thousands of stray cats and dogs were destroyed on the streets. The fact also that the bridges from the island could be watched to prevent dogs being taken off the island made the control of the infection fairly simple. Clinics were established at the city hospitals for providing antirabic treatment, and most dog-bites, of any type whatever, were treated there as a routine. No human deaths have been reported. It is hoped that with the advent of the winter the infection will be eventually stamped out, but the provincial health authorities quite realize how stringent and prolonged the precautions must be. Considerable numbers of infected cattle have had to be destroyed.

## England and Wales.

### A MILK CONFERENCE.

Milk in relation to public health was the subject of a conference convened by the National Clean Milk Society, and held in London on November 16th. It was announced that some thirty-four organizations, including the British Medical Association, supported the conference; and the Minister of Health, Mr. Neville Chamberlain, presided at the earlier part of the afternoon session. Notwithstanding these distinguished auspices, and a very good attendance at the meetings, it was hard to discover much that was new in the speeches. It was noticeable, perhaps, that the supporters of pasteurization appeared to outnumber the advocates of clean raw milk, thus reversing the position taken up at the discussion in the Sociological Section of the British Medical Association's Annual Meeting at Bath in 1925. At the morning session, in the discussion on Dr. Harriette Chick's paper, the attention of speakers was almost entirely

absorbed in tuberculosis. Dr. Black Jones, M.O.H. Builth and Colwyn, stated that he did not institute legal proceedings against farmers under the Milk and Dairies Acts. His method was to teach, explain, and advise, and then to publish reports of the producers who had reached a proper standard. The results had been excellent. Dr. Nathan Raw described the success of compulsory pasteurization of milk in America, where, he thought, no doctor would in futuro have any experience of non-pulmonary tuberculosis in children. At all events, ten years of pasteurization of milk were stated to have eliminated these diseases in New York; it appears, however, that 6 per cent. of the Washington butter contains tubercle bacilli. Dr. W. G. Savage had apparently been prevented on previous occasions from replying to those who think that bovine tuberculosis confers immunity on children because the bovine bacillus is less virulent than the human. The evidence, said Dr. Savage, showed that the bovine bacillus was really the more virulent; its apparent innocuity was due to the fact that it was ingested—a different and more resistant path. At the afternoon session Mr. Neville Chamberlain recapitulated information for the benefit of a wider audience. The rest of the afternoon was devoted to a rather desultory discussion on various proposals for amending, defining, extending, and strengthening milk Acts and regulations. Many will be found to agree with Mr. Wilfred Buckley in condemning the deceptive title "Grade A" as applied to milk. Some amusement was caused by a representative who wondered how many of the audience had tried to milk a cow under really clean conditions. On the whole, we think that the National Clean Milk Society might wisely abandon its love of conferences, and devote its energies in two directions—first, to promoting knowledge among producers and distributors, and secondly, to striving by research to obtain answers to the many disputed questions connected with milk.

#### COST OF TUBERCULOSIS TREATMENT.

The Ministry of Health has issued a memorandum (122/T) showing in tabular form under various heads the cost per patient per week at certain residential institutions for the treatment of tuberculosis in England and Wales. The period under review is the year ended March 31st, 1926. The tables have been compiled on the same lines as in former years, and for purposes of comparison the corresponding figures for the previous two years have been inserted. The information thus set out is circulated in the hope that it may help the authorities concerned to decide whether in a given case the items of expenditure are on the lowest possible level compatible with efficiency. Analysis shows that in rather more than half the institutions for which comparative figures are available, the total cost per patient per week has increased, in some cases considerably, and that in a number of these the percentage of beds occupied to beds provided has diminished. Since full value for the expenditure incurred at a residential institution can only be obtained if all the beds are occupied, the Ministry asks local authorities to do their best to keep their beds filled to the greatest possible extent. Another matter to which attention is drawn is the proportion of staff to beds for patients; it appears to the Ministry that in some institutions "this question should continue to receive careful consideration."

#### ROYAL DENTAL HOSPITAL AND SCHOOL.

The staff and past and present students of the Royal Dental Hospital and School dined together at the Trocadero Restaurant on November 20th, under the chairmanship of Mr. W. H. Dolamore. Among the guests were several leading members of the dental profession in London and the provinces. The Chairman, in recalling the history of the school, said that the name of John Tomes was ever to be connected with its origin. He represented British dentistry in a sense which was scarcely true of any other one man, and he was the moving spirit in the foundation of the school. Speaking as a member of the Dental Board, Mr. Dolamore said that the Board's concern for professional progress was heartily supported by men who came on the *Register* under the Act of 1921 as by those who were there through qualification, and as a result of the efforts initiated

by the Board the movement for dental education was going forward, existing schools were being better equipped, and new schools would be opened. He looked forward to a large increase of dental students, notwithstanding a temporary decline due to passing causes. Mr. J. H. Badeock, past-president of the British Dental Association, whose name was associated with the toast of the school, spoke of the school as the mother of dental schools, with her children in every part of the British Empire. He also referred to the entrance of women into the profession; their excellent work already had fully justified the broadminded policy of the governors in admitting women to the hospital. Mr. Badeock gave some advice to those just entering dental practice—to join a defence union, to insure against accident and illness, and to become members of the British Dental Association. Further responses were made to the toast by one of the prizemen, Mr. M. Lewis, and by the dean of the school, Mr. H. Stobie, who gave an account of recent changes in the staff and other matters of domestic interest. Mr. A. L. Paekham proposed the health of the guests, and the toast was responded to by Professor T. B. Johnston of Guy's, and the proceedings closed with compliments to the chairman, voiced by Mr. Norman G. Bennett, and warmly endorsed by the company.

## Scotland.

#### HENDERSON TRUST LECTURE.

A PUBLIC lecture under the William Ramsay Henderson Trust was delivered on November 12th by Dr. R. D. Clarkson, M.D., F.R.C.P.E., in the anatomy classroom of Edinburgh University. Dr. Hamilton C. Marr, Senior Commissioner of the General Board of Control, presided. The lecturer took as his subject "Some types of mental defectives," and said that in the popular mind three grades of mental deficiency were recognized. Over fifty years ago the lecturer's predecessor in the post of medical superintendent of the Royal Scottish National Institution at Larbert had suggested a classification under twelve types. The Mongolian type had been first distinguished in 1866 by Dr. Langdon-Down, who had been struck by the small broad head of these cases, which produced a Chinese cast of features. None of the tissues of these persons were normal, their ligaments were extraordinarily lax, so that many could sleep quite comfortably with the head between the feet, and as they grew older they never attained to the normal facility in the use of their limbs. There had been a belief that these were reversions to a forgotten ancestral type, and Dr. Crookshank had written a book, *The Mongol in our Midst*, in which it was made to seem probable that mankind had risen from at least three separate stems, so that there were affinities between the Mongol and the orang, between the negro races and the gorilla, and between the white races and the chimpanzee. This theory was negatived if the mental state of the Mongolian defectives were examined. They were placid, easily pleased, confiding, and gentle. They were incapable of forming abstract conceptions, and therefore never got any clear idea about their environment. They had a strong sense of rhythm, and were fond of music. A few of those who reached school age had very low intelligence quotients, and the majority were in the imbecile class. The highest of them might learn to read and write, but were very defective in arithmetic, and had to be cared for as children all their lives. It was fairly certain that if an ancestral branch of the human race had had such characteristics, it must have died out very soon and left no descendants. The simple primary defectives formed a less definite class and were regarded as degenerates. Stigmata of degeneracy were said to be very numerous, but every one of the physiological and physical stigmata, such as the deformed palate, malformed ear, and so on, might be found in quite normal people. The lecturer had grave doubts as to there being evidence of a degenerative tendency, although it was a fact that the bodies of idiots were seldom well formed. As in the bodily state of the simple primary cases there was no definite evidence of any one morbid

condition at work, so in their mental state every conceivable variation was found. It was quite common to find cases with sufficient intelligence to get on in life, but so defective in temperament that they failed. No test yet devised would detect these cases, and life was the only acid test for the certain detection of mental defect. Among the higher-grade defectives there were some whose defect was almost certainly the result of improper education. The growth of the mind was the result of innumerable reactions between the nervous system and its environment. If wrong reactions were formed into habits by constant encouragement, a child that might have passed as normal might revert into the defective class. The most important part of education was the building up in the years when the brain was growing fastest before the school life began. As yet there were not nearly enough special schools for children who were backward in development; further, it must be ensured that the good which was done to a child in such a school was not undone in the home or on the way home. No system of education, however, would bring the lowest grades up to normal, and these must continue to be a burden on the community. He considered, however, that all defectives should be prevented from having children; for, apart from the risk that their children might inherit mental defects, which was possibly exaggerated, it was certain that no child of a defective could have a fair chance of growing up to be a useful citizen, unless it was brought up by someone else. It was to be hoped that before long the community would make better provision for the defective and that diagnosis and treatment would be more successful than had been possible in the past.

#### CHEMISTRY AND BIOLOGY.

At a meeting of the Pharmaceutical Society, in the Society's Hall, Edinburgh, on November 19th, Professor J. Arthur Thomson, Professor of Natural History in the University of Aberdeen, gave the inaugural sessional address on "Chemistry in the service of biology." He spoke of the fundamental contributions to this subject to be found in the work of Lavoisier and Liebig. The former had introduced the idea of life as combustion, the latter had an equally important concept in regard to the circulation of matter. Important steps forward with far-reaching consequences had been made by Wöhler in the synthesis of urea, which had broken down the wall between organic and inorganic chemistry, and by Pasteur, whose chemical researches had appreciated the manifold activities of bacteria and foreseen the important role of fermentation in vital processes. One of the most important processes in the world was the synthesis that goes on in the green leaf under the action of light. There had been a long chain of discoveries in this subject from Priestley onwards. At the present day no one could do much in regard to the biology of the cell unless he was familiar with the properties of colloids. A recent instance of the invaluable services of chemistry to biology was found in the importance to muscular activity of glutathione, a substance discovered by Sir F. G. Hopkins. Services to embryology might be illustrated by Werber's experiments on the role of butyric acid in the production of monstrosities. The study of the nature and origin of organic pigments had been of great use in regard to the elucidation of biological problems of concealment, advertisement, or decoration. The modern work on the specificity of proteins had verified the old saying that all flesh was not the same flesh. It was possible that recent means of distinguishing by chemical tests between the blood of a male and a female animal might lead to discovery of the metabolic difference between the sexes. Indeed, all the descriptive sciences were bound to come more and more closely into co-operation in describing the nature and being of living things.

#### PERIODIC MEDICAL EXAMINATION.

An address on factory legislation was delivered on November 18th to the Unionist Workers' League by Dr. W. Robertson, medical officer of health for Edinburgh. Dealing with the Factories Bill of 1926, he said that there had been a tendency to do too much by legislation, and that the individual should take a share in the general levelling-up process that was going on. Among the most clamant

needs of the moment, however, was the establishment of a universal scheme for periodical medical examination of employees. Prevention was a watchword in medicine, and it should be continued to its logical conclusion by seeking to prevent sickness. If the victims of indigestion, anaemia, faulty teeth, defective vision, rheumatic pains, shortness of breath, headaches, and so on, were detected at the outset, the time and wages lost through sickness could be materially reduced. Under the National Health Insurance Act payment was made for the treatment of illness, but under a preventive scheme it was possible that sickness which might end in incapacity for work might be arrested. A plan of operations on a large scale naturally suggested the spending of money, but more payments from employer or employed could not be reasonably expected. It was natural, therefore, to turn to surplus funds belonging to the national health insurance scheme. If politicians were anxious to introduce more legislation, he suggested that the National Health Insurance Act should be so modified that a sickness prevention scheme might be established. In many instances large employers of labour had gone in advance of legislation by erecting factories replete with arrangements for the safeguarding of health. Housing schemes had also been established, welfare organizations set on foot, canteens provided, and various forms of outdoor recreation encouraged. The new Factories Bill had aimed at consolidating the Act of 1901 and subsequent enactments, but had very properly been held over for the present. The bill, when the time came for its introduction, would aim at making further advances in preventive work.

#### VITAL STATISTICS.

The return of the Registrar-General for Scotland for the third quarter of 1926 shows a birth rate of 20.1 per 1,000, a marriage rate of 6.8, and a death rate of 10.7. The number of births was 24,821. The corresponding rate is, with one exception, the lowest third quarterly Scottish birth rate yet recorded. In the counties the highest rate was in West Lothian and the lowest in Argyll. Of the larger burghs, Coatbridge stood highest with 25.7 and Edinburgh lowest with 18.4. The number of illegitimate births during the quarter, 1,749, is considerably below the average. The number of marriages during the quarter was 8,403. The rate for marriages is the lowest third quarterly rate in Scotland since 1917. The deaths registered during the third quarter were 12,865. The corresponding death rate is the lowest quarterly Scottish death rate on record, the nearest approach being 10.7 in the third quarters of 1922 and 1923. Among the counties the highest rate was in Caithness and the lowest in Peebles. Of the larger burghs, Kirkcaldy was highest with a rate of 12.5 and Dunfermline lowest with 7. The infantile mortality rate for Scotland during the quarter was 64 per 1,000 registered births, being the lowest third quarterly rate yet recorded, with the sole exception of the third quarter of 1923. The rates in the larger burghs ranged from 106 in Dundee to 30 in Dunfermline.

## Ireland.

#### ROYAL MEDICAL BENEVOLENT FUND SOCIETY.

THE eighty-fourth annual report of the central committee of the Royal Medical Benevolent Fund Society of Ireland states that the number of grants awarded in the year was eighty-five, as compared with eighty-six in the preceding year. That the income of the society from subscriptions has been increased even to a small degree during a year of marked financial stress is a matter for gratitude, and shows that in most of the counties the interest in the Fund is at least maintained. The income of the general fund from all sources was £2,390 11s. 10d., as compared with £2,097 1s. 6d. in the previous year. Receipts from dividends and interest increased by £66 13s. 3d. Subscriptions paid through the branches increased by £23 7s. 6d., while those paid through the central treasurer increased by £9 10s. 6d. The British Medical Association sent the handsome amount of £54 4s., collected during fourteen

months, January 1st, 1925, to February 28th, 1926; the amount collected during the year 1924 was £26 13s. Donations amounted to £31 10s., being life membership donations from Dr. Alfred R. Parsons, £21, and Dr. Thomas G. Stovens, £10 10s. The Irish Medical Association contributed £10 and the Dublin Clinical Club £5 5s. Two legacies were received. The late Dr. William Hennessy of Galbally left to the trustees of the Fund the sum of £100 for the purpose of providing an annuity of £5, or whatever that sum invested produced, for the benefit of widows or orphans of medical men, and the late Mrs. E. Thompson of Kingstown bequeathed £100 to the Fund; thanks were expressed to Dr. T. Hennessy, T.D., and to Mr. Herbert Dudgeon, the executors of these respective estates. These sums, together with a further sum derived from recovered income tax, have been invested in War Loan 5 per cent. stock, 1929-47, to round off the holding in that security at the even figure, £4,000. The Osborne fund being still in debt to the general fund, no grants have been charged against it; the debt has now been reduced to £4 9s. 2d. The committee points out that while receipts from dividends and interest during the past year amounted to £1,079 4s. 11d., the normal income from subscriptions was only £646 2s. 6d., and this, it was considered, afforded a rather remarkable contrast between the contributions of the dead and those of the living; while recognizing with gratitude the liberality of those who subscribe, it deprecates the fact that so many contribute nothing. Could the mass of the profession but realize how much the grants of the society mean to the recipients—comforts otherwise beyond their reach, clothes for themselves or for their children, and in some cases the very essentials of life itself—the committee believes that the number of supporters would materially increase. It asks those who know the society's work to canvass their colleagues who are not subscribers, so that the field of support may be extended and the financial stability of the Fund increased.

#### MEDICAL INSPECTION OF SCHOOL CHILDREN.

Dr. E. F. Stephenson, chief medical adviser to the Department of Local Government and Public Health in the Irish Free State, in a statement to the *Irish Independent*, announced that local authorities, in consultation with the newly appointed county medical officers of health, will prepare and submit draft schemes for school medical inspection for the approval of the Minister. The county medical officers of health when appointed will make preliminary surveys of the schools to ascertain the state of the general physique of the children and to estimate the standard attained in the different schools by children of approximately the same age. The school medical service should include the supervision of health, cleanliness, nutrition, and physical upbringing of each child, and should provide for periodical medical and dental inspections, with a view to preventing disease in the whole child population of school age. The regulations required general inspection of the children, special examinations of each child at specified age-periods, and careful investigation of defective children, followed by treatment. The inspections would be performed, where possible, in a room set apart for the purpose. It was intended to utilize the existing hospitals as treatment centres, and to employ the nurses engaged by district nursing associations, thus encouraging voluntary effort. In several cases special clinics, especially dental clinics, would be required. All the necessary institutions existed in Dublin, and the scheme there required practically no new machinery. The staff in each area would consist of the school medical officer, dentists, nurses, and, in large areas such as Dublin, an assistant medical officer. By co-ordinating with the scheme the nurses employed in maternity and child welfare work overlapping would be avoided and the health of the children would be supervised from birth to the time they left school. Dr. Stephenson added that there was no intention of rushing an elaborate and costly scheme on the country. No coercion would be employed, and a grant would be made to defray half the net cost of the approved schemes, payable in three instalments in the same way as the tuberculosis grant. Schemes

on these lines in Cork and Clonmel were developing satisfactorily. A general survey of Cork had shown the need for such a scheme. Of the children examined, 69.9 per cent. were found to have defective teeth, 19.5 per cent. defective sight, 6.8 per cent. nose and throat troubles, and 9.4 per cent. minor ailments. Uncleanliness was present in 11.8 per cent., and malnutrition in 8 per cent. All these children were being treated at appropriate centres. Treatment under the scheme would be limited to certain common ailments which permitted of more or less direct remedies—for example, defects of the eyes, ears, teeth, enlarged tonsils, adenoids, minor ailments, and uncleanliness. More serious cases, such as orthopaedic and spinal cases, would be referred to the local authority.

## India.

[FROM OUR OWN CORRESPONDENT.]

#### CHOLERA IN MADRAS.

A SPECIAL study of the epidemiology of cholera is being made in Madras, and in his annual report for 1925 Major A. J. H. Russell, I.M.S., the director of public health for the Presidency, states that three papers on the subject are in the course of preparation. Colonel King, who was sanitary commissioner in Madras during part of the last decade of last century, asserted that where both the north-east and south-west monsoons affected a district its chief cholera season would follow its chief monsoon. This observation has been related to the conditions during a series of years, and it has proved substantially correct. In addition to this annual periodicity associated with the monsoons recent investigations have revealed a tendency for cholera epidemics to show violent exacerbations every seventh year. In 1918 nearly 123,000 deaths were recorded, and it was consequently anticipated that the incidence of cholera in 1925 would again be high. Preparations were therefore made, and although the forecast proved substantially accurate the mortality during 1925 was less by 7,000 than that of 1924, and only about one-third of that recorded in 1918. This indicates the value of the systematic preventive work in the infected districts, which was often carried on under considerable difficulties. In a special report submitted to the Government in 1872 the then sanitary commissioner, Dr. Cornish, concluded that cholera had no endemic centre in the Presidency of Madras, and that each fresh outbreak of the disease was due to waves of invasion from Bengal, either through the Bombay Presidency or the Central Provinces and Hyderabad. Recent investigations have, however, proved that these hypotheses were unsupported by facts, and that there are many endemic foci in the deltas of the large river basins in the Presidency. In each serious epidemic the first cases always appear in the same centres, and indisputable evidence exists to show that the infection spreads from these foci along the rivers and canals. The outbreaks arising in the delta areas of the Presidency are characterized by chronicity, whereas in other regions they are short and explosive. Certain districts are also in constant danger of invasion by cholera from neighbouring territories, such as Hyderabad and Pondicherry. Until recent years fairs and festivals played a prominent part in the dissemination of cholera, but since the introduction of the district health scheme considerable attention has been paid to the sanitary arrangements at these centres, and outbreaks of the disease are now exceptional. This prevention of cholera outbreaks associated with fairs and festivals necessitates also the taking of measures to safeguard the health of the pilgrims on the main routes leading to and from them. The importance of this, it is added, has not yet been sufficiently recognized, and severe cholera outbreaks have consequently resulted. Major Russell urges that the grants for rural water supplies made by the Government to local bodies should be so allocated as to improve and protect the sources of water lying along the main routes radiating from the festival centres. The efficacy of anti-cholera vaccines, both Haffkine's and



Besredka's, and the most suitable remedies for the early treatment of this disease, are also under examination. Of 2,570 persons in Coimbatore protected with anti-cholera vaccine only one died, and in this case death occurred within six hours after inoculation, so that infection must have occurred previously. In a series of 1,878 persons inoculated in Salem no deaths from cholera occurred. As regards treatment, recovery was recorded in 80 per cent. of 155 persons in all stages of the disease in another district. During the recent epidemics the district health staffs were substantially increased, and in some cases doubled. The chlorination of drinking-water supplies was extensively employed in preference to Hankinization with very satisfactory results.

#### MEDICAL DISPENSARIES IN ASSAM.

An account of the work of the dispensaries in Assam during the years 1923, 1924, and 1925 has been prepared by Colonel C. H. Bensley, I.M.S., superintendent of the civil hospitals in Assam. He reports that the number of hospitals and dispensaries at the end of the triennium was 237, and that on the average there are 2.2 to each 100,000 of the population, and 2.8 to every 1,000 square miles. There was a decrease in the number of patients treated, except in six districts, and this is attributed to the closing of some travelling dispensaries, the transfer of medical officers to kala-azar survey work, and the reduction of need for treatment in some localities owing to improvements in sanitation and the establishment of an increased number of private practitioners. In his statistical return it is shown that there was an increase in the treatment of malaria and diseases of the skin, eye, and respiratory system, while there was a decrease in cases of roundworm and rheumatic fever. Cholera also diminished, and the hope is expressed that this will be well controlled in future, since there are now two epidemic units at work, and anti-cholera inoculation is gaining in popularity; three more epidemic units are, however, required. During the three years special efforts were directed towards the control of epidemic diseases generally, and of kala-azar in particular. Campaigns and surveys were organized in districts, and new subcentres opened for treatment. There was an increase in the number of in-patients treated in the hospitals, and a decrease of out-patients. Liberal grants were made by the Government for the purchase of drugs and the general maintenance of dispensaries. While many local boards and municipalities are endeavouring to provide greater facilities for medical treatment by opening new dispensaries, inadequate provision is often made for those already in existence, very many being short of funds for the provision of medicine, equipment, and repairs, and hampered by large outstanding debts. Considerable relief has been derived from Government grants, but it is intimated that such assistance cannot be continued indefinitely. The public support of local board and municipal dispensaries is still very inadequate. Modern dispensary buildings and two cottage wards have been erected at Jorhat. A new ward has been added to the Luugleh hospital, and new dispensary buildings at Bijnai, Krishnai, and Saikhowa. Extensive repairs are in progress at various dispensary centres.

#### THE BURMA GOVERNMENT MEDICAL SCHOOL.

In the annual report of the working of the Burma Government Medical School in Rangoon for the year 1925-26 it is announced that it has been decided to admit no more students, and to allow the school to close down gradually. The educational facilities hitherto given by it will be afforded by Rangoon University. The number of students at the beginning of the year was 171, and 44 passed the final examination subsequently. Training for three months in practical midwifery was arranged for 45 students at the Government Maternity Hospital at Madras; this training is no longer available, and arrangements are now being made for the organization of the necessary courses at the Dufferin Maternity Hospital in Rangoon. Lieut.-Colonel J. Fuller-Good, superintendent of the school, gives an account of its satisfactory progress during the year; in all examinations a high percentage of successes was secured.

## Correspondence.

### REST IN ACUTE POLIOMYELITIS.

SIR.—Your very admirable article of November 20th (p. 947) on rest for acute poliomyelitis is most timely, and should be carefully noted by all practitioners. We are accustomed to look upon the first stage of the disease as extending from the onset until all pain has disappeared. If there is no pain or very transient pain it is wise to consider the first or acute stage as lasting six weeks, but so long as pain, or tenderness of the muscle, lasts we must regard it as an indication of active irritation of the central nervous system.

During this acute stage it is essential that the child be kept at rest. He should not be allowed to roll and twist in bed. The head, spine, and limbs should be held rigidly by a simple apparatus softly padded to ensure comfort. This Fabian policy may be trying to both doctor and patient, but it is certain that the child is in considerable danger from premature massage and electricity. In the presence of acute symptoms it is dangerous to stimulate the peripheral ends of nerves connected with haemorrhagic and inflamed centres. The room should be kept quiet and darkened, and nothing should be allowed likely to cause excitement. Not long ago, in consultation with distinguished physicians abroad, I saw a child in the acute phase of poliomyelitis. The physiotherapist, with all his apparatus, was already in the room in order to test the muscle reactions, while the child lay unprotected on the bed rolling and screaming in terror. Such an episode is a tragedy, and reflects grave discredit on our profession.

The other point upon which I would lay emphasis is that the paralysed groups of muscles, during the whole of the acute stage and until recovery has taken place, should be kept in the position of relaxation—that is, the limb should be kept extended if the quadriceps is paralysed; the foot inverted where the tibial group is affected; the ankle plantar-flexed where the calf muscles are paralysed; and on the same lines where other groups are involved. This is based on a fundamental principle which admits of no exception.

In conclusion, I wish to subscribe to all you say in regard to the closing of schools. With the knowledge we have of the infectious nature of the disease and its spread in the United States, there can be no justification for sending 500 boys all over the country, some of whom may well be carriers of disease.

I would recommend all who have the responsibility of advising school authorities to read the report of infantile paralysis in Vermont compiled by the late Professor Lovett of Harvard.—I am, etc.,

Liverpool, Nov. 23rd.

ROBERT JONES.

### EPIDEMIC POLIO-ENCEPHALOMYELITIS IN SCHOOLS.

SIR,—May I, with all respect, express a doubt that there will be general acceptance of the course of action advocated by Lord Dawson and Dr. James Collier—namely, that, in the presence of an epidemic of acute polio-encephalomyelitis, a school, already infected, should isolate itself and carry on. Let me enumerate the measures at the disposal of the school medical officer who is faced with such a problem.

As long as the epidemic remains entirely outside the school, he can attempt to turn the school into a self-contained and isolated community. In the case of a moderately large boarding school standing in its own grounds this can be done with very fair success. Parents, visiting teachers, and all outsiders can be prevented from entering the building, and the children, with the teaching and domestic staffs, can be confined to the grounds. Considerable difficulty may arise with the laundry, and still more will be met with in the matter of the domestic staff, and a much more reliable domestic than has yet been evolved will be needed to carry the plan through successfully over any length of time. This type of school is most favourably placed, but there are others. Mixed day and boarding schools cannot attempt the plan. Big public

schools with constituent houses are in the greatest difficulty. In the case of Uppingham, consisting of thirteen houses scattered in the town, the scheme of isolation is clearly and completely impossible, and the school cannot protect itself from the town. Nor can the town protect itself from the school if such a school becomes infected, and as the action of disbanding the school at Uppingham has been criticized as likely to spread the disease, it is well to point out that in such a case the public is going to be endangered whether the school is kept open or is closed.

But in the case of a school already attacked, what can a school medical officer do to ensure the safety of those in his charge? He can institute a throat and nose drill with the prescribed gargles and sprays. The results of such prophylaxis are hopeful, but no one could fairly say that it gives security. Apart from this, combined with general health measures, he can do nothing. His chief difficulty is that he cannot possibly isolate contacts, nor can he prevent a certain amount of crowding. What, then, is the position if the school is kept together? If the disease is spread by contact it means that with each fresh case a whole group of children is subjected to a fresh risk; if by carriers or dust, it means that the children are subjected to prolonged danger. In any case, had the children gone home, the risk to them would have disappeared once the initial period of danger was over. If it is reasonably certain that the disease is of epidemic type, there is no risk to the pupils as quickly as by

There seems a lack of thought in the criticism of this plan. If a carrier comes home and gives the disease to someone else, how is it worse than if he stays at school and infects a school-fellow? In their respective homes contacts can be isolated; in the community of a school they cannot. Further, I am afraid the psychology of parents is hardly allowed for. To ask them to regard this disease as in any way at all comparable with the infectious diseases they know is useless. They recognize no resemblance and, however many cases of permanent paralysis from it they see, and however many cases of children being found dead in bed they hear of, they will not be impressed with such resemblance. They do not look upon their school as a quarantine station, nor do they deem themselves fit to be responsible for the public health; they are simply anxious that their children should escape as quickly as possible and with the least risk. Nor is it reasonable to attribute their anxiety to ignorance, for it is those who know about the disease who are the most apprehensive. Let me relate my experience.

In the late Broadstairs epidemic Dr. Hugh Raven asked me down to consult with him about two schools under his care, neither of which had been infected. A letter was written in which we were able to say that in both cases the schools had not been exposed to any danger for a time already longer than the usual incubation period, and that their position was by then practically safe. Before this report could reach the parents the news of the epidemic was in the press. In one school there were three children from the "Harley Street area." On my return to London the next morning the parents of these three children were the very first to be at me, and I had seen them all within an hour. All of them had settled to take their children home that very day, and only what I was able to tell them kept them from doing so. Their action guided many other parents, and I believe no child was removed after that date. But my point is that those who were most anxious were the very ones who knew the disease; and I must own that to those who asked, should I prove wrong and a case occur in the school, ought they then to remove their children, I could only answer "Certainly."—I am, etc.,

London, W., Nov. 20th.

REGINALD MILLER.

In response to inquiries for information we have received the following letters:

SIR,—I am glad to say that now, eleven days after the boys returned home from Uppingham, only one case of poliomyelitis has been reported to us. It is rather a coincidence that this boy has a younger brother at home who was removed from Broadstairs. The total number of

cases in Oakham urban and rural districts was fourteen; in Uppingham two cases—the Uppingham School cases. There is very little communication between the two sides of the county. The Uppingham School authorities are well aware of the gravity of breaking up during term—this is the only occasion—but the risk to boys of an epidemic was considered sufficient to justify it. Events have proved this, apart from hundreds of letters from grateful parents, many of them medical men. I do not think it is necessary to deal with the letter of Lord Dawson and Dr. Collier in the *Times*. From letters received by me the profession seem to understand the position.

Now that epidemic poliomyelitis has started in England we are likely to have another outbreak next year. I hope the medical officers of schools will meet to discuss the matter, and formulate a scheme, if possible, to deal with a disease of which so little is known.—I am, etc.,

WILLIAM DUNN, M.B.,  
Medical Officer, Uppingham  
School.

November 23rd.

SIR,—The following are the facts with regard to poliomyelitis in Oakham.

We had three cases in September, one a lad of 15, who died within a week of the appearance of symptoms, the second a local policeman of 28, and the third a girl of 9. The last patient contracted the illness at Leicester, and was sent home to Oakham after the acute symptoms had disappeared. The two latter cases were treated at the local cottage hospital, and were later transferred to the Hospital for Paralysis, Maida Vale.

There was a fourth case, a child, in October, and a fifth, also a child, in November. This last was first seen on November 2nd; since then we have had no fresh cases. There have been no cases in the Oakham school.

I have had two cases in two neighbouring villages, and I understand Dr. Skipworth of Market Overton, the adjoining practice, has had five or six cases.

The extraordinary and inaccurate statements in the press with regard to the epidemic have had the effect of alarming the people generally, and the parents of boys at school particularly. If a calm, authoritative statement could be made by the Ministry of Health with regard to this epidemic it would materially help to counteract this.—I am, etc.,

Oakham, Rutlandshire, Nov. 22nd.

T. CLAPPERTON.

We are indebted to Dr. J. E. O'Connor, M.O.H. for Leicestershire and Rutland Combined District, for the following information concerning the notifications of poliomyelitis in the district. The first notifications for the Leicestershire districts were made during the week ending August 21st, and numbered 4; the notifications for the ten weeks August 28th to October 30th were as follows: 5, 1, 6, 14, 4, 4, 2, 3, 2, 4—the total for the eleven weeks being 49. The cases occurred in a great many parishes, and in no instance was there more than one case per house; most of the cases were treated at home. The notifications for the county of Rutland numbered 17; they occurred as follows: 2 in the week ending October 9th, 5 in that ending October 23rd, 6 in the following week, 2 in the week ending November 6th, and 2 (in Uppingham School) in that ending November 13th. In the Oakham rural district, in which 12 cases were notified, there were 3 in one house and 2 in another.

Dr. O'Connor adds: It will be observed that no case has been notified in any of my Leicestershire districts during the present month. In Rutland districts, where 4 out of 17 cases proved fatal, the disease has been relatively far more prevalent, as their total population is under 16,000. It is now eleven days since the onset of the last case.

#### THE CANCER VIRUS.

SIR,—Dr. Gye in his article on the cancer virus in your issue of November 13th apparently refers to my suggested interpretation of his work—wherein he remarks on "the extremes to which men will go to explain away a fact which runs counter to a strongly held opinion." He also says, "such views, I hope, need no reply."

Dr. Gye must remember we are dealing with an exceptional tumour, and the case perhaps demands an exceptional explanation. At any rate it is neither helpful nor logical to dismiss the view with the hope that it need not be answered. I maintain that the view expressed in my letter to the *BRITISH MEDICAL JOURNAL* of January 30th last is a possible interpretation of the facts, and well within the scope of scientific conception.

I would therefore again ask the question in the hope that it will be answered, "Has Dr. Gye in his experiments merely broken up the malignant cell into cytoplasm and filterable fragments of nucleoplasm, and then reunited them in another host?" For the essential and characteristic property of nucleoplasm is its power of auto-synthesis if placed in a suitable pabulum, thus reconstituting itself as the true genetic cell.—I am, etc.,

FRANK B. SKERRETT, M.B., B.Sc.Lond.

Town Hall, West Ham, Nov. 20th.

#### SURGERY IN GENERAL PRACTICE.

SIR.—It seems to me a most unfortunate circumstance that Sir James Berry, at the Royal Society of Medicine's dinner, should have considered it a public duty to reflect prejudicially upon the present-day tendency of general practitioners to take up surgery in its larger aspects.

Whether this be the truth or not is beside the point, unless he can also indicate the remedy. His only suggestion in this direction is that the public should exercise care in the selection of a surgeon!

The chief result of his outspoken remarks has been a host of articles, sub-leaders, and interviews in the public press, nearly all of which show complete misunderstanding of what was, presumably, Sir James's real intention—which I take to be the prevention of general practitioners undertaking big operations more or less promiscuously, without the necessary training, knowledge, and skill. I think the vast majority of the profession will endorse this view.

On the other hand, what do the public, as evidenced by the journalistic efforts it has evoked, know of the distinction between specialists, general surgeons, house-surgeons, honorary medical officers of provincial hospitals, and general practitioners?

It is certainly true that the war led to a great increase in the amount of surgery done by general practitioners by reason of the fact that an army of pure surgeons took an active part in France and elsewhere; and it became a necessity for patients, both hospital and private, to put themselves in the hands of their own doctors or other local practitioners recommended by them. For the first time patients realized that much good work and difficult operations might be performed by local men, and at a much reduced fee. This state of things has continued more or less to this day.

Then, when the war was over, numbers of R.A.M.C. men, accustomed to performing many and varied operations while in the army, so soon as they started in practice as partners or otherwise naturally did all they could to continue to get as much surgery as possible. The able man, in either of these categories, if honest, would only undertake such things as he felt competent to do; cases beyond his ken, and special work, he would advise being given to a "special" surgeon.

It is useless to make sweeping remarks about general practitioners—they vary in quality and degree as men may in any other profession, or even as surgeons do themselves, and, as a matter of fact, outside the big cities they are all general practitioners who staff the hundreds of provincial hospitals.

If general practitioners are to be prevented from doing big surgery, then many thousands of urgent abdominal cases and tens of thousands of sub-urgent cases would have to be sent to London and other large centres. And with what result?—no beds to hold them, or not enough surgeons to operate.

No! Common sense must be introduced with the subject. Who is to decide what or which is a major operation—what is to be done if an apparently small beginning results in a great finding? Is the operator to wait until a bigger man arrives—too late, from the patient's point of view?

In my opinion the big men are themselves to blame to a great extent. Fees are too often grossly beyond the actual value of the operation, and the public know that many local men are competent and willing to do the same thing with an equally good result for a very much smaller fee, and they trust their medical adviser to recommend a special man for the job if they think it necessary. It seems so unfair that one fee should be ten guineas and another two hundred—the increase in relative value is fictitious.

I am quite sure the swing of the pendulum towards too frequent operation by general practitioners not on hospital staffs will soon begin its return journey and normal will gradually be attained; but I am equally sure that each man should endeavour to make and keep himself as efficient as possible, and I am also equally sure that any breach in the good relations between general practitioners and consultants—who, if not always complimentary, are complementary to one another—can only militate against the best interests of the public and the profession.

That is why I think all such public utterances as those made by Sir James Berry are so harmful, and one can only hope they will not be repeated. I beg to enclose my card.—I am, etc.,

November 22nd.

A GENERAL PRACTITIONER.

SIR.—May I, as a general practitioner, crave space to express my indignation (shared, I feel sure, by my brethren) on reading the views aired by Sir Arbuthnot Lane, and adumbrated by Sir James Berry on November 18th?

I write to you, Sir, because, generally speaking, we general practitioners do not choose to figure largely in the lay press. We feel that the representatives of the public papers have access to our journals, and that it is perhaps a little beneath the dignity of a general practitioner to depreciate publicly the work of his colleagues.

Sir James Berry is quoted as saying, "Those of us who are behind the scenes in the surgical world see only too much of what is going on." May I add that those of us who are behind the scenes in general practice see a good deal too? And some of our most difficult cases are those who, in Sir James Berry's cryptic words, "wanted an operation and took care who did it."

Sir Arbuthnot Lane sums up the situation by saying that people get exactly what they pay for. Herein he does his own great profession and a vast body of conscientious practitioners a grave wrong. He should have added that this was strictly his own experience. There are those amongst us who do not exorcise our pound of flesh from every patient; it would be a sad and bad day for many of our needy patients if we did. "There is only one remedy" [says Sir Arbuthnot Lane]; "we must educate the coming generations of doctors." Perhaps he may be induced to assist at this great and onerous task himself when he has completed his education of the public.—I am, etc.,

EUGENE H. COYNE, M.C., M.Sc., M.B.

London, S.W.2, Nov. 20th.

#### SANATORIUM TREATMENT.

SIR,—In answer to Dr. Weatherhead's kind criticisms of my remarks in a recent number of the *JOURNAL*, I may say that twenty-five years ago I analysed the histories of about 300 patients who had been inmates of the Brompton Hospital, most of whom were at that time well advanced cases of pulmonary tuberculosis, and most of them had been infectious for years. I found that the initial symptom in 19 per cent. was haemoptysis, and that the time between the haemoptysis and admission to hospital averaged three years. In addition, in 20 per cent. of the cases the initial symptom was pleurisy, and the time between the pleurisy and admission to hospital averaged four and a half years.

It would thus appear possible to admit to sanatoriums 40 per cent. of cases, the majority of them curable, without filling the sanatoriums with doubtful material. Ordinary methods of differentiating cases of haemoptysis and pleurisy not due to tuberculosis would be used; where no other cause for the disease could be found, then the cases should be treated as tuberculous without delay. It should be explained to these patients that if they recovered they would

be in no danger of espionage from the sanitary service, thus placing them on a level, as regards liberty, with patients suffering from venereal disease. This would protect the public from mixing for years with infectious cases, often in complete ignorance of their condition. Most of these cases would either never become infectious or would lose their infection under treatment.

The treatment of such cases would occupy only a small fraction of the time taken now in keeping alive more or less permanently in our midst a large number of infectious patients. By the method I propose we should be restoring patients to health and preventing infection all along the line, we should be able to spend much less on hospitals for advanced cases, and colonies and tuberculosis villages would be unnecessary.

The eradication of this disease is largely in the hands of the general practitioner, whose confidence requires strengthening; a large proportion of the cases he sends must do well, and if this is to happen it is probable that a great deal more rest will have to be prescribed in sanatoriums than at present.

We must be careful not to add to the disabilities of patients who are willing to be treated; remembering that at the present time it is not the infectious who are penalized, but only those who have been willing to undergo treatment and thus render themselves innocuous. —I am, etc.,

Ayrshire Sanatorium, New Cumnock,  
Nov. 14th.

EDWARD E. PRIST.

SIR,—I read with interest your review in the *BRITISH MEDICAL JOURNAL* (August 28th, 1926, p. 397) of a memoir by Dr. Stocks and Mr. N. Karn, dealing with the results of treatment in the Belfast Municipal Sanatorium.

The validity of Dr. Stocks's conclusions has been questioned on account of several factors by your correspondents, who have, however, confined their criticisms to the material on which the investigation is based. Even if one assumes that the figures on which the authors base their calculations are quite incomplete and grossly inaccurate, that does not explain the inferior progress of the sanatorium-treated cases. Errors in diagnosis and in recording clinical facts would roughly cancel out in the respective groups compared by the authors.

I should like to point out an error in the joint authors' calculations which goes far to explain the astonishing conclusions reached by this inquiry. Dr. Stocks and Mr. Karn have compared the progress "of 170 incipient cases who were treated during some part of the period (not less than fourteen days) at sanatorium and during the rest of the time at dispensaries, and the progress of 499 cases who received only dispensary or domiciliary treatment" (p. 414, lines 14-17). From this one learns that only 25 per cent. of incipient cases had sanatorium treatment at any period of their illness, and it is important to note that the anatomical classification is based on the physical signs *when the patient is first examined*.

"The anatomical grouping was almost invariably entered on the schedule by the tuberculosis officer when the initial complete examination was made: where this was not done it was usually possible to assign the case to its proper group from a careful examination of the lung chart and report of examination of the chest: in only a small proportion of cases was there insufficient information to enable an anatomical classification to be made." (Page 410, lines 15-19.)

The amount of systemic disturbance in these incipient cases is also estimated *when the case is first observed*.

"To test this possibility each case was classified into one of three groups, S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>, according to the severity of symptoms when the case was first observed, as defined in Section 3." (Page 434, lines 26-28.)

The authors admit (p. 436) that the proportion of cases with little or no systemic disturbance is smaller in the sanatorium-treated group, and make a correction accordingly, but they have ignored a much greater fallacy. They appear to have forgotten that the average time interval from first visit to dispensary (that is, the

date of classification) to admission to sanatorium is 279 days for incipient male cases and 339 days for incipient female cases (p. 413). We are entitled to speculate as to the relative progress of the sanatorium-treated and the non-sanatorium-treated groups during this considerable space of time. Is it not reasonable to assume that those cases which deteriorated materially during the first six to twelve months of dispensary attendance declared their willingness to enter the sanatorium, especially as the period under consideration (May, 1914, to July, 1917) was one of good employment and high wages?

It appears, then, that of 669 cases of incipient pulmonary tuberculosis in Belfast, 170 had sanatorium treatment after a considerable period of observation. These cases are compared with 499 incipient cases who did not have sanatorium treatment after the same period of observation. Broadly speaking, this is to compare the sick with the comparatively healthy, and it is not astonishing that those who felt well enough to carry on outside the sanatorium should show a higher degree of ultimate progress. May I illustrate the point by an example? On January 1st, 1915, two patients present themselves for examination at the tuberculosis dispensary. Both have suspicious symptoms and physical signs: they are classified L<sub>1</sub>, S<sub>1</sub>, and advised to attend again. The first patient feels better after a rest, resumes work, and soon ceases to attend the dispensary. The second patient, who has active pulmonary tubercle, becomes worse, perhaps has a hæmorrhage, an acute pleurisy, or a rapid loss of weight. Then, after six to twelve months' delay, the second patient consents to "try the sanatorium." By this time the physical signs may be advanced, and the symptoms of tuberculous toxæmia may be severe. Nevertheless, according to the classification of Dr. Stocks and Mr. N. Karn, this patient is an incipient case with slight or no systemic disturbance.

The real value of sanatorium treatment, about which I express here no opinion, will never be assessed by such faulty methods of reasoning as are used by the joint authors of this memoir.—I am, etc.,

B. R. CLARKE, M.D.,  
Medical Superintendent, Forster Green  
Hospital.

Fortbreda, Belfast, Nov. 15th.

## A STRANGE EPIDEMIC:

DIARRHOEA: LOCAL ASPHYXIA: RASH.

SIR,—The following are the details of a somewhat perplexing epidemic of diarrhoea which, at the moment of writing, is rife at Sunshine House, Chorley Wood, one of the resident homes for blind babies supported by the National Institute for the Blind. If any readers of the *BRITISH MEDICAL JOURNAL* have met with any similar cases or can throw any light on the obscure etiology of this outbreak we shall feel greatly obliged if they will communicate with us.

The cases have occurred almost simultaneously among the members of the nursing staff, and among the children; only one domestic, the laundry-maid, has been attacked. Although the symptoms among the adults and among the children have many features in common, there is this distinction, that only the children have suffered from the skin condition presently to be described. But in spite of this difference it is difficult to believe otherwise than that all the cases are due to one common cause.

The symptoms are as follows: the attack commences with a feeling of intense tiredness, followed in twenty-four hours by acute pain in the epigastric region with diarrhoea, and in some cases with sickness. In the adult cases complaints were made of frontal headache with a queer feeling of fuzziness in the head. Intense drowsiness was also complained of, and in one or two cases there were attacks of faintness.

The young children do not appear to be in any great discomfort, but they are distinctly apathetic and listless. One baby, a few months old, showed symptoms of cerebral or meningeal irritation. In none of the cases has there been any rise of temperature, the pulse has been invariably slow, and the blood pressure low. Recovery takes place at the end of three or four days

<sup>1</sup> The references are to the original memoir, *Annals of Eugenics*, Vol. I, Parts 3 and 4, April, 1926.

The real peculiarity of this epidemic is that among the children, in addition to the symptoms already described, there is a condition of the toes and feet which looks like local asphyxia almost amounting to gangrene, the parts affected appear as if they were frost-bitten, and there are localized spots of erythema which look as if they would ultimately vesicate, but in no instance has this actually taken place. The spots range from the size of a small pea to that of a large bean; they are round or oval in shape. They are distributed over the toes, the soles; and the dorsum of the foot, and none have been noticed in any other situation. They are painless, and not tender to pressure. In the end they become dry and scaly and appear something like erythema iris or ringworm.

The epidemic started on November 13th, and has continued intermittently up to the present time. Out of 24 children 11 have been attacked, and out of 10 nurses 8 have fallen victims. Only one of the domestic staff has been attacked, and she slept in the nurses' quarters and had her meals apart from the rest of the other servants.

The etiology of this epidemic is complicated by the fact that during its course there was an overflow from an unsuspected cesspit which flooded the cellars and filled the whole establishment with a foul-smelling effluvia.

Although in most of its features the epidemic is more like one of infective origin, the absence of all pyrexia militates against this diagnosis. Its intermittent character is contrary to the diagnosis of food poisoning or botulism, and poisoning by sewer gas does not seem altogether probable.—We are, etc.,

H. J. CARDEW,  
Medical Officer, Sunshine House,  
Chorley Wood.

ERIO PRITCHARD,  
Consulting Physician for the Sun-  
shine Homes for Blind Babies.

November 21st.

#### CLOTHING AND CATARRHS.

SIR,—Dr. Leonard Williams accuses me of an act of crude discourtesy in writing so strongly as I did "over a legitimate difference of opinion as to the respiratory function of the skin." If this were the case I should indeed feel ashamed to have written my letter, but, as he evades the greater part of my argument, I hope I may be allowed to try and refute his accusation.

I made three points against Dr. Williams's hypothesis. The first and least important was that the respiratory function of the skin is almost negligible. The second was that, even supposing that this function is important and were abolished, leading to increased respiration by the lungs, there is no sort of reason to suppose that this would lower their resistance to bacteria. Increased respiration for most people is surely healthy. My third point was that in so far as warm clothing acts on the respiratory function of the skin it tends to increase it.

To the first point alone Dr. Williams replies to the effect that while such is the usual teaching, he differs, as he might, on such a question as the function of the appendix. To this I rejoin that here is not a doubtful question in medicine, but an established fact in the science of physiology, established by direct experiment, and only to be refuted by such. But, even allowing that Dr. Williams is right by some intuitive process and the physiologists are wrong, and that by a further intuition he is correct in supposing that they have made another mistake in saying that hyperæmia and sweating increase the skin's respiration, and that he elects so to dispose of my third argument, he has still to answer my second, which combats the very essence of his hypothesis.

It was the cumulative effect of these three points which really made me think that it was more charitable to assume that Dr. Williams did not advance his idea seriously, but thought it was good enough to use to rub in some doubtless excellent hygienic precepts in the same way as most of us may be led into making dogmatic statements to patients for their good.

That was my excuse for the tone which I adopted in my first letter. If Dr. Williams does now intend to maintain his hypothesis in a scientific journal, I can only say that

I have here given fully my reasons for opposing it; and that while I regret the misapprehension which gave rise to the tone of my first letter, I also regret that Dr. Williams did not emulate the writers therein referred to, but chose the medium of a popular article in the lay press to exploit such a remarkable contribution to the pathology of catarrhs.—I am, etc.,

A. R. JORDAN.

Dover, Nov. 21st.

SIR,—In view of the fact that the epidermis consists of four strata (each composed of several layers), that the surface is cornified and covered by a film of grease, and that the whole is non-vascular, respiration through the skin would appear, if not impossible, certainly negligible.

Dr. Leonard Williams asserts it does take place. Will he please inform the profession as to the nature of his experiments in proof of his contention.—I am, etc.,

J. F. P. GALLAGHER.

Bournemouth, Nov. 22nd.

#### Obituary.

##### THE LATE DR. FRANCIS WARNER.

DR. FRANCIS WARNER, of whom an obituary notice was published on November 6th (p. 857), was a pioneer in the investigation of mental abnormality from the physical standpoint. The greater part of his work was connected with the study of children, and led to such important practical sequels as the provision of special schools for blind, deaf, and defective children, and the eventual adoption of a more hopeful and scientific attitude to cerebral disorders. In the course of a paper before the Section of Psychology at the Glasgow Meeting in 1888 he enumerated the physical signs which, in his opinion, pointed to slight degrees of mental impairment, and he suggested that an investigation should be made on a large scale to determine the degree of mental health of children in primary schools. A committee was appointed for this purpose by the Council of the British Medical Association, and became part of a large organization; it carried on its work until 1897, assisted by grants from the Association, amounting in all to £653. The first report of the committee appeared in 1889; considerable difficulty had been encountered in obtaining permission for the examination of children in certain primary schools, and a recommendation was then made that a scientific investigation on a larger scale should be instituted by the Government. In the course of the nine years during which the committee was at work Dr. Warner examined systematically 100,000 children, and statistical reports were issued from time to time. In 1890 an account of the examination of 50,000 children, seen in 106 schools in London, was published in the report of the Commissioner of Education for the United States, and a full report was published later by the British Medical Association, with recommendations as to education and training, several of which were adopted in subsequent legislation. Considerable differences in the development of children were found in certain localities and nationalities. Various other reports were published later in the *BRITISH MEDICAL JOURNAL* and, as already mentioned, in the *Journal of the Royal Statistical Society*. Dr. Warner became, naturally, a recognized authority on this subject, and took an active share in the work of the Royal Commission on Blind, Dumb, and Defective Children in 1889, the Departmental Committee of the Local Government Board on the Feeble-Minded in 1896, and the Committee of the Home Office on Reformatory Schools in the same year. Two years later he was associated with a departmental committee of the Educational Department, which investigated problems concerning defective and epileptic children, and in 1903 was a member of the Royal Commission of Physical Training in Scotland. His main conclusion that brain conditions, including mental action, could be interpreted in terms of neural function, and be considered physiologically and pathologically, was finally established, and considerable light was thrown by him on the problems of infant mortality and feeble health in childhood.



Mr. ROBERT HARRY LUCAS died on November 6th at his residence in Bury St. Edmunds, aged 81. He was the third son of Dr. Thomas Lucas of Burwell, Cambridgeshire, and received his medical education at the Middlesex Hospital, where, after obtaining the diplomas L.S.A. and M.R.C.S. in 1869, he held the posts of house-surgeon and resident medical officer for several years. In 1879 he began private practice in Bury St. Edmunds as a partner of the late Dr. McNah, whom he afterwards succeeded. He was a member of the honorary staff of the West Suffolk General Hospital, and took a leading part in the organization and extension of its surgical department. On his retirement from active practice in 1909 Mr. Lucas was appointed consulting surgeon. For many years he held a commission as surgeon captain in the Loyal Suffolk Hussars; during the late war he was attached to the Suffolk Depot Military Hospital, and was a member of the Military Service Medical Board. He was a justice of the peace for Suffolk and a regular attendant at the Thingoe Petty Sessions. Mr. Lucas gave active support to the British Medical Association over a period of many years, and was a member of the East Anglian Branch Council from 1899 to 1903. He was chairman of the West Suffolk Division in 1904, and a member of the Representative Body in 1912 and 1913. He leaves a widow and one son, who is in the medical profession.

Dr. WILLIAM FRANK MORGAN, who died suddenly on November 3rd at Wilton, near Salisbury, at the age of 38, received his medical education at the London Hospital, and obtained the diplomas M.R.C.S., L.R.C.P. in 1913. After assisting in a practice near Leeds, he obtained a commission in the R.A.M.C. at the beginning of the war, and spent most of his service in the front line, retiring after the armistice with the rank of major. Since 1920 he had been in partnership with Dr. A. W. K. Straton at Wilton, where he became very popular by reason of the soundness of his work and the quiet kindness of his nature. He was a member of the British Medical Association and a Fellow of the Royal Institute of Public Health.

## Universities and Colleges.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND. ANNUAL MEETING OF FELLOWS AND MEMBERS.

The annual meeting of Fellows and Members of the Royal College of Surgeons was held on November 18th, with the President (Sir BERKELEY MOYNIHAN, Bt.) in the chair. About sixty were present.

The President said that the Supplemental Charter as prayed by the College had been granted. It was approved by the King in Council on July 26th, signed and sealed on August 16th, and received by the College on August 24th. The charter itself made no alteration in the by-laws, but it gave the Council power to do so. These had to undergo a rather tedious process before coming into force, but a process deliberately made slow in order that the fullest consideration might be given to any changes. These changes must be considered at three meetings of the Council, they must then be submitted to the Home Secretary, be examined and allowed by certain Law Officers of the Crown, and finally approved by the King in Council. Alterations in certain sections of the by-laws, required to carry out the provisions of the new charter, had already passed through certain of these stages, and it was hoped that the new by-laws, if they received no challenge from the Law Officers, would come into force early in the New Year. Turning to other matters in the annual report of the Council, Sir Berkeley Moynihan said that the award to Dr. Gye of the Walker Prize would be approved by the whole profession. (Applause.) The Cartwright Prize had been awarded to Dr. Sim Wallace, and the Lister Medal to a great friend of his own, Professor von Eiselsberg of Vienna. The College had been approached by the Canadian Medical Association, which desired facilities for Canadian medical practitioners to obtain, by post-graduate study and examination, the Fellowship of the College. Certain quite informal discussions had also taken place between the Council and representatives of Australia. He need not enter into this matter at the moment; the only thing necessary to say was that every member of the profession would desire the Council to do whatever was in its power to bring about a closer relationship between the Dominion and the College. (Applause.) The last year had been very satisfactory in respect to two matters. The College last year issued 763 new diplomas of membership. This figure was second only to the highest in previous years. Clearly the diploma

of membership, despite certain disadvantages which apparently in the minds of some members still attached to it—(laughter)—was a diploma very highly valued. So far as the finance of the College was concerned, the receipts had only on one previous occasion been larger than they were during the last College year.

In reply to Mr. C. E. WALLIS, who asked what was the cost of obtaining the Supplemental Charter, the SECRETARY said that the fees paid to the Government authorities were £102; the total cost, including the official fees, was somewhere about £250. Dr. FINVCANE remarked that out of the total revenue of the College of £43,630, no less a sum than £24,803 was derived from fees connected with Membership examinations. He thought that the expenditure on examinations (£12,962), representing one-half the expenditure of the Conjoint Examining Board, was unduly high. Dr. C. W. BROOK drew attention to the examiners' fees in the third examination (£7,228), which he thought an excessive figure.

Dr. H. WANSEY BAYLY then moved the usual resolution:

That this thirty-eighth annual meeting of Fellows and Members again affirms the desirability of admitting Members to direct representation upon the Council of the College, and respectfully requests the Council to take a postal vote of Fellows and Members on the general principle as set out in this resolution.

He urged that the system of government at present existing in the College was archaic and not democratic. The College was governed by a Council composed entirely of, and elected by, Fellows, while nearly 90 per cent. of the College—the Members—had neither voice nor vote in its affairs. Before 1843 the governing body was composed of Members only. The Supplemental Charter granting similar rights to women Fellows, Members, and Licentiates as were now enjoyed by men involved an alteration in the by-laws which had not yet come into effect, and he regretted that the procedure could not have been accelerated to permit women Fellows and Members to exercise their new rights at that meeting. To make the Council representative it should include at least one woman Fellow and one woman Member. Although many Fellows were now engaged in general practice the majority were still consulting or operating surgeons attached to the staffs of hospitals, and it might be argued that general practitioners, whose work was in the homes of the people, were in closer touch with the realities, humanities, and difficulties of the great work of the profession than were consulting or operating surgeons. Members of the College had that wholesome dislike of patronage common to all free citizens, and in pressing for some representation for themselves on the Council they were demanding a right and not asking a favour. He added that the Society of Members had on several occasions undertaken a postal vote on this question, and on each occasion the replies of Members, and of Fellows also, had shown a majority in favour of the inclusion of Members on the Council.

Dr. REDWOOD ROOME seconded the resolution, and took occasion to thank the late President and Council for the courtesy shown to the deputation from the Society of Members when it appeared before them to bring forward the case for the direct representation of Members. The Council did not grant the request of the society, but gave it very careful consideration, not only when the deputation was received, but at two or three subsequent meetings held specially to consider the request. He and two other Members then prepared a counter-petition to His Majesty in Council. This went through various stages, and was passed back to the Council of the College for observations, and the matter got no further, the Council considering that controversial questions were being introduced which would imperil the obtaining of the charter. He demurred to the word "controversial," though it was, of course, difficult to get unanimity in the profession on any question really worth considering. With regard to the postal vote, he felt strongly that the granting of representation was a matter of abstract justice, and it was not usual in proposing any extension of franchise to invite the people concerned to say whether they wished to be enfranchised or not. But if the Council really thought this was an exceptional case in which the opinions of Members and Fellows generally should be sought, the Council itself was the proper body to undertake the canvass, and he and his friends had no fear whatever of what the result of any postal vote would be. He added that although the Council had given an unfavourable reply to the deputation, a happier atmosphere had been created as a result of recent events. A new era in the negotiations between Members and the Council had been inaugurated, and he hoped that the Council of its own volition would see its way to concede this request.

Mr. EAKST WARE created some amusement by paraphrasing a passage in the President's recent oration before the Medical Society of London, in which he had pleaded for greater union between the surgeon and the physician: "How much more rapid our progress would have been, and how much more fertile our labours, what waste of time and effort would have been spared, if instead of each living inside his own impenetrable ring-fence, the Fellow and the Member had met on common ground in the interests of the College." Dr. C. W. BROOK, speaking as a parliamentary candidate, said that the time was approaching for a change of Government, and when this question came forward the whole matter of registration and qualification would be involved; among other

things the organization of the College would come under review, and drastic measures might be taken in the House of Commons.

Mr. Howard Stratford, while of opinion that the majority of members of the Council should be Fellows, thought it would be all to the good if two or three Members were included. The Council and the College would greatly benefit from the co-operation on the Council of a small number of well informed general practitioners. Dr. L. B. Ward said that the limit of constitutional methods of protest had now been reached, and if nothing came of the present resolution the Society of Members would reduce itself to a farce by proposing further annual resolutions. It would be very regrettable to have civil war in the College, or the boycott of a section by the majority, yet this might happen if the Council persisted in its narrow-minded view of the functions of government. Dr. F. W. Collingwood and Mr. R. Gillbard also supported the resolution, the latter making a personal appeal to the new President to seize this rare opportunity of breaking down exclusiveness and generating peace.

The resolution was then put to the meeting and carried with one dissentient.

#### UNIVERSITY OF LONDON.

A MEETING of the Senate was held on November 17th, with the Vice-Chancellor (Sir William Beveridge) in the chair.

Regulations were adopted for the recently established academic Diploma in Anthropology.

The degree of D.Sc. in Physiology was conferred on D. T. Harris, an internal student of University College, for a thesis entitled, "Biological action of light."

Sir Holburt Waring, M.S., F.R.C.S., has been elected chairman of the Brown Animal Sanatory Institution Committee for 1926-27.

#### Semon Lecture.

The Semon Lecture, 1926, as already announced, will be given this year by Dr. A. Brown Kelly of Glasgow on Thursday, December 2nd, at 5 o'clock, at the house of the Royal Society of Medicine (1, Wimpole Street, W.). The subject of the lecture is "Nervous affections of the oesophagus," and the chair will be taken by Dr. Andrew Wylie, President of the Laryngological Section of the Society. Reception and tea at 4.30 p.m.

#### SOCIETY OF APOTHECARIES OF LONDON.

The following candidates have passed in the subjects indicated:

**SURGERY.**—R. Bobo, J. M. Moran, D. D. Stidston, L. D. Williams.  
**MEDICINE.**—P. V. Bamford, R. Bobo, S. B. Brownlag, K. Roberts, D. Jacobsohn, E. H. Waller.  
**FORENSIC MEDICINE.**—B. Best, L. O. Jaggassar, H. Ruadstrom.  
**MIDWIFERY.**—B. Best, J. de Rosa, B. Elliott, L. J. Lawrie, L. W. Rosa, D. D. Stidston, N. W. Wood.

The diploma of the society has been granted to Messrs. S. B. Browning and J. M. Moran.

### Medico-Legal.

#### ALLEGED NEGLIGENCE: JURY DISAGREE.

In the King's Bench Division of the High Court of Justice, on November 22nd, after a four days' hearing, before Mr. Justice Horridge, a special jury disagreed upon a claim brought by Edwin Battershill, a wholesale manufacturing furrier, against Alan Cowan Mann, M.B., Ch.B.Edin., of Staines, for damages for alleged negligence and lack of skill in failing to diagnose that he was suffering from a fractured clavicle after an accident. The defendant denied negligence, and counter-claimed for £1 10s. fees.

Mr. Ernest Charles, K.C., and Mr. Rowland Thomas (instructed by Messrs. Saunders, Sobell and Co.) appeared for the plaintiff; Mr. A. Neilson, K.C., and Mr. H. C. Dickens (instructed by Messrs. Hempson) appeared for the defendant.

#### The Plaintiff's Case.

Mr. Charles, in his opening, said that on December 6th, 1925, whilst Mr. Battershill was staying at Staines, he slipped as he was approaching the house of his friends, falling with great violence on his left shoulder. Dr. Mann examined the shoulder, and assured him that nothing was broken, but advised him to put his arm in a sling. The pain being greater the following day, Dr. Mann made a further examination, and assured Mr. Battershill again that nothing was broken. On December 9th Dr. Mann told him he could return to work on December 14th, and Mr. Battershill, though suffering intense pain and the loss of the use of three fingers, did so. On December 15th Mr. Battershill saw Dr. Lester Samuels of High Street, Whitechapel, who immediately told him he was suffering from a severe fracture of the collar-bone. An x-ray photograph, taken by Dr. Marsb, radiologist, confirmed this diagnosis, showing that the broken parts of the bone overlapped by 1½ inches. Counsel said any competent doctor, using reasonable diligence, would have had Mr. Battershill's shoulder x-rayed at once, and would then have seen the fracture. An operation was performed, which restored to Mr. Battershill the use of his arm, but, whereas it would have been a simple matter if it had been performed at once, it was, in fact, a serious matter owing to the neglect of the injury.

A number of expert witnesses were called by both sides in addition to the parties interested. For the plaintiff Sir George

Lenthal Cheatle, surgeon to King's College Hospital, was called, and, in answer to the judge, he thought that, from the x-ray photograph, any competent man could have detected the fracture with his hand. If Dr. Mann happened to be right—that is, as to the impossibility of finding the fracture—he thought Dr. Mann should have advised the patient to be x-rayed.

#### The Defendant's Case.

Mr. Neilson, opening for the defence, said that Dr. Mann's appointments, as medical officer of health to the Staines Urban District Council and medical officer to the Staines Hospital and Staines Union, showed that he was regarded as a competent and careful medical practitioner. Counsel submitted that the most likely course of events was that the pieces of bone remained end-to-end until after December 13th, and overlapped only at a later date. If that were so and the bones did not at first overlap, the treatment by Dr. Mann was correct even if there were a fracture.

Dr. Mann, in evidence, said when he first saw Mr. Battershill he suspected a fracture, but on examination he could find no displacement of bone whatsoever. He told him to put his arm in a sling and go to bed, and he considered that was the proper treatment in view of what he had found. He did not think an x-ray photograph would have been of any service in view of what he found.

Mr. Charles (cross-examining): You belong to the Medical Defence Union?—Yes.

Do you agree with this—in the annual report: "In conclusion, the President emphasizes the urgent desirability of an x-ray examination being made in every case of injury to a bone or joint"—I have never seen that before.

Further cross-examined, Dr. Mann said that in his view the displacement of the two parts of the collar-bone was due to the breaking of the periosteum, which had kept the ends in place between December 13th and 15th. The periosteum could be torn by a movement of the arm or a bump on the shoulder or the elbow.

Horridge, J.: With that possibility before you, you thought it wise to allow Mr. Battershill to go to London to work?—Yes.  
And to go without having taken an x-ray?—Yes.

Sir Robert Jones, Bt., said that for a fracture of that kind one treatment was to order the patient to keep the arm in a sling. Having seen the x-ray photograph, he considered that, personally, he would not have attempted to manipulate the fracture at all, as the bones, if left in the position in which they were, would unite satisfactorily. Answering the judge, he would not have sent the patient out to his business if the fracture were as shown in the x-ray photograph.

Mr. Frank Romer, consulting surgeon to the Jockey Club and the National Hunt Club, said that he personally would have sent the plaintiff to his business, though he admitted that if he knew there was a fracture he would strap the arm to prevent further slipping of the bones.

Sir Joseph Skevington, senior surgeon and radiologist at the King Edward VII Hospital, Windsor, and Sir Herbert Waterhouse, consulting surgeon to Charing Cross Hospital, and president of the Medical Defence Union, also gave evidence favourable to the defendant.

Mr. Justice Horridge, in his summing up to the jury, said the case was a very important and serious one. If a general practitioner agreed for reward to attend a patient he had to exercise all reasonable care and skill. He was not bound, however, to have the attainments of a Harley Street specialist, or to know the most recent discovery in medical science unless it was reasonably well known to the profession.

The jury disagreed, as stated, and were discharged.

### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons took the report stage of the Merchandise Marks Bill on November 22nd and 23rd. The rapid progress of this and other measures gives ground for hope that the Government will succeed in passing into law before the session ends most of the measures which it has asked Parliament to carry. These include the University of London Bill, the Coroners Bill, and the Public Health (Smoke Abatement) Bill, all of which have been under discussion in the last few days. The University of London Bill has still to go to a standing committee, but has strong Government support. The Smoke Abatement Bill awaits report. No quorum was obtained for consideration of the Coroners Bill in Grand Committee on November 24th, and further progress with the bill this session is unlikely. Time was left at the end of the week in the Commons for a debate on the continuance of the Emergency Regulations, but owing to the advance towards a coal settlement the Government hoped to be able to drop most of them.

The House of Lords had a second reading debate on the Electricity Bill. The Lords have given a first reading of a Poor Law Bill, introduced by the Ministry of Health. November 25th was named for the second reading of this bill, which is purely a codifying and consolidating measure, designed to prepare the way for the promised Poor Law reform.

### The University of London Bill.

Lord Eustace Percy (President of the Board of Education) moved the second reading of the University of London Bill in the House of Commons on November 19th. It proposed, he said, to appoint commissioners to draw up statutes for the University in general accord with the report of the committee presided over first by Lord Ernle and later by Mr. Hilton Young. The committee reported that the University had no financial resources for the development of teaching and research save the balance of examination fees. The committee thought that present and prospective grant-governing committees should be able to deal with a central university body. The bill proposed to give representation on the Senate to the constituent schools of the University and to establish a Finance Council. The Board of Education had nothing to do with the bill nor would it have anything to do with the control of the University when the bill passed. One object of the bill was to get rid of the control of the finance of the University by the purely departmental and bureaucratic University Grants Committee. Dealing with criticisms of the bill's proposal to eliminate the nominated third on the Senate, Lord Eustace said it was only by chance that this nominated third represented an outside independent element. It contained, for instance, representatives of the Royal College of Physicians and of the Royal College of Surgeons, but at the present moment there was no representation of the medical schools. He gave an assurance that there was no intention to interfere fundamentally with existing schools in the University.

Mr. Trevelyan, for the Labour party, hoped the bill would receive a second reading.

Dr. Graham Little moved the rejection of the bill. He said he had been elected to Parliament in 1924 because he opposed the reconstitution of the University on the lines of the Haldane Report. There were forty-four schools in the University. The Faculty of Medicine had between 3,000 and 4,000 students. The bill was an attempt to wreck the independence of the schools, of the University, and of the students. The theological colleges had said they would not remain in the University if regulations curtailing their freedom were enforced. He was convinced that the medical schools would follow this example. One medical school had for many years refused to take the grant from the Board of Education. Another was threatened, a few years ago, by the Treasury Grants Committee with a cessation of the grant unless it consented to become a special school of medicine, instead of remaining a general school. The school, which had been a school of medicine for more than a hundred years, refused to modify its character. It worked out its own salvation and became able to support itself, and, when it had achieved that consummation the Treasury Grants Committee gave it the grant. It was useless for Lord Eustace Percy to express sympathy for university independence and then to devise machinery which must destroy that object.

Sir Alfred Hopkinson hoped that the questions raised by the bill would be settled as soon as possible. Dr. Little's motion for rejection was not pressed to a division. The bill was read a second time and sent to a standing committee.

### Lead Poisoning Bill.

The House of Lords went into Committee on the Lead Paint (Protection Against Poisoning) Bill on November 18th. This bill has passed the House of Commons. Lord Arnold moved to insert a new clause prohibiting, from November 19th, 1927, the use of lead paint in painting the interior of buildings, save for artistic purpose, or in the process of fine lining or in accordance with a special order of the Home Office. Lord Arnold said the bill as it stood was a breach of the Geneva Convention of 1921. Every year some hundreds of men suffered from plumbism, and forty or fifty died from its effects. Experience would not support the Government's contention that regulations would stop or materially alleviate the injury done by lead-paint poisoning. Thirteen years of regulation in the pottery industry had not stamped out lead poisoning. The Home Secretary had lately admitted that in one firm in the Potteries three cases of lead poisoning had occurred this year, one fatal. The Home Secretary had remarked that regulations had not been carried out. Lord Arnold contended that enforcement of regulations would be more difficult in house painting, where men did not work in masses. Lord Desborough, for the Government, had said that the position had been changed since 1921 by the introduction of wet-rubbing, and that great things were expected from a waterproof sandpaper. Lord Arnold asked whether the wet-rubbing process did not cause a cream to be formed, which got under the nails of the men who were working and into the system. He remarked that the Government itself was not confident about the bill.

The Bishop of Southwark contended that the only way of dealing with the problem was to prohibit altogether the use of lead paint.

Lord Desborough said the Government considered that action by regulations was possible at once, and would save many lives. No part of the British Empire had ratified the draft Geneva Convention of 1921 on the use of lead paint, and the Scientific Committee of the International Labour Conference had preferred a system of regulation to the prohibition of lead paint for internal work. The Government regulations for the prevention of dust and in regard to scraping and rubbing down paint would apply to external as well as to internal work.

The proposed new clause was defeated by 45 to 23.

The first clause of the bill proposes, among other things, to prohibit "dry rubbing down and scraping." The wet process of rubbing had the strong endorsement of Sir Thomas Oliver.

Lord Desborough said that the Home Office regulations would provide that every surface must be deemed to be painted with

lead unless the contrary were proved. The amendment was withdrawn.

On Clause 2, which prohibits the employment after November 19th, 1927, of any woman or young person in painting any part of a building with lead paint, Lord Balfour of Burleigh moved that women be not excluded. Only some hundreds of women would be affected, and they ought to be allowed to choose for themselves. The medical theory that women, as women, were more susceptible to lead poisoning than men dated from the days when very poorly paid women in large numbers were engaged on dangerous processes in the Potteries.

Lord Dawson of Penn doubted whether the case for the special protection of women was strong enough to justify their exclusion. He would place more reliance on the women themselves than on any regulations in deciding whether they should undertake painting. Women were precluded from entering many occupations because they were physically weaker than men, but painting was a skilled trade to which they were physically suited, unless they could be proved to be specially prone to the poison of lead. The figures at present available appeared to show that lead attacked women, especially young women, more often and more severely than men. But these figures were mainly taken from old days in the Potteries when women largely undertook the less skilled and more dangerous forms of work. There was ground for the view that a large part of the proclivity of women was the result of economic position rather than of sex. Until a further inquiry was undertaken in the light of modern knowledge he doubted whether there was a case for excluding women from the painting trade. It had been established that the respiratory tract was far and away the most important route whereby lead entered the system. Dirty fingers and unclean mouths had indirect effect by making people unhealthy and lowering their resisting power. If it were true that by substituting wet for dry methods the proposed regulations would eliminate the dust, quite possibly the greater proclivity of women would fall nearly to zero. Lead produced abortion and miscarriages, but he ventured to think that women were quite capable of protecting themselves. Dust, and dust only, mattered, and if the dust was prevented from entering the respiratory tract the women would not abort. The figures showing that lead poisoning, in bringing about abortion, often went through the male as well as the female were most interesting as well as tragic. Where the wives had never worked in lead mines and the men did so, 40 per cent. of a given number of pregnancies ended in miscarriage. There the poison was carried by means of the man, and other figures bore that assumption out. If women were excluded and men left, but the regulations were bad, miscarriages would still occur. If the regulations were good, as he believed them to be, women and men would alike be protected. He called attention to the fact that by Clause 1 of the bill the Home Secretary could order a medical examination, which would often discover the early stages of lead poisoning before the person had any symptoms. He hoped that through the activities of the Industrial Research Council means would be found whereby it could be ascertained by some biochemical test which individuals were prone to lead poisoning. A large number of people could breathe lead with apparent impunity, just as large numbers of people could drink alcohol with comparative impunity. There were others who, after a fortnight's work in lead, were apt to get poisoned.

Lord Haldane suggested that the question whether women were in greater danger of lead poisoning than men should be referred for inquiry to the Medical Committee of the Privy Council or preferably to the Committee on Civil Research.

Lord Desborough said that if the bill were shelved for inquiry it could not pass this session. Under the Women and Young Persons (Employment in Lead Processes) Act, 1920, women were not allowed to be employed in a great many processes involving the use of lead. The balance of medical opinion was overwhelmingly on the side of the views on which the policy of successive Governments for thirty-five years had been based. The opinion of Sir Thomas Oliver was: "On the whole females, particularly young females, suffer more severely from plumbism than males." He went on to say: "My contention is that it is largely owing to the power of lead to inflict harm upon the reproductive organs of women that the female sex is so liable to be adversely influenced by the metal." That contention was at the bottom of the regulations which had been adopted by Parliament. "Sir Thomas Oliver had also said: 'An interesting point in regard to maternity and plumbism is that, while the expectant mother does not show any sign of plumbism and is apparently not suffering from lead poisoning, she transmits to her babe such a legacy of lead that the infant is born dead or dies shortly after birth.' In his book on lead poisoning and lead absorption, which was written in conjunction with Sir Kenneth Goadby, Sir Thomas Legge stated unequivocally that women are more susceptible to poisoning by lead than men. The Special Commission on unhealthy processes appointed by the first International Labour Conference, which met under the Treaty of Peace at Washington in 1919, had passed unanimously a resolution stating that, although absolute proof was lacking that women were considerably more susceptible than men, their role as mothers made it necessary to consider special precautions. One of the results of this Commission was the Employment in Lead Processes Act. The Commission recommended that the subject of women and painting should be referred to a later conference. This was done, and the painting industry was considered by a conference in 1921, and a draft Convention was adopted by it, containing the provision for the exclusion of women which had been included in the Government's present bill. Lord Desborough also quoted from a publication of the International Labour Office which said: 'All agree that in women lead poisoning assumes a more severe form (manifesting itself in convulsions and amaurosis, etc.) than in men. . . . It is not necessary for the mother to be affected by lead for the children to develop symptoms of lead poisoning.'

Lord Phillimore hoped that after Lord Dawson's temperate and, in the House would not pass prohibitive medical question.

The amendment not to exclude women was defeated by 35 to 17. The House then agreed to the remaining clauses and reported the bill without amendment.

#### Acute Poliomyelitis.

On November 22nd Viscount Sandon asked the Minister of Health if, to obviate the danger of infantile paralysis being spread by reason of boys being withdrawn from infected schools by parents, he would take steps to prevent any school so infected from being closed down or the boys leaving. Mr. Chamberlain (Minister of Health) replied that he was not empowered to take the course suggested, but was always ready to arrange for the medical officers of his department to confer with the school authorities on the precautions appropriate to any outbreak of infectious disease.

The Minister of Health, on November 23rd, said that the following table (here slightly abridged) gave the particulars, so far as they were available, of the numbers of cases notified and deaths recorded from acute poliomyelitis and polio-encephalitis in England and Wales and certain European countries in six-monthly periods in 1925-26.

Country.	First Six Months of 1925.			Second Six Months of 1925.			First Six Months of 1926.		
	Cases Notified.	Deaths.	Cases per Million Population.	Cases Notified.	Deaths.	Cases per Million Population.	Cases Notified.	Deaths.	Cases per Million Population.
England and Wales ...	132	79	3	230	77	7	136	57	3
Denmark ...	31	2	9	84	7	25	12	2	4
Finland ...	14	2	4	14	2	4	3	2	2
France ...	80	2	2	142	2	4	70	2	2
Germany ...	131	2	2	255	2	4	115	2	2
Holland ...	12	4	2	20	5	3	8	2	1
Italy ...	217	2	5	383	2	10	97	2	6
Norway (towns only) ...	17	0	21	70	8	88	5	1	2
Sweden ...	105	2	17	400	2	66	85	2	14
Switzerland ...	24	2	6	69	2	18	9	2	2

The number of cases notified in England and Wales during the nineteen weeks ended November 13th, 1925, was 291 (23 per million population). The number of deaths in this period in England and Wales and corresponding figures for cases and deaths in other European countries are not at present available. The number of deaths per million mid-year population in England and Wales for the three six-monthly periods equalled 2, 2, and 1.

#### Smoke Abatement Bill in Grand Committee.

A Grand Committee of the House of Commons, which included Dr. Fremantle and Sir Richard Luce, began consideration on November 18th of the Public Health (Smoke Abatement) Bill. The first clause provides that a chimney (not of a private dwelling house) sending forth smoke in such quantity as to be a nuisance may be dealt with summarily, notwithstanding that the smoke was not black. To an amendment to insert the word "black" before "smoke," Mr. Neville Chamberlain objected. He said Lord Newton's Committee examined nearly 150 witnesses, who were almost unanimous that the limitation of the present law to black smoke should be removed. He had watched the chimneys of certain works pouring out white smoke which contained the fumes of arsenic and lead, and as the law stood no local authority could take proceedings. Moreover, it was impossible for a central body to define black smoke or the quantity which could be emitted without a nuisance. Mr. Greenwood agreed that "smoke" should include all noxious emanations from chimneys which meant positive injury to health and vegetation. Commander Astbury said that most councils allowed the manufacturer two minutes of black smoke while firing to get up a pressure of steam, and thought this practice should continue. Dr. Fremantle said the bill contained safeguard after safeguard for industry. Those who were keen on getting some measure of smoke prevention from the public health point of view feared that nothing would be done. The amendment was negatived, as was also one enjoining the Ministry of Health to fix standards for smoke.

On the proposal of the bill to make smoke include soot, ash, grit, and gritty particles, Sir Kingsley Wood said it was just as detrimental for these to be emitted as black smoke. Mr. Williams said that forced draught would reduce black smoke, but would produce a greater emission of grit. So would the use of powdered coal as fuel blown on the furnaces. Major Birchall repudiated such protests on behalf of manufacturers. Sir Kingsley Wood said the Ministry of Health did not apprehend that any nuisance would follow the use of proper steps were taken. Fourteen towns, Bolton, and Bradford, had power under the bill to deal with the emission of grit and gritty particles. Mr. Jephcott said that in the new station of the Birmingham Electricity Committee they were spending £30,000 in an effort to eliminate grit, but so far had failed. The amendment to omit grit and gritty particles was defeated.

Asked to explain what processes would be exempted under the bill, Sir Kingsley Wood said that, broadly speaking, they were the Sheffield steel processes. Mr. Chamberlain said it might be true that Pittsburgh had been able to make steel without smoke, but Sheffield had not the processes needed, and in its present

difficulties could not be forced to adopt them. Mr. Albery asked that exemption should also be granted to cement works, which threw fine dust up the chimney that did no appreciable harm. Evidence in medical reports from Germany and this country was that the health of the cement worker was not affected in any exceptional way. Mr. Chamberlain said he was advised that the emission of white smoke and dust particles from cement works had not in fact been found to be a nuisance.

**The International Opium Convention.**—Sir Austen Chamberlain, in an answer to Mr. Campbell, said that a ratification of the International Opium Convention had been deposited which covered all parts of the British Empire except Canada and the Irish Free State. Of foreign signatories, only Portugal and the Sudan, so far as the Government knew, had deposited ratifications. The Hague Convention of 1912 continued in force between the States which were parties to it.

**Encephalitis and Vaccination.**—On November 22nd Mr. Chamberlain told Mr. Groves that he had drawn the attention of the Committee on Vaccination, now sitting, to cases of death from encephalo-mylitis after vaccination. One of the terms of reference of this committee was to inquire into and report on the practical methods which were available in the light of modern knowledge to diminish or remove any risks which might result from vaccination. On November 22nd Mr. Trevelyan Thomson asked whether encephalo-mylitis was mentioned as a cause of death on the certificates of death in the case of the seven deaths from that disease which occurred shortly after vaccination; whether an inquest was held on any of the cases in question; and whether the lymph used for the vaccinations was issued by his department. Mr. Chamberlain replied that he was informed that, so far as it had been possible to identify these fatalities, in none of the seven deaths was "encephalo-mylitis" mentioned on the practitioner's certificate as a cause of death. An inquest was held in one case. In four of the seven cases the lymph used for the vaccination was issued by his department, and in one instance a proprietary lymph was used, but no information as to the source of the lymph used in the remaining two cases was available. The deaths to which he assumed reference was made occurred in 1912, 1922, and 1923.

#### Notes in Brief.

The Minister of Health cannot undertake to introduce legislation to waive, in cases where proper medical evidence is given on the date when sickness commenced, the rule that sickness must be notified within three days of its occurrence. The official view is that prompt notification of illness is essential to the proper administration of sickness benefit.

Mr. Chamberlain told Admiral Beamish that he would consider whether the terms of the Departmental Committee now investigating the chemical treatment of flour should be extended with a view to its making an authoritative statement on the dietic value of white bread. The committee could not take up this subject till it had disposed of the matters already referred to it.

Lord Eustace Percy has stated that some preliminary tests and observations have been made among school children on the use of glass which allows the ultra-violet rays of the sun to reach them. Any general recommendation on the subject would, however, be premature.

Mr. Chamberlain has received a report from the local authority which seems to show that the mortuary at Dover is reasonably adequate. Asked whether the coroner had stated that he had received complaints from every doctor in Dover that the mortuary was insufficient, Mr. Chamberlain declined to give any further answer.

## Medical News.

THE annual dinner of past and present students of the Bristol Medical School will be held on Thursday, December 2nd, at the Victoria Rooms, Clifton, Bristol, at 7 for 7.30 p.m. The chair will be taken by Professor E. Fawcett, F.R.S. The guest of the evening will be Professor J. T. Wilson, F.R.S. (Cambridge University). Local practitioners, as well as old Bristol students, are cordially invited to attend. Application for tickets should be made without delay to Mr. W. A. Jackson, 15, Mortimer Road, Clifton, Bristol.

THE centenary of the death of Pinel, to whose efforts was largely due the introduction into France of milder methods for the treatment of the insane, was celebrated by the Académie de Médecine in Paris on October 26th, when the General Secretary, Professor Achard, delivered a memorial address.

AT the meeting of the Röntgen Society to be held at the British Institute of Radiology, 32, Welbeck Street, W.1, on Tuesday, December 7th, at 8.15 p.m., Mr. W. V. Mayneord will read a paper on an x-ray study of the crystal structure of some biological objects. Mr. Cuthbert Andrews will give a demonstration on the serinoseop, a new instrument for serial radiography.

A MEETING of medical practitioners to discuss the question of treatment for tuberculosis has been arranged by the Mayor of Lambeth, Dr. R. S. Pearson; it will take place at his house, 193, Clapham Road, S.W. (near The Swan, Stockwell), on Thursday, December 16th, at 4 p.m.



At the meeting of the Post-Graduate Hostel to be held at the Imperial Hotel, Russell Square, W.C.1, on Tuesday, November 30th, at 9 p.m., Mr. W. Ernest Miles will give an address on fistula. On Wednesday, December 1st, at the same hour, Dr. M. A. Cassidy will speak on precordial pain. Dinner will be served at 8 p.m. (price 5s.), and coffee and biscuits at 10 p.m. (price 6d.). All medical practitioners are welcome.

The Fellowship of Medicine announces that on December 2nd, at 5 p.m., Dr. John Parkinson will lecture on cardiac emergencies at the Medical Society, 11, Chandos Street, W.1; the lecture is free to medical practitioners. From December 6th to 18th, at the Infants Hospital, Vincent Square, a special course in infants' diseases will be held for medical officers of welfare centres and others interested. Lectures and clinical demonstrations will be given each afternoon and visits will be paid to the model pasteurizing plant at Willesden, the venereal diseases centre, Holborn, and to the Nursery Training School at Hampstead. Courses in obstetrics can be arranged at Queen Charlotte's Hospital and the City of London Maternity Hospital. Clinical assistantships can be obtained through the Fellowship at the Samaritan Hospital. The following special courses will be held in January: medicine, surgery, and the specialties, at the Prince of Wales's General Hospital; cardiology, at the National Hospital for Diseases of the Heart, for which early application is desirable; diseases of children, at the Children's Clinic and the Royal Free Hospital; and psychological medicine, at the Bethlem Royal Hospital. Copies of all syllabuses and of the general course programme may be obtained from the Secretary to the Fellowship, No. 1, Wimpole Street, W.1.

SIR ROBERT ARMSTRONG-JONES, C.B.E., M.D., of Plas Dinas, Carnarvon, and Dr. William Evans Thomas of Ceredidwr, Llanuwchllyn and Ystrad Rhondda, have been nominated as sheriffs for Carnarvonshire and Merionethshire respectively.

In connexion with the scheme for providing spa treatment for pauper patients a deputation from the General Federation of Trade Unions visited Bath last week and investigated the local facilities for treatment of rheumatic diseases under the guidance of the chairman of the Baths Committee, Councillor C. H. Haeker, and Mr. Jobu Hutton, director of the baths, who is also honorary secretary of the British Spas Federation, which is responsible for the scheme. The proposals provide for the treatment of insured persons suffering from rheumatic diseases which are likely to yield to spa treatment, using existing facilities at spas in such a way as not to interfere with the regular visitors. It is hoped to link up the scheme with the mineral water hospitals.

DR. ALEXANDER SCOTT was called to the Bar by the Middle Temple on November 17th.

THE Master and Wardens of the Society of Apothecaries have issued invitations to the winter livery dinner at Apothecaries' Hall, Blackfriars, on Tuesday, December 14th.

A CHAIR of biological chemistry has been founded at the medical faculty of Naples, with Professor Quagliariello as its first occupant.

THE first Polish school for nurses has recently been founded in one of the hospitals at Warsaw by American Jews.

DURING the week ending October 16th 5 cases of plague with 3 deaths, 16 cases of cholera with 11 deaths, and 25 cases of small-pox with 10 deaths were reported by the Far East Bureau at Singapore.

At the eighth annual general meeting of the Industrial Welfare Society, on November 17th, the report was presented for the year ending June 30th, 1926. The steady increase in the extent and value of the work was the subject of a congratulatory message from H.R.H. the Duke of York, who during the year had visited fifteen firms associated with the society. The report contains an account of the progress made, with special reference to the organization of welfare schemes, the appointment of supervisors, the work of the information department, and various conferences, lectures, and other propaganda activities.

THE Alvarenga prize of the College of Physicians of Philadelphia has been awarded this year to Drs. P. S. Feltonze and Frederick S. Schofield for an essay entitled "The Gamophaga." It is announced that essays for the 1927 prize must reach the Secretary of the College of Physicians, 19, South 22nd Street, Philadelphia, on or before May 1st. The value of the prize is about 300 dollars.

THE following five members of the medical profession have been appointed justices of the peace for Glasgow: Dr. John Gaister, jun., Dr. R. T. Halliday, Dr. William Lawson, Dr. Henry L. G. Leask, and Professor Archibald Young, M.D.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to *The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.*

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBERS of the British Medical Association and the *British Medical Journal* are *MUSEUM 9361, 9362, 9363, and 9364* (internal exchange, four lines).

THE TELEGRAPHIC ADDRESSES are:

EDITOR of the *British Medical Journal*, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediacra Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

## QUERIES AND ANSWERS.

### TINNITUS IN MENIÈRE'S DISEASE.

"H. S." (Leeds) asks for suggestions for the relief of the constant "singing noises" in a case of Ménière's disease. Bromides, potassium iodide, hydrobromic acid, gelsemium, and adrenaline have been tried.

### CHILBLAINS.

DR. M. STEWART-SMITH (Northwood) writes: I have had considerable success with the high-frequency vacuum electrodes, applied after iodex has been smeared on to the affected parts. Radiant heat is then used after the high-frequency treatment.

### RECURRENT ULCERATION OF THE MOUTH.

"A. Y." seeks advice on the following case: A man, aged 25, has frequently recurring small ulcerations of tongue and mucous membrane of mouth generally. The tongue is often painful in parts without any obvious cause. About seven years ago a pipe snapped in his teeth and caught the tongue, and this was, perhaps, the origin of the trouble. Treatment, so far tried without success, as follows: (1) Diet: all condiments and spices forbidden; (2) no smoking; (3) antiseptic mouth-wash (potassium permanganate 1 in 10,000, and also sometimes dibromin 1 in 5,000 instead); the tender spots are treated with glycer. alum; (4) a strongly alkaline mixture was ordered for three or four weeks to check acidity. The teeth are quite healthy. These ulcerations have been occurring for some years, and the above treatment seems to have failed to check them. The general condition of the patient is satisfactory.

### NERVOUS RETCHING.

"H. T." writes to ask for suggestions for overcoming the retching excited by the introduction of a denture. The patient is a very nervous man, who retches immediately any foreign body (except food) comes into contact with his teeth, so that he even finds it difficult to smoke a pipe. It has now become necessary for him to wear a denture, but he is unable to do so on account of his hypersensitiveness.

### INCOME TAX.

#### Vacant Consulting-Room.

"E. P." has been living on the outskirts of London and using a consulting-room in the medical quarter. For reasons of health he has moved into the London area and now practises in his own residence. He has given up the use of his consulting-room, but, owing to temporary inability to sublet or otherwise dispose of it, has since incurred the expense of paying nine months' rent without any return. Can he deduct this expense?

\* In the case of the Granite Supply Association v. Kitton (43 Sc. L. R., 65) the court refused to allow the cost of removal to more commodious premises; we fear that the taxpayer's claim would be at least no more likely to succeed where the cause of the expense was a purely personal one, such as for reasons of health. The expense incurred by "E. P." after he had ceased to use the consulting-room seems to have been in substance an expense of removal, and therefore inadmissible in view of the above decision.

#### Partnership Dissolved—Cash Basis.

"A" and "B" dissolved partnership as from June 30th, 1925, and advice is sought as to whether the firm's book debts collected since the dissolution must be accounted for for tax purposes, and, if so, as to the proper apportionment of the assessments for



1925-26 and 1926-27 between "A" and "B." The practice has been assessed on the "cash basis" for many years.

\*. It is essential to bear in mind the fact that the income tax Acts attach liability to the earnings or profits of a practice whether received in cash or still owing. The reason for the acceptance of the amount of the cash received as the basis for assessment is that that figure is readily ascertainable and is in the long run the same as the value of the bookings; but it is not the receipts as such which are being taxed, but the profits of the year of assessment. In the present case the profits of the year 1925-26 have been estimated on the average of the three years 1922-1924, taking the gross earnings as the amount of the cash receipts for those years, but the method of arriving at the assessment does not affect the primary fact—namely, that it relates to and is in respect of the profits of the year ending April 5th, 1926. Consequently Dr. "A" should bear the tax relating to quarter of half of the gross assessment for 1925-26, and no portion of the 1926-27 assessment is applicable to him. Whether or not the cash received after June 30th, 1925, should be brought into the calculation of the 1926-27 assessment depends on whether Dr. "B" wishes to continue to be assessed on the cash basis. He is entitled to reject it for the future and to calculate the gross receipts according to the value of the fees receivable for the work done, but of course the cash basis is very much more convenient in practical working.

#### Car Allowance.

"I. G." bought a new car in April, 1925, for £195, and sold it in July, 1926, for £70, buying a new car of similar make and power for £190. He has claimed an allowance of £120, but the inspector regards £40 of this as a capital loss, that amount "being the difference between the price of a second-hand car fifteen months old and the price" actually received.

\*. We fail to see the argument unless the second car was of a more expensive type than the car displaced. If, for instance, the old car was an open tourer and the new one of the enclosed type, then there is some substance in the contention that inasmuch as an improvement had been effected some of the cost must be placed to capital. In the absence of some special feature of that kind we disagree with the inspector's view, and consider that it is irrelevant to bring hypothetical figures into the computation; if "I. G." replaced one car by a similar one, he is entitled to the allowance without such a deduction as is suggested.

#### LETTERS, NOTES, ETC.

##### GOOD AND BAD DIETS.

"INQUIRER" writes: I think everyone reads Colonel McCarrison's writings with much interest and profit, and that published on October 23rd (p. 733) tempts me to ask if he or any other recognized authority would detail a good daily diet for the Britisher, with particular reference to the eating of raw vegetables. We read of individuals and sects who maintain that vegetables should be eaten raw, but I have yet to see anyone do so. As youngsters we stole and ate raw carrots and turnips, but that natural instinct has gone with most adults, evidently to our misfortune, to judge from McCarrison's experiments. Are we to give up cooking our vegetables and fruits, either by boiling or steaming, and give ourselves stoically to taking our vegetables raw? I am sure many would be willing to try if one with McCarrison's authority outlines a diet, detailing the vegetables and fruits to be eaten raw.

##### CYTOLYTIC TREATMENT OF CANCER.

DR. MICHAEL C. GRABHAM, in a pamphlet entitled *The Mastery of Cancer* (published by Messrs. H. K. Lewis and Co., Ltd.), states that some success has been obtained in the treatment of advanced cancer by the local action of trachoma exudate. In this connection he refers to the publication of A. Fleming (*Proceedings of the Royal Society*, 1922), in which the lacrymal secretion was shown to be endowed with bacteriolytic, cytolytic, and diaphoretic properties. Dr. Grabham is

a medical practitioner in Funchal, found that a few drops of trachoma exudate, when injected into a growing carcinoma, caused immediate inhibition of the vitality of the malignant tissues, and, ultimately, their disintegration, with little or no disturbance. Two cases are mentioned particularly: the first was one of cancer of the larynx in a woman aged 60, and the other of carcinoma of the breast in a woman aged 40. In both complete recovery is stated to have followed the application of the purulent trachoma exudate. Dr. Grabham is inclined to believe that the micrococci or the lacrymal lysozyme is the active agent, and invites further research with a view to establishing the reliability of this method of treatment. He states that seventeen patients have been treated already in Madeira.

##### COMMON SALT AND CANCER.

MR. FREDK. T. MARWOOD, J.P. (Pleasington, Lancs), writes: In the *JOURNAL* of October 30th (p. 803) there is an extract from the annual report of Dr. L. J. Pietou, medical officer of health for Winsford. In it there appears the following passage: "The staple industry of Winsford is the manufacture of salt from

brine. As the mortality rate from cancer at Winsford is no higher than elsewhere, the theory that salt has anything to do with cancer has, says Dr. Pietou, no support." As a layman deeply interested in the subject of salt in relation to cancer (on observational and statistical lines only) may I be permitted to explain that in my investigations I am mainly concerned with consumers of salt, salted foods, and salt compounds, although I have not overlooked the point brought forward by Dr. Pietou. There are workers amongst many deleterious compounds who pursue their avocations without injury to health. If the M.O.H. for Burton-on-Trent made the statement that because drunkenness was no higher at Burton-on-Trent than in many other places the theory that beer induced inebriation received no support, this it seems to me would be on a par with Dr. Pietou's conclusions regarding Winsford and cancer.

##### SUPPLY OF DOGS FOR RESEARCH.

ON November 20th a man named Hewett was convicted by Mr. Fry, magistrate at Bow Street police court, for feloniously receiving two Irish terrier puppies, valued at £7, and for cruelly ill-treating them. He was sentenced to six months' imprisonment, with hard labour, on the first charge, and to a further month's imprisonment on the second. It appeared that Hewett had been sentenced at Leicester in 1914 to four months' imprisonment for dog stealing, but had since been working honestly. An inspector of the Royal Society for the Prevention of Cruelty to Animals said that Hewett was stopped when about to take the puppies into the School of Physiology at University College; they were in a sack, and when removed were in a state of complete exhaustion. In a published statement Dr. C. Lovatt Evans, Jodrell Professor of Physiology at University College, said that he had purchased dogs from Hewett since October 11th last. Hewett was a dealer in dogs and other animals, and provided food for the animals in the laboratory; he had signed a declaration to the effect that all the animals supplied to the laboratory were legally obtained. It is unfortunate that the laboratory should inadvertently have had dealings with a dog stealer, but it may be well to point out that the position with regard to the supply of dogs to physiological laboratories is anomalous. The police, we are informed, are by law required to take all stray dogs to the Dogs' Home, where unclaimed dogs, and those for which no ordinary purchaser can be found, are put to death. On the other hand, Parliament and the Government require various researches to be carried out which call for the employment of dogs; it does this through grants to the Royal Society and to the Medical Research Council, has a special committee for imperial research, and is deeply interested in the prevention and cure of tropical diseases. Government employs inspectors to see that all animals in laboratories are properly housed and kindly treated, and requires a return of all experiments in these laboratories to be made every year to Parliament. On the Continent and in many towns of America a university can obtain or buy animals from the dog pound kept by the police; but here a stray dog must be killed in a lethal chamber, but not by an overdose of chloroform after serving a useful purpose. In view of public comments that have followed the prosecution at Bow Street, Lord Chelmsford, Chairman of the College Committee of University College, London, has appointed a subcommittee to inquire into the supply of dogs to the School of Physiology, and the first meeting was held on Tuesday.

##### MAJOREA.

WE are indebted to Dr. A. PHILLIPS (Cotebrook, Tarpotley) for information about Majorea additional to that published last week (p. 958). Dr. Phillips recommends the inquirer to obtain Chamberlain's *Guide to Majorea*, 1925, which is the "official publication of the Fomento del Turismo de Palma, Majorea." This book, written in English, is full of most useful information relating, not only to Palma, but to the whole island. It also contains two good maps and is fully illustrated.

##### A PHOTOGRAPH IN AN ADVERTISEMENT: AN APOLOGY.

WE have received from the Secretary of the Ardath Tobacco Company a letter with reference to an advertisement of cigarettes in which a photograph of Sir W. Arbuthnot Lane smoking a cigarette was included. The Secretary writes:

This photograph was selected, with others, from a large number submitted, and was purchased by us from a firm of photographers who purported to sell us the copyright. We were in total ignorance as to who was the original of the photograph, and it was not until after some of the advertisements appeared that we knew that we had inadvertently used a photograph of Sir W. Arbuthnot Lane. We need scarcely say that Sir W. Arbuthnot Lane knew nothing of this until he saw his photograph in the press as part of our advertisement. Directly our attention was drawn to this we withdrew our advertisement, and we desire to apologize to Sir W. Arbuthnot Lane and to express our regret that such a mistake should have been made, and as a mark of that regret we have had much pleasure in sending a cheque for 100 guineas to the New Health Society, in which Sir Arbuthnot Lane is so much interested.

##### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 36, 37, 40, and 41 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 38 and 39.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 231.

## Harveiana Edinburgensia: RELATIONS OF WILLIAM HARVEY TO MEDICINE IN EDINBURGH.

BEING THE HARVEIAN ORATION TO THE EDINBURGH  
HARVEIAN SOCIETY

BY

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FELLOW HARVEIANS.—The return of our Harveian Festival recalls from the subconscious a host of feelings to each of us: in the forefront the sense of profound reverence towards one of the *Dii immortales* of medicine; in little less degree, the sense of pride—national pride—that the unravelling of the enigma of the circulation was British born. For it is not we alone who, on the day of celebration, stand barchheaded before the perpetual monument; in every school of medicine the world over the same impulse is felt, whatever the outward expression.

The recurrence of the festival rekindles our interest in the personality of the man and the bygone times when he accomplished his work, and in the relation of that time to ours. The events of those far-off days and of this evening in the Physicians' Hall intermingle in curious intimacy—a closer intimacy than we may have hitherto realized. That is the burden of my song, and on that account I have ventured to label these pre-prandial jottings "Harveiana Edinburgensia."

Hopeless as it seems to shift the kaleidoscope so as to reveal any further facet in the precious stones uncarved by the labours of his genius, and impossible as it may be to add to the knowledge of his life, I crave indulgence in seeking to forgo some links which attach William Harvey to our city, and particularly to the University and Edinburgh School of Medicine.

Partial as may be its success, the effort may not lack in interest on the occasion of the Harveian Festival which coincides so closely with the celebration of the bicentenary of the Medical Faculty. For it seems to me a reasonable view, on evidence to be presently submitted, that in the events which culminated in the creation of the Edinburgh School the manifold activities of Harvey played no insignificant part.

### HARVEY'S EARLY LIFE AND SCHOOLING.

In order to clarify the leading *motif* of this address, you will allow me, first, to recall some biographical points, familiar enough, but with special bearing on my purpose. The facts are drawn from a variety of sources. For those which bear on Harvey's life I would express my special indebtedness to Sir Norman Moore's *History of St. Bartholomew's Hospital*, and Sir D'Arcy Power's *William Harvey*.

William Harvey was born at Folkestone on April 1st, 1578. His father was an alderman of Folkestone and filled the office of Mayor in 1600. His mother must have been a remarkable woman, and probably influenced her family (seven sons and two daughters) in high degree. On her tombstone she is described as

"A Godly harmless Woman: A chaste loving Wife;  
A Charitable quiet Neighbour: A comfortable friendly Matron:  
A provident diligent Husbwfe: A carefull tender-hearted Mother.  
Deere to her Husband: Reverenced of her Children:  
Beloved of her Neighbours: Elected of God."

Harvey was educated at the King's School, Canterbury (five years), and passed to Cambridge (Cains College) at the age of 16. The selection of Cains College seems an early indication of his direction towards medicine, for Cains, the founder of the college, besides being a classic, seems to have been one of the first exponents of practical anatomy in this country. Cains College had the privilege of receiving annually for dissection the bodies of two criminals who had undergone capital punishment. Harvey took the degree of B.A. in 1597.

About this date his passion for travel showed itself, and in 1598 he set out for Italy by way of France and

Germany. Anatomist and physician in embryo, he made for Padua—which had been the home of Vesalius and was at the date of Harvey's residence the school of Fabricius (do Aquapendente). Padua was the university at which Cains had taught. In each session, which commenced with an oration in praise of medicine, followed by High Mass and the Litany, the entire body was dissected twice in public by the professor of anatomy.

Fabricius must have been a remarkable man. Admittedly most learned, he was given precedence of all other professors, with a right to wear a robe of purple and gold and the golden collar of the Order of St. Mark. In his old age he was granted an annual pension of a thousand crowns. Harvey seems to have been singled out by Fabricius, then aged 61, who became his close friend. At the time of Harvey's arrival Fabricius was engaged in original work on the circulation, especially the veins. Harvey was admitted Doctor of Medicine of Padua in 1602. The diploma, dated April 25th, records that "he had conducted himself so wonderfully well in the examination, and had shown such skill, memory, and learning, that he had far surpassed even the great hopes which his examiners had formed of him. They decided therefore that he was skilful, expert, and most efficiently qualified both in arts and medicine, and to this they put their hands, unanimously, willingly, with complete agreement, and unhesitatingly." The diploma of Padua granted to Harvey leave to practise and teach in every land and seat of learning.

### HARVEY AND THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

On returning to England Harvey fixed his residence in London. He took the degree of Doctor of Medicine at Cambridge, and became a Member of the College of Physicians of London in 1604. Later in the same year he married Elizabeth Browne, daughter of Dr. Lancelot Browne, physician to Queen Elizabeth and to James I. His professional advance was rapid. In June, 1607, he was admitted a Fellow of the College of Physicians, and in 1609 was elected to the office of physician to St. Bartholomew's Hospital. In his application for this post he had the support of King James I and the president of the Royal College of Physicians.

In 1615 he was appointed Lumleian Lecturer—one of the earliest offices in the gift of the Royal College of Physicians, which continues till this day. The fact that it was primarily an anatomico-surgical lectureship is interesting, and emphasizes the close relation which existed in those days between the better educated physicians and surgeons. Harvey, be it noted, was a leading Fellow of the Royal College of Physicians, and we commonly think of him nowadays as a physician. The Harveian Festival of London is the central feature in the annual life of the Royal College of Physicians. Yet Harvey was conspicuously an anatomist and biologist. He held the Lumleian Lectureship for forty years, and he evidently practised surgery, for one of the clauses of his will bequeaths especially his "little silver instruments of surgery to Dr. Scarborough."

His function as Lumleian Lecturer seems to have corresponded to that of professor of anatomy. From the earliest times anatomy, as the foundation of medicine, held a high place. The lecturer on anatomy was held in supreme respect. Anatomical discourses were conducted with considerable ceremony. The fact is illustrated in Rembrandt's celebrated picture of Professor Tulp demonstrating the relations of the flexor sublimis (perforatus) and flexor profundus (perforans) of the hand in the midst of a group of colleagues of the Guild of Surgeons of Amsterdam (painted in 1632).

Harvey's attitude to the Lumleian Lectures shows the large scope of the lectureship and no less the width of his own outlook. Among the principles he laid down for himself in the conduct of his lectures are included the following:

Not to speak of anything which can be as well explained without the body or can be read at home.

Not to enter into too much detail, or into too minute a dissection, for the time does not permit.

To enforce the right opinion by remarks drawn from far and near, and to illustrate man by the structure of animals. To bring in points beyond mere anatomy in relation to the causes of diseases, and the general study of nature, with the object of

correcting mistakes and of elucidating the use and actions of parts, for the use of anatomy to the physician is to explain what should be done in disease.

It is noteworthy that Harvey's first course of lectures, delivered in 1616 (the year of Shakespeare's death), already contained in embryo his great discovery, which was only formally published in 1628. In discoursing on the thorax he says:

"It is plain from the structure of the heart that the blood is passed continuously through the lungs to the aorta as by the two clocks of a water bellows to raise water. It is shown by the application of a ligature that the passage of the blood is from the arteries into the veins. Whence it follows that the movement of the blood is constantly in a circle, and is brought about by the beat of the heart."

#### HARVEY'S RELATIONS WITH THE STUARTS.

In the midst of his scientific observations and research Harvey acquired an influential practice. He had as patients Francis Bacon, the Lord Chancellor, the Earl of Arundel, and others. And who can say whether he may not have been consulted by William Shakespeare? He was appointed Physician Extraordinary to King James I on February 3rd, 1618. In the formal language of the time, "the King, as a mark of his singular favour, granted him leave to consult with his ordinary physicians as to his Majesty's health," promising him the post of Physician in Ordinary as soon as one should become vacant. This is highly significant as showing Harvey's very close relations with the King, whose promise, although not fulfilled in his lifetime, because there was no vacancy, was implemented in his son's reign, when Harvey became Physician in Ordinary to Charles I (1631). In the College of Physicians Harvey was appointed one of the four Censors in 1613, and was reappointed on several occasions. In 1627 he was nominated one of the "elects" (one of eight), who had the duty of selecting the president and of examining candidates for licence to practise. In 1628 he became treasurer of the College, and was re-elected as treasurer in 1629. The year 1628 is still more conspicuous as being the year of the publication of his great work *Exercitatio Anatomica de Motu Cordis et Sanguinis*.

In 1629, by command of the King, he accompanied James Stuart, afterwards Duke of Lennox (aged 17), on a Continental journey, resigning his office of treasurer of the College and getting leave of absence from St. Bartholomew's. They travelled in France and Spain (apparently not Italy, where, in the north, plague was virulent). An interesting sidelight on his scientific outlook is found in a letter from Harvey to Viscount Dorchester in which, describing the countries he passed through, he wrote:

"I can only complain that by the way we could scarce see a dog, crow, kite, raven, or any other bird, or any thing to anatomise, only some few miserable people, the relics of the war and the plague where famine had made anatomies before I came."

On his return to England he renewed his interest in the College of Physicians. In 1631 he was appointed Physician in Ordinary to King Charles I, with whom he appears to have come into very close personal relations, accompanying him everywhere and joining in sport and social functions. Of the intimate terms on which he stood with King James and King Charles I there is abundant evidence in his life. More than once there are references to specimens—eggs and the like—which he showed to the King. He utilized his frequent hunting expeditions with King Charles for the purpose of dissecting deer; for example, he says:

"The game, during the three summer months, was the buck, then fat and in season; and in the Autumn and Winter for the same length of time the doe. This gave me an opportunity of dissecting numbers of these animals almost every day during the whole season. . . . I had occasion, so often as I desired it, to examine and study all the parts . . . because the great Prince, whose physician I was, besides taking much pleasure in such inquiries and not disdaining to bear witness to my discoveries, was pleased in his kindness and munificence to order me an abundant supply of such animals, and repeated opportunity of examining their bodies."

Referring to the minute embryonic heart, he writes:

"I have exhibited this point to His Serene Highness the King, still palpitating. . . . It was extremely minute indeed, and without the advantage of the sun's light falling upon it from the side, its tremulous motions were not to be perceived."

And again, with reference to a young nobleman (the eldest son of Viscount Montgomery) in whose case the King was much interested, he writes:

"I carried the young man himself to the King that His Majesty might with his own eyes behold this wonderful case: that in a man, alive and well, he might without detriment to the individual, observe the movement of the heart, and with his own hand even touch the ventricles as they contracted. And His Most Excellent Majesty, as well as myself, acknowledged that the heart was without the sense of touch: for the youth never knew when we touched his heart except by the sight and sensation he had through the external integument. . . . We also particularly observed the movements of the heart, viz., that in the diastole it was retracted and withdrawn; while in the systole it emerged and protruded."

In 1633 he accompanied the King to Scotland when His Majesty was crowned at Holyrood, at the time when ecclesiastical difficulties were rife in Scotland and Janet Geddes threw her stool at the Bishop of St. Giles. During that visit to Scotland Harvey found time to develop his biological taste, visiting the Bass Rock, which he described in interesting and graphic terms.

In 1636 Harvey visited Germany, Austria, and Italy, apparently in the entourage of the Earl of Arundel, who went to Vienna as Ambassador Extraordinary to the Emperor Ferdinand. *En route*, he stopped at Nuremberg and tried (in vain) to convince Casper Hofmann, one of his leading critics, of the truth of his views by demonstration. A letter bearing on his visit to Rome describes him as "honest little Harvey whom the Earl is sending to Italy about some pictures for His Majesty"—an interesting sidelight on his quality and culture.

In 1639 he was appointed Senior Physician in Ordinary to the King. The civil war was just beginning and Harvey accompanied the King. At the battle of Edgehill, on October 23rd, 1642, he was placed in charge of the King's sons, Charles and James. Retiring with the King to Oxford, he was admitted to the degree of M.D. on December 7th, 1642. During his stay in Oxford, in addition to the usual professional work, he devoted himself to natural science, worked at anatomy, made many dissections, and was in close touch with men who were working there, including notably Highmore and Charles Scarborough. The latter was attached to Merton College, of which college Harvey was named Warden by Royal mandate in 1645. Scarborough was admitted a Doctor of Physic in 1646.

#### LATER YEARS.

When Oxford surrendered in 1646 he returned to London, and thereafter retired largely into private life, living with his brothers Eliab and Daniel. His attachment to the College of Physicians was maintained. He was elected councillor in 1655 and 1656, and continued to hold the Lumleian Lectureship till 1656.

His last literary effort—the treatise on generation—was published in 1651. In that year he offered to build a library for the College of Physicians. This was formally handed over to the College in February, 1654. That same year the College sought to elect him president, but he declined on account of his age. In giving up the Lumleian Lectureship in 1656 he took formal farewell of the Fellows and presented his paternal estate in Kent to the College. He was succeeded in the Lumleian Lectureship by Sir Charles Scarborough, to whom he was attached by affectionate ties, and whom he had urged to come to London.

Harvey suffered much from gout, and the attacks became aggravated with the advance of years. He died at Roehampton in his brother's house on June 3rd, 1657, in his eightieth year—apparently from cerebral haemorrhage—and was buried at Hempstead, Essex, on June 26th, being followed to the grave by the Fellows of the College of Physicians "clothed in their gowns."

His devotion to the College of Physicians is further illustrated by the terms of bequest, which run:

"And first, I appoint so much money to be raised and laid out upon that building which I have already begun to erect within the College of Physicians in London as will serve to finish the same according to the design already made." And again: "Touching my books and household stuff, pictures and apparel, of which I have not already disposed, I give to the College of Physicians all my books and papers and my best Persian long carpet and my blue satin embroidered cushion, one pair of brass andirons with fire shovel and tongs of brass for the ornament of the Meeting Room I have erected for that purpose."

And in testimony of his close attachment to Sir Charles Scarborough the will reads:

"I give my velvet gown to my loving friend Mr. Dr. Scarborough"; and later, "And to Dr. Scarborough all my little silver instruments of surgery."

In thus briefly recalling some points in the life of Harvey I have sought to punctuate those which reveal to us the manner of man he was: humanist, biologist, physician with a sidelong glance towards surgery, the confidant of the best men of his time, the trusted adviser and friend of two successive sovereigns, and the supremely devoted fellow of the Royal College. His influence in all these spheres must have been great.

"He dwelt among men: physician and sage,  
He served them, loving them, healing them;

He played on men, as his master, Phoebus, on strings  
Melodious."

#### HARVEY AND THE UNIVERSITY OF EDINBURGH.

My immediate purpose in rehearsing these points has been to inquire whether, and to what degree, his influence had bearings on events in the history of Edinburgh, and particularly of the Edinburgh Medical School.

It is indeed a remarkable fact that William Harvey, born in England, educated at Cambridge and Padua, and early and closely attached to the Royal College of Physicians of London, was, by reason of the circumstances of the times, brought into closest relationship with the monarch who, after long residence and rule in Scotland, carried to England a full knowledge of the educational and allied conditions in Edinburgh, to which city, some twenty years before, he had granted the Royal Charter founding King James's College—the Town's College—which subsequently developed into the University of Edinburgh.

William Harvey was born just four years before the foundation of the Town's College of Edinburgh in 1582. It matters little whether credence is to be given to the detailed, but apparently mythical, story of Bower in his history of Edinburgh University, when he tells how Bishop Roid of Orkney bequeathed 8,000 merks "to the town of Edinburgh for the purpose of erecting a University within the city," and that in 1561, "on the faith of speedily obtaining" the said sum, the town council discussed the establishment of a college, and "in 1563 purchased part of the ground upon which the College at present stands"; and that "three years afterwards the unfortunate and susceptible Mary, whose generosity was unbounded, her love of learning sincere, and her proficiency considerable, entered warmly into the same views, and endowed with revenues the institution which she was so anxious to patronize." Certain it is that about the date indicated the town council began to busy themselves regarding the application of public moneys which hitherto had been paid to "papists, priests, friars, monks, nuns, and others of that wicked sort, for maintaining of idolatry and vain superstition," and resolved that these should "be applied to more profitable and godly uses, such as for sustaining of the true Ministers of God's Word, founding and building of Hospitals for the poor, and Colleges for learning and upbringing of the youth, and other such godly works."

Gradually from out the rather vague educational proposals the conception of the Town's College took shape. The city register, of date August 9th, 1564, records that the stonework of the Kirk-of-Field is being taken down, and that the council think it should "be bought for the good Town, either for the Hospital or for a University to be made in the said Kirk-of-Field."

The final acquisition of the Kirk-of-Field took time. There seems no indication that Mary Stuart was inspired by a wish to transfer the site for the purpose. The desire of the city of Edinburgh and the city ministers to have a college founded seems to have been thwarted in part by the three older universities in which the influence of the bishops continued. It seems certain that the final practical move towards the foundation of the college was made by the city ministers, more especially Mr. James Lawson, who, according to Craufurd, "Having obtained a gift of a University within the City, in the beginning of this year (1581) purchased from John Gib and John Fenton, servants

to the King, their right to the Kirk-of-Field to be a place for the situation of the intended College."

Whether or not there was an earlier charter, as has been suggested, the charter of James VI, dated April 14th, 1582, gave largo powers to the town council in the direction of founding a college or colleges. It is significant in this connexion that in 1617 King James VI—or, as he then was, King James I of England—when he revisited Scotland, is reported to have said: "After the founding of the college of Edinburgh had been stopped for sundry years in my minority, so soon as I came to any knowledge I zealously held hand to it."

However we may choose to appraise the amount of King James's zeal, the above statement made by the King has especial interest in view of his having lived in Edinburgh during twenty-one years following the grant of the charter to the university, and thereafter in England some fourteen years before the above statement was made. Coming as the statement does some thirty-five years after the event, it suggests that the circumstances of the grant of the charter had made a definite impression, and there is reasonable presumption that the King was familiar with subsequent developments during his residence both in Edinburgh and later in the South. At that time there was no question regarding medical teaching in Edinburgh.

To return to Harvey. By his own qualities and happy matrimonial alliance his advance was rapid, professionally and socially. Four or five years after his return from Padua we find him a Fellow of the College of Physicians and physician to St. Bartholomew's Hospital, being supported for the latter office by King James and by the president of the Royal College of Physicians. During the succeeding years his relations with the Court had become pretty intimate. This is evidenced by the manner in which his appointment as Physician Extraordinary was made. Harvey was thus in close touch with King James at the date when the King recalled, in the words I have quoted, the circumstances of the foundation of Edinburgh University. So rapid was Harvey's advance in the College of Physicians that in 1613 he was appointed one of the four Censors of the College, and, in 1615, Lumleian Lecturer.

#### THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

It is not likely that those facts and their bearings were unknown to King James. Can we doubt that from time to time conversation turned on such topics? It is, therefore, of very great interest to recall that the first move towards the foundation of the Royal College of Physicians of Edinburgh was made in 1617, on the occasion of the King's revisit to Holyrood. If nothing immediate came of it, it seems hardly conceivable that the endeavour failed from lack of interest on the part of the King.

The personal relations between the Court and Harvey were continued throughout the reign of Charles I, who nominated him to more than one office, and, in 1631, appointed him to be his Physician in Ordinary. It is significant to recall that that date corresponds very nearly with a further effort towards the foundation of the Edinburgh College. Harvey was by this time in intimate relations with King Charles, and accompanied him to Holyrood in 1633. On the occasion of that visit Harvey, who found time to study the solar geese on the Bass Rock, cannot fail to have become well versed in the *pros* and *cons* in the leading professional question of the moment. At that date—within a few years after the publication of his great work on the circulation—his interest in the project and his influence must both have been great. They were not, however, sufficient to overcome local prejudice and animosity.

From now onwards Harvey's life was growingly overshadowed by the surging difficulties which led finally to civil war and the execution of the King in 1649. But during the Oxford period (1642-46) began the very significant relation between Harvey and Scarborough which ultimately ripened into affectionate friendship. In a very literal sense Harvey's mantle fell on Scarborough (see the terms of Harvey's will), who went to London on Harvey's suggestion, and succeeded him as Lumleian Lecturer in 1656.

During ten or twelve years these two men must have exchanged many ideas. Inevitably they would discuss

medical and academical matters. Can it be supposed that Harvey knew the facts both from conversations with the King and by personal observations in the city itself. The proposals for the establishment of a College of Physicians can hardly have been excluded from Harvey's talks with Scarborough.

It is a fact of pathetic interest that the next serious move towards the foundation of the College of Physicians of Edinburgh occurred in 1657—the year of Harvey's death. The proposal had the sanction of the Protector, and would probably have been carried through but for Cromwell's death the following year. Between that date (1657) and the actual granting of the Charter to the College (1681) there was an interval of twenty-four years. During that period various forces and counter-forces were at work until all the difficulties were removed.

Edinburgh would seem to have had a renaissance of intellectual activity and culture. This was evidenced in the trend of young Scotsmen about 1660 towards the universities of Holland, France, and Italy. Of those who ultimately constituted the first twenty-one Fellows of the College of Physicians, approximately one-half went abroad for study—the majority to the University of Leyden, where later, in 1692, one of the first Fellows of the College—Archibald Pitcairne—became professor of medicine and was probably one of the teachers of the great Boerhaave. Those are significant points in relation to the final successful effort to found the Royal College. Presently a band of keen, zealous friends began to hold fortnightly meetings (conferences) in Robert Sibbald's house. Chief among these were Doctors Balfour, Burnet, Pitcairne, Sibbald, and Stevenson.

#### SIR CHARLES SCARBOROUGH AND THE COLLEGE.

The appointment of Prince James, Duke of York, as High Commissioner to Scotland brought the Prince to Holyrood in 1679. In his train, as medical attendant, came Sir Charles Scarborough, who, in succession to Harvey, had become Physician to the King. The quickened intellectual atmosphere would prove congenial and interesting to Scarborough, who by this time was a member of Council of the Royal College of Physicians of London. Balfour he had already known as a pupil of Harvey. Towards Pitcairne he must have been drawn especially, for which later, both in Edinburgh and Leyden, he did much to disseminate. Sibbald, speaking of the Holyrood group, says: "We consulted with Sir Charles, and found him our great friend, and very ready to give us his best assistance, with the King and the Duke, who was by this time High Commissioner." Sibbald was successful in persuading the Earl of Perth and his brother to be friends to the enterprise, and he says, "they brought over many of the nobility to favour the design." To this happy combination of circumstances must be added a piece of good fortune that came to Sibbald, who relates it as follows:

"I having recovered one warrant of King James the Sixth of happy memorie [obtained by his uncle Dr. George Sibbald and left in his care], directed to the Commissioner and Estates of Parliament then sitting in Scotland, dated the 3rd July 1621, with an reference by the Parliament thereunto, to the Lords of Secret Council with power to doe therein what they thought fit and that their determination therein should have the force of an Act of Parliament, dated the Second of August 1621, produced this to his Royall Highness, who, as soon as he saw it superscribed by King James, said with much satisfaction 'he knew his grandfather's hand and he would see our business done,' and from that moment acted vigorously for us."

After unavoidable discussions as to its form, the completed Charter was duly written on parchment and the Great Seal was appended on St. Andrew's Day, November 29th, 1681.

The College is fortunate in having in its possession an engraving of Sir Charles Scarborough, who thus played so important a part in relation to its foundation. But I may be permitted to express regret that the original oil painting of the eminent benefactor, which was presented three or four years ago to the Royal College of Physicians of London, did not come to this hall. During the past year the College has had the good fortune to receive at the hands of one of its Fellows, Dr. Alexander Blackhall-Morison, an early portrait in oils of William Harvey

himself, whose relations—direct and indirect—to the foundation of the College can no longer be overlooked.

The commemoration of the bicentenary of the Medical Faculty of the University of Edinburgh during the present year has rekindled interest in the history of the medical school. At those celebrations becoming tribute was paid from many sides to the supreme part played by the first Fellows of the Royal College of Physicians in the establishment of the Faculty of Medicine within the University. Four years after the granting of the Royal Charter the College of Physicians submitted a petition for the establishment of professorships of medicine; and in 1685 the town council of Edinburgh appointed Sir Robert Sibbald, Dr. James Halkot, and Dr. Archibald Pitcairne to be professors of medicine within the University.

This first gesture, enluminating as it did in the creation, in 1726, of the Faculty of Medicine, was fitting crown of the renaissance of intellectual activity in relation to medicine which emerged in Scotland after the union of the two kingdoms. It follows that whatever links may be suggested as attaching William Harvey to the Royal College of Physicians must, by the rules which govern lineal relationship, be regarded as attaching him no less surely to the Medical Faculty of the University. So far as my memory serves, during the recent bicentenary celebration of the Faculty, no suggestion of so significant a connexion emerged. I trust my fellow Harveians will not think me presumptuous in thus endeavouring to repair the omission.

#### THE HARVEIAN SOCIETY OF EDINBURGH.

There remains little time to dwell on another line of thought which I should gladly have developed in more immediate relation to our Harveian Society.

Alongside Harvey's pre-eminent genius as observer and interpreter of nature, there was a rich store of human qualities which attached him to his friends and fellows; and continues to arouse feelings of personal regard and affection. In making over to his beloved College his paternal estate at Burmarsh in Kent, with provision for a salary to the College librarian, and the endowment of an annual oration, he begged that the orator should exhort the Fellows of the College "to search out and study the secrets of nature by way of experiment, and also for the honour of the profession to continue mutual love and affection among themselves." It was the dual character of Harvey's manhood—his science, on the one hand, and his humanity on the other—which led to the establishment of our own Harveian Society and the Harveian Festival which, for the 139th time, we are holding to-night.

The objects of the Harveian Society, as primarily indicated, were threefold—namely, to commemorate the discovery of the circulation of the blood, to cherish a kindly feeling among the members of the medical profession, and to foster a spirit of experimental inquiry among the students at this school of medicine.

The third object of the society, embodied in the award of an annual prize to the author of the best essay on a subject announced by the society, has fallen into abeyance, and the laws read now as follows:

**Law II.**—The Objects of the Society shall be to commemorate the discovery of the Circulation of the Blood, and to cherish a kindly feeling among the Members of the Medical Profession.

**Law III.**—The Society shall endeavour to accomplish these objects by dining together annually on April 12th, the birthday of the illustrious Harvey; and in any other way the Society shall see fit.

To-night, in commemorating the discovery of the circulation of the blood, as enjoined by the laws, we do reverently place anew our wreath of laurel before the monument of Harvey. It was long the practice of the society to dine on the anniversary of his birthday. The changes which have inevitably occurred in relation to the school of medicine—the division of the session into terms with alternating holidays—have rendered the month of April unsuitable for a commemorative gathering. Hence it comes—that, in place of dining together on April 12th, the birthday to-day (July 2nd, 1926).

If the primary purpose of the Harveian Festival is to pay reverent homage to William Harvey, it is certain that



it was no less the purpose of its founders to cherish a kindly feeling among the members of the medical profession.

The Harveian Society was a direct offshoot from the older Aesculapian Club. Both were founded by Dr. Andrew Duncan, and both have flourished—and flourished abundantly—to the present time; nor is there indication of senility or decay.

The Aesculapian Club was established in 1773, and consisted exclusively—as it does at the present day—of Fellows of the Royal College of Physicians and Fellows of the Royal College of Surgeons. The Aesculapian Club, which was essentially a supping, & dining, club, was limited not only in numbers (ranging from 12 to 22 members in all), but also in funds. When, three years after its foundation, the members of the Aesculapian Club proposed to widen their interest and influence by presenting a prize for medical investigation, they found—canny Scots—that, by reason of the limited number of members, the presentation of the prize (although amounting only to some 5 guineas) would press heavily on the purses of its members. Accordingly, the proposition was made that, without infringing on the prestige of the select Aesculapians, a larger society should be instituted which would include not only Fellows of the Colleges but graduates of the University and men in practice in the counties adjacent to Edinburgh or attached to the naval and military services.

Thus our society had its birth in 1782—bearing apparently two baptismal names, by which it was known indifferently—namely, the Harveian Society, or the Circulation Club. Judging by available documents it would seem at the beginning to have been more commonly known as the Circulation Club.

The initial roll of the club (1782) contained 23 names, including, of course, that of its founder, Dr. Andrew Duncan, whose portrait by Raeburn adorns the College hall, and, it is interesting to note, Dr. Nathaniel Spens, whose portrait by Raeburn in the dress of the King's Body Guard for Scotland is well known to you, Mr. Benjamin Bell, Dr. Alexander Monro, Dr. Daniel Rutherford, and others which recall far-reaching connexions with the medical history of Edinburgh. The first president was very naturally Dr. Andrew Duncan, who thereafter assumed the office of secretary, which he held for forty-six years to the end of his life.

One sometimes thinks with envy—too hastily perhaps—of the leisure times which the profession enjoyed 150 years ago. Yet Andrew Duncan—immersed in practice, lecturing on the principles and practice of medicine; first outside and latterly within the University, founder and moving spirit of the Aesculapian, Harveian, and Gymnastic Clubs, instructor of the *Edinburgh Medical Journal*, and inspiring influence of the Royal Edinburgh Asylum, Royal Public Dispensary, and Scottish Horticultural Society—must have been not only busy, but possessed of superabounding health and energy.

How the Harveians of those days realized their purpose to “cherish a kindly feeling among members of the profession” may perhaps best be realized by two pictures drawn from the minutes of the society—both relating to Harveian Festivals held at a time when Great Britain was overshadowed by the fateful possibilities of the Napoleonic wars.

The first picture is from the Harveian anniversary of April 12th, 1815—less than two months prior to the battle of Waterloo, when Dr. Andrew Duncan, the septuagenarian secretary, was promoted to the degree of Doctor of Mirth and Social Glee. It is best described in the quaint phrasing of the bard of the society:

A Motion was made,  
And all present were glad,  
As our joys are so few, and our time is so fleeting,  
That our vacancy in the chair, of Doctor of Mirth,  
Should be regularly fill'd up at our next meeting.

So for this situation,  
Without hesitation,  
As the time was so precious, the Preses did name  
Our trustworthy Secretary, who, for humour and pleasantry,  
through full half a century had acquired much fame.

Then next it was mov'd  
And most highly approv'd  
That the President, mentioning the candidate's qualities,  
Should prepare his diplom; and, when next in this room  
have him duly invested with all the formalities.

Yet, stop, say some, What's all the hurry,  
Who is the hero of your story?  
Who is the man that's dous such wonders,  
And thus has benefited hundreds  
Of generations yet to come,  
Of countless myriads a vast sum?  
I answer, neither Jew nor Turk  
E'er had a hand in this great work;  
And joy must glisten in your faces  
And national pride add to its graces,  
When I inform you that the man  
Who's thus completed Harvey's plan  
Is one that's here; for him I claim  
Th' immortal fame, and now do name  
Andrew Duncan, virum gravem,  
Moribus et vultu suavem,  
Virum septuaginta annorum,  
Dictum vulgo seniore,em,  
Sed ah! hinc to be styl'd majorem,  
Because in mirth for juniorem  
Than half the youngers now before him.

The Diploma was couched in the following terms:

#### DIPLOMA.

*Sodalitas Edinburgensium filiorum Aesculapii,  
In GULIELMI HARVEI honorem instituta,  
Ut in aeternum floreat inventum utilissimum,  
Circulatio sanguinis,  
Omnibus ad quos haec pervenerint  
Salutem.*

With all the rights of due decorum  
Nunc in altissimum honorem,  
Evectus sit Andrew Duncan,  
Honestus vir, si talis unquam.  
As to know him is to respect him,  
So nos habemus mitch delectum,  
Quod festo tempore et loco  
Cum risu, cantilena, joco,  
He has, auspiciis Minervae,  
Completed the great plan of Harvey;  
Proving that sanguinem abire  
A corde et ad cor redire,  
And ita, rite, circuire,  
By keeping heartsome, light and cheery.  
So therefore “cum nunc creamus,  
Statuimus et proclamamus,  
Of mirth Magistrum et Doctorem,  
Vel si libet Professorem”;  
And farther, nos auctoritate,  
Invest him plena potestate,  
“Quando liberit, potandi,  
Ludendi porro et jocandi,  
Moesios vino medicandi,  
Et ad risum fabulandi.”

The diploma, held in the hand, was delivered in pronouncing the last words of the following address:

Senex venerande, magnopere laudaude  
Propter innatam tuam smobnitatem,  
Et propter virtutem minime hirsutam,  
Cui, vita henō acta, seuctus est facta,  
Vero iucunda.  
Doctrina ornate, honore onerate,  
Probis probate, omnibus grata.  
Qualicunque aetate,  
Accipe honorem, valde decorum,  
Mimine quem volumus, atamen quem possumus  
Tibi donare.  
Quo, tardus et serus abiens in coelos  
Vivens hic, beate, bene, fortunete,  
Lacte, quiete, placide, complete,  
Longum fruate.

The second picture is from the Harveian anniversary of April 12th, 1812, when the degree of Doctor of Merriment was unanimously conferred on the Rev. Dr. William Moodie, Minister of St. Andrew's parish church and professor of Oriental languages in the University, who, sadly enough, died within a few months of his promotion to the said degree. With glasses duly charged, the feelings of the Harveians towards their Pontifex Maximus are thus expressed:

To all good fellows he it notum,  
That William Moodie, Virum Scotum,  
Has proved his power in merriment,  
Ut scripta multa nunc nos docent;  
And to reward his sterling wit,  
Quod felix nunc faustumque sit,  
Doctor of Mirth, nos huic creamus,  
And to all laughers, commendamus,  
In proof of which his health we drink,  
Wishing him well, et unne et hinc.

The Pontifex Maximus, having duly received this diploma, sent the following acknowledgement to the secretary:

With Aesculapians I did sup,  
And with Harveians kept it up,  
With dear Gymnastics oft was happy,  
Our friends were kind, our liquor nappy,  
And he who now the truth can tell,  
Ne'er saw war 'mang them than himsol'.

# ACUTE NODULAR LEPROSY ORIGINATING IN THIS COUNTRY AND CURED BY VACCINE TREATMENT.

BY

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(With Special Plate.)

Mr. X., a Chinese student, aged 36, who had been six months in this country, was brought to me on May 14th by Dr. Sherwill Dawe, with the following remarkable history:

The patient had been under his care for some weeks, suffering from severe pain in the left arm from the axilla to the wrist. Local applications, but no medicine, were given until three weeks later, when an eruption of nodules came out quite suddenly upon the face, and later upon the body. These gave rise to no subjective symptoms; there was no itching or pain. Under the impression that the eruption was an urticaria, calcium lactate was given by the mouth, and no other medicine had been taken by the patient. The eruption spread rapidly over the trunk and hands, and a patch of infiltrated skin, approximately four inches by two inches, appeared near the wrist, and a similar patch of induration upon the back a little later. He was brought to see me ten days after the first onset of the rash. The photograph (Fig. 1) gives a very fair impression of the state of the face when I saw him on May 14th. The skin over the forehead and cheeks was studded with granulomatous nodules; the face was generally swollen, especially over the forehead and nose. A large number of granulomatous nodules and plaques of indurated reddened skin were also found upon the back and front of the trunk. Upon the left forearm there was a very prominent induration of the skin, with a typical dusky flush; the ulnar nerve upon this side was greatly swollen and tender. The patient was obviously acutely ill, but no rise of temperature had been noted. The glands were generally enlarged.

I told Dr. Sherwill Dawe that I regarded the eruption as a lepride, and I obtained his permission to show the patient at the meeting of the Dermatological Section of the Royal Society of Medicine on May 20th. My diagnosis was confirmed by the unanimous opinion of the members present.

In the discussion which followed, Dr. Sequeira mentioned a case with an acute outbreak—the only one in his experience—in a woman who came from South Africa. Dr. Macleod gave an instance under his care of a boy in whom an acute outbreak of nodules, practically covering the body within forty-eight hours, had occurred, but the patient had had a previous attack of leprosy two years before. Dr. Whitfield mentioned a case under Dr. Pringle in whom an acute leprosy swelling of the face had come on within a few hours of an attack of malaria. Dr. Adamson pointed out the analogy between these cases and post-exanthematous lupus, which occurred after measles or other fevers in children who suffered from tuberculous glands. The rarity of such acute cases may be gauged from the fact that four medical men, with vast experience of skin disease, could each cite only one instance within their individual observation.

Further discussion ensued upon the measures to be taken, and it was again the unanimous opinion of the meeting that the prognosis was so desperate that the patient should be urged to take immediate steps to return to his home in China, if arrangements could be made for his transit.

Leprosy is not a notifiable disease in this country, and there is no adequate provision for the reception of such cases. Some years ago one of the members of the Section was confronted with an extremely difficult position, in which he sought the advice and assistance of his colleagues. A man suffering from leprosy had been living in lodgings in London. A lawsuit for damages, brought by the landlord, appeared probable, and this lesson of the very serious plight of a patient suffering from leprosy in England added to the urgency of the advice which I gave to Dr. Dawe, that the patient should leave England as speedily as possible, before his condition would prevent him from doing so.

Now comes the remarkable sequel. Mr. X. had the good fortune to come under the observation and treatment of Dr. James Hasson, whose very extensive experience of leprosy in Egypt enabled him to give a much more promising prognosis. The treatment adopted by Dr. Hasson is appended in a communication for which he is solely responsible.

The opportunities for seeing leprosy in this country are necessarily very limited, but I have had some exceptional opportunities of observing the disease in South Africa, the West Indies, and the Canary Islands. Some fifteen years ago I had the privilege of watching a case of leprosy under treatment by my colleague Sir Almoth Wright, who was giving small intramuscular doses of an emulsion of leprosy tissue obtained from a tumour excised from the patient. Some improvement at first resulted from this treatment, but it was never very encouraging, and was abandoned. Several other attempts have been made with the same means, notably by Dr. Winkelried Williams, but the improvement has not been such as to recommend a wide adoption of the method. It is the general experience that the products of chaulmoogra oil have not fulfilled the hopes expressed by Sir Leonard Rogers in his Croonian lectures of 1924.

The astonishing results obtained in the case now under consideration can best be apprehended by comparing Fig. 2, after treatment, with Figs. 1 and 3, before treatment. I examined Mr. X. in October, and am happy to report that the nodules and the tumefaction of the skin of the face have completely disappeared, the nodules leaving no trace of their presence other than a slight deepening of pigmentation. The indurated plaques upon the back and forearm have also vanished, leaving only a deepening of pigmentation in the flaccid skin covering the site of the induration. The general health of the patient has improved beyond all recognition, and it would really seem that we have at last obtained an effective method of treatment of this dreadful disease.

## COMMUNICATION BY DR. JAMES HASSON.

The patient mentioned by my colleague Dr. Graham Little was sent to me by Dr. Manson-Bahr last June. I have nothing to add to the above account of the patient, except that there was a specific rhinitis which made breathing difficult. His temperature was one degree below normal, and the large lepride of the forearm was in certain parts anaesthetic, and in other parts hypo-aesthetic.

I commenced vaccine treatment immediately, and after a series of injections of 23 ampoules, a majority of which were given into the veins, the lepromata described above, as well as the large infiltrated lepride, melted away.

I showed the patient to Dr. Manson-Bahr after this series of injections, and we agreed to let the patient have a rest of one month, during which time I gave him one or two injections a week of 2 per cent. solution of lecithin in olive oil, inasmuch as his urine contained an appreciable quantity of phosphates. He lost a stone in weight.

The vaccine injections were resumed about July 20th—four a week, then three a week, and finally two a week—in very small doses so as to avoid the strong reaction from higher doses.

The patient has had fifty-three injections in all of vaccine in small doses, after a special formula containing three milliards of Hansen's bacilli instead of five, and five milliards of *Bacillus pyocyaneus* instead of fifteen, in each ampoule—an alteration, as explained above, determined by the general health of the patient.

The present situation is as follows: All the lepromata of the face and the body have completely disappeared; the large lepride of the forearm has gone. The rhinitis is cured to such a degree that the patient breathes normally. The nasal septum is intact and there is no indication of destruction of the bones of the nose. The anaesthesia of the lepromata and of the lepride gave place during the first week of treatment to hypo-aesthesia. Both these symptoms have disappeared now and the hair is growing normally. Blistering of an old nodule shows in the blisters complete absence of Hansen's bacillus. The

method of preparing vaccine has been described in the *Transactions of the Royal Society of Tropical Medicine and Hygiene*, No. 7, vol. xix.

By means of a stick of carbonic acid snow applied for from a half to one minute upon the lepromata or upon the anaesthetic macules a blister results, which if emptied twenty-four hours later contains a large number of the bacilli of Hansen. This method may also be used to confirm or to contradict the diagnosis of leprosy when it is doubtful.

The preparation of the leprosy vaccine is a very delicate process, and necessitates a long practice. When the blisters are formed on the patients with the CO<sub>2</sub> snow they must not be emptied until after a lapse of twenty-four hours. Thirty-six hours are necessary if it is desired to obtain a fair number of Hansen's bacilli. The serum taken from one patient with one special form of Hansen's

disease is then mixed with the serum taken from other patients, suffering from different forms of leprosy, and the whole mixture is kept in the incubator for from fifty days to three months at 36°C. Then a mixed culture of *Bacillus pyocyaneus* is added to the serum containing the Hansen's bacilli (previously rendered incoagulable by the addition of a sterile solution of 2½ per cent. sodium citrate). The whole is transferred to the centrifuge for twenty minutes, the requisite quantity of distilled water is added to the solution, the bacilli are counted, then washed with petrol-ether, and the vaccine put up in 2 c.cm. ampoules. An ampoule of 2 c.cm. contains five milliards of Hansen's bacilli and fifteen milliards of *Bacillus pyocyaneus*.

The conditions vary for each case according to the general state of the patient; but the average dose is two ampoules, to be injected into the veins weekly.

## British Medical Association.

### PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

#### SECTION OF NEUROLOGY AND PSYCHOLOGY.

E. FARQUHAR BUZZARD, M.D., F.R.C.P., President.

#### DISCUSSION ON PITUITARY DISORDERS.

##### OPENING PAPERS.

I.—GORDON HOLMES, C.M.G., C.B.E., M.D., F.R.C.P.,  
Physician, Charing Cross Hospital; Physician,  
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My aim in opening this discussion will be to give a general survey of pituitary disorders and leave it to those who follow me to fill in details. I am fully conscious of the difficulty of the task, for the hypophysis, or pituitary body, is a complex structure composed of several distinct parts of different origin and different function, and disease may involve all of these parts together, or any one or more of them at a time; again, it may produce either loss or excess of function. Further, recent investigations have thrown doubt on hypotheses which we have accepted as physiological facts; it may, indeed, be said that the physiology of the pituitary body is still in the melting-pot. Another difficulty in the subject is that whatever may be the normal functions of the hypophysis they are so closely related to the activities of other glands, and especially to those of the sex organs, that a distinction of the clinical symptoms produced by their disease is often not easy, or their interpretation is uncertain.

It will, however, be my aim to deal with the clinical manifestations only of pituitary disease, and to place before you mainly the practical applications of my own experience. I shall have to refer from time to time to recent experimental work, but I shall do so only when this is necessary for the recognition and treatment of pituitary disorders.

It is now generally admitted that the pituitary body has important influences on growth, on sexual development and activity, and on the general metabolism of the body, and that these separate functions depend on different parts of it. A secretion or hormone of cells of the anterior lobe stimulates the growth of bones and influences the development of the skin and of some visceral organs; the pars intermedia and the posterior lobe control the development of the sex organs, while carbohydrate-metabolism is also influenced by the posterior lobe. The infundibulum, or rather the pars tuberalis that lies on it, is probably concerned with the secretion of urine.

The functions of the pituitary may be disturbed by many different types of disease. Tumours arising from its cells are probably the most common lesion in clinical practice, but it may be invaded by metastatic growths too. Then

it may be injured by disease originating outside the sella turcica, as by tumours growing from the meninges or from Rathke's pouch; by the distended floor of the third ventricle in the case of hydrocephalus; or by syphilis or encephalitis in the region of the infundibulum. These extrasellar lesions may compress the gland, or produce effects by blocking the secretions from the posterior lobe that normally enter the cerebro-spinal circulation through the third ventricle, or interrupt the nervous connexions between the pituitary and the hypothalamus. In other cases there is an aplasia or defective development of the pituitary, owing to either congenital or mechanical causes, or the organ may undergo regressive changes. Finally, alterations in the size and functions of the pituitary may be associated with disease or functional disturbances of other endocrine organs, as in pregnancy, in castration or atrophy of the sex glands, and with disease of the thyroid.

The clinical symptoms of pituitary disease are generally divided into those due to overactivity of a part of the gland, producing the condition of hyperpituitarism, and those that result from loss or deficiency of some of its secretions, or hypopituitarism. This classification is probably the most useful that can be proposed in the present state of our knowledge. It is, however, as yet an unproved assumption that the secretions of the cells of an adenoma are identical with those of normal cells, and the gross pathological lesions that most commonly cause symptoms can scarcely have selective actions on one part of the gland only. Adenomata of the anterior lobe, for instance, necessarily compress other parts in addition to altering the functional state of the anterior lobe cells. Many clinical symptoms must therefore be regarded as those of a dyspituitarism or altered cellular function, or as the combined result of the abolition or defective activity of some cells or parts, and the overactivity of other cells or parts. For clinical purposes, however, it is still advisable to retain the terms "hyperpituitarism" and "hypopituitarism."

The best method of presenting the subject for discussion will probably be to describe to you some of the more important clinical features of pituitary disease, and the more common modes in which they are grouped together.

##### DISTURBANCES OF GROWTH.

The best known and most common form of pathological overgrowth is acromegaly, which, since Mario described it in 1886, has been known to be associated with an enlargement or a tumour of the anterior lobe of the pituitary. It is true that in a few of the recorded cases no tumour or other lesion of the hypophysis was found, but in these there may have been a similar growth or an overfunction of an accessory pituitary, the common presence of which in the neighbourhood of the main gland or along the course of the pharyngo-cranial canal has been pointed out by Erdheim and others.

Benda originally showed that the characteristic lesion in acromegaly is an adenoma of the eosinophil cells of the anterior lobe, which usually deviates so little from the structure of the normal elements that we may assume the tumour produces a similar secretion; in other words, there is a physiological excess as well as an anatomical increase

of these elements. Dott and Bailey, in their recent study of hypophyseal adenomata, have come to the same conclusion.

As a direct result of the excessive secretion, or possibly as a result of it combined with changes in the activities of other ductless glands, an overgrowth of certain tissues of the body occurs. The most prominent increase in size is in the skeleton, leading to the characteristic changes in the face, jaw, and skull, as well as in the spine and in the distal segments of the extremities. The malar bones become prominent, the supraorbital ridges bulge owing to increase in size of the frontal sinuses, and the lower jaw enlarges, producing frequently a prognathism with the lower teeth projecting beyond the upper. Frequently the teeth of the mandible are separated widely, since they do not enlarge as the bone in which they are embedded.

The chief changes in the skull are an increase in bulk of the natural ridges and points of attachment of the muscles, but the common complaint that the patient requires larger hats as the disease progresses is in some cases due to a general increase in the size of the head. The chief vertebral change is the development of a diffuse upper dorsal kyphosis, but it is sometimes represented only by an unnatural prominence of the upper dorsal spines. Radiographic examination of the bones of the limbs generally reveals less change than might be expected, but the phalanges are often enlarged and exostoses on them are common.

It is to a thickening of the soft parts, especially of the dermis and subcutaneous tissues, that much of the deformity is due; the skin becomes thick and inelastic, and is usually so adherent to the tissues beneath it that it cannot be raised or pinched up in folds as in normal persons. This adds to the characteristic coarseness of the face, and gives the fingers their sausage-like or cylindrical appearance. Other soft organs enlarge too: the nose is generally large, coarse, and broad, the lips thick, and the tongue so massive that it seems to fill the whole mouth; the ears also increase in size. The visceral organs may also enlarge; a hypertrophy of the heart has been described, as well as enlargement of the liver, spleen, pancreas, and kidneys, but these changes have little or no clinical or pathological significance. In one case, on which I made a *post-mortem* examination, the walls of the intestines were considerably thickened, while the colon was enormously enlarged, its lumen being two or three times as great as the normal. This may be the explanation of a symptom I have seen in a few patients with acromegaly; they complain of severe constipation, but periodically pass motions of enormous size, probably because the intestinal contents accumulate in the enlarged bowel. Many of these patients have also excessive appetites.

#### *Gigantism.*

The acromegalic is characterized by overgrowth of certain portions of the skeleton leading to abnormal proportions, but in subjects who develop disease of the pituitary in early life a general increase in height and bulk may be the most prominent feature. Frequently growth in these cases continues beyond the usual period of adolescence. In the giant the normal proportions of the body are retained, or more commonly the limbs are abnormally long but well shaped. There are, however, often anomalies: the sex glands are sometimes underdeveloped and the secondary sexual characters poorly marked. There are many conditions that predispose to gigantism: some subjects are probably normal in every respect and mere "sports"; in others the excessive growth is connected with lesions of other glands, and especially the sex organs—among eunuchs, for instance, abnormal stature is not uncommon.

In some giants, however, the pituitary is undoubtedly at fault, a hyperplasia or adenoma of the anterior lobe, or possibly only a functional overactivity, providing the stimulus to skeletal overgrowth; but this is possible only before the epiphyses have permanently fused. There is now experimental evidence, too, that the anterior lobe of the hypophysis has an influence on growth, for Uhlenluth has shown that tadpoles fed on it increase in size more rapidly and to a greater degree than controls, and Evans and Long have obtained similar results in rats by the intraperitoneal injection of fresh gland substance. The

abnormally great stature sometimes seen in eunuchs and among the Russian Skoptzen, who in early life submit to castration, may be related to hypophyseal activity, for an increase in size of the anterior lobe, and presumably therefore increased function, is known to follow removal of the testes or ovaries.

The view that gigantism is acromegaly in early life cannot be accepted, as true acromegaly has been described even in childhood. There are, however, close relations between gigantism and acromegaly. Many giants develop symptoms of acromegaly in later life, and it is not unusual to find acromegaly appearing in persons of large build, even though they cannot be described as giants. Again, similar regressive changes occur in the two conditions; both the acromegalic and giant are usually at first strong muscular persons, but in both a progressive weakness, surprising in view of the size of their bodies, is liable to develop, and may progress to a final cachexia. In both, too, the sexual functions are depressed or in abeyance, and both frequently show the same apathy, indolence, lack of energy and interest, and narrowing of emotional life, though the giant is usually more infantile in his mental outlook.

#### *Dwarfism and Infantilism.*

Experimental observations have shown that injury or partial removal of the anterior lobe may, in young animals, lead to a lack of physical development, and clinical observations leave no doubt that disease of it in children or early adolescence may result in dwarfism, or an arrest of development with conservation of the normal adult proportions; or, on the other hand, to infantilism, in which growth is not necessarily stunted, but the morphological characters of infancy and an absence of sexual development persist beyond the age of puberty.

True pituitary dwarfism is not common, but I have had two cases under my care. Both were simply men in miniature, with fairly developed genitals and normal hair growth. In both the symptoms started in late childhood, and the associated features suggested suprapituitary growths; in one the shadow of a calcified tumour was present in radiograms of this region, and he became blind, the loss of vision extending from the temporal halves of the visual fields. In other cases the dwarfism is due to congenital absence of the hypophysis, as in the patient recorded by Peritz, or to its atrophy. One interesting feature of these cases is that, usually in the third decade of life, they become as it were prematurely senile; they lose weight, their skin becomes thin, dry, and wrinkled, and they may grow either bald or grey.

Infantilism is more commonly seen; here the stature is not necessarily short, but the general development is slender. The striking feature is the childlike configuration of the body, the infantile state of the sexual organs, and the non-development of secondary sexual characters, and usually an unbroken high-pitched voice. Obesity is a prominent feature of many of these cases, but this will be dealt with later.

#### *Adiposity.*

Cushing and others have shown that experimental damage of the pituitary, and especially lesions of the posterior lobe, may lead to the deposition of an abnormal amount of fat in the subcutaneous tissues as well as in the visceral organs. A similar adiposity is a frequent accompaniment of pituitary disease, no matter what its nature or the origin may be, provided it injures the posterior lobe; it is sometimes seen in acromegaly, in certain cases of gigantism, and in dwarfs, but it appears most characteristically in the stato to which Fröhlich has given the name "dystrophia adiposo-genitalis." In addition to primary hypophyseal disease it may be produced by any lesion that interferes with the functions of the pituitary, as suprasellar tumours, chronic hydrocephalus with distension of the floor of the third ventricle, and syphilitic basal meningitis, especially congenital infection. Cushing originally attributed it to defect of the posterior lobe, and certain clinical observations point to the same conclusion; recent work, however, suggests that it may not be the direct effect of the pituitary lesion, but results from damage of adjoining centres in the base of the brain, or from the genital atrophy that usually accompanies

hypophyseal disease. The resemblance to the obesity in eunuchs is certainly striking. Another argument in favour of the latter hypothesis is the case of a patient with hypopituitarism recently under my care, who had increased 4 st. in weight in six months, but lost most of his abnormal fat after a testicular graft. Peritz has published a similar observation in a hypophyseal dwarf.

The distribution of the fat is not in itself pathognomonic of pituitary disease; a similar adiposity results from genital defects and other pathological conditions, and occurs normally, particularly in families which incline to obesity. In the most common type the fat is laid down mainly on the breasts, abdomen, buttocks, the upper portions of the thighs, and over the pubis; but in other patients the increase is found chiefly in the lower limbs above the ankles, the trunk and the upper extremities being more or less free. Sometimes, however, there is a general adiposity.

#### Skin.

More or less characteristic changes in the skin usually accompany the obesity, but they occur also in the non-obese cases in which atrophy or non-development of the genital organs is the chief feature. It is usually soft, thin, and smooth, often practically hairless, and as a rule dry, though rarely scaly. The folds over joints and other regions may be obliterated, and to the touch it has the soft velvety feeling of childhood. In younger patients its colour is generally good, though many are anaemic, but in middle life it becomes thin and wrinkled, resembling the skin of old age. In acromegaly and other conditions associated with overactivity of the anterior lobe it is, on the contrary, thickened, firm, and rough, and often deformed by warts and small tumours of the fibroma molluscum type.

Simmonds has described an interesting condition, under the title "hypophyseal cachexia," which resembles in many respects the condition described in animals by Cushing and others after total removal of the pituitary. It results from a rapid destruction of the whole hypophysis, which in some of the published cases was due to extension of infection from the sphenoidal sinus. It is characterized by rapid emaciation, somnolence, amenorrhoea in women, polyuria, atrophy of the sex glands, anaemia, slow pulse and respiration, increasing muscular weakness, atrophy of the skin, and in some cases loss of hair and teeth. Some of the cases have improved on the injection of pituitary extracts, but finally ended in death.

#### DISTURBANCES OF THE SEXUAL FUNCTIONS.

As a rule sexual activity is depressed or lost in all forms of pituitary disease, and this is frequently the first symptom of which the patient complains. Some cases of acromegaly are exceptions: one of my patients begot a child when the enlargement of the pituitary was so great as to cause a serious degree of blindness by pressure on the optic chiasma, and I have recently seen a woman with unmistakable physical symptoms, including blindness of one eye and a temporal hemianopia in the other, whose periods have remained regular and normal during the five years the condition has existed. States of sexual overactivity have also been described in the early stages of acromegaly. In other hypophyseal affections amenorrhoea in women and impotence and lack of desire in men are almost invariably the rule, and often the first symptoms to attract attention. This is particularly true in the case of chromophobe adenomata of the anterior lobe which injure the pars intermedia and posterior lobe, with which the sexual functions are usually correlated; it holds, too, for most suprasellar lesions that compress the pituitary. It must be regarded as a direct consequence of destruction of the gland.

The state of the sexual organs naturally varies with the age at which the symptoms of the disease commence; when the onset occurs before puberty the penis and testes in the male, the uterus, the ovaries, and the external genitalia in the female, remain undeveloped and infantile, and no evidences of puberty appear. If the disease starts after puberty the sexual organs may retain their natural size, but frequently atrophy and regressive changes set in, especially in long-standing cases. Then the penis shrinks,

the testes become small and soft, and often not tender to pressure. The uterus has often been found infantile in shape and size, while the labia and clitoris may atrophy too. This state is associated with loss of all manifestations of sexual function; in the female complete amenorrhoea exists, and none of the accompanying phenomena of menstruation occur, while the male never has erections, omissions, or other sign of sexual activity. A point of some importance in the diagnosis of pituitary impotence is the fact that it does not occasion the patient the worry or distress that impotence from other causes usually does; there is at the same time a complete lack of desire, and in the female absolute frigidity.

An absoneo or deficient development of the secondary sexual characters usually accompanies this genital atrophy. When the disease sets in before puberty the female breasts are small and contain little glandular tissue, but in adipose types they may be distended by fat. In cases in which the disease develops later in life the mammae may atrophy, though by no means always. In men collections of fat underneath the nipples often produce pseudo-mammae. The general shape and configuration of the patient is often striking, particularly in cases of pre-adolescent onset; in males the body is slight, often broader at the hips than at the shoulders, and frequently shows the tendency to waist formation which is more characteristic of the female. The limbs are long, the fingers slender and tapering, and the appearance lacks that muscularity which is normally typical of the young adult male, while the type of adiposity, with accumulation of fat on the buttocks and thighs and in the region of the breasts, exaggerates the female-like type of body. In young females the figure is frequently that of a child: the pelvis is narrow, the back straight, the thighs slender, and the pubic region undeveloped. In later life adiposity generally predominates; the abdomen is large and pendulous, the breasts soft and hanging, and irregular pads of fat around the shoulders, loins, and thighs distort the figure.

The amount and the distribution of the hair in the male are important diagnostic points. In the hyperpituitary syndrome there is often excess over the body, which sometimes is irregularly distributed in patches on the back, upper arms, and limbs. In hypopituitary states, on the contrary, hair is scanty and its distribution approximates to the female type. Youthful patients develop no beard or moustache, or at the most there is a soft down on the face. The trunk and limbs are hairless, the axillary hair is usually scanty, and that on the pubis has a horizontal upper limit as it usually has in the female. In patients in whom the condition commences after puberty the hair anomalies are less pronounced. Frequently, however, there is less than the normal amount on the face; many patients, in fact, state that while previously they had to shave every day, once or twice a week is now sufficient. The moustache is scanty and generally retreats from the sides towards the middle line, while the beard is represented mainly by fine hair along the lower margin of the jaw and up the middle line, the skin under the angles of the mouth being more or less devoid of it. The eyebrows are generally thin and there is frequently a deficiency of hair in their lateral parts. In women there are less striking changes; in juvenile cases the pubic hair may never grow, and it is often sparse in older patients. In all types and in both sexes the hair of the head is usually normal in amount, but in hypopituitary cases it is often dry, fine, and thin.

#### METABOLIC DISTURBANCES.

Glycosuria, as has been for long known, is often found in acromegaly, but it is a variable symptom, sometimes present, sometimes absent, regardless of diet or mode of life of the patient. Or it may be produced by a moderate intake of sugar. This glycosuria can be controlled by insulin as easily as that of pancreatic origin. On the other hand, as Cushing and his fellow workers first recognized, in patients with hypopituitary symptoms there is usually a marked increase of carbohydrate tolerance, larger amounts than 150 grams of glucose by the mouth being necessary to produce glycosuria. This test



has been extensively employed as a diagnostic sign, and it is undoubtedly of use, though it has not the absolute value originally attributed to it. There are obvious fallacies in it, since the glucose may not be absorbed from the intestinal tract, or the renal threshold for sugar may be high. The investigation of the blood sugar curve after the administration of glucose either by the mouth or intravenously is a more accurate and more valuable method. In normal subjects the highest point of the curve is reached thirty or forty minutes after the glucose has been given, but Gray, Sachs, and others have found that when the pituitary is injured by experiment, or its functions interfered with by disease, the curve rises more slowly and remains up longer than normal.

In a series of blood sugar investigations made recently on fifty-six patients at the National Hospital this condition was found. In both acromegaly and hypopituitary states the form of the curve was the same, the highest point being reached late, sometimes an hour or more after the administration of the glucose, and it fell to its initial level very slowly. The percentage of blood sugar usually differs with the type of the disease; in acromegals the resting or fasting sugar tends to be high, while when obesity and other signs of hypofunction are present the fasting blood sugar is small in amount.

Several recent observers have obtained glycosuria by experimental lesions of the hypothalamus only, and clinical cases have been recorded in which it occurred in disease limited to this region. Sachs, for instance, assumes that though it may have a modifying effect on carbohydrate metabolism, the pituitary alone is not responsible for the glycosuria. It has been shown, however, that the intravenous injection of posterior lobe extract can produce glycosuria in healthy persons and lower the tolerance for carbohydrates in states of hypopituitarism, and Burn has found that the simultaneous injection of posterior lobe extract with insulin counteracts the effects of the latter.

Numerous observations go to show that the basal metabolic rate is also lowered in hypopituitary states and raised in hyperpituitarism, but this is apparently not a constant rule. It has been attributed to secondary changes in other glands, especially in the thyroid, and to pressure on the tuber cinereum.

Polyuria and the clinical manifestations of diabetes insipidus have also been attributed to disease of the posterior lobe of the hypophysis. An excessive amount of urine is not, however, a common symptom in the more usual forms of pituitary disease, but diabetes insipidus is often associated with more acute lesions of this region, as basal syphilis and fractures of the base of the skull. Recent observations, both experimental and clinical, have thrown doubt on this explanation of polyuria, and many of them point strongly to its being directly due to injury of the hypothalamus; the temporary relief of the symptoms of diabetes insipidus by injections of extracts of the posterior lobe suggests that the pituitary may play a part in its pathology.

**Blood Pressure.**—My own observations show that in most cases of tumour of the hypophysis both the systolic and diastolic pressures are lower than normal. This is particularly so in the chromophobe adenomata associated with dystrophia adiposo-genitalis; here the systolic pressure often does not rise above 100 mm. of mercury.

Somnolence is not an infrequent symptom in pituitary disease, especially in adipose patients with evidences of hypopituitarism. In these we occasionally observe a tendency, similar to that found after epidemic encephalitis, to sleep excessively by night, and to drop off into sleep at any hour of the day. This is a true and perhaps a wholly natural sleep from which the patient can be easily awakened, and must be distinguished from the stupor with slowing and obtuseness of the mental processes that occurs with cerebral tumours and other lesions that raise intracranial pressure. It is most probably not a direct pituitary symptom, as a series of extremely interesting observations have within recent years demonstrated the existence of a centre in the neighbourhood of the third ventricle which controls or regulates sleep. This region is, of course, frequently compressed or otherwise damaged by hypophyseal tumours.

### PRESSURE SYMPTOMS.

In a large proportion of all cases with clinical symptoms of pituitary disease the primary lesion is a tumour which either arises in the sella turcica or compresses the hypophysis within it. The tumours often attain a considerable size; cysts and other growths from Rathko's pouch are often as large as a walnut, while tumours of the pituitary itself frequently grow out from the sella and surround the base of the brain. Such tumours naturally compress or injure other structures and thus produce other symptoms.

**Headache** is variable. Many patients with even large pituitary tumours complain of little or no pain in the head, but in others it is one of the earliest and most prominent features. When the tumour lies entirely within the sella the headache is most probably due to pressure on its dural lining. It is most commonly referred to the temples, and described as a dull aching or a more severe bursting pain, which is often continuous for hours or days. When the growth originates outside the sella or extends from it the headache is a result of the general increase of intracranial pressure. Then it is usually more severe, but less constant, and is commonly referred to the forehead or behind the eyes; intense bouts occur in the early morning on waking, and are sometimes accompanied by attacks of cerebral vomiting, which is rare in intrasellar tumours.

### Visual Symptoms.

As the optic nerves and chiasma lie in close relation to the sella it is not surprising that visual disturbances are among the most common symptoms of pituitary tumours. These vary from case to case, owing partly to the position of the tumour and the direction of its growth, partly to the variable anatomical relations of the chiasma to the sella turcica. Most commonly its anterior border lies on the sellar diaphragm, and consequently the upward pressure of a pituitary tumour involves first the optic fibres from each nasal half of the retina as they decussate in the chiasma. In other cases the optic nerves are longer and the chiasma more posteriorly situated, so that one or other of the optic nerves is first compressed. More rarely the chiasma is placed anterior to the sella, and then the pressure first affects one of the optic tracts.

Pressure on the chiasma alone produces the characteristic picture of a bitemporal hemianopia. A pure bitemporal homianopia is, however, rare, for the decussating fibres seldom suffer alone, and they are all affected only when the tumour has reached a considerable size. The loss of vision may develop in several different ways. The earliest defect in the field is usually found in the periphery of one upper temporal quadrant; from here the blindness gradually extends towards the fixation point, and then invades the lower temporal quadrant. The other eye may be affected simultaneously or suffer later. In another type, which is probably as common, a scotoma, at first partial but gradually becoming more complete and larger, is found on the temporal side of the fixation point. This scotoma extends temporalwards, chiefly into the upper quadrant, until it reaches the normal, or more commonly the contracting, periphery. Frequently it spreads over the fixation point or for a short distance above or below it into the nasal fields. In other cases there is a general and gradually increasing contraction of the peripheral temporal field, or there may be merely a progressive diminution of vision throughout the whole temporal field.

When the chiasma is situated more posteriorly in relation to the sella, the tumour first compresses one or other of the optic nerves. The first clinical evidence of this is usually a diminution of contralateral vision, which progresses, often rapidly, to blindness of the eye of this side. As the tumour increases in size it usually involves the chiasma next, producing a temporal hemianopia of the opposite eye; or the second optic nerve may be compressed, with the result that its central vision also suffers. In a patient with an anteriorly placed chiasma, a homonymous hemianopia to the opposite side may be the first visual symptom, but this is uncommon.

Tumours growing from the infundibulum or from the meninges produce similar disturbances of vision; when they lie above the chiasma the loss often commences in

the lower temporal quadrants, owing to the fact that the fibres from the upper halves of the retina decussate in the upper part of the crossing and are consequently liable to suffer first by pressure.

Associated with the loss of vision we generally find a progressing pallor of the optic discs, giving the ophthalmoscopic appearance of a primary optic atrophy. The discs, however, frequently retain their normal colour for a considerable time after defects in the fields of vision have set in, especially when these develop rapidly. Papilloedema, or swelling of the discs, is rarely seen in simple pituitary tumours, but it occurs frequently with extrasellar growths.

**Ocular Palsies.**—Diplopia, strabismus, and ptosis are not uncommon symptoms. One or more of the muscles supplied by the third nerve may be weak, or all, including the iris and ciliary body, are affected. The external rectus is commonly palsied, but in my own experience the fourth nerve generally escapes. It has been stated that these ocular palsies are found only when there is an intracranial extension of the pituitary tumour, or when the growth lies outside the sella turcica. They are certainly then more common, but I believe they occur even with intrasellar growths, which may bulge lateralwards and compress the ocular nerves, especially when the tumour has extended backwards and eroded the posterior clinoid process.

#### *Trigeminal Pain.*

Occasionally patients complain of pain and numbness on one side of the face, most commonly in the distribution of the ophthalmic or maxillary division of the trigeminal nerve, and examination reveals a defect of sensation in the area to which the pain is referred. These symptoms must be due to compression of the fifth nerve or one of its branches by the tumour; they probably never occur when the growth lies entirely within the sella, and consequently indicate an intracranial extension or a primary extrasellar lesion.

#### *Anosmia.*

Disturbances of smell are rare with pituitary tumours, but extrasellar neoplasms may produce them by compressing the olfactory tracts or the area olfactoria in front of the chiasma.

#### *Cerebral Symptoms.*

In view of the serious amount of compression which the brain may suffer in the case of a large pituitary tumour, and even more so in the case of neoplasms growing from the infundibulum and its neighbourhood, it is surprising that cerebral symptoms are so rare. Occasionally, however, a mild degree of hemiplegia, often indicated only by an extensor plantar reflex, is seen. It is due to compression of one of the cerebral peduncles, and consequently occurs most commonly with extrasellar tumours extending into the interpeduncular space. These may also damage the mesial aspect of the temporal lobe and produce uncinate attacks.

#### *THE PITUITARY AND THE HYPOTHALAMUS.*

I have already referred to the fact that considerable doubt has arisen within recent years on the direct relation of some of the functional disturbances we have discussed with disease of the pituitary.

Karplus and Kreidl originally showed that there exist in the hypothalamus centres which can, under experimental conditions at least, affect the activity of the sympathetic system, and later observers brought further evidence that this region of the brain is concerned in the regulation of temperature and metabolism, in the secretion of urine, in the control of sleep and in the functions of the sex glands. Erdheim first suggested that disturbance of the hypothalamus is the cause of many of the symptoms attributed to the pituitary, and Aschner and others have provided further experimental and clinical evidence in favour of this thesis. Several physiologists now maintain that, contrary to the view generally held, the pituitary is not essential to life, and that its complete removal may not be followed by the characteristic symptoms. It seems to be definitely established that polyuria and temporary glycosuria may be produced by lesions of the tuber cinereum, and some experimenters claim that even adiposity and regressive

changes in the sex glands may result from injury of the base of the brain though the pituitary be intact.

Numerous clinical cases published within the last few years tend to substantiate these experimental conclusions. Diabetes insipidus and glycosuria have been found associated with lesions limited to the tuber cinereum; obesity has been observed in disease of these parts, and even a few more or less typical cases of dystrophia adiposo-genitalis have been recorded in association with encephalitis of the base of the 'tween-brain. It may be that the "pituitary" symptoms resulting from experimental injury or disease of the base of the brain are really the result of blockage of pituitary secretions that normally reach the cerebro-spinal fluid through the infundibulum; further investigations are necessary to settle this point. On the other hand, as Abel suggests, the symptoms that follow hypothalamic lesions may be due to injury of the pars tuberalis of the pituitary which surrounds the infundibulum and extends on to the base of the brain.

Certain clinical syndromes must, however, be correlated with hypophyseal disease. There is now the clearest evidence that acromegaly is associated with an overgrowth of the eosinophil cells of the anterior lobe, and that its constitutional manifestations may precede any evidence of pressure on the brain. It also seems to me certain that disturbances of the functions and anatomical regression of the sex glands are direct pituitary symptoms.

The major clinical manifestations of pituitary disease are not common, but it is probable that certain minor disturbances of health which often escape notice or diagnosis are a result of disturbances of pituitary function. Unnatural obesity, stunted growth, and sexual weakness, for instance, may be of this origin, though accompanied by no other evidences of hypophyseal disease. Some disturbances at the climacteric may be due to imbalance of the activities of the pituitary and the sex glands, and in men certain changes not infrequently seen about middle life may have the same cause. It has been, for instance, suggested that the obesity, sexual impotence, and pathological somnolence of Napoleon at about the period of Waterloo were symptoms of a pituitary affection.

#### *TREATMENT.*

In some cases of pituitary disease the main aim of treatment is to alleviate the symptoms of glandular deficiency, in others it is to relieve the pressure which a pituitary tumour exerts on the optic tracts or other structures, or the headache that it causes.

When the most prominent symptoms are those which we regard as hypopituitary in nature, the most rational procedure would be to administer the active substance of the gland in suitable doses. It is definitely known that the intravenous injection of posterior lobe has an influence on metabolism, and that the intraperitoneal injection of anterior lobe stimulates growth in animals. Similar results, however, have not yet been obtained regularly in patients with symptoms of pituitary deficiency. Cushing, for instance, found that in undergrown children even the intraperitoneal injection of an extract every second day for months had no effect, though others have obtained partial success. It appears, then, that even intravenous or intraperitoneal injections give no constant results.

The efficacy of oral administration is even more doubtful. The notable success in the treatment of myxoedema by extracts of thyroid by the mouth has aroused the hope that other glandular defects may be relieved by similar means, and has created an actively advertised market for various glandular products. There is, however, no evidence I know of that pituitary preparations given by the mouth are absorbed, or that their active principles survive digestion and absorption. I have used them extensively, but I have never satisfied myself that any of them had the least effect in relieving the symptoms of pituitary deficiency. I am aware that others have been more fortunate, though their published results do not inspire very confident hopes. More may be attained by this method of treatment when we can be sure of obtaining a reliably active and accurately standardized preparation.

Other glandular extracts, and especially thyroid, have been employed. There is no doubt that, in some cases of

the adipose type, thyroid in moderate or large doses diminishes weight, reduces somnolence and lethargy, and leads to a subjective improvement at least. It is probable that these effects are due to the direct action of the thyroid, but it is possible that it also acts by influencing hypophyseal cells that persist. The administration of thyroid to patients with large adenomata certainly diminishes the pressure symptoms in many cases; I have repeatedly observed an improvement in vision and diminution of headache under its use. Pituitary extracts are often given with it. Suprarenal, ovarian, and testicular preparations have also been tried, but there is no convincing evidence that they have any effect when administered by the mouth.

When the most urgent symptoms are, as is frequently the case, due to compression by a pituitary tumour of neighbouring structures, as the optic nerves or chiasma, there are only two efficient modes of treatment—surgery and radiology. Operation has now become a relatively safe procedure, though in my opinion it is as yet justifiable only when headache and other pressure symptoms are severe, or when vision is threatened. Unfortunately many cases are referred to the surgeon only when the tumour has attained a large size, or even burst out of the sella into the intracranial cavity; then only a temporary relief of pressure can be expected. The operation may be undertaken by the trans-sphenoidal or by the fronto-temporal route; personally, I have had more experience of the operation that approaches the tumour by elevating the frontal lobe of the brain, and I cannot but believe that it is the most effective, though its mortality may be slightly higher.

X-ray treatment has been extensively employed within recent years, especially by Bédère and other French physicians, and some striking results have been reported. It is claimed that this method is free from danger, and this is probably true so far as life is concerned; but I have seen an increase of blindness and other pressure symptoms, and other cases have been reported, after a few x-ray applications. This method certainly deserves further trial, especially in feeble patients with low blood pressure who do not stand surgical intervention easily.

## II.—NORMAN M. DOTT, F.R.C.S. ED.,

Surgeon, Royal Edinburgh Hospital for Sick Children; Assistant Surgeon, Church of Scotland Deaconess Hospital; Lecturer, Edinburgh University.

(With Special Plate.)

THE treatment of pituitary disorders, as of other diseases, demands of the individual who assumes responsibility therefor as complete a knowledge of the organ concerned as is possible. It is only on such a basis that treatment can be rationally planned and its results correctly assessed. As a surgeon concerned in the treatment of certain diseases of the pituitary gland, I propose to lay before you an outline of their principal features and the factors bearing on their treatment. In doing so I shall be obliged to review the known physiology of the gland, since it is only on a basis of normal function that pathological states become comprehensible. I shall then describe the pathology in relation to the endocrine function of the gland. Lastly, the lesions will be considered in their anatomical and surgical bearings.

In the first place, I wish to acknowledge my indebtedness to the clinic of Dr. Harvey Cushing at Boston, on the staff of which I had the privilege of acting two years ago, and whose rich mine of records I was permitted to explore. Dr. Cushing has been so kind as to send for your inspection most of the microscopic specimens which I have set out.

## I.—PHYSIOLOGICAL CONCEPTIONS OF DISORDERED PITUITARY FUNCTION: HISTORICAL.

As in the case of the thyroid gland so for the pituitary we recognize a state of excessive activity (hyperpituitarism) and a state of insufficient activity (hypopituitarism) on either side of the zone of normal function. It should be of interest to review the salient points in the history of these conceptions.

## Hyperpituitarism—Gigantism and Acromegaly.

Pierre Marie gave the first clear description of acromegaly as a disease entity in 1886. In the following year Minkowski pointed out the association of the disorder with a tumour of the pituitary gland. It is noteworthy that for some years the disease was considered to be an expression of pituitary insufficiency—a very natural conclusion from the presence of a tumour which obviously destroyed the gland. The failure of Horsley and others to induce acromegaly changes in animals by operative destruction of the hypophysis cast doubts on this theory, and led Tamburini, in 1894, to put forward the conception that acromegaly was an expression of hyperpituitarism. The relationship between acromegaly and gigantism was also recognized at this time. In 1900 Benda showed that the tumour concerned was an adenoma of pituitary origin, not a sarcoma or carcinoma, as it had previously been designated: Fraenkel, Stadelman, and Benda, in the following year, called attention to the hyperplasia of eosinophil cells in the tumour, and they regarded this finding as evidence of hyperpituitarism. A decade later the nature of the syndrome of pituitary insufficiency was clearly recognized from animal experiments, and, by contrast, additional strength was given to the view that acromegaly and gigantism were expressions of increased pituitary function. A recent analysis of 162 cases of hypophyseal adenoma from Cushing's clinic, by Percival Bailey and myself, revealed an absolutely constant relationship between the eosinophilic adenoma and acromegaly. The final proof was furnished by Uhlenluth, Evans, and others, who induced actual gigantism in amphibia and rats by administration of pituitary anterior lobe substance. Evans has actually caused pituitary insufficiency in young rats by operation, and subsequently dispelled its symptoms by injections of a preparation of the anterior lobe.

## Hypopituitarism.

We have no convenient synonym for the term hypopituitarism, as none of the familiar phases or types of the disease, such as hypophyseal infantilism, dystrophia adiposo-genitalis (Frölich), etc., are sufficiently representative of the disease to give it their name. Babinski in 1900, and Frölich in the following year, each described a single case of pituitary tumour associated with genital hypoplasia and adiposity. Neither observer, however, appears to have grasped the conception of pituitary insufficiency in relation to these cases. In 1906 Bartels gave a clear description of the syndrome, which he christened "dystrophia adiposo-genitalis"; he believed that a pituitary lesion had no causal relationship to the symptoms. Cushing, in 1909, reproduced this syndrome experimentally in dogs by partial hypophysectomy, and on this basis first clearly formulated the conception of hypopituitarism. A year later Aschner reported dwarfism as a consequence of similar experiments on young puppies, and thus demonstrated the relationship of infantilism to hypopituitarism. The lowered metabolic rate of pituitary insufficiency was shown both experimentally and clinically by Cushing and Boothby. The clinical and pathological evidence of a recent review of 162 cases of hypophyseal adenoma (above referred to) shows that all tumours or other destructive agents acting on the hypophysis, with the single exception of the eosinophilic growth, cause hypopituitarism.

It is interesting to observe that of the two syndromes hyperpituitarism was by far the earlier to be understood, and that its elucidation came primarily from the hospital ward and pathological laboratory. Hypopituitarism was not recognized until fifteen years later, and was then brought to light in the experimental laboratory. In both instances it is instructive to consider how the clinical, pathological, and experimental avenues have alternated and interwoven in advancing our knowledge, and encourages us to anticipate further progress along similar lines.

## II.—THE PHYSIOLOGICAL FUNCTIONS OF THE PITUITARY GLAND.

In discussing the physiology of the hypophysis I shall dwell briefly on those functions of which we possess substantial proof, but shall touch also on some related phenomena of less certain origin. At the same time, in

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FIG. 1.—Pituitary adenoma. Typical x-ray appearance of sella turcica. Note the characteristic even "ballooning." Film by Dr. Hope Fowler. J. W., female, aged 40; Deaconess Hospital, 1925; transphenoidal operation with marked improvement to vision.

FIG. 3.—Hydrocephalus due to pericerebellar adhesions. Ventriculography. Air outlines enormously distended anterior horns. The third ventricle is seen to dip into the flattened sella turcica. The dorsum sellae is eroded. Note marked atrophy at vault and gaping of coronal suture. J. S., male, aged 15; Deaconess Hospital, 1926; cerebellar decompression; adhesions freed. (Film taken with head in inverted position.)

FIG. 2.—Suprasellar cyst. Typical calcification in solid base of tumour. Slight erosion of posterior clinoid processes. (Film by Dr. Hope Fowler.) Female, aged 11. Private series, 1923. No operation possible.

FIG. 4.—Large right parietal glioma. Typical pressure atrophy with obliteration of dorsum sellae, thinning of floor and anterior clinoid processes and orbital plates; stippling of inner table over vault. (Film by Dr. Hope Fowler.) Male, aged 42. Private series, 1923. Wide decompression over growth.

## E. GRAHAM LITTLE ACUTE NODULAR LEPROSY.



FIG. 1.—Face, before treatment.

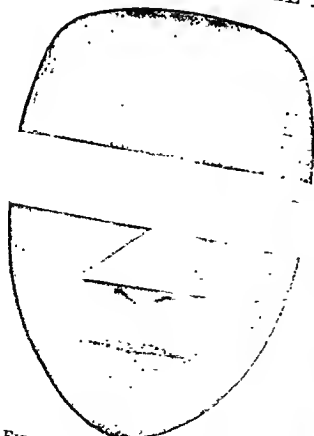
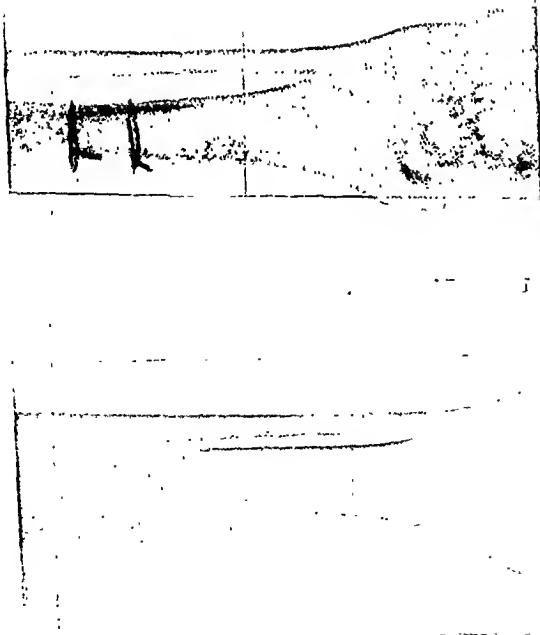


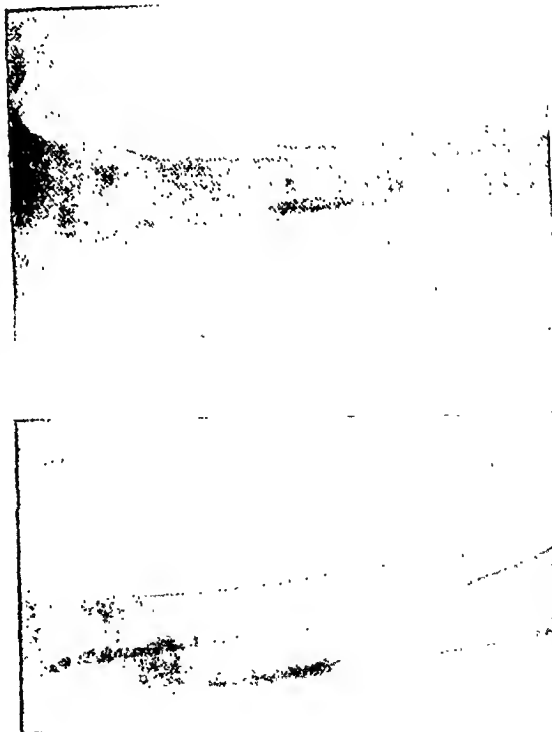
FIG. 2.—Face, after treatment.



FIG. 3.—Back of trunk, before treatment.



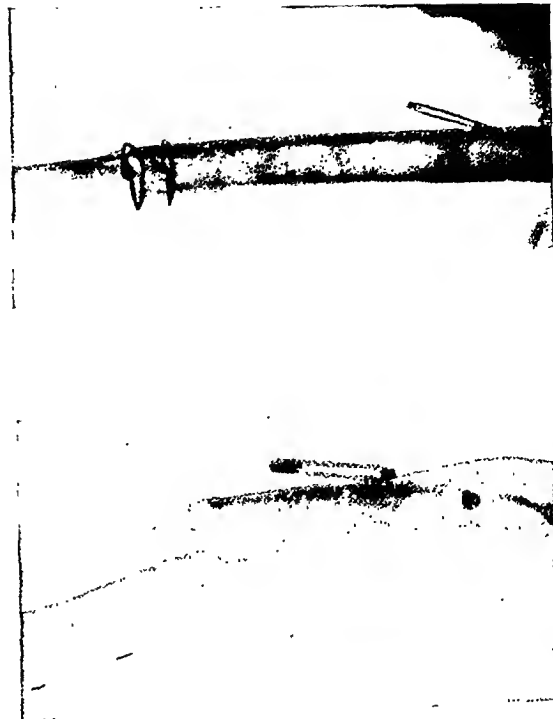
(a)  
CASE I.—Spiral fracture of tibia. (a) After nine days' ordinary treatment. (b) After operation.



(a)  
CASE III.—Fracture of femur in a girl aged 15. (a) After three weeks' treatment. (b) After operation. Note the slight projection of the proximal end and the small fragment.



(a)  
CASE II.—Spiral fracture of femur in a girl aged 8. (a) After one week's treatment. (b) After operation.



(a)  
CASE IV.—Spiral fracture of humerus in a woman aged 30. She suffered from achilles tendonitis and the above was involved. (a) At the end of one week. (b) After operation. Complete recovery of drop-wrist.



consideration of the dogmatic statements often made as to anterior and posterior lobe symptoms, it may be well that we should inquire into the actual state of knowledge concerning the individual lobes.

#### *The Posterior Lobe (Pars Nervosa, Intermedia, and Tuberalis).*

Knowledge of the functions of this structure remain very scanty and uncertain at present. The activity of extracts of the posterior lobe in raising the blood pressure and in causing a transient diuresis was shown by Schafer with Oliver and Magnus at the outset of this century. Their observations have been followed by a host of others, demonstrating the potency of the extract in causing contraction of plain muscle in the uterus, eye, bladder, stomach, and intestines; showing its prolonged anti-diuretic effect, its action on the pigment cells of amphibia, its influence on capillary tone, and its quantitative effect in inducing the onset of parturition. It should be emphasized, however, that although these observations show that the extract has powerful pharmacological activities, and may be suggestive as to the purpose of the organ in the body, they actually prove nothing as to the normal physiological functions of the posterior lobe. The single proven function which I know of for this part of the gland is the regulation of pigment cells in the skins of certain amphibia. These animals remain pale after removal of the posterior lobe; they become temporarily black again on injection of the extract, and remain permanently black after successful grafting of pars intermedia tissue. In considering the possible purposes of the posterior lobe in the mammalian economy it is important to recollect that the total removal of this organ in the dog is unattended by any observable consequences to the animal. Many independent workers have confirmed this. At the present time it may be interesting to mention a particular instance in one of my own experiments. I observed a collie bitch from which the entire posterior lobe had been excised for several years. During this period she remained a perfectly natural and healthy animal. She had three normal pregnancies, terminating in due course in normal parturitions. The completeness of the excision was verified at subsequent autopsy by microscopic examination. I feel, therefore, that suggestions as to the possible functions of the posterior lobe should be made with great reserve at present. It appears to me quite unwarranted by known facts to attribute any definite symptom of pituitary disease to derangement of this structure.

#### *The Anterior Lobe (Pars Distalis).*

We have much more definite information concerning the normal activities of this gland. As already indicated, some of its functions were early suspected from clinical and pathological evidence in cases of acromegaly and gigantism. The probability that it was concerned with growth, with the development and maintenance of the functions of the sex glands, and with the maintenance of the normal metabolic rate, was strengthened by disturbances of these functions following its experimental removal. Experiments on the administration of the anterior lobe or its extracts remained somewhat inconclusive until, in 1917, P. E. Smith caused tadpoles, which had remained dwarfed after hypophysectomy, to grow again by anterior lobe feeding. Evans completed the evidence by similar experiments on young rats, employing intraperitoneal injection as the method of administration. The relation of the eosinophilic cells of the anterior lobe to these phenomena is rendered almost certain by their constant hyperplasia in clinical hyperpituitarism and their marked diminution or absence in the presence of hypopituitarism. It is of great importance to note that experimental hyperpituitarism in rats is always associated with cessation of sexual functions, just as in hypopituitarism. The sex glands would appear to be governed by a delicate balance of anterior lobe activity. True experimental gigantism has been induced by anterior lobe administration to certain amphibia and rats. In these particular animals natural growth does not cease abruptly, but continues slowly throughout their lifetime. In the human giant similar conditions exist. Before growth is

complete he develops hyperpituitarism, his genital glands fail to mature, his epiphyses therefore fail to close at the normal age, and at the same time are stimulated to grow by hyperpituitarism; and, in fact, growth often continues until 30 or more years of age in such a case. We must again pay tribute to an early observer, for this is no new conception of gigantism. Tandler, in 1910, expressed the view that the eunuch is potentially capable of increasing in stature on account of the absence of puberty and its associated epiphyseal closure; that he actually does attain an abnormal stature is the result of hyperplasia of the pituitary, which constantly follows castration. He applied this reason . . . . . Nothing resembling the changes of . . . . . reproduced by experimental administration of anterior lobe. This raises the question as to whether the secretion of the eosinophilic tumour cells may not be merely excessive, but also qualitatively abnormal.

#### *"Pituitary" Symptoms of Uncertain Origin.*

*Adiposity* is an inconstant, though often a striking, accompaniment of hypopituitarism. It varies with age; being much more frequent and conspicuous in the young, and decreasing both in frequency and degree as the age of onset of the disease advances. A comparison with the adiposity of castration and the recollection of the genital hypoplasia of pituitary insufficiency suggest that the symptom may be due to an indirect effect through the intermediation of the genital glands. On the other hand, some recent experimental evidence points to the possible existence of a fat-metabolism centre in the hypothalamic region of the brain. It is quite possible that implication of this region by the tumour may be responsible for adiposity. The cause of adiposity in pituitary disease remains uncertain at present.

*Diabetes insipidus* is a very inconstant accompaniment of tumours of the pituitary region. It may also follow oncephalitis affecting this neighbourhood. It has been attributed on the one hand to lesions of the posterior lobe, and on the other to lesions of the adjacent hypothalamic region of the brain. A study of tumours of the neighbourhood indicates that diabetes insipidus occurs only when the growth is large enough to indent the base of the brain, but it does not always accompany this event. Experimental evidence strongly favours the cerebral theory. It is, however, very difficult to regard as mere coincidence the fact that injections of posterior lobe extract will arrest the polyuria of diabetes insipidus. We must leave this an open question at present.

*Diabetes mellitus* of acromegaly is also a very inconstant symptom. It may occur early or late in the disease. It appears to differ from typical diabetes mellitus in its character, being extremely irregular and often transient in its appearance. It may be of severe degree for a few days or weeks, and then completely disappear spontaneously, to return in weeks, months, or years, or not at all. When present it reacts to insulin treatment as does true diabetes. Two cases under Dr. Cushing's observation have died in typical diabetic coma. In one of these cases some of the islets of Langerhans show sclerosis. It is difficult, however, to associate an intermittent symptom with a sclerotic process. Again we must leave this question open.

*"Increased Sugar Tolerance."*—It has been observed that the obese subjects of hypopituitarism can ingest larger quantities of sugar without exhibiting glycosuria than normal subjects. The phenomenon is not specific for hypopituitarism, but may be observed in any form of obesity with lowered metabolism. I have observed that if the sugar is injected intravenously a glycosuria and blood sugar curve is obtained in hypopituitarism which does not differ from the normal. The inference is that the abnormality in the ingestion test lies in the rate of alimentary absorption and is probably an expression of the general metabolic depression. I would emphasize the gross fallacies to which sugar ingestion tests are liable. All such investigations should be made by the intravenous route, and further, a continuous injection regulated by grams per hour is essential.

### III.—PITUITARY DISORDERS IN RELATION TO DISTURBED ENDOCRINE FUNCTION.

Having reviewed the known functions of the pituitary gland, we may now correlate the various pathological lesions of the organ with the train of symptoms due to disordered glandular activity which they engender.

The evolution of our knowledge of disease of any organ is usually characterized by a period in which isolated symptoms and numerous clinical and pathological types are described, and they tend to accumulate into a complex and chaotic mass. Finally, scientific investigation succeeds in correlating and arranging this mass into a much simpler and clearly comprehensible form. I hope to show that such simplicity of conception is applicable to pituitary disorders. Its outline was clearly delineated in Cushing's *Disorders of the Pituitary Gland* in 1911.

We have to deal with two main types, between which a borderland will be recognized. The eosinophilic adenoma accompanied by hyperpituitarism constitutes one main type; the chromophobe adenoma and all other lesions which destroy or compress the hypophysis, accompanied by hypopituitarism, constitutes the other. Between these a smaller group, characterized by a mixed adenoma and by mixed hyperpituitary and hypopituitary symptoms, is distinguished.

#### *The Eosinophilic Adenoma and Hyperpituitarism.*

The *eosinophilic adenoma* possesses the characters of a true neoplasm in its loss of architectural arrangement and in definite modifications of its component cells, both as to form and relative proportions. The eosinophilic cell preponderates and shows considerable variation in size and shape. Rarely it is exclusively present. More frequently there is a proportion of chromophobe cells, and they resemble those of the normal gland, though showing some variation in size and form. The supporting stroma may be extremely scanty or quite dense, according to the proliferative activity of the particular tumour. Thus the growth may be almost self-limiting or may cause a rapidly enlarging tumour. The presence of the eosinophilic adenoma in acromegaly and its absence in hypopituitarism are absolutely constant.

*Pathological hyperpituitarism* is first manifested by general overgrowth if the patient is still within the growing period. Growth persists beyond the normal limits both of age and stature, and gigantism results. It is accompanied by acromegalic changes, and these changes usually become pronounced at a later period. If, as is more frequent, the state first appears in adult life, acromegaly alone ensues. Its earliest symptom is usually a fibrous hyperplasia in the subcutaneous tissues of the fingers, lips, nose, and ears, followed by similar changes in the tongue, internal organs, and nerve sheaths. Overgrowth of the bones of the face and hyperostosis of the vertebral column, ribs, and limb bones follow. The metabolic rate rises progressively, though never so markedly as in hyperthyroidism. Loss of sexual function is constant, but may be comparatively late in onset. Hypertichosis and glycosuria are inconstant and somewhat infrequent signs. In the later stages toxæmia, presumably the consequence of continued excess of the pathological pituitary secretion, dominates the picture, inducing asthenia and often emaciation.

#### *The Purely Destructive Lesions and Hypopituitarism.*

In this category we have to deal with a variety of pathological conditions, which are here grouped together because they are all associated with hypopituitarism by reason of their injurious effect on the pituitary body. Among them are numbered the chromophobe adenoma, the suprasellar cyst of Rathke's pouch, and various other suprasellar growths, such as meningioma, cholesteatoma, glioma, etc. Hydrocephalus may compress the hypophysis by forcing the brain down into the sella turcica; and, indeed, chronically increased intracranial pressure from any cause—for example, a large tumour at a distance from the sella—may induce hypopituitarism in the same way. Of these causes the chromophobe adenoma and suprasellar cyst are by far the most frequent. The suprasellar cyst is a simple squamous epithelial neoplasm derived from the primitive tubular outgrowth from the buccal ectoderm from which the epithelial portion of the pituitary body takes origin.

Its base, lying just over the sella, is composed of a solid mass which projects in wart-like processes into the upper cystic portion, which occupies the interpeduncular space. The solid portion is usually calcified. The growth is of the nature of an adamantinoma.

The *chromophobe adenoma* is selected for special description in order to contrast it with the eosinophilic adenoma. The chromophobe tumour consists of a mass of cells which are devoid of specifically staining granules. They differ considerably from the fully developed chromophobe cells of the normal gland, being of a more or less embryonic type. They are usually elongated or columnar in form, but may be irregularly rounded. They are arranged either in acinar formations or quite irregularly. The cell type is uniform. Eosinophilic cells are absent (or practically so). The stroma varies, but tends to be scanty. The tumour is usually one of comparatively active growth.

*Hypopituitarism*, if its onset occurs during childhood or adolescence, causes retardation or cessation of growth resulting in some degree of dwarfism. The sex glands fail to mature, the epiphyses remain unclosed, and secondary sex characters do not appear. Thus the subject is physically infantile in every respect. Mental development is usually normal. When the condition arises during adult life the earliest symptom is invariably a depression of sexual function—an occurrence which is very clearly indicated in women by the onset of amenorrhœa. The only other constant sign is some degree of hypotrichosis of the limbs and trunk and of the face in men, together with a peculiar fineness of the skin. The cutis is thin, soft, and pliable, and in patients over 40 years of age the skin exhibits a characteristic fine wrinkling. The secretion of sweat is usually diminished. Probably a depression of the basal metabolic rate is also constant, but the finer degrees of variation are difficult to detect with certainty by clinical calorimetry. The metabolic rate is not nearly so markedly as in is inconstant for all ages, but striking in the young; it rarely appears after the age of 40.

#### *The Mixed Adenoma and Dyspituitarism.*

The *mixed adenoma* possesses the general characters of the chromophobe tumour, but its cells exhibit some degree of eosinophilic granulation. The granules may be present as a thin ring at the periphery of each cell, or a few scattered but typical eosinophil cells may be present in a tumour chiefly composed of pure chromophobe elements.

*Dyspituitarism* or the mixed clinical syndrome is by no means uncommon. The patient who is somewhat overgrown, who has large bones and air sinuses, but who at the same time exhibits hypotrichosis, fine soft skin, and genital atrophy, is quite familiar. Less common perhaps is the combination of definite infantilism with acromegalic thickening of the fingers, lips, and nose. It is notable that the degree of eosinophilia in the mixed adenoma is constantly reflected by the degree of pathological hyperpituitarism in the associated mixed syndrome.

When we look for an explanation of these definite glandular syndromes, we find it in the histological type of the tumour. All the adenomata are exactly similar in their gross anatomical appearance and in their pressure effects, and all destroy the normal pituitary gland. The eosinophilic cells are the distinguishing feature of the particular tumour associated with clinical signs of pathological hyperpituitarism, and it is reasonable to assume that these cells are responsible. It is interesting to reflect that the eosinophilic tumour most closely resembles the normal anterior lobe and represents its most highly specialized cell form; it might be expected to secrete something resembling the normal anterior lobe hormone. No specific secretion would be expected from the chromophobe adenoma, which represents the least specialized cell type and usually attains only an embryonic phase of this cell. It has been indicated that good reasons exist for suspecting that the secretion of the eosinophilic neoplasm may be qualitatively abnormal as well as excessive, hence I have used the term "pathological hypopituitarism." The mixed adenoma and dyspituitary syndrome strongly supports this view, for were physiological hypopituitarism and hyperpituitarism present they should tend to equalize each

other, causing little or no disturbance of function. In actuality definite acromegalic changes may occur in the presence of undoubted hypopituitarism, indicating that acromegaly is to be considered as a pathological state, as contrasted with a simple exaggeration of a physiological state.

#### *Latent Hypopituitarism.*

I use this term to designate a group of cases—"cases with pronounced neighbourhood but inconspicuous glandular symptoms," as Cushing described them in 1911. These cases, recognizable only from the effects of tumour pressure on the optic fibres, etc., occur in persons over 40 years of age. The lesion is usually a chromophobe adenoma. Their explanation is very simple. It has been pointed out that certain cutaneous changes and depression of sexual function are the only constant signs of hypopituitarism, and that adiposity does not supervene in later life. In the female the onset of amenorrhoea after 40 has no obviously pathological significance; and in the elderly male loss of sexual desire may not attract attention. The inconspicuous hypotrichosis and finely wrinkled skin are not likely to arouse suspicion in a patient over 40 years of age. A chromophobe adenoma large enough to involve the optic fibres has certainly compressed the hypophysis at an earlier period, and hypopituitarism is undoubtedly present in these cases. The recognizable symptoms of this condition are masked, however, by the natural phenomena of advancing years. Hence the expression "latent hypopituitarism" appears appropriate.

#### *Adenocarcinoma of the Pituitary Gland.*

This is an extremely rare affection. The few cases of which I have been able to find record were in patients over 45 years of age. The growth evinces a definite tendency to invade the bones of the cranial base and to spread between them and the dura. The fibrous dura seems to offer a barrier against intracranial invasion. The signs are those of progressive involvement of the cranial nerves. In one case all the cranial nerves with the exception of the auditory and facial on one side were completely interrupted. The growth may produce typical metastases in the liver and elsewhere.

#### IV.—PITUITARY DISORDERS FROM THE ANATOMICAL AND SURGICAL STANDPOINT.

When pituitary disorders are regarded from the technical surgical point of view, histological and endocrine grouping falls into comparative abeyance. The pathology must be rearranged on an anatomical basis. We must distinguish three main groups: (1) lesions of intrasellar origin, (2) lesions of suprasellar origin, (3) increased general intracranial pressure. Such grouping is essential to differential diagnosis and efficient treatment.

#### *Tumours of Intrasellar Origin.*

By this term I would imply those growths which arise within the sella turcica, though by the time they cause symptoms they have usually trespassed its limits. They are the pituitary adenomata, and are by far the most frequent lesions encountered. Let us consider the enlargement of such a tumour, the structures it successively encounters and the effects it thus produces.

It first compresses the soft and yielding parent gland, inducing hypopituitarism (acromegalic signs will appear in spite of this if the tumour happens to be eosinophilic). Distending the dural capsule of the sella it causes typical headaches. Distending the bony wall of the sella it causes a characteristic ballooning of this structure which is evident on the x-ray film. Squeezing itself outward between the two layers of the dura it displaces the cavernous sinuses and surrounds the internal carotid arteries; in doing so it may cause an abducens paralysis. It may thus reach Meckel's cave and so induce paraesthesiae and sensory loss in the upper divisions of the trigeminal nerve. Rupturing the dural roof of the sella it encounters the optic fibres, usually at the chiasm, and thus gives rise to characteristic bitemporal defects in the visual fields and primary optic atrophy. It next impinges on the base of the brain, inducing polyuria (probably), somnolence, and

sometimes acute hyperthermia, which may cause death. Its further upward extension gradually obliterates and obstructs the third ventricle, causing hydrocephalus with signs of general increase of intracranial pressure. If it bulges outwards it may crush the oculomotor nerve against the sharp dural edge of the sella, or impinge on the inner surface of the temporal pole—whence olfactory hallucinations. Continued downward pressure irritates the sphenoidal sinus and induces congestion and catarrh of its mucous lining, evidenced by slight recurrent epistaxis and post-nasal dripping. I would especially emphasize here how even a tumour of moderate size will surround the carotid arteries and insinuate itself between the layers of the basal dura—facts which render its complete operative removal out of the question.

#### *Tumours of Suprasellar Origin.*

In this category I include those growths which arise from or near to the roof of the sella turcica, which enlarge primarily in the space afforded by the cisterna chiasmatis, though by the time they cause symptoms they have usually encroached on the sella and its contents by pressing down its roof from above. In their upward enlargement most of these growths pass behind the optic chiasm towards the third ventricle and interpeduncular space. They differ from the intrasellar tumours, not only in their origin, but in their relation to the subarachnoid space, and in the sequence in which they encounter the various structures which they press upon and the direction of this pressure. Thus polyuria and somnolence may appear as early symptoms. There may be a significant difference in the position and mode of progress of the visual field defects, since the pressure often comes from above and behind the chiasm. The appearance of the sella turcica as revealed by radiography differs entirely from that of the intrasellar growth. There may be erosion of the clinoid processes and flattening of the sellar outline by pressure from above, but never the even distension characteristic of the pressure from within of the adenoma.

#### *General Pressure causing Hypopituitarism.*

To those who are familiar with the striking appearance of the flattened sella, as disclosed by x-ray examination or at necropsy, in any case of long-standing intracranial hypertension, it cannot be surprising that definite signs of hypopituitarism may sometimes result from this cause. I have seen the pituitary signs so well marked in cases of hydrocephalus secondary to mid-brain tumour and to chronic adhesive meningitis that, at first sight, one would incline to regard them as instances of primary pituitary disease. An interesting recent example was that of a young woman who had a very large temporo-occipital meningioma. The skiagram showed well marked erosion of the dorsum sellae, and complete amenorrhoea had supervened. Normal menstruation returned immediately after removal of the growth, and has remained regular since. In such cases careful inquiry will usually reveal that the hypopituitary symptoms were of comparatively late onset, while the presence of definite signs of involvement of a region distant from the sella will deflect the diagnostic search in the correct direction.

#### V.—DIFFERENTIAL DIAGNOSIS.

A definite differential diagnosis between pituitary lesions of intrasellar, suprasellar, and distant origin is almost always possible. Its importance cannot be overestimated, since the most efficient operative treatment of the three groups differs very materially, and since an incorrect surgical approach may not only be inadequate but highly dangerous. The diagnosis of a tumour in the neighbourhood of the pituitary is usually very obvious, and does not require further discussion here. Some factors in the differentiation of these growths may, however, be of interest.

The age of the patient may be of assistance. Adenomata are extremely rare before the fifteenth year, and quite uncommon before the twentieth. The suprasellar cyst is frequently encountered in young children, and the vast majority manifest themselves before the age of 30. The

chronology of the symptoms and the nature of the visual field defects will assist in many cases. The x-ray appearance of the sella turcica is of paramount importance. The even ballooning caused by the intrasellar adenoma (Fig. 1) is quite characteristic. The isolated clinoid erosions of the suprasellar cyst and its calcification which is present in 85 per cent. of these cases form a well marked contrast (Fig. 2). When the sella is affected by general intracranial hypertension there is erosion of the prominent clinoid processes and dorsum sella, but in addition other portions of the base and vault of the skull show evidence of pressure atrophy. The floor of the sella and orbital plates are thinned, and the inner table of the skull, especially over the vault, shows stippling and erosion (Fig. 4). It should be noted in passing that clinical signs of such chronic hypertension are not always very obvious; headache and vomiting are frequently absent.

To be sure, difficulties may arise in the differential diagnosis. For example, it may not be easy to decide between a suprasellar cyst or tumour without calcification in it and a cerebellar lesion with accompanying hydrocephalus. It is notorious that the neurological picture in some of these basal tumours may be very similar. Each of them is capable of causing hydrocephalus, and in the absence of calcification of a suprasellar cyst the x-ray appearances may be quite indistinguishable. In a recent case of this nature, in a child aged 15, in which the diagnosis of chronic adhesive meningitis about the cerebellum with secondary hydrocephalus seemed probable, there were such obvious signs of hypopituitarism and sellar erosion that an uncalcified suprasellar cyst with hydrocephalus could not be excluded by all ordinary diagnostic methods. Since the surgical approach in the former condition would be by the suboccipital route, and in the latter by a transfrontal procedure, a definite decision had to be reached. The matter was settled by ventriculography. The film (Fig. 3) has been taken with the head in the inverted position. The air, attempting to rise, has outlined the third ventricle against the base of the skull. The ventricle is seen to dip right into the flattened sella turcica, leaving but little room for the hypophysis—far less for a suprasellar growth! The initial and correct diagnosis was thus verified.

As experience of these cases increases, and diagnostic measures are improved and new ones evolved, the doubtful case is becoming rare.

#### VI.—TREATMENT.

It remains for us to consider how the patient afflicted with a tumour in the vicinity of the pituitary body may be benefited. Three means are at our disposal: (1) surgical operation, (2) radiotherapy, (3) glandular therapy.

##### *Operative Treatment.*

**Indications.**—The indications for surgical intervention are fairly clear. Amelioration of symptoms of glandular disturbance following operation has been recorded in a very small proportion of cases. For example, return of menstruation, and even fruitful pregnancy, has followed partial removal and decompression of the growth, presumably from relief of pressure on some remaining glandular tissue. In the case referred to in Fig. 5 sexual desire and potency have been recovered. Very exceptionally acromegalic changes have definitely receded after partial removal of the responsible tumour. Improvement of glandular symptoms has been rare, however, and as they alone are seldom a very serious inconvenience to the individual, they do not constitute an indication for operation at present. The persistence of severe headache and progressive failure of vision, on the other hand, are symptoms which demand relief more urgently. When the position is explained to the patient he is usually willing to submit to operation on these grounds. It is of the utmost importance that surgical treatment should be carried out reasonably early, as the risk is less at this time and as marked benefit to vision is assured. The frequent examination of the visual fields and acuity usually furnishes us with dependable evidence regarding the behaviour of the tumour. Operation should be strongly urged when the

visual fields or acuity are progressively decreasing, and also in cases of any severity, if actual improvement in these respects is not occurring spontaneously.

**The Adenoma.**—The impossibility of total removal in practically all cases coming to operation must be clearly recognized in the first place. All those with large experience in this field of surgery are in agreement on this point. The impropriety of exposing the patient to what is necessarily a very hazardous attempt on the basis of so forlorn a hope is obvious. This being the case, we have to reckon with the likelihood of further enlargement of the growth after partial removal at operation. If this subsequent enlargement is allowed to occur in an upward direction the temporary benefit gained by a partial removal will be lost. The only means of preventing upward extension is to induce the enlargement to take place in a downward direction. This implies the creation of a sufficient breach in the bone and dura of the sellar floor, which can only be effected by an approach from below. In other words, a sellar decompression by the transphenoidal route is indicated. Since the pressure within the cranium is higher than that in the sphenoidal sinus the growth is partially extruded into the latter, and any further enlargement tends to take place in a harmless downward direction.

The fear of sepsis has deterred some from this operation, but extensive experience has shown this objection to be negligible in comparison with the advantages. It is true that a potentially septic field is traversed in the operation from below, but the relationship of the adenoma to the leptomeninges renders the potential sepsis of little practical significance. The tumour originates in the sella, below the cisterna chiasmatis of the subarachnoid space, and, in enlarging, it lifts the cistern away from the sella turcica. The tumour itself constitutes a thick barrier between the leptomeninges and the danger zone of the sphenoidal sinus. It is instructive to note that those who have recorded by far the largest series of pituitary operations are now in agreement that the transphenoidal procedure is the operation of choice for the adenoma. Hirsch (1926) and Frazier (1925) record excellent results, and apparently base their preference on the much lower mortality rate which the operation has given in their hands as compared with the intracranial approach. Cushing's preference is influenced less by the comparative mortality rate than by the degree of benefit which the operations confer. His statistics (1925) show a mortality of 7.38 per cent. in a total of 203 transphenoidal operations, and this figure has been reduced to 2 per cent. in his last fifty cases. The fatalities following thirty-five transfrontal operations have been 5.7 per cent. In his hands, therefore, there is little to choose between the two, and the risk in either case is indeed very slight considering the nature of the malady. At his clinic the much more durable benefit derived from the transphenoidal operation, as contrasted with the usually temporary relief gained by the transfrontal method in adenoma cases, has been most striking and is the important factor. Thus, from every point of view—the comparative simplicity of the technique, the low mortality rate, and the more permanent relief to the patient—the transphenoidal procedure is the operation of choice for the pituitary adenoma.

As performed by Cushing, the operation involves no external incision. The frenum of the retracted upper lip is incised and the anterior edge of the nasal septum exposed. A submucous resection of the septum is carried out. Between the layers of muco-periosteum thus separated a speculum is passed to the antero-inferior wall of the sphenoidal sinus. When the latter has been removed the bulging floor of the sella lies exposed. The floor is in turn removed, producing an aperture which varies from 10 to 20 mm. in diameter. The dural capsule of the tumour is now incised. As a rule, the soft, tense neoplasm partially extrudes itself at once through the incision. So much of the growth as is thus spontaneously forced out is removed with the spoon. Occasionally a tumour of unusually firm consistence will not come down at the time of operation. In these circumstances a fragment may be removed for examination, but no attempt should be made to clear out the contents of the sella. In the course of a few days or weeks the tumour will become moulded to the shape of the

aperturo under the influence of normal intracranial pressure, and it will then slowly descend. Convalescence is usually smooth, and the patient is able to leave hospital in ten or fourteen days. Patients frequently notice the improvement of vision so soon as they recover consciousness. The results in the restoration of vision are often dramatic (Fig. 5). The post-operative prognosis is difficult to give at present. Formerly from five to eight years of freedom from symptoms could be expected. To-day x-ray treatment is found to have a very powerful influence on these adenomata, and it is to be anticipated that the duration of benefit after operation will be greatly prolonged by this means. In exceptional cases the transfrontal operation as described below may be carried out as an adjunct to the transphenoidal procedure for an adenoma in which there is evidence of a large intracranial protrusion which will not descend satisfactorily into the decompression. In the event of recurrence of visual symptoms the fibrous tissue which eventually forms around the extruded growth may be freed by a second transphenoidal operation and further extrusion thus permitted, or a further portion of the growth may be removed by a transfrontal approach.

#### The Suprasellar Tumour.

The primary factors which dictate the mode of surgical attack on these tumours are their relation to the leptomeninges and the possibility of their total removal. As already indicated, these neoplasms grow primarily in the cisterna chiasmatis. As they enlarge, therefore, they displace this portion of the subarachnoid space and remain surrounded by the leptomeninges, so that the outer layer of the pia-arachnoid membrane lies between the growth and the base of the skull. An approach from below would necessarily involve the opening of the leptomeninges and subarachnoid space under possibly septic conditions before the tumour could be reached. This consideration alone renders a transphenoidal operation out of the question for a tumour originating above the sella turcica. The second factor which demands an approach from above is that a proportion of suprasellar growths are amenable to complete removal. While the adenoma is a soft diffuse neoplasm, and insinuates itself between the layers of the basal dura, the suprasellar tumour is usually of a more circumscribed character, and lies entirely within the dura. Frequently it cannot be completely extirpated on account of its size or its relation to important structures. Nevertheless, this should be the ideal of its operative treatment, and has been successfully accomplished in a proportion of cases. Ample access to the region of the optic chiasm and interpeduncular space is essential, and can only be provided by an approach from above. Various operations have been advocated for exposure of this region—transfrontal, fronto-temporal, and temporal. That which has given the most satisfactory results and is now employed by the majority of those experienced in this field is the transfrontal procedure. An osteoplastic flap is elevated from the right frontal bone (in the absence of special indications for a left approach); the flap hinges in the temporal region. The dura is separated from the roof of the orbit and incised along the lesser wing of the sphenoid and outer edge of the cribriform area. Elevation of the frontal lobe, protected by its dura, now gives excellent access to the hypophyseal region. If possible, the tumour or cyst is removed completely. If this cannot be accomplished, considerable, though comparatively temporary, relief can be expected from partial removal.

The role of subtemporal decompression in cases of pituitary tumour is a very minor one. It is obvious from the position of the lesion and the fixation of the optic nerves to the base of the skull that no benefit to vision could be anticipated by decompression from above—rather the reverse. Since general hypertension in association with pituitary disease is usually due to a secondary progressive hydrocephalus, a decompressive operation fails to relieve it. It could only be reasonably used as a palliative for hypertension in a patient already hopelessly blind, and when the hypertension was due to the size of the growth without complicating hydrocephalus. These are very exceptional circumstances.

I do not wish to belabour the subject of the choice of operation unnecessarily, but I feel that it is a most important one. The pioneers of pituitary surgery naturally inclined to favour one or other method in their early endeavours, but, as already indicated, the recent views of those with greatest experience are unanimous in favouring the transphenoidal operation for the adenomata and

the transfrontal operation for the suprasellar tumours. It is also their experience that a correct differential diagnosis can now be made in the vast majority of cases. When doubt does exist as to the nature of the lesion a transfrontal exploration is the only safe course, as the risk of exposing an intrameningeal tumour through the sphenoidal sinus would be extreme. The surgeon is responsible for the method which he adopts, and he must be familiar with the diagnostic features of the various lesions which may give rise to hypophyseal symptoms, in order that he may assess their significance and direct his procedure accordingly.

#### Radiotherapy.

Deep radiation has a powerful destructive influence on the neoplastic cells of the pituitary adenomata, but not on other tumours of this region so far as is known. That caution must be exercised in employing it as a primary measure in the treatment was shown by a trial of preliminary radiation in a series of cases at Cushing's clinic. Two of these cases indicated the danger of radiotherapy in the absence of a sellar decompression opening. In them such a degree of reactive swelling occurred in the tumours that the pressure symptoms became acutely aggravated, and immediate sellar decompression had to be carried out. In cases with very early visual symptoms a trial of radiotherapy without previous operation may be justifiable. Certainly, when the optic fibres are already seriously compressed, it should not be employed until a transphenoidal operation has been done. As a post-operative adjunct it is most valuable, and undoubtedly promotes the improvement which has followed the operation alone. There is every reason to anticipate that it will go far in retarding or preventing further enlargement of these growths. Several treatments are usually given on successive days before the patient leaves hospital, and this should be repeated at intervals of one or two months, according to the indications of the particular case. The visual fields are, of course, kept under frequent observation meanwhile.

Radium has been employed by some by means of an endonasal applicator. The results, so far as I know, have not been superior to those of x-ray treatment, and a number of complications, such as necrosis of adjacent bone, have been recorded.

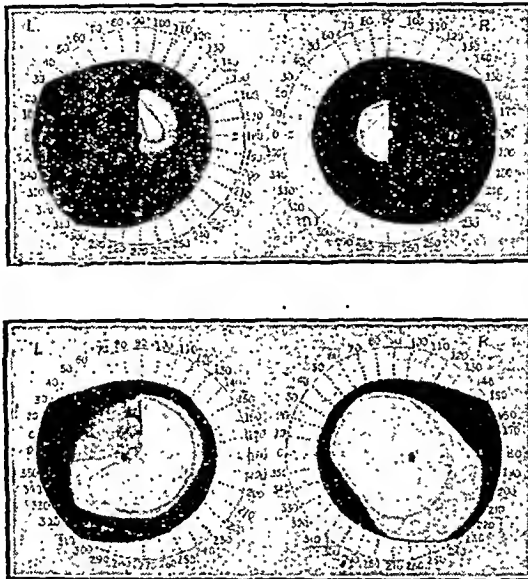


FIG. 5.—Visual fields one day previous to and three months after transphenoidal operation for pituitary adenoma. (Charts by Dr. H. M. Traquair.) R. S., male, aged 47; Deaconess Hospital, 1926; chromophobe adenoma, hypopituitarism. Subsequent radiotherapy by Dr. Hope Fowler.



*Medicinal Treatment.*

*Diabetes Insipidus.*—The constant thirst and great frequency of urination associated with this malady are most distressing symptoms. They can be greatly relieved or even abolished by administration of pituitary posterior lobe extract. This is most conveniently accomplished by the intranasal spray; 0.5 to 5 c.cm. of the standard preparation used in obstetrical practice is employed daily or twice daily, according to the demands of the particular case. The effect is obviously of great interest in relation to the function of the posterior lobe, though it cannot yet be explained in terms of normal physiology. It is interesting to note that incidental pyrexia and simple lumbar puncture may occasionally cause temporary cessation of polyuria and thirst.

*Pituitary anterior lobe and "whole gland" administration* by various means has been extensively employed in clinical cases of hypopituitarism (and in many other conditions). A study of the literature on the subject is by no means convincing as to the efficacy of this treatment. Nevertheless, a sure foundation is being laid at present in the experimental laboratory, where very definite amelioration of the symptoms of artificial hypopituitarism has been obtained in mammals by intraperitoneal injections of large doses of anterior lobe substance. The active principle has not yet been isolated, and suitable means for its administration to the human subject have not yet been contrived. One can hardly doubt that before long such means will be at our disposal.

## DISCUSSION.

Mr. M. L. HINE (London) treated the investigation of cases suspected of pituitary disorder from the ophthalmological point of view, and mentioned the importance of using various sizes of test objects, or in some cases coloured test objects. It was frequently found that while little change in field was present in one quadrant with a 10 mm. white test object, yet with a 5 mm. or 3 mm. test object, or with a red test object, there was definite alteration. If a smaller test object, such as the normal 5 mm. white one, was used at the start, and a defect found, it was necessary in making a prognosis to test the field with larger objects (10 mm. or 20 mm.), or, more accurately, with those numbered by the degree of angle subtended on the retina. It was evident that if, using the larger test objects, a field was obtained, there was not complete atrophy of the conducting fibres, and the prognosis was correspondingly hopeful after the tumour pressure had been removed. In addition to Mr. Dott's criteria for operation—namely, pressure symptoms indicated by headaches and increasing depreciation of visual fields—Mr. Hine urged the importance of taking very careful fields with graduated test objects. Walker's papers on this subject from Cushing's clinic should certainly be studied by all neurologists and ophthalmologists. Traquair's paper in the *British Journal of Ophthalmology* in 1917 would also repay careful study.

Dr. W. J. ADIE (London) said that the part of Dr. Gordon Holmes's comprehensive paper which he would like to amplify was that dealing with the relation of the pituitary body to the nervous structures that lay above it in the floor of the 'tween-brain (thalamocephalon). There was no need to emphasize the close anatomical connexions between these parts; the posterior lobe, the nervous part of the gland, was nothing more than a process from the floor of the 'tween-brain with which it was connected by stout bundles of nerve fibres in the stalk. The anterior lobe; the glandular portion, was continued upwards in the stalk by a process which certainly reached the region of the chiasma, sometimes extended to the tuber cinereum, and even further into the substance of the 'tween-brain. Secretions from the gland also found their way to the 'tween-brain through the stalk. The vegetative centres in the 'tween-brain therefore were bathed by glandular secretions, while the gland in its turn was subject to a nervous control from these centres, directly through the stalk in the case of the posterior lobe and indirectly through the sympathetic in the case of the anterior lobe. This close anatomical relation suggested an equally close physiological relation. Dr. Adie submitted that these two parts—the

pituitary body and vegetative centres in the floor of the 'tween-brain—formed an intimately connected physiological mechanism which might be called the "pituitary-'tween-brain system." He further suggested that the same symptoms and syndromes might arise from disease strictly confined either to the glandular or to the nervous part of this system. As Dr. Holmes had said, Karpus and Kreidl first showed that various disturbances in the vegetative nervous system could be produced by experimental lesions in different parts of the 'tween-brain; others had obtained results which proved the existence in this part of centres the integrity of which was essential for normal temperature regulation, fat, water, and sugar metabolism, and activity of the sex gland. Destruction of the temperature-regulating centre, for example, rendered animals poikilothermic, so that it was impossible to cause a rise of temperature in them by infection or by any of the many methods by which fever might be produced experimentally in normal animals. Further, it had been shown that minute lesions confined to the 'tween-brain, and certainly sparing the pituitary body and its stalk, could cause glycosuria or polyuria and be followed by obesity and atrophy of the genitals; clinical evidence—for example, the behaviour of the temperature in encephalitis lethargica—supported these results; the sudden rises of temperature in this disease without corresponding increase in other symptoms were most easily explained by assuming that inflammation had affected the temperature-regulating centre (Economo). The speaker was convinced that irregular pyrexia might be the only symptom for many months in patients who ultimately developed the post-encephalitic Parkinsonian syndrome. In two of his cases the diagnosis of tuberculosis had been made in the premonitory stage. Again, moderate or extreme obesity, slight or severe polyuria, glycosuria and dystrophia adiposo-genitalis, were well known sequels of encephalitis lethargica—a purely nervous disease with a predilection for the grey matter in the mid- and 'tween-brains—and in other conditions affecting the infundibular region. These and similar facts had caused some to maintain that the above-mentioned symptoms were always of 'tween-brain origin and that the pituitary body never played any part in producing them. It had been said, for example, that diabetes insipidus was always of 'tween-brain origin. Dr. Adie was sure that this was not true. A case of his had been published by Dr. Piney, in which the diagnosis of secondary deposit of carcinoma confined to the posterior lobe of the pituitary body was confirmed *post mortem* in a woman with severe diabetes insipidus whose breast had been removed for cancer. One observer collected thirty-two cases in which lesions strictly confined to the posterior lobe caused polyuria. Those who denied that polyuria might result from uncomplicated pituitary disease asked why this syndrome was not more frequent in pituitary tumours, and why, with an increasing lesion, polyuria often ceased. The reason seemed to be that polyuria occurred when the posterior lobe alone was diseased; if both lobes were damaged there was no polyuria, and when disease spread to the anterior lobe it ceased (Hanu). The pituitary body certainly played a part in the normal regulation of temperature, for it had been shown that extirpation of the gland or division of its stalk produced exactly the same results as injury to the centre in the 'tween-brain, and that injections of pituitary extract counteracted the effects of this extirpation. He asked if the temperature was lower than normal in these patients; if there was anything noteworthy about the daily variation in temperature; had any of them passed through an acute infection? Unequivocal experimental and clinical evidence existed in favour of the view that disease confined to the pituitary body could also cause obesity, atrophy of the genitals, and other endocrine disturbances. He was forced, therefore, to conclude that the symptoms under consideration might be produced by a purely nervous or a purely glandular lesion, and that the pituitary body and vegetative centres in the 'tween-brain worked together as equivalent parts of an endocrine nervous system. At present investigators seemed to be divided into two camps—those who maintained that the pituitary alone was responsible for certain symptoms, and those who attributed them all to disease in the 'tween-brain, denying that the pituitary

played any part in their production. If the view Dr. Adie had put forward was correct, both assumptions were wrong; as Professor Schiff had said, it was not a matter of "either-or" but of "not only—but also."

Dr. H. GARDINER-HILL (London) referred particularly to the question of obesity and growth disturbances in children and their relation to pituitary disease. A considerable proportion of cases was suggestive of dyspituitarism, including a number of apparently the true Fröhlich type, in which there was no demonstrable evidence of a pituitary or suprasellar tumour. In over a hundred children with clinical features suggestive of pituitary disturbance, and in whom the carbohydrate metabolism was altered in the way which Dr. Gordon Holmes had mentioned as characteristic of pituitary disease, they found evidence suggestive of pituitary or suprasellar tumour in only about 10 per cent., and those were cases of the true Fröhlich type with lack of growth and gonital hypoplasia. The tumour, though unverified, appeared to be suprasellar, judging by the changes in the optic discs and visual fields and the absence of any enlargement of the sella. There was also a high proportion in which the syndrome of obesity, overgrowth, and early development occurred without evidence of pituitary tumour. In these children the obesity was often extreme at the age of 14 or 15; they might weigh as much as 15 or 20 st. The condition very frequently developed after one of the infectious illnesses of childhood, and the obesity was first noticed during convalescence. It appeared especially liable to develop if the infectious illness occurred at the time of the second dentition or at puberty. In some cases there was undoubtedly a diätetic factor, but in the large majority there was no history of alteration in diet or of overfeeding or lack of exercise. The onset of obesity was accompanied by marked acceleration of growth, which continued until puberty, when it ceased. Puberty occurred early, at 11 or 12, and growth then ceased. If an x-ray examination of the bones was made, it was found that the bone development was advanced, and in many cases the epiphyses were already fused. The skeleton was large, and the condition appeared to be the opposite of that found in Fröhlich's syndrome, where there was delay in the appearance of the centres of ossification and late fusion of the epiphyses. The secondary sexual characteristics developed early, and in girls menstruation commenced before the usual age. It might at first be excessive; in a considerable number, however, it was normal, though after a few years many patients suffered from periods of amenorrhoea. Estimations of the sugar tolerance showed that the carbohydrate metabolism was abnormal; in some the tolerance was decreased, in others it was markedly increased. There was seldom any alteration in the sella turcica, though in a fairly large proportion it was frequently found to be rather below the average size. This syndrome was relatively frequent in the speaker's series of cases, while the type described originally by Fröhlich was comparatively rare. The question arose whether they were justified in attributing this overgrowth obesity syndrome to pituitary disturbance in the absence of neighbourhood signs. If there was any evidence of pituitary tumour the clinical features would fit in very well with those of the mixed type of adenoma described by Mr. Dott in his paper in the *British Journal of Surgery*, in which symptoms of the hyper- and hypo-pituitary syndrome were combined; but in the speaker's cases there was seldom any indication of tumour. One striking point of similarity, however, in the two syndromes was that in both cases the hyper- and hypo-pituitary symptoms developed concurrently. There is other recent work of interest in this connexion. Evans and Long, in their work on the intraperitoneal injection of anterior lobe extract in rats, not only found marked acceleration of growth with increase in size of the skeleton, but they also remarked on the large deposit of fat which was found in the injected animals.

Mr. GEOFFREY JEFFERSON (Manchester) dealt with the question of operative treatment, and more particularly the relative merits of the transfrontal and trans-sphenoidal methods of approach. As a mode of access for super-pituitary lesions, for the Rathke pouch tumour, and supra- or para-pituitary endoteliomas, the transfrontal operation

was obviously the method of choice, and there was no disagreement on this point. It was in the treatment of the true intrasellar tumour, the pituitary adenoma; that opinions had diverged almost to the point of bitterness. At the best, what could be done with the pituitary adenoma? Could they expect to remove it completely, or did they hope at most to relieve local pressure? There could be but one answer in general to this question. The pituitary tumour was not a malignant growth. It was a serious, and indeed a fatal, tumour only because of its position, which endowed it with the power of destroying sight, of paralysing the ocular muscles, of involving the trigeminal nerve by extension, of projecting upwards into the third ventricle and so interfering with cerebro-spinal fluid drainage, and of causing such local pressure damage as might give rise to urinate attacks and the like. They could relieve these pressure effects by either of two methods, which were in their essence quite different. By the transfrontal operation the tumour might be directly attacked and as much as possible removed by curette and by suction. The beneficial results were here obtained by actual reduction of tumour mass. The trans-sphenoidal operation, on the other hand, was a local decompression, the floor of the sella being removed widely and crucial incisions being made in the inferior part of the capsule of the adenoma to allow of its extruding itself downwards, extra-cranially, where it could do no harm. The improvement looked for here was obtained by the reduction in intracranial tumour mass by its extra-cranial protrusion. The adenomata were on the whole of soft consistency, often cystic in part at least, and when the capsule was incised the adenomatous tissue escaped and could be removed. But no attempt was made to scrape the tumour out from the sella, and ill results were likely to follow if this was done, because a dam must be left behind to block the way from the nose through to the intradural space. The transfrontal operation would appeal most readily to the surgeon, because it was an osteoplastic operation of much the same type as that which he was often doing there, and elsewhere on the skull, for other conditions. The trans-sphenoidal route was an unfamiliar one to him, involving as it did a submucous resection of the nasal septum and the chipping away of the anterior wall of the sphenoidal air sinus; but it was not a very difficult matter with suitable instrumentation and help in the early days from specialist colleagues. The speaker had dwelt on the essentials of the two operations, because the objects of the trans-sphenoidal operation were not well understood generally in this country. Its disadvantages leapt to the mind immediately, the chief of these being sepsis. Cushing had repeatedly tried to dispel this boggy, and in his last series of fifty cases had only one death. While none of them were likely to rival these figures yet, they would get nearest to them by limiting the operation to its essential, a sellar decompression. It was obvious that the best results would occur with the soft tumours, and that the hard type, almost like tough thyroid adenomatous tissue, would not give equal results. But even these, as he had reason to know, were capable of slowly extruding themselves, and fortunately this type was distinctly uncommon. The opponents of this route were apt to point to massive adenomata extending high into the skull and ask what the trans-sphenoidal operation could do for such as these. Little was likely to be gained by argument on pathological curiosities, for which probably nothing could be achieved by any operation. The great advantage of the transfrontal route was that it allowed of a correction of the diagnosis, as, for instance, where the sella had been destroyed by a distended third ventricle in hydrocephalus, cases which they had all seen. So that where there was doubt the transfrontal route was unquestionably the one to follow.

Dr. ELIZABETH C. EAVES (Sheffield) said that Dr. Gordon Holmes and Dr. Adie had referred to the theory advanced by several workers on the subject that lesions in hypothalamic nerve centres might bring about conditions of infantilism and the train of symptoms occurring in hypopituitarism. She was interested in Dr. Adie's statement that either a glandular or a nervous lesion might be the cause of dyspituitarism, as her own observations inclined her to the same opinion. She mentioned two cases of

hypopituitarism in which she examined the brain and the pituitary; in neither case was there a tumour. The first was a girl of 16, very adipose, of stunted growth and with an abnormal condition of the limbs. There was no lesion discovered in the brain, but the pituitary was about half the normal size and considerably fibrosed. The second case was one of infantilism resembling somewhat the Lorain type, and polyuria was present. The whole brain was very abnormal, the condition being the rare one of hypertrophic sclerosis. The pituitary was small, compressed by a dense capsule of connective tissue, and both anterior and posterior lobes were abnormal. In one case of epidemic encephalitis, with Parkinsonism and great wasting and terminating by respiratory failure, there were marked changes in the pars anterior of the pituitary which might account for the cachexia.

Apart from lesions in the hypothalamus and in the pituitary, there was possibly a third way in which hypopituitarism might be brought about—namely, by changes in other ductless glands. It was noteworthy that in children treated for diabetes with insulin for long periods the appearance was rather suggestive of dystrophia adiposogenitalis. She thought it worth while to ascertain if repeated injections of insulin in rabbits caused any alteration in the size and histological appearance of the pituitary. It should be mentioned first that the weight of the pituitary could be altered by several conditions; thyroid feeding was found to cause a slight decrease. After thyroidectomy, three weeks previously, the weight of the pituitary in one rabbit was more than double that in a normal animal. Pregnancy usually caused a hypertrophy of the gland. In five rabbits injected for varying periods of time with moderate doses of insulin the pituitary was above the average weight in every case. The average weight of the pituitary in fourteen control animals was 21.8 mg., that in the insulin-injected animals 30.4 mg. Histologically there were changes both in the pars intermedia and pars anterior. In the pars intermedia there was an enlargement and blurring of the cells, which sometimes merged into a mass of secretion. In the pars anterior the number of eosinophils seemed increased; the cells were larger than normal and confluent. The changes observed indicated increased activity of the pituitary. In a second series of animals insulin was given in about five times the amount in the first series. Cysts were present in the pars intermedia, and the cells of the pars anterior were chiefly chromophobe. These changes probably signified an exhausted condition of the gland. There was another way in which changes could be brought about in the pituitary. In examining the pituitary glands from rabbits in which Dr. G. A. Clark had cut the right vagus at varying intervals of time previously, she was struck by the large size of the glands in many cases, and was led to investigate the histological appearances. Up to the present the appearances found had not been compared with those of strict control animals, but the difference between the pituitary after vagotomy and that in normal rabbits was a marked one. Dr. Clark had suggested (in a paper now in the press) the possibility of inhibitory fibres in the right vagus to the islets of Langerhans. Removal of this inhibitory influence would cause increased insulin production. The changes found in the pituitary glands of the vagotomized animals were found to be very similar to those previously found in the insulin-injected rabbits.

Dr. C. G. IMRIE (Sheffield) described a case of polyuria following encephalitis lethargica which he had recently had the opportunity of investigating; the polyuria was controlled by injections of pituitrin. For diabetes insipidus pituitrin was not necessarily a specific, as J. B. S. Haldane had shown that the substance would control the polyuria following the ingestion of large quantities of water. In cases with a low blood-sugar figure the effect of pituitrin was to cause an increased rise in the percentage of blood sugar, thus rendering the growth more normal. Indeed, 0.5 c.cm. of pituitrin had a greater effect on raising the blood sugar than 50 grams of glucose. It was conceivable that in the pars tubalis there was a sympathetic nervous control of the pituitary gland similar to that controlling the adrenals.

## TREATMENT OF SPIRAL FRACTURES.

A PAPER READ IN THE SECTION OF SURGERY AT THE ANNUAL MEETING, NOTTINGHAM.

BY

A. B. MITCHELL, O.B.E., B.Ch., F.R.C.S.I.,  
Surgeon, Royal Victoria Hospital, Belfast.

(With Special Plate.)

SPIRAL fractures, as revealed by x rays, are much commoner than was formerly supposed. In the absence of complete reduction of the deformity and the maintenance of accurate apposition of the fragments, this fracture gives rise to very prolonged incapacity. Treatment is complicated by two difficulties: (1) the tendency of the sharp ends of the fragments to become deeply and firmly embedded in the muscles of the limb; (2) by the rotation of the distal fragment which, if it can be corrected, is very difficult to keep corrected.

A good stereoscopic x-ray photograph which will enable us to decide whether the spiral is right or left handed is essential. This having been obtained, reduction under full anaesthesia is attempted, rotation corrected, and suitable apparatus to maintain extension and apposition is applied.

At the end of a week a further skiagram is taken. It is surprising how often it will show either (a) that reduction has been incomplete, or (b) that rotation of the fragments has recurred. In this event, given favourable surgical conditions and efficient operative skill, there should be no hesitation in recommending operation.

The following method will be found simple, rapid, and efficient.

1. The fracture is exposed by a suitable incision.
2. The ends of the fragments are freed and brought out into the wound. (The medullary canal will be found plugged with organized blood clot, which is not disturbed, except any projecting portion which may prevent accurate locking of the fragments.)
3. A piece of silver wire is now slipped over each end of the bone.
4. The bones are replaced, and an assistant extends and rotates till the fragments are accurately locked.
5. The wires are placed one at each end of the spiral, where they are secured by twisting slowly and firmly till they have a tight grip.
6. The wires are then cut short and the ends turned down against the bone.
7. The wound is closed in the usual way.

As the wires do not penetrate the bone there is no tendency to rarefying osteitis with subsequent loosening, which is the great defect in methods involving the use of screws or wires traversing the cancellous tissue.

If the spiral is a very long one it is possible to substitute kangaroo tendon or catgut for the silver wire, using three or four strands. It is difficult, however, to tie these substances sufficiently tight to ensure absolute immobility; apposition is consequently not so perfect as with wire. There is, however, an obvious advantage, in the fact that no persistent foreign body is left behind.

Treated in this way the limb need only be fixed in splints for a short time and muscular movements commenced at the end of a week. Patients with fractures below the knee may be allowed to walk at the end of a month, and enjoy full use of the limb in two months. A longer time must, of course, be allowed for the femur. In either case the period of incapacity will be reduced to a minimum owing to the accuracy of apposition, and the small amount of callus required for repair.

[Photographs of cases illustrating the operation and its results were exhibited. See Special Plate.]

## DISCUSSION.

Professor R. E. KELLY (Liverpool) said that torsional strain always produced a spiral fracture, and he demonstrated how the direction of the force influenced the form of the fracture, and how on one side the periosteum was usually preserved. A knowledge of the mechanism of production was essential in order to bring about reposition.

Mr. E. FINCH (Sheffield) said that he had performed the same operation for dislocation of the clavicle as Mr. Mitchell, but he used kangaroo tendon, and also made a new capsule over the joint with fascia lata. A professional footballer upon whom he operated was able to play again in six months.

Sir W. DE COURCY WHEELER (Dublin) said that he had given up operating on all these fractures for a number of years now. He used spinal anaesthesia for reduction and, if necessary, put a pin over the tendo Achillis to obtain a sufficient grip for traction. This was done on the fracture table, and plaster was then applied. He only operated upon cases which proved intractable to this treatment, and then he only replaced the fragments and treated the limb as he had outlined. In children, although reduction might be very imperfect, in two to three years the anatomical results had proved extremely good.

Mr. MITCHELL, in reply, said that he did not recommend routine operation upon fractures, but he thought it caused less disability if operation was performed in some cases.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### RUPTURED SPLEEN: SPLENECTOMY: RECOVERY.

THE following brief account of a somewhat unusual case—namely, ruptured spleen, splenectomy performed after four days, with recovery, despite the supervention of empyema as a post-operative complication—may be of sufficient interest to merit publication.

John R., aged 9, was admitted to the Bury Infirmary on June 9th, 1925, at the request of his own doctor, who suspected the possibility of injuries to his ribs with intrathoracic complications.

**Previous History.**—The patient stated that, four days before admission to hospital, he fell from the window-sill at school, a height of about six feet, but arose unhurt. When he got home he felt dizzy and faint, and was put to bed, his own doctor being sent for, who gave him a bottle of medicine. He felt better the next day, but was still kept in bed. On the evening of the third day he became rather restless, and complained of vague abdominal pain. His removal to hospital was ordered early the following day.

**Examination.**—The patient was extremely restless and pale, pallor of the lips and finger-nails being very marked, and he complained of intense pain in the upper abdomen, which was referred to the left shoulder. Temperature 97° F., pulse 132 and very weak, respirations 32 and very shallow. There was marked tenderness all over the left hypochondriac and the epigastric regions, and movable dullness in the flanks was easily demonstrated. No fractured rib could be found clinically. I informed the parents that the child had a ruptured spleen, and advised immediate operation as an absolute necessity; to this they assented.

**Operation.**—The abdomen was opened by a right paramedian incision above the level of the umbilicus, and was found to be filled with free blood. The spleen, which was delivered through the abdominal wound, was torn at the upper pole (the tear extending through the entire thickness of the organ); it was removed, and the abdomen closed. Immediately on his return to the ward he was transfused with a pint of (citrated) blood and started on continuous rectal salines by the Murphy drip method.

**Progress.**—For two days his condition was very precarious. The salines, with 5 per cent. glucose and half an ounce of brandy to the pint of saline, were continued, and 1/2 c.cm. doses of pituitrin given hypodermically every four hours during the day and night until twelve doses had been given (during the forty-eight hours). On the third day he rallied, and was put on a sparing but nourishing fluid diet. Thenceforth he began to mend very rapidly; the diet was increased, and liberal amounts of minced raw sheep spleen, spread on bread, were given. On the sixth day after operation he developed a troublesome cough, and appeared ill. The pulse rate increased from 80 to 90 to 126 per minute, and the respirations from 28 to 46 per minute. He remained ill for four days, the temperature rising to 100° F. or more each night and falling to normal in the morning. There were profuse night sweats. Examination of the chest revealed loss of breath sounds and marked dullness over the left base. When aspirated, a syringeful of pus was drawn off.

**Thoracotomy and Drainage.**—Under local (novocain) infiltration anaesthesia a portion of rib was resected and the empyema drained. The nourishing diet was continued and stimulants were given. On the fifth day after thoracotomy the tubes were entirely dispensed with, and by the sixteenth day the wound was perfectly healed. After this the patient made a very rapid and uneventful recovery, and was discharged on July 30th in an excellent state of convalescence and with both the abdominal and thoracic wounds perfectly healed.

He came to see me recently for examination, and now, fifteen months after the operation, he is a fine healthy lad, with the left lung functioning fairly well. The only sequel I can find is a definite lateral curvature of the spine (scoliosis). The blood picture is perfectly normal, without even the faintest suggestion of a secondary anaemia.

I am extremely indebted to Dr. J. C. Turnbull of the honorary surgical staff, under whose care the case was admitted, for kindly permitting me to publish these details.

I. R. ROSIN, M.B., B.Ch., B.A.O. Univ. Dubl.  
Senior House-Surgeon, Bury Infirmary.

#### TWENTY-TWO YEARS A CARRIER.

A SMALL outbreak of enteric fever—five cases with one death—occurred in Edinburgh in February, 1926. Milk was suspected as its cause, and the infecting supply was tracked down to a dairy in Dumfriesshire. Dr. W. S. I. Robertson investigated conditions in the dairy, and obtained blood, urine, and faeces from those engaged (three persons) in milk distribution. This material was subjected to bacteriological examination (enterica group) with the following result:

Mrs. X.—Serum, 1 in 50, showed complete agglutination against *B. typhosus*; 1 in 150 incomplete. Both faeces and urine were negative.

Mr. X. and D. X. (the other persons examined) gave negative results.

Mrs. X., showing this serum titre, was further examined. She stated that she had been in Pilton Fever Hospital in Edinburgh suffering from typhoid fever twenty-two years ago. This illness she had quite forgotten all about.

Further specimens of faeces in glycerin saline were obtained from her and sown in brilliant green peptone water, and plated to six MacConkey plates. From these plates three colonies were isolated, each of which was true to sugars, and agglutinated with Oxford serum to 1 in 1,000 and to her own serum to 1 in 1,250. This procedure was repeated a few days later with a similar result. She was removed from the dairy.

The interest here is the long period of time—namely, twenty-two years—during which she remained a carrier. The case is published at the request of Dr. John Ritchie, county medical officer of health, Dumfries.

W. LEONARD FORSYTH, M.B.,  
Major I.M.S. (ret.), Bacteriologist to Dumfriesshire.

#### ERYTHEMA NODOSUM IN MEMBERS OF A FAMILY.

THE following cases are, I think, worthy of record, owing to the fact that three different members of the same family, living in the same house, contracted the same uninfected disease.

On June 4th, 1926, I was called to a girl aged 12 years. She had a temperature of 100° F., pulse 110, sore throat, and acute pains down the lower part of her legs. I found a well marked purpuric urticarial rash, thickly distributed over both tibial regions. The patches were exquisitely tender to touch. With absolute rest the symptoms soon subsided.

When visiting her on June 10th I found her grandmother, aged 53, confined to bed with exactly the same symptoms—rash over the tibial region tender to the touch, sore throat, rapid pulse, and high temperature.

On visiting both my patients on June 14th I was astonished to find a man, aged 34, lying in bed with a temperature of 102.5° F., pulse 120, sore throat, and the same purpuric urticarial rash, distributed in patches over the tibial regions, but, in addition, there were very small patches over both elbow regions and also in the spinal region around the vertebra prominens.

The patients did well, with complete rest and salicylates as the main treatment, with the exception of the girl, who developed a systolic regurgitant murmur, which persists at the time of writing.

I confidently diagnosed erythema nodosum in each case, but on searching the literature on the subject I can find no record of this seemingly "infectious" nature of the disease.

D. GORDON ROBINSON, L.M.S.S.A. Lond.,  
Surgeon, Hull and Sculcoates Dispensary.

## British Medical Association.

## CLINICAL AND SCIENTIFIC PROCEEDINGS.

## ULSTER BRANCH.

THE opening meeting of the Ulster Branch for the session was held in the Medical Institute, Belfast, on November 18th. The retiring President, Dr. D. P. GAUSSEN of Dunmurry, thanked the members of the Branch for their cordial and kind support during his year of office, and introduced his successor, Dr. JOHN S. MORROW, who took the chair, and read his address entitled "Some points in medical examinations for life assurance."

Dr. Morrow said that the British Medical Association was fast nearing its centenary; it was founded in 1832, and now numbered 32,000 members. The Ulster Branch had striven to keep before it the objects of the Association—to increase and diffuse medical knowledge, to promote research, to watch over and defend the interests of the profession, and to encourage and foster friendship and mutual esteem among medical men that they might the better discharge their onerous and often trying duties to their patients and to the public. These ends were all the more indispensable now that the profession was exposed to attacks by organizations which promulgated in journals opinions which they, as trained and educated medical men, could not but look upon as dangerous to the community.

*Medical Examination for Life Assurance.*

The examination for life assurance was generally a simple and routine matter to the experienced physician; but many young men, trained in hospital to look for and to diagnose disease, found a difficulty in estimating the expectation of life of an apparently healthy man. To do so with confidence and reliability required a sound professional knowledge, good common sense, as much experience as possible, carefulness, and a certain discerning sympathy with the frailties of life. The medical examiner and referee was only one link in the chain of evidence; the reports of the agents and local managers, of the friends, and the final judgement of the chief medical officer at headquarters, were all evidential. A young medical practitioner should weigh the answers of the overconscientious and garrulous applicant; of the unwilling proposer out of whom he must dig all information; of the important business man who says there is no necessity for him to strip; of the hustling, well nourished, florid type who says he has never been refused; and of the elderly man who is applying for life assurance for the first time. As regards the actual examination, this should always be made without anyone present, and in a good light; male applicants should be stripped to the waist. Much stress was rightly laid upon the careful examination of the apices of the lungs, but the bases must never be omitted. Life assurance companies always laid great stress on heredity. Early senile decay and longevity were both found in families. One death from cancer in a relation might be ignored, but two demanded loading. In tuberculosis both the tendency to consumption, which was hereditary, and the accident of living with an infected patient must be considered; the older the applicant in the first instance and the longer the interval of time since exposure to infection in the second, the less was the danger. The causes of death known as "childbirth," "congestion of lungs," and "broucheitis" must always be closely and searchingly inquired into, as pulmonary tuberculosis was not infrequently eluded under such a disguise. Body weight must also be fully discussed, and where no evident cause of excess either way could be discovered, the 15 or 20 per cent. departure from average weight-height ratio must decide the acceptance or refusal. Syphilis was another factor, and opinion had become more and more stringent. It must never be forgotten that curing symptoms did not mean the elimination of the disease. Tabes and general paralysis might still be coming in the future. Companies relied chiefly on the history, the thoroughness of treatment, the absence of recurrences, and the presence of healthy children; no one

should be accepted in any case in the first three years after an initial sore, and an increased premium was demanded for the next ten years. No one acquiring syphilis after 40 should be accepted; a Wassermann test was often of great help. Albuminuria had been found present in 16 per cent. of schoolboys, and severe physical exertion would excite it in most adolescents. Its disappearance with a four-day course of calcium and a clear biochemical renal test would render acceptance possible. In glycosuria the habit in some people of eating unduly large quantities of sweets or sugar, and also the low sugar threshold of some kidneys, forming renal glycosuria, must be investigated before rejection, a blood sugar test being required. In both functional albuminuria and in temporary glycosuria no trace of the classical signs of either condition should be present. The acceptance of certain heart conditions had been said to depend on the skill and bias of the examiner; a murmur always indicated something, but it had been proved clearly, and was generally accepted, that many soft systolic murmurs were of no vital significance. An aortic systolic murmur should always be fully investigated with regard to the possibility of stenosis of the aortic orifice. The heart should always be examined both in the supine and erect positions; a mitral stenosis might manifest itself only on exertion or in the recumbent posture. This lesion and aortic incompetence were for practical purposes uninsurable, although occasionally very mild forms, where no symptoms and no cardiac enlargement were present, might be taken with safeguards. In cases of cardiac irregularity an electro-cardiograph record and the results of the exercise test should be obtained. Sinus irregularity and that due to respiration and some forms of extra-systoles did not debar acceptance, but the other forms were prohibitive. In low blood pressure careful search for tubercle should be made, and with high pressure kidney and cardio-vascular trouble in an incipient stage might be threatened.

Dr. LESLIE proposed and Professor MACILWAINE seconded a hearty vote of thanks to the President for his clear, practical, and instructive address, which was the fruit of long experience and thoughtful observation.

Dr. DARLING (Lurgan) showed a specimen of a large uterine fibroid, weighing 8 lb., that he had just removed from a pregnant woman, lately married, aged 27, without inducing abortion or performing Caesarean section. Some years ago he had had a successful case of the same nature, and although the woman aborted some weeks afterwards, yet, later, she had a successful pregnancy and safe delivery of a living son.

## CITY DIVISION.

*Treatment of Gastric Diseases.*

A MEETING of the City Division was held at the Metropolitan Hospital on November 2nd, when thirty-six members were present, and Professor HUGH MACLEAN of St. Thomas's Hospital gave an address on modern views on the treatment of gastric diseases.

Professor Maclean first discussed the normal conditions of the stomach. During a meal the hydrochloric acid and pepsin increased, and with them the sodium chloride. With digestion in progress there was a regurgitation of alkaline pancreatic fluid from the small intestine, which neutralized the acid in the stomach. Lack of gastric juice did not set up gastric symptoms, the real digestive juice being pancreatic. The stomach was not required if the food was thoroughly masticated; it acted as a feeder and prepared food for entrance to the intestine. Ulceration was associated with the action of hydrochloric acid on the stomach, since it was confined to the "hydrochloric acid area." All evidence went to show that there was no risk of cancer following ulcer of the stomach or duodenum. Only 3 per cent. of cases of cancer of the stomach gave a history of symptoms which might suggest previous ulceration. While x rays were often not very helpful in the diagnosis of ulcer of the stomach, they were nevertheless sometimes very useful in cases of suspected cancer, where they often gave definite results. With test meals 88 per cent. of hospital cancer patients showed no hydrochloric acid. In the past lactic acid had



often been confused with hydrochloric acid. Duodenal ulcer was more common than gastric ulcer, and ulceration did not occur in areas where free hydrochloric acid was not present. If a case presented symptoms suggesting cancer with achlorhydria and lactic acid present then it was almost certainly cancer. When pain disappeared on a liquid diet there was generally no ulcer. Most patients with dyspepsia had hyperacidity, the hydrochloric acid and pepsin continuing to be secreted after digestion of the meal, when they were no longer required. Gastric diseases might be divided into the functional, including hyperacidity and hypoacidity, and the organic—namely, ulcers of the stomach and duodenum, gastritis, and cancer. In gastric ulcer the operation of gastro-enterostomy should be the last resort; its usefulness depended on the fact that it rendered the stomach contents permanently alkaline. Without an operation good results might follow an attempt to change the reaction of the stomach contents by medical means. In ulcer there was a tendency to hyperacidity; the ulcer was irritated by the gastric juice and the symptoms were increased. If the contents were kept alkaline the symptoms disappeared. With intensive alkaline treatment the results were often extremely good. Hydrochloric acid was deleterious to active ulcers while alkaline pancreatic juice was not; the stomach must therefore be kept alkaline by a powder of equal parts of the carbonates of magnesium and bismuth with sodium bicarbonate. A teaspoonful in water every two hours kept the stomach alkaline in the daytime. At bedtime a tablespoonful was given, and also in the middle of the night if the patient awoke with pain. For ten days the daily diet was three pints of milk and Benger's food; then toast and custard followed by fish, the ordinary diet being reached in four to five weeks. Smoking was very injurious, and meat was kept to a minimum. The administration of the powder was gradually reduced to thrice daily, then to twice daily and at night. This gave a chance for the irritated surface of the ulcer to heal, and the symptoms were relieved. If the symptoms did not disappear the diagnosis was generally wrong; if medical treatment failed a surgical operation was required. At his hospital clinic hundreds of these cases were treated, with only a few operations each year. As regards diet, mastication was absolutely the most important consideration, and meat was kept to a minimum. A large meal was harmful, and salads, vegetables, and condiments were bad. On the whole a surgical operation was not always a cure for gastric ulcer; many failures were met with. In haematemesis from gastric ulcer rest combined with intensive alkaline treatment gave the best results, and also prevented its recurrence.

After a considerable number of questions had been put and answered, the evening terminated with a vote of thanks to the lecturer, which was heartily acclaimed.

#### SOUTH WALES AND MONMOUTHSHIRE BRANCH.

##### *Sympathetic Ophthalmia.*

THE autumn clinical meeting of the South Wales and Monmouthshire Branch was held at the Royal Gwent Hospital, Newport, on November 18th, when the President, Dr. R. PRICHARD (Cardiff), was in the chair.

Dr. W. J. ROCHE read a paper on sympathetic ophthalmia, the cause of which was in most cases a perforating wound in the ciliary region or danger zone. When the ciliary body or iris prolapsed and was incarcerated in the wound the dangers were increased, but when suppurative occurred in the injured area sympathetic ophthalmia rarely followed. The condition might follow on cataract operations or iridectomy for glaucoma. The symptoms and signs were mentioned—dimness of vision, keratitis punctata, cloudy media, and formation of synechia. The indications for and against operation, and the determination of the suitable time for operation, would depend on the state of vision in the injured and in the sound eye, and on the signs of active disease. The medicinal or expectant treatment relied on atropine, mercurials, pilocarpine, and salvarsan. The theories of causation and pathology were mentioned in detail, and also the paths

of infection, and the theory of anaphylaxis. Special bacteria had an affinity for the uveal tract only, but the theory held by Brownlie and Hepburn that the disease was protozoal in origin was perhaps the most favoured.

##### *Clinical Cases.*

Dr. F. W. ROBERTSON showed: (1) A case of transposition of viscera in a man aged 25, with skiagrams in which the dextrocardia, displacement of the stomach to the right and of the liver to the left were clearly seen. (2) Psoriasis in a boy, aged 10, with a strong family history of syphilis. The distribution and character of the rash were unusual and the differential diagnosis was interesting. (3) Hydatid cyst of the meninges in a girl aged 15. There was a history of slowly developing right-sided hemiplegia followed by marked papilloedema on the left side. A diagnosis of cerebral tumour was made and an operation was performed, when a large hydatid cyst was found lying between the meninges of the parietal lobe on the left side. Papilloedema rapidly disappeared, hemiplegia passed off, but was not completely cured in the right arm. Fits occurred at nine months, twelve months, two years, and four years' intervals after the operation. During the current year fits had become more frequent and were definitely Jacksonian in type, beginning in the right foot. Skiagrams showed two spicules of bone evidently pressing on the upper part of the Rolandic area on the left side. The point in diagnosis was to decide whether the pieces of bone were the cause of the fits, or whether a patch of softening due to pressure was the focus. The question of treatment was discussed.

Dr. J. BOND showed: (1) A case of sarcoma of the sacrum in a woman aged 21. Four months previously a swelling had been noticed, followed by weakness and loss of sensation, in the right leg. Pain was severe and she was compelled to remain in bed; sedatives were administered. An operation was undertaken, but owing to haemorrhage was only exploratory in nature. Six intensive x-ray exposures had been given at intervals of one week. Improvement had been rapid and she was now able to walk; a small pigmented scar over the site of tumour was seen, but no tumour could be felt. (2) A case of bronchiectasis in a girl aged 16. She had been under observation for some weeks in a sanatorium, but all evidences of tuberculosis were wanting. The sputum was not fetid, due probably to good drainage from the site of disease in the right upper lobe. Physical signs pointed to the presence of a cavity. The physical signs eight years ago were apparently the same. The skiagrams were demonstrated by Dr. T. I. CANDY, and the differential diagnosis from a radiological standpoint was explained. (3) A case of eventration of the diaphragm, in a man 50 years of age, with vague pains in the epigastrium and in the lower half of the left chest, which he attributed to an accident seven years ago. A scar on the left side of the neck was referred to an operation for tuberculous glands. As the symptoms varied from time to time, skiagrams were taken of the chest and bismuth meals examined. Marked upward displacement of the stomach was seen. The question to decide was whether this was a case of eventration—namely, a diffuse relaxation of the diaphragm—or one of genuine hernia through one of the normal openings or through a rupture, possibly as a result of the accident seven years ago. The case was regarded as one of eventration, due to injury to the left phrenic nerve.

Dr. CANDY showed two cases to demonstrate further the value of x rays in treatment. (1) Lupus of the nose of four years' duration, completely healed with no scarring after three exposures. (2) An exuberant warty growth on the skin of the ankle, cured by six exposures of filtered rays at monthly intervals. A small pigmented scar remained at the site of growth. Photographs were shown of the condition before treatment.

##### *Syphilitic Aortic Aneurysm.*

Dr. P. C. INGRAM read a short paper on a case of syphilitic aortic aneurysm and regurgitation in a man 69 years of age, formerly a soldier. For three and a half years shortness of breath and pain across the front of the chest were the chief symptoms. An enlarged heart

was present with a to-and-fro bruit, but no abnormal cardiac dullness or pressure signs. The Wassermann reaction was positive. A skiagram showed an aneurysm of the aorta. Potassium iodide was given for three weeks and then nine injections of bismuth at weekly intervals. There was considerable improvement in the condition four months later; there was no chest pain, and the orthopnoea was less, but the urine showed a trace of albumin. A fortnight afterwards kharsulphan 0.3 gram and silversal 0.1 gram were started at weekly intervals alternately, but after the sixth he felt worse and colloidal iodine was given instead. Another course of nine injections of bismuth was given and further improvement noted. Three weeks later a slight attack of jaundice occurred. Thiostab was administered in five doses at weekly intervals and the jaundice had then cleared. The present condition of the patient was satisfactory, the pulse being 80 lying and 88 standing; the urine was normal and only slight dyspnoea and pain were experienced on exertion. The improvement under anti-syphilitic treatment was encouraging, but it was undertaken too late in the disease to be of very great benefit. The attack of jaundice illustrated the care required in the administration of arsenical preparations, and it would have been advisable in this case to have given kharsulphan only. The bismuth had been of benefit and had been well tolerated.

#### *Death following Wasp Sting.*

Dr. W. F. DONOHUE described two cases of wasp sting, one of which, in a man aged 44 and in good health, ended fatally. Sixteen years before he had been stung by a wasp and alarming symptoms developed. Recovery followed, but he had lived in dread of wasps since. In August last year he was again stung on the left forearm over the basilic vein. He quickly lost consciousness, cyanosis followed, there were jerky movements of hands, the tongue was swollen, and foaming at the mouth was seen. In a few minutes he was dead, before medical aid arrived. The interesting point in this case was the possibility of anaphylaxis or of suggestion playing a part; both might be responsible.

The meeting, which was well attended, terminated with a cinematograph demonstration by Dr. T. I. CANDY, who showed two films, the first of the capillary circulation as seen under the microscope, and the second of the social meeting of the Branch held in May at the Roman Amphitheatre at Caerleon.

## Reports of Societies.

### THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

THE usual quarterly meeting of the Royal Medico-Psychological Association took place at the Horton Mental Hospital, and later at the West Park Mental Hospital, Epsom, on November 16th, under the presidency of Lieut.-Colonel J. R. LORD, C.B.E., M.B. A special meeting of the association was held on the previous afternoon in the Great Hall of the British Medical Association House to hear an address by Dr. ALFRED ADLER of Vienna on "The cause and prevention of neurosis," to which had been invited all psychiatrists and neurologists and senior medical students. There was a large attendance, and Dr. Adler was most cordially received and listened to with the greatest interest. We hope later to publish an abstract of his address.

Before introducing Dr. Adler, the PRESIDENT alluded, with deep regret, to the death of Professor Emil Kraepelin of Munich, an honorary member of the association since 1909 and a psychiatrist of world-wide reputation. The audience rose in silence as a tribute of respect and regret. At the meeting held at Horton Mental Hospital Professor G. M. ROBERTSON also referred to the death of Professor Kraepelin, and the PRESIDENT alluded with feeling to the passing of Dr. R. H. COLE, who had laboured so long and successfully for the association.

#### *A Research and Clinical Psychiatry Committee.*

THE PRESIDENT said that there had been a most encouraging response to his circular letter on this subject, and many helpful suggestions had been received. He expressed the view that every member should either have definite work to do for the association or some direct interest in it. Resolutions were unanimously passed appointing a preliminary Research and Clinical Psychiatry Committee to prepare the way for the standing committee on these subjects ordered by new by-laws under the charter; also regarding the establishment of divisional clinical meetings as outlined in the presidential address. The local authorities are to be approached to afford facilities for the holding of the latter (to which local practitioners will be invited) and to encourage all assistant medical officers to attend.

#### *Chronic Epidemic Encephalitis.*

At West Park Mental Hospital a joint paper by Dr. P. K. McCOWAN and Dr. J. S. HARRIS was read by the former on chronic epidemic encephalitis. It consisted of a description of what was being done for the cases of the condition in this institution, and of some experimental work with hyoscine, with special reference to its carbohydrate metabolism. The authors said that investigations in encephalitis lethargica were leading to a better understanding of the neuroses and psychoses, as it had afforded insight into the psychological and physiological mysteries of many mental mechanisms. The symptoms shown by some of the cases appeared first during an attack of acute epidemic encephalitis, and persisted after the disappearance of the other symptoms. It was found to be impossible to give a prognosis of the ultimate outcome of an acute attack, however mild—indeed, a history of an acute attack was not necessary to establish a diagnosis. In children especially later symptoms were common after an attack. Hyoscine could be regarded as a specific in the treatment of encephalitic Parkinsonism; therefore the authors first investigated the carbohydrate metabolism as represented by the blood sugar curve, experiments being conducted later on muscular tonus, and inquiry into the altered affectivity as shown by the psycho-galvanic reflex. All these phenomena were abnormal in these patients, but hyoscine caused them to approximate to the normal. In the normal person the subcutaneous injection of 1/100 grain of hyoscine hydrobromide was followed, in ten to fifteen minutes, by dryness of the mouth and throat, a sensation of giddiness and some mental confusion, slurring of speech, and inability to walk straight. There was also marked impairment of accommodation, so that none but the largest print could be read. Later there followed a feeling of laziness or fatigue, and if left to himself the person would fall asleep and remain asleep for several hours. So that, in the case of the normal person, the effects of hyoscine were depressant, the contrary effect to that seen in subjects of this disease. In practically every case of the disease under consideration a proper dose of hyoscine caused improvement; the general muscular rigidity was reduced, while the tremors of face and extremities and the excessive salivation and lachrymation disappeared. The patient's alertness was also increased, articulation was improved, and there crept into the rigid countenance some expressiveness. The action of hyoscine, the authors submitted, supported the thesis that the functions of the mind were dependent on the harmonious working of all parts of the body. The authors used an apparatus they devised for taking a mechanical record of the knee-jerks, and these records showed an approximation to the normal knee-jerk under the influence of hyoscine. A number of cases were related.

Discussing the disease in its general aspects, the authors said that the functional aura was here found to an extent not approached by any other group of patients in a mental hospital. They thought that here could be discerned a clue to the discovery of an organic basis for the so-called functional nervous disorders and psychoneuroses. In encephalitis lethargica there might be subtle biochemical or biophysical abnormalities. The site involved was that of the basal ganglia, a centre of prime importance in the instinctive and emotional life of man. The laboratory investigations were carried out at the Maudsley Hospital.

The effect of injecting 1/100 grain of hyosine was to depress the blood sugar values, but there might be a secondary rise of that curve due to some hyperglycaemia two hours after the glucose meal and the drug injection. A similar result was produced on the curve by atropine. These drugs also caused inhibition of the external secretion of the pancreas, and a general arrest of the secretions of the alimentary tract. The blood sugar values obtained in this disease were consistent with the theory that it was a chronic toxæmia. The results of the injection of hyosine simultaneously with the ingestion of glucose permitted of a classification of the cases into two groups: (1) those exhibiting Parkinsonism with a depression of blood sugar levels, (2) those not exhibiting Parkinsonism and in which the blood sugar curve did not show improvement after the injection. Hyosine could be given either subcutaneously or by the mouth, but the best effects followed a combination of the two methods, 1/100 grain injected in the morning, 1/50 grain during the day by the mouth. Some of the unpleasant effects were combated by giving 1/10 grain of pilocarpine. Some patients had been having hyosine two years, and no deleterious effects were traceable. The action of the drug was only temporary, and when it was discontinued there was a relapse into the former state. Stress was laid on the fact that these patients were still suffering from an active disease, not the mere after-effects of an acute process. The treatment, the authors said, must still be regarded as in the experimental stage. Two drugs were found very helpful for this disease—tryparamide and argotropin. These were given to all cases, of both types. Tryparamide seemed to gain access to the central nervous system in a way that no other arsenical preparation appeared to do, and no case had shown progress of the disease since it was given. The course was eight weekly injections of 2 to 3 grams.

Dr. HARRIS then demonstrated a large number of patients, illustrative of the various stages of the disease, in groups.

## TUBERCULOSIS IN MAN AND IN CAPTIVE WILD ANIMALS.

A MEETING of the Section of Comparative Medicine of the Royal Society of Medicine was held on November 24th, when a discussion on tuberculosis in captive wild animals as compared and contrasted with the disease in man was opened by Dr. H. H. SCOTT, pathologist to the Zoological Society of London.

Dr. Scott, in his opening remarks, dealt briefly with the question of the existence of tuberculosis amongst wild animals under natural conditions, stating that there was no evidence in favour of the occurrence of this. Taking into consideration the case of the more isolated native communities, it appeared that, on *a priori* grounds, it was most unlikely that tuberculosis should occur in free animals, though this was a difficult thing to prove.

The reasons for the readiness with which tuberculosis was contracted in captivity were in the main three. The first was the survival of the unfit, since the healthiest animals were killed or escaped, and it was mostly the sick, injured, or very young which fell into captivity. In the second place tuberculosis might result from contact, after capture, with man or other animals, while the wild animals were in a condition of susceptibility owing to the absence of previous immunization from such repeated doses of bacilli as were commonly found in civilized communities. Thirdly, the disease might be due to the confinement, lack of exercise, deficient sunlight, ennui, and in some cases inability to obtain their natural food. The various facts adduced were based on the findings and records of the necropsies performed on animals dying during the last two years at the Zoological Society's Gardens. It had been noticed that some of the animals dying with most extensive tuberculous mischief and a widespread distribution of lesions might exhibit practically no signs of ill health until a very few hours before death. This had been observed both in birds and mammals, and various illustrative examples were given. A cercopithecus at autopsy showed bronchopneumonic phthisis with pulmonary excavation and involvement of

the pleurae, the omentum, and mesentery. The liver and spleen were thickly studded with caseating deposits; the head of the pancreas was occupied by a large tuberculous mass, both kidneys showed miliary tubercles, and the bronchial, infraclavicular, and mesenteric glands were enlarged, caseated, and softening. With so extensive a tuberculosis the animal was nevertheless not emaciated and had appeared to be in its normal state of health on the day prior to its death. In mammals and birds, but less so in reptiles, generalization of the disease was as a rule greater than in man, and the course seemed in most cases to develop much more rapidly. The difficulties of determining the primary portal of entry of the bacillus, by no means always an easy matter in man, were greater in animals because of the rapid development and generalization, rendering it sometimes impossible to say which was the oldest focus. Certain differences between the symptoms and also the pathological lesions in animals and in man were then detailed, notably the absence of hæmoptysis due to phthisis, which Dr. Scott had not seen in any of the animals, even in an advanced stage of pulmonary tuberculosis, and the rarity of tuberculous affection of the nervous system, or of the bones and joints. The only bones attacked with even relative frequency were the ribs, which, in monkeys, might be involved by direct extension from the lungs. On the other hand, in spite of the prolongation of the air passages into the long bones in birds, the bacilli, though repeatedly looked for, had not been found in the shafts even when the lungs and air sacs had been converted into masses of caseous tubercle. The rarity of pus formation in avian tuberculosis was mentioned and the possible relation of the Pierre Marie syndrome of hypertrophic pulmonary osteoarthropathy to tuberculous infection of the bones. The differences presented by tuberculosis in birds as compared with the condition in mammals were discussed in considerable detail, with particular reference to the nodular form and that known as "gelatinous tuberculosis," in which a hyaline necrosis seemed to occur simultaneously over an area of some size, as distinct from the slower progressive necrosis of mammalian disease. Another marked characteristic was the peculiar infiltrative form of avian intestinal tuberculosis. Brief descriptions were given of the microscopical differences between miliary tubercles in man, cattle, dogs, monkeys, birds, and reptiles. Specimens collected by Dr. Scott at the Zoological Society's prospectorium and now in the museum of comparative pathology at the London School of Hygiene and Tropical Medicine, were used to demonstrate some of the conditions described.

## TREATMENT OF CONGENITAL TALIPES.

A MEETING of the Bristol Medico-Chirurgical Society was held on November 10th, the President, Dr. A. L. FLEMING, taking the chair. After Mr. E. R. CHAMBERS had shown a case of recurrent carcinoma of the uveal tract in a woman of 55, and Dr. A. D. FRASER had exhibited specimens of endometrioma, Mr. A. W. ADAMS read a paper on the treatment of congenital club-foot.

Mr. Adams defined the differences between this condition and the deformities consequent on paralysis, spastic or flaccid. The etiology of congenital talipes equinovarus, the commonest variety, was unknown, but he inclined to the old theory that deficiency of the liquor amnii allowed pressure on the foetus. The theory of arrest of development could scarcely account for some of the varieties. The incidence was greatest among males; it was said to show a familial tendency, but this was found in two cases only of his series, who were brothers. There was a tendency to associated deformities, as illustrated by one case shown, with webbed fingers and ankylosed elbows, wrists, and other joints. The condition often affected both feet, and in his series this was found in half the patients. Two factors must be recognized; rotation inwards on an anteroposterior axis brought the os calcis up under the internal malleolus, while rotation inwards on a vertical axis at the mid-tarsal joint brought the fore part of the foot pointing inwards and the sole backwards. The tendons and ligaments on the inner side of the ankle-joint were shortened.

Treatment, to be successful, must begin early, at one month if possible, when the tissues were pliable and the bones relatively plastic; it must be regular, prolonged, and continuous. It was waste of time to attempt treatment on manipulative lines unless the parents realized that for success they must co-operate with the surgeon. For several weeks treatment aimed at reposition, for some months at retention, and for some years at education. The first step was to secure the reposition of the astragalus by manipulation around the antero-posterior axis. The astragalus was forced in under the tibia, and the os calcis was drawn downwards and outwards under the astragalus. In addition to forced movements by the surgeon, the foot was moved as far as possible in the correct position by the nurse several times a day, being held there for a few minutes. When the posterior part of the foot was rotated the anterior part was turned outwards on a vertical axis. Slight over-correction was the aim. In all cases some fibres of the deltoid ligament had to be divided, in many part of the inferior calcaneo-scapoid ligament, and in few was tenotomy needed. A diagram showed how a roll of stockinette might be used to avoid bruising. As soon as the foot could be brought well out it was put up in plaster for several weeks, with changes and manipulations once a fortnight. The tendency for the plaster to fall off a fat leg and foot was met by carrying it up over the knee or by incorporating strapping. The next step was tenotomy of the tendo Achillis; without this attempts to correct equinus would stretch the plantar ligaments. The over-correction should not be too great. A wooden sole-plate was used with strapping to retain the foot in the over-corrected position. Movements and massage were continued at regular intervals; this was the difficult time, for parents saw the foot in a good position, and wished to discontinue attendances, which had become wearisome. At 18 months a malleable splint down the back of the leg and along the sole was employed, fitted with a toe-plate to resist varus. The child was encouraged to walk, but wore the splint day and night; a small overshoe was used with the splint. The régime of massage and movements was continued long after the splint could be discarded. By the age of 3 the child could learn simple exercises, and so co-operate in treatment. In some cases, however, iron supports were needed for several years. In other patients who came late for treatment cuneiform osteotomy was required. The only absolute bar to success was failure to attend regularly for the necessary period of several years. Treatment might be interrupted by a variety of causes, such as illness of parents or patients, or by poverty. The stupidity or carelessness of parents might vitiate the results of months of work. Long treatment in plaster seemed to interfere somewhat with the nutrition of the limb. Neither this nor some degree of flat-foot (which was not rare) appeared to cause the patients any trouble. There was a tendency to hallux varus when the child began to walk without splints, and in some cases an inward twisting of the tibia; osteotomy of the tibia might be needed, but had not been employed for any of the cases shown. In conclusion, Mr. Adams classified in tabular form the results obtained with thirty-three feet, to indicate how regularly results less than "good" were associated with irregular attendance. Eight cases were shown to illustrate the later stages of treatment, and many photographs to demonstrate the application of various forms of retention apparatus.

Professor HENRY GROVES said that the greatest difficulty in treatment was to secure adequate co-operation by parents. He thought that insufficient emphasis had been given to the correction of the malposition of the astragalus. He had found that reposition in a small fat foot was not easy, but thought failures were often due to this part of the deformity not having been corrected. Where the foot faced inwards he advised osteotomy of the tibia. Tarsotomy gave excellent immediate results as regards reposition, but the after-treatment needed to be just as careful and prolonged, and the final result was not so good as with manipulative methods. He particularly admired the sole-piece used by Mr. Adams.

Mr. H. E. CHITTY agreed that the displacement of the os calcis was the most difficult part of the deformity to reduce. He had found plaster splints very difficult to

retain in position, and used a small internal malleable splint. In late cases he took out a wedge on the outer side to correct the heel; the remaining correction was easy.

Mr. E. WATSON-WILLIAMS had noticed that in the first case shown, and in several of the photographs, the second or third toe was pushed up out of line so as to lie on the dorsum of a neighbour. He asked about the correction of this, and suggested a connexion with the tendency to hallux adductus.

Mr. W. A. JACKMAN had obtained very good results in seven cases out of eight with Mr. Adams's splints, not using plaster; all his cases were bilateral.

The PRESIDENT believed the deformity was related to a defective heredity, which was relatively common in remote and isolated districts, and showed itself in mental as well as physical abnormalities.

Mr. ADAMS, in reply, said he recognized that the posterior deformity was the most difficult to treat. This correction could be made at the same time as the abduction, but it was easy to overdo it. In favour of plaster over splints at the early stage, he remarked that splints needed daily attendance. He admitted that the following up of cases would be made easier by the appointment of an officer for this service. Great efforts were often needed to keep some parents attending regularly.

### THE EVOLUTION OF GYNAECOLOGY.

At the first meeting of the eighty-fifth session of the Edinburgh Obstetrical Society, on November 10th, Professor R. W. JOHNSTONE delivered his presidential address on "The greater gynaecology: its relations to medicine and surgery."

Professor Johnstone recalled that the foundation of the society in 1840 was in the main due to younger members of the profession, who were practising midwifery and who were admittedly "dissatisfied with the position that branch of medicine held in the eyes of the profession and public, and who were anxious and determined to make an effort to raise it to a position more worthy of the important interests it guarded and the onerous duties it performed." Records of those days clearly showed that practitioners in obstetrics were looked upon by their brethren as being engaged in the practice of an inferior sort of art, which had little connexion with either medicine or surgery.

In seeking for an explanation of this alleged inferiority Professor Johnstone briefly sketched the history of midwifery, and indicated how the development of obstetrics was retarded by the practice of the art being in the hands of ignorant midwives. Little advancement was made during the fourteen centuries following the work of Soranus of Ephesus until William Harvey wrote his chapter on labour, the first original English work on midwifery. The Chamberlen family and their important discovery did much to drive out the uneducated midwife, who had been the sole attendant on the parturient woman for centuries, as no untrained woman could use such an instrument as the forceps on the living mother and the living child. Further advancement in the science and art of obstetrics was made during the next century, principally by Smellie, William Hunter, and Charles White, and it was due in the main to the teaching and influence of these great men that the practice of midwifery was finally transferred from the ignorant midwife to the trained male practitioner. The rapid development of the science of obstetrics after this transference had been accomplished showed what a retarding influence had been exercised during the long reign of the uneducated midwife. Surgery had suffered an eclipse similar to that of midwifery during the Dark and Middle Ages, and its elevation to equal partnership with medicine was a comparatively recent development, for which the genius of Paré, John Hunter, J. Y. Simpson, and Lister was required. Referring to the origin of the Edinburgh society, Professor Johnstone indicated how such a society could exercise beneficial influence, and how the Edinburgh society had been doing so. The development of obstetrical science and art during the last eighty-five years had been reflected at every step in the work of the society. Thus, in its annals were to be found the original papers on the

introduction of anaesthetics and their application to labour by the genius of J. Y. Simpson; the application of Lister's antiseptic principle to labour; the invention of rubber bags by Keillor, and their introduction into the uterus for induction of labour; the improvements of the forceps by the Simpsons, and later by Milne Murray, to mention only a few of the earlier papers. In the last thirty-five years the work of the society had shown no deterioration, and all the later discoveries had been fully discussed, and several had found origin within its precincts. Very important physiological and pathological research had been carried out by numerous Fellows of the society, perhaps the most important being the work of Matthews Duncan and of Hart and Barbour on the anatomy and physiology of labour, and the series of contributions by Ballantyne on ante-natal pathology. Gynaecology was not a recognized science when the society was founded, and it was not until the society had been in existence for twenty-five years that gynaecology emerged as a specialized branch of medical science and practice, the outcome of the work of both the surgeon and the obstetrician jointly. In their modern conception obstetric and gynaecology were inseparable as "the greater and the lesser" and had been aptly said that good midwifery was preventive gynaecology, and until a considerably higher standard of midwifery was reached it would remain true that half of gynaecology was reparative midwifery. In this organic union midwifery and gynaecology were now intimately linked up with both medicine and surgery. To medicine they were linked by the recent developments of biochemical study of the maternal metabolism, of the toxæmias of pregnancy, and of the nutrition of the foetus; while the wide field of endocrinology was common to both medicine and the greater gynaecology. With surgery the greater gynaecology was closely linked by the numerous operations required to be performed, not only in gynaecology, but also in midwifery. The whole position had been summed up succinctly by Sir George Newman in his remark, "The obstetrician and gynaecologist is the great example of the unity of medicine and surgery in actual practice. Here is the full integration." Professor Johnstone pointed to the significance of such a remark being applied to the practitioner of what in 1840 was regarded as an inferior sort of art which had little connexion with either of the great departments of medicine or surgery. The Cinderella of medicine, as midwifery used to be called, had found her prince in gynaecology, and taken her rightful place in the family at last.

#### ROUTINE EYE EXAMINATION.

At a meeting of the London Association of the Medical Women's Federation, on November 9th, Miss ELIZABETH BORTON, the President, in the chair, Miss IDA C. MANN read a paper on routine examination of the eyes as an aid to diagnosis.

Miss Mann said that by routine examination she implied such investigation as could be easily made by the general practitioner and would indicate any abnormality. The tests suggested were: Examination of the position and condition of the eyes and lids with the patient looking straight forward; examination of the movements of the eyes and upper lids when the patient followed a moving finger, the head being kept still; examination of the pupil reactions; rough test of the fields of vision with the hand; examination of the media of the eye and the fundus with an electrical ophthalmoscope, which would reveal the presence of opacities of the media and disease of the fundus without a mydriatic in most cases, though fuller examination might be necessary in order to establish the diagnosis. The electrical ophthalmoscope, being easier to use than the non-luminous instrument, should be in the possession of every general practitioner. The patient's visual acuity with each eye should be tested separately without glasses for distance and near vision; Snellen's and Jaeger's test types were the best for this purpose. Such a routine examination would in a large number of cases be found to afford most valuable assistance to diagnosis. In some instances it might even establish the diagnosis, as when it revealed, in a patient complaining of shooting pains in the legs, the presence of an Argyll Robertson

pupil; in other cases it would often indicate a fruitful line of investigation and treatment. Some patients complained of ocular symptoms only, others with symptoms elsewhere made no mention of their eyes. In some of the latter cases a direct question would elicit an admission of ocular symptoms, but in others, and these usually the more serious, the patient was quite unaware of the presence of any eye disease. In both groups an ophthalmic examination was equally imperative. In a certain number of cases, as for example, in errors of refraction, the ocular condition sufficiently accounted for the symptoms. Headache, not necessarily frontal, and often worse in the morning than at night, was a frequent accompaniment of error of refraction; it might be associated with depression, lack of concentration, fatigue, anxiety, and even, in some cases, nausea and dyspepsia. A suitable pair of glasses would benefit a hypermetropic clerical worker more than a month's holiday, and might often avert a definite breakdown; this was especially true in women between 45 and 50, at which age, unless she was myopic, the average woman would begin to suffer from eye-strain after close work. This onset of presbyopia was physiological, and, if corrected by glasses, not painful. If neglected, it could give rise to very severe headache, which, coming at a time of life when most women had been taught to expect a certain amount of discomfort, was often put down by them and their doctor to the climacteric, though inquiry would reveal that their periods were regular. A suitable pair of glasses for work would entirely remove the symptoms. It was much too common a practice to refer every pain in a woman of 46 to menstrual disorder, though evidence was accumulating to show that the menopause occurred on the average nearer 50 than 46. Men were, in her experience, much less tolerant of this presbyopic headache than women, and usually sought relief for it earlier. Much more important, however, than the detection of errors of refraction was the early diagnosis of glaucoma. Though not actually a matter for the general practitioner, since it demanded experience and a certain amount of elaborate apparatus, the disease could at least be suspected. It was accompanied by attacks of headache, transient blurring of vision, and, occasionally, nausea; the central visual acuity might remain good almost up to the onset of blindness. The acute form of glaucoma was most often overlooked by practitioners who did not perform routine examination of the eyes. Miss Mann mentioned the danger of injecting atropine before operation in a subject of chronic glaucoma, and quoted six cases treated for gastric influenza, intestinal colic, food poisoning and other troubles, before advice was sought for the ocular condition. In two cases the congestion of the eye was noticed by the doctor, who proposed to treat it when the patient was better, not realizing that the vomiting and collapse for which advice was sought could have been relieved immediately by a posterior sclerotomy, and the sight of the eye (which was in each case lost) probably saved. In other cases, the headache or other symptom for which advice was sought was a manifestation of a general disease having ocular signs; in these cases examination of the fundus was of much assistance in diagnosis. All cases of headache and vomiting required a fundus examination; a papilloedema would be found in some, and the diagnosis of cerebral tumour could be made before the onset of optic atrophy. In other cases the presence of disease of the retinal vessels, exudates, haemorrhages, patches of choroiditis, and other abnormalities would supply a diagnosis, or at any rate indicate a line of investigation, at an early stage. It was surprising how often the initial diagnosis of diabetes, albuminuria, arterio-sclerosis, and syphilis was made in the eye department of a general hospital. In disease of the central nervous system an ocular examination was pre-eminently of help, but a very large number of systemic and general diseases had ocular signs, and diseases so far removed from the eyes as apical phthisis and carcinoma of the pancreas might be suspected from an ophthalmic examination alone.

Miss Mann, in reply, said that an injection of eserine could be given before the atropine where glaucoma was suspected. She suggested that the circumcorneal injection mentioned by Dr. Casson might be related to a prolonged



effort of accommodation. She agreed that emmetropes often retained full power of accommodation long after the age of 45, but added that emmetropes comprised only about 1 per cent. of the population.

### FREQUENCY OF MICTURITION.

At a clinical meeting of the Newport Medical Society, on October 27th, the President, Dr. P. C. P. INGRAM in the chair, an address on frequency of micturition and its diagnosis was given by Mr. T. E. HAMMOND (Cardiff).

Mr. Hammond said that the desire to pass urine coincided with a sudden rise in the intravesical pressure, when the bladder held a volume which was fairly constant for the individual; moreover, when the urine passed over the prostatic urethra in the male and the female urethra, there was a reflex contraction of the bladder, and any change in this region was apt to set up a desire to pass urine. Consequently an increased desire was due to one of the following: increase in the volume of the urine after excessive drinking, in cold weather, in diabetes mellitus and insipidus, and also in chronic interstitial nephritis and hyperpiesia; in oxaluria and hyperacidity; interference with emptying of the bladder at the end of micturition by an enlarged prostate in men and by fibroids of the cervix, urethrocele, and a retroverted gravid uterus in women; conditions which prevented the bladder wall relaxing normally, such as lesions of the mucous membrane—congestion, inflammation, and ulceration; lesions of the muscle coat, seen in fibrosis after inflammation, and extravascular causes, such as ovarian cysts, large fibroids, and the pregnant uterus; lesions of the mucous membrane in the region of the ureteral orifices, the trigone and the prostatic urethra in men, and the urethra in women; irritation of the spinal centres in multiple and disseminated sclerosis and the crises of tabes. Reflex action had probably little effect; the frequency associated with renal colic and a calculus in the lower end of the ureter was probably due to the spasm of the ureteral muscle passing over and increasing the contraction of the bladder muscle. When the frequency was due to polyuria alone it was not accompanied by pain or urgency, and was evenly spaced throughout the twenty-four hours; if the bladder was involved some pain and urgency were often present. If after the completion of the action an equal amount of urine could almost immediately be passed it was due to a diverticulum, a stone, or the enlargement of the middle lobe of the prostate. With a lesion in the trigone or the prostatic urethra there was often an intense and urgent desire to pass urine repeatedly after the completion of the act. In examining the patient particular attention should be paid to the cardio-vascular and nervous systems; but even in the event of definite disease being detected here a careful examination of the genito-urinary tract was always essential, as marked cardio-vascular changes might be secondary to the enlarged prostate. X rays occupied a very secondary place to cystoscopy in the diagnosis of bladder lesions. Early diagnosis was of paramount importance in bladder lesions. It was sometimes found that though a lesion of the urinary tract, such as an inflammation, was cured, the frequency persisted owing to the scarring and fibrosis of the muscle, which remained after the original lesion had been cured. Frequency of micturition was not physiological in old age, but was always pathological, and should lead to careful examination of the cardio-vascular system and the prostate. Occurring in adults it should arouse suspicion of tuberculosis, and in doubtful cases a guinea-pig should be inoculated. It was never due to endometritis and was never cured by curetting. Endometritis was not infrequently associated with a chronic cystitis, and in such cases both were due to the same cause—namely, lowering of the general resistance; they were best cured by rest and fresh air. The practice of treating frequency by vaccino-therapy was to be condemned until an examination of the genito-urinary tract had negatived any associated lesion, since, even if bacteria and pus were present, these might be secondary to some lesion of the urinary tract, such as an enlarged prostate or stone. When neurosis was diagnosed the case should be reconsidered every three months, since early organic disease was difficult to detect.

### DISEASES OF THE HIP-JOINT.

At a meeting of the Aberdeen Medico-Chirurgical Society on November 4th, Dr. JAMES CROMBIE, the President, in the chair, Mr. ALEXANDER MITCHELL gave a demonstration of lantern slides illustrating diseases of the hip-joint.

Mr. Mitchell said that the future of a patient suffering from an affection of the hip-joint was greatly dependent upon an accurate diagnosis and a real understanding of certain well established principles of treatment. A periodic review of the methods of treatment must be beneficial to all if such conditions as great shortening and loss of function were to be avoided. In dealing with the subject of tuberculous lesions of the hip-joint, Mr. Mitchell emphasized the fact that in cases, if at all severe and accompanied by bone destruction, there was a persistent tendency for the head of the bone to become dislocated, which condition, left untreated, resulted in shortening of the limb even up to four inches. Fixation of the limb in a fully abducted position with extension prevented this slipping out of the head, and, combined with treatment along modern lines, a cure of the disease would result with probably impaired movement, but with little shortening and subsequent disability. Unless this dislocation, which so readily occurred, was thoroughly understood, even the most careful treatment would not produce the desired result. Many difficulties arose in the treatment of these cases, but they must be overcome if the patient was to get the results which might reasonably be expected at the present day. These difficulties, such as proper fixation and special nursing, could be overcome to a great extent by prolonged institutional treatment and careful observation afterwards. In referring to modern methods of treatment, tribute was paid to the pioneer work of the late Hugh Owen Thomas of Liverpool and to Sir Henry Gauvain and Dr. Rollier. An excellent series of slides was demonstrated, including tuberculous lesions, osteo-chondritis deformans juvenilis, fibro-cystic disease, coxa vara, congenital dislocation, malignant disease, osteo-arthritis, and fractures of the neck of the femur in old people. A plea was put forward for the more active treatment of fractures of the neck of the femur in the aged.

### MEDICAL CRIMINALS.

At a meeting of the Brighton and Sussex Medico-Chirurgical Society, on November 4th, an address on some well known medical criminals was given by Dr. L. A. PARRY.

Dr. Parry said he would not deal with such famous medical poisoners as Palmer, Pritchard, and Lamson, but rather with less widely celebrated instances. His first example was that of Dr. Warder of Brighton, who, in 1866, poisoned his wife by means of aconite, and then, when suspicion was aroused, himself took prussic acid. Two previous wives had died in suspicious circumstances, and there was very little doubt that he had also poisoned these. The case aroused very considerable interest at the time. Dr. Alfred Swayne Taylor, who examined the viscera, said he was unable to find any poison, although he had carefully tested for all the well known alkaloids, including morphine, strychnine, and aconitine, and that injections from the organs into a rabbit had had no harmful effect; yet after hearing the evidence of the victim's medical attendant he was of opinion that aconite poisoning was the cause of death, and the jury returned a verdict to that effect. Warder had been a lecturer on forensic medicine at the Grosvenor School, adjoining St. George's Hospital, and was one of the many members of that school who gave evidence in favour of Palmer, the infamous poisoner. The judge at Palmer's trial had made some rather scathing remarks on these witnesses, blaming them for being advocates determined to prove the innocence of the prisoner, rather than medical witnesses. Dr. Parry mentioned various other cases of poisoning by doctors, including Smethurst, who bigamously married a lady and then killed her for her money. He was convicted and sentenced to death, but, owing to a mistake made by the Government analyst, doubt was cast on the justice of the verdict and the Home Secretary took the unprecedented course of referring the whole of the evidence to Sir Benjamin

Brodie, and, as in his judgment there remained a slight doubt, Smeethurst was pardoned and released. He actually brought an action in the courts to obtain the money of the wife he had murdered, and won his case. He was afterwards sentenced to a year's imprisonment for bigamy. Another instance was that of Dr. Cross of co. Cork, who fell in love with the beautiful and accomplished young governess of his wife. She yielded to his solicitation, and as he was most anxious for a legal union, he murdered his wife by means of arsenic, and at once took the girl to London and secretly married her. Suspicion was aroused, the body was exhumed, and arsenic found. This led to the speedy trial, conviction, and execution of Cross. Some examples of medical men who had been charged with high treason were then given. Dr. Cameron, in the rebellion of 1745, was medical officer in charge of troops, and after the battle of Culloden escaped to France. Most of those who had taken part in the rising were pardoned, but an Act of Attainder was passed excluding certain persons, among them Cameron, from this indemnity. Some eight years later Cameron returned to his native land; he was arrested and hanged as a traitor. Dr. Watson, who engaged in the political upheavals after the end of the Napoleonic wars, and was connected with the notorious Thistlewood (later executed for his share in the Cato Street conspiracy), was one of those who led the mob which set out to burn the Tower of London, the Bank of England, and other Government buildings; although this object was not attained, great damage was caused by the rioters. Watson, mainly owing to the very brilliant speech of his counsel, Mr. Wetherell, was acquitted. After the battle of Sedgemoor the Government, not satisfied with the cruel and vindictive treatment of the rebels by Judge Jeffreys, arrested Dr. Bateman and charged him with high treason. Bateman was a strong supporter of the Exclusion Bill, and had rendered assistance to Titus Oates when that rogue was whipped in the streets of London; he was convicted of complicity in the Whig plot and sentenced to be hanged and quartered. Dr. Parry pointed out that this short list by no means exhausted the doctors who had been entangled in political affairs, and who had been charged with high treason or other serious offences. Others were Dr. Wakeman, physician to Queen Katherine, Dr. Bastwick, Dr. Spruell, Dr. Hensey, Dr. Sheridan, and Dr. Joseph Collier. Two cases of murder by violence by medical men were recalled: that of Dr. Levi Weil, who turned burglar and murdered a man in one of the houses he robbed, for which he was hanged; and Dr. Smith of Aberdeenshire, who killed a labourer after heavily insuring his life, but was acquitted.

## DIAGNOSIS AND TREATMENT OF GONORRHOEA.

COLONEL L. W. HARRISON opened the session of the Medical Society for the Study of Venereal Disease on November 26th with a survey of modern methods in the diagnosis and treatment of gonorrhoea.

He emphasized the need for laboratory procedures to determine the nature of an infection. Those who neglected microscopic examinations of the secretion often went on treating for weeks a non-gonococcal infection with potassium permanganate or one of the endless varieties of silver preparations, which, in his judgement, were useless against such organisms as *B. coli*, *streptococci*, and *staphylococci*. There were differences of opinion as to the value of cultures in the diagnosis of gonorrhoea, but personally he thought them indispensable in female cases, and often valuable in male urethritis. While he did not think the complement fixation test as satisfactory as the Wassermann in syphilis, it was carried out as a matter of routine in all the female and many of the male cases attending his clinic. On occasion a positive reaction by this method was the only indication that a gonococcal infection had not been eradicated. As for topical diagnosis, Colonel Harrison said that he was not greatly concerned, in the acute stage of gonorrhoea, to determine whether or not a patient had posterior as well as anterior urethritis. It did not affect the general lines of his treatment, because he believed in washing the whole urethra with mild lotion from the first. It surprised him to see

those who limited local treatment to the anterior urethra until they considered the posterior urethra affected rely for the diagnosis of commencing posterior urethritis on the two-glass test, because a little thought must convince them that, when the posterior urethra began to secrete pus, all of it must be washed into the first glass. He also urged the value of the urethroscope in diagnosis; to omit its use seemed to him reactionary. With regard to treatment, he was one of those who, while not denying the value of local treatment, did not believe that there was any bactericidal remedy which could reach down to and destroy the gonococci in the depths of the tissues. He sought to cure gonorrhoea by encouraging those processes whereby the tissues rid themselves of the infection. The modern treatment of gonorrhoea consisted in the application of two great surgical principles—namely, the raising of the patient's resistance and the securing and maintaining of drainage. Silver nitrate was formerly the great stand-by in both male and female gonorrhoea, and it was still used by many workers in female gonorrhoea in strengths which, in his view, only cauterized the surface, converting it into an excellent medium for the growth of secondary organisms, and left considerable scarring, whilst failing to kill the deeper-lying gonococci. The ineffectiveness of silver nitrate as a complete cure was sufficiently shown by the use of the innumerable other silver preparations which, during the last thirty years, had been advocated in its stead. He was in agreement with many workers who were trying to discover indirect methods of assisting the tissues to eliminate the gonococci. Some workers believed that vaccines had a specific value, and others that any good effect was by virtue of their protein-shock action. Colonel Harrison himself had always held that there was somewhere in certain cultured strains of gonococci the means of raising the patient's resistance to a degree sufficient to bring about the elimination of the infecting organisms. On the value of protein-shock therapy in gonococcal infections, he could say only that it was certainly useful in complications, but that here, as in vaccines, there was much still to be learned as to preparations and their dosage which gave the best results. At St. Thomas's they had used chiefly electrargol and milk. The results with milk in combination with vaccine had not been so good as those claimed by Tausard, possibly because the milk was not so full of bacteria as that used by the French worker. In diathermy at St. Thomas's the results had been sufficiently encouraging to justify perseverance. He believed that it acted, not by destroying gonococci by heat, but probably by an auto-vaccine effect.

Major E. C. LAMBEIN described in detail certain investigations, not yet completed, which are taking place at the Royal Herbert Hospital at Woolwich on the scientific preparation of a vaccine against gonorrhoea. The results so far obtained indicate that gonococci can be divided into good and bad immunizers, and that from the former can be split off a fraction which is antigenic but not toxic.

## JAMES MACKENZIE INSTITUTE.

On November 3rd Dr. BARCLAY NESS communicated a paper on "Difficulties in the clinical diagnosis and prognosis in the various forms of chronic Bright's disease." After giving a classification of the pathological changes found at death, he showed that mixed or transitional forms of disease were common, and that while the diagnosis of the pure types of lesion could be made with fair certainty during life, the difficulty of accurate diagnosis of the transitional forms was considerable. He discussed in detail the clinical phenomena upon which the differentiation might be made, and commented specially upon the fact that some of these had obviously been in existence for months or years before giving rise to definite symptoms, since the patients often presented themselves in the first instance with the disease fairly advanced. In hospital practice the "secondary contracted kidney" was the commonest form of chronic Bright's disease encountered, while the "primary granular contracted kidney" was comparatively rare. He emphasized the importance of the information to be derived from ophthalmoscopic examination of the retina.

## Rebiefus.

### ULTRA-VIOLET LIGHT.

ONE of the most satisfactory features of the more recent books on ultra-violet therapy is that they are becoming increasingly practical and begin to record the results of clinical experience. Dr. BELL FERGUSON's little book on the *Quartz Mercury Vapour Lamp*,<sup>1</sup> which is none the less valuable because it deals with a single type of illuminant only, can safely be recommended to anyone who desires a good practical introduction to ultra-violet light therapy. His notes on the historical and purely physical side of the subject are clear, concise, and interesting, and are illustrated by a chart of the whole range of electro-magnetic waves. These waves vary from the gamma rays, which have a length of about a ten-millionth of a millimetre, up to the waves employed in wireless work (and waves even beyond those), which have a length of 2,000 metres and more. Between the two extremes are  $\alpha$  rays, the ultra-violet rays, the visible light rays, and the infra-red or heat rays. To those who are comparatively untutored in the mysteries of modern physics, this chart, which was originally made by the Royal Society for the Wembley Exhibition, gives a concise picture of the nature and powers of all the different varieties of electro-magnetic radiations. The more important section of the book is, of course, that devoted to the use of the mercury vapour lamp and the results achieved with it. Dr. Bell Ferguson recommends that made by Messrs. Kelvin, Bottomley and Baird; in it there is no vacuum, and it is more constant in output and of longer life than the types in which a vacuum is present. Moreover, it is of British manufacture. He gives full details of the methods and dosage employed by himself in various types of case, both as regards the length of exposure, the distance of the patient from the lamp, and whether general or local irradiation is preferred. In fact, after reading this book with care, any practitioner could safely begin to use ultra-violet light in treatment, and we think that this is the best testimony that can be given to its value. In addition, it may be added that although the author is obviously keen on the subject, as is proper, he makes no extravagant claims for the healing powers of ultra-violet irradiations, and gives a scrupulously fair account of his own experiences in their use. The book is fortified by a preface by Sir Henry Gauvain, who is well known as one of the pioneers, in this country at all events, of light treatment in surgical tuberculosis, and who cordially recommends the work to the medical public.

Although, as has been implied above, ultra-violet light has become increasingly popular in this country during the last three or four years, it will come as a surprise to many that since 1907 it has been in use in Germany for the treatment of baldness, with results undoubtedly worthy of serious consideration. Dr. NAGELSCHMIDT, whose book first appeared in 1913, has collected in a new edition<sup>2</sup> 200 cases, all treated locally with ultra-violet light. He excludes 43 of these from his statistics as the knowledge of their subsequent history is insufficient, but of the remaining 157 he gives details: 104 of them were cases of alopecia areata, of every degree of severity; 80 he claims as cures, 16 as showing improvement; in 8 the condition, he admits, was unchanged. He succeeded even in curing 6 cases of total alopecia, and out of 18 such cases only 4 were entirely unaffected by the treatment. Perhaps the most striking of his results are those he claims for the 53 cases of seborrhoeic alopecia; all are stated to have been cured. As this is a disease which is the cause of the common type of baldness in men, the gradual thinning and disappearance of the hair over the crown and temples, our interest was naturally aroused, and we hoped that baldness (which is known even among

dermatologists) would soon become a thing of the past. Examination, however, of the details of the cases given dashed our hopes. Many of the patients were females, in whom the affection seldom leads to denudation of the scalp; others were described as cured owing to the cessation of scaling and irritation of the scalp; and as regards the hair itself the report was merely that it was "essentially thicker." Consequently we came to the conclusion that although in all probability benefit is to be derived from the use of ultra-violet light in such cases, it does not provide the specific cure which is desired. Dr. Nagelschmidt uses a quartz mercury vapour lamp, air-cooled, of a type which is now familiar in this country, made by the quartz lamp company of Hanover. For directions as to the time of exposure, precautions to be taken, the interval to be allowed between the sittings, and other details, we must refer the reader to the original. Ultra-violet light is now well established as a treatment for alopecia areata, and it probably deserves to be employed more often in the treatment of alopecia of the more ordinary type. Dr. Nagelschmidt is a pioneer in this field, and we are indebted to him for providing an account of his methods which will enable others to follow them.

In *Sunlight and Artificial Light*<sup>3</sup> Mr. HAROLD WIGG gives a short and simply written exposition, intended for the use of nurses, of the nature of ultra-violet rays and of their application in the treatment of some diseases. The descriptions are given in clear, though occasionally flowery, language, and a few figures and illustrations help the reader. Mr. Wigg states that light is a potent drug which cannot be used indiscriminately without danger. He deprecates also the tendency to regard light as a panacea for all evils. We note, however, that advertisements in the booklet urge the reader to have the magic of the sun-bath in his own home at the cost of less than 2d. a bath.

### EPILEPSY.

Drs. R. G. ROWS and W. E. BOND have written a volume entitled *Epilepsy: A Functional Mental Illness*,<sup>4</sup> which, as its subtitle suggests, seeks to develop the thesis that the various symptom-complexes to which the term "epilepsy" is usually applied are determined by previous psychic occurrences with strong emotional colouring. On the basis of such an etiology the authors deprecate the use of drugs, and advise a simple life, the avoidance of strain and excitement, and psychotherapeutic measures consisting of explanation, exploration, and re-education.

We cannot but feel that much more evidence in support of this theory than appears in this volume is required in order to make it convincing. The conclusions reached are based largely upon the study of "shell-shocked" soldiers, and in these cases it was only to be expected that the study of the psychic content should reveal the existence of unpleasantly toned emotional complexes. It is quite conceivable that the terrible experiences of these patients were, in a measure instrumental in the production of epileptic manifestations. Further than this it would seem difficult to proceed with the authors in their attempt to formulate a general theory of epilepsy. Furthermore, though a psychological understanding of the epileptic is necessary for the carrying out of treatment, drugs are often unquestionably of considerable value. Many epileptics, whose lives are rendered almost useless by the disease, are able to mix with their fellows and earn their living under a suitable drug régime.

In the preface to this volume Dr. Bond explains that at the time of the death of Dr. Rows this monograph was "in the rough," and that he was placed in a difficult position by the loss of the co-operation of his colleague. We are grateful to him for publishing this work, not only because it contains a number of interesting discussions and observations, but also because it affords an opportunity of paying some slight tribute to the work of his collaborator. Dr. Rows was responsible for much notable research in the

<sup>1</sup> *The Quartz Mercury Vapour Lamp*. By J. Bell Ferguson, M.D., D.P.H. With an Introduction by Sir Henry Gauvain, M.A., M.D., M.C. London: H. K. Lewis and Co., Ltd. 1926. (Demy 8vo, pp. xii + 106; 34 figures. 6s. net.)

<sup>2</sup> *Die Lichtbehandlung des Haarausfalls*. Von Dr. Franz Nagelschmidt. Vierte Auflage. Berlin: J. Springer. 1926. (Med. 8vo, pp. 82; 89 figures. R.M. 3.50.)

<sup>3</sup> *Sunlight and Artificial Light*. By Harold Wigg. London: Faber and Gwyer, Ltd. 1926. (Cr. 16mo, pp. vii + 96; 15 figures. 1s. 6d. net.)

<sup>4</sup> *Epilepsy: A Functional Mental Illness: Its Treatment*. By R. G. Rows, M.D. Lond., and W. E. Bond, M.R.C.S., L.R.G.P. London: H. K. Lewis and Co., Ltd. 1926. (Demy 8vo, pp. viii + 138. 8s. net.)

sphero of neuropathology before the war, and the value of his unsparring and devoted work on behalf of the war-shocked soldier, both during and after it, can scarcely be overestimated.

### THE PROTEINS.

IN *Chemistry of the Proteins, and its Economic Applications*,<sup>5</sup> Dr. DOROTHY JORDAN LLOYD offers us a very useful little monograph, though we suspect that she is more in sympathy with the chemistry of her subject than with its industrial aspects.

It has been the habit of some teachers to treat the proteins as a race apart, undisciplined to the conventions of molecular behaviour. True, they are built of the same clay as other substances, but their peculiarities of conduct are held to betray an unnatural unbringing. For this view there is reason enough in the idiosyncrasies of protein behaviour, but the regrettable consequence has been that this group of compounds has not, on the whole, been seriously treated by the organic chemist. It has been the privilege of the last few years to show that an enlightened use of physico-chemical precept, building upon the solid analytical foundations laid by the masters of biochemistry, could tutor many of the vagaries of protein behaviour to classical conventions. The story is well, but not exhaustively, told by the author, who thereby gives us—what we had lacked—a monograph in our own tongue on the position of protein chemistry in its analytical, synthetic, colloidal, physico-chemical, and applied aspects. The balance is, on the whole, well maintained, and a student, baffled by the elusive treatment of the subject in many general textbooks on chemistry, should derive real satisfaction from this work.

Phenomena are not always so abstruse as the labels that are fixed to them, and—as this book shows—a considerable understanding of much in the behaviour of proteins may be achieved without great subtlety of argument or ingenuity of nomenclature.

### RENAL SURGERY.

F. MCG. LOUGHNANE has written *A Handbook of Renal Surgery*<sup>6</sup> for the use of students and practitioners, and has aimed at presenting in as concise a manner as possible a complete up-to-date statement of practical renal surgery. The title of the book is, however, somewhat misleading, for far more space is given to diagnosis and methods of examination than to treatment. Indeed, it is not so much a handbook of renal surgery as a guide to modern methods of diagnosis, and particularly to pyelography. The subject matter is illustrated by numerous pyelograms which must go far to convince any reader who is not acquainted with the refinements of modern methods of diagnosis of what great advances have been made within the last ten years. In addition to the pyelograms, the book contains some excellent pictures of the kidney after oxygen inflation of the perirenal tissues. The text accompanying these radiographs is written in a clear concise style and is eminently practical in its outlook. As stated above, the signs and symptoms of renal lesions have been discussed in Mr. Loughnane's book with far greater thoroughness than the methods of treatment applicable to these conditions. It is indeed in his handling of renal surgery treatment that a certain loss of proportion is apparent when the aim of the work is borne in mind. Quite apart from such statements as that in hydatid disease "an attempt should be made to remove the cyst in toto," a piece of advice with which most people who have had to deal largely with echinococcus of the kidney will probably quarrel, the operative surgery of the kidney has been dealt with so briefly that the work cannot serve as a guide to treatment. Though the book falls short in this respect, what it says is sound, well written, and well illustrated.

<sup>5</sup> *Chemistry of the Proteins and its Economic Applications*. By Dorothy Jordan Lloyd, M.A. Cantab., D.Sc. Lond., F.I.C. Introduction by Sir Frederick Gowland Hopkins, M.D., D.Sc., F.R.C.P., F.R.S. London: J. and A. Churchill. 1926. (Post 8vo, pp. xii + 273; 48 figures. 10s. 6d. net.)

<sup>6</sup> *A Handbook of Renal Surgery*. By F. McG. Loughnane, F.R.C.S. London and New York: Longmans, Green and Co., Ltd. 1926. (Demy 8vo, pp. xiv + 210; 46 figures. 10s. 6d. net.)

### THE CONTROL OF CANCER.

*Cancer, its Control and Prevention: A Book Everyone Should Read*,<sup>7</sup> by the late Dr. HALL-EDWARDS, is a small volume intended to give the public what ought to be common knowledge with regard to cancer, an ignorance of which is responsible for a preventable shortening of the lives of a large number of persons. The author emphasizes two directions in which there is room for improvement—namely, an earlier application for treatment than is frequently the case, and the avoidance of recognized causes of cancer. With regard to the first point, a patient cannot be expected to appreciate the grave significance of many apparently trivial symptoms. The problem is to educate him to recognize what symptoms he must not regard as trivial until he is confirmed by medical authority. With regard to the second point he has to be taught to realize the importance of irritation as a factor in the causation of cancer, and to know the common forms of irritation that should be avoided or not allowed to continue. Dr. Hall-Edwards's book supplies much information on these matters; he considered that the objects aimed at could be best attained by means of a vigorous propaganda. He suggested measures on the lines of the campaign of the American Cancer Control Committee, and expressed a hope that the Ministry of Health might authorize the formation of similar committees to undertake the propaganda. The American committee favours propaganda through the daily press; we are inclined to think, without any desire to prejudge the question, that in this country the daily press would not be a suitable agency for the purpose. It is difficult to formulate a practicable scheme, but it seems that, even with the existing organization, more might be done than is done by that large body of practitioners who may be called "family doctors." It is probable that they could be very helpful in drawing their patients' attention to the matter and gradually inculcating the habit of bearing it in mind. It would seem to be an important part of preventive medicine, and falls well within their sphere.

### MONGRELS.

MESSES. ARTHUR H. ESTABROOK AND IVAN E. McDONOUGH's book *Mongrel Virginians*<sup>8</sup> is a study of descendants of four men—one a white, the others Indians—who settled in the foot-hills of a mountain range in Virginia. There was much subsequent intermixture of blood with negroes and Indians, and the group has experienced the social ostracism to be expected in a society where colour is a class distinction. A result has been that matings tended to be frequent within the group; in the fifth generation 58.6 per cent. of the matings were within the family, in the sixth generation, not yet completely paired, 37 per cent. of the unions have been consanguineous. The group consequently presents many of the characteristics of a separate community, and this book is a detailed record of the characteristics of the individuals, followed by a brief statistical summary of the results and their interpretation.

Reviewers are often accused by disgruntled authors of not reading the books criticized. This reviewer must confess that he has only read a small proportion of the 130 pages devoted to individual descriptions, of which the following is a typical specimen:

"Oneida, the last of this fraternity, born 1896, light in color, has little education, and has been a prostitute for some years. She has had two illegitimate children, one by Lloyd Jones, now with its father, and 'B,' 'of mixed blood,' who died in 1914, soon after birth, from what was supposed to be mumps. She is 'no good.'"

Even the life stories of the many bold bad women, such as Abigail, who, although never married, wears two huge brass wedding rings and has borne eight illegitimate children, or Hopsy, who was a "promising girl" "when

<sup>7</sup> *Cancer, its Control and Prevention (Education will Lower the Death Rate): A Book Everyone Should Read*. By John F. Hall-Edwards, F.R.C.P., L.M. Edin., D.R.M.E. Cantab., F.R.S. Edin. Birmingham: Cornish Brothers, Ltd. 1925. (Cr. 8vo, pp. 82. 2s. act.)

<sup>8</sup> *Mongrel Virginians: The Win Tribe*. By Arthur H. Estabrook and Ivan E. McDonough. Baltimore: The Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1926. (Cr. 8vo, pp. 205; 21 illustrations. 13s. 6d. net.)

young," but "became a prostitute when in her youth" (a subtle distinction, this, between being young and in one's youth), and "has an ugly temper which she uses occasionally, especially towards her mother," are not deeply interesting, and one hastens to the conclusions. They are these: that the whole tribe is below the average, mentally and socially, and that, considering the remoteness of pure Indian blood, the persistence of Indian traits among them is remarkable. "When one sees a group of men walking along the county road they will always be found parading in single file and for the most part non-communicative." The authors infer from their rather meagre statistics (125 reproducing females) that the fertility of the group is above average, but without a comparison with agricultural families from the same part of the country this conclusion cannot be accepted as proven. The authors also seem to hold that the data are evidence against the social expediency of mixed marriages. But in speaking of one of the unsocial traits of the group they remark that "this may be largely due to their geographical and their even greater psychological isolation throughout life." Altogether apart from any biological considerations, one would not expect a socially ostracized minority to score high marks when examined by the standards of the majority.

This book represents a great deal of work, and is, let us hope, of scientific value. But its authors do not display much literary skill, and, since to present their case readably would require great literary skill, the book is not easily readable. These are raw materials rather than a finished product.

### SURFACE CHEMISTRY.

It is well known that the surface of a solid or liquid exhibits properties which belong to the surface alone, and are not shared by the interior part of the substance. Dr. E. K. RIDEAL's *Introduction to Surface Chemistry*<sup>9</sup> treats of the effects taking place at the surfaces which separate contiguous bodies dealing with them as functions of chemical constitution. The purely physical properties of surfaces have been the subject of research since the early days of experimental science. More recently many of the known phenomena have been co-ordinated and interpreted in terms of the reciprocal chemical relationships of the participating substances. The examination of such relationships has now been so far extended in this sense that a basis is afforded for the explanation of all that takes place between matters which do not destroy each other's identity on contact.

The study embraces the primary causes leading to the formation of emulsions and colloids, and enters into adsorption and its attendant phenomena of catalytic activity. The nature of the effects induced at the interface of contiguous matters being determined by the forces exerted on the individual molecules or by the energy they possess, the ultimate explanation of their behaviour is resolved into a consideration of these terms. The study is thus a branch of molecular physics having a special regard to chemical effects. It is therefore necessarily given a mathematical treatment. This fact need not prove a serious obstacle to the ordinary reader. The mathematical expressions are not generally beyond the reach of the student of physics and chemistry; they are nowhere an embarrassment, and the text supplies an adequate introduction to the basic facts and their consequences. Dr. Rideal's treatment of the subject is systematic; it is set on a broad basis dealing with many aspects of the various problems. The book is ostensibly prepared for those beginning their acquaintance with the subject, and is written, we are happy to note, with a measure of sympathy for their powers of perception, for we have not infrequently seen a style in textbooks much like that of a candidate writing for his examiner, and presenting a context sufficient to demonstrate the writer's knowledge but not well suited to enlighten the uninformed. This book is one of the first, if not the first, to make of the subject the special study which it is destined to become. There is hardly a branch of knowledge that does not owe

some debt to research on the behaviour of the single molecule, and particularly its behaviour when it occupies a place at the surface of the body to which it belongs. It would be safe to say, for example, that nothing is known of lubrication save what is revealed by surface chemistry. Physiology and a number of other sciences must become more and more directly dependent on what is taught by the facts and theories of this special province. Dr. Rideal has prepared a useful book, which must become a necessary part of the equipment of every scientific reader.

### NOTES ON BOOKS.

THE third number of this year's volume of *the Annals of Medical History*<sup>10</sup> has on the cover a portrait of Sir William Lawrence (1783-1867), that commanding personality and orator who was on the surgical staff of St. Bartholomew's Hospital for fifty-two years (1813-1865). The account of his life, taken admittedly in part from Sir Norman Moore's *History of St. Bartholomew's Hospital*, has special reference to his ophthalmic work. The frontispiece, representing the first Alexander Monro, illustrates an editorial article on the early teaching of anatomy at Edinburgh, based on an article published some four years ago by Dr. J. D. Comrie. The account of John Redman of Philadelphia contains the history of the founding in 1786 of the College of Physicians, of which Redman was the first president. In a scholarly article redolent of much research, Dr. C. G. Cumston traces the history of herpes from the time of Hippocrates to the early years of the nineteenth century. Dr. Roy L. Moodie's account of an alveolar abscess in the mandible of a rhinoceros belonging to a group of running mammals which have been extinct probably for millions of years is of special interest in view of the rarity of dental disease in fossil vertebrates. Dr. W. G. Aitchison Robertson's article on the use of unicorn's horn, coral, and stones in medicine discusses the origin of the unicorn myth. Other articles in this number are on the teachers and textbooks in use during the thirteenth and fourteenth centuries in Paris, on Pepys's account of the plague, on Bernard de Mandeville's "Fable of the Bees," and on the operative story of the heart.

*What it Feels Like*<sup>11</sup> is an attractively written series of letters to a medical friend by "Doctor Robin," who has plenty of breezy humour, and, indeed, does not take himself very seriously, for after his degree and diploma on the title-page he adds: "Holder of the usual sort of hospital appointments, and author of the usual unimportant treatises." His description of the life of a medical missionary in China covers the five years ending February, 1925, and breathes a wholesome muscular Christianity and genial clarity. The account of the varied life and wide opportunities for medical work in the Chinese mission field should make recently qualified readers in search of a career consider such a life, when the present troubles in China have passed away.

The twenty-second volume of *The Ophthalmic Year Book*<sup>12</sup> contains bibliographies, digests, and indexes of the literature of ophthalmology for the year 1925. The information is arranged under anatomical, physiological, and pathological headings, and each reference is accompanied by a short abstract of the book or article concerned. Good indexes of authors and subjects are appended, and ophthalmic surgeons will find this a most valuable key to recent work in their specialty.

*The Motor Electrical Manual*,<sup>13</sup> which has reached its third edition, essays the difficult task of explaining to the owner-driver the electrical contrivances upon which the running of his motor car now so largely depends. Elementary explanation of electrical principles is given in sufficiently non-technical language, together with the information required for maintaining the working of the equipment. Some of the statements made are perhaps not quite forcible enough; thus, to say that "it would not be possible to . . . use 6-volt bulbs on a 12-volt equipment" hardly conveys a full impression of what would result from the attempt.

<sup>9</sup> *Annals of Medical History*. Vol. VIII, No. 3, September, 1926. Edited by Francis R. Packard, M.D. New York: Paul B. Hoeber, Inc.; London: Baillière, Tindall and Cox. 1926. (8 1/2 x 12 1/2, pp. 213-330; illustrated. Subscription in Great Britain £2 2s. per volume of four numbers.)

<sup>11</sup> *What it Feels Like: Letters from a Doctor out East to a Colleague at Home*. By "Doctor Robin," M.A. Oxon., M.R.C.P. Lond. With an introduction by Sir Humphry Rolleston, K.C.B., M.D. London: Student Christian Movement. 1926. (Cr. 8vo, pp. 78. 2s. net.)

<sup>12</sup> *The Ophthalmic Year Book*. Vol. XXII. Edited by William H. Crisp. Chicago: Ophthalmic Publishing Company. 1926. (Roy. 8vo, pp. ix + 515; 9 figures.)

<sup>13</sup> *The Motor Electrical Manual*. Third edition, revised. London: The Temple Press, Ltd. 1926. (Cr. 8vo, pp. vi + 175; illustrated. 2s. 6d. net.)

<sup>10</sup> *An Introduction to Surface Chemistry*. By Eric Kightley Rideal. With a preface by Professor F. G. Donnan. Cambridge: The University Press. 1925. (Demy 8vo, pp. vi + 336. 18s. net.)



# British Medical Journal.

SATURDAY, DECEMBER 4TH, 1926.

## HARVEY'S INFLUENCE IN EDINBURGH.

THIS issue of the JOURNAL opens with the oration recently delivered by the President-Elect of the British Medical Association, Sir Robert Philip, on the occasion of the Harveian Festival of the Edinburgh Harveian Society, which has flourished for a century and a half. In his interesting and graceful outline of the life of Harvey, Sir Robert suggests that in his capacity of Physician Extraordinary to King James he might have come into contact with Shakespeare, who was a Court servant. The possibility of this relationship is undeniable, but there is no available evidence one way or the other. William Harvey, equally with William Shakespeare, was not for an age but for all time, and not for one country but for "states unborn and accents yet unknown"; and Edinburgh and the Scots, ever hungry for the fruits of the spirit, have done well to honour the founder of modern physiology. When we look back on the careers of the physicians of the sixteenth and seventeenth centuries we realize how international science then was. The Italian universities welcomed scholars from all parts of Europe, as did the Dutch schools of learning, which were especially frequented by the Scots. The familiarity of all educated men with the Latin language, which they learnt and used as a living and not as a dead tongue, rendered this intercourse and international understanding easy. Latin came as readily to Harvey's tongue and pen as French does to a modern diplomatist, and very little by him is extant in any other language.

Small wonder that Edinburgh should have its Harveian Society, although all records of the personal influence of Harvey in that city are lost. We know that in 1633 he accompanied his royal master on his visit to Scotland, and it cannot be doubted that his inquiring mind led him to seek out all or any of the Scottish physicians who had pretensions to scientific attainments—if, indeed, as seems more likely, they did not seek out the celebrated discoverer of the circulation of the blood. Unfortunately, all the record that we have of this visit is that passage in the work on the generation of animals in which Harvey describes the Bass Rock and its sea-birds, and dismisses as mere hearsay the stories of the generation of geese from the fruits of certain trees that had fallen into the sea. Even this treatise might not have come down to us but for Dr. Ent, to whom all later physiologists should return thanks; for Harvey in his age was discouraged and weary, but still working, and, as he said, "did I not find solace in my studies, and a balm for my spirit in the memory of my observations of former years, I should feel little desire for longer life." He had suffered irreparable loss when his house was pillaged and the fruits of many years of toil were taken from his museum, so that, as he said, "many observations, particularly on the generation of insects, have perished, with detriment, I venture to say, to the republic of letters."

There had been talk in Edinburgh of a College of Physicians for some years before the visit of King Charles I. and his Physician in Ordinary, and Sir Robert Philip suggests plausibly that Harvey was consulted on these proposals, as well as on others for the institution of a school of medicine as part of the "Tounis College," which afterwards became the University of world-wide fame. If in fact Harvey, who stood for all that was best in the spirit of the Royal College of Physicians of London in his day, and who was so much devoted to its interests, had no part in the proposals for the foundation of its younger brother of Edinburgh, yet we may be sure that he would have cordially welcomed its birth, which, however, did not take place till the year 1681, twenty-four years after Harvey's death and one hundred and sixty-three years after Henry VIII granted a charter to the London College. At least we know that his faithful disciple Sir Charles Scarborough, physician, mathematician, and anatomist, who accompanied the Duke of York to Scotland in 1679, had a good deal to do with the foundation of the College, and we can hardly doubt that he was thoroughly imbued with Harveian ideas.

Sir Walter Scott has painted vivid pictures of the conviviality of the lawyers of Edinburgh in his time. The leaders in medicine do not seem to have lagged behind them, for the Harveian Society, which grew out of the Aesculapian Club, was convivial as well as learned, and we suspect that its earlier name, or nickname, of "The Circulation Club" may have referred to the circulation of the bottle as well as of the blood. Sir Andrew Duncan, the "father" of the Royal College of Physicians of Edinburgh, records that Alexander Monro (*secundus*), the greatest of the three anatomists of that name, was a distinguished member, and that "without transgressing the bounds of the most strict sobriety, he afforded us demonstration of the exhilarating power of wine." Duncan himself was, as Sir Robert Philip tells us, promoted in 1815 to the degree of Doctor of Mirth, from which circumstance we may conclude that exhilaration on the occasion of Harveian banquets was not peculiar to Monro. The traditional day of meeting was April 12th, which is referred to as the birthday of Harvey, who, however, was born, like Prince Bismarck, on April 1st. Evidently the members of the Circulation Club were so conservative as to mark their opinion of the reform of the calendar by dining on the first of April, Old Style.

The Harveian Society of Edinburgh was established under that name in the year 1773, the same in which Dr. Samuel Johnson arrived in that city on his way to the Hebrides with the faithful Boswell, whose acquaintance was largely among lawyers, so that the great man was not introduced to many doctors. But he met the celebrated William Cullen, who seems to have humoured him dexterously; also Sir Alexander Dick, who was President of the Royal College of Physicians for seven years, and then retired of his own free will; as well as Dr. James Gregory, not long afterwards appointed to the chair of the Institutes of Medicine at the early age of 23. This versatile, witty, and quarrelsome man published an essay on "The theory of the moods of verbs" which would hardly have appealed to Harvey, who held with Galen that we should but agree about the things, and not dispute greatly about the words, for, as he says in another place, "We are too much in the habit, neglecting things, of worshipping specious names." Again, in a letter to Slegel of Hamburg he wrote: "You counsel well when you say, 'only make sure of the thing, call

\*This and other quotations are from Dr. Robert Willis's translation of the works published by the Sydenham Society, London, 1847.

it what you will.' " Harvey's clear and penetrating mind had little tolerance for verbal subtleties.

We may safely predict that the visitors at the Annual Meeting of the British Medical Association next July will find that hospitality and conviviality—within the limits of becoming mirth—are still practised on a generous scale in the venerable capital of Scotland, as they were on the occasions of former Annual Meetings there, when Alison, Christison, and Grainger Stewart successively adorned the presidential chair of the Association. Edinburgh, as is truly stated by the writer of another interesting article in this issue, powerfully stirs the imagination of all who know anything of its history, even if only through the pages of Scott and Stevenson. Like London, it had its Guild of Surgeons and Barbers, and, unlike London (which had to wait three centuries for its University), it had that celebrated child of the Reformation, the "Tounis College," founded in 1582, to which was added later a medical faculty that became in the eighteenth century of world-wide reputation. The union with England conferred great benefits on both countries, and, so far from prejudicing the University of Edinburgh, it increased its fame and its importance by attracting Englishmen, especially from the northern counties of the sister kingdom.

### LORD BALFOUR ON RESEARCH.

THE EARL OF BALFOUR has recently had occasion to deal with scientific research in two separate pronouncements, one relating particularly to medicine, the other in more general terms. Through his position as chairman of the Medical Research Council he has been afforded the opportunity of gaining a sympathetic insight into the aims and methods of research workers, while his philosophic temper and breadth of vision enable him to survey the wide domain of their activities with understanding. His views on research are therefore significant, and must command attention. Research in the common phrase may be taken to mean careful and diligent inquiry. In its scientific application it implies in addition the quest of something unknown. The serious research worker, having followed the made road to its termination, must pass beyond it into the undiscovered land where his field of action lies. The confirmation of points not fully known or insufficiently attested may for practical purposes be held to be included within the purview of research, but its true aim, its ultimate object, is "some new thing."

In his speech at the dinner of the Royal Society of Tropical Medicine and Hygiene, noticed in the JOURNAL last week (p. 1013), he put the case of a young medical graduate who goes out to a remote part of the Empire and finds himself forced by his sense of the situation to undertake research. Research conducted under these conditions must inevitably differ to some extent from work done at home. This is not to say that scientific work of high precision may not be carried through with conspicuous success in quite unfamiliar surroundings. The researches of Professor Barcroft and his party on the respiratory function of the blood at high elevations on the Andes are comparable in method and equivalent in accuracy to similar work at mean levels. But Barcroft's party had a travelling laboratory and lived in comfortable houses. The Everest expedition of 1924, on the other hand, could take no laboratory with them. They had no protection, save that of tents, from the icy mountain winds. Undeterred by the hardships which beset them they made unique

observations, but it was physically impossible for them to prosecute research of a sustained or elaborate kind. The case of Lord Balfour's medical graduate in some tropical outpost of British rule is, *mutatis mutandis*, akin to that of the Everest expedition. Though free from the distresses of life at high altitudes, he may suffer instead from the exhausting effects of hot humid air or endemic disease. Burdened with routine work, and, if he is a mobile officer in an undeveloped country, unable to take much scientific equipment about with him, he finds himself faced with medical problems, and sets himself to the task of their solution. His work in the circumstances described is a true research. He has passed beyond the made road of medical science. He is dealing with "some new thing." Even if the disease which is the subject of his investigation should prove in the end to be known elsewhere, his struggle has not been unavailing. He has established the fact of its presence in his area, he has made some contribution to its etiology and initiated measures which may ultimately lead to its extinction or effective control.

The second of Lord Balfour's two pronouncements, which relates to research in more general terms, forms an introduction to the Report of the Research Special Subcommittee of the Imperial Conference set up to consider the question of research from the economic standpoint. The subcommittee suggested to the Conference the need for the fullest practical co-operation between the organizations within the Empire respectively responsible for agricultural, fisheries, forestry, medical, and industrial research, the quick and orderly exchange of results, and the fullest possible discussion of problems of common interest. The subcommittee did not consider that all imperial research organization should necessarily be centred in Great Britain: an organization for veterinary science, for example, might conceivably be set up in South Africa. Gaps in knowledge might usefully be discussed at the conferences which they propose. For medical purposes good co-ordination would be effected if each part of the Empire were permitted to nominate a representative to the quarterly standing conferences of the Research Council.

In presenting the report of the subcommittee Lord Balfour recalled, among other things, that neither money nor organization can increase the supply of original scientific genius. This is a pertinent reservation which is sometimes too little remembered. Money and organization can provide well furnished premises, suitable to be places of research, but they cannot ensure the provision of the mental equipment necessary for turning them to the highest uses. The most lavishly fitted laboratory, uninspired by some creative mind, will never produce first-grade work. The worker is the essential factor; not the workplace. Epoch-making researches of gifted men have before now been carried out with modest or meagre laboratory equipment. Pasteur's best work was done under such conditions, for the Pasteur Institute came as a recognition of his greatness, not as a means to it. But, given a creative mind to animate and direct, a well equipped laboratory or institute for the promotion of research is obviously great gain.

Lord Balfour, while commending the principle underlying the subcommittee's suggestions for the co-ordination of research, expresses himself as averse to any form of imperial control with this object. Despite his reservation as to the supply of genius he was hopeful that much may be accomplished in the way of improvement "if we are not too ambitious."

There are at this moment in different parts of the Empire a large and increasing number of institutions devoted to research. They provide a basis to work on. Let easy exchange be cultivated between them, and full co-operation will follow. Intellectual waste will thus be diminished, and investigators in the same scientific field, though far separated in space, will be able to work together as partners.

In these two pronouncements Lord Balfour glances at research from two slightly different angles. In one he is concerned with the medical pioneer working under difficulties, in the other with the economic research worker in an organized institute who has ample resources to his hand. In both cases, however, he equally lays stress on the need for exchange of ideas and results, in order to prevent overlapping and save time and labour. It would appear to be not less needful that the results of work in the institutes and scientific departments of the various Governments of the Empire, both in England and overseas, should, when completed, be published in such a manner as to be readily accessible, not only to Government departments, but also to scientific workers in general. The Medical Research Council in this particular has set a good example. The reports of its observers are usually published as pamphlets of handy size, and at a price which is doubtless as favourable to purchasers as circumstances permit. Reports buried in reports of local governments escape the notice of many who would gladly profit by their perusal, and the medical and scientific press, desiring to do the best for its readers, cannot reproduce them verbatim for the information of the few, to the exclusion of topics of more general interest. A scheme of authentic publication, like that of the Medical Research Council, would, if adopted by Governments and their departments, greatly help the scientific worker. It would bring within his reach authoritative information on his own subject in a convenient form, and, amid the mass of material in the guise of science which pours at the present time from the printing presses of every civilized country the whole world over, it would give him, if not always "some new thing," at least some sure thing to guide his further progress. Such a scheme, as an adaptation of the principles commended by Lord Balfour, would advance the cause of true research.

#### CENTENARY OF LAËNNEC.

It is a hundred years since the death of the illustrious Laënnec, and it is also exactly a hundred years since the second edition of his masterly work the *Traité d'Auscultation* was published. The Académie de Médecine has taken the initiative in celebrating this double anniversary by a series of séances on December 13th, 14th, and 15th. On the afternoon of Monday, December 13th, receptions will be given at the Académie de Médecine and the Hôtel de Ville; in the evening there will be another at the Sorbonne in the presence of the President of the Republic; addresses will then be given by the Rector, Professor Ménétrier (on the discovery of auscultation), by Professor d'Arsonval (on Laënnec and the Collège de France), by Professor Roger (on Laënnec and the Faculté de Médecine), and by Professor Léon Bernard (on tuberculosis since Laënnec); after these, addresses from the foreign delegates. On Tuesday, December 14th, there will be in the morning a visit to the Musée Carnavalet; at 3 p.m. a sitting at the Académie de Médecine and addresses by Professor Bar, by Professor Mirailhé (the medical beginnings of Laënnec), by Professor Letulle (Laënnec as a pathologist), by Professor Sergent (Laënnec as a clinician), and by Professor

Achard (the role of Laënnec in the evolution of medicine). There will also be an exhibition of souvenirs. On Wednesday, December 15th, there will be a reception at the Hôpital Laënnec and an address by Dr. Rist, followed by a visit to the Hôpital Necker and the Hôpital de la Charité. In the afternoon, during a visit to the Institut Pasteur, Dr. Calmette will give an address on the prevention of tuberculosis since the days of Laënnec. The fêtes will close with a banquet the same evening at the Palais d'Orsay. All who desire to join in these interesting ceremonies should communicate with the Secretary-General, Dr. Roussy, 21, Rue de l'École de Médecine, Paris, 6. We understand that the Royal College of Physicians will be represented by Sir John Broadbent, and that the Royal Society of Medicine has nominated Sir StClair Thomson as its delegate.

#### GENERAL MEDICAL COUNCIL.

THE winter session of the General Medical Council was unusually brief, lasting only four days, and the disciplinary cases were few in number and raised no novel points of professional conduct. Not a single case was concerned with misleading certification or with "covering," and the one case in which the complaint related to advertising had to do with an Indian practitioner advertising in a Burmese newspaper. Three of the cases related to charges of drunkenness. One of these was dismissed with a caution, and in the other two judgement was postponed for twelve months to give the respondents time to consider their position. In another case the charge was that of professional relationship during adultery. The usual defence in such charges is that professional relationship had ceased before adultery began, but in this case the defence was that the adultery preceded such professional relationship as existed. The Council dismissed the case. The inquiry which occupied the longest time concerned a complaint against a practitioner for unprofessional conduct towards a female patient, the patient appearing as complainant. The solicitor for the complainant asked that the case might be heard *in camera*, and the solicitor for the respondent having no objection, the Council agreed, and strangers, including the press, withdrew. The result of the case was the erasure of the name from the *Medical Register*. The remaining business of the Council was disposed of in half an hour; it consisted of reports of committees which dealt merely with routine matters, but the Council considered for a long time *in camera* the question of the restoration of certain names to the *Register*. The President's introductory address was printed in full in last week's SUPPLEMENT (p. 225), and our report of the session is continued this week.

#### THE TERMINOLOGY OF VISION.

WRITERS of scientific treatises have constantly to beware of the danger of their readers misunderstanding the technical terms they use. In the absence of a technical dictionary the reader may tuck away the phrase or word in his mind for future reference, or may presume it to mean something different or less exact. Moreover, scientific terminology is constantly widening. A technical dictionary is quickly out of date, not merely because new terms are invented, but because old terms are dropped or are given a more restricted meaning. Take such a common expression as the fundamental unit in photometry—"candle-power." When we discuss the brightness of a lamp we speak of it as of high or of low candle-power. Hitherto this has been a general expression for brightness, but photometrists have lately introduced the term "luminous intensity" for use when no actual measure is involved, and have reserved the term "candle-power" strictly for intensity as measured by the international candle, a unit

maintained by a group of incandescent filament lamps at the National Physical Laboratory in this country and the corresponding institutions in Paris and Washington. Perhaps the wise author will include a glossary in his work so that there will be no misinterpretation. The Illumination Research Committee of the Department of Scientific and Industrial Research has hit upon an even better method; it publishes from time to time a series of technical essays on particular pieces of work, mostly relating to specific problems in industrial illumination, such as the light distribution of certain reflectors, and the absorption of light by window glass, and it has taken the precaution to devote the first of these essays simply to terminology in order that those who read what comes afterwards may have a clear apprehension of the terms and symbols. This essay, published in a pamphlet with the title *The Terminology of Illumination and Vision*,<sup>1</sup> adopts, not the alphabetical order of the dictionary, which is the crudest of classifications, however convenient, but the natural order of the subject as a student would approach it, proceeding from the simple to the complex, from the general to the particular, and from the regular to the anomalous. Certainly it is helpful to the memory to come upon a certain term with its definition, not isolated among words with which it has nothing in common except that their initial letters are the same, but branching out from other terms which up to a point have the same meaning. Even the casual student in that way begins to appreciate that the terms used in ophthalmology, for example, are not arbitrarily chosen, but hang together and are themselves a science. Take, for example, the disturbance of muscle balance in the eye, which is spoken of as "heterophoria." If the deviation is a convergence we have "esophoria," if a divergence "exophoria," if vertical "hyperphoria." In a few pages the Illumination Research Committee manages to bring into a clear narrative practically all the more common terms used in photometry and illumination on the one hand and physiological optics on the other. The latter section begins with a simple description of the structure of the eye, its dioptric mechanism, whereby images are brought to focus on the retina, the adjustment of this mechanism by accommodation, and its anomalies, which involve such terms as anisometropia, hypermetropia, and myopia. The co-ordination of the movement of the eyes brings in another set of terms, and a simple explanation is given of what is meant by the visual field and by binocular and stereoscopic vision; then come the three visual sensations—the light, the form, and the colour sensation—and the tests for each. The same plan is followed with the terms in photometry and illumination, which are even more formidable than those in ophthalmology, and are fully to be apprehended only by the mathematician.

#### GENERAL PARALYSIS IN PRIMITIVE RACES.

PROFESSOR FELIX PLAUT of Munich has recently given an interesting account<sup>2</sup> of a tour undertaken in company with the late Professor Emil Kraepelin to determine the prevalence of general paralysis among negroes and Indians in the United States, negroes in Cuba, and Indians in Mexico. During the eighty clear days which they had at their disposal the writers investigated North American negroes in the St. Elizabeth Hospital at Washington, Cuban negroes in the Mazorra Institute at Havana, North American Indians in the Asylums for the Insane at Canton, South Dakota, and Mexican Indians in the general asylum in Mexico City. Their investigations led them to conclude that during the last ten to fifteen years syphilis has been

twice as frequent among the negro men and three times as frequent among negro women as in the corresponding sexes of the white race. Certain differences in the course of syphilis were noted among North American negroes, such as the rarity of extragenital chancre, peculiarities in the form and extent of the secondary eruptions, and appearances of gummata on parts of the body seldom affected in the white race, and the fact that the osseous system is involved twice as frequently as in whites. The inquiry showed, however, that the negroes in North America were as susceptible to general paralysis as the whites, and that the incidence of cerebral syphilis among negroes in asylums was relatively high. Whereas in 1922 the incidence of general paralysis among the negroes showed only a slight excess over that among the whites (11.6 per cent. as compared with 8.5 per cent.), cerebral syphilis was four times as frequent among the negroes as among the whites. General paralysis was rare among the negroes of Cuba, who, though not quite so often infected with syphilis as the North American negroes, are sufficiently often attacked to render a higher incidence of general paralysis probable unless some protective influences were at work. The nature of these influences was not ascertained. General paralysis is also decidedly rare among the North American Indians, in spite of the relatively high incidence of syphilis. Predominance of skin and bone syphilis cannot account for this, as the disease appears to be of a milder type than in the neighbouring white races. Syphilis was found to be very prevalent among Indians in Mexico City, and the frequency of general paralysis among them did not appear to differ essentially from that found in the asylums of North America and Europe.

#### TWO MEALS A DAY.

ANDREW BOORDE, who was born in or about 1490 at Cuckfield in Sussex, began life as a monk and was afterwards nominated suffragan Bishop of Chichester, although he never seems to have discharged any episcopal duties. He finally obtained dispensation from his orders, and became a physician. Partly to improve his knowledge and partly to find out what was thought of Henry VIII, he travelled over many parts of Europe, and, like a sixteenth century Flexner, visited and inspected many universities. Some have supposed him to be a Scot because he studied at Glasgow; but he, in fact, had a very poor opinion of Scotsmen. In addition to a sort of guide-book to Europe he wrote several medical books, including one entitled *Dietary*, in which he gave much shrewd advice. Of a man's ordinary diet he said: "Two meales a day is sufficient for a roost man; and a laborer may cate three tymes a day; and he that doth eate after lyveth a bestly lyfe." Mr. Salzman, who quotes this in his *English Life in the Middle Ages* (London: Humphrey Milford), says that at the time when Boorde wrote "the two universal meals were dinner, taken about 10 or 11 in the morning, and supper, for which the usual hour was 4 o'clock. . . . Mediaeval cookery was more elaborate than is often realized. A great variety of soups, stews, pasties, fritters, jellies, and so forth were in common use, and the recipes that have survived from the fifteenth century show that many dishes were of very elaborate composition, most containing quantities of spices." As an instance of an elaborate recipe Mr. Salzman takes that for "leche lumbard," which was something in the nature of a saveloy or German sausage: "Take pork and pound it in a mortar with eggs; add sugar, salt, raisins, currants, minced dates, powdered pepper, and cloves, put it in a bladder and boil it; then cut it in slices." This was served with a sauce made of raisins, red wine, almond-milk coloured with saffron, pepper, cloves, cinnamon, and ginger. If our forefathers of the sixteenth century only had two meals a day,

<sup>1</sup> I.L.M. Stationery Office, 8d. net.

<sup>2</sup> *Paralysestudien bei Negern und Indianern: Ein Beitrag zur vergleichenden Psychiatrie.* Von Dr. Felix Plaut. Mit einem Geleitwort von Prof. Emil Kraepelin. Berlin: Julius Springer. 1925. (Sup. roy. 8vo, pp. 52; 15 figures.)

each would seem to have been copious whenever the house could afford it. Mr. Salzman quotes some rhyming instructions, one of which is:

"Defyle not thy lips with eating much, as a pigge eating draffe;  
Eate softly and drinke mannerly, take heed you do not quaffe."

It would seem, however, that our forefathers had some difficulty in providing meals containing much meat during the winter season. The system of saving fodder from the summer and late autumn was not efficient, and cattle had to be killed and cured in the autumn—at any rate, that was the case a century earlier. The dearth of fresh meat accounts for the obligation there was on the lord of the manor to keep a capacious pigeon cote. Probably he ate most of the pigeons himself, but doubtless the tenants took toll. If we come to the next century we find a considerable number of entries in Pepys's Diary of what he ate for dinner, which seems to have been a movable feast any time between noon and two o'clock; the latter hour probably was exceptional, and due to the pressure of his work and the talkative habits of committees, which would sometimes sit much longer than he thought at all necessary, but without getting very much work done. This fault is not altogether unknown at the present day.

#### RECENT RESEARCH IN FOOT-AND-MOUTH DISEASE.

The epizootic of foot-and-mouth disease which has been present in this country for the past few years appears to have reached its zenith in 1923, when over a quarter of a million animals were slaughtered, at a direct cost to the country of 2½ million sterling in compensation alone. During 1925, according to a recent report of the Ministry of Agriculture, only twenty thousand animals were slaughtered, and the compensation amounted to just over a quarter of a million sterling. Research is still continuing both here and abroad. At home there is little advance in the state of affairs previously reported in these columns. Investigations, however, have been conducted into the plurality of viruses, and the existence of two separate types (corresponding to the A and O strains of Carré and Vallée) has been confirmed in this country. Stockman and Minett<sup>1</sup> have investigated seventeen strains from various outbreaks in Great Britain, and find that sixteen of these were of the O type and only one of the A type. (The terms O and A were originally given by Carré and Vallée to strains collected in the Oise (O) and in Germany (A).) It has previously been suggested<sup>2</sup> that man might be relatively insusceptible to one of these types, and if this hypothesis can be confirmed it would serve to explain the comparatively small number of human infections in Britain. The O type seems to produce a much milder form of disease in cattle than the A type—the incubation period is longer, the lesions are less extensive, and there may even be no clinical signs of the disease. It is significant that many of the human epidemics have occurred in Germany, and it is suggested that these may be A type infections. Most of the cases recorded from this country have been very mild, compared with the sometimes fatal Continental cases, and would probably be O type infections. It has previously been suggested that these types should be referred to as apthous and parapthous fever. Recently, however, Waldmann and Trautwein<sup>3</sup> have reported the existence of a third type in Germany, and the suggested nomenclature would seem to be insufficient without the assistance of the alphabet in a manner analogous to the typhoid fevers in man. Meanwhile the American commission on this disease has visited the Continent, and has issued an interim report.<sup>4</sup> In horses, especially in the United States, there exists a disease called vesicular stomatitis, which clinically resembles foot-and-

mouth disease very closely. The commission found that injections of material from vesicles of this disease into guinea-pigs produced lesions almost identical with those of foot-and-mouth disease in these animals; the viruses could be distinguished by cross-immunity tests, however. The commission found also that injections of this virus into cattle produced what appeared to be foot-and-mouth disease, but there was less tendency to produce vesicles on the feet than in the classical disease, and the one virus gave no immunity against the other. Pigs appear to be equally susceptible to either virus, and the lesions, both on the mouth and the feet, are indistinguishable the one from the other. Here again there is no cross-immunity. But neither do the A and O viruses of foot-and-mouth disease give any cross-immunity. The horse shows a considerable resistance to true foot-and-mouth disease (the American commission was quite unable to infect this animal experimentally), but it is very susceptible to vesicular stomatitis, lesions developing not only on the mouth but sometimes also on the feet. This appears to be the greatest difference between the two diseases, and accordingly there seems no valid reason why vesicular stomatitis should not be considered a variety of foot-and-mouth disease. The present position seems to indicate that foot-and-mouth disease, like distemper in dogs and coryza in man, is not a single disease but a whole group of diseases with somewhat similar clinical symptoms, but producing no immunity against each other—which promises very considerably to complicate the bacteriological fight against it.

#### ILLUMINATION IN PRINTING ROOMS.

The Departmental Committee on Factory Lighting appointed by the Home Office in 1913, in its third report, after classifying a variety of processes as "fine" and "very fine," urged the importance of obtaining more precise knowledge of the conditions of illumination desirable on physiological and psychological grounds for such work. This was one of the problems submitted to the Illumination Research Committee appointed by the Department of Scientific and Industrial Research to study illumination on general lines, and the committee decided to select hand composing in letterpress printing as the first example of fine work to be studied. The collaboration of the Medical Research Council was invited, and it appointed Mr. H. C. Weston and Mr. E. K. Taylor, of the National Physical Laboratory, to assist in the inquiry, and the Joint Industrial Council for the Printing and Allied Trades nominated two representatives to the special subcommittee appointed to supervise the investigation. The observations were carried out at the printing works of Messrs. Kelly's Directories. The most striking conclusion is that all printing offices would seem to be insufficiently lighted. It appears that some of them have less than 2 foot-candles; with this insufficient illumination nearly a quarter of the possible output is lost, the number of mistakes is more than doubled, and the fatigue experienced by the compositors materially increased. Even when the illumination is as much as 7 foot-candles—a value which is thought to be higher than the present general practice—over 10 per cent. of the possible output is lost, and there is a high percentage of errors. The committee concludes that there is an optimum value of illumination for hand composing, and that it is of the order of 20 foot-candles. If the installation is well planned so as to secure approximate uniformity of illumination over the whole area of work, it may be expected that the daylight rate of output will be maintained, at any rate for the short periods for which an artificial light is required in ordinary printing offices during the year. When work has to be done continuously by artificial light, as in newspaper offices, the provision of

<sup>1</sup> Journ. Comp. Path. and Therap., xxxix, p. 231.

<sup>2</sup> BRITISH MEDICAL JOURNAL, July 19th, 1924, p. 117.

<sup>3</sup> Berl. Tier. Woch., xlii, p. 569.

<sup>4</sup> Journ. Amer. Vet. Med. Assoc., lxx, p. 147.



## THE GENEVA OPIUM CONVENTION.

higher values of illumination is essential if the efficiency of a night shift is to approach that of a day shift. If work is done in artificial light only for a few hours a day, no evidence was found that any undue ocular fatigue is likely to result, providing the illumination is uniform and of the order of at least 10 foot-candles.

## THE GENEVA OPIUM CONVENTION.

THE Geneva Opium Convention of February, 1925, from which such beneficial results were anticipated by those who framed it, has not yet come into force. It cannot do so until it has been ratified by ten of the signatory Powers, including seven of the principal States in respect of which the Central Board to supervise its operation is to be formed. The Secretary of State for Foreign Affairs recently made in the House of Commons the unsatisfactory announcement that only the British Empire (excluding Canada and the Irish Free State), the Sudan, and Portugal had deposited ratifications. It was claimed by M. Zahlo, the president of the Second Geneva Conference, that the convention signed in February, 1925, had "provided the mechanism for its own realization," and that it had initiated "a movement which will accelerate from day to day and from month to month," and that it "had greatly strengthened the Hague Convention of thirteen years ago." This sanguine anticipation has not so far been realized. Reports of illicit traffic in opium, morphine, and cocaine abound. The immense excess of production over any conceivable legitimate use is notorious. The extinction of the export trade in Indian opium, mostly used for smoking, will not be completed for ten years. Critics of the Geneva conferences freely declared that "the agreement of the First Conference represents no progress worth discussing, and the new drugs convention adopted by the Second Congress is a thing of printed paper with the odds heavily against it ever being anything else." It is perhaps some consolation to learn from Sir Auston Chamberlain's recent reply that "The Hague Convention of 1912 continues in operation as between the States parties to it." It will be remembered that the American delegation at Geneva regarded the convention of 1925 as in some respects a less satisfactory instrument than that of 1912, and complained that some of the obligations envisaged by the latter had not been carried out. More recently the Italian representative at the League of Nations declared that the earlier convention of 1925 was in some respects a step backwards from the Hague Convention of 1912. If the earlier convention was lacking in the provision of adequate machinery to attain its objects, it was largely because the British Government instructed its delegates to refuse to discuss "the advisability of an international commission to be entrusted with the carrying out of any international agreement concluded." The present position is highly unsatisfactory, and can only be regarded with equanimity by those who profit by the traffic in dangerous drugs, or who are loath to restrict their employment exclusively to medical and legitimate uses.

## LOCUSTS IN MEXICO.

GREAT BRITAIN, fortunately, is not infested by locusts, but this plague, which we are accustomed to associate with the name of Moses, is by no means uncommon in many countries at the present day; and those who have witnessed smiling orchards and green fields stripped of every vestige of their vegetation in a single night, and have seen the devastating hordes advancing in solid masses to the limits of the horizon, will realize the importance of investigations which throw light on the life-history and habits of these pests, and indicate the direction to be taken in formulating measures for their destruction. We welcome, therefore, a valuable contribution to our knowledge of the subject that

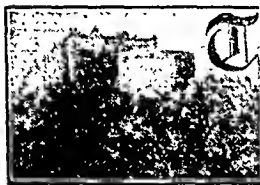
comes from Mexico in the form of a report by a scientific committee appointed to investigate a plague of locusts which invaded the State of Vera Cruz in 1923 and continued in successive waves in 1924. Oddly enough, the committee was appointed, not because of the destruction caused to the agricultural interests of the State, but on account of complaints made to the health authorities of the pollution of water supplies by the dead bodies of the locusts. The committee carried out its investigations in the autumn of 1924, and the report now published bears the names of its three members, Dr. Carlos Hoffmann, professor of zoology in the National University, Dr. Dampf, professor of entomology in the National School of Agriculture, and Señor Gerardo Varela, assistant in the bacteriological department of the Mexican Institute of Hygiene. Their report contains five chapters. The first, by Professor Hoffmann, gives the history and progress of the plague and the situation at the beginning of November, 1924, when the report was submitted. The second chapter, by Dr. Dampf, is a contribution to the morphology and bionomics of the *Schistocerca paranensis* Burm., the locust which caused the plague. The third chapter, by all three members of the committee, contains observations on the parasites that are found on and attack the locusts; the fourth chapter, by Dr. Dampf and Señor Varela, is a study of the carcasses of the locusts; and the final chapter, by Professor Hoffmann and Señor Varela, investigates the nature of the pollution of water supplies by the dead bodies and their influence in spreading disease. The report is extremely well and clearly written. It is illustrated by excellent photographic reproductions and drawings, and gives a short bibliography at the end of each chapter. It embodies a scientific investigation that is worthy of study by all who are interested in the bionomics of locusts or in the prevention of the appalling devastation caused by them from time to time in so many quarters of the globe.

## THE ASSOCIATION IN 1926.

THE middle pages of the SUPPLEMENT this week are addressed to medical practitioners who are not already members of the British Medical Association, and in particular to those who have lately joined the ranks of the profession. A brief account is given of the chief aims of the Association, its work and organization, and of the privileges and responsibilities of membership. The remarkable growth of the Association in recent times is brought out graphically in a chart showing the number of members year by year since 1876. In the past twelve months there has been a further gain of nearly 2,000, the total on November 25th, 1926, being 32,330. The numerical strength of a professional body is not, of course, the only test of its vitality, but a net increase of more than 12,000 since the war speaks for itself. During the same period the number of names in the Medical Register has increased by about 7,000.

SIR THOMAS LEGGE, M.D., who has been H.M. Medical Inspector of Factories since 1898, states in a letter to the Times that he has resigned that appointment because he cannot recede from the position he took up at Geneva in 1921, when, as one of the delegates of the British Government, he voted for the draft convention prohibiting the use of white lead for internal painting of buildings. As recorded in our Parliamentary column last week (p. 1025), the Lead Paint (Protection against Poisoning) Bill reached its final stage in Parliament on November 18th. In it the Government adopted the policy of action by regulations for the prevention of lead poisoning among house painters, instead of the prohibition of lead painting for interiors recommended by the International Labour Conference at Geneva five years ago.

# NINETY-FIFTH ANNUAL MEETING of the British Medical Association, EDINBURGH, 1927.



Edinburgh Castle.

THE ninety-fifth Annual Meeting of the British Medical Association will be held in Edinburgh next summer under the presidency of Sir Robert Philip, M.D., LL.D., honorary physician to the King in Scotland, who will deliver his address to the Association on the evening of Tuesday, July 19th. The sectional meetings for scientific and clinical work will be held, as usual, on the three following days, the morning sessions being given up to discussions and the reading of papers, and the afternoons to demonstrations. The Annual Representative Meeting, for the transaction of medico-political business, will begin on the previous Friday, July 15th. The provisional programme for the work of the twenty-one Scientific Sections is being drawn up by an Arrangements Committee, consisting partly of Edinburgh representatives and partly of members appointed by the Council of the Association. The names of the Presidents of Sections are given in a Current Note published in this week's SUPPLEMENT; the full list of officers, together with other details of the arrangements for the Annual Meeting, will appear in later issues. On the last day of the meeting (Saturday, July 23rd) there will be excursions to places of interest in the neighbourhood. The Association last met in Edinburgh in 1898. We publish below the first of a series of articles on the past history and present activities of the Scottish metropolis and its world-renowned medical institutions.

## OLD EDINBURGH AND THE BEGINNING OF THE EDINBURGH MEDICAL SCHOOL.

EDINBURGH is a town that powerfully stirs the imagination, both by its natural beauties and by reason of the tradition and romance which cluster round its streets and buildings.

The Castle Rock and the surrounding hills have been the seat of human habitation and warfare since prehistoric times. Cramond and Musselburgh, on the city boundaries, show remains of occupation as Roman military posts, and the wall of Agricola, between the Firths of Forth and Clyde, which formed the northern boundary of the Roman Empire, ended some eighteen miles west of Edinburgh. In the Castle to-day are still to be found buildings to remind the visitor of Margaret, the saintly queen of Malcolm Canmore, who did much to civilize and Christianize Scotland; of David I, that "sair saint for the Croon," who founded the beautiful abbeys of Jedburgh, Kelso, Melrose, Dryburgh, Newbattle, and Holyrood, and who introduced the feudal system into Scotland; and of the troubled and romantic times of the unfortunate Mary Queen of Scots. From the Castle the historic mile leads down the High Street, past St. Giles Cathedral and John Knox's house and the old dwellings of the Earl of Moray, Lady Stair, the Earl of Huntly, and others of the ancient Scottish nobility, to Holyrood, with its palace and ruined abbey, again associated with the fortunes of Mary Queen of Scots. On the north of this old town lie Princes Street Gardens, once occupied by the Nor' Loch, which protected the city on this side, while half a mile or

so from the High Street, on the south, can still be found remnants of the old city wall, which formed the buttress against "our auld inemys of England." Immediately within

the precincts of the old wall stood in the fifteenth and sixteenth centuries several religious houses, whose names are still preserved in Blackfriars Wynd, Greyfriars Churchyard, and the Pleasance, where the convent of Saint Mary of Placentia formerly stood. On the site now occupied by the University buildings, about one mile from Holyrood, stood Kirk o' Field, the house in which the unhappy Darnley was blown up in 1567 during the progress of a masque at the Palace. Among the other buildings still extant and connected with celebrated names of bygone days are Heriot's Hospital, built with funds supplied by "Jingling Geordie," the Treasurer of James I of England; Merchiston Castle, where John Napier worked out his logarithms; Lauriston Castle, the home of John Law, the fosterer of the Mississippi scheme; and the houses of Sir Walter Scott, Lister, John Brown, and many others who have contributed to the fame of the scientific and literary life in Edinburgh.



FIG. 1.—Convening House of Barber-Surgeons in Dickson's Close (still standing).

Edinburgh is situated on high ground overlooking the Firth of Forth, with Leith, now absorbed in the city, but until recently a separate burgh, as its seaport. Some nine miles to the north-west, the Firth of Forth is crossed by the Forth Bridge, near which lies Rosyth Dockyard and the naval anchorage, a place of great activity during the

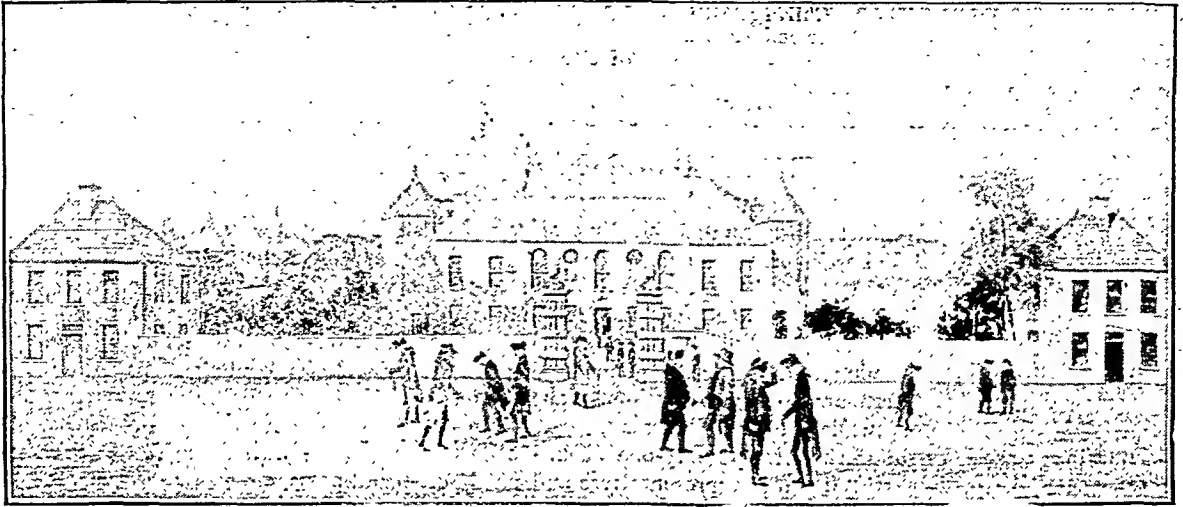


FIG. 2.—The 1697 Surgeons Hall, with old City Wall in background. (Hall still standing with part of wall.)

war. In the Firth lie the islands of Inchcolm, with an old abbey and the monastic cell of one of the early Christian missionaries to Scotland, and further to the east the Bass Rock, with an ancient fortress. To the south of the city the rich agricultural district of the Lothians stretches to the Moorfoot and Lammermoor Hills. In the middle of the plain stands up Traprain Law, a steep rounded hill once crowned by a primitive hill-fort, in which some years ago was unearthed a great hoard of silver vessels, the plunder of Roman towns in Gaul. South of the hills lies the fair valley of the Tweed, celebrated in border minstrelsy and legend. It is a commentary on the change wrought by time that at the present day one can lunch at Edinburgh and comfortably take tea at Otterburn, where, in 1388, took place between the Scots and English what Froissart calls "the bardest and most obstinate battle that was ever fought," and where the dying Douglas said:

"But I have dreamt a dreary dream,  
Beyond the Isl. of Skye,  
I saw a dead man win a fight,  
And I think that man was I."

The road along Tweedside by Peebles and the abbey of Melrose, Dryburgh, and Kelso, ruined during the incursions of Somerset in the time of Henry VIII, is one of the most beautiful in Scotland, and an easy afternoon's motor run from Edinburgh.

The union of the crowns under James VI of Scotland and I of England in 1603 was a great blessing to both countries by putting a stop to the constant warfare on the border, and since that date the peaceful penetration to London has been the aim of all ambitious Scots. In mediæval times Scotland was a poor country, although intercourse and alliance with France brought to the northern country many intellectual advantages which have left traces on Scottish architecture, habits, and language. The desire for education was satisfied by many monastic settlements, and Haddington, some seventeen miles east of Edinburgh, was the seat of a school and abbey church known far and wide as "The Lamp of Lothian." Here William Dunbar, John Knox, George Buchanan, and Sir David Lindsay were educated. St. Andrews, in Fife-shire, had schools which were noted in the twelfth century, and a university founded in 1411. The University of Edinburgh, a child of the Reformation, was founded as the "Tounis Collegio" by the town council in 1582. In regard to medicine, in Scotland as in other countries from early times churchmen, who had obtained a knowledge of medicine during travels abroad, were found in the religious houses. Such a one was Michael Scot in the twelfth century, who returned to Scotland in his declining years to be buried in Melrose Abbey,

"A Wizard of such dreaded fame,  
That when in Salamancæ's cave  
Him listed his magic wand to wave,  
The bells would ring in Notre Dame!"

There also existed in the highlands a peculiar type of hereditary doctor, especially in the family of Beaton or Macbeth, attached to some of the great families, and handing down their medical traditions from father to son through many generations. In the towns, and notably in Edinburgh, there were guilds of barber-surgeons, as of other trades, and in the fifteenth century the brethren of the Guild of Surgeons and Barbers maintained an altar, where daily services were held, in the Kirk of St. Giles, under the patronage of St. Mungo. In the year 1505 this guild received a charter of incorporation from the town council, confirmed the next year by King James IV. Among the conditions stipulated in this charter was a provision that every man before he became a freeman and master of the craft should submit to an examination in the following points, "that he know anotomea, nature and complexion of every member In manis bodie And in lykewayes he know all the varnys of the samyn thatt he may mak flew-bothomea in dew tyme And als that he know in quihilk member the signe hes domination for the tyme." Further, no master was to take an apprentice to practise the craft of surgery unless he could both write and read—a sign of unusual erudition in those days. A noteworthy concession by the town council, as indicating the beginning of public teaching, is the grant to the guild "that we may have anis in the yeir ane condampnit man efter he be deid to mak anatomea of quhairtrow we may haif experience Ilk ane to instruct utheris." Doubtless the yearly anatomical demonstration was carried out in the same manner as that by which Mondino had lectured at Bologna two centuries earlier, and seeing there was much intercourse in the sixteenth century between Scotland and the Continent, probably Mondino's little textbook was used, or that of his contemporary, Henri de Mondeville of Paris and Montpellier. Although public dissections had been carried out in most of the Continental universities in the fourteenth and fifteenth centuries (Venice from 1308), this was the first enactment on the subject in Britain, preceding even the law of Henry VIII in 1540, by which four bodies of executed criminals were granted to the barber-surgeons of London. During the next half-century Edinburgh suffered several disasters, commencing with the battle of Flodden, and continued by the destruction wrought in the English invasions under Somerset. In 1558, indeed, the Incorporation of Surgeons supplied twenty-five of their number, including apprentices, to a force of Scots and French operating against England.

While minor surgery was left in the hands of the barbers and their apprentices, there were in the sixteenth century at Edinburgh several distinguished surgeons who had been trained abroad, especially in the French wars. Among these were Anthony Brisset, who treated Queen Mary of Guise (1542), Gilbert Skene, who published at Edinburgh a treatise on the plague (1568), John Chisbalm,

who operated on the Regent Earl of Morton for strangulated hernia (1572), and Gilbert Primrose, chirurgieon to James VI and Deacon of the Craft of Chirurgieons (1583), under whom this guild was granted pre-eminence among the trade guilds of Edinburgh. An apprentice of the last in 1587 was John Naysmyth, later chief surgeon to the Scots Guards of the King of France. The social status and professional skill of these sixteenth century master surgeons of Edinburgh, relative to other callings and to the general knowledge of the time, was at least as high as that of surgeons at the present day. Several of them possessed considerable heritable property in the city or estates in its vicinity. Their number was not large, as may be gathered from the fact that in the year 1648 they totalled only ten.

While the demonstration of anatomy by the barber-surgeons on the bodies of executed criminals probably continued year by year, a definite teacher of anatomy is not mentioned until 1645. The master surgeons had presumably given yearly demonstrations in rotation conformably to the words of the original charter "illk ane to instruct utheris." In this year James Borthwick, a burges of Edinburgh, having duly passed his examination, was admitted as a master surgeon for the special purpose of "desceting of anatomie for the farder instruction of prentissis and servandis." Borthwick had served abroad through the Thirty Years War and been chirurgieon-general to the Auxiliary Scots Army in England during the civil war. It had been the custom till now to hold the meetings of the craft in the house of the deacon for the time being, and one can imagine that the anatomical instruction must have caused some awkwardness in his domestic arrangements. In 1647 David Kennedy and James Borthwick reported that they had taken as a place of meeting "three rowmes of ane tenement of land in Diksono Close, for payment of fourtio poundis zeirlic." This tenement in a derelict condition still stands near the end of Dickson's Close. In 1669 the Incorporation of Surgeons and Barbers had become so important that it was decided to build a "conveening house" on a piece of ground in the south-east angle of the city wall, presented to them by the town council in 1656. Each member subscribed £100 for that purpose. The grant of further sources of anatomical material by the town council made it possible by Michaelmas, 1697, to build, repair, and have in readiness an anatomical theatre for public dissections. From December, 1697, therefore, the teaching of anatomy in Edinburgh became systematic. Archibald Pitcairne, Alexander Monteth, and others gave combined anatomical demonstrations, and we find Pitcairne, who had for two years been a professor of medicine in Leyden, writing in 1694 to a friend in London that he proposed "to make better improvements in anatomy than have been made in Leyden these thirty years." The Tounis College for the study of the humanities, established by the town council in 1582, had not yet made any provisions for medical teaching. In 1676, however, the town council appointed James Sutherland professor of botany, and three professors of medicine—Dr. A. Pitcairne, Sir Robert Sibbald, and Dr. James Halket—were added to the College in 1685. These appointments appear to have been mainly titular, and there is no evidence that any of the three gave a systematic course in medicine.

The general practitioner of the seventeenth century in

Scotland, as in England, was a surgeon apothecary, professing to heal wounds and cure diseases, making and selling drugs, operating with instruments often made by the local blacksmith and much inferior to the fine steel instruments of the French surgeons. He bound himself for an apprenticeship of three years, and received instruction from the master whom he helped in practice, not being permitted to attend any lectures for the first two years; and probably the majority, unless they lived in one of the towns, never attended any lectures, and stood a very perfunctory examination before they were licensed to practise. In seventeenth century Edinburgh there were, however, several skilled physicians who had obtained diplomas at French or Dutch universities. Among these were Sir Robert Sibbald, Sir Andrew Balfour, Sir Archibald Stevenson, Dr. Archibald Pitcairne, and Sir Thomas Burnet, the brother of Bishop Gilbert Burnet, celebrated for his share in the revolt against James II, and for bringing over William of Orange. This group of men decided on the foundation of medical teaching on a better basis than hitherto at Edinburgh. Among their activities



FIG. 3.—Archibald Pitcairne.

was the founding of a College of Physicians, which finally obtained a charter from Charles II in 1681. By this College an Edinburgh Pharmacopocia was issued in 1699. This compares favourably, in the relative absence of disgusting remedies, with the current London edition of the *Pharmacopocia*, which had been first issued by the London College in 1618. Another of their resolves was to found a complete medical school in Edinburgh. This began as a development of the anatomical teaching already mentioned; in 1702 a course of anatomical demonstrations was carried out by several members of the Incorporation of Surgeons. This anatomical course consisted of eight practical demonstrations, as follows:

*First day:* A general discourse on anatomy, and the common teguments and muscles of the abdomen, by James Hamilton, the Deacon.

*Second day:* The peritonæum, omentum, stomach, intestines, mesentery, and pancreas, by John Baillie.

*Third day:* The liver, spleen, kidneys, ureters, bladder, and parts of generation, by Alexander Monteth.

*Fourth day:* The brain and its membranes, with a discourse of the animal spirits, by David Fyfe.

*Fifth day:* The muscles of the extremities, by Hugh Paterson.

*Sixth day:* The skeleton in general, with the head, by Robert Clerk.

*Seventh day:* The articulations and the rest of the skeleton, by James Auchincloss.

*Eighth day:* The epilogue, by Dr. Pitcairne.

Later the course was extended to ten days, and about the year 1705 arrangements were made with one man to take over the conduct of these lectures, and Robert Eliot was chosen as "public dissector," receiving from the town council a salary of £15 per annum, "as an encouragement to young men to study anatomy instead of travelling to foreign universities, which was attended by expenses and perils to youth." Eliot was succeeded by John McGill and Adam Drummond, who in 1719 resigned in favour of Alexander Monro, a young man who had a special knowledge of anatomy, having studied under Cheselden in London. On March 14th, 1722, Monro's appointment was confirmed by the town council for life. Monro lectured in the Hall of the Surgeons from 1719 till 1725, when, following upon a public riot directed against body-snatching, he removed his preparations for greater security within the walls of the University, as the Tounis College had come by this time to be called. As early as 1711 there had been great complaints of graves in Edinburgh being rifled,

and the Incorporation of Surgeons had felt themselves called upon to forward to the magistrates a memorial in which they denounced this as "a scandalous report most maliciously spread about the town," and entreated the magistrates to exert their utmost power for the "discovery of such atrocious and wicked crimes." The whole memorial, however, sounds rather exculpatory than sincere, and the practice probably continued, though with greater precautions. After the trouble of 1725 the Incorporation promised a reward of "five pounds stg., for discovering such as have given just ground for this report, whether they be Chirurgeons' apprentices or others personating them in their rambles or using this cover for executing their other villainous designs." There are, however, records which give some colour to these reports: for example, in 1724, after a woman had been executed, there ensued a fight between her friends and some surgeon apprentices for possession of the body. In the middle of the fracas the supposed corpse came to life, and lived for many years, with the popular appellation of "half hangit Maggie Dickson." It was not till a century later that the report received dreadful confirmation in the revelations at the trial of Burke and Hare.

Monro (*primus*), when appointed professor of anatomy, immediately introduced an extended course of instruction lasting from October to May, and including the history of anatomy, osteology, demonstrations on the soft parts and organs of the body, the dissection of various animals, the diseases for which surgical operations were commonly undertaken, and general lectures on physiology. This comprehensive course was continued every winter for nearly forty years, a period during which the number of students attracted to Edinburgh yearly increased. In 1720 the number attending the anatomy class had been 57, and by 1760 the annual number had increased to nearly 200.

Between these dates and shortly after the final appointment of Alexander Monro as permanent professor of anatomy, the town council decided, on the recommendation of the prominent medical men in Edinburgh, to appoint other professors, so that a complete medical course might be formed at Edinburgh. Dr. Crawford had already been appointed professor of chemistry in 1713, owing to the importance which this subject had attained in the hands of Sylvius and others on the Continent, and the final step in the institution of the school was made in 1726 by the appointment of Andrew St. Clair and John Rutherford as professors of medicine and institutes of medicine, Andrew Plummer and John Innes as professors of chemistry, and Joseph Gibson as professor of midwifery. The bicentenary of this foundation of the Medical Faculty at Edinburgh University was celebrated in June, 1926, and a full account appeared in the *BRITISH MEDICAL JOURNAL* of June 19th, 1926.

### THE HEALTH OF THE SCHOOL CHILD.

In presenting his annual report as the chief medical officer of the Board of Education for the year 1925,<sup>1</sup> Sir George Newman states that in all new public services, but especially in those of which the cost tends to increase from year to year, it is essential from time to time to examine the position and balance the cost against the benefit obtained. This he does for the school medical service for the year in question, making comparisons with previous years.

The duties of the school medical service fall under three headings: inspection for the discovery of defects and disease; curative measures; and preventive measures. For these purposes there are doctors, dentists, nurses, and clerks, with premises and equipment. The work of inspection includes the routine medical examination of three age groups, or one-third of the children every year; examination of special cases outside these age groups, and the following up and re-examination of those suffering from defects. The ostensible object of the work is to fit the child there and then to receive and benefit from the education provided for it by the State. But the crucial test of the service is not the cure year by year of so many children

suffering from ill health or defects of physique. The service is educational, and that is one reason why it falls within the duty of the local education authority.

The Act of 1907 did not require that only sick children should be selected for inspection and treatment, but laid down the great principle that every child, sick or well, should come periodically into the doctor's hands, in order that this process of health education should be available for all. Education in health involves the organization of the prevention of infection at school. It is concerned with the nutrition of the child, with games, with school work, rest, cleanliness, habits of life, with drains, light, warmth, and air. It seeks to get a clean body for the child, but, better still, to teach parent and child to keep the body clean. There are some 5,000,000 children on the rolls of the elementary schools in England and Wales. Last year 2,619,350 were examined—more than the half of all, and nearly 200,000 more than the previous year. The number found to require treatment apart from uncleanness and dental defects was nearly half a million, or 23.8 per cent. of all those inspected. Of the defects requiring treatment (excluding the two named) those of vision head the list, closely followed by enlarged tonsils and adenoids and other throat affections. Deformities account for a tithe, and tuberculous lung and local affections for still fewer.

Much of the success which has attended this work is due to the part taken by voluntary workers through the teachers and care committees. The influence the teachers can exert, and do in fact exert, on children and parents is unequalled; the success of many treatment schemes depends largely upon them. In London alone there are 330 school care committees, with 5,700 voluntary workers who give up their time with enthusiasm to the care of school children. They follow up individual children, secure regular attendance at the treatment centres, and see that the orders of the doctors are carried out in the homes.

Last year at least 80 per cent. of the children suffering from defective vision obtained proper treatment. Enlarged tonsils and adenoids required operation in 134,880 children, and 45 per cent. received treatment by operation—an increase on last year. Of the total roll of children 2,038,988, or two-fifths, were subjected to dental inspection, and two-thirds of them needed treatment; the number actually treated was 768,146, or 55.5 per cent. of those examined and found in need of treatment. School nurses made thirteen million inspections of children in the schools in regard to cleanliness—that is, three examinations for each child on the rolls. Those found to be unclean numbered 800,000, or 6.5 per cent.—the lowest recorded figure. Last year it was 1 per cent. higher. A sixth of these were cleaned under arrangements with local authorities, most of these being in London.

In secondary schools the incidence of defects of vision is somewhat higher than in elementary schools; defects of ear, nose, and throat are noticeably fewer; deformities are higher, but most are minor degrees of lateral curvature and flat-foot, not recorded in elementary school inspections.

#### *The Teaching of Hygiene.*

There is gratifying evidence that the majority of the training colleges for teachers now realize that the study of hygiene is best approached through a general scientific foundation which includes biology, chemistry, and physics. The whole theory of hygiene is founded on these. The study of animal life enables students to obtain a knowledge of structure and action of the body which should be part of the mental equipment of every man and woman. In one modern training college last year 79 per cent. of the students took such a course of study. In addition to internal lectures and practical work, external lecturers gave accounts of social activities, and visits were made to special schools, clinics, model dairies, crèches, and other centres of welfare work. In the schools also there is evidence that more teaching is given in hygiene. Some school medical officers, notably Dr. Bullough of Essex and Dr. Savage of Somerset, report that definite instructions have been given for this teaching on the lines issued to all head teachers. Special lectures have been given by Red Cross and voluntary aid societies, particularly in connexion with women's institutes, and to officers of girl guides.

<sup>1</sup> *The Health of the School Child. Annual Report of the Chief Medical Officer of the Board of Education for the year 1925.* H.M. Stationery Office, or through any bookseller. 1925. Price 1s. 6d. net.



*Physically and Mentally Defective Children.*

The provision for the education of defective children incapable of taking advantage of the teaching of the ordinary schools is one of the most onerous tasks that the local education authorities have to undertake. Places are now provided for 45,000 children. Over 16,000 of these are for mentally defectives. Next comes the provision for crippled children, closely followed by the open-air schools for the sickly and schools for the blind and deaf. There has been an increase under nearly all these headings, but this is not due to any increase in the actual number of defective children, but to improved arrangements for the ascertainment of existing defectives. Generally speaking, there is sufficient provision for all children totally blind or deaf, but a considerable increase is needed in the provision of special classes for children who are partially blind or deaf. There is only about half the necessary accommodation for mental defectives, there is not enough for the epileptic, and there is pressing need for further provision for children in various stages of crippling, whether due to tuberculosis, paralysis, heart disease, or other cause.

*Open-air Schools.*

Reports from areas where open-air schools have been established show that they are taking a useful place in our educational system; the children benefit both physically and mentally from attendance thereat. Dr. Wyche of Nottingham says:

It is noteworthy that widespread outbreaks of "cold," influenza, and other infectious diseases, which not uncommonly play havoc in the ordinary schools, are never able to get a firm grip on the delicate children in the open-air schools; odd cases occur, but that is all; there is little or no spread of infection in sunshine and open air.

The returns of the results achieved are held to be useful as far as they go, but it is thought desirable to obtain further evidence as to the permanency or otherwise of the benefit received. The cost of the schools is high—£30 a year for each child in a day open-air school, as against £12 in an ordinary elementary school. The high cost is due to small classes, more teachers, three meals a day, and equipment for rest and for shower baths. Certain school medical officers in areas where such schools have been in existence for some years were invited to furnish reports of the after-effects. Returns were received relating to 231 children who had been for three or more years in such school. Their state three or more years after leaving was noted as follows: Very satisfactory 116, satisfactory 55, fair 27, unsatisfactory 21, still under treatment 10, dead 2; of 101 returned to the ordinary schools 81 are reported to attend regularly. Dr. Thomas notes that in his London district the after-history of the boys is more satisfactory than that of the girls, and suggests that the reason is that the home life and occupational activity of the girls are more confined than in the case of the boys. It is added that there are two chief influences that tend to depress the health and undo the good of the open-air school: first, unsatisfactory home conditions, and secondly, unsuitable employment. Attempts are being made to provide more suitable occupations, but the difficulty is to find work that parents think holds out good prospects, and especially of a type they know themselves. Dr. Auden of Birmingham reports that the gain derived is not only to health and physique, but is educational also. There would appear to be a definite financial advantage to the community, inasmuch as these children are enabled to become regular wage-earners when their school days are over.

*Juvenile Employment.*

The battle for the school child in relation to employment in industry has been fought and on the whole won through legislation that culminated in the Education Act of 1921, Part VIII. No child may now be employed for gain under the age of 12 years. A child between 12 and 14 may be employed after school hours till not later than 8 p.m. The child is examined by the school doctor as to physical fitness before being permitted to take up the proposed employment, and in some areas close vigilance is exercised on the children in employment. Generally speaking, the opinion of the school doctors appears to be that under the present restrictions industrial employment to children over 12 years

out of school hours is not detrimental. Much of the work is out of doors, and the effect, both direct and indirect, is advantageous—for example, the child gets better food and clothing. But there are references to the innumerable cases where girls are used as drudges in the home, with disastrous results, both to health and mentality. This is a problem the solution of which lies in the development of an enlightened public opinion.

*Costs.*

The cost of the school medical service for the year was £1,300,347; this is about 2½ per cent. of the cost of public elementary education, which is just over 57 millions. So that of every £100 spent by local education authorities £2 5s. 2d. goes to the medical services—not a high premium of insurance. Sir George Newman states that he has

"no doubt whatever that the nation is getting value for money. A very large number of children suffering from defects of various kinds are having those defects remedied and are thereby enabled to profit more fully from the education provided for them at the public cost. These children are the workers and citizens of the future, and improved physical condition now means increased efficiency and capacity in later years. These are positive gains, and to them must be added the large saving of expenditure which would otherwise have been incurred in various ways had these defects and this physical unfitness been allowed to remain."

*Infants.*

One significant fact that has emerged through systematic school medical inspection is the serious degree of physical defect in the children on their first admission to school. This the report places in the forefront of the medical problems of the elementary school. Observations have been taken of the state of entrants over a number of years. Broadly speaking, there is not much evidence of substantial improvement—nothing like the manifest improvement of the children in school. This is due to the fact that for the most part many of them had never had medical attention or even examination until they were brought to the school for the first time. There is, however, one criterion worthy of note—namely, general physique as measured by height and weight. Dr. Wheatley of Shropshire reports an improvement in weight since the war in both sexes, of entrants and leavers, in town and country schools. Dr. Hordman of Bedfordshire says that children born in 1920 and examined in 1925 averaged nearly one inch taller and one pound heavier than the average pre-war child of the same age. Dr. Thomas of Acon gives similar returns, and adds that the full returns show that the increase in height and weight is more obvious among the children coming from the schools in the poorer districts. Malnutrition, large tonsils and adenoids, bad teeth, deformities, and squint are common findings. The medical observations are held to represent a large measure of failure wisely to provide nurture for the early years of infancy. Much of the failure is not due to neglect or want of effort. It may be due to overanxiety for the welfare of the child showing itself in overfeeding, overclothing, and overcoddling generally. In either case it is want of knowledge in the grand art of child nurture. The cure for this is thought to lie in a closer association between the infant welfare work and the school medical service, but the private medical practitioner and the voluntary hospital are also rendering most valuable assistance.

It is suggested that it would be of value if each school medical officer in his next yearly report reviewed the health of the entrant child in his area and indicated any special problem with which he is faced. Information and observations bearing on the physical condition of the entrant in relation to the care bestowed during pre-school years, together with an indication of the results already attained, might prove invaluable in affording guidance in regard to different types of measures adopted or required. With a view to elucidating the interpretation of cause and effect of early disease in the young child Sir George Newman is obtaining the aid of individual medical officers in regard to the more detailed examination and following up, personal and environmental, of certain children immediately on admission to school, with the object of ascertaining, in regard to physical defects present, their relative frequency and importance, their causation, their subsequent history, and the measures to be taken to prevent their recurrence.

(To be continued.)

## Nova et Vetera.

### THE MEDICAL ART CALENDAR.

For some years past we have noticed briefly at this season the *Medical Art Calendars* published by Mr. J. Philip Kruseman at the Hague. A copy of the ninth annual issue of this calendar, for the year 1927, has now reached us. It is quite up to the standard of its predecessors, both in the choice of pictures and in the skill and taste with which they are reproduced. In selecting his material Mr. Kruseman has been assisted by a small advisory committee of three Dutch medical men and a dental surgeon; while on the historical and artistic side he has again had the help of the eminent art critic Dr. Hofstede De Groot.

Among the artists of whose work excellent examples are presented this year are Jan Havicksz Steen and Pieter Brueghel the elder, and the front cover reproduces on a larger scale the better of Steen's two pictures of a doctor visiting a lovesick young woman with chlorosis. Many other Dutch painters of the sixteenth and seventeenth centuries are represented, together with a few Flemish artists of the same period. Oil paintings predominate, but several reproductions of old engravings appear; for instance, the frontispiece of the *Fabrica* of Vesalius by Nicolaas Fontanus; one of a set of engravings illustrating the five senses, by David Teniers the younger; and a portrait of Carolus Clusius, professor of botany in the University of Leyden at the end of the sixteenth century. There is also an early Italian woodcut of the martyrdom of St. Apollonia, the patron saint of dentists, and a modern steel engraving after Bisschop's picture showing Rembrandt before the door of the anatomical theatre at Amsterdam, where he was making studies of his friend Dr. Tulp and his pupils for "The Lesson in Anatomy."

Most of the pictures are intimate character groups having a medical interest, direct or indirect, and doctors and dentists and their patients again form the staple of the collection. The store of Dutch pictures dealing with medical incidents seems almost inexhaustible, and it is interesting, year by year, to observe how different artists at different periods have handled the same kind of subject. Thus in the present calendar we see the village surgeon pulling off a plaster from the arm of his wincing rustic patient, vividly depicted by Adriaen Brouwer (1606-38), and can contrast it with Lucas Van Leyden's drawing of an operation upon the ear, a century earlier. Uroscopy, always a favourite theme with the painters of Dutch "medical interiors," is the subject of two illustrations, and it will be noted that Jan Steen shows the doctor inspecting a common short-necked urine bottle, while Bernard Van Orley, in his fine study of Job's trial by sickness, makes the physician hold a long-necked urinal.

The picture from this year's *Calendar* here reproduced is a photograph of the entrance to the former pest-house at Leyden, with the sculptured group by Verhulst over the doorway. This stone carving bears the date 1660, and the child in its grandmother's arms has doubtless just died of plague. The grief-stricken mother, with her younger infant tugging at her robe, is finely portrayed.

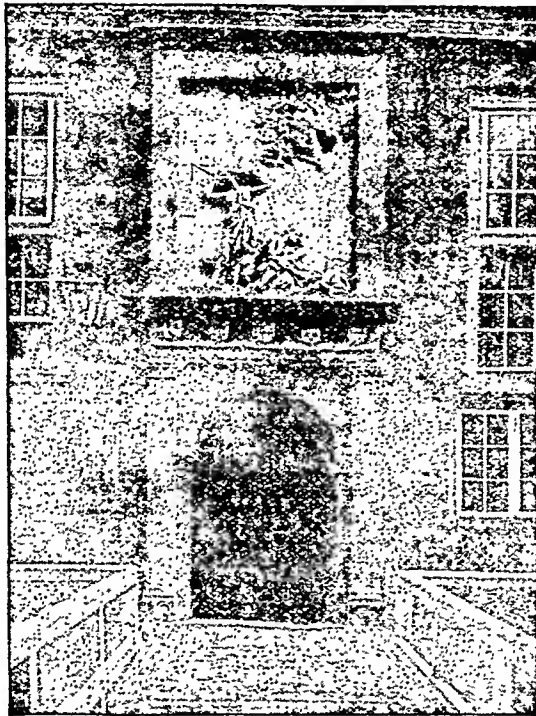
These calendars are a distinct contribution to the history of medicine, and there must be a good many of our readers who would like to have a handy means of preserving the

illustrations after the almanacs have served their turn. They may be glad to know, therefore, that Mr. Kruseman is preparing a special album in which the pictures from this and previous calendars may be collected.

The price of the *Calendar* is 6s., post free, and the album will be sold at 2s. 6d. The pictures illustrating former issues are obtainable also from the publisher at 'S-Gravenhage, Noordeinde 91, Holland.

### THE FATHER OF TRIGONOMETRY.

RICHARD OF WALLINGFORD, the great fourteenth century mathematician and astronomer, whose election six hundred years ago to be Abbot of St. Albans was celebrated last week, was a leper. No doubt the term was applied loosely in that age to include various chronic skin diseases, perhaps psoriasis in particular. But it seems pretty certain that the disease he had was leprosy, for in a prayer composed by him when Abbot he spoke of God's great bounty in inclining "the hearts of the great towards me, that ever when present, they do not abhor my speech and the deformity of my face and hands, but rejoice to converse with me." The mention of deformity of the hands seems to prove that he had something worse than a disease of the skin only. Also in the prayer he speaks of himself as "of lowly estate and smitten by Thy providence with an evil plague, so that I am not worthy to walk among men, but should by law be cast without the camp. Dr. R. T. Gunther of Oxford, who has transcribed the passage in a recent article in *Nature*, states that there are two miniature portraits of Richard in the illuminated chronicle of Matthew Paris, and that in both he is represented with a spotty face. Richard was the son of a blacksmith, and the training he is assumed to have had in the smithy is thought to have stood him in good stead when he set to work on the instruments, the almon and the rectangulus, for which he is still remembered. The two instruments, Dr. Gunther thinks, were intended to be used together. The second instrument was designed to simplify the means of determining the course



The Old Pest-house, Leyden.

and place of fixed stars and planets.

Richard, who was born in 1291, was adopted by the Prior of Wallingford, who sent him to Oxford at the age of 17. In 1314, when aged 23, he became a monk at St. Alban's Abbey, but after three years the Abbot sent him back to Oxford as one of the students every Benedictine house was bound to maintain at the University, so that the Order's reputation for learning should be maintained. He entered the newly founded college of Merton, the home of the never learning, and there found several kindred spirits in the study of mathematics and the observation of natural phenomena. No doubt Richard's main or early interest was in astrology, but, as his work showed, his mind was cast in the scientific mould, and he was ready to seek practical applications. His administrative ability must indeed have impressed his contemporaries, for not only was he elected Abbot of St. Albans in 1326, when only 35, but later on he became a trusted adviser of the King, who took up the cudgels for him when some of the monks of St. Albans, not liking his strict discipline, mutinied when he was discovered to be a leper, and appealed to the Pope to deprive him. The attempt failed, but Richard died in 1335 at the age of 43, after the abbot's house in which he was sleeping had been struck by lightning. Dr. Gunther thinks that in his weakened health the shock was fatal.

## THE NEED FOR THE USE OF DOGS IN PHYSIOLOGICAL AND THERAPEUTIC EXPERIMENTS.

At one of its recent meetings the Science Committee of the British Medical Association considered and approved the following Memorandum, setting out briefly reasons why it is essential that dogs should be used for certain classes of physiological, pathological, and therapeutic experiments. The publication of the Memorandum at this time may be helpful to members of the Association, who, owing to the recent incident in connexion with the Physiological Institute of University College, may have present occasion to consider the subject and possibly to advise members of the lay public upon it.

### MEMORANDUM BY THE SCIENCE COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION.

The modern science of physiology started only in the second half of the last century. The early workers devoted themselves to the establishment of the general principles of physiology. They did not know what the practical therapeutic results of their work would be, but they knew that advance in therapeutics could come only as a result of increase of knowledge of the functions of the body.

Claude Bernard in 1877 said, regarding the practical therapeutical value of his work on the function of the liver in relation to sugar metabolism and diabetes: "Sans doute, nos mains sont vides aujourd'hui, mais notre bouche est peut-être pleine de légitimes promesses pour l'avenir." His work established the fundamental facts regarding the manner in which the transport of sugar in the body was affected. It had no immediate practical therapeutic value, but it formed the foundation for all future work on the subject; after forty-four years Claude Bernard's prophecy was fulfilled, and the invaluable remedy insulin was discovered by Banting.

To-day we have a knowledge of the fundamental processes of many physiological functions, thanks to the pioneer workers of the past. The present century has already reaped a brilliant harvest of practical therapeutic results from researches conducted during last century from a purely theoretical interest.

Insulin is a striking example of long years of research being finally crowned with a brilliant success of the highest therapeutic importance. Numerous other examples of a less striking nature could be mentioned. The knowledge of the importance of vitamins in nutrition was the result of academic work carried out at the beginning of the century, and now it promises to be of the most fundamental importance in the prevention of disease amongst urban populations.

A great many problems which at present appear of purely abstract interest are still awaiting solution, and it is as necessary as ever, if the foundations of therapeutic science are to be strengthened and enlarged, that these should be solved. Nevertheless, the knowledge which we already possess is sufficient to permit animal experiments to be made on definite problems connected directly with the healing art. That is, it is intended to utilize our knowledge regarding general physiological and pathological laws to improve the treatment of disease.

For this detailed work it is essential to use animals as nearly allied to man in their metabolism as possible, and the only alternative to this is to make experiments on man himself. The latter is a last resort, but it is unavoidable in diseases which are not transmissible to animals, as in dengue fever; in this instance 64 volunteers were inoculated with dengue from mosquitos (*Journ. Amer. Med. Assoc.*, 1926, p. 418). Similar experiments have been made in respect to malaria and yellow fever, not without risk to life. Furthermore, when it is desired to make experiments to determine the value of a specific therapeutic method it is essential that they be made on a large number of experimental animals, with many controls. This is necessary to avoid the results being vitiated by individual variation.

These reasons make the use of dogs necessary in experiments, because no other suitable animals are available. Healthy monkeys in large quantities cannot be obtained in

this country. In herbivorous animals, such as sheep and goats, the physiological functions of the body are too dissimilar from those of man. The diet and metabolism of the dog are almost unique in their similarity to those of man. For example, a cat cannot be fed on a diet of biscuits or a rabbit on one of meat, whilst a dog can be given either, or an intermediate diet. Experiments on dogs may therefore throw light on human conditions—for example, with regard to digestion and urinary secretions—which would not be valid in any other available animal. Questions of mere size often preclude the use of cats. Speaking generally, the more experiments are directed to obtain results of immediate therapeutic importance, the more are experimenters forced to use dogs. This is seen very clearly if the recent work which has led to results of immediate therapeutic value is considered.

#### Insulin.

The fundamental work was all done on dogs by Banting and Best.

#### Heart.

All the recent advances in knowledge concerning the mode in which functional disorders of the heart arise was done on dogs. Our knowledge of the functions of the *spleen* and the mechanism of the secretion and absorption of the *cerebro-spinal fluid* is also due to experiments on dogs.

#### Parathyroid Glands.

The disease of infantile tetany has long remained a mystery, but it has been known to be associated with certain minute glands, the size of a pin, embedded in the thyroid gland. Collip has now shown by experiments on dogs that these glands have a most important action in controlling the calcium content of the blood. He has obtained an extract which has been used with therapeutic success in infantile tetany. It is possible that this extract will be found of the greatest value in the treatment of many forms of septic troubles—for example, wounds and ulcers that refuse to heal.

#### Rickets.

This disease used to be known on the Continent as the "English disease." It has long been a dreadful scourge in the children of the large cities of England and Scotland. At last its causation is known, and it is now recognized that it can be cured either by the administration of cod-liver oil or by exposure to sunlight. Of these two cod-liver oil is the more important, because one can buy cod-liver oil but one cannot buy sunlight—at least not in Glasgow. The fundamental work on the relation of cod-liver oil to rickets was done on puppies, because in them it is possible to induce rickets. The work on light was done chiefly on children.

#### Dentition.

Decayed teeth are still one of the chief causes of ill health in this country. The recruiting figures bear eloquent testimony to this fact, while the cost to the country of dental clinics is not inconsiderable. Mrs. Mellanby's work on puppies showed that a slight deficiency in the fat-soluble antirickets vitamin is a potent cause in favouring teeth decay. This work could not have been done on any other animal, and as a result of it we have a method by which the dentition of young children may be greatly improved.

#### Liver and Bile.

Liver diseases are one of the most important classes of disease in this country. Our knowledge of the functions of the liver, which is by far the largest and most important gland in the body, is absurdly deficient. In the case of jaundice it was not even known if this condition was always due to liver disease or whether it might not also be due to blood disease. Prolonged experiments on dogs by Mann in America have shown that jaundice can be produced not only by liver disease but also by certain diseases of the blood. This is the first step towards the discovery of the causation of jaundice, and hence to the discovery of the means for its prevention.

The liver excretes bile in quantity only less in daily amount than that of the urine. But whereas the urine is discharged into the open, the bile passes into the intestine, where it disappears as such, partly mingling and discharged with the faeces, partly reabsorbed into the circulation.

Owing to our lack of knowledge of the functions of the liver and bile, the disorders and diseases connected therewith continued to be subjects of conjecture until recently. The ancients deemed the liver the principal organ of the body and the focus of all its activity; Harvey's experiments demonstrated that the ancient view was to a large extent erroneous; Glisson showed us something of the structure of the liver; and *post-mortem* examinations demonstrated the changes in the liver which end in death, but afforded no light on the causes of these changes, which may possibly be amenable to remedy.

The experiments of Claude Bernard already referred to started inquiries relating to the real function of the liver. Complications of disease had produced biliary fistulae, which exhibited the large amount of bile daily excreted; but with this concurrent abnormality—that the bile was escaping externally and not into the intestine.

#### *Surgery of the Gall Bladder.*

Advances in surgery were preceded by animal experiments showing that the gall bladder might be excised without harm. By further steps the removal of gall stones from the biliary passages was firmly established as a means of preventing fatal inflammations or the supervening of cancer. But there continued obscurity as to the indications for surgical interference, with the result that there was delay in carrying out operations, or the surgeon had to undertake exploratory operations while uncertain as to the conditions needing to be remedied.

In the course of pharmacological experiments carried out on dogs, certain new chemical preparations have been discovered to be excreted by the liver into the bile without being poisonous to the animal. Moreover, when excreted into the biliary tract these preparations prove to be opaque to the x rays. Thus by injecting dogs with the preparation and observing the animals under x rays, the gall bladder can be seen to be filled with material causing it to be exhibited in a skiagraph as a black object. Also the course of the bile can be traced by these shadows through the common bile duct into the intestine. The excretion of bile into the intestine can be demonstrated to be increased by a drug, such as magnesium sulphate taken by the mouth, when it reaches the biliary orifice in the duodenum. Such experiments, first carried out on dogs, have already brought about improvements in surgical treatment. The chemical preparation injected into the patient causes no essential disturbance; the free excretion of bile into the biliary tract and its discharge into the intestine in the healthy subject can now be compared with the different varieties of obstruction in the biliary passages. Gall stones in the gall bladder or bile ducts are composed of material translucent to x rays, which cause no shadow; they are now made apparent as clear rounded areas in the midst of a dense black shadow. The surgeon can now be furnished with information as to the exact position of a gall stone, or a biliary obstruction, before commencing the operation. The most approved preparation at the moment appears to be tetraiodophenolphthalein-sodium, administered either by the mouth or by intravenous injection.

#### *Distemper in Dogs.*

Continuous research is going on, and valuable results have already been obtained. The problem is very difficult, but there is every reason to hope for ultimate success. Success will probably throw light not only on distemper but on a number of obscure human diseases.

#### *Pregnancy and its Disorders.*

Pregnancy and its disorders in general are very difficult to investigate. The bitch is particularly suited for this study, as the relations between mother and foetus are more like those found in the human species than they are in those of herbivorous animals. The cat is here too small and temperamentally unsuitable, while monkeys rarely breed in captivity. Our knowledge of the influence of the ovaries on the sexual cycle and the mechanism of uterine contraction is the outcome of experiments on dogs.

#### *Anaesthetics.*

Dogs are best anaesthetized without causing fright or discomfort by means of chloroform. But they are very

easily killed by an overdose in the hands of an inexperienced administrator. An investigation of the cause of this death, produced more readily in the dog than man, has led to invaluable information, and demonstrated the action of chloroform on the vagal system.

#### *Conclusion.*

Medical science cannot remain stationary; unless it advances it will cease to attract the best brains and will retrogress; freedom for research is essential. It is an impossible position if a scientist arrives at a point where the next step involves research on dogs and then has to stop.

Restriction will as surely kill research as the forbidding of dissection on human bodies in Mohammedan countries killed Arabic medical science, which—as a result of the knowledge obtained from Greek science, as advanced by experiment in Alexandria—was in the early Middle Ages far in advance of European medical science of the time.

## France.

[FROM OUR OWN CORRESPONDENT.]

#### *Summer Gatherings.*

Two fresh manifestations of the great activity prevailing in the medical profession in France were afforded this summer by the Journées Médicales de Paris and the Assemblée extraordinaire de l'Union des Syndicats. The journées were held in July, and the members met in the Grand Palais. As is probably well known, this type of meeting had its origin in Brussels, and it seems destined to have a wide extension. During the month of November this year the journées de Montpellier were held. They comprised lectures and demonstrations designed to give practitioners information of the latest progress made in the art of treatment, using that term in its widest sense. Professor Vidal, who is ever at the head of every modern movement, was the moving spirit of this gathering. It was not, however, because he is a university professor that he occupied the chair, but for the more splendid reason that he is the leading physician in France. Nearly two thousand persons attended, which, for a first meeting, was a very striking success.

The Union des Syndicats Médicaux made an attempt to define the attitude the medical profession in France should take in face of the new laws about social assurance which Parliament is about to adopt. By a very large majority it was decided that the members of the Union should refuse to collaborate in carrying out the law if the assurance was to be at the expense of the medical profession. In other words, while the practitioner does not wish to profit from the operation of the law, it is resolved to apply to all compulsorily insured persons the minimum syndicate tariff. Unfortunately the Union did not succeed in ending the conflict by which the 12,000 members of the Union are separated from 3,000 federated practitioners who have recently left it. Though the attempt at reconciliation failed, there never was a time when a united front was more desirable than the present.

#### *Congresses.*

Medical life, which during the summer seems to be so wholly concentrated in the thermal stations, begins again in Paris in October. It has been marked this year, as in previous years, by the congress of surgery in Paris. Its president, Professor Faure, in his inaugural address, which was delivered in the presence of representatives of the Government, did not hesitate to express his fear that the state of public opinion rendered the practice of surgery singularly difficult. He was referring to the frequency with which patients who had been operated upon, and were, sometimes perhaps quite honestly, dissatisfied with the results, instituted legal proceedings against the surgeon. Should a fracture, after consolidation, leave some functional defect, or should a scar be deemed unsatisfactory, a demand was made for at least pecuniary compensation. Only too frequently have the results of an operation, demanded for the relief of unbearable suffering, led to the unfortunate surgeon being treated as a malefactor. Burning words such as these, delivered with all the eloquence for which Professor Faure

is famous, have found an echo in the newspapers, and it is just possible that the general public has been made to understand that if a surgeon is to operate with a threat of this kind hanging over his head he will hesitate to accept the risk and feel inclined to leave nature to do its worst. The two chief discussions at the congress were on the pathology of the cartilages of the knee and the value of conservative operations in inflammatory lesions of the annexes. This last question is engaging a great deal of attention, and it is satisfactory to find how anxious French surgeons have become to avoid surgical procedures which produce mutilations that can never be remedied. The meeting of the congress of surgery was followed immediately by the congress of urology and the congress of hygiene. At both there were exhibitions, where those interested could readily make themselves acquainted with recent mechanical advances.

#### Students and Post-Graduates.

Every student to-day is impressed by the necessity of losing no time in completing his curriculum. The cost of living has become so high that many of our new students find that the least prolongation of the time of study beyond the period fixed by regulations is impossible. The time has gone when the newly qualified man could afford to spend many months in wandering from one special service to another. Nowadays he must begin at once to earn his living. Later on, perhaps, he will come back to the university; fortunately the universities are realizing the necessity of providing him with the intellectual nourishment of which he stands in need.

The most recent devices used in the schools combined to ensure ultra-rapid methods of teaching. Last year we saw how the cinematograph, combined with the loud-speaker, made it possible to give a simultaneous demonstration of a clinical case to an unlimited number of students. Recently we have had a striking example of this tendency in a demonstration given at the Faculty of Medicine by Dr. Lutembacher: the telecardiophone had proved to us that the presence of the patient was unnecessary, because the sounds were fully registered by the instrument. By carrying the method to its extreme limit Dr. Lutembacher has succeeded, by explanations given through the loud-speaker, in synchronizing what the eyes see and what the ears hear. Some of us wonder whether he has reflected on the possibility that the loud-speaker may in the future allow us to do without the presence of the teacher!

G. MONOD.

## England and Wales.

#### SHEFFIELD MEDICAL DINNER.

THE Sheffield annual medical dinner was held at the Royal Victoria Hotel on November 25th, the chair being taken by Dr. C. J. Patton, professor of anatomy in the University. An even larger number than last year attended, and the guests included the Master Cutler, who, in replying to the toast of "The City and Trade of Sheffield," spoke in high terms of the administrative and medical work of the city. Canon Dolan proposed the toast of "The Medical Profession," and contrasted the prevalent want of settled convictions and definite purpose in the general population with the high ideals, faithfulness to famous traditions, and strong discipline of the medical profession. Sir Thomas Horder, who was the principal medical guest, replied to this toast, and congratulated the Sheffield practitioners on their loyalty to medicine as a profession. Elsewhere he had detected recently signs of laxity in the maintenance of dignity, and even a gratuitous desire to shed traditions which for very many years had endowed the work of the medical profession with nobility and greatness. There was some danger that a craving for publicity and selfishness might diminish the respect in which the profession was generally held. It had in the past been a simple matter for the public to distinguish between a qualified and an unqualified practitioner, and it was in the public interest that this distinction should remain clearly defined. There was some tendency at present to distinguish only between the unsuccessful and the successful unqualified man, rather than

to take account of whether he was qualified or not. Referring to the relation of the medical profession to the public, Sir Thomas Horder said he believed that the only sound way of protecting the citizen was the maintenance of personal contact between patient and doctor.

#### AFTER-HISTORY OF TUBERCULOUS PATIENTS.

The Public Health Committee of the London County Council has presented a report on the after-history of tuberculous patients who received residential treatment under its scheme and were discharged during 1922. The particulars have been collected from reports on the patients obtained approximately three years afterwards. The number of adults discharged during 1922 was 3,636; of these, 182 were not traceable, and in 270 others the diagnosis of tuberculosis was not confirmed. Of the 3,184 cases investigated, 2,957 were pulmonary. These had been classified during treatment into two main groups: A, cases in which the tubercle bacillus was not found in the sputum, and B, in which it was; the latter group had been subdivided into three groups: (1) cases with slight constitutional disturbance, if any, and with obvious signs of very limited extent; (2) cases which could not be included in this first subgroup, but were not sufficiently advanced to be included in (3), which consisted of cases of profound systemic disturbance or constitutional deterioration, and all cases with grave complications:

#### Condition Three Years Later of Patients Discharged in 1922.

Group.	Total.	Percentage Alive.	Percentage Dead.
A ... ..	409	87.0	13.0
B (1) ... ..	279	74.2	25.8
B (2) ... ..	1,440	48.0	52.0
B (3) ... ..	829	8.7	91.3

An investigation of the fitness for work of the 1,510 surviving patients showed that, out of a total of 563 A and B (1) cases, 63 per cent. were at work; the percentages of survivors at work in the B (2) and B (3) groups were respectively 23.6 and 16.7. Similar investigations were made in the case of 578 children—326 with pulmonary and 252 with non-pulmonary (surgical) tuberculosis—discharged during 1922, and the results were as follows:

Group.	Total.	Deaths up to three years after discharge.
A ... ..	243	1.6 per cent.
B (1) ... ..	16	51.3
B (2) ... ..	29	51.7
B (3) ... ..	38	92.1
Non-pulmonary ... ..	252	8.3

#### MEDICAL DEVELOPMENTS IN MANCHESTER.

IN view of the increasing importance of nerve work and the need for specialization in this branch of surgery, the Manchester Royal Infirmary is proposing to create a new office. A neurological surgeon is to be appointed with charge of hospital beds and out-patients specially reserved for this class of work. The laboratory of clinical research at the Infirmary has now been running for twelve months under the new director, Dr. W. M. Roberts. Much useful research work on the alimentary canal is in progress.

The post-graduate lectures at the different hospitals are in full swing, and, judging by the attendance, appear to be much appreciated by the local practitioners. A scheme has been under consideration for some time whereby it is hoped that Manchester will shortly be well to the forefront as a centre for post-graduate teaching. This scheme will be quite distinct from the undergraduate teaching so far as the actual instruction is concerned. It is proposed to hold short courses of three months in special subjects, whilst in addition intensive courses lasting for three weeks will also be held. The University and the leading hospitals are actively co-operating in this plan, and it is probable that the present post-graduate courses of lectures will be linked up in one big scheme. The course may be launched next autumn, and it is hoped that practitioners from the colonies and abroad will be attracted by the syllabus. Manchester has a rich supply of clinical material and offers excellent facilities for a course of this nature second to none in the country. The new Vice-Chancellor, Dr. W. H. Moberly, has thrown himself with



great enthusiasm into the work of the University, and appears to be taking special interest in the medical school. This was seen at the opening meeting of the Medical Society, when he presided during the delivery of the presidential address by Dr. A. A. Mumford.

Manchester, and more especially the Royal Infirmary, has recently suffered a great loss in the death of Sir William Cobbett in his eighty-first year. Sir William became chairman of the board of management of the Infirmary in 1904, and largely inspired the removal of the hospital to the new buildings in Oxford Road. It was as a mark of his labours in this capacity that he received his knighthood in 1909.

#### WIGAN INFIRMARY.

The new radiological department at Wigan Infirmary, which has been established at a cost of about £10,500, was opened by Dr. Robert Knox on November 16th. The new building contains rooms for radiographic diagnosis and treatment and two rooms for heliotherapy. Great care has been taken to make the department as completely up to date as possible, and special attention has been devoted to protecting the operators and the patients. Dr. Knox delivered an address on the advance of radiology, and emphasized the importance of close co-operation between the general hospital staff and the radiologists. The powerful apparatus which had been installed would make it possible to treat all forms of malignant disease, and he was glad that the bulk of the apparatus was British. The chairman stated that over £60,000 had been spent in the establishment of new departments at the Infirmary during the past ten years. He claimed that the operating theatres were the finest in the country.

#### BRITISH DENTAL HOSPITAL.

The annual meeting of the British Dental Association was held at the house of the British Dental Association on November 25th. Sir Harry Baldwin, who presided, said that last year the British Dental Hospital had treated about 20,000 cases. It ramified into various parts of London, and had five chief hospital centres and also dental clinics in populous districts. The hospital was opening new centres, and negotiations were proceeding with regard to the opening of yet others. The hospital represented in the true sense of the word a public dental service. The service was rendered by dental surgeons to a great mass of the public who, while able to pay something towards the cost, were not able to afford the customary fees. On that basis the hospital had been able to pay its way. The dental surgeons on its staff, of whom there were between forty and fifty, and the anaesthetists, of whom there were about fourteen, practically did their work for love, except for a small allowance for expenses. The service was not restricted to insured persons or to children, but was open to all persons whose means were insufficient to meet the ordinary cost of dental treatment. The hospital also engaged in propaganda and instruction in dental hygiene. He announced that the Duchess of York had consented to succeed the late Queen Alexandra as patroness. An address was then delivered by Colonel T. A. Hunter, C.B.E., dental director for New Zealand. Colonel Hunter described how, following upon the war, which had revealed a good deal of dental deficiency, the New Zealand Government instituted a scheme for the prevention and treatment of dental troubles in school children. On instituting the scheme it was found that no less than 95 per cent. of the children required some form of treatment. It was resolved to aim at prevention in young children, and to follow the children up as far as possible throughout their school life. To this end a service of specially trained dental nurses was established to undertake dental supervision of the children. These young women received two years' training, and they started work at a minimum salary of £195, rising to £225. Professional interests were carefully safeguarded, and the dental nurses were not allowed to practise outside their sphere, even in association with a registered practitioner. At the present time there were fifty of these nurses in the field and sixty probationers in training, and the Minister of Health of New Zealand was anxious that the numbers should be increased. The nurses were placed in the

schools as soon as their training was completed, and the children were examined every six months. At the present moment 30,000 children were under treatment or observation.

## Scotland.

#### RELATION OF VOLUNTARY TO MUNICIPAL HOSPITALS.

At a meeting of the Aberdeen Town Council on November 15th a letter received from the clerk of the Aberdeen Royal Infirmary was remitted to the Public Health Committee for consideration. This letter contained the observations of the honorary medical and surgical staff of the Infirmary with regard to the hospital proposals of the town council. The Infirmary staff expressed the opinion that the concentration of patients in one hospital area is of benefit both to patients and to medical students, and affirmed very strongly that the main venereal disease department should continue to be at the Infirmary, not at a special clinic; the staff also deprecated strongly the transference of cases of surgical tuberculosis, pneumonia, and other illnesses from the voluntary to the municipal hospitals, as proposed and practised in some areas.

#### LAND AND NATION LEAGUE.

Dr. Joseph Hunter, M.O.H. for Dumfries, has been appointed director in England and Wales for the work of the Land and Nation League. Dr. Hunter was approached some time ago to stand as candidate in the Liberal interest for Dumfries Burghs, but at that time preferred to exert his activities on behalf of Dr. Chapple, who was then with a parliamentary delegation in South Africa. It is expected that Dr. Hunter will be asked to contest the constituency in the Liberal interest at the next election. Dr. Hunter is a graduate in medicine of Edinburgh, and D.P.H. of Cambridge. He served in the South African war, and is a recognized authority upon the life and works of the poet Robert Burns.

#### SCOTTISH SECRETARY ON SOCIAL SERVICE.

The report presented to the annual meeting of the Edinburgh University Settlement, when Principal Sir J. Alfred Ewing presided, referred to an appeal for a sum of £30,000 for the purpose of rebuilding the settlement which had been issued shortly before the outbreak of the strike, and in consequence had not been pressed upon the public, although a sum of £5,547 had already been contributed. Sir John Gilmour, Secretary of State for Scotland and Lord Rector of Edinburgh University, said that when he was a student in the University the settlement did not exist, but when he passed to the University of Cambridge he was brought directly in touch with just such a movement as the present one. In certain directions some of the great English universities had been working at these problems for a longer time, but their importance was now recognized in other great centres of life. Everyone knew that there were differences in ability to reach the higher stages of education, but all true citizens recognized the importance of acquainting themselves with the conditions of life, circumstances, and lines of thought of those who moved in other spheres than their own. Many of those who had taken part in the great war had hoped that the very close and personal association which grew up between the leaders of the men in the field and the rank and file would break down many of those foolish misunderstandings of class distinction. A great deal had been done in this direction. The men and women students of to-day would be the leaders of the future, and the power of leadership must be acquired by knowledge of the circumstances of life in other quarters of the world.

#### HEALTH OF EDINBURGH CHILDREN.

A report submitted by medical officers of the Scottish Board of Health to the Public Health Subcommittee of Edinburgh Town Council states the results of an inspection dealing with the arrangements for child welfare in Edinburgh. The maternity and child welfare scheme is stated to be both effective and economical. There are some forty clinics, day nurseries, play centres, and other institutional advantages arranged for children. The total number

of deaths among children under 1 year of age during 1925 was 731, giving a death rate of 96 per 1,000 births, as compared with 69 in the preceding year. Provision has to be made in the various agencies for an estimated number of children under 5 years in the city amounting to 52,628. During the past year the health-visiting nurses paid 6,690 visits to newborn children, 64,123 visits to children between 1 and 5 years, and 1,312 visits to expectant mothers—a total of 72,125 visits, or an average of 3,606 visits by each nurse. The increased appreciation by the public of the advice given at ante-natal clinics is shown by the fact that total attendances at these during 1925 were 8,793, as against 7,769 for the previous year.

#### TOWN PLANNING.

A lecture under the auspices of the Edinburgh Women Citizens' Association was delivered on November 17th by Captain Reiss, chairman of the Garden Cities and Town Planning Association, London. He demonstrated, by means of photographs taken from the air, how the old plan of rows of monotonous and closely packed buildings, with little space between them, was being displaced by houses grouped in crescents and squares, in such a way as to ensure a maximum of sunlight and fresh air. Regard must be had also to industrial development, and schemes for neighbouring towns should be considered together. Additional land adjacent to new residential quarters might often be secured for factories, and in this way much expense saved in the matter of transport of workers. Until quite recently the artisan had never been properly housed as housing was understood to-day. Since the armistice the number of houses actually built in Great Britain had only just met the ordinary annual demands. Captain Reiss urged that schemes for slum clearance should be thought out well beforehand. He described a scheme in Bristol where half an acre of land was secured close to a slum area about to be cleared. Houses were built upon it into which tenants of the old houses were persuaded to remove, and their old houses were then demolished and rebuilt. Other tenants were then moved into the latter, and their houses in turn rebuilt. In this way, with a small area of ground, a considerable slum area could be replaced, and there were always a few empty houses to work upon.

#### BEQUEST TO INVERNESS INFIRMARY.

The directors of the Northern Infirmary at Inverness have received notice of a bequest by the late Mr. John Mackay of Montreal, leaving the residue of his estate, which is expected to amount to approximately £20,000, to the Infirmary. Mr. Mackay, who died in October, was a native of Inverness and went to Canada as a boy, and there built up a flourishing business as a stockbroker and banker. The directors of the Northern Infirmary are at present endeavouring to raise £100,000 for the purpose of erecting a hospital to meet the needs of the Highlands, and towards this sum £50,000, including Mr. Mackay's bequest, has already been received.

#### WELFARE CLINICS AND BIRTH CONTROL.

In an address delivered under the auspices of the Society for Equal Citizenship, on November 23rd, Dr. Joan K. Rose suggested that questions involving birth control could most suitably be considered at ante-natal clinics, and at these post-natal work should also be undertaken. In such a clinic the subject seemed to be placed in its proper perspective—as a small piece only of a complete maternity service whose aim was to secure the health of both children and mothers. A large family, the lecturer considered, was not in itself a thing to be avoided. The defect lay only in a large family of poor stock, below the poverty line, which was liable to be a hindrance to social evolution. Encouragement of a good stock should go along with discouragement of the bad.

#### HOSPITAL FOR INCURABLES, EDINBURGH.

The report presented to the annual meeting of the Royal Edinburgh Hospital for Incurables showed that the daily average of patients under treatment had been 201. At the end of the year there had been a waiting list of 56, of which 44 were women. The chairman, Sir Henry Cook,

said that the managers wished it to be clearly understood that patients were not admitted by rotation, but according to the urgency of their condition. The general hospitals, owing to the pressure upon their accommodation, could not retain cases of incurable disease, even when in urgent need of hospital treatment, and such cases were especially suitable for the Longmore and Liberton hospitals. The ordinary income for the year ending March 31st, 1926, had been £12,000, and the ordinary expenditure £18,796, the balance having been met out of capital. The average cost per occupied bed for the year in the two hospitals of Longmore and Liberton had been £85. Dr. William Robertson, medical officer of health for Edinburgh, said that the low cost per bed reflected very favourably upon the management, because, taking other large institutions in the city, this cost varied from £99 to £145 per annum. A place like this hospital was entitled to support because of its humanitarian work, and if each person over 15 years of age in Edinburgh would subscribe 6d. per annum this would yield a revenue of £7,866, which would amply meet the deficit on the ordinary income. Baillie Dr. Nasmyth, in moving a vote of thanks to the medical officers, said that the two hospitals provided one-third of the 602 beds available in Scotland for incurable cases.

## Ireland.

#### THE PROBLEM OF THE CRIPPLED CHILD.

THE annual report of St. Mary's Open-Air Hospital, under the care of the Sisters of Charity, has been published. The report states that the Cappagh Hospital is the nucleus for any national campaign which aims at the prevention and cure of diseases leading to deformity in children. Its site is ideal, the building is of the most modern pattern for the purpose, and its therapeutic equipment, including an artificial-sun lamp for use in the sunless days of winter, is thoroughly up to date. The education of the children who are confined to bed for long periods in the hospital is carried out under open-air conditions by specially trained teachers under the approval and supervision of the National Board of Education. The nursing is not excelled in any institution at home or abroad, and the members of the nursing staff have not hesitated to visit and work in similar hospitals abroad in order to compare and improve their methods. Here, therefore, it is argued, is a hospital ready to hand to act as the central hospital of a scheme, which cannot now be long delayed, to deal effectively and systematically with the problem of the cripple in Ireland. The Government is making an effort to increase the efficiency of public health work in this country. Prospective county medical officers of health are undergoing special training abroad. There is a prospect of the badly needed medical inspection of schools materializing. All this must lead to the detection of many cases of tuberculous disease of the bones and joints, of infantile paralysis, rickets, and other deforming conditions, which, in their early stages require skilled orthopaedic treatment in the open-air hospital. Now is the time to provide adequate accommodation for such cases if these public health measures are to provide any practical results, and not merely statistics. But the accommodation requires immediate extension, apart altogether from the cases the new public health measures may bring for treatment. The eighty beds are constantly full. The Sisters at Cappagh believed that if the people of Ireland knew the sufferings of the doomed patients who could not be admitted, accommodation would be provided. They attempted to tell of this need, they embarked on the erection of a new institution, adjoining the present one, but they have not succeeded so far in providing additional accommodation. Two years ago the erection of the new hospital was commenced. Everything went well for a time: the foundations were laid, the walls were rising, but lack of finance and want of response to many appeals caused an inevitable closing down of building operations. To-day a building capable of housing 120 additional cases stands roofless—it has walls, it is true—and the crippled children of Ireland are left to their fate.

## Correspondence.

### SURGERY IN GENERAL PRACTICE.

SIR,—The President of the Royal Society of Medicine has adopted a singular method of supporting the plea, so eloquently voiced by Sir Berkeley Moynihan, that the profession should seek to gain a closer understanding with the lay public. Had Sir James Berry elected to utter his diatribe in the privacy of a meeting of the Section of Surgery of his society there would be no possible cause for complaint. The whole question might make an excellent subject for debate, but to choose an occasion when he must have known that such a pronouncement would be eagerly snapped up by the sensation-mongers of the lay press was surely to show scant courtesy to the humbler members of the profession who had no chance to speak in defence of themselves.

That the war is responsible for what we might call the "democratization of surgery" I do not wholly agree. I held resident surgical posts at my own school in the years preceding the war, and it used to be said then by the younger surgeons that the field of their activities would be considerably circumscribed, as the well educated general practitioner would be capable of doing much of his own operative work. As house-surgeons we used to be given the opportunity of doing a considerable amount of major operating, with the encouragement of our chiefs. Why, with the added advantage of a riper experience to assist us, we should be abused for doing the same thing in our practices passes the understanding of the average general practitioner. I agree with Sir James Berry that operating should only be undertaken by men who have had a thoroughly good grounding—but it is only such men who are likely to accept such a responsibility. To exclude all those who cannot make the practice of pure surgery their life-work displays an extraordinary ignorance of things as they are outside all but the biggest towns. Take the case of an industrial town with a population of 50,000: there is any amount of surgical work to be done, but I can state positively from experience that under the present conditions such a town cannot support a pure surgeon, as nine-tenths of the work has to be performed gratuitously. In the smaller towns situated at a distance from the big centres many lives can be, and are, saved daily by men tackling acute cases on the spot. Would Sir James prefer that these cases should run all the risks of delay, while waiting for a surgical specialist to come from a distance, than that a competent general practitioner should intervene? Personally, I do not think that there is nearly so much chance of the general practitioner surgeon overreaching himself as there is of the half-baked specialist. Though Sir James Berry may not know it, the general practitioner has to work under a fiercer searchlight than that which beats upon the consultant: he cannot make a mess of a case, and then depart back to the Olympian heights of Harley Street or its local equivalent.

The consultant is not liable to meet that mastoid with facial paralysis every time he walks abroad. The general practitioner is in daily contact with the friends and relations as well as the patient himself, and is constantly brought face to face with them afterwards, so is it likely that he is going to take the slightest risk which he does not conscientiously feel able quite adequately to meet? Personally I do not mind confessing that I would rather have fifty acute abdomens to cope with than one fractured femur (that is about the ratio one meets with these cases in an ordinary mixed type of practice), and I would sooner invite a specialist to undertake the whole treatment of such a fracture than I would a case of acute appendicitis. I rather doubt whether most consultants would appreciate that compliment. The enormous and constantly increasing scope of surgery makes it inevitable that the art of operating must be extended over an ever-widening field; it behoves all who have the best interests of surgery at heart to seek to turn out more perfect technicians in greater numbers, rather than, by hinting at mysteries where none exist, to attempt to restrict practice to the fortunate few. —I am, etc.,

Bradleyton, Yorks, Nov. 23th.

C. J. GORDON TAYLOR.

SIR,—Sir James Berry's remarks were a great testimonial to the really excellent surgical work performed by general practitioners in provincial hospitals. Given a well equipped, well organized operating theatre, with a well trained nursing staff, then it is only a matter of practice before a quite efficient general surgeon is produced. The appointment of assistant surgeons was a most beneficent reform in our provincial hospitals. One of the most glaring defects of our hospital system is the lack of co-operation between hospitals of different sizes. The teaching hospitals should be linked up with the larger non-teaching hospitals, and these with the smaller. Surgeons from the teaching hospitals ought to be on the active working staffs of large non-teaching hospitals, and surgeons from these on the staffs of smaller and cottage hospitals.

Before closing let me plead that more attention and care should be given to the medical cases in the non-teaching provincial hospitals.—I am, etc.,

Southend-on-Sea, Nov. 23th.

FRED. REES, M.D.

SIR,—May I, as a general practitioner in a rather remote district, and who does not undertake major surgery, be allowed to add to the admirable letters on this subject in your issue of November 27th?

Away from all but the largest cities, the ordinary general practitioner recognizes, and accepts, the fact that his major surgery is, and in most cases necessarily must be, done by others whose facilities for surgical work, by reason of their appointment to neighbouring hospitals of greater or less magnitude, are greater than his own, but whose daily bread is also obtained by general practice.

In nearly every case these same general practitioner surgeons have won his confidence both ethically and surgically, and their generosity in the matter of fees is, as every country practitioner will gratefully acknowledge, indisputable, and better known to himself perhaps than to his patients. I have seen an acute abdominal operation most skilfully performed in the desert by a general practitioner, and am myself indebted for my present existence to an operation in a military hospital by a general practitioner surgeon. After thirty years in ordinary general practice I shall continue, slightly altering Sir James Berry's "cryptic words," to do my best to discover those among my patients who "want an operation" and myself "take care who does it." The pure specialist's fees in these altered times are beyond the power of the vast majority of one's patients to disburse; and, perhaps mistakenly, some of us have gathered the idea that thoughts and inclinations sometimes lean too strongly to removal of some favourite anatomical part whatever the primary condition, and the patient may get (or lose) even more than he pays for.

Competent surgeons are born as well as made, and while training and experience are essential in surgical operating as in all skilled crafts, only the few deserve the true confidence of the many and less gifted, and this is at least as frequently given to the surgically inclined general practitioner of proved merit as to the pure specialist surgeon whose early finances have enabled him to wait those years required to catch the public eye and get a bit of his own back.—I am, etc.,

November 23th.

ANOTHER GENERAL PRACTITIONER.

SIR,—I have always maintained that a general practitioner should not attempt major surgery. He should do unto his patients as he would be done unto, and should ask himself one question, "Would he call in a general practitioner to perform an abdominal operation on himself or a member of his family?"

Surgery is an art, and requires great practice, ability, and dexterity. It is absurd to say that a busy general practitioner can be as efficient as a surgeon, who gives all his time to his art and who has undergone a long apprenticeship. A general practitioner may be quite capable of removing an appendix, but is he certain that his diagnosis is correct, and is he prepared to deal with anything he may find in the abdomen?

As regards fees, I have no difficulty in getting my major surgical work done gratis for those who cannot afford to

pay, and at fees, for people in a better position, that they have no difficulty in meeting.

If surgeons are not encouraged, surgery in this country will degenerate, as it will not be worth a man's while to go through the arduous toil and incur the expense of acquiring surgical skill.—I am, etc.

November 28th.

G. P.

### THE PROPHYLAXIS OF POLIOMYELITIS.

SIR,—In view of the prevalence of poliomyelitis at the present time, it seems advisable to draw attention to the important observations of Flexner and Clark published in 1911 on the effects of hexamine (urotropine) in preventing the disease in monkeys.

"When a large dose is administered by mouth, its presence can be demonstrated in the cerebro-spinal fluid soon afterwards. We have ascertained that when the virus of poliomyelitis is injected intracerebrally in monkeys, in which the hexamine is already present in the fluid, and the drug is then administered by mouth daily thereafter, in a proportion of animals so treated . . . the incubation period of the disease is prolonged from six to eight to twenty-four days, and the onset of paralysis is entirely prevented."

Any attempts to prevent the disease in contacts by similar means have in the past been unlikely to meet with success owing to the very small dose which has to be given on account of the irritation of the bladder and haematuria, which result from the setting free of formalin in acid urine. Our observations in the treatment of cholecystitis during the last four years have shown, however, that as much as 100 grains of hexamine can be safely given three times a day so long as alkalis are administered at the same time in sufficient quantity to keep the urine alkaline, as formalin cannot then be set free and the bladder is not irritated. Dr. F. A. Knott has shown that the alkali does not prevent the urotropine acting on the alkaline bile, and in view of Flexner and Clark's observations it seems unlikely that it would inhibit the action in the cerebro-spinal fluid, which is also always alkaline. I would therefore suggest giving these large doses to all people who have been in contact with the disease until the incubation period of fourteen days has passed, and perhaps for an additional fourteen days because of the possibility that the incubation period would be lengthened by the hexamine as it is in monkeys.

Although Flexner and Clark do not appear to have made any observations as to whether hexamine prevents the full development of the symptom in monkeys when the infection is once established, it has become usual to give the drug during the acute stage of the natural disease. I would suggest that at the first suspicion of the disease being present 100 grains should be given three times a day instead of the usual 10 or 15 grains.

A mixture containing 60 grains each of sodium bicarbonate and potassium citrate in 1 ounce of water is given after breakfast, after tea, and after a glass of milk last thing at night. The hexamine is given at the same time, but in a different mixture, so that the dose can, if necessary, be varied without altering the dose of alkali. It is perhaps safest to begin with 50 grains in 1/2 ounce of water and add a drachm of the solution to each dose every day till the full 100 grains in 1 ounce of water are being given. In the unusual event of bladder irritation occurring the dose of hexamine should be reduced slightly and the dose of alkali further increased.—I am, etc.,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest,  
Nov. 24th.

### EPIDEMIC POLIO-ENCEPHALOMYELITIS IN SCHOOLS.

SIR,—This correspondence raises a most interesting epidemiological problem, which may be enunciated in these terms: A few cases of an illness which is known to develop sometimes into an epidemic have occurred within a closed community; is it better to keep that community closed or to disperse its members, (a) from the point of view of the members of the community, (b) from that of the whole population?

In the first place, we must ask whether we have sufficient knowledge of the epidemiology of the particular illness

to be able to say that it is, epidemiologically, *sui generis*, so that analogies drawn from the epidemiological behaviour of other illnesses are worthless. The two best summaries of epidemiological knowledge of poliomyelitis which will be available to all readers are, I think, Batten's paper<sup>1</sup> and Reece's study of the epidemics of 1911 in Cornwall and Devon.<sup>2</sup>

The conclusions we may draw from past experiences are: (1) That, taking as a measure the ratio of cases exposed to risk, poliomyelitis is much less infective than scarlet fever or diphtheria (Batten, p. 206). Such epidemics as that of Trästena in 1905 and Stoke Rivers in 1911 suggest that the intimate admixture of children from different families in a common school is an important factor in increasing infectivity. A corollary is that the considerations suggested by Power's classical report on diphtheria in Pirbright are relevant. If I am right in this contention (I, of course, recognize that it may be swept away by the production of real proof that the epidemiology of poliomyelitis is *sui generis*) then experimental work on the effect of aggregation as compared with segregation in other infections is relevant.

In the third of Professor Topley's Milroy Lectures<sup>3</sup> will be found a summary of experiments on mouse-typhoid. The problem was to determine whether, when an epidemic had begun in a herd of mice, the mortality would be affected by partial segregation. Suppose that from such a community we take 100 individuals and keep them together in a herd, and another 100 individuals whom we divide into ten groups of 10 each, which 100 will experience the heavier mortality? The answer was unequivocal. If the segregation is effected at an early stage of the epidemic, before many deaths have occurred, the ten batches of 10 will suffer much less than the undivided 100. If one delays until the epidemic has gathered strength; segregation will have little effect. As Topley says:

"It is not difficult to suggest a possible mechanism for the effect of dispersal upon the total mortality. Whether the important factors in the production of fatal infection be the size of the first dose of bacteria received, the rapidity with which successive doses follow each other, the relative virulence of the bacteria, or the relative resistance of the receiving host, we have seen that the effectiveness of these factors must be expressed in terms of chance. By dispersing the population at risk we shall redistribute these chances in a random way, and the sphere of action of those mice which are acting as dangerous centres of infection will be limited."

So far, then, as the interests of the members of the herd themselves are concerned, breaking the herd up is clearly the right policy. But it may fairly be contended that the parallel is not a strict one, for the groups of 10 were not mixed with other mice which had not formed part of the original community. May not the dispersed members of the small herd, the school, light up disease in the general community; may not the interests of the small herd be opposed to those of the larger herd, the whole population, of which they are part?

The general teaching of epidemiology that the presence of a sick person or a carrier is only one of the factors of an epidemic is familiar to all educated men. Experimental work of Professor Topley and myself shows that even in diseases of much greater infectivity than poliomyelitis (for example, pasteurilla infection) it is not sudden exposure to a large number of non-immunes, but the steady circulation of non-immunes through a community containing infected or carrying individuals, which is a fundamental condition of high epidemicity.<sup>4</sup> It does not appear, therefore, that any increased risk to the greater herd does counterbalance the advantage to the smaller herd which dispersal of the latter involves.

Finally it may be noted that when the survivors of the dispersed herds in Topley's above cited experiments were reassembled (in the case where dispersal took place before the epidemic in the original herd had reached a maximum) the disease broke out again. Hence it is prudent only to reassemble a herd after a considerable interval, and it might be wise not to admit new comers to it for a still longer time.

<sup>1</sup> *Proc. Roy. Soc. Med.*, Epidem. Sect., vol. iv, p. 193.

<sup>2</sup> *Ibid.*, vol. v, p. 59.

<sup>3</sup> *Lancet*, March 27th, 1925.

<sup>4</sup> *Journ. Hyg.*, xxiv, 1925, pp. 45-110.

The continuous study of morbidity in closed communities, such as boarding schools, is of extraordinary interest. A report to the Medical Research Council by Surgeon-Commander Dudley (now at press) illustrates this and also our real need for further information.—I am, etc.,

Loughton, Nov. 27th.

MAJOR GREENWOOD.

#### CANCER RESEARCH.

SIR,—The valuable paper entitled "Some physico-chemical and biochemical aspects of malignant neoplasms" by Professor W. C. M. Lewis (BRITISH MEDICAL JOURNAL, November 26th, p. 920) contains many interesting observations made by foreign scientific men, but gives little or no recognition of the important work of our own countrymen on the subject. For instance, I am surprised to find no reference to the work of Dr. J. A. Shaw-Mackenzie on the biochemical side of the problem, who for many years has shown, among other facts, that tissue lipolysis and utilization of fats is defective in cancer.

In the subheading "Lipolytic (esterase) activity in malignancy" Professor Lewis recalls the observation of Bauer<sup>1</sup> that "every human serum examined contains fat-splitting enzymes which are greatly decreased in carcinoma and advanced phthisis"; and he goes on to emphasize a differentiation between true fat-splitting enzymes and esterases which act on lecithin, as indicated by Bloor.<sup>2</sup> A differentiation between a true fat-splitting enzyme and esterase was dealt with as early as 1910, in the *Journal of Physiology*, by Rosenheim and Shaw-Mackenzie. They were able to confirm previous statements on the lipolytic action of serum—namely, that a true fat-splitting enzyme is not present in serum, "whilst even the action of what might be called a butyrase on the esters of lower fatty acids is a feeble one." They noted, however, that "serum, although not possessing any fat-splitting action by itself, increases in a remarkable way the lipoclastic activity of pancreatic lipase." In these researches it was found that lipase itself in pancreatic extracts and in pancreatic juice is separable into two parts—namely, "co-enzyme" and "inactive lipase" or pro-lipase, neither of which has any fat-splitting action alone but together become active. The importance of this in all its bearing has hardly received the attention it deserves. Serum contains an activating agent different from but analogous to the pancreatic co-enzyme of lipase, and in this way the activator or activators carried by the blood enable the lipases of the tissues to hydrolyse the fats brought to them by the blood stream after digestion. It was pointed out also that cholesterol "in all cases was found to exert an inhibitory action," not only on lipase, but on the accelerating action of serum with its contained activators. It was found also that lecithin is readily split by lipase, as previously shown by Maclean.

In the course of this work variations were observed in the accelerating action on lipase of a variety of substances, organ press juices, the serum of lower animals, and of the serum in certain diseases. In 1913, in a paper given before the International Congress of Medicine, London, Dr. Shaw-Mackenzie pointed out that the power of the serum to increase fat-splitting is decreased in cancer, in the acute stages also of tuberculosis, and in other bacterial infections. The experiments were repeated. The results fully confirmed his earlier ones, and were detailed by him in a paper published in the *Journal of Physiology* in 1915.

This decreased power of the serum frequently enables a positive diagnosis of cancer to be made in doubtful cases, or the presence of cancer to be excluded. It formed the basis also of further blood tests, dependent in part on the increased cholesterol content in the serum of cancer patients.

The main outcome of these researches on lipase since 1911<sup>3</sup> and onwards has been to show that natural and induced tissue lipolysis with the fatty acids or their sodium salts are important factors in the protective processes and resistance of the body in malignant disease.

The bearing of these researches clearly indicates the importance of the chemical and medical side of the problem

of cancer and its treatment, having for its aim the reinforcement of natural physiological defensive processes of the body, and stimulation of tissue lipolytic activity with destructive action on the fats and lipoids of the cancer cell. Perhaps the most striking indication is the application of therapeutic measures in this direction in post-operative cases in the hope that the sum total of recurrences may in some measure be reduced.—I am, etc.,

Ross Institute, Putney, S.W.15,  
Nov. 26th.

W. J. SIMPSON, M.D.

#### MONGOLIAN DEFECTIVES.

SIR,—According to the brief report of Dr. Clarkson's Henderson Lecture, given on page 1015 of your issue of November 27th, I am supposed to have supported, in *The Mongol in our Midst*,<sup>1</sup> a polyphyletic scheme of human origins that is negatived if the mental characteristics of Mongolian defectives are considered, since, in Dr. Clarkson's opinion, any ancestral branch of the human race that had such characteristics must have died out very soon and left no descendants. This is as it may be; but, in fact, I have never suggested the former existence of any such ancestral branch. An "atavistic" explanation of the occurrence of Mongolian characteristics amongst pure-bred "Europeans" no more calls for belief in the former existence of such a branch as Dr. Clarkson has in mind than does the "recapitulation" explanation of embryological and infantile characters require belief in the former existence of any race of creatures just like a human embryo at any stage of its development. If I point out that the turtle heart of a dead infant with congenital heart disease may be "explained" by the theory that mankind passed through a reptilian stage on its way from the amoeba hither, would my view be "negatived" by the statement that a race of such creatures as the child in question would have died out and left no descendants?

Now the homologies between the Mongolian defective, the racial Mongol, and the orang are indisputable. Sera has described skeletal homologies between the Japanese and the orang; Kurz has shown that the brain of the Chinese child is distinguished from the brain of another child by just those characters which distinguish the brain of the orang from that of another ape; and Gans has shown that the brain of the Mongolian defective is distinguished by just those characters that distinguish the brain of the Chinese child and the orang. It is with such facts as these that I am concerned, rather than with any attempt to "prove" a triple line of descent for mankind. But it is an obvious duty to inquire whether these new facts are compatible with the orthodox monophyletic schemes, now a little blown upon. As a matter of fact, they are not, and it would seem that all good Darwinians, who accept as axiomatic the assumption that homologies prove descent, must either ignore the new facts or be content to accept some one of the polyphyletic schemes, which do at any rate have this in their favour, that they afford a convenient explanation of the otherwise unexplained occurrence, in our midst, of not only defective, but even distinguished "mongoloids," some of whom beget children and transmit their peculiarities, or some of them, on more or less Mendelian lines.—I am, etc.,

London, W.1, Nov. 29th.

F. G. CROOKSHANK.

#### CLOTHING AND CATARRHS.

SIR,—Mr. Jordan has mistaken the purport of my letter. The question on which I ventured to address you on November 15th was not as to whether my views on the respiratory function of the skin were correct, but as to whether Mr. Jordan was justified in charging me with insincerity in expressing them. That is a purely personal question on which, having made my protest, I do not propose to trouble you further.

Let me add that even if I were inclined to engage in a public discussion on the subject of cutaneous respiration, I should decline to do so with one who includes among his controversial methods the puerile expedient of assuming that his opponent's only authorities were derived from intuitions, and the wholly indefensible one of attributing unworthy motives to those from whom he differs. In the

<sup>1</sup> *Wien, Klin. Woch.*, 1912.

<sup>2</sup> *Physiological Review*, 1922.

<sup>3</sup> *Proceedings of the Physiological Society*.

<sup>1</sup> *The Mongol in our Midst*, second edition, London, 1925. Pri



atmosphere created by such amenities a reasonable exchange of views on any subject is impossible.

It is not my custom to answer questions addressed to me in the tone adopted by Dr. Gallagher, but if he will consult Luciani's *Human Physiology* (Macmillan, 1913), vol. ii, p. 495, he may possibly be led to conclude that the problem of cutaneous respiration is not yet ripe for the kind of dogmatic statement which he seems to affect.—I am, etc.,

London, N.W.1, Nov. 30th.

LEONARD WILLIAMS.

### "RISING OF THE LIGHTS."

SIR,—The quotation from Buchan's *Domestic Medicine* is very interesting, as it gives an explanation of this mysterious name, but I think that if it refers to deaths from throat disease it would apply to all forms of inflammatory trouble, not diphtheria only. These would include acute septic conditions like angina Ludovici. Now there are a great many references to "putrid sore throat," which in some but not in all cases may have been diphtherial. Our ancestors could distinguish different kinds of such inflammations. Huxham's, of course, is the classical instance of a clear definition. The wonder is that there were not more returns under this head, seeing that in London alone, as late as 1850, not one water supply was uncontaminated, as may be gathered from Hassall's pamphlet of that date, with excellent coloured illustrations of the poisonous material found in every one of the then sources of the various water companies. Sewer drainage had added to the pollution of the Thames in the nineteenth century.—I am, etc.,

Appledore, Kent, Nov. 17th.

F. WILLIAM COCK.

SIR,—I have come across this expression both in the East and West of England, with varying meanings. In Cornwall it is used of flatulent dyspepsia with frequent eructations. In the course of my collection of material for a book on folk-medicine in Eastern England I have received the following items:

From a pharmacist at Peterborough: "In 1830 a woman called at my pharmacy from Thorney Fen for something for her husband who was really suffering from liver and stomach troubles. She complained he had always something in his throat; on being asked if he had taken any medicine, imagine my feelings when the reply came, 'He had swallowed some shot to keep his lights from rising.' On making inquiry afterwards I found this to be a common practice."

A doctor in North-East Suffolk wrote in 1925: "An old lady of my acquaintance used to swallow small shot in handfuls 'to keep her heart and lights down.' She never suffered from lead poisoning, but died of an intracapsular fracture of the hip, possibly due to increasing weight."

Varden, quoting *Chambers's Book of Days* (about a hundred years ago), tells of a good old soul who was troubled by "rising of the lights" and who "took a dose of shot and that kept 'em down." I have heard of another old lady who, troubled by the same complaint, used to "shove 'em (the lights) down with a tablespoon."

With regard to the application of remedies to the soles of the feet, I have come across a number of modern instances, most of them rather unpleasant.

For pneumonia "wrap the patient's feet in calf's liver hot from the slaughter and give a teaspoonful of goose grease at frequent intervals" (a gipsy remedy from Blythburgh, Suffolk).

For typhoid fever "the spleen of a bullock, raw, applied to the soles of the patient's feet as a cure" (from Great Yarmouth). "The milt or spleen of a cow or the skirt of a sheep, applied to the feet, is supposed to draw the fever from the head and thus bring about a speedy cure" (*East Anglian Handbook*, 1835).

For whooping-cough "peel a garlic and wear it in the right shoe" (Welby, Suffolk).

I have met with sulphur placed in the boots as a remedy for rheumatism in Norfolk, and for psoriasis in Cornwall. In the latter case it was prescribed by a doctor, and, combined with a thorough dredging of sulphur all over the body, effected a cure in a case of "English leprosy."

With such a widespread use of the term "rising of the lights" nowadays, it is very unlikely that its meaning was ever confined to any specific disease, unless by a purely local custom. The class of people who would use such a term are far too conservative to have allowed a hundred years or two to have made any difference in their nomenclature. "Lights" to the ordinary person means an animal's lungs, but if the local butcher is asked for a

pennyworth of "lights" for the dog, probably some spleen and possibly pancreas will be included in the parcel along with the lung and trachea. I think "rising of the lights" probably meant any disease that caused a sensation of something coming up, or an actual appearance of something, whether from lungs or stomach.—I am, etc.,

Norwich, Nov. 14th.

MARK R. TAYLOR.

SIR,—As the writer of the article in your *Nova et Vetera* column of October 9th on the Bills of Mortality, I have been much interested in the correspondence on "rising of the lights."

As a student I was told that this term was a synonym for emphysema, but it appears from your correspondents' letters and from a discussion of the question in *Notes and Queries* (8th series, vol. vi, pp. 308, 415, and 516) in 1894 that it has been used to denote a sense of fullness in the throat accompanied by oppressed breathing. John Graunt, in his "Observations," remarks on the relation in the Bills of Mortality between "rising of the lights" and "mother," and shrewdly suggests that the two were names for the same thing, so that "rising of the lights" must be simply globus hystericus. It is difficult to accept this suggestion in this case, seeing that hysteria is not a very fatal disease, yet in 1629 forty-four deaths were attributed to "rising of the lights," and only one to "mother."

Another contributor to *Notes and Queries* quotes MacCulloch as saying that Sydenham solved the question in treating of this disease under hysteria. Another contributor, J. Astley, writing from Coventry, stated:

"In this district a sense of fullness in the throat, accompanied by oppressed breathing, arising from disordered stomach, is attributed to a 'rising of the lights,' i.e. lungs, and the common remedy is to take either some small gun-shots, or a globule of mercury (about a quarter of an ounce), in shot by their weight to keep the lungs down. I cannot report any beneficial effect of the medicine."

This remedy of small shot or mercury, meant to force the rising lungs to descend, seems to have been very general.

The identification with croup is strengthened by the fact that in the Bills of Mortality for 1796 rising of the lights disappears as a cause of disease and croup alone remains.

Finally, the term would appear to be popular in America, for the author of *Mrs. Wiggs of the Cabbage Patch* puts it into the mouth of one of her characters as applied to a horse (*Notes and Queries*, 10th series, vol. iv, p. 66).—I am, etc.,

November 29th.

E. M. L.

\* \* We are afraid that these lights must now be quenched.

### APPENDICITIS AND VEGETARIANISM.

SIR,—The statistics quoted by Mr. Robert H. Perks in your issue of October 2nd (p. 616), on the infrequency of appendicitis among the natives of Northern India, are rendered more striking when it is remembered that the majority of the inhabitants of the Punjab are Moslems or Sikhs, and that both communities are extensive meat eaters. They also, unlike the Hindu community, allow themselves to suffer severely from constipation. It is therefore not quite clear to what they owe their immunity from the disease.

Captain Williamson's statement in your issue of October 16th, that he has never removed an Oriental appendix, is surprising and contrary to my experience in my very restricted surgical practice in India. I have performed eight operations for appendicitis during the past two years in India, and of these three were on Indians. The pathological conditions found in each case were: (1) Gangrenous appendicitis with peritonitis, (2) perforated appendix with abscess, (3) catarrhal appendicitis.

In two other instances when operating on Indians for tuberculous peritonitis and pancreatic cyst respectively, the appendixes were observed to be the seat of catarrhal inflammation.—I am, etc.,

J. DESMOND O'NEILL, M.B., B.Ch.,

Jubbulpore, India, Nov. 7th.

Lieutenant I.M.S.

*Medico-Legal.*

## THE PRESTON CRIMINAL ABORTION CASE.

## BOTH PRACTITIONERS ACQUITTED.

THE Grand Jury at the Manchester Assizes having thrown out the bills on charges of murder against Dr. Arthur Stuart Holden of Preston, and Dr. Frederick Langton Webster of Bamber Bridge, but returned true bills on charges of manslaughter and felony, the two accused doctors were arraigned on these charges arising out of the death of Nora Elizabeth Marmion, aged 24, at the Assizes on November 29th, before Mr. Justice Branson. The trial lasted two days, and resulted in the petty jury finding a verdict of not guilty, the Judge remarking: "I think it is right to say I entirely agree with your verdict."

Although the charges against Mrs. Constance Mary Holden, Mrs. Helen Blackburne (the deceased woman's sister), and her husband, Major William Edward Blackburne, bank manager, of being accessories to the murder were withdrawn in the course of the magisterial hearing, their names appeared on the assize calendar, as they had been committed on coroner's warrants. No evidence being offered by the prosecution, the jury on the direction of the judge returned a formal verdict of "Not guilty," and these accused were discharged.

The previous proceedings in the coroner's court and at the magisterial hearing were reported in the *BRITISH MEDICAL JOURNAL* of November 6th (p. 860) and of November 13th (p. 909).

Mr. T. Eastham, K.C., and Mr. Neville Laski appeared for the Crown; Mr. J. E. Singleton, K.C., and Mr. Lustgarten for Dr. Holden; Mr. J. C. Jackson, K.C., and Mr. Lustgarten for Dr. Webster; Mr. N. B. Goldie for Mrs. Blackburne; Mr. G. G. Blackledge for Major Blackburne; and Mr. Lustgarten for Mrs. Holden.

Both the accused medical practitioners pleaded not guilty.

*Case for Prosecution.*

Mr. Eastham, in opening the case for the Crown, remarked that up to the matters complained of both doctors bore excellent characters and reputations. Miss Marmion was a single woman of no occupation, and lived with her father. Counsel referred to her friendship with a Mr. French, to a visit she paid to her sister Mrs. Blackburne, and then to a visit to the house of Dr. Holden in October last. That visit, he suggested, was paid with a view to consulting Dr. Holden about her condition, and, as a result, counsel proceeded to suggest, Dr. Holden and his wife, on October 7th, called at Major Blackburne's flat with a motor car and took Miss Marmion to Bamber Bridge, saying they were going to play bridge. They went to Dr. Webster's house, and the prosecution's allegation was that an illegal operation was performed there either by one or both of the accused, and that Miss Marmion died from shock during the operation. At 2 a.m. on October 8th both doctors went to the police station at Bamber Bridge and saw Inspector Blenkinsop. Dr. Webster, as it happened, was the inspector's family doctor, and had attended the inspector's son. Dr. Webster said to Inspector Blenkinsop: "This is Dr. Holden. He has had an operation on a lady at my house to-night. She has died under the anaesthetic." Dr. Holden said: "I have let Dr. Webster in. She was my patient, and Major Blackburne's sister-in-law." Dr. Webster then added: "Yes, she has died at my house; she was his case." Later, at his own house, Dr. Webster said to the inspector: "I am innocent of this charge. They came to my house to play bridge." Counsel said Inspector Blenkinsop had allowed the two doctors to leave the police station without first informing his superior. He had completed twenty-seven years' service in the force, and at the time had been through a serious illness and an operation. On November 4th last he attempted to take his own life by prussic acid, but fortunately the attempt was unsuccessful.

Evidence was then called for the prosecution.

After Mr. Peter Marmion (the deceased woman's father) and Mr. Alexander French had given evidence, counsel intimated that he did not propose to offer any evidence in the cases of the three persons committed on charges of being accessories, but he wished to call Major Blackburne. Mr. Lustgarten objected, stating that although Major Blackburne was not under arrest at the time he gave evidence at the inquest, he was now under arrest, and was a prisoner on bail. The judge said he thought that calling Major Blackburne placed him in a difficult position. Major Blackburne was not called into the witness-box.

*The Doctors' Statements to the Police.*

Inspector Blenkinsop gave evidence in support of counsel's opening statement.

Mr. Singleton (cross-examining): Did Dr. Webster say to you that the lady was really Dr. Holden's patient, but as death had occurred in his house he thought it was his duty to report it to the police?—No; he did not say that.

Was the coroner mentioned?—No.

Did Dr. Holden say it was an examination he was making of her under an anaesthetic?—No; he did not.

Did he say she had come round from that anaesthetic but went into a fit and died?—No.

Did he say, "I cannot understand why she died"?—No.

Did he say, "This has been a great shock to me, for she was more a personal friend than a patient"?—No.

If your evidence is correct I assume you took it there had been prior to the doctors coming to you a criminal offence committed by them?—Yes.

When was it you attempted to commit suicide?—November 4th.

In reply to Mr. Jackson, who asked why he did not arrest them, the witness said that one doctor said the woman had died from an

anaesthetic, and the other gave another reason; he wanted to see the body. The question was repeated, and the witness then replied: "I admit I made a mistake there." He wrote the particulars of Dr. Webster's statement on a slate, but the writing was subsequently rubbed out; he did not know how. He did not know the statement was going to be challenged until the inquest. In re-examination, the inspector said he attempted to take his own life because he had been reduced by his superior for not detaining the two doctors.

Medical evidence was then given.

*Medical Evidence for the Prosecution.*

Dr. W. A. Simpson, acting police surgeon at Bamber Bridge, said his *post-mortem* examination caused him to form the opinion that death was due to asphyxia owing to the action of an anaesthetic upon a fatty heart. Cross-examined, he said he performed the examination about thirty-six hours after death. He smelt no trace of anaesthetic, but vomiting or attempts at artificial respiration might take away the smell.

Dr. K. M. Duncan, senior police surgeon for the county of Lancaster, who was present at the necropsy, said he did not altogether agree with Dr. Simpson's opinion as to the cause of death. In his own opinion, death was more likely to have been due to shock than to asphyxia caused by an anaesthetic. He detected no trace of an anaesthetic, but he admitted that his sense of smell was very poor. Cross-examined, he agreed that it was difficult with any certainty to give the cause of death. Shock from asphyxia might be the cause of death.

Sir Bernard Spilsbury, honorary pathologist to the Home Office, described his examination of the heart and uterus. He detected no smell of chloroform, ether, or any other anaesthetic, though it was usually to be detected where it had been used. There was nothing in the condition of the heart to account for death. He came to the conclusion that an instrument had been used, and that an ovum had been removed after death. He was of opinion that the deceased woman was about two months pregnant, and he proceeded to give his reasons for that opinion. He attributed her death to shock due to the passage of an instrument. The uterus was quite healthy, and there was nothing in its condition—no disease—to necessitate the passing of an instrument.

Cross-examined by Mr. Singleton, Sir Bernard Spilsbury said he had had experience of thirteen cases of death from shock following immediately after the passage of an instrument. They were all cases in which he had been called in by police authorities. He agreed that before he examined the organs submitted to him he had received certain police reports, and that he made his examination with the knowledge that it had been suggested that an illegal operation had been performed, and no evidence in support of that had been disclosed by the *post-mortem* examination.

Mr. Singleton drew attention to the witness's description of the mark which he attributed to the passage of an instrument, and pointed out that not one of the three well known professional men who had made an examination of the body had been able to see any trace of such a mark. Sir Bernard Spilsbury replied that he could well believe it, but it had not occurred to him that what he found was very probably not the mark of any instrument.

*Case for the Accused Practitioners.*

Mr. Singleton said the case for the prosecution rested entirely upon the evidence of Sir Bernard Spilsbury, and he submitted that it had not been proved either that death resulted in the way that Sir Bernard Spilsbury had suggested or that an illegal operation had been performed. The medical profession was a body rightly proud of its own reputation, and would be no party to illegal operations. The accused all their days would have cause to be grateful for the help of eminent members of their profession who had come forward to give evidence to help the defence in order to show that what Sir Bernard Spilsbury had put forward as his theory would not hold water. There were two men of unblemished reputation. Not a word could be said against their characters, and yet it was on the theory of Sir Bernard Spilsbury alone that the jury were asked to convict them.

*Evidence for the Defence.*

Dr. Holden, in evidence, said he had a large practice and there was not the slightest need for him to stoop to any illegal practices. He knew Dr. Webster as a schoolboy, but had lost sight of him until after the war. He had known Miss Marmion about two years, having met her with the Blackburnes. She was not a patient of his before October of this year. On October 6th she made a statement to him of an occurrence at Waterloo Park, and told him her sister did not know of the matter. He said she must go home and tell her sister and brother-in-law, and he later made an examination at the Blackburnes' house, but found nothing to suggest that the girl was pregnant. The following night he telephoned to Dr. Webster and arranged for a game of bridge. There was no thought of any operation. At Dr. Webster's house Miss Marmion complained of pains in her back and right side; it was her own request that she should be examined. He and Dr. Webster both advised her to go into a nursing home. She objected to that because she said it would upset her sister. She wished to be examined there, and said if they found anything that would warrant her removal to a nursing home she would consent to go. She then asked whether she could have a slight anaesthetic as she was in pain. That suited him because he had already made an examination not under an anaesthetic. It was quite usual to give an anaesthetic for a fuller examination, this nature. Dr. Webster tested the girl's heart and made an examination usual before anaesthesia. The anaesthetic used was A.C.E. mixture. Witness then made the examination in the presence of his wife and Dr. Webster. As a result both he and Dr. Webster were perfectly satisfied that Miss Marmion was pregnant.

Mr. Singleton: Was any illegal operation performed at any time?—None whatever.

Continuing, Dr. Holden said when the effects of the anaesthetic began to pass, his wife called to him: "I don't know what is the matter with Norah. She has gone pale." He then noticed that Miss Marmion's pupils had begun to dilate: they soon became very much dilated. Her pulse was quick, but small. Presently, her face began to go blue and she raised her forearms, clenched her fists and teeth, and went into a convulsion. Dr. Webster exclaimed: "Good heavens, she is having a fit." He at once looked for restoratives and then began artificial respiration whilst Dr. Webster massaged the heart and his wife raised the girl's legs. A hypodermic injection of strychnine was given, and even the old method of mouth-to-mouth breathing to inflate her lungs. They were at work for two hours, and Dr. Webster said at last: "It is no use going on any longer: she's dead." He and Dr. Webster then paid a visit to the police station. Dr. Webster said: "This is Dr. Holden. A lady has died at my house to-night following the administration of an anaesthetic." The witness gave the inspector particulars which were written down on a slate. Then the inspector said: "I cannot do any more about this until the morning. I think that will be all; good-night." As he afterwards thought the inspector said: "By the way, what was the complaint the lady was suffering from?" The witness said it was a case of an examination under an anaesthetic in which he found that the lady was not pregnant. He did not say a word about criminal operation. Miss Marmion had told him she was going to be married to the boy French in the spring.

Mr. Eastham (cross-examining): If you had nothing to conceal, why did not you give your explanation before the coroner?—Because I was advised not to. You must remember that when the time came for me to do so, Sir Bernard Spilsbury had already given his evidence. He had made these extraordinary statements and we had not had any pathologist to refute them.

Do you say no preparation was made for giving an anaesthetic?—No preparations that I know of, but I understood the girl had had no food for about four hours.

Was it not a very odd time and a very odd place to give an anaesthetic to a woman?—No time is an odd time and no place an odd one if it is necessary.

Asked what he meant by his statement to Inspector Blenkinsop, "I have let Dr. Webster in," Dr. Holden said he had been misunderstood. He meant there would be a *post-mortem* examination at Dr. Webster's, and that would let Dr. Webster in for a mess in his house.

Dr. Thomas Watts Eden, consulting obstetric physician to Charing Cross Hospital, said he had great difficulty in accepting Sir Bernard Spilsbury's evidence as to the cause of death, because the doctor who made the *post-mortem* examination came to another opinion. In his own opinion, asphyxiation would be a reasonable explanation of death, coupled with the condition of the heart. He did not think there was any conclusive evidence of an instrument having been used, or that an operation had been performed. He did not agree that there was evidence of any operation being performed even after death.

Dr. Sidney Rawson Wilson, lecturer in anaesthetics and applied physiology in the University of Manchester, said he was of opinion that the condition revealed *post mortem* was consistent with death from syncope, and with the administration of a light anaesthetic. If there was some fatty degeneration of the heart the patient would be very likely to collapse. The witness had himself had many cases in which he had been unable to detect the smell of anaesthetic, except when very deep and prolonged. He had that morning performed two experiments showing that after anaesthetic for an hour and a half it was smell of it.

Shaw, gynaecological surgeon to the Manchester Royal Infirmary, said he did not think the evidence of the *post-mortem* examination conclusive, either as showing death from shock or death from an anaesthetic. It would have been impossible for the contents of the uterus to have been removed in the way suggested. He could see no evidence conclusive of the use of an instrument.

Dr. Daniel Dougal, lecturer in obstetrics and gynaecology in the University of Manchester, said that the evidence in favour of pregnancy was not conclusive, and he found no evidence of an instrument having been used for the purpose of an operation.

Dr. Webster, in evidence, said he was qualified in 1915, and was severely wounded on the Somme. Since 1922 he had been in practice at Bamber Bridge. He first met Miss Marmion on September 15th this year. On the night when Miss Marmion died she arrived at his house for cards with Dr. and Mrs. Holden. She looked ill, and was shivering, and, after a time, Dr. Holden asked permission to take her to the consulting-room. She was sitting on a chair, complaining of severe pains in the right side and back. Dr. Holden suggested that he should take her home, or that she should go to an infirmary or nursing home. Miss Marmion disagreed, and asked if she could be examined there, and she herself suggested an anaesthetic. Before administering the anaesthetic he took every precaution. Miss Marmion had told him she had had two previous anaesthetics. He denied that he had performed any such operation upon her as the one alleged, and repudiated the suggestion that Dr. Holden performed an operation whilst he (the witness) was occupied with administering an anaesthetic. Regarding the interview at the police station, the inspector seemed very disturbed at seeing him. He did not hear Dr. Holden's reply when the inspector asked what complaint the lady had suffered from. The only words he did hear were "pregnant," and the sentence, "I have let Dr. Webster in." Cross-examined by Mr. Eastham, he denied that he heard Dr. Holden say the girl was pregnant.

Mr. Eastham: Why did you go to see a solicitor if there was no suggestion of abortion?—Because I was rung up by a solicitor who advised me to go to see him.

Mr. Jackson, addressing the jury, said the foundation of the case was the evidence of Inspector Blenkinsop. Sir Bernard Spilsbury came to the case knowing that these men were said to have confessed to criminal abortion. Starting with this knowledge, Sir Bernard, as the Home Office pathologist, proceeded to look for every trifle that bore out the story. As to the police inspector, the man who in trouble took prussic acid, was he a man upon whose mind and recollection they could rely?

#### Summing-up and Verdict.

Mr. Justice Branson, in his summing-up, said they had heard that both of the accused doctors had hitherto borne irreproachable characters, and that was a matter that should be taken into account. The importance of the case could not be exaggerated. If they were convicted the accused would not only get severe punishment, but they would be ruined in their profession.

The jury retired, but within a quarter of an hour returned, and announced a verdict of "Not guilty." The announcement was the signal for an outburst of cheering, and the court officials had some difficulty in obtaining silence.

On other counts in the indictments against the two doctors no evidence was offered, and the jury returned a formal verdict of "Not guilty."

Mr. Laski said the prosecution thought it highly desirable that he should say that Major Blackburne went out of the court without a stain on his character. The future of Major and Mrs. Blackburne and Mrs. Holden being at stake, it was very important that the public should know that all charges against them had been withdrawn.

The defence of both Dr. Holden and Dr. Webster was undertaken by the London and Counties Medical Protection Society, Ltd.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons has this week made good progress with minor bills, including the Births and Deaths Registration Bill and the Mental Deficiency Bill. The date of enforcement for the former bill has been altered, and the varying definitions of mental deficiency in the latter may be correlated at a later stage. The Government put down the concluding stages of the Smoke Abatement Bill for November 30th, but had to postpone them. The session is expected to end on December 17th, by which time the bills mentioned above and the London University Bill will probably have passed into law. The Government's proposal to reduce the housing subsidies after next September was down for discussion in the Commons on December 2nd, and the coal dispute will probably be reviewed in a debate on December 8th.

The Parliamentary Medical Committee met at the House of Commons on November 24th, Dr. Fremantle presiding, and received a deputation, headed by Colonel Peck and Captain Hill, which represented ex-service pharmacists. The Director-General of the Army Medical Service also attended. The deputation explained that they desired the appointment to the army of two army pharmacist officers of commissioned rank—one at Aldershot and one on the staff of the R.A.M.C. The purpose of these appointments would be for training dispensers and advising on contracts and on mobilization schemes. The Parliamentary Medical Committee promised to consider the proposals, but it was pointed out that the suggestions made would establish a new branch of the Service likely to involve expense. Questions to the Director-General showed that army dispensing is done, for the most part, with drugs already compounded, and that contracts for drugs and dressings are made on a large scale with better economic results than by the system of making up which the deputation suggested. The Director-General said, however, that he would make personal inquiries at some of the big hospitals where drugs were prepared on similar systems to that which the deputation of pharmacists suggested. After the deputation withdrew the Medical Committee asked the Director-General some questions about such service matters as amalgamations of hospitals, since further amalgamations are now being considered separately in each service centre. The closing of an army hospital at Chatham was mentioned, as also a proposal now under consideration to concentrate military hospitals from all round the Kentish coast at Gillingham. The difficulty, it was thought, would be to obtain economy while ensuring efficiency in sudden pressure. Sir Richard Luce asked what further economies, if any, were contemplated in the Territorial Army Medical Service, and what was the chance of restoring the three skeleton field ambulances previously provided per division. The Committee then went over the Rural Housing, Smoke Abatement, Coroners, and Births and Deaths Registration Bills as they then stood.

#### Births and Deaths Registration Bill.

The Births and Deaths Registration Bill was considered on the Report stage in the House of Commons on November 29th.

Mr. Basil Peto moved the following new clause: "The death of any person shall not be registered unless and until there has been

delivered to the registrar of the district in which such death has occurred a certificate signed by a medical practitioner of the fact of death and of the cause of death, as respectively in this Act defined, and such certificate shall be given only after the medical practitioner has seen the body." The bill, he said, provided no machinery for the inspection of a body after death. There could be no disposal of the body without a registrar's certificate, but that certificate only stated that that official had registered the death. He asked for an assurance that the Ministry of Health possessed powers to put an end to the present unsatisfactory state of affairs, by which a very large number of people supposed to be dead, but were not really dead, were in danger of immediate burial. The fact of death should be certified by a medical man who had seen the body.

Mr. Groves, in seconding the new clause, expressed the same opinion. According to the Registrar-General, only 40 per cent. of the people buried in this country were certified on medical evidence to be actually dead. The whole matter was one of expense. The Government could not find the money to do what was required, and medical men would not do it without payment. After all, the panel doctor was responsible for his panel patient until life was extinct, and it ought to be his duty to certify that life was actually extinct after seeing the body. A similar rule should obtain in Poor Law institutions and hospitals. The new clause gave the Government an opportunity to make the necessary representations to the General Medical Council seriously to consider the matter, and to see if this long-standing grievance could not be brought to an end.

Dr. Fremantle said that this clause was an alternative to that which he had put down, which was originally a specific clause in the bill with which he was personally associated. In the bills he had introduced in previous years on this subject his aim had been to meet the particular objections put forward by Mr. Peto. The stage which Mr. Peto and his friends had reached was one he (Dr. Fremantle) had passed through, with many others. This matter was not merely one of expense; the real question was that it was impracticable from the point of view of the doctor's time. That argument really met the statement that only 40 per cent. of deaths were certified after a personal view of the body by the doctor. If the doctor was visiting a patient regularly, and the patient was gradually going downhill, the doctor could not watch and be there, and was of no use if he were there, every minute right up to the very last. The doctor saw the end coming, and he naturally discreetly retired. He would call in the course of his round, and he would retire when there could be no question about the end. It was safe to conclude that in practically every one of the 60 per cent. of deaths certified without actual view of the body the doctor was quite assured in his own mind, when he signed the certificate, that death had supervened and was bound to do so. In ordinary practice the doctor was busy on his round from the time he had finished his morning surgery until the evening. He had often no time for his meals, which, as a rule, were scratch meals. He admitted that the proposal would give greater confidence to the public, but it was impracticable; there were only a certain number of doctors in this country. If this extra duty were thrown on them they would undertake it, but it would be at the expense of their patients. It was a question of proportion. The only way to meet the case was that suggested in an amendment of which he had given notice. It suggested that, after consultation with the Government department, a special officer might be appointed for this particular purpose. His amendment proposed that the county boroughs might, where they wished, appoint such a special officer. He was very sorry that the society that entertained this fear of premature burial had not accepted the half-measure, but had gone out for the whole proposal in Mr. Peto's amendment. As so often happened, in aiming at the impracticable, the society had lost the half-loaf which he had offered. He opposed the amendment, as it was impracticable. He hoped it would be withdrawn, and that they would see what the Government suggested as an alternative.

Dr. Vernon Davies said that he had no hesitation in saying that so far as the towns were concerned and the districts near towns the proposal that the doctor should see the body after death was feasible. In twenty-three years' practice he had only failed once to see the patient after death. In country districts the matter was not so easy, as a doctor might have to travel twenty miles to see a body. If something could be done to meet the case of the country areas he would be prepared to support the proposal.

Sir Kingsley Wood (Parliamentary Secretary to the Ministry of Health) said that under the Act of 1874 a doctor in attendance on the deceased person in his last illness was required to give a certificate as to the cause of death to the best of his knowledge and belief. If there was no medical certificate the registrar at once referred the matter to the coroner, and if the death was due to an accident, an industrial disease, or other cause which was appropriate for consideration by the coroner, the registrar referred it to the coroner before registration. The certificate was thus, even in present circumstances, an important element in the evidence determining how the case was to be treated. A doctor it was not required to see the deceased person after death, nor was it essential for the purposes of a certificate that he should do so. In ordinary cases, where he had attended the deceased until shortly before death and was informed by a relative that death had taken place, that knowledge would enable him to certify the cause of death, provided this was consistent with the opinion he had formed of the disease. It would be a pity to imperil the useful provisions of this bill, which had been supported by all parties, because of a question of this kind. The steps that could be taken to meet the views of those who felt strongly on this matter had been considered. It was true that in about 40 per cent. of cases the doctor did not see the deceased after death; the difficulty of meeting the situation was very largely experienced in the rural areas. It

was difficult to impose not only on medical men but on the families of the deceased persons charges and expenses which in many cases they would resent. Therefore he suggested that the case might be met by the Registrar-General's office extending the system of the reference by registrars to coroners on the facts as disclosed by the medical certificate of the cause of death. If that policy was pursued as it was intended that it should be, the certificate would show whether the doctor had seen the deceased after death, and how long before death he last saw him alive; and it would thus be possible that any case not seen after death or a reasonably short period before death would come under review by the coroner before registration or burial. It was to be anticipated that this arrangement, in addition to bringing a large class of the more doubtful cases under special review, would greatly increase the proportion of cases seen by a doctor after death, and the improvement in that respect would be progressive to the extent of reaching by stages a standard which even Mr. Peto might regard as satisfactory. In order that the progress and success of this course of action might be properly watched the Registrar-General would obtain statistics showing the proportion of deaths certified by doctors who had seen the deceased after death, and these figures would be published in the Registrar-General's annual publication. The Minister of Health was also prepared to say that if the result of the action now proposed was ineffective he would be prepared to reconsider the whole question with a view to securing the object in view either by executive or legislative action.

Mr. Peto withdrew his amendment.

On the motion that the bill should be read a third time, Mr. Groves, in supporting the third reading, repeated his plea that the panel doctors should be required to view the body before certification.

Dr. Fremantle thanked the Ministry of Health and the House for supporting the bill. He said that the feature in which it would be found most useful would be the notification of stillbirths.

The bill was read a third time and passed; it will come into operation on July 1st, 1927.

#### Mental Deficiency Bill.

The Mental Deficiency Bill, which has passed the House of Lords, came on for second reading in the House of Commons on Monday night, November 29th. Mr. Chamberlain (Minister of Health), in moving the second reading, explained that the measure was very urgently required in the interests of mental defectives themselves. The real substance of the bill was to be found in the first clause, which extended the definition of defectives. Hitherto there had been difficulty in dealing with mental defectives who were not defective at birth or in early life. There had been some extremely painful and distressing cases of encephalitis lethargica where, as an after-effect, serious mental deterioration had taken place, but the boy or girl affected, not being of an early age, could not be dealt with under the existing law. The bill provided that cases of mental defectives, whether innate or induced after birth by disease, injury, or other causes, could be dealt with.

Calling attention to a number of amendments on minor matters to the existing law, designed to make it more complete, the Minister stated that Clause 6 dealt with local authorities. The present Act authorized combination of local authorities, but did not enable them to provide additional beds which could be lent to other authorities. Clause 6 of the bill permitted a local authority to build an institution of a size sufficient to deal with its own cases and to take in patients from other areas. The local mental deficiency authority and the local education authority could provide the institution jointly. It was hoped that mutual arrangements would be come to whereby the best use would be made of the provisions of the bill, which had the unqualified support of the Central Association for Mental Welfare. The bill did not in any way interfere with the safeguards provided in the Mental Deficiency Act of 1913. In addition to the general limitation in that Act, it was provided that there must be two medical certificates, one of which must be signed by a medical practitioner specially approved for the purpose. The case would then come before a judicial authority. That authority must be satisfied that the person was a defective and was a subject to be dealt with under the Act. At the end of a year, after the case had been dealt with in an institution, special medical and other reports had to be made and forwarded to the Board of Control. If the Board, after considering the reports and the means of care and supervision which would be available if the defectives were discharged, came to the conclusion that the continuance of the Order was required in the defective's interest, they could make an order continuing detention in the institution for another year. The same procedure was followed at the end of succeeding periods of five years each. In the case of a defective under 21 there was the further safeguard that visitors might, when the patient reached 21, discharge him if they thought his detention was no longer required in his own interest. In addition, all defectives detained under the Act were visited by members of the Board of Control from time to time. The bill did not diminish any of the existing safeguards.

Mr. Rhys Davies moved the rejection of the bill because it was not confined to children and because it would be wiser to wait until three committees now sitting had reported.

Mr. Morrison seconded the motion for rejection. After some discussion, Sir K. Wood (Parliamentary Secretary to the Ministry of Health), in reply, said that the bill would enable existing accommodation to be more usefully employed. He agreed that much care and attention should be given to the cases of mental defect after lethargic encephalitis. The bill provided that the treatment to be made available was, first, supervision; secondly, guardian-ship; and, thirdly, institutional care.



Dr. Vernon Davies expressed doubt whether the Minister of Health, in referring to encephalitis lethargica, had in mind elderly people. The bill referred to a condition of arrested or incomplete development of the mind. A man of 50, who got encephalitis lethargica and developed some of these awful symptoms afterwards, was not necessarily suffering from arrested development or incomplete development. It was a perverted development, and the great benefit of the bill was that it made it possible to take charge of these sad cases at whatever age. The bill ought to apply to people of any age.

Mr. Chamberlain replied that the question of people of later ages could be discussed in committee. His view was that clearly it was impossible at present to deal with all ages; it was only possible to deal with those mental defectives whose development had been arrested or rendered incomplete by one of the causes specified.

Dr. Nicolson said that he served on committees with the experts who drew up the distinction, or something like it, and submitted it to the Ministry of Health; they wished only to apply it to the adolescent, and did not intend to extend it to later ages when the number of cases was not sufficiently numerous.

Mr. Rhys Davies withdrew his motion for the rejection, and the bill was read a second time.

### Dogs for Research.

In reply to questions from Captain A. Evans and Captain P. MacDonald, concerning the conviction as a dog thief of a man who sold dogs to the University College School of Physiology, London, Sir William Joynson-Hicks said he had seen a press report of the case. He added that the college authorities had stated publicly that their procedure was to buy the animals when required from a general dealer in animals and animals' food, and to require from him a written guarantee that all the animals so purchased were legitimately obtained. The experiments carried on at the college were for the purpose of medical and scientific research, and were subject to the conditions and restrictions laid down by the Act 39 and 40 Vic., cap. 77. The laboratory was inspected at frequent intervals by the inspectors appointed under that Act.

Dr. Salter asked whether the Home Secretary would arrange for allocating to scientific purposes some of the 50,000 stray dogs taken charge of by the Metropolitan Police every year. The Home Secretary replied that he did not think it desirable at present that the police should enter into arrangements of this kind. The man in this case had been previously convicted, but he had no evidence that the college authorities knew that fact. Mr. Bromley asked whether the Government did not think it time to stop "this horrible practice, carried on under the cloak of science." The Speaker ruled out the question. Sir Robert Gower suggested an inquiry into the methods by which dogs and other animals were obtained for vivisection in physiological schools. The Home Secretary replied that he had received a communication from the responsible authorities of the school containing information as to the procedure adopted by them in the purchase of animals. This information, he understood, was not before the magistrate when he dealt with the case. Apart from this case, no complaints had reached him, and he saw no necessity for a general inquiry. The provisions of the ordinary law of larceny were sufficient to deal with thefts of animals. Sir R. Gower suggested that licences should be compulsory for persons dealing in dogs and cats. The Home Secretary said he could not answer without further consideration, for which at present he saw no need.

### Smoke Abatement Bill in Grand Committee.

Consideration of the Public Health (Smoke Abatement) Bill was resumed in Grand Committee on November 23rd. On a clause which provided that, to ensure the reduction of smoke, urban authorities might make by-laws regulating the heating arrangements in new buildings other than private dwelling-houses, Captain Waterhouse moved to extend this power to new private dwelling-houses. Dr. Fremantle said advocates of smoke abatement admitted that it was impossible to deal at present with the nuisance in existing houses. They thought they should try to regulate the fireplaces of houses to be built under the Government schemes, but in the name of public health he protested against the idea that the local authorities might construct houses without open fireplaces. The authorities might thereby promote the interests of their electrical or gas undertakings, but Professor Leonard Hill, the greatest authority in the country on the subject, had declared for the open fireplace against systems which heated by convection or radiation, but did not ventilate. Dr. Fremantle asked what the Ministry of Health was doing at its building laboratory. Mr. Greenwood said some local authorities had constructed houses so as to prevent a new smoke nuisance. Mr. Lunn said he had never had a headache till he came to London and sat by a gas fire. Commander Ashbury said they all knew that gas fires were unhealthy. Mr. Chamberlain agreed that domestic smoke produced more nuisance than industrial smoke. They now had 8,000,000 houses in this country, none of which would be affected by the bill. New houses were being built at the rate of 200,000 a year, mostly by authorities who did not need to enact by-laws against themselves. Local authorities were fitting 75 per cent. of their new houses with arrangements for cooking or heating by gas or electricity. Mr. Dalton asked if the Ministry was experimenting with smoke-consuming grates. The Minister said

that it was. The amendment to include dwelling-houses was defeated, but on the motion of Sir Arthur Holbrook local authorities were empowered to make smoke abatement by-laws regulating cooking apparatus in buildings other than private dwelling-houses.

On the clause authorizing local authorities to make by-laws against noxious smoke, Mr. Chamberlain said the Ministry could not lay down legal definitions of smoke, but scientific standards might later be established. Mr. Womersley asked whether noxious vapours from fish-meal works and fertilizer works would come under the bill. Mr. Chamberlain pointed out that the bill provided that the Minister of Health could schedule the emission of noxious gases of any kind and could send his inspectors to examine the works. The clause authorizing this was carried after Dr. V. Davies had said that bad smells were not necessarily noxious; some did people good. On the other hand, an invisible scentless emission might damage health and vegetation.

The Committee stage was completed on November 24th. A clause excluding ships from the operation of the bill was amended to make the bill apply to ships other than those habitually used as ocean-going vessels. A subsequent clause proposed that any local authority observing a smoke nuisance on premises occupied for the public service of the Crown should report it to the appropriate Government department, which should cause steps to be taken for its abatement. Mr. Lunn moved to add that if the nuisance was not abated or recurred it should also be reported to the Ministry of Health. Sir Kingsley Wood opposed the amendment; it did not, he said, arm the Minister of Health with power to deal with other Government departments. Dr. Fremantle said the amendment reminded the Committee that the Ministry of Health was established to supervise the health of the country generally, but had no power to look into any question affecting the health of persons in any other Government department. Some machinery should be provided to enable the Minister to supervise the Acts for which he was mainly responsible as a whole, and not only those parts which he had to administer. In the army what corresponded to the Ministry of Health had power to look into every department and to make representations; the separate departments remained responsible for carrying them out. There ought to be some such system in civil life. Sir Kingsley Wood said it never had been intended that if small-pox or scarlet fever broke out among the clerks of, for instance, the War Office, medical officers of the Ministry of Health should attend to it. The amendment was withdrawn. A new clause was added giving power to local authorities, singly or in combination, to make researches into atmospheric pollution and the abatement of smoke nuisances, and to contribute towards the cost of researches by other bodies or persons.

**Infantile Paralysis.**—In reply to a question asking the Minister of Health whether it was desirable, when an epidemic occurred in a school, that it should be closed, Mr. Chamberlain said that was a request for an expression of personal opinion. He had no powers to deal with the closing of schools. In answer to another question, he said that no other public school than Uppingham had been attacked by infantile paralysis.

**Foot-and-Mouth Disease.**—The Netherlands Government has furnished the British Ministry of Agriculture with details of experiments in Holland which are claimed to show that the virus of foot-and-mouth disease, existing in the flesh of animals infected by that disease, is destroyed by the lactic acid which in a short time develops in the dead tissues. The Dutch experiments dealt with flesh only, but the British Ministry is conducting experiments on the duration of the virus in all parts of the animal, and results have already been obtained indicating that certain parts of the carcass remain infective. In these circumstances the Ministry was not prepared to remove the prohibition of the import of fresh carcasses from countries infected with foot-and-mouth disease.

**Ventilation of Underground Shelters.**—Sir L. Worthington-Evans, on November 30th, replying to Mr. Thurtle, who asked what was the object of the recent action of his department in sending a company of soldiers into the London postal tube and keeping them there for a number of hours, said that the experiment was designed to furnish data regarding the ventilation required under certain conditions in underground shelters, such as dug-outs.

### Notes in Brief.

The Home Secretary is not satisfied with the present strength of the factory inspectorate, and as soon as the factories bill has made substantial progress proposes to set up a committee to make a comprehensive survey of the position.

Milk brought from Ireland, the Channel Islands, and the Isle of Man will not come under either the Public Health (Imported Milk) Regulations or the Milk and Dairies Order.

Up to and including September 30th, 1926, 209,685 widows' pensions had been applied for. Of these, 161,309 were awarded and 44,930 rejected. For the same period, 15,375 orphans' pensions were asked for; 11,123 being granted and 3,433 rejected.

Mr. Amery (Secretary for the Colonies) states that the progressive establishment of a chain of tropical research stations has been recommended by the Imperial Conference to the consideration of the Governments concerned.

The Home Secretary has under consideration the extension of the police returns for 1927 to include further particulars of the persons killed by vehicles on the road or as passengers in such vehicles.

On November 30th the Lords' Amendment to the Lead Paint (Protection against Poisoning) Bill was agreed to by the House of Commons.



## Universities and Colleges.

## UNIVERSITY OF OXFORD.

## Radcliffe Travelling Fellowship.

AN examination for a Radcliffe Travelling Fellowship of the annual value of £300, and tenable for two years, will be held during Hilary term, 1927, at the University Museum, commencing on February 15th. Candidates must have passed all the examinations required by the University for the B.A. and B.M. degrees. They must not have exceeded four years from the time of passing the last examination required for the degree of B.M. The successful candidate must before election declare that he intends to devote himself during the period of his tenure of the fellowship to the study of medical science and to travel abroad with a view to that study. The fellowship will be vacated *ipso facto* by a Fellow who spends more than nine months in the whole within the United Kingdom. The Regius Professor of Medicine and the examiners present a yearly report on the work done by each Fellow to the electors, who may, if they think the report unsatisfactory, declare the fellowship forfeited. The fellowship is open to women.

The examination will occupy four days. Papers will be set in physiology, pathology, and preventive medicine, and a subject will be proposed for an essay. There will also be a practical examination in pathology. A candidate desiring to offer in addition a special branch of either medicine or surgery must send notice of this to the Regius Professor by February 2nd. Intending candidates should send their names, addresses, qualifications, etc., to the Regius Professor of Medicine, University Museum, by February 2nd.

At a congregation held on November 27th the following medical degrees were conferred:

D.M.—E. G. T. Liddell.  
D.M.—J. de la M. Savage.

## UNIVERSITY OF BIRMINGHAM.

Dr. F. A. PICKWORTH has been appointed director to the Joint Board of Research for Mental Diseases in the City and University of Birmingham, in place of the late Sir F. W. Mott. Dr. Pickworth received his medical education at Charing Cross Hospital, obtained the diplomas M.R.C.S., L.R.C.P. in 1921, and graduated M.B., B.S. in 1922. His previous appointments included those of house-physician to Charing Cross Hospital and research officer and pathologist to the Birmingham Joint Board of Research.

## UNIVERSITY OF LEEDS.

Mr. J. S. YOUNG, M.A., B.Sc., M.B., Ch.B. Glasg., has been appointed lecturer in experimental pathology and assistant director of cancer research, and Mr. H. J. CHANNON, B.A., M.Sc. Lond., biochemist in the Department of Experimental Pathology.

Cancer Research Fellowships have been awarded to Miss Georgiana M. Duthie, M.D. Manch., who has been a demonstrator in the pathology department of the University since January, 1925, and to Mr. G. A. COLLINSON, M.Sc. Leeds, who during the same period has acted as research assistant to Sir Berkeley Moyulhan.

They were made as follows:  
M. Duthie, demonstrator in biochemistry;  
M. Channon, assistant in physiology;  
and Mr. F. C. Hapgood, M.Sc. Manch., demonstrator in pathology and bacteriology.

## VICTORIA UNIVERSITY OF MANCHESTER.

The following have been appointed members of the Board of the Faculty of Medicine: Dr. William Dyson, O.B.E., Dr. D. S. Sutherland, and Mr. S. R. Wilson, M.B., B.S., F.R.C.S.

## UNIVERSITY OF GLASGOW.

At the graduation ceremony on November 20th the degree of M.D. was conferred on Evelyn M'Pherson.

## The Services.

## COMMISSIONS IN THE R.A.M.C.

COMMISSIONS in the Royal Army Medical Corps, not exceeding twenty-five in number, will be offered by nominations allotted to the medical schools in January, 1927. A certain number of nominations will in addition remain at the disposal of the War Office. Candidates must be under 28 years of age on January 31st, 1927. The names of those nominated, and applications for consideration, must reach the War Office not later than January 10th. The list of medical schools to which nominations have been allotted and further information will be found in our advertisement pages.

## EXAMINATION FOR DENTAL OFFICERS R.N.

AN examination for dental surgeons for entry into the Royal Navy will take place at Guy's Hospital Dental School, London Bridge, S.E.1, on January 4th, 1927, and the following days. Nino appointments are offered for competition. Further particulars will be found in our advertisement columns.

## Medical News.

DR. GUSTAV MONOD, physician to the Thermal Hospital at Vichy, has been appointed Chevalier of the Legion of Honour. Dr. Monod, who is M.R.C.P. Lond. as well as M.D. Paris, is delegate for Great Britain of the Association for the Development of the Medical Relations of the Faculty of Medicine of Paris; he is also, as our readers know, our French Correspondent.

A SERIES of lectures and practical courses of instruction for the diploma of psychological medicine will commence at the Maudsley Hospital, Denmark Hill, S.E.5, on Tuesday, January 4th, 1927. Part I of the series, in addition to practical instruction and demonstrations, will comprise twelve lectures on the physiology and anatomy of the nervous system by Dr. F. Golla, pathologist to the London County Council and Director of the Central Pathological Laboratory, Maudsley Hospital, beginning January 7th; four lectures on the histology of the nervous system and the endocrine glands by Dr. C. Da Fano, reader in histology in the University of London, commencing on January 4th, and eight lectures on psychology by Dr. Henry Dolving, medical superintendent of the Holloway Sanatorium for the Insane, beginning January 6th. Part II will follow in March, and will consist of a further series of lectures and demonstrations. The fee for the whole course of Parts I and II is 15 guineas, for Parts I and II separately 10 guineas, for one single lecture in Part I or Part II 4 and 2 guineas respectively. Inquiries should be addressed to the Director of the Central Laboratory, Maudsley Hospital, Denmark Hill, S.E.5.

A THREE months' course of lectures and demonstrations on clinical practice and in hospital administration will be given at the North-Eastern Hospital of the Metropolitan Asylums Board, Tottenham, by Dr. F. H. Thomson, medical superintendent, beginning January 3rd, 1927. Particulars can be obtained from the Clerk to the Board, Victoria Embankment, E.C.4.

AT the meeting of the Post-Graduate Hostel to be held at the Imperial Hotel, Russell Square, on December 7th at 9 p.m., Mr. Clifford Morson will discuss percutaneous prostaticotomy on Thursday, December 9th, at the same hour, a discussion on carcinoma of the oesophagus will be opened by Sir Charters Symonds. Dr. Arnold Chaplin will read a paper on the medical service at sea in the mercantile marine, on Friday, December 10th, at 9 p.m. Dinner (price 5s.) will be served at 8 p.m. All medical practitioners are welcome.

THE Fellowship of Medicine announces that on December 4th, at 5 p.m., Mr. L. Bathe Rawling will deliver a lecture at the Medical Society, 11, Chandos Street, W.1, on injuries to the head; open to all members of the medical profession without fee. On December 6th the Infants Hospital will begin a fortnight's afternoon course. Practical courses in obstetrics can be arranged at Queen Charlotte's Hospital to occupy a fortnight or a month; every week the City of London Maternity Hospital holds a course in obstetrics and child welfare; personal application must be made to the Fellowship offices; the Fellowship can also arrange clinical assistantships at the Samari Hospital. The following courses will be held next month: a fortnight's intensive course in medicine, surgery, and the specialties at the Prince of Wales's General Hospital, from January 10th to 22nd; a fortnight's all-day course in cardiology at the National Hospital for Diseases of the Heart, from January 17th to 29th (entries limited to twenty); a fortnight's course in diseases of children at the Royal Free Hospital and the Children's Clinic, from January 10th to 22nd; and a month's course (Tuesday and Saturday mornings at 11) in psychological medicine at the Bethlem Royal Hospital from January 11th to February 5th. A further series of lectures on medical and surgical emergencies will be held under the auspices of the Fellowship of Medicine, and there will also be a series of clinical demonstrations in ophthalmology at the Royal Eye Hospital; particulars to be announced later. Copies of all syllabuses of the special courses, a programme of the general course of work, and the *Post-Graduate Medical Journal* can be obtained from the Secretary of the Fellowship, 1, Wigmore Street, W.1.

THE autumn dinner of the Irish Medical Schools' Graduates' Association was held at the Savoy Hotel on November 23rd. Sir W. I. de C. Wheeler, the president, was in the chair, and the guest of honour was the Right Hon. Thomas Molony, the late Lord Chief Justice of Ireland. The toast of "The Guests" was proposed by Sir John William Moore and responded to by Sir Thomas Molony and Lord Shaw of Dunfermline. The toast of "The President Association" was proposed by Dr. R. Travers Smith, and Sir William Wheeler responded. The success of the dinner was enhanced by a delightful musical programme.

DEC. 4, 1926]

# LETTERS, NOTES, AND ANSWERS.

THE annual dinner of the Yorkshire Association of Glasgow Graduates will be held in the Great Northern Hotel, Leeds, at 6.45 p.m. on Friday, December 17th. The guest of the evening will be Mr. Farquhar Macdonald of Glasgow. All old Glasgow graduates resident in Yorkshire are invited to the dinner, particulars regarding which may be had on application to the honorary secretary, Dr. W. MacAdam, 40, Park Square, Leeds.

THE Tropical Disease Prevention Association is issuing an appeal for subscriptions to enable it to depute Dr. Louis Sambon and his fellow workers to investigate further the subject of cancer houses. Dr. Sambon, working under the auspices of the association named, carried out investigations in northern Italy, which he reported in the *Journal of Tropical Medicine and Hygiene* last August. The observations he made are held to justify the use not only of the term "cancer houses," but even of such phrases as "cancer streets" and "cancer villages." The facts are thought to support the suggestion that there is an unequal distribution of some organism or other which may be a predisposing or even a causative agent. The appeal is signed by Lord Abernethy and a number of well known men of medicine and science. Subscriptions may be sent to Mr. J. E. Russell, treasurer, at the National Bank, 101, Baker Street, London, W.1.

At the meeting of the Hunterian Society of London on Monday next, December 6th, at Simpson's Restaurant, Cheapside, a discussion on the nervous child will be opened by Dr. H. C. Cameron and Dr. Bernard Myers at 8.30 o'clock.

At the meeting of the Harvelan Society of London at Paddington Town Hall on Thursday, December 9th, at 8.30 p.m., a discussion on the etiology of high blood pressure and the respiratory phenomena associated with high blood pressure and chronic nephritis will be opened by Sir John Poynton, Bt., followed by Professor Collingwood, Dr. Parkinson, and Dr. de Wesselow.

THE Medical Society of the Mediterranean Coast has arranged a tour from December 6th to 24th, visiting Hyères, St. Raphael, Cannes, Grasse, Nice, Mentone, Monte Carlo, Monaco, and Beaulieu, open to all medical practitioners, their families, and students in so far as accommodation allows. The cost, including hotels and motor-car excursions, is 1,050 francs, apart from the cost of the railway journey outwards to Toulon and homewards from Nico. Further information may be obtained from the Office Français du Tourisme, 55, Haymarket, S.W.1.

THE buildings, in Endsleigh Gardens, W.C.1, of the Wellcome Bureau of Scientific Research and the Museum of Medical Science have been reconstructed and will be reopened on Wednesday next, December 8th, at 3 p.m., by Mr. Neville Chamberlain, Minister of Health. Afterwards Sir Walter Fletcher, M.D., F.R.S., Secretary to the Medical Research Council, will give an address on research and citizenship.

MESSERS. WILLIAM HEINEMANN (Medical Books) announce for immediate publication the fourth edition, in two volumes enlarged and revised, of Jacoby's *Atlas of Dermochromes*, with a new and original text by Henry MacCormac, C.B.E., M.D., F.R.C.P.

IN view of the heavy demand for facilities for undergraduate instruction which has been experienced at the National Hospital for Diseases of the Heart, Westminster Street, W.1, arrangements have now been made for the practice of the hospital to be open to medical students as from January 1st, 1927, at half the fees charged to graduates.

ON his retirement from the medical officership to the Post Office staff at Carnforth, after more than forty years' service, Dr. E. S. Jackson was presented by past and present employees and friends with a microscope.

DR. GEORGE WINDHAM CROWE has been presented by the past and present members of the Worcester police force with a handsome silver salver upon his retirement from the post of police surgeon after forty-eight years' service. Dr. Crowe, who lives in the house occupied by the founder of the British Medical Association, Sir Charles Hastings, was local secretary of the Jubilee Meeting of the Association held at Worcester in 1882.

A TURKISH pharmacopoeia has been introduced by the Turkish Government at Angora in place of the French codex hitherto in use.

A MONUMENT to Professor Chanvran was unveiled at the National Veterinary School at Lyons on November 7th.

A CHAIR which had belonged to the late Lord Lister was stolen, on November 16th, while in transit from the Shetland Islands to the Wellcome Historical Medical Museum. It had been made from the operating table of the old Edinburgh Infirmary, and was the property of Sir Watson Cheyne. It has now been recovered.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.** ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish to have their names, not necessarily for publication, printed with their articles must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager. The **TELEPHONE NUMBERS** of the British Medical Association and the *British Medical Journal* are **MUSEUM 9361, 9362, 9363, and 9364** (internal exchange, four lines). The **TELEGRAPHIC ADDRESSES** are: **EDITOR of the British Medical Journal, Aitology Westcent, London.** **FINANCIAL SECRETARY AND BUSINESS MANAGER** (Advertisements, etc.), **Articulate Westcent, London.** **MEDICAL SECRETARY, Medicera Westcent, London.** (Advertisements, etc.) **Office of the British Medical Association, 16, South Frederick Street, Dublin** (telegrams: **Bacillus, Dublin**; telephone: **4737 Dublin**), and of the **Scottish Office, 6, Drumsheugh Gardens, Edinburgh** (telegrams: **Associate, Edinburgh**; telephone: **4361 Central**).

## QUERIES AND ANSWERS.

**LICE ON DOGS.**  
A. J. C. T.—Many different drugs are recommended for the treatment of lice on dogs: a solution of potassium sulphurate in warm water is excellent if the dog can be washed out of doors, but owing to its objectionable odour it is not suitable if the dog has to be washed indoors. Fresh pyrethrum powder dusted into the dog's coat and brushed out after a few minutes is generally sufficient to remove the lice, but as it only stupefies the insects, the brushings must be immediately repeated. "Laval," a proprietary preparation manufactured by Cooper's Dip, is non-toxic. None of the drugs in present use are capable of destroying the "nits," and the treatment must be repeated to about a week. Bedding should also receive attention, as the larvae reach the dog deposited on the bedding material and the larvae reach the dog in this way. In addition to the above measures, any of the usual disinfectants in common use—except the carbolic series of disinfectants, which are very toxic to dogs—may be used in dilute solution.

**CHILBLAINS.**  
DR. A. MACBETH ELLIOT (London, W.) sends a note on the treatment of chilblains (erythema pernio) by ultra-violet light. He says: "Until recently I have had the same unsatisfactory results with whatever line of treatment I adopted in cases of chilblains. Early in October I had my first case this winter—a married woman who had been a martyr to chilblains all her life; both hands and feet were affected, and she was hardly free through the winter. Ultra-violet radiation with quartz mercury vapour lamp to the fingers and toes and to the legs and arms with the tungsten lamp gave immediate relief. After four radiations the condition had cleared up, and so far there has been no return. In another case in a woman giving the same history as above, but the feet being the more painful, all local signs had disappeared at the end of ten days. No other treatment was administered during the radiation; high frequency ionization, diathermy could be employed to supplement it if necessary, and in the past I have had temporary relief with these, but never anything like the results with ultra-violet radiation. Needless to say, each case must be treated on its merits; ultra-violet radiation requires very careful supervision."

DR. F. A. E. SILCOCK (Leicester) recommends the use of luminous heat-ray treatment in combination with the ultra-violet light. "I have," he says, "treated many cases with the very satisfactory results by using a Bach mercury vapour ultra-violet and a Solux luminous heat-ray lamp, concurrently focused on the affected parts. By this method the relief of the pain appears to be quicker and natural sunlight is much more closely imitated."

DR. SIDNEY MATTHEWS (Crawley) is induced by the mention of ultra-violet treatment of chilblains to say that he has found advantage from ultra-violet treatment in Raynaud's disease. He has a case of the second degree under treatment.

DR. A. H. MACDONALD (London), who is inclined to think that chilblains come under the heading of a deficiency disease, recommends the following general line of treatment for the prevention of chilblains: (1) Exercise. (2) Those who only go to school should sit down to lessons at school, so as to have a short distance and then sit down to lessons at school, so as to frequently. It will be found advisable on arrival at school to set the circulation going. (3) Cod-liver oil should be given to

those who are known to suffer in this way in the winter. (3) Milk at 11 a.m.—a quarter to half a pint. (4) Some fresh fruit every day. These measures will prevent chilblains in most cases. To heal them ultra-violet rays are a great aid, and it is fortunate that we have this extra means now at our disposal to cure this complaint. The giving of calcium salts I have found to be disappointing, but the help given by (2), (3), and (4) goes a long way towards preventing this trouble.

#### INCOME TAX.

##### Assessment of Practice.

"C. W. S." is part proprietor of a practice which has been assessed on the cash basis for thirty-five years. The authorities now desire to change to the basis of "fees earned"—less, presumably, an allowance for probable bad debts—and further to revise the assessments already made from 1920-21 onwards.

\*. As we have always admitted, the cash basis is not technically correct in strict law, and its acceptance is based on mutual convenience and on the assumption that in the long run the results derived from the two methods are substantially the same. "C. W. S." is willing to agree to an alteration for the current year, but we think he is acting only reasonably in objecting to the reopening of the liability for previous years. Assuming that there have been no special circumstances which have rendered the cash basis unfair to the revenue, and bearing in mind that inspectors of taxes have accepted that basis in the past and that in doing so they have followed a common practice within the cognizance of the authorities, we suggest that, if the local inspector continues to press for a revision of past assessments, "C. W. S." should place all the facts before the Secretary, Board of Inland Revenue, Somerset House, W.C.2, and ask that the local official should be authorized not to insist on the application of the "fees earned" basis to years prior to 1926-27.

##### Depreciation of Motor Cycle.

"F. M. W." has been informed by the inspector of taxes that "depreciation in respect of the motor cycle is not allowable as an expense if repairs, etc., are allowed."

\*. The statement seems to be based on a misunderstanding. The depreciation allowance excludes a claim to deduct the cost of replacing the vehicle used, but not running costs. It must surely be obvious that such expenses as petrol, oil, licence, and replacement or repair of parts are allowable, however the gradual exhaustion of the vehicle by wear and tear may be dealt with in the return.

#### LETTERS, NOTES, ETC.

##### AN APPEAL.

DR. HILDRED CARLILL (Physician to Westminster Hospital) writes from 146, Harley Street, W.: "A medical man, aged 70, who has no knowledge of this appeal, is sorely pressed. Twenty years ago he was advised to leave his general practice. He is unable to act alive, but w is in debt. Of four sons who would now all be helping, three died at the age of 21 (one, my friend in another ship, in the *Queen Mary* at Jutland, and one of cerebro-spinal meningitis at St. Omer). The remaining boy is in the air branch of the navy, and he sends home the little he can afford. Recently a prolonged illness, lasting over four months and necessitating several operations, has prevented the doctor from earning a penny, and his financial state is critical. A friend has opened a subscription list with £50, and I, who know the facts, shall be very glad to receive, acknowledge, and forward subscriptions from sympathetic professional colleagues. Perhaps someone may know of an opening for the doctor on the clerical side of a hospital or its appeal department, or of a medical or other society. He aspires only to a small living wage, and for this he would do first-rate work."

##### THE CANCER PROBLEM.

DR. A. T. BRAND (Driffeld), in the course of a letter on this subject, writes: Dr. Gye, in his interesting lecture published in the *JOURNAL* of November 13th, states that he has succeeded in isolating a "living filterable microbe" which he believes to be the cause of new growths; but he insists that the microbe can only act in conjunction with an accessory chemical substance, which determines the special characters of the resulting cancers. I maintain that, since cancer does not arise in the perfectly healthy subject, there must be a predisposing condition precedent in every case before the causal microbe can attack successfully. One of the chief predisposing agents is prolonged irritation, which prepares the soil for the reception of the micro-organism. The special characters of the resulting cancers depend on the variety of tissue involved. Nor is the filterable virus described by Dr. Gye the only form of the microbe responsible for cancer. Several years ago both Dr. T. J. Glover of Toronto and Dr. J. Young of Edinburgh isolated and cultured, from every variety of malignant disease, the same micro-organism, which they found to be pleomorphic, its life cycle consisting of bacillus, coccus, spore sac, all easily visible under

the microscope, and a filter-passing phase, which is ultra-microscopical under ordinary circumstances, but evidently the same as the filterable virus of Dr. Gye, rendered visible by the special method of Mr. Barnard. Dr. Glover scrupulously refrained from making his researches known until he had completed them to his satisfaction, but now he has made a full communication, which has been published in the November issue of the *Canada Lancet and Practitioner* of Toronto. In this communication Dr. Glover describes his discovery, the isolation and culture of the micro-organism, the successful propagation of the disease from culture among the lower animals of all kinds, the injection of the toxin of the organism into the horse, resulting in the production of an antitoxin which he has used for diagnosis, prophylaxis, and treatment, concluding with a detailed account of fifty cases of successful treatment of advanced disease.

##### A LONDON CLINIC FOR PHYSIOTHERAPY.

THERE will shortly be opened in London, near Victoria Station, an out-patient clinic (to be called "The London Clinic") for the study and practice of "physical" treatment. The medical staff will be entirely honorary, and the treatment, we are informed, will be available for those who cannot afford to pay for its private administration. Courses of lectures and practical instruction will be held for doctors and medical students. There will also be courses for hospital nurses, and for masseuses. Each department will be supervised by one or more medical men who have specialized in the particular branch, and an honorary medical director will co-ordinate the work of all. There will be two large artificial light departments, one for women and children, the other for men, each equipped on a scale that will enable them to treat 1,000 patients in a day, and the clinic will gladly extend to insurance practitioners and school doctors facilities for the attendance of debilitated school children. The light treatment will be administered solely by generally trained hospital nurses, and the treatment in the electricity department, also under medical control, will be given by masseuses holding the medical electricity certificate of the Chartered Society of Massage and Medical Gymnastics, and those who hold this certificate will be eligible for a special course and examination in "orthopaedic electricity." This course is designed to turn out a masseuse competent to treat orthopaedic disabilities, including the effective stimulation of muscles or groups of muscles. The work of this department will thus consist of the ordinary "medical" electricity and "orthopaedic" electricity. There will be a special department for diathermy applied to certain conditions in women, such as dysmenorrhoea and infective cervicitis; this treatment will be administered by the medical officer himself. Massage will be co-ordinated with the electricity department, and remedial exercises will have an important place. A covered exercise ground is being constructed, and the Maryvet Morris system of exercises has been selected as specially suitable for classes of children, supervised by Miss Morris. It is possible that the treatment of medical instances sufficient in due course in the medical journals. The present nucleus staff consists of Dr. G. Murray-Lewick (medical director), Mr. J. F. Carter Braine, F.R.C.S., Dr. L. D. Bailey, M.C., Dr. E. F. Cumberbatch, and Dr. C. A. Robinson.

##### PUBLIC HEALTH IN GERMANY.

DR. BINNIE DUNLOP (London, S.W.7) writes: Professor Abel is reported (November 6th, p. 846) as having said that "in Germany the last figures showed that the population had diminished in a year by half a million." According to my notes he said that Germany's population was still increasing. In any case, one of his charts showed that the birth rate and death rate per thousand of the population had been approximately 36 and 21 in 1900, 28 and 16 in 1913, 22 and 12 in 1925—representing in 1925 an addition of about 670,000 inhabitants. Why, it might be asked, did the death rate fall thus? Surely it was mainly because the declining birth rate continually reduced the proportion of badly nourished persons; and this contention is supported by the dramatic rise of the tuberculosis mortality in Germany during the war which Professor Abel demonstrated.

\*. "Diminished" was a slip of the pen. The increased tuberculosis mortality experienced not only in Germany but in other European countries, including England and Wales, is commonly attributed to the diminished food supply. The Malthusians would probably attribute the fall in the death rate of Germany to a reduction in the proportion of badly nourished persons, but a more widely accepted view is that the improvement of sanitation and of the well-being of the population generally, including better nutrition, is responsible.

##### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 66, 67, 68, 69, 72, and 73 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 70 and 71.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 239.

DEC. 11, 1926]

SECTION OF SURGERY.

British Medical Association.  
PROCEEDINGS OF SECTIONS AT THE ANNUAL  
MEETING, NOTTINGHAM, 1926.

SECTION OF SURGERY.

Sir D'Arcy POWER, K.B.E., M.B., F.R.C.S., President.

DISCUSSION ON CARCINOMA OF THE TONGUE.

OPENING PAPERS.

I.—DUNCAN C. L. FITZWILLIAMS, C.M.G.,  
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THE SURGICAL ASPECT.

*Preliminaries.*  
There is hardly any situation in the body in which the success of the operation and the comfort of the patient depend more upon the preliminary attention and training of the patient than in cancer of the tongue.

The buccal cavity is a septic cavity; it is more septic where ulceration is taking place or where carious teeth, pyorrhoea, and other obvious foci of sepsis are present. The effect of sepsis, as in the case of other poisonous drugs, is a matter of dose and concentration. A small dose of morphine may be beneficial; a larger one produces deep sleep; and a still larger one kills the patient. A small dose of sepsis produces a slight elevation of temperature, and is often seen after so-called aseptic operations; a larger one produces rigors, breaking down and suppuration of wounds, according to its intensity; a still larger one causes pyaemia and the death of the patient. As, therefore, we cannot altogether eliminate sepsis from our procedure in the mouth, we must diminish the dose as much as possible.

All carious teeth or teeth around which there is suppuration in the gums should be removed, also septic tonsils. A strong antiseptic mouth-wash of carbolic should be used constantly for some days by the patient. A very good and pleasant mouth-wash is the following: Phenol pur. 1 oz., tinct. lavender 2 oz., water to 6 oz.; 1 oz. to a tumbler of warm water. This mouth-wash should be held in the mouth for some time, the patient breathing through the nose. The ulcer on the tongue can be dried and the brush surface touched with a pledget of cotton-wool or a brush dipped in pure carbolic acid or 20 per cent. chromic acid twice a day, taking care that none of the acid spreads beyond the ulcer. In this way we can ensure that the buccal cavity contains as few septic organisms as possible.

The operation will upset the important function of swallowing, and to a less extent breathing and coughing. We little realize how much we are dependent on the action of swallowing for our comfort. Not only do we swallow food, but we are constantly swallowing saliva. The flow of saliva we can diminish by rinsing the mouth out with an astringent, such as an infusion of orange peel.

After the operation for removal of the tongue swallowing is completely upset: the liquids taken through the mouth must be poured down by means of a feeding cup and long rubber tube which extends to the back of the throat. There is always some difficulty in tolerating things at the back of the throat and guiding fluids past the opening of the glottis. This should be acquired by practice some days before the operation. The patient takes the feeding cup in one hand and passes the tube into the pharynx; the tube is pinched by the other hand and the cup tilted: by relaxing the tube fluid is allowed to flow into the throat and is swallowed. Some practice is needed. For these reasons it is better that the patient should go into a nursing home for a few days before the operation. In many advanced cases the man is enfeebled by pain, inability to swallow, sleeplessness, and the continual absorption of sepsis. These should be obviated as far as possible. His health should be sustained and improved by good food, enemata being given if thought necessary: sleep should be procured by sedatives, and the measures just detailed followed to finish the oral sepsis. A rest in bed for part of the day will do him good.

There is always some difficulty in getting a patient to submit to these measures, as, having made up his mind to undergo an operation, he wants it performed at once. An operation is not a pleasant thing to look forward to; it is not without risk, but having once screwed himself up to the point he wishes to diminish the period of anxiety. He does not appreciate or pay any attention to the preliminaries which are so necessary for success. This is natural in an elderly individual whose peculiarities, crotchets, and eccentricities have all been exaggerated by a painful illness. A patient who can take a placid and common-sense view of the proceeding and who will help the surgeon is a great asset; this attitude goes a long way towards recovery.

*Choice of Operation.*

The first thing to be decided upon is whether the operation can be an intrabuccal operation, such as that which we associate with the name of Whitehead, or whether it has to be one which demands division of the jaw, to which the name of Syme is attached.

This may be left to the individual view of the surgeon, but we are all guided by the fact that an intrabuccal operation is suitable for every case in which there is no extension to the floor of the mouth, no implication of the lower jaw, and no involvement of the anterior pillar of the fauces, tonsil, or palate; and perhaps we might add where the growth is not situated too far back upon the tongue. In cases where the growth has extended to these situations there is no doubt that division of the jaw may give better access. Over a large number of cases of operation collected from different sources the difference is very marked, that of the intrabuccal operation being exactly one-quarter that of the operation requiring division of the jaw.

*Methods of Approaching the Operation.*

These are perhaps the most important points in what I am going to say. I am going to ask you to throw upon the scrap-heap almost the whole of the ordinary procedure of the scrap-heap operation.

I think I may say that the usual procedure for an intrabuccal operation is the following: An incision is made in the neck, the lingual artery is tied, the submaxillary gland removed and any carotid glands which may be seen; the tongue is then removed. The wound in the neck, so that it as a rule, communicates with that in the neck, so that it is advisable to have the neck dissection as small as possible. If the whole tongue has to be removed the same procedure may take place upon both sides of the neck—a long and trying operation for an old man. The operation is not difficult, and almost any careful surgeon can carry it out with a very small operative mortality. The after-history, however, is melancholy in the extreme. It is not too much to say that the after-results are as bad as any we have in surgery. This, in my opinion, is due solely to the procedure adopted, and I do not think any modern surgeon would approach the problem in this way if he was not guided and bound by tradition and wont.

The operation consists in removing the growth and the lymphatic field. This cannot be done adequately at one operation, as the mouth and the neck will not communicate, and there will be a huge septic wound. It must, therefore, be done in two stages; it is obvious that the dissection, which is almost more important as regards prognosis than the mouth operation, must be as thorough as possible, and accordingly should not be handicapped by the scar tissue of a previous operation. This at once brings us to the question of the ligation of the lingual artery, and here I may say that I believe the discarded procedure it has had its day, and is no longer necessary. At a time we can all remember, when the temporary assistant, and the anaesthetist fought for the temporary passage of the patient's mouth, there was a constant risk of blood being sucked into the larynx, and the control of haemorrhage was of vital importance; now, however, with the laryngotomy tube and the pharynx plugged, it is of no consequence. Having, therefore, done away with the ligation of the lingual artery, would any surgeon proceed

to perform a preliminary dissection of the glands in the neck in an adequate manner with the knowledge that the fascial planes were liable to be infected from the mouth? If he were tempted to do it on one side, would he do it on both? The answer is, Never.

A dissection of the neck is an operation which should be complete, and not a mere adjunct to the ligation of the lingual artery, as it now is in many cases. It is an operation which ought to be thoroughly carried out, and the whole gland-bearing fascia of the neck should be cleared from the great vessels. This is the one chance we have of dissecting in the undisturbed fascial planes, and no subsequent operation can be anything like as easy and as thorough. It is a long operation, and doubly so if both sides of the neck are to be dealt with. Moreover, considering the stage of the disease in which we see most of our cases, the safety of the patient lies entirely in the thoroughness with which this part of the operation is performed.

I believe that the proper method of dealing with the situation is to remove the tongue locally, first, as widely as is thought necessary, and then let the mouth wound heal, and a fortnight later deal with the neck. The flow of lymph during that fortnight must be very slight, as the site from which it flows is removed. Spread of the disease during that time is not to be feared, as the cancer is no longer present. This is far better than doing the neck first, and at the same time taking the opportunity of ligating the vessels, and then, when the neck wound is healed, dealing with the tongue. In this case the lymph is flowing from the cancer, and is going by roundabout routes, the limits of which we do not know, to the same side or to the opposite side of the neck; at the same time the collateral circulation is opened up, and instead of a blood supply the anatomical relations of which are well understood, we have one which is unknown, but is just as free. I merely state this as a common-sense view to take of the matter, and one which I now always follow, though I am well aware that many surgeons reverse the process, and most of the cases operated upon in the Mayo Clinic between the years 1910 and 1922 had the glands removed first.

#### *The Anaesthetic.*

This is a most important subject, and must be dealt with fully. A good anaesthetist is as important as a good surgeon; and by a good anaesthetist I do not mean one who anaesthetizes so that the patient can leave the operating table alive, but one who acts for the ultimate good of the patient.

There are four methods of anaesthetizing, all of which I have used.

First, there is the ordinary way of anaesthetizing by the mouth, at first by means of a mask, followed by some such apparatus as Junker's. This method has almost completely gone out of use; there was far too great a risk of the suction of blood and mucus into the upper bronchial passages, and consequent pneumonia. This method, however, is still used and even advocated by some.

There is the method by tracheotomy and the plugging of the pharynx—an excellent method, but a severe procedure, as the tracheotomy takes some time to perform, the wound does not heal at once, and there is an added risk of sepsis; still it is a great step in advance. The patient, however, is deprived of the ability to cough and clear his pharynx for some days after the operation.

Then there is laryngotomy. A small opening is made through the crico-thyroid membrane and a narrow tube thrust into the larynx, and the anaesthetic given through that, the pharynx being plugged. A small, flat laryngotomy tube is used or a bivalve tracheotomy tube; the opening takes only two or three minutes to perform. A small transverse incision is made and the membrane stabbed so that there is only a small hole, into which the tube fits so tightly that there is no bleeding. The tube is removed when the operation is finished: the sides of the wound come together, no air escapes, no emphysema occurs, and coughing is at once restored to the patient. This is by far the best of the methods used at the present day.

Lastly, there is the method of intratracheal delivery of the anaesthetic. This seemingly has very great advantages,

but they are more apparent than real. It gives a very nice quiet anaesthetic, but continual swabbing of the throat is necessary. It must be remembered, too, that as the entrance to the glottis is narrowed by the tube, the force with which material can be sucked in is proportionately increased, and there is a liability that pneumonia will follow. Also it is not always easy to introduce a tube into the larynx. Anaesthetists will say that it can be done with a mirror, and the tube not contaminated in any way from the ulcer. That may be so, but my experience has been that when the patient has arrived upon the table with the tube in place there are often evidences that it has not been altogether plain sailing, and, besides a considerable loss of time, I have frequently found that there was free bleeding from the ulcer. Pulling, tearing, or massaging of the ulcer is the last thing that is desired.

I share the opinion expressed by Trotter in this matter—that where there is a fungating mass in the mouth laryngotomy is the best procedure. Much time may be lost in attempting to pass the tube, during which the breathing may be seriously embarrassed, and an additional strain of unknown weight added to the seriousness of the operation. Be it remembered that most of these patients are old men, and any additional heart strain is to be avoided.

About the same time that Trotter expressed this opinion Rupert Jones published his experience of anaesthesia by this method. Two tongue cases were included. In the first, a man of 52, the tube was passed without difficulty; four days later the patient developed signs of pneumonia at the right base and died in a week. In the second, a man of 55, "intubation was repeatedly tried for thirty minutes" without success; laryngotomy was then performed. The patient died suddenly of heart failure twenty-eight hours later. A thirty minutes' struggle is hardly a happy preliminary to a serious operation, and probably contributed materially to the sequel. Trotter carefully limits his remarks to fungating tumours of the tongue, and excludes small warty or superficial growths where ulceration is absent or slight. I go further and hold that intratracheal anaesthesia for all serious intrabuccal operations upon the tongue is much inferior to laryngotomy from the surgeon's and from the patient's point of view; and I have had a large experience of both forms given by such excellent exponents as Dr. Chaldecott and Dr. Matthews. I therefore repeat that for the ultimate good of the patient the anaesthetic should be given by a laryngotomy tube; there should be no preliminary ligation of the lingual artery, and the neck should be left untouched till a later date and then dealt with as thoroughly as possible.

Wheeler strongly recommends rectal anaesthesia, and states: "It is the method *par excellence* for excisions of the tongue or jaw and for the removal of goitre or glands in the neck." Its advantages are not quite obvious, and the pharynx cannot be plugged; but I have had no experience of the method and cannot judge.

There is another important point in the anaesthetic which it behoves the surgeon to inquire into. We know that the number of deaths upon the table is greater with chloroform than with ether. I am certain, however, that if the deaths were taken for fourteen days from the commencement of the operation the figures would be reversed, and the ether deaths would exceed those of chloroform in a most decided manner. The older the patients operated upon the more pronounced will this be.

The risk of death upon the table has, in my opinion, been allowed too great an influence in the matter of anaesthetics. The irritation of the ether is very marked in some people; we recognize this, and now in every case give atropine to counteract its action. Nature intended us to breathe through our noses and provides a large surface of epithelium to warm the air breathed, so that cold air shall not find its way into the lungs. Ether, being a vaporable fluid, becomes cold, and if delivered direct into the lungs through the opening in the trachea, larynx, or by the intratracheal tube, must be a most potent factor in the fatalities which ensue. The ether must be warmed, and if the operation is prolonged additional hot water must be added to the apparatus: unless pre-



cautions are taken, at the end of the operation it will be found that the water is cold and useless for the purpose of warming the vapour.

If a preliminary injection of morphine be given it should be a small dose. Hewitt has emphasized this; he had two or three fatalities, which were, he writes, "in my opinion, partly, if not chiefly, due to pneumonia excited by the passage of blood into bronchi rendered insensitive by morphine. The profession has not, I think, fully realized the importance of a rapid return of the coughing and swallowing reflexes after operation of this character."

With this opinion I cordially agree.

#### *Partial or Unilateral Excision.*

The patient being anaesthetized through a laryngotomy tube and the mouth gagged widely open, a stout silk ligature is placed through the anterior part of the tongue on each side. If the growth is far back it is an advantage to place one through the tongue behind the growth, as pulling on this will bring the back part of the organ much better into view. The pharynx is then plugged by a marine sponge to which a string is attached, which hangs out of the mouth.

The tongue being steadied, an incision is made through the mucous membrane suitable for the removal of the particular growth. In making this incision it should be remembered that a carcinoma does not spread laterally along the mucous membrane but along the lymphatics deeply into the substance of the tongue. There is no need, therefore, to remove the mucous membrane widely, and much more can be left to cover the raw surface of the mouth than is usually done. I do not for a moment wish you to think that the growth should be encroached upon: a full three-quarters of an inch should be left round the growth, but in a growth at the middle or behind the middle of the tongue it is unnecessary to remove the tip or mucous membrane of the under surface of the tongue.

The mucous membrane having been divided the two halves of the tongue can be separated; the mid-line should be closely inspected to see if there is any sign of the growth penetrating to the centre of the tongue. The tongue is then elevated and the origin of the genio-hyo-glossus muscle separated from the genial tubercle on the affected side. The stylo-glossus muscle in the anterior pillar of the fauces is divided.

On pulling the tongue upwards and to the opposite side the hyo-glossus muscle will be placed on the stretch. A director is inserted under this muscle, which is divided, exposing the lingual artery for the whole length of its second part. A ligature can be passed round it with an aneurysm needle, or the vessel may be caught with forceps, divided, and ligated. It should be ligated at once; if forceps are left on they are in the way and are apt to tear off or become loose, and the vessel may then bleed. This is the method of dealing with the vessel devised many years ago by Charles Cathcart. When the vessel has been secured some snips may be made into the tongue just where it has been caught to avoid injuring the vessel later. This is a better method of securing the lingual artery than snipping the tongue through in the hope of recognizing the vessel before it is out. The tongue can now be pulled further out of the mouth. By pulling on the back silk suture the hind part of the tongue can be better displayed. With snips of the scissors the tongue is now divided transversely well behind the growth. The face of the section should be closely inspected to make sure that infiltration has not reached it. Some twigs from the dorsalis linguae vessels may need to be secured. The tongue should now be turned round so that the tip is sutured to the base and the mucous membrane of the mouth stitched up as well as possible so as to diminish the raw area left. In many cases of partial excision, if thought has been given to this matter there is practically no raw area left, and the comfort of the patient is enormously increased; healing should be complete in most cases in ten days. The plugging is removed from the pharynx and the laryngotomy tube withdrawn, when the patient will at once breathe through the natural channel. A small dressing is applied to the neck, and the patient is then removed to bed. The operation is nearly as bloodless as when the lingual artery has been secured in the neck.

In complete excisions, where the whole of the tongue has been removed, the lingual artery is dealt with first on one side and then on the other.

If the tongue is divided very far back a silk suture should be placed through the glosso-epiglottidean fold and left hanging out of the mouth to draw forward the hyoid bone if necessary. It can usually be removed within twenty-four hours. The oozing can be stopped by applying a hot sponge to the raw surface. The tongue having been removed, the mucous membrane is sewn up, covering the floor of the mouth, part of the mucous membrane of the anterior pillars of the fauces being used for this purpose.

Some surgeons have advocated splitting the tongue and removing half at a time. Removal of the whole tongue, however, means that both halves are infiltrated, and longitudinal division means that infected or suspicious tissue must be cut through. This is a bad practice, as cancer cells may escape during the operation and may cause a local recurrence later.

#### *Treatment of the Stump.*

If the flaps have been cut with foresight and precision and the mucous membrane has been sewn up carefully, it is surprising what a small raw area need be left. What there is can be painted with warm Friars' balsam: there is no advantage in adding iodoform to this. Swallowing is much less painful where there is only a small raw area. No dressing whatever need be applied, as it only distresses the patient to have foreign substance, gauze of all things, in the mouth. The stitch in the back of the stump is fastened to the cheek by a strip of plaster.

#### *After-treatment.*

Good after-treatment adds much to the comfort of the patient. The patient is returned to bed and laid upon his side with the head low, so that all mucus runs from the mouth on to a soft towel laid under the cheek. The nurse should be told to wipe away mucus from the lips, but on no account to insert anything into the mouth, or she may tear the sutured mucous membrane. Morphine should be withheld so that the patient returns to consciousness as soon as possible and is able to cough. A continual rectal saline can be given through a fine catheter without disturbing the patient. To this may be added brandy, bromide, chloral, and glucose, as thought necessary.

As soon as the patient regains consciousness sufficiently he should be propped up in bed with pillows. He is then taught to wash out his mouth himself whenever he feels inclined. For this a douelle can be suspended near the head of the bed a few inches above the level of his mouth. He takes the tube, places it in his mouth, and allows the fluid to run in while he bends his head over a basin held by the nurse. He regulates the flow by pinching the tube. The patient much prefers to do this rather than have it done for him, as he can direct the stream where he wants it. The best fluid he can use is warm potassium permanganate, or warm 1 in 80 carbolic lotion. He will find these most comforting, and will probably use them frequently.

As a rule the patient can swallow the next day, and can be fed by the feeding cup and tube, which he has already accustomed himself to use previous to the operation. If there is any difficulty, he can be fed by passing a small, well oiled catheter a little way down into his oesophagus and allowing small quantities to run in slowly. Should any regurgitation or coughing take place the feeding cup or funnel should at once be lowered. The patient will probably prefer to feed himself.

A little water should be run in first to test that all is well; a little more can be run in to clear the tube before withdrawing it. In a few days the patient will be able to swallow quite well himself.

It is hardly necessary to add that all fluids used should be sterilized by boiling before use. A patient who cannot be fed in this way must be placed upon rectal enemata, upon which he may subsist for some days, until swallowing has become easy.

Time does not allow me to say much in connexion with the dissection of the neck. This, however, is just as important as the removal of the tongue. To be successful the

dissection of the neck should remove the whole of the gland-bearing fascia, both high up, far back, and low down. The best results seem to be gained by a block dissection starting from under the chin and extending backwards to the sternomastoid muscle, which must be removed in its greater part, together with the internal jugular vein. The dissection should extend back into the posterior triangles of the neck. Especially is it important to remove the glands high up under the parotid, a portion of which gland can also be removed. Better access can be obtained to this region by sawing off the angle of the jaw. The spinal accessory nerve has to be sacrificed in most cases, as it is surrounded by glands which cannot be separated from each other without the danger of the escape of their contents. No glands must be cut into, torn, or even squeezed, for fear of the escape of cancer cells.

This may seem an heroic procedure, and unnecessary in many cases, but only a careful examination later will show whether these glands have already become infected.

## REFERENCE.

1. BRITISH MEDICAL JOURNAL, 1925, vol. ii, p. 1223.

## II.—SIR WILLIAM MILLIGAN, M.D.,

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## TREATMENT OF CARCINOMA OF THE TONGUE BY RADIO-DIATHERMY.

My share in to-day's discussion will be limited to experiences gained in the treatment of carcinoma of the tongue by means of radium, diathermy, and a combination of both methods—namely, radio-diathermy.

Every surgeon will, I think, admit that the purely surgical treatment of cancer of the tongue leaves much to be desired, that the results are in general most disappointing. With radio-active treatment and with diathermy much the same tale has to be told, notwithstanding the fact that considerable relief to the more distressing symptoms is obtained and life prolonged in comparative comfort in many cases for somewhat surprisingly long periods as the result of the destruction of the primary growth.

To my mind the supreme factor in the successful treatment of cancer is time. Cancer when seen early is a local disease capable in many cases of eradication and cure; when seen late, as unfortunately it most frequently is, dissemination to adjoining lymphatic glands has already taken place and varying degrees of toxæmia are present. The cases referred to the radiologist are almost without exception those considered inoperable by the surgeon, and are therefore the worst type of material to work upon. Notwithstanding this fact, the insertion of radium in suitable doses, with or without the destruction of the primary growth by diathermy, affords at times complete freedom from symptoms often for years, and great comfort by relieving pain, by preventing hæmorrhage, and by diminishing dysphagia.

For these reasons few cases are refused one or other form of treatment at the Manchester Radium Institute, even when the ultimate outlook is most unfavourable. "Hope springs eternal in the human breast," and experience has shown that a mitigation of the most distressing symptoms is of the greatest moment to the patient.

In almost all the tongue carcinomata dealt with the histological structure, as proved by microscopic section, is found to be that of a squamous-celled epithelioma—unfortunately the most resistant type of growth with which the radiologist is called upon to deal. Columnar-celled carcinomata are occasionally met with and prove somewhat more amenable to the influence of gamma radiations than the squamous-celled type.

The problems which have to be faced in the treatment of cancer of the tongue are:

1. Is operation a practical problem?
2. If it is, what is the best method of dealing with the primary growth?
3. Should the primary growth be removed prior to or subsequent to removal of the infected glands, or should growth and glands be removed at one and the same time?

4. Is it advisable or necessary to perform a preliminary ligation of the external carotid artery or of the lingual artery?

5. Has removal of the growth by the diathermy knife advantages as compared with ordinary surgical procedures?

6. Should insertion of radium into the growth be accompanied by radiation from the surface?

7. What are the advantages, if any, of combining radium and diathermy in the treatment of these cases?

Unfortunately many cases coming under review are obviously too advanced to permit of any reasonable possibility of successful surgical removal, partly from fixation of the tongue, from extension of the growth to adjacent areas of buccal, faucial, or tonsillar mucosa, and from the extensive lymphatic infection of one or both sides of the neck.

When surgical intervention is deemed admissible—and this undoubtedly varies with the mentality of the operator—it is, in my judgement, the proper course to adopt, and should be carried out on virgin soil as it were, without any previous irradiation, which, however serviceable as a post-operative procedure, only complicates successful surgical removal of the growth.

To effect an adequately free excision of certain tongue cancers with the knife is frequently impracticable, and it is just in such cases where the diathermy knife proves so useful, the tissues being slowly coagulated and a bloodless removal effected, bearing always in mind, however, that the occurrence of subsequent deformity must for the time being be ignored, the aim and object being to remove the growth in its entirety. Difficulties do not arise, however, so much with the removal of the primary growth as with the removal of the extensive secondary glandular deposits so frequently met with.

The lymphatic drainage from the tongue, largely submucous but partly intramuscular, runs in four well defined streams: (1) from the apex of the tongue, (2) from its sides, (3) from its median surface, and (4) from its base. The apical lymphatics drain into the submental and inferior cervical glands; those from its lateral surfaces into the submaxillary glands situated within and around the submaxillary salivary gland, and into the superior cervical and carotid glands; those from the median surface into the submaxillary glands; and those from its base into the superior deep cervical glands. It is also essential to note that lymphatic vessels cross the middle line of the tongue and drain into cervical glands on the side opposite to that on which the malignant growth or ulcer is situated. The problem of dealing efficiently with such a wide lymphatic field by ordinary surgical measures is thus a serious problem, at times so serious as to be impracticable. In such cases drenching the tissues with gamma radiations, either by the insertion of tubes or needles into the glands or by external radiation, opens up certain possibilities.

The insertion of suitably screened or unscreened tubes is undoubtedly more effective than external radiation. Where a sufficient quantity of radium is not at hand or obtainable, multiple puncture with a diathermy needle has at times proved serviceable.

Whether the primary growth should be treated first and glandular deposits second, or vice versa, is a moot point. My own preference is to attack the primary growth in the first instance, either by insertion of radium tubes screened or unscreened, or by means of diathermy button-shaped electrodes, or by excision with the diathermic cautery knife. I regard the glandular invasion as Nature's first defensive barrier, and consider that it acts as a filter bed of some importance during the period of temporary local disturbance which follows the removal or destruction of the primary growth. After the lapse of ten days or so a free dissection of the submaxillary and cervical triangles on the affected side should be undertaken, upon both sides if the disease is extensive. The radiation of the lymphatic tracts intervening between the primary growth and the secondary nodal deposits will depend upon the view held as to the method of dissemination of the cancer cell—whether it be the result of permeation or of embolic transmission. If the former view is held, the course of the lymphatic tributaries should be thoroughly irradiated, preferably by the insertion of tubes containing radium element or emanation along the course of their main channels or by external radiation from suitably disposed

## CARCINOMA OF THE TONGUE.

applicators. If, on the other hand, the embolic theory of transmission be accepted, then free surgical removal of all infected and non-infected glands is imperative, followed, if thought advisable, by surface radiation. The treatment of secondary deposits presents even greater difficulties than the treatment of the primary lesion, and ultimately success will be found to hinge largely upon the efficiency with which the infected lymph nodes and their tributaries have been removed or radiated. An important point to note in cases of cancer of the tongue is that lymphatic extension beyond the submaxillary and cervical triangles is rare.

The placing of enlarged glands in the substance of glandular over masses of the skin, which varies within such wide limits. The burying of tubes in the substance of glandular deposits in such a way as to form a barrage and secure efficient cross-fire is attended at times by shrinkage and by their complete disappearance, whatever time period is adopted. Unfortunately, microscopic deposits of cancer cells in palpable glands in the substance of glandular lymphatic tributaries, are not directly influenced, and form foci for ultimate recurrence. Whenever it is a practical proposition the glandular field should, in my opinion, be attacked surgically, either by ordinary dissection or by block dissection, followed by the burial of screened tubes in the course of the lymphatic stream, and later on by surface radiation. It is essential not only to attack the primary lesion in the tongue, or unscreened tubes means of applicators, screened tubes, or unscreened tubes containing radium or its emanation. The use of applicators for any length of time may be treated by tubes owing to the difficulty of retaining them in situ, and is therefore, a method which need not be seriously entertained.

Screened tubes may be buried in the growth and retained for periods varying with the extent of the lesion and strength of dosage. Owing to the screen absorbing all the alpha rays the therapeutic action is obtained from the beta and gamma radiations. The beta rays, however, being more local in their reaction than the gamma rays, are apt to produce necrosis, followed by sepsis, if retained for more than forty-eight hours, so that in practice it is advisable to cut off these rays by employing platinum-screened tubes with a thickness of 0.5 mm. containing 8 to 10 millicuries of emanation—equal to 8 to 10 mg. of radium element. The main objection to employing screened tubes in a mobile organ such as the tongue is that it is almost impossible to keep them accurately in situ for any length of time, and also on account of the risk of becoming encapsulated into the substance of the growth large numbers of "seeds" containing emanation, leaving them to become devitalized or to slough out—the object aimed at being to devitalize the malignant cells and induce a state of fibrosis. These "seeds" or capillary tubes are from 3 to 6 mm. in length and from 1 to 2 mm. in thickness, and contain a dose of from 0.3 to 0.6 millicurie of emanation.

For effective therapy the lingual artery should invariably be ligated and the growth exposed so far as it is possible to do so, in order to permit of its being handled for the accurate implantation of the seeds in parallel series. The cutting off of the main blood supply frees the patient from the risks of haemorrhage and does not interfere with the therapeutic action of the seeds into the substance of the growth should follow a definite plan, parallel rows 1 cm. apart being inserted by means of a specially devised needle, those seeds implanted in the growth itself having a greater radio-activity than those inserted at its periphery.

The cases which in private practice come within the purview of the laryngologist are as a rule those cases of malignant disease which primarily attack the faucial, palatal, or buccal mucosa, and which later on spread to the tongue itself. In carcinoma of the larynx we differentiate cases as intrinsic and extrinsic—those which attack the interior of the laryngeal box and those which

spread beyond its confines. In the former the prognosis is relatively good, owing largely to the late involvement of the lymphatic plexuses; in the latter, on the other hand, owing to the early involvement of lymphatic tracts, it is very bad. So in the tongue—in growths limited to the tongue (intrinsic cases)—early surgical removal of the affected whole or half of the organ, if carried right down to the hyoid bone, yields reasonably good results; if, on the other hand, tissues extrinsic to the tongue are involved, the prognosis is essentially grave whatever form of treatment is adopted. In such cases excision of the affected area with the diathermic cauterizing knife presents many advantages. In the first place, if the operation is done with deliberation there is little, if any, haemorrhage, the activity of the malignant cell is destroyed by coagulation, and owing to the sealing up of lymphatic tributaries the dissemination of the cancer cell is prevented. As a precautionary measure it is advisable to ligate the lingual or the external carotid artery. The current used should be from 1½ to 2 amperes, and should be increased from zero to full strength in about thirty seconds. When seaming takes place the diathermic action ceases.

Another great advantage of diathermic excision is that it can be employed in the case of growths not readily accessible to ordinary cutting operations—for example, growths in the faucial region and posterior part of the tongue. The disadvantage of the method is that a slough forms, and the mouth becomes very septic. The slough separates, however, as a rule within ten to twenty days, during which time the lymph vessels have become obliterated, so that distant septic infection is rare and dissemination of the cancer cell prevented. When excision is not possible, a useful method is destruction of the primary growth by button- or spike-shaped electrodes, the depth of tissue destroyed by each application being equal to the square of the surface of tissue is therefore possible with diathermic treatment. Healing is remarkably rapid and the resulting scar tissue soft and pliable. Should considerable deformity ensue, some plastic operation may be subsequently performed, or a mechanical appliance be worn.

Diathermic treatment in conjunction with radium is particularly valuable. Where extensive ulceration is present, buried in the tissues. Where extensive ulceration is present, sepsis is largely eliminated as the result of sterilization of the tissues by the high frequency current and the risks of haemorrhage owing to an endarteritis obliterans following irradiation. My experience of these distressing cases leads me to state:

- (1) That whenever possible immediate surgical removal of the primary growth and of the lymphatic field draining the focus of infection should be carried out.
- (2) That when surgical intervention is deemed impracticable an attempt should be made to remove the growth with the diathermic knife or to destroy it by gradual coagulation with button- or spike-shaped electrodes.
- (3) That when removal of the growth is contraindicated the insertion of unscreened radium tubes into its substance should be carried out.
- (4) That combined treatment by means of diathermic coagulation and radium implantation affords at times gratifying results.
- (5) That in early cases the lymphatic field upon the affected side should be dealt with surgically; in advanced cases the lymphatic field upon both sides.
- (6) That irradiation of the lymphatic field should be an invariable post-operative procedure, preferably by the implantation of screened tubes, or alternately by surface applications or x-ray therapy.
- (7) That no preliminary radiation should be employed if glandular deposits are to be removed by ordinary surgical procedures.
- (8) That the diathermic cauterizing knife presents many advantages as compared with the scalpel for the removal of a cancerous tongue.

Through the courtesy of my colleagues Drs. Burrows and Birkett, I am able to place before you the results of the treatment of 812 cases of cancer of the tongue and mucous membrane of the mouth treated between January, 1915,

and December, 1925. The methods of treatment adopted were as follows:

Superficial applicators in ...	...	33 cases.
Screened tubes (24 hours or less) in ...	...	269 "
Screened tubes (24-48 hours) in ...	...	51 "
Unscreened tubes in ...	...	249 "
Unscreened tubes and diathermy in ...	...	61 "
Screened tubes and diathermy in ...	...	11 "
Screened and unscreened tubes in ...	...	67 "
Various combinations in ...	...	15 "

Out of the 812 cases treated, only 51 can be regarded as successful. These 51 cases have been well for the following periods:

For 9 years ...	1	For 3 years ...	8
" 8 years ...	1	" 2 years ...	5
" 5 years ...	2	" 1 year ...	16
" 4 years ...	5	Under 1 year ...	13

The 51 cases were treated as follows:

By superficial applications alone ...	...	2
By screened tubes buried in the lesion ...	...	6
By screened tubes and diathermy ...	...	21
By unscreened tubes ...	...	7
By unscreened tubes and diathermy ...	...	13
By a combination of screened tubes, diathermy, and unscreened tubes ...	...	13

Unscreened tubes—in my opinion the method of the future—were therefore employed in 41 cases in which the primary lesion cleared up; of these 41 cases 35 have been well for over one year and 20 for two years or more.

Details of Cases in which the Primary Lesion has been apparently Cured.

	Site.	Treatment.	Meta- stases.	Sec- tion.	No. of Years Well.
1	Tonsil ...	(1) Screened. (2) Un- screened	0	0	9 1/2
2	Tonsil ...	Screened 24 hours, local and glands	+	0	9/12
3	Soft palate ...	(1) Screened. (2) Un- screened	0	0	8 9/12
4	Cheek ...	Screened	0	0	3
5	Floor of mouth ...	Screened 24 hours	+	0	3 3/12
6	Cheek ...	Screened 12 hours. Un- screened	0	0	5 6/12
7	Tongue ...	Unscreened	0	0	2
8	Cheek ...	Unscreened	0	0	4 8/12
9	Floor of mouth ...	Unscreened	0	0	6/12
10	Tonsil ...	Unscreened	0	0	4 8/12
11	Fauces and tongue	Unscreened	0	0	9/12
12	Uvula ...	Unscreened	0	0	4
13	Fauces ...	Unscreened	0	0	1 6/12
14	Alveolus ...	Unscreened	0	0	2
15	Fauces ...	Unscreened	+	0	3 7/12
16	Tonsil ...	Unscreened	+	0	4 3/12
17	Tongue ...	Unscreened	0	0	3 7/12
18	Floor of mouth ...	Unscreened and screened	0	+	3 3/12
19	Cheek ...	Unscreened	0	+	3 3/12
20	Palate ...	Unscreened	+	+	3
21	Tongue ...	(1) Screened (2) Unscreened and dia- thermy	0	0	1 6/12
22	Tongue ...	Unscreened	0	0	1 3/12
23	Tongue ...	Unscreened	0	0	1 5/12
24	Tongue ...	Unscreened and diathermy	0	0	4
25	Cheek ...	Unscreened and diathermy	0	0	2 6/12
26	Floor of mouth ...	Diathermy and screened 24 hours	0	0	1 6/12
27	Cheek ...	Diathermy and unscreened	0	0	1 10/12
28	Tongue ...	Unscreened	0	0	2 2/12
29	Tongue ...	Unscreened and diathermy later	0	0	3
30	Fauces ...	...	0	+	2 6/12
31	Fauces ...	...	0	+	1 3/12
32	Tongue ...	...	0	+	2
33	Palate ...	...	0	0	1 5/12
34	Fauces and tongue	...	0	+	1 3/12
35	Tongue ...	Unscreened	0	0	1 9/12
36	Fauces ...	Unscreened	0	0	1 4/12
37	Palate ...	Unscreened and diathermy	+ later	0	1 5/12
38	Lip ...	Unscreened	0	0	1 10/12
39	Fauces ...	Unscreened	0	0	1 4/12
40	Floor of mouth ...	Unscreened	0	0	1 6/12
41	Tongue ...	Screened 48 hours and diathermy	+ later	+	1
42	Tongue ...	(1) Screened 48 hours (2) Unscreened and dia- thermy	0	0	Under one year
43	Mouth ...	Plato	0	0	"
44	Floor of mouth ...	Screened 48 hours and unscreened	+ later	0	"
45	Palate ...	Unscreened	0	0	"
46	Tongue ...	Plato	0	0	"
47	Floor of mouth ...	Unscreened	0	0	"
48	Tongue ...	Screened 48 hours	+ later	+	"
49	Fauces and tongue	Screened 48 hours	+	0	"
50	Floor of mouth ...	Unscreened	0	0	"
51	Tongue ...	Screened 36 hours	+	0	"

The accompanying table of results is taken from the annual report of the Manchester Radium Institute for 1925, and is compiled by the radiologist, Dr. G. E. Birkett, to whom I am much indebted for assistance in the preparation of these notes. The results can certainly not be considered brilliant, but with the type of case dealt with—surgically inoperable—they show at least that alternative methods hold out hopes of relief and periods of freedom from the most urgent symptoms of the disease.

Finally, Mr. President, an apology is perhaps due from me as a laryngologist for intruding into the holy of holies—that is to say, into a purely Surgical Section. I do so, however, at the invitation of your secretaries in order that I may place before you an unvarnished tale of the experiences gained at the Manchester Radium Institute and in my own private practice in the treatment of carcinoma of the tongue with radium, with diathermy, and with a combination of both methods.

No one, however impassionately reviewing the results of the treatment of cancer of the tongue by purely surgical measures or by one or other of the accessory forms of treatment, can remain satisfied with the results as at present; nor will the results, in my judgement at least, ever be good until the public realize the importance of applying for assistance at a much earlier stage of the disease than is usual to-day. This implies on the part of the public a knowledge of the importance of the early signs and symptoms of malignant disease, knowledge which can only be obtained if the profession lends itself to what in my opinion is so much needed in this country—namely, an anticancer crusade.

#### GENERAL DISCUSSION.

Mr. W. S. DICKIE (Middlesbrough) wished to confine himself to cancer of the postero-lateral part of the tongue. These growths were very often tumours of the fauces which had extended to the tongue. They very often spread outwards to the jaw and backwards to the tonsil or upwards to the soft palate. The jaw-bone dominated the whole operative procedure. He regarded temporary resection as useless, because the bone was very early involved. In operating upon these cases he first paid attention to the hygiene of the mouth, but did not remove teeth—mouth-washes and wiping alone being used. The anaesthetic was administered through a laryngotomy tube. He removed the jaw from the canine fossa backwards, including the condyle, and thus gained free access to the side of the pharynx. He did not perform a block dissection of the neck, although he cleared out all the glands and connective tissue, the sterno-mastoid being left. This part of the operation was done first and the jaw then removed subperiosteally. He thought it sufficient to leave half an inch margin of uninfected tissue around the growth. During the last five years he had operated upon 17 patients with 4 deaths; 8 of them had had no recurrence up to date. Two cases were exhibited.

Mr. G. GORDON-TAYLOR (London) said that carcinoma of the tongue was a disease of neglect of mouth hygiene and of syphilis; it was not a disease of the wealthier classes. He was accustomed to operating upon these cases in three stages: block dissection of the neck on one side, removal of the tongue, and block dissection of the neck on the other side. He had recently changed his technique, and had begun taking out the tongue first and doing a block dissection of the neck second. He had been led to do this because of the high mortality which accompanied an efficient operation. In 69 cases in which a mouth dissection had been performed with a diathermy knife, with a double block dissection in nearly every case, the mortality was 48 per cent. Against this very serious death rate he was able to show 50 per cent. of the survivors alive and well up to five and a half years. He found that 80 per cent. of the deaths were due to bronchopneumonia, and the risk of this occurring was greater after the mouth than after the neck operation. Laryngotomy facilitated the administration of the anaesthetic and diminished the incidence of bronchopneumonia, but did not prevent it. Patients who died from this cause succumbed on the third day after the

## POST-OPERATIVE TREATMENT OF CANCER OF BREAST.

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operation. He thought the complication was due to discharges trickling down the throat. He believed that the glands should always be removed on both sides of the neck. On the second side, if no enlarged glands were felt, however, only the upper part needed dissection. He never performed bilateral block dissection at one operation as the patients always died. In order to gain access to the mouth part of the jaw; this was much better than splitting the mandible. In 30 to 40 per cent. of his cases there had been bone involvement, necessitating bone resections. He maintained that the prognosis was hopeless, since he could produce survivors in such cases up to five years and more. Although the primary mortality was very heavy, he did not take such a gloomy view of the outlook for these patients as many authorities, because he was able to establish a cure in about 50 per cent. of his survivors.

Mr. E. DENESLY (Wolverhampton) said that the ultimate results of the purely surgical treatment of this disease were so discouraging that many surgeons would willingly hand them over to anyone who could cure them by any form of diathermy or radiation. Unfortunately, though it was not difficult to destroy the primary growth by such means, this was of little use unless the infected glands could also be destroyed or removed, and few radiologists claimed to be able to do this without a surgical operation on the neck. For the present, therefore, if the primary growth was surgically removable, from an anatomical point of view there seemed little advantage in diathermy, since the gland dissection where the growth afterwards. But in certain situations where the growth involved the gums, the palate, or the tonsils, diathermy was the best means of dealing with it, the glands being removed by a subsequent block dissection. As regards the surgical treatment of removable cancer of the tongue he agreed entirely with Mr. Fitzwilliams, and had employed the same method for many years—namely, removal of the affected part of the tongue entirely through the mouth before any operation on the neck, the use of chloroform through a temporary laryngotomy with plugging of the pharynx, the exposure of the larger vessels before cutting them, and the complete covering of the raw surface with mucous membrane; this operation to be followed by block dissection of the neck, each side at a separate operation. He thought that operations involving the division or excision of parts of the mandible were rarely worth doing.

Mr. STANFORD CARR (London) said that in the surgery of cancer of the tongue and the treatment of cervical glands regional anaesthesia had proved a great advance. It diminished inhalation risks and gave perfect freedom in neck manipulation. The routine consisted in injecting a solution of 1/2 per cent. novocain near the lingual and inferior dental nerves and a cervical paravertebral block of the second, third, and fourth cervical nerves. By this method intraneural manipulations and dissection of the neck were accomplished painlessly. The unsatisfactory results of surgical treatment of lingual cancer led him to adopt the methods advocated by Professor Regaud in Paris and Professor Bayet in Brussels. He had substituted radium therapy for surgical removal in all cases of cancer of the tongue for the past two and a half years. Radium needles containing 0.6 mg. of the element and screened by 1/2 mm. of platinum were inserted around the growth in healthy tissue and left in position for five to seven days or even longer. Preliminary cleaning of the mouth was obtained. A biopsy was performed from radium necrosis was obtained either with lead or by subperiosteal resection. If the cervical glands were enlarged but operable a Crile's dissection was performed; if the glands were not enlarged, or if enlarged and inoperable, surface application of large doses of radium by means of Columbia paste collars, giving the requisite distance from the skin, were made use of. Results were highly encouraging and surpassed anything offered by surgery. This applied only to the disappearance of the primary growth; no claim whatsoever as to cure could be made at this early stage.

Mr. D. C. L. FITZWILLIAMS (London) referred to the workers at the Curie Institute; their results were about 25 per cent. of five-year cures. They had abandoned unscreened tubes as being dangerous for insertion. For glands it was recognized that block dissection gave better results than radium alone, and external applicators were very largely used. He was surprised at the bad results from operation reported by Mr. Gordon-Taylor; he agreed that the majority of deaths would be reduced by withholding morphine, so as not to interfere with coughing, and by warming the anaesthetic. Sewing up the mucous membrane avoided the danger of a raw septic area, and the mortality would be modified above all by not using the diathermy knife. The speaker now only used the diathermy knife in those cases where sufficient margin could not be obtained by other means. Diathermy, though fashionable, was a retrograde step. Every thinking surgeon knew that the best instruments with which to divide tissues were the knife and scissors; no other method produced so little damage. Haemorrhage in the modern operation was negligible. He advised very strongly against affected block dissections of both sides. There was seldom any necessity for this unless the glands were obviously held out on both sides, when, in his opinion, operation should be performed on the affected side and the other side should be left alone. If the patient was kept under supervision each month or two months, it would be seen at once if any affected glands appeared. The infection would be limited, as there was now no source from which malignant emboli could come. Infected glands could be easily and safely removed while small, provided they were not pinched, handled, or cut into, and ample time would be allowed to perform the second block dissection when it became necessary. Better results would be obtained by early diagnosis than by increasing the scope and range of operations.

Sir WILLIAM MILLIGAN, in reply, reminded the meeting that the cases of tongue carcinoma dealt with at the Manchester Radium Institute were cases deemed inoperable by ordinary surgical measures. He thought that there was ample room for an improvement even in the inoperable group of cases. No attempt was made to interfere with glands by any diathermic process; if the glands were operable, they were removed by ordinary surgical method. The radium technique was changed from time to time. He was not a slave to any one particular method, but it so happened in the table of statistics shown on the screen that 41 of the 51 more or less successful cases were treated with unscreened tubes. He was well aware that the pendulum had swung round to the employment of small doses in screened tubes for prolonged periods—a method which he also had employed for some considerable time past.

## POST-OPERATIVE TREATMENT OF CANCER OF THE BREAST.

H. W. CARSON, F.R.C.S.,  
Surgeon, Prince of Wales's General Hospital, London.

Cancer of the breast is one of the few cancers that becoming recognized at an earlier date: it is rare now to see the advanced cases which were common enough in the past. At the same time they are apparently increasing in frequency, and with the development of the knowledge of surgery in the profession it may often fall to the lot of a medical man to have to make himself responsible, if not for the actual operation, certainly for the post-operative treatment. It may be interesting therefore to mention a few practical points which may make the convalescence go more smoothly.

### Uniformity of Operation.

The operation is becoming standardized. Adopting the permeation theory of Sampson Handley, it is generally agreed that the operation should consist of the removal of the whole breast with a minimal sacrifice of skin, and a wide removal (a circle 10 inches in diameter centred on



and December, 1925. The methods of treatment adopted were as follows:

Superficial applicators in ...	33 cases.
Screened tubes (24 hours or less) in ...	269 "
Screened tubes (24-48 hours) in ...	51 "
Unscreened tubes in ...	249 "
Unscreened tubes and diathermy in ...	61 "
Screened tubes and diathermy in ...	11 "
Screened and unscreened tubes in ...	67 "
Various combinations in ...	15 "

Out of the 812 cases treated, only 51 can be regarded as successful. These 51 cases have been well for the following periods:

For 9 years ...	1	For 3 years ...	8
" 8 years ...	1	" 2 years ...	5
" 5 years ...	2	" 1 year ...	16
" 4 years ...	5	Under 1 year ...	13

The 51 cases were treated as follows:

By superficial applications alone ...	2
By screened tubes buried in the lesion ...	6
By screened tubes and diathermy ...	2
By unscreened tubes ...	21
By unscreened tubes and diathermy ...	7
By a combination of screened tubes, diathermy, and unscreened tubes ...	13

Unscreened tubes—in my opinion the method of the future—were therefore employed in 41 cases in which the primary lesion cleared up; of these 41 cases 35 have been well for over one year and 20 for two years or more.

*Details of Cases in which the Primary Lesion has been apparently Cured.*

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2	Tonsil ...	Screened 24 hours, local and glands	+	O	9/12
3	Soft palate ...	(1) Screened. (2) Un-screened	O	O	8 9/12
4	Cheek ...	Screened	O	O	3
5	Floor of mouth ...	Screened 24 hours	+	O	3 3/12
6	Cheek ...	Screened 12 hours. Un-screened	O	O	5 6/12
7	Tongue ...	Unscreened	O	O	2
8	Cheek ...	Unscreened	O	O	4 5/12
9	Floor of mouth ...	Unscreened	O	O	6/11
10	Tonsil ...	Unscreened	O	O	4 8/12
11	Fauces and tongue	Unscreened	O	O	9/12
12	Uvula ...	Unscreened	O	O	4
13	Fauces ...	Unscreened	O	+	1 6/12
14	Alveolus ...	Unscreened	O	+	5
15	Fauces ...	Unscreened	+	O	3 7/12
16	Tonsil ...	Unscreened	+	O	4 3/12
17	Tongue ...	Unscreened	O	O	3 7/12
18	Floor of mouth ...	Unscreened and screened	O	+	3 3/12
19	Cheek ...	Unscreened	O	+	3 3/12
20	Palate ...	(1) Screened	+	+	3
21	Tongue ...	(2) Unscreened and diathermy	O	O	1 6/12
22	Tongue ...	Unscreened	O	O	1 3/12
23	Tongue ...	Unscreened	O	O	1 5/12
24	Tongue ...	Unscreened and diathermy	O	O	4
25	Cheek ...	Unscreened and diathermy	O	O	2 6/12
26	Floor of mouth ...	Diathermy and screened 24 hours	O	O	1 6/12
27	Cheek ...	Diathermy and unscreened	O	O	1 10/12
28	Tongue ...	Unscreened	O	O	2 2/12
29	Tongue ...	Unscreened and diathermy	O	O	3
30	Fauces ...	Unscreened	O	+	2 6/12
31	Fauces ...	Unscreened and diathermy	O	+	1 3/12
32	Tongue ...	Unscreened and diathermy	+	+	2
33	Palate ...	Unscreened and diathermy	O	O	1 5/12
34	Fauces and tongue	(1) Unscreened and diathermy. (2) Screened 43 hours	O	+	1 3/12
35	Tongue ...	Unscreened	O	O	1 9/12
36	Fauces ...	Unscreened	O	O	1 4/12
37	Palate ...	Unscreened and diathermy	+ later	O	5 1/12
38	Lip ...	Unscreened	O	O	1 10/12
39	Fauces ...	Unscreened	O	O	1 4/12
40	Floor of mouth ...	Unscreened	O	O	1 6/12
41	Tongue ...	Screened 43 hours and diathermy	+ later	+	1
42	Tongue ...	(1) Screened 43 hours (2) Unscreened and diathermy	O	O	Under one year
43	Mouth ...	Plato	O	O	"
44	Floor of mouth ...	Screened 48 hours and unscreened	+ later	O	"
45	Palate ...	Unscreened	O	O	"
46	Tongue ...	Plato	O	O	"
47	Floor of mouth ...	Unscreened	O	O	"
48	Tongue ...	Screened 43 hours	+ later	+	"
49	Fauces and tongue	Screened 43 hours	+	O	"
50	Floor of mouth ...	Unscreened	O	O	"
51	Tongue ...	Screened 35 hours	+	O	"

The accompanying table of results is taken from the annual report of the Manchester Radium Institute for 1925, and is compiled by the radiologist, Dr. G. E. Birkett, to whom I am much indebted for assistance in the preparation of these notes. The results can certainly not be considered brilliant, but with the type of case dealt with—surgically inoperable—they show at least that alternative methods hold out hopes of relief and periods of freedom from the most urgent symptoms of the disease.

Finally, Mr. President, an apology is perhaps due from me as a laryngologist for intruding into the holy of holies—that is to say, into a purely Surgical Section. I do so, however, at the invitation of your secretaries in order that I may place before you an unvarnished tale of the experiences gained at the Manchester Radium Institute and in my own private practice in the treatment of carcinoma of the tongue with radium, with diathermy, and with a combination of both methods.

No one, however impassionately reviewing the results of the treatment of cancer of the tongue by purely surgical measures or by one or other of the accessory forms of treatment, can remain satisfied with the results as at present; nor will the results, in my judgement at least, ever be good until the public realize the importance of applying for assistance at a much earlier stage of the disease than is usual to-day. This implies on the part of the public a knowledge of the importance of the early signs and symptoms of malignant disease, knowledge which can only be obtained if the profession lends itself to what in my opinion is so much needed in this country—namely, an anticancer crusade.

#### GENERAL DISCUSSION.

Mr. W. S. DICKIE (Middlesbrough) wished to confine himself to cancer of the postero-lateral part of the tongue. These growths were very often tumours of the fauces which had extended to the tongue. They very often spread outwards to the jaw and backwards to the tonsil or upwards to the soft palate. The jaw-bone dominated the whole operative procedure: He regarded temporary resection as useless, because the bone was very early involved. In operating upon these cases he first paid attention to the hygiene of the mouth, but did not remove teeth—mouth-washes and wiping alone being used. The anaesthetic was administered through a laryngotomy tube. He removed the jaw from the canine fossa backwards, including the condyle, and thus gained free access to the side of the pharynx. He did not perform a block dissection of the neck, although he cleared out all the glands and connective tissue, the sterno-mastoid being left. This part of the operation was done first and the jaw then removed sub-periosteally. He thought it sufficient to leave half an inch margin of uninfected tissue around the growth. During the last five years he had operated upon 17 patients with 4 deaths; 8 of them had had no recurrence up to date. Two cases were exhibited.

Mr. G. GORDON-TAYLOR (London) said that carcinoma of the tongue was a disease of neglect of mouth hygiene and of syphilis; it was not a disease of the wealthier classes. He was accustomed to operating upon these cases in three stages: block dissection of the neck on one side, removal of the tongue, and block dissection of the neck on the other side. He had recently changed his technique, and had begun taking out the tongue first and doing a block dissection of the neck second. He had been led to do this because of the high mortality which accompanied an efficient operation. In 69 cases in which a mouth dissection had been performed with a diathermy knife, with a double block dissection in nearly every case, the mortality was 48 per cent. Against this very serious death rate he was able to show 50 per cent. of the survivors alive and well up to five and a half years. He found that 90 per cent. of the deaths were due to bronchopneumonia, and the risk of this occurring was greater after the mouth than after the neck operation. Laryngotomy facilitated the administration of the anaesthetic and diminished the incidence of bronchopneumonia, but did not prevent it. Patients who died from this cause succumbed on the third day after the

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# POST-OPERATIVE TREATMENT OF CANCER OF BREAST.

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operation. He thought the complication was due to discharges trickling down the throat. He believed that the glands should always be removed on both sides of the neck. On the second side, if no enlarged glands were felt, however, only the upper part needed dissection. He never performed bilateral block dissection at one operation as the patients always died. In order to gain access to the mouth in difficult cases he was accustomed to remove the alveolar part of the jaw; this was much better than splitting the bone involvement, necessitating bone resections. He maintained that the presence of enlarged glands in the neck did not make the prognosis hopeless, since he could produce survivors in such cases up to five years and more. Although the primary mortality was very heavy, he did not take such a gloomy view of the outlook for these patients as many authorities, because he was able to establish a cure in about 50 per cent. of his survivors.

Mr. E. DEANESTY (Wolverhampton) said that the ultimate results of the purely surgical treatment of this disease were so discouraging that many surgeons would willingly hand them over to anyone who could cure them by any form of diathermy or radiation. Unfortunately, though it was not difficult to destroy the primary growth by such means, this was of little use unless the infected glands could also be destroyed or removed, and few radiologists claimed to be able to do this without a surgical operation on the neck. For the present, therefore, from an anatomical point of view there seemed little advantage in diathermy, since the gland dissection was still necessary afterwards. But in certain situations where the growth involved the gums, the palate, or the tonsils, diathermy was the best means of dealing with it, the glands being removed by a subsequent block dissection. As regards the surgical treatment of removable cancer of the tongue he agreed entirely with Mr. Fitzwilliams, and had employed the same method for many years—namely, removal of the infected part of the tongue entirely through the mouth before any operation on the neck, the use of chloroform through a temporary laryngotomy with plugging of the pharynx, the exposure of the larger vessels before cutting them, and the complete covering of the raw surface with mucous membrane, this operation to be followed by block dissection of the neck, each side at a separate operation. He thought that operations involving the division or excision of parts of the mandible were rarely worth doing.

Mr. STANFORD CARR (London) said that in the surgery of cancer of the tongue and the treatment of cervical glands regional anaesthesia had proved a great advance. It diminished inhalation risks and gave perfect freedom in neck manipulation. The routine consisted in injecting a solution of 1/2 per cent. novocain near the lingual and inferior dental nerves and a cervical paravertebral block of the second, third, and fourth cervical nerves. By this method intraneural manipulations and dissection of the neck were accomplished painlessly. The unsatisfactory results of surgical treatment of lingual cancer in Paris and methods advocated by Professor Regaud in Brussels. He had substituted radium therapy for surgical removal in all cases of cancer of the tongue for the past two and a half years. Radium needles containing 0.6 mg. of the element and screened by 1/2 mm. of platinum were inserted around the growth in healthy tissue and left in position for five to seven days or even longer. Preliminary cleaning of the mouth was essential. A biopsy was performed in every case. Protection of the lower and upper jaws from radium necrosis was obtained either with lead or by subperiosteal resection. If the cervical glands were enlarged but operable a Crile's dissection was performed; if the glands were not enlarged, or if enlarged and inoperable, surface application of large doses of radium by means of Columbia paste collars, giving the requisite distance from the skin, were made use of. Results were highly encouraging and surpassed anything offered by surgery. This applied only to the disappearance of the primary growth; no claim whatsoever as to cure could be made at this early stage.

Mr. D. C. L. FITZWILLIAMS (London) referred to the workers at the Curie Institute; their results were about 25 per cent. of five-year cures. They had abandoned unscreened tubes as being dangerous for insertion. For glands it was recognized that block dissection gave better results than radium alone, and external applicators were very largely used. He was surprised at the bad results from operation reported by Mr. Gordon-Taylor; he agreed that the majority of deaths were from bronchopneumonia. He believed that this death rate would be reduced by withholding morphine, so as not to interfere with coughing, and by warming the anaesthetic. Sewing up the mucous membrane avoided the danger of a raw septic area, and the mortality would be modified above all by not using the diathermy knife. The speaker now only used the diathermy knife in those cases where sufficient margin could not be obtained by other means. Diathermy, though fashionable, was a retrograde step. Every thinking surgeon knew that the best instruments with which to divide tissues were the knife and scissors; no other method produced so little damage. Haemorrhage in the modern operation was negligible. He advised very strongly against performing block dissections of both sides. There was seldom any necessity for this unless the glands were obviously affected on both sides, when, in his opinion, operation should be performed on the affected side and the other side should be left alone. If the patient was kept under supervision each month or two months, it would be seen at once if any affected glands appeared. The infection would be limited, as there was now no source from which malignant emboli could come. Infected glands could be easily and safely removed while small, provided they were not pinched, handled, or cut into, and ample time would be allowed to perform the second block dissection when it became necessary. Better results would be obtained by early diagnosis than by increasing the scope and range of operations.

Sir WILLIAM MILLIGAN, in reply, reminded the meeting that the cases of tongue carcinoma dealt with at the Manchester Radium Institute were cases deemed inoperable by ordinary surgical measures. He thought that there was ample room for an improvement even in the inoperable group of cases. No attempt was made to interfere with glands by any diathermic process; if the glands were operable, they were removed by ordinary surgical procedures. The radium technique was changed from time to time. He was not a slave to any one particular method, but it so happened in the table of statistics shown on the screen that 41 of the 51 more or less successful cases were treated with unscreened tubes. He was well aware that the pendulum had swung round to the employment of small doses in screened tubes for prolonged periods—a method which he also had employed for some considerable time past.

## POST-OPERATIVE TREATMENT OF CANCER OF THE BREAST.

BY

H. W. CARSON, F.R.C.S.,

Surgeon, Prince of Wales's General Hospital, London.

Cancer of the breast is one of the few cancers that are becoming recognized at an earlier date; it is rare now to see the advanced cases which were common enough in the past. At the same time they are apparently increasing in frequency, and with the development of the knowledge of surgery in the profession it may often fall to the lot of a medical man to have to make himself responsible, if not for the actual operation, certainly for the post-operative treatment. It may be interesting therefore to mention a few practical points which may make the convalescence go more smoothly.

### Uniformity of Operation.

The operation is becoming standardized. Adopting the permeation theory of Sampson Handley, it is generally agreed that the operation should consist of the removal of the whole breast with a minimal sacrifice of skin, and a wide removal (a circle 10 inches in diameter centred on

the growth) of deep fascia, including the sheath of the upper rectus abdominis on the affected side. The whole of the pectoralis major muscle, except its clavicular origin—even that in some cases—and the pectoralis minor are removed, and the axilla is dissected downwards from the costo-coracoid membrane, which is removed. The supraclavicular fossa is not dissected as a routine.

There are certain points in the performance of the operation which help in the convalescence.

1. The removal of only the necessary amount of skin with the wide undercutting required to remove the deep fascia allows the incision to be sutured without tension in most cases. This has an important bearing on shock, pain, the healing of the wound, and chest complications.

2. The incision is designed so that the scar is kept out of the axilla. This is of importance for subsequent free movement.

3. The most minute care is taken to reduce loss of blood. Nearly all the bleeding comes from the anterior perforating arteries in removing the pectoralis major, and a capable assistant will pick up many of these vessels before they are cut.

4. Shock is minimized by protecting all raw areas which are not actually being worked on, by towels wrung out in hot saline solution.

5. Delicate quick work without tearing or rough handling reduces shock and promotes healing by first intention.

#### *Immediate Post-operative Complications.*

Shock is not often seen in these cases, but occurs sometimes three to four hours after return to bed. I always anticipate this possibility and institute the following treatment as a routine. Immediately after operation 1 pint of saline solution with 5 per cent. glucose is given by the rectum. This is repeated in four hours, and at the same time the patient is wrapped up in two blankets and placed under a cradle, to which is fastened an ordinary incandescent lamp. This lamp is kept alight for half an hour, then there is one hour's intermission, and it is turned on again for another half-hour. A hypodermic injection of morphine is given if the patient is restless or in pain, and is generally needed, though it is not often repeated.

Pain is not severe after the first night, and is excited later on only by the early dressings which inevitably lead to movements of the arm or body. All patients complain about the arm in whatever position it is placed.

Chest complications are rare, and are best avoided by careful preparation, especially of the upper air passages, by closing the wound without tension, and by avoiding tight bandaging. The patient is made to sit up in bed after the first twenty-four hours or less.

A few cases of paralysis of the upper arm have been recorded; I have had two in my own practice. The paralysis always affects the biceps, and is, I think, due to pressure on the outer cord of the brachial plexus, by excessive extension of the arm during the operation.

#### *Position of the Patient.*

The patient is supported by a wedge formation of pillows in a sitting position, and the elbow, forearm, and hand are carefully packed up with pillows. My practice is to keep the arm at right angles to the body from the first; it may be sufficient to support it on pillows, taking care to support the forearm and hand also, or it may be necessary to tie it to the head of the bed for the first few hours. I am convinced that the right-angled position is less painful, does not increase oozing, and makes the early attempts at mobility less difficult and painful.

#### *Drainage.*

Fluid appears in three areas: (1) in the axilla, (2) in the suprapectoral space, and (3) in the upper end of the rectus abdominis; the first and last collect blood, the second serum. Some surgeons drain the wound by four or five tubes introduced through stab wounds in the posterior flap. I do not consider this necessary, but I drain the axilla by a tube passed through a stab wound in the axilla flap, which I place as far back as I can, and I rely upon evacuation of the other collections by means of dressing forceps passed between the stitches of the main wound. I believe that the

recognition and evacuation of these collections makes all the difference in the primary healing of the wound. This is by first intention as a rule. Occasionally necrosis of the edge of the axillary flap occurs, but rarely any other complication. The old idea that suppuration made recurrence less likely was very comforting, but there is very little evidence to support it. It is most important that the scar should not be allowed to become adherent to the chest wall, and it should be gently moved from the first.

#### *Movements of the Arm.*

The subsequent comfort of the patient and her value to the community depend much upon free mobility of the arm. Removal of the pectorals makes astonishingly little difference to the value of the arm, at any rate for ordinary pursuits, but limitation of shoulder movements is a real handicap, and is always associated with pain. My practice is to do the first dressing on the second day, and at each subsequent dressing passive movements, abduction, and forward and backward swinging movements are practised. Active shoulder movements are started at the end of the first week, but from the first the patient is allowed to flex and extend the elbow. At the end of the second week the patient should be able to raise her arm unaided to the side of her head. By this time she is allowed to get up. I am no advocate of early rising after this severe operation.

Swelling of the arm may occur as a later complication. I believe this to be due to pressure on the axillary vein by adhesions in the axilla, and that it is best prevented by strict asepsis and early movement. If it occurs it must be treated by massage and shoulder movements, but if it persists the axilla should be reopened and the vein freed. I have not had any lasting success with the Kōndoleon or other operation.

#### *Radiation.*

It is difficult to obtain evidence for or against the routine use of x rays as a prophylactic against recurrence. I have had no personal experience of rapid or widespread recurrences which have been reported by some observers after the use of x rays, and I have had considerable experience of the value of radium and x rays in the treatment of recurrences. My own feeling is against its prophylactic use, but I will admit that I am ready and willing to be convinced of its value.

#### *Keeping under Observation.*

I make it a rule that all my patients shall attend for my inspection once a month for the first year, once in three months in the second year, and twice in the third year. Routine inspection in this way has allowed me to discover the occurrence of supraclavicular gland involvement in several cases before the patient was aware of it, and a timely operation is easy and curative. An x-ray examination of the mediastinum is also of value as an assurance of the absence of complications.

#### *Summary.*

In breast cancer operations success depends upon several factors:

1. The correct planning of the operation by the surgeon, so as to assure primary union and free movement after a thorough removal.

2. The skill of the surgeon's assistant in controlling haemorrhage and avoiding exposure during operation.

3. Skilful nursing to prevent shock and promote comfort.

4. Early movement to prevent fixation of the scar and limitation of shoulder movements.

5. Careful examination and re-examination at stated intervals for at least three years.

#### *DISCUSSION.*

Professor R. E. KELLY (Liverpool) recommended Kocher's incision for the removal of carcinoma of the breast and excision of a wider area of skin than Mr. Carson had depicted. He had found that recurrences, when they occurred locally, were not necessarily in the margins of the incision, but 1 to 1½ inches away from it.

Mr. D. C. L. FITZWILLIAMS (London) thought that no incision for removal of the breast need extend to the arm. The line of the vessels was from the middle of the clavicle

to the inner side of the arm. No incision need pass beyond the vessels along the inner side of which lay the glands of the axilla. He always made a plastic flap, which he used to fill in the gap left by the large amount of skin he took away. The easiest way of undermining the skin was, not to reflect it in the ordinary way, but to thrust a 6-inch amputating knife under the skin, and cut parallel with the skin. The flap could thus be cut with great rapidity and accuracy, especially in a fat patient.

Mr. GARNETT WRIGHT (Manchester) considered the kind of incision unimportant provided no scar was left in the axilla. He thought some skin should be taken away and that a continuous suture was far better than uninterrupted tension stitches, since it was less liable to cause necrosis. He regarded the position in which the arm was placed after

operation as unimportant, but it should not be fixed. Active, not passive, movements were necessary, as they prevented adhesions of the scar to the chest wall.

Mr. C. GORDON-TAYLOR (London) said that he had made an extensive trial of post-operative x-ray treatment. He had found that the prognosis was rendered worse and had therefore abandoned it. Recently he had been performing the operation with the diathermy knife, a method which led to less loss of blood. He regarded the operation on the breast as always a very serious one. He had had two cases of traction palsy in carcinoma of the breast.

Mr. GEORGE SIMPSON (Liverpool) thought x-ray treatment after operation a very valuable addition. It was continued for six to twelve months, and he was very satisfied with the results.

## DISLOCATION OF OUTER END OF CLAVICLE.

BY

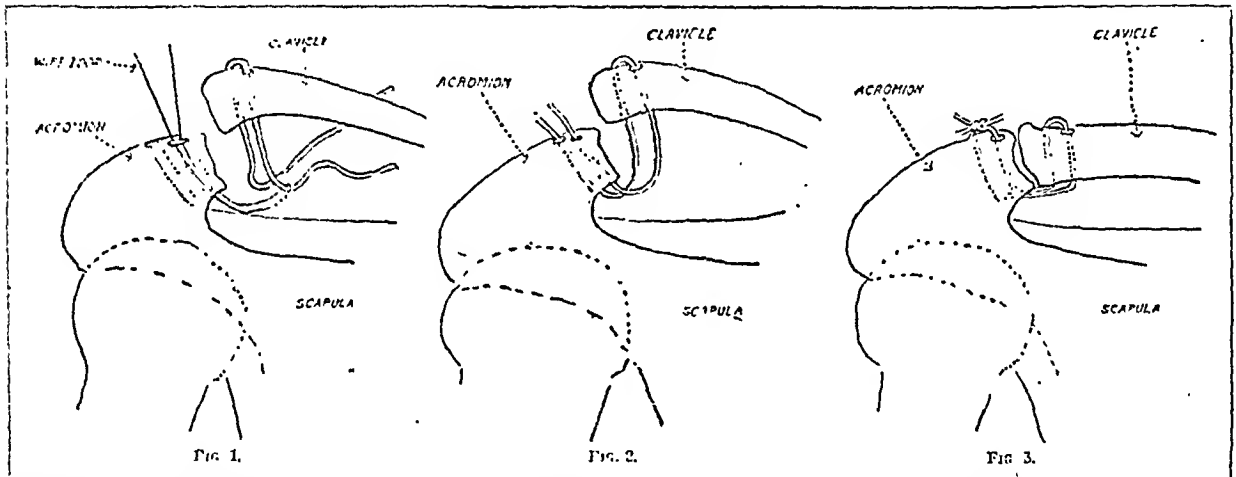
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This injury is not very common. The deformity is easily reduced but difficult to keep reduced. Partial recurrence always follows the ordinary method of treatment. I have never seen a patient who could play football after this

7. The ligature is now tightened and tied on the upper surface of the acromion. The effect of this is to pull the clavicle first downwards and then outwards, and to hold it firmly apposed to the acromion.

8. The periosteum around the edges of the new joint is sutured by fine chromicized catgut.

In my first case I used thirty-day catgut to hold the bones in position. I have discarded it in favour of silk on account of the greater tensile strength and durability of the latter.



dislocation unless an operation had been efficiently performed. In my early cases I only operated at a late stage for the relief of pain and prolonged incapacity. I wired the ends together; I invariably found it necessary to remove the wires, because they became loose or caused pain.

The operation I now employ is very simple and very efficient. I now recommend it in every case. Once it has been done the patient can discard all dressings in eight to ten days, and resume work in fourteen days. Two of my patients were playing Rugby football in two months. The procedure is as follows:

1. A curved incision with convexity behind is made from the tip of the acromion to the middle of the posterior border of the clavicle.
2. The flap thus outlined is reflected forward, exposing the acromio-clavicular joints.
3. The inter-articular cartilage is removed, and the ends of the clavicle and acromion process are freshened.
4. Two holes are drilled vertically through the end of the acromion, and also through the outer end of the clavicle.
5. A carefully sterilized strong silk ligature is passed through the clavicle, so that the free ends both project below and the loop is across the top. (Fig. 1.)
6. The free ends are then drawn through the acromion from below upwards. This is best done by the aid of a loop of fine wire. (Figs. 1 and 2.)

## SECTION OF OPHTHALMOLOGY.

WILLIAM GEORGE LAWS, F.R.C.S., President.

### DISCUSSION ON THE SIGNIFICANCE OF RETINAL HAEMORRHAGES.

#### OPENING PAPER

BY

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THE subject which has been chosen for discussion at this meeting is that of retinal haemorrhages, and although it is a subject which has been widely discussed at various meetings and congresses I take it that it is the importance of the subject which has induced the Council to choose it, rather than the expectation that there is anything very fresh to say about it. At any rate, for myself I feel that there is little that I can say which has not previously been under discussion. I have, however, endeavoured to deal with known facts in a different manner.

I suppose we may assume that it is not intended to comprehend all those numerous diseased conditions of the retina with which retinal haemorrhages are associated, such as renal retinitis, retinitis circinata, etc., but rather that we should confine our attention to retinal haemorrhages as such. Cases of trauma or new growths need not be considered.

I should like to state here that it was chiefly the stimulus supplied by reading Dale and Laidlaw's and Dalo and Richards's investigations, and Krogh's work on the anatomy and physiology of the capillaries, that induced me to accept our secretary's invitation to take part in this discussion, and I may appropriately here acknowledge my special indebtedness to these investigators.

I propose to deal with the matter under the following sections: I, General considerations. II, The different types of retinal haemorrhages. III, A consideration as to the pathogenesis of the haemorrhages. IV, The changes which retinal haemorrhages undergo.

#### SECTION I.

I put forward the following as a reasonable classification of retinal haemorrhages, excluding such as are due to disease localized in the eye.

##### A. Disorders of Metabolism.

1. Renal disease.
2. Diabetes.
3. Scurvy.

##### B. Diseases of the Haematopoietic System.

1. Arterio-sclerosis.
2. Severe anaemias (or severe cachexia).
3. Leukaemias.
4. Infective endocarditis.
5. Vaquez's disease.
6. Haemophilia.

##### C. Obstruction to the Venous Flow.

1. Thrombosis of the retinal veins.
2. Thrombosis of the cavernous sinus.
3. Subarachnoid haemorrhage.
4. Papilloedema.
5. During birth.
6. Severe compression of the chest.

Let us now consider for a moment the structure of the small vessels as shown by Krogh. The capillaries are, of course, the essential part of the circulatory system; the whole of the rest of this system, whether heart, arteries, or veins, being solely concerned with ensuring that an appropriate supply of blood is delivered to the tissues through the intermediation of the capillaries. Krogh has shown that the capillaries are not tubes which undergo passive dilatation or narrowing, but that actively contractile cells (Rouget cells), which are under nervous control, are incorporated in their walls outside the endothelium, forming a loose meshwork, through the spaces of which free transition between the blood in the capillaries and the fluid in the tissue spaces takes place. By means of these cells the capillaries are capable of extreme constriction or dilatation.

He has shown that in a resting tissue at any one moment a few only of the capillaries are transmitting blood, the remainder being collapsed and empty, but that capillaries which are open at one moment are shortly closed down and neighbouring ones which previously were contracted have now become patent; and this process is repeated again and again, so that all the tissues are adequately supplied. He has shown that in an active tissue all the capillaries transmit blood, and that the number of such capillaries in an active tissue as compared with a resting one may be increased twenty or thirty fold. (Whether it might be possible to find evidence of this phenomenon in the retina by varying the illumination I do not know, but it would certainly be worth trying.) He has shown, too, that in certain circumstances the capillaries may transmit plasma without any contained red cells—a condition to which he applies the term of "plasma-skimming."

So far, then, as the capillaries are concerned we have to deal with vessels composed of one layer of endothelial cells, outside which is a wide-meshed network of contractile cells leaving a large part of the endothelial wall uncovered; so that under nervous control the capillaries may be quite collapsed, they may transmit plasma only, they may be so narrow that a red blood corpuscle is squeezed into a sausage-like shape in passing through, or they may be so greatly dilated that they are several times the diameter of the supplying arteriole. The transition between arterioles with a complete muscular coat and capillaries is sharp and abrupt; on the other hand, the transition between capillaries and venules is more gradual, for the latter have at first, like the capillaries, an outer coat formed of a wide-meshed network of Rouget cells,

through the meshes of which interchange between the blood and tissue fluids can occur as in the capillaries.

In conditions of health there is a very free interchange of fluids, salts, gases, proteins, and even colloids, between the capillaries and the tissue spaces; and this interchange may take place in either direction, for after a large haemorrhage not only is the volume of the blood quickly made good, but the constitution of the plasma is rapidly restored by the transference of the appropriate constituents from the tissues; but in spite of this very complete interchange there is no passage of the cells of the blood into the tissue spaces, and Krogh has shown by the following striking experiment how impervious is the healthy capillary wall to the transmission of minute foreign particles.

Particles of Indian ink are submicroscopic, nevertheless when the capillaries are widely dilated as a result of treatment by histamine, if so much Indian ink is injected into the blood that the plasma, even in the smallest vessels, is made quite grey, even though the plasma passes out very freely through the endothelium into the tissues the minute Indian ink particles are kept back quantitatively within the capillaries. If, then, escape of blood occurs from the capillaries, there must be some special factor or factors which are responsible for its escape.

Ricker and Regendanz performed two experiments on the conjunctiva of rabbits, in one of which the conjunctiva was severely irritated by a mechanical stimulus—namely, finely powdered pumice-stone, which was then washed out. There was immediate strong hyperaemia, and in a few minutes complete stasis, but haemorrhages are not mentioned. In the second experiment a solution of abrine was dropped into the conjunctival sac. There was no immediate effect, but eight hours later there was pronounced hyperaemia, and next day the vessels were much dilated. There was marked capillary stasis and capillary haemorrhages, which increased for several days. Here, then, the haemorrhages seemed to be due to poisoning of the endothelial cells by the abrine; and it is well known that in what one may refer to somewhat roughly as poisoned states of the blood, such as diabetes and renal disease (to mention perhaps the two most prominent), retinal haemorrhages are of frequent occurrence.

Thus it seems evident that there are certain poisons which especially affect capillary walls, so that they no longer maintain an inviolate barrier against the passage of cells from within their lumen; and I suppose it cannot be doubted that toxins may be responsible for retinal haemorrhages, whether it be by means of a gross breach, so to speak, of the capillary wall, or whether by diapedesis between adjoining endothelial cells. I suspect that it is defective nutrition of the endothelium which determines the escape of the blood, and this I suggest is brought about by abnormal constituents in the blood, as in nephritis or diabetes, or perhaps in the anaemias by the defective nature of the blood itself.

There is a structural abnormality in the vessels which may be mentioned. Aneurysms of arteries and veins which are visible to ophthalmoscopic examination have often been described and are well recognized; aneurysmal dilations of the capillaries are figured by Gowers in the second edition of his *Medical Ophthalmoscopy*, and Parrisius states that in individuals who are the subject of vaso-neurotic constitutions—that is, patients in whom frequent changes in the innervation of small vessels occur spontaneously, or from trivial causes, as, for example, those in whom the fingers go quite white or "dead," as they say (due to simultaneous contraction of arteries, capillaries, and veins), sometimes strongly red (dilatation of all vessels), or deep blue (contraction of arterioles with dilatation of capillaries and venules)—that in such individuals at the same moment there may occur, in capillaries lying side by side, some of usual calibre, some enormously dilated, and in some true capillary aneurysms.

#### SECTION II.

##### *Different Types of Retinal Haemorrhages.*

Having considered some of the features concerning the normal capillaries it would seem best, in the next place, to consider haemorrhages as seen with the ophthalmoscope,



to see whether we can gather any guidance from this source as to the pathogenesis of the haemorrhages.

It will not be disputed that retinal haemorrhages are not all of one type, and there are a number which are characteristic in appearance, are easily differentiated, and to some extent are distinctive of different disorders. The following form eight types of haemorrhages which are distinctive in greater or less measure, and from certain of them we can, I believe, obtain some hint as to the mode of escape of blood from the vessels.

1. Flame-shaped haemorrhages.
2. Rosette haemorrhages.
3. Diamond-shaped haemorrhages with pale centres.
4. Gross haemorrhages of mottled appearance.
5. Pre-retinal or subhyaloid haemorrhages.
6. The haemorrhages of infective endocarditis.
7. The haemorrhages associated with subarachnoid haemorrhage.
8. Cotton-wool patches.

Let us consider these in order in a little detail.

1. *Flame-shaped Haemorrhages.*—These no doubt are the commonest type of haemorrhage. They may be exceedingly small, but are seldom very large. They are situated in the nerve fibre layer, and their appearance, like a tongue of flame, is due to their taking on the texture of this layer. They are a common type in renal retinitis, arterio-sclerosis, etc.

2. *Rosette Haemorrhages.*—These are small, are situated in the deeper retinal layers, and are somewhat characteristic of diabetes; they are almost always multiple, more or less circular, and have an irregularly crenate edge.

3. *Diamond-shaped Haemorrhages with a Pale Centre.*—These haemorrhages always remind me a little of the shape of an endothelial cell, the pale centre representing its nucleus. They are seldom large, are certainly seen much more frequently in the anaemias or leukaemias, and are rather distinctive of these conditions; they are quite rare in such conditions as renal disease and arterio-sclerosis. I suspect the pale centre is composed of those elements of the blood (perhaps fibrin and platelets) which last escape from the leak in the vessel before it is finally sealed. In rarer instances the pale centre is replaced by a denser red clot.

4. *Large Mottled Haemorrhages.*—These are gross haemorrhages composed of red areas mottled by white exudate. They usually occur close to the disc and along the temporal vessels, which in parts are completely hidden and in parts emerge for a short distance and disappear again. They occur chiefly in severe vascular disease and are probably due to a leak from a vessel larger than a capillary, although after their complete clearance, when the vessels in the affected area have again become clearly visible, I have sought for, but have failed to discover, any evidence as to the source of the leakage.

5. *Pre-retinal or Subhyaloid Haemorrhages.*—These form a very striking type of haemorrhage, and, as is well known, are most frequent in the macular region. They are of homogeneous texture, they may be multiple, and may show successive layers produced by successive bleedings. When very dense they often have a slaty appearance over their densest parts, and this appearance is also seen in other large haemorrhages of other types. They may occur in vascular disease, and leukaemia is a rather common cause of them. Erythropsia is sometimes complained of.

6. *The Haemorrhages of Infective Endocarditis.*—I suppose there can be no doubt that these are due to the lodgement of minute infected emboli in the retinal vessels, and it seems certain, for anatomical reasons, that they must be situated on the heart side of the capillaries. Few cases of the disease occur in which retinal haemorrhages are not present. It is more common in this disease than in any other to see the blood extending along the vessels as though it were effused into the perivascular sheath.

7. *The Haemorrhages Associated with Subarachnoid Haemorrhage.*—In any case in which there is free blood in the anterior cranial fossa it is free to flow into the loose subarachnoid sheath of the optic nerve. Thus it occurs in fractures involving this region of the skull, in cerebral haemorrhages which have afterwards extended into the subarachnoid space, and in rupture of aneurysms of the circle of Willis. Turnbull has shown that aneurysms of

the circle of Willis occurred in 0.92 per cent. of the autopsies in which the head was examined at the London Hospital, and he and others have made it clear that with few exceptions they are due either to an inborn defect of the middle coats of the arteries or to infective endocarditis, and that syphilis enters very little into their causation. When haemorrhage into the sheath of the nerve takes place haemorrhages in the retina are not infrequently developed. They are large, adjacent to the disc, and usually multiple. It has been suggested that they are brought about by the direct extension of blood from within the sheath of the nerve along the central retinal vessels into the eye, but it is perhaps more probable that the presence of the blood in the sheath obstructs the outflow of the blood from the eye by pressure upon the central retinal vein, where it traverses the subarachnoid space and so is responsible for the haemorrhages. I think one may say that where retinal haemorrhages of this type occur in a patient who has had an apoplectic attack and in whom there are none of the ordinary signs of vascular disease spontaneous subarachnoid haemorrhage should be borne in mind and the cerebro-spinal fluid examined for blood. I have on four occasions diagnosed the condition, but in only one of them was the diagnosis put to the crucial test in the post-mortem room, and in this case it proved to be correct.

8. *Lastly, what I have called Cotton-wool Patches.*—Under this head I should like to make reference to certain patches which occur in the retina which I believe should be properly considered under the heading of haemorrhages—namely, white patches which are seen in the retina in some cases of anaemia. Seen by themselves they are indistinguishable ophthalmoscopically from the cotton-wool patches of renal retinitis. They are usually associated with haemorrhages, but may occur alone. Thus, in 43 cases of secondary anaemia in which retinal haemorrhages were present these white patches were present in 6, and in 2 of these cases no haemorrhages were present. They may be fringed by blood or form a sort of fringe for a haemorrhage, and indeed every gradation between a pure red haemorrhage and a pure white patch may occur. Their especial importance is that when they are associated with haemorrhages, or indeed apart from them, the condition may simulate early renal retinitis so closely as to be indistinguishable from it, and one should remember that severe anaemia is a frequent concomitant of nephritis, and perhaps may be a factor in the production of the ophthalmoscopic changes of this disease. I imagine the patches are produced by infiltration of the retina by fibrin.

### SECTION III.

In the light of the information that we have reviewed in the two previous sections may we now see whether we seem justified in forming any conclusions as to what is the route by which the blood escapes into the tissues and what are the immediate pathological processes which lead to this escape.

Does it occur from arterioles, or capillaries, or venules? does the escape occur by a process of diapedesis or by a gross lesion? is it the result, for instance, of the giving way of small aneurysms, or is there a rupture of a vessel wall? is the escape due to a disease of the vessel wall, or to an altered state of the blood acting on a healthy vessel wall, or are mechanical causes alone sufficient even though the blood and vessels are healthy? It would seem evident that the immediate cause of the escape from the vessels in such divergent conditions as thrombosis of a retinal vein, pernicious anaemia, or a case of infective endocarditis must be very different.

Let us first consider the site of the escape of the blood. May it occur from arterioles? Rupture of the small arteries in the brain is common, is frequently associated with multiple aneurysmal dilatations, and is caused by the giving way of such a dilatation; but what aneurysms have been reported on the retinal arteries have, I think, always been associated with other retinal changes and have probably been of congenital origin; and in the many cases of arterio-sclerosis which I have seen associated with cerebral haemorrhages I do not remember to have seen an aneurysmal dilatation of the retinal arteries.

In the cases of sudden infiltration of the vitreous by blood, leading to sudden great loss of sight it is, I think, clear that a vessel of larger calibre than a capillary has given way, but whether this has been on the venous or arterial side I have no direct evidence to offer, although on several occasions I have looked for the source of the bleeding when, the haemorrhages having cleared, the retina has again become to some extent visible. I should think it is indisputable that in infective endocarditis and other cases of septicaemia and pyaemia, where the haemorrhages are brought about by the lodgement of emboli, such haemorrhages occur from arterioles.

We may next give consideration to the capillaries as the source of leakage. We have already seen in Section I that the very essence of capillaries is that they should allow of the freest possible interchange between the blood and the tissue fluids, and at the same time we have seen how impermeable they are to foreign or abnormal constituents so long as their nutrition is maintained.

It seems to me that the picture that is presented to our mind is that of an endothelial cell or cells whose health is impaired by the action of a toxin, to the extent that the endothelial tube is no longer inviolate, but that a defect in it is developed which is sufficiently gross to allow of the escape of the cellular elements of the blood into the tissues; whether such a stoma results from the opening up of the line of junction of separate cells or from a break-down in the cell itself I should not care to guess. We may remember that red cells are easily distorted, so that they pass through capillaries of much less diameter than themselves, and that they will pass through filter paper which keeps back granules quantitatively much smaller than they are, even though the pressure is no more than the height of the fluid in a funnel, and it may be that this faculty facilitates their escape from within the lumen of the capillary.

I believe, then, that circulating toxins, by acting on the endothelial walls of the capillaries, render their walls permeable to blood cells, and that there are certain toxins which seem to have a specific action in this direction, whereas many others which similarly have a specific action on other tissues have none such on the capillary walls. Thus, to take a single example only, the diphtheric toxin, while potent for heart muscle, does not, except in special cases, lead to haemorrhages in the tissues; on the other hand, the toxins of certain other organisms appear specially to lead to haemorrhages, and perhaps the Koch-Weeks bacillus in the conjunctiva is a fair example of this.

I suggest, then, that the retinal haemorrhages of renal disease and diabetes are probably due to this cause. In the case of the anaemias, leukaemia, and cachexia, I see no reason to suppose that there is necessarily any circulating toxin which causes the haemorrhages, and it seems to me that the likeliest cause is a defect in the nutrition of the endothelium as a result of the depleted quality of the blood or perhaps from defective oxygenation.

#### *Haemorrhages in the Anaemias.*

It may be said in a general way that in any severe anaemia retinal haemorrhages are likely to occur, and especially is this so when the anaemia is the result of a prolonged drain on the body, such as the anaemia which is a part of a severe cachexia from any cause. I doubt whether a patient ever dies of pernicious anaemia or leukaemia without at some time having haemorrhages in the retina. On the other hand, although chlorosis has now become a rare disease I never remember to have seen a retinal haemorrhage in the condition; and I have seen extreme anaemia rapidly produced by loss of blood without haemorrhages occurring in the retina.

We may now inquire whether increased pressure in the capillaries may be responsible for haemorrhages.

It is, of course, well recognized that folk with a high systolic pressure—for example, in renal disease or primary arterio-sclerosis—frequently have retinal haemorrhages, and it is sometimes assumed that it is the increased pressure in the vessels which is directly responsible for the haemorrhages. I believe that the peripheral resistance to

the circulation which is responsible for the increase in the blood pressure is situated in the small arteries, and that the pressure in the capillaries of such patients is not at all raised, but is frequently, and perhaps always, less than the normal—a fact which I believe is demonstrable, as I have pointed out elsewhere.<sup>2</sup> Any drastic reduction in the general blood pressure of such patients, were it in fact possible to bring it about, would only still further reduce the blood supply to the tissues, so that their functions could no longer be efficiently carried out, and the patient's well-being would be still further prejudiced; and indeed I would not be surprised to find that any drastic lowering of the blood pressure of such patients would lead to an increase in retinal haemorrhages.

I do not believe, then, that retinal haemorrhages of arterio-sclerosis are caused by an increase of pressure in the arteries or capillaries; they occur only in cases which are somewhat advanced, and I suggest that the haemorrhage is an expression of the defective circulation through the vessels, so that the nutrition of their endothelium is impaired and consequently a leakage of blood occurs.

If we now turn to the other side of the capillary bed—namely, the veins and venules—Krogh has shown that the small venules are supported by an open meshwork of Rouget cells, and are not completely clothed by a muscle coat, so that they probably act as capillaries for the interchange of substances between the blood and the tissue spaces—a fact which would seem to facilitate leakage from them.

There are a number of conditions where the venous flow from the retina is obstructed in which retinal haemorrhages occur; they form perhaps the most interesting of the cases with which we are concerned, and may be conveniently classified in three groups:

#### *Group A. Cases of general venous engorgement.*

1. General constitutional conditions, such as whooping-cough or vomiting.
2. The haemorrhages produced apparently by the process of birth.
3. Severe compression of the chest.

#### *Group B. Due to a local cause outside the eyeball.*

1. Subarachnoid haemorrhage.
2. Papilloedema.
3. Some cases of thrombosis of the cavernous sinus.

#### *Group C. Due to a cause within the eyeball.*

Obstruction of the central retinal vein or one of its tributaries.

It seems difficult or impossible to avoid the conclusion in all these cases that the back pressure caused by the venous obstruction is the cause of the leakage of blood.

In Group A there is venous engorgement of the whole body, and I think it may be said in a general sort of way that the profusion of the haemorrhages is commensurate with the degree of the engorgement.

In Group B the site of the obstruction in papilloedema and subarachnoid haemorrhages is probably in the central retinal vein where it crosses the subarachnoid sheath of the optic nerve. In thrombosis of the cavernous sinus haemorrhages are inconstant and their incidence may depend upon the anatomical termination of the central retinal vein; if it enters directly into the sinus haemorrhages would be likely to be profuse, but where it ends in the ophthalmic veins the occurrence of haemorrhages may be avoided when the communication between this vein and the angular vein is a free one.

In Group C the obstruction is in the veins of the retina in which thrombosis may occur, or the lumen may be reduced by endophlebitis, or the vein may be pressed upon by a thickened artery.

It is true that in these cases the small vessels may be diseased and add an additional factor, but in the case of birth haemorrhages, the haemorrhages of papilloedema, and those associated with subarachnoid haemorrhages, there is no associated vascular disease, and there can be no doubt that the extreme venous engorgement is transmitted to the venules and capillaries, and so perhaps they are distended to the point of bursting or leakage.

In this connexion I should like to refer to cases, of which I have seen several instances, where there was evidently a hindered outlet of blood from the eye owing to disease of the veins but no complete obstruction, associated with innumerable small retinal haemorrhages in the territory of one tributary or of the whole retinal vein, the

small haemorrhages looking like leaves on a tree, the branches of which were represented by the veins and their smaller tributaries. It seemed impossible to avoid the conclusion that there was some venous obstruction which was of sufficient degree to cause the haemorrhages; and in one case thrombosis of the central vein had occurred in the right eye, and one could not but feel, from the presence of the appearances described above, that it was imminent in the left. Nevertheless the haemorrhages completely disappeared, and ten years later none were present and the eye was still good enough to enable the man to continue his work at a paper-cutting machine, even though it was his only useful eye. Abnormal dilated vessels had formed on the disc, which, it seemed, had provided collateral channels which were sufficient to relieve the obstructed venous outflow.

It would seem, then, that leakage of blood from the arterioles occurs from the lodgement of infected emboli, as in infective endocarditis, from the capillaries, either from poisoning of the endothelium as in renal disease or from impairment of its nutrition as in the anaemias, and from the venules from mechanical causes, as in a hindered venous outlet from the eye.

#### SECTION IV.

##### *On the Changes which take place in Retinal Haemorrhages.*

It is worth while giving some attention to the ophthalmoscopic changes which take place in retinal haemorrhages in the course of their disappearance, and to inquire whether any permanent residue of them remains and whether permanent sight defects occur. It has been shown by a number of observers, and recently by a careful investigation carried out by Juler, that retinal haemorrhages are very common in newborn infants and are apparently produced during the process of birth. Juler found them in 15.5 per cent., and, contrary to what might have been anticipated, he was not able to substantiate that they were most frequent in difficult and prolonged labour. Seeing, then, that 15.5 per cent. of the population have retinal haemorrhages at birth, it is quite evident that in a very small proportion of them, if any, a permanent residue of the haemorrhages persists, or damage to sight is produced.

I have on many occasions carried out observations on all sorts of retinal haemorrhages by making outline drawings, using the retinal vessels as lines of latitude and longitude so to speak, so as to be able to identify exactly the particular haemorrhage which was being watched.

I believe it may be said that all haemorrhages simply fade away, gradually becoming smaller, and undergoing no other change in colour. The length of time required for their complete disappearance varies enormously. Thus, I have seen a small flame-shaped haemorrhage disappear completely in six days, and Mr. Juler tells me that he has seen a haemorrhage in a newborn infant disappear completely in so short a time as four days; this observation has the advantage that the precise time of the development of the haemorrhage is known, whereas in my own observations the time of disappearance has necessarily been taken from the date of discovery of the haemorrhage.

On the other hand, large dense haemorrhages may take many months for their complete absorption. I have notes of large heterogeneous haemorrhages which took more than a year for their complete clearing.<sup>1</sup> In the case of thrombosis of the central retinal vein, where haemorrhages are especially profuse, I have on several occasions seen the retina afterwards become completely free of haemorrhages, though it is much more usual for a few haemorrhages to remain for months or years if they are carefully sought for; it is not, of course, that the same haemorrhages remain for all this period, but fresh ones are developed as the old ones become absorbed. I have seen a case of central vein thrombosis where the haemorrhages cleared completely and eight years afterwards recurred, the fundus having exactly the appearance of a primary thrombosis of the central vein. I have once seen, in a man of 77, what looked like small globules of blood in the retina, which were still present and hardly changed in appearance three years later; and on two occasions I have seen blood in connexion with the

perilental space which I believe had been present for six years. It seems very improbable that blood should remain for so long a period, but without being certain I believe my observation is correct.

We may now inquire as to whether permanent fundus changes may develop as a result of a retinal haemorrhage. I believe it may be stated that haemorrhages, no matter how profuse or large, produce no permanent change in the retina unless the external limiting membrane is lacerated. Unless this occurs no sort of pigmentary change follows, the haemorrhage clears so completely that no residue remains, and the part of the fundus previously involved comes to have a normal appearance, except that where the haemorrhage has been large I have several times seen a few bright dots scattered over the area. Juler's observations supply additional evidence in this direction, for, as already stated, he finds that 15.5 per cent. of the population have haemorrhages in the retina at birth, and it is certain that no such proportion of the general population have abnormal pigmentary fundus changes. I have shown that in cases of thrombosis of the central vein pigmentary changes at the yellow spot are afterwards rather common, but I have little doubt that they are of degenerative origin, and not a residue from the blood, for the changes are limited to the macular area, and I have never seen them in cases of tributary thrombosis; and, further, Williamson-Noble's observations<sup>2</sup> provide definite histological evidence in favour of this view.

With regard to the cotton-wool patches to which I have drawn attention, they, like the haemorrhages, gradually fade away completely and leave no permanent residue; they disappear, however, more rapidly than haemorrhages of similar size, and where they are developed in association with blood, as, for instance, where they form a sort of fringe for a haemorrhage, they disappear long before the haemorrhage has become completely absorbed.

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<sup>1</sup> *Dent. Zeit. f. Nervenheilk.*, 1921, lxxii, 310. <sup>2</sup> *Trans. Ophthalmol. Soc.*, 1916, xxxvi, 319. <sup>3</sup> *Quart. Journ. Med.*, 1917, x, 29; and *Brit. Journ. Ophthalmol.*, Supplement, 1924. <sup>4</sup> *Trans. Ophthalmol. Soc. U.K.*, 1923, xliii, 237.

#### GENERAL DISCUSSION.

Dr. C. O. HAWTHORNE (London) emphasized the medical importance of retinal haemorrhages. As such haemorrhages might occur without any recognition by the patient of impaired vision, and as they might be the earliest objective evidence of serious disease, it necessarily followed (1) that every patient should be examined by the ophthalmoscope, and (2) that any patient who was the victim of a retinal haemorrhage should be subjected to a complete clinical examination. No practitioner supervising an acute or prolonged illness was content with a single examination of the heart or the urine, and similarly no practitioner should in like circumstances be content with a single ophthalmoscopic examination. Though no retinal haemorrhages were present on one day it did not follow that they would not be present on the next. An explanation of a retinal haemorrhage in a patient who in other respects was organically sound was not easy. It might be suggested that there were persons with unduly brittle retinal vessels, even as there were persons whose cutaneous vessels yielded to such slight pressure as a friendly grip, with the resulting production of a bruise. Just as certain abnormal qualities of the blood led in different instances to such events as petechiae, ecchymoses, epistaxis, haematemesis, haematuria, etc., it was at least possible that other alterations in blood quality, too subtle perhaps for detection at present, prejudicially affected the integrity of the retinal vessels and thus caused retinal haemorrhages. In any event it was beyond dispute that now and again such haemorrhages occurred apart from appreciable evidence of disease even when the patient's subsequent history was followed over a relatively long course of years. Examples of the clinical value of the recognition of retinal haemorrhage were to be found in glycosuria and nephritis and arterial degeneration; and particularly in difficult cases such as pyrexia without obvious cause, for while in pernicious anaemia and leucoerythraemia retinal haemorrhages were the rule, they were not to be expected

in enteric fever, paratyphoid fever, or in tuberculosis. Again, joint pains, apt to be labelled "rheumatism," took on a different aspect when the presence of retinal haemorrhages suggested that a septic infection was the true interpretation. In these and other instances retinal haemorrhages had high diagnostic value. The tracing in retinal haemorrhages of specific characters distinguishing between albuminuria and glycosuria might have a certain sporting interest, but could not be commended as a sound diagnostic method. In prognosis retinal haemorrhages played a part subordinate to clinical evidences from other sources. In chronic nephritis, for example, the fact of haemorrhages in the retina influenced the outlook as much or as little as the occurrence or non-occurrence of epistaxis. Both in the one and in the other the event was but a single member in a large series, and it was on the whole of the record, and not on a part of it, that a rational outlook for the future must be based. In all probability it was a sound proposition that a retinal haemorrhage was always preceded by damage, anatomical or nutritional, to the vessel wall.

Mr. G. H. POOLEY (Sheffield) said that in considering the significance of retinal haemorrhages there must be taken into account (1) the character or appearance of the haemorrhage, which varied to a certain extent according to the nature of the morbid process which had caused it, and (2) the age and general condition of the patient. Retinal haemorrhages occurred in the following conditions among others: nephritis, high blood pressure, arterio-sclerosis, diabetes, trauma, thrombosis of retinal veins, glaucoma, and retinal conditions such as retinitis circinata or proliferans. Retinal haemorrhages varied in the depth in which they occurred in the retina. Some were on the surface of the retina—the so-called pre-retinal or subhyaloid haemorrhages. They were D-shaped and occurred in middle age. The blood usually came from the upper temporal vein, and in its descent, owing to the erect posture, covered the macula. The blood was generally reabsorbed within six months, and little, if any, impairment of vision usually, though not invariably, resulted. Some intraretinal haemorrhages were in the retina, but not very deep; these were striate or linear haemorrhages. Others also in the retina were larger, rounded or irregular in shape, and deeper than the striate ones. Many of these intraretinal haemorrhages were due to renal disease. The fewer and the smaller were the intraretinal haemorrhages the better was the prognosis. The absence of oedema of the retina and thickening of the retinal arteries was also very favourable. Conversely, large intraretinal haemorrhages with extensive white patches of oedema and marked thickening of the retinal arteries were signs of a very serious condition, in which the duration of life was calculated in months. This applied to all cases at all ages, though the younger the patient the more serious was the appearance of retinal haemorrhages due to renal disease. Even if only one or two striate haemorrhages were present and there was no oedema of the retina, the outlook of the patient was grave—far graver than in an older patient. When the renal condition which caused the haemorrhages was secondary to some general infection, such as scarlet fever, the outlook was better, but even then a good many young patients died within three or four years of the appearance of retinal haemorrhages. In young patients, if in addition to rather large retinal haemorrhages there was distinct and considerable oedema of the retina and thickening of the retinal arteries, the prognosis was extremely bad; they seldom lived for twelve months. Often these patients only came to ask for glasses for the relief of headache; they usually had either large or small white kidneys, and died with sad rapidity. The older the patient and the more chronic the lesion of the kidney, the longer would the patient live. Patients over 60 years of age, with striate retinal haemorrhages associated with chronic interstitial nephritis, might live active lives for another decade. Retinal haemorrhages due to unduly high blood pressure were of bad omen, but, though many of these patients did not live more than a couple of years, some might recover and live a long time. One man, aged 65 when seen ten years ago, had then extensive retinal haemorrhages. He was still in good bodily

health, though quite blind. On the whole, in renal disease the significance of retinal haemorrhages was of very serious importance, but, in the case of striate haemorrhages, the patients lived on the whole far longer than had been generally expected. It was only when, in addition to the haemorrhages, there was oedema of the retina and thickening of the arteries, that a very gloomy prognosis should be given. These were the only ones that died within the year; it used to be assumed that all renal cases with retinal haemorrhages did, whereas many of them lived for many years. The significance of the presence of retinal haemorrhages in diabetes was masked by the different response these patients made to treatment. In glaucoma the presence of retinal haemorrhages made the prognosis as bad as it could be. An examination of the retina by an ophthalmic surgeon in consultation with a physician might give valuable information.

Mr. M. L. HISE (London) congratulated Mr. Foster Moore on having so clearly classified the significance of retinal haemorrhages etiologically, but was glad that Mr. Pooley had also considered their significance from the point of view of the patient and their prognosis. He remembered two cases of subhyaloid haemorrhages over the macular area in otherwise healthy young men, both in the cable service. The blood came from retinal vessels below the macula, and both patients regained 6/6 vision. He had to give an opinion as to their return to work in out-of-the-way parts of the world, and advised that neither should be sent out until he had been free from recurrence for two years. In neither case had the haemorrhages returned in two years. He would be glad to know the percentage liability of recurrence in such cases, and the intervals lapsing between recurrences. He corroborated Mr. Foster Moore's statement that some cases of thrombosis of retinal vessels took a long time to clear up, and would not be too gloomy in giving a prognosis in such cases until after a long interval. In one patient he had some years ago at hospital there was thrombosis of the inferior temporal branch of the retinal vein in the right eye with many haemorrhages in the macular area and less than 6/60 vision. After six months the vision had not improved, and he gave a bad prognosis, but nine months later the patient came again to hospital and his vision in that eye was 6/12.

Dr. P. MACDONALD (York) reported another instance of a patient coming for glasses, and extensive retinal haemorrhages being found on examination. The urine was loaded with albumin and a gloomy prognosis was given to the family practitioner. This was many years ago, and the patient was still a vigorous active man; his disabilities, including his albuminuria, seemed to have disappeared.

Dr. A. CHRISTIE REID (Nottingham) thought that the chief significance of Mr. Foster Moore's paper lay in the new conception of haemorrhage which it opened up. The day might be not far distant when they would be able to classify retinal haemorrhages according to the actual blood constituents that had escaped. Haemorrhage without red blood corpuscles might be difficult to distinguish from an exudate, and this again from a transudate. Signs of actual bleeding (red corpuscles) were often sought without success in the undoubtedly haemorrhagic exudates of, say, retinitis circinata. They were still ignorant of the factors determining which of the blood constituents would pass through these very adaptable capillary walls.

Mr. W. H. McMULLEN (London) insisted that to form an accurate estimate of the prognosis in cases of retinal haemorrhages associated with albuminuria examination of the urine alone was not sufficient. A complete testing of the renal functions was necessary.

Mr. H. L. G. LEASK (Glasgow) did not agree with Mr. Pooley that the prognosis was unfavourable in direct proportion to the size of the haemorrhage. A small haemorrhage might be of very serious import and a very large one clear up completely. In a case quoted of general arterio-sclerosis, with one minute haemorrhage there was a fatal

issue in twelve months. Large haemorrhages in young persons might have a tuberculous basis, and clear up under the appropriate specific treatment.

Mr. E. H. HARRIS-JONES (Northampton) said that in any discussion of prognosis in retinal haemorrhages they must not forget that quite a number of patients developed acute glaucoma.

Dr. E. J. PRIMROSE (Glasgow) mentioned the case of a patient who, at the age of about 38 years, had an extremely profuse infiltration of her right eye, with minute haemorrhages. A few years previously she had had an acute iridocyclitis of the left eye, while the system generally was affected with rheumatism, and there was also a positive Wassermann reaction due to inherited syphilis. These constitutional conditions and the local eye condition were entirely in abeyance, and had been so for some years, when the retinal haemorrhages occurred in the other eye. The Wassermann reaction had been, and continued to be, negative. The retinal haemorrhagic condition was treated without resort to antisyphilitic or antirheumatic remedies, and it completely cleared up, so that from almost blindness she had a vision of 6/6, and ophthalmoscopically no vestige of the retinal haemorrhages could be discovered. Several years had elapsed since then, and though she still had pains in the eye that had had iridocyclitis, and at these times suffered from rheumatic pains in the joints, the eye that had had the retinal haemorrhages continued to function well and was free from sign or symptom. He did not think albuminuria had been present.

Dr. A. VERNY (Lausanne) always feared retinal haemorrhages, and thought their prognosis was bad in the majority of cases. He insisted on the importance of remembering the possibility of haemorrhagic glaucoma occurring, and referred to the way in which haemorrhagic states of the retina often resulted in increase of tension.

### HIGHER EDUCATION OF GIRLS WITH LITTLE OR NO SIGHT: CHORLEY WOOD COLLEGE.

BY

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Half a dozen years ago the greatest lack in the arrangements in this country for the training of blind children was made good by the establishment of Chorley Wood College by the National Institute for the Blind, and it is fitting that some account should be given of the new venture. There was before that date ample provision for the training of blind children in levels of work corresponding to elementary education; for training in handicrafts in schools and institutions of more advanced type which might be graded with secondary schools; and there were voluntary institutions which specialized in certain arts, such as music. But the provision for higher education was deficient; there was a first-class public school for boys in Worcester College, but there was no corresponding public school for girls. That deficiency was a serious disadvantage to blind girls, particularly of our station of life. The numbers of such girls are happily few, but there are enough to make proper provision for their effective training and education a necessity; the more especially as the blind girl is handicapped in the highest degree; for her the richest field of womanly activity is closed, since motherhood and the care of a home is wellnigh debarred her. It is the more necessary, therefore, that the individual capacities of these girls should receive the highest form of cultivation possible along other lines, so that they may find the joy of life in other forms of service. Before 1921 the only form of blind training available for them was through individual tuition by home teachers of the blind. A very few, despite their handicap, made good in the ordinary roads of education in association with the sighted. But for the most part the education these blind girls of our class received was little more than learning to read and write Braille.

Attention was called to the need of a school for blind girls in the report of the Interdepartmental Committee on the Welfare of the Blind in 1917, but the stress of war

prevented anything being attempted. In January, 1921, the National Institute for the Blind opened a splendid college for girls "with little or no sight" at Chorley Wood in Hertfordshire. I call it a splendid college, and indeed it is. The grounds and buildings will stand comparison in dignity and impressiveness with any modern public school that I know. The mansion which is now the college was built some sixty years ago in the Palladian or domestic classical style. It is a fine specimen of building in good stone and brick, with noble porticoes and windows, great sweeps of lawn, and many quiet pleasaunces, and placed in a position of surprising beauty on the edge of Chorley Wood Common. This common is a high table-land, rugged with gorse and bracken, with a view of tree-crowned heights in the distance beyond the moat-like valleys that protect the common from popular invasion. Judged by our modern English feeling for and reversion to the Tudor cottage style of domestic architecture, noble as this mansion is, it must have been for a private home uncomfortably spacious. A family, even with a generous allowance of guests, must have been lost in it, and perhaps have yearned for some little suite like that of Marie Antoinette buried in the heart of vast Versailles. But as a college it is perfect. Spacious and airy halls, broad shallow-stepped stairs, straight level corridors, a solidity of structure that damps out the noise of internal traffic, and a complete absence of extraneous sounds save the distant calls of birds and cattle. All these features combine to provide that calmness of atmosphere which is true mate to the cultivation of the mind; whilst the spacious rooms, with their admirable lighting, give a brightness that is most attractive to those girls who still possess some little sight. The estate and house was the generous gift of Mr. J. H. Batty; the house has since been remodelled at great cost by the National Institute for the Blind, so that it is now in every way fitted for a college. The interest shown in the college may be gauged by the growing list of benefactors, headed by the King and Queen.

The college receives girls from the age of 7 years and upwards. On occasions a few young adult women have been received into residence for special coaching for university examinations and the like. Pupils have come from all parts of the British Isles, and a few from abroad—for instance, Sweden, Holland, Italy, and South Africa. Terms and holidays conform to the usual public school arrangements. The school work-rooms, dormitories, the food, the care of clothing, and the sanitary arrangements are excellent. On one of my visits there accompanied me a lady of wide experience; she was greatly impressed with the excellence of the domestic side. An ophthalmic surgeon visits the college at the beginning of each term and examines each pupil; the local medical practitioner is the school doctor, and visits regularly; the matron is a trained hospital nurse. Detailed medical records are kept.

The educational staff comprises the headmistress, four full-time, one half-time, and four visiting teachers, all with degrees or their equivalents. The headmistress is Miss Phyllis Monks, M.A., of Girton College, Cambridge, and formerly a mistress of Roedene School and Fulham County Secondary School. So that both by training and experience she is exceptionally qualified to guide pupils who are less standardized than the average public school girl. In an inspection by the Board of Education in 1925 note was made of the generous allowance of staff, but it was added, "it has to be remembered that there are special difficulties in teaching the blind, which are best surmounted when classes are small." The curriculum is of full public school standard, including Scripture, English, geography, history, French, Latin, mathematics, science (of which there is some practical work despite the difficulty thereof), handwork, music (of which much is made), and physical instruction. Braille and typewriting are inevitable; and there are such pleasant tasks as poultry keeping, gardening, domestic crafts, housewifery, raffia and cane work, needlework, spinning, weaving, and the making of pottery. That the level of blind education is able to keep closely to normal standard is due largely to the ever-increasing library of Braille books now available to students. Special boards and type bring all arithmetic



and algebra within reach; spur-wheels, Braille compasses and rulers are used for geometry and trigonometry; relief globes and maps, and many other such devices help to make full mental development on normal lines practicable. There are thirty-two pupils now in residence; former students number ten. It is early to count successes, but already one has entered Oxford University, another St. Andrews University, and one is now a teacher of English in Sweden; two will shortly start small schools—one in England, another in South Africa.

Recreation has been well thought out. There is "free-time" after dinner, usually occupied by voluntary hand-work, with reading aloud; but impromptu concerts, dances, charades, and debates are popular. A school magazine has been produced, and for so small a company is uncommonly good; the originals are in Braille, but they have been done into typescript for circulation amongst friends. Outdoor games are played on a clear level lawn of half an acre bounded by a wide gravel walk, which makes the guide of safety. A satisfactory ball game has been evolved, something after the fashion of Association football, except that it is played by hand. The ball is of covered wicker-work and in it is a bell which gives by sound the sense of position. So clever have the girls become at this game that on one occasion they beat a team of sighted girls. The girls take a practical share in the work of the house by making their beds, managing meals, caring for the classrooms, and so forth. Thrice a year there is "parents' day," on which the girls entertain their friends and give a concert or other performance. That the girls are thoroughly happy in their college life there can be no manner of doubt. The shy, solitary, self-centred blind girl soon learns through comradeship to cast off that sense of separateness which a physical handicap is apt to engender, and in so doing takes the first step to the acquisition of independence.

The inspection by the Board of Education last year has been referred to. Dr. Eichholz, senior medical officer of the Board, and three of His Majesty's inspectors, Messrs. W. C. Fletcher, T. W. Phillips, and F. Spencer, made a complete examination of the work of the college, and their report has been published in an eight-page pamphlet issued by H.M. Stationery Office. It is a most satisfactory report, and may well be put into the hands of any inquirer.

In conclusion I desire to stress the responsibility of every ophthalmic surgeon, and, indeed, of every medical practitioner, to such of their patients who are blind or nearly blind girls, or, in the terms of the college, "who have little or no sight"; when all has been done for them by way of medical treatment, no greater good can be given them than an introduction to such a college as this. It may be thought that this or that girl may be well taught at home by a succession of capable governesses. But the girl who enters this college will find a happiness beyond compare with the solitary life of the blind girl in the best of homes. To be taught in company with others is infinitely more stimulating to the mind than the monotony of the most assiduous solitary teaching, whilst the play of wits engendered by life in a community such as a public school of itself affords a training that will give the blind girl a capacity for independence of judgement and of action which is an endowment of no mean advantage in these days.

### SLIT-LAMP TECHNIQUE APPLIED TO SIMPLE APPARATUS.

BY

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THE slit-lamp has greatly amplified that method of examining the eye which is known as oblique illumination. It throws a sharply defined beam of intense light into the eye, a beam which can be narrowed down till it is about one-fortieth of a millimetre in width, and one which can be focused at will upon any point in the anterior half of the eye. The narrow beam gives an "optical section" of the eye; all the structures can be seen in profile, and in consequence accurate localization along the optical axis

of the eye becomes possible. In a word, the slit-lamp gives us the third dimension which was necessary to enable us to visualize the eye as a solid. A second advantage of the slit-lamp is the ability to concentrate a powerful beam upon a reflecting surface and employ this as the source of illumination. Thus the cornea can be examined in light reflected from the iris, and the iris in lens light. There are other variants of illumination which are now so well known that they need not be mentioned.

It is easy to see that the slit-lamp has become indispensable to many ophthalmic surgeons, and that all cases cannot be completely diagnosed without it. Unfortunately, the apparatus is not always available. It is not portable, and not every patient can be brought to it. Some surgeons have more than one consulting-room, and the cost of the instrument forbids its duplication. Fortunately much of the technique that has been developed for the slit-lamp can, to a considerable extent, be carried out with the simple articles that should be found in every consulting-room. A suitable lamp, an electric ophthalmoscope, a condensing lens, and the ordinary or the binocular loupe, intelligently used, will solve many of the problems hitherto reserved for the slit-lamp. The essential feature of the more elaborate apparatus is not the high magnification of the Czapski microscope, but the refined command of the illumination and the localizing power conferred by the slit-lamp. Much of the work accomplished by the instrument can be carried out with the lowest objective, with a magnification of but nine diameters, which is little more than that of the ordinary loupe, and nearly all can be managed with an enlargement of 15. It is therefore obvious that if we can supply a suitable focal beam much can be done with the loupe, if this be used to its best advantage. An effective beam can be gained by two methods: we can focus a bright linear source of light upon the eye with an ordinary condensing lens, or we can use the filament of an electric ophthalmoscope. Both methods are valuable. The latter plan was brought to my notice by Mr. Coulter of Newport.

I have tried out various sources of light. The pencil furnished by a "point o' light" lamp, or by a motor-head-lamp bulb, has not proved so effective as the much simpler half-watt bulb which is found in every house, and which does not need a resistance or transformer to step down the town voltage. A 60-watt lamp, placed at about four feet from the patient, is the best, and can be made to give a streak of bright light. The lower powered bulbs are now badly made, the filament soon hangs in loops, and no longer supplies a linear source of light.

Many electric ophthalmoscopes, especially the Hamblin, will give a parallel beam if the bulb be drawn right back; if they do not they are out of adjustment and should be returned to the maker. This property has been utilized in my pocket slit-lamp made by Messrs. Hamblin. There is no hole in the mirror, and the instrument furnishes a sharp beam of remarkable intensity. The lamp costs £2.

**Half-watt Technique.**—The bulb must be placed at about four feet from the eye of the patient, and at such a height that the plane of the circular filament lies on the line joining the bulb to the eye. If it be higher or lower we get, not a line, but an ellipse of light. The light is focused upon the cornea, and is seen as a bright line. The loupe is held between the thumb and the forefinger by its cover, the middle finger raises the lid, and the ring and little fingers rest upon the patient's forehead. The forehead of the observer rests upon his bent forefinger, and a meticulous focus is obtained by an alteration in the flexion of the ring-finger. We must emphasize the fact that to see such a phenomenon as the actual circulation of the blood with the loupe it is necessary to focus the loupe within a fraction of a millimetre. The condensing lens rests against the surgeon's forehead. By this method the patient and the observer are one, and any movement of the patient does not disturb either the focus of the lens or that of the beam. It is necessary to focus the beam just as accurately as the beam of the slit-lamp, and to learn simultaneously and instinctively to move the combined focus from one object to another. The pocket slit-lamp is used in a similar way.

**Localization.**—The pocket slit-lamp is better for accurate localization than the half-watt lamp. With it we obtain a definite corneal prism, and can determine three zones in the cornea—the epithelial surface, the endothelial surface, and an intermediate zone, the corneal stroma. We can therefore in the cornea say that an object is on the surface, in the substance, or on the back of the cornea. We can do no more, but this rough localization is very valuable. It distinguishes between a deep and a superficial keratitis, and tells us that certain dots are not on the surface of the cornea but are keratic precipitates. This determination is not always easy with an ordinary diffuse oblique illumination. With the half-watt lamp we work from three mirrors: the corneal mirror, the mirror of the anterior capsule, and that of the posterior capsule of the lens. There is no definite corneal prism; the beam is not sharp enough to form one. The pocket slit-lamp shows up the more marked zones of discontinuity in the lens, and affords a fairly accurate localization of opacities. With both the half-watt lamp and the pocket slit-lamp a nuclear cataract is perfectly distinct, and a central opacity can be defined with ease. A lamellar cataract can be localized with the pocket slit-lamp. With both we are able to localize a posterior cortical or capsular cataract, but we cannot differentiate between a cortical and a capsular opacity. The depth of the anterior chamber can be gauged with reasonable accuracy, but we cannot see cells in the aqueous. Increased flare, if marked, is seen with the pocket slit-lamp.

**Methods of Illumination.**—With the exception of retro-illumination from the posterior capsule for the examination of minutiae in the cornea, all the varieties described for the slit-lamp are available. Diffuse illumination is gained by pushing the lens forward within the true focus. That given by the half-watt lamp is far more effective than the dim diffused light furnished by the frosted bulb found in many hospitals, a form of light inefficient for oblique illumination, and inappropriate for retinoscopy. All dark rooms require two lights: a half-watt for focal illumination, and a bright frosted bulb in a Thurington's chimney for retinoscopy. The ordinary light is a bad compromise. Focal illumination is easy to obtain. The beam can be directed at will upon any part of the cornea, or the iris, and can be projected on to any portion of the lens or into the vitreous. Retro-illumination is given from the iris and from the lens as a whole, probably mainly from the posterior capsule. Specular illumination is constantly used. With it under certain conditions we have seen that the endothelial shagreen is visible, but the magnification is insufficient to resolve it into cells. The anterior lens shagreen is a beautiful object, but the posterior is not seen except as a bright area of light. The sutures of the cortex and of the adult nucleus are easily demonstrated. The Y sutures of the embryonic nucleus are observed only under pathological conditions. Scleral scatter is probably of more real value when obtained by simple methods than with the slit-lamp. It is very useful to detect diffuse opacities in the cornea.

**Technique to Find the Lens Shagreen.**—The patient must direct his gaze in such wise that his line of sight bisects the angle between the visual axis of the observer and the illuminating axis; he must look half-way between the lamp and the loupe, and all three lines must lie in the same plane. The surgeon alters his position slightly till he gets the glare of the light from the lens, and he then raises and lowers his head till the shagreen shines out like freshly cast aluminium. A slight alteration in adjustment brings out the sutures of the cortex, which, as we have stated already, are better seen in their entirety with the loupe than with the microscope.

**The Vitreous.**—Much can be gained by the examination of the vitreous with loupe and half-watt lamp. A detached retina is often seen thus which cannot be brought into view with the slit-lamp. Haemorrhages and tumours are detected, and the vitreous fibrils are visible. It is hardly possible to detect a pathological vitreous with the loupe unless very advanced, but asteroid hyalitis at once attracts the attention.

The visible circulation can be seen in a vascularized cornea and at the normal limbus, but the latter is difficult to detect, and is a test of high proficiency with the loupe.

It probably calls for exceptional eyesight and for dark adaptation. The visible circulation in a pannus can occasionally be seen in daylight with the light of a half-watt lamp and loupe. Very occasionally focal illumination of the retina by the filament of the ophthalmoscope will demonstrate the circulation in the smaller retinal vessels. This phenomenon has been observed, not only by the author, but by Mr. Ruidl, surgical registrar to the Birmingham Eye Hospital, and quite independently.

**Technique to See the Visible Circulation.**—In all cases even in the retina, the vessel must be viewed by retro-illumination. In the case of the limbus the light is focussed on to the sclera in such wise that it is reflected back through a conjunctival vessel to the eye of the observer. Corneal vessels are illuminated from the iris, and retinal vessels from a deeper layer of the retina.

The pocket slit-lamp is of very real value to one trained in slit-lamp technique who not only knows exactly how to manipulate the light, but also realizes what he is looking for. An object previously invisible with the loupe is often seen perfectly when it has been examined with the slit-lamp.

## NAGEL'S ANOMALOSCOPE

BY

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(Abstract.)

**Model I** of Nagel's anomaloscope enables an investigator to look for Rayleigh's equation (lithium red mixed with thallium green, equal to sodium yellow). It is by means of this match that anomalous trichromies are best detected. Not only is the knowledge gained, as by other ways, such as lanterns and isochromatic tables, that these patients are deficient in colour perception, but an exact diagnosis of their defect can be made. With this apparatus any source of light can be used, but Rayleigh's equation will not be the same for the different kinds of light. Three slits let in rays which divide into their components on three prisms disposed in the centre of the apparatus. The first two are twin slits, and use is made of the green rays of the one and the red rays of the other. The combined breadth of these two slits moving together is equal to one millimetre, so that it is possible to get pure green, pure red, or a mixture of both. That mixture is matched with yellow, of different luminosities, let in by the third slit, which is independent of the twin slits.

If electric light is used, normal people have an exact match between the mixture and yellow when the red slit is open to three-quarters of its breadth and the green slit to one-quarter only; the yellow must be of low luminosity, the slit being open to one-quarter only. That equation is an "exact match," the sensitiveness for colours of normal people enabling them to note the least change produced in the mixture if the proportion of red and green is changed. Abnormal people can give all kinds of abnormal matches—from those who find such matches, with more green and less red than normal people, or vice versa, and those who find "match regions" in which many matches are possible; the latter show in that way diminution of sensitiveness for both colours at the same time.

While Model I permits researches for green and red only, Model II, with its special device, is a real spectroscopy, allowing all kinds of different matches to be made, including a blue equation, which renders possible the discovery of diminution of sensitiveness for blue. It can also be used as a simple spectroscopy; by means of the spectrum a diagnosis is very much facilitated. Detection is rapid of shortening in the red or the blue end, and of neutral sections in the yellow, green, or blue-green parts of the spectrum, as they may be found in tritanopes (blue blind), deuteranopes (green blind), or protanopes (red blind).

Diminution of blue perception seems a very rare condition as a congenital dyschromatopsy, but is much more frequent in acquired dyschromatopsy. Macular blue blindness seems to be found not only in affections of the retina, but in disorders of the optic nerve alone. In these last affections sensitiveness for blue is often more diminished than for red and green.

The author is persuaded that if macular sensitiveness for blue was tested otherwise than with the perimeter only, means of classifying cases of atrophy of the optic nerve in an earlier stage of the affection would certainly be found. For all these purposes Nagel's anomaloscope is a most handy and practical apparatus.

### STEAMY CORNEA IN CASES OF NON-INFLAMMATORY INCREASED TENSION.

BY

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(Abstract.)

No satisfactory explanation of steamy cornea has yet been proposed. It cannot be due to an exudate, because the cornea is non-vascular, nor can it be attributed to the forcing in of aqueous humour, since Descemet's membrane is impermeable. It is seen in pressing on enucleated eyes, and disappears immediately the pressure is relaxed. Personal experiments show that pressure on the eye will first produce rapid restriction of the visual field, then of vision, the fixation point disappearing last. The subject of my next investigation may be the estimation by means of a suitably constructed dynamometer of the pressure in grams required to obliterate vision in a large number of normal eyes. Any findings below the minimum probably indicate the presence of high tension. With very light pressure, sufficient only to constrict the peripheral field, the test types at 6 metres show duplication of the letters, and lines of print at reading distance show shadowy images, which change their relative position as the pressure is altered. The image of the Javal mires are clean cut in normal corneae, even when the fixation is changed from the centre of the tube to one edge or the other. In steamy cornea with quite smooth epithelium the images show duplication of the edges of the mires varying with the change of fixation. I suggest that possibly there is a shifting of the surface epithelium causing polarization of light, and perhaps a shifting of the corneal layers, causing the iris pattern to look smudged where there is certainly no inflammatory reason for this appearance. This also causes us to see objects duplicated when we press our corneae. The duplication of the Javal image might well be due to a second, feebler image being reflected from the second layer of epithelium, these layers being extremely thin. Less weighty, perhaps, though suggestive, is evidence derived from the examination of microscopical sections. Corneal epithelium is found to be laid down very regularly, like bricks, in the normal cornea, the cells being all tumbled about in old-standing glaucoma. A shredding of the corneal layers is found to be quite regular and symmetrical in normal sections, while in glaucoma cases it often appears that in separating under the microtome they have shifted against each other, the meshes thus formed appearing distorted and giving an appearance of traction that has been relaxed. Slit-lamp experts might be able to clear up this point, for in the Javal image of steamy cornea, if a miotic is instilled and it be viewed after the steaminess has vanished, the image no longer appears duplicated. I suggest that if certain fixed points on the surface of the cornea were observed—for instance, in their relative position to a certain patch of endothelium, before and after the administration of a miotic—some knowledge might be gained.

#### DISCUSSION.

Mr. BASIL GRAVES (London) suggested that, when speaking of a "dull cornea," they must distinguish between a simple dulling of the view of the iris pattern—a sign used in the clinical examination of glaucoma cases—as the result of an abnormality of the cornea through which the iris was viewed, and a dulling of the corneal reflex which produced, for example, the window image—a manifestation dependent on a smooth surface of the epithelium; in fact, the thin capillary layer of tear fluid on the epithelial surface was the actual mirror. He had always understood that the essential alteration of the corneal epithelium when the tension was raised was due to microscopic globules of fluid collecting at first between the

larger basal cells of the epithelium on the face of Bowman's membrane. Such fluid vacuoles were often seen by slit-lamp technique in cases in which the tension was not raised; in certain cases of iridocyclitis they were familiar to slit-lamp students. When present thus, in fine degree, they did not give rise to any disturbance of the surface contour of the epithelium, and hence the mirror effect of the surface of the epithelium was not impaired—the window reflex was still bright. But if these droplets became more numerous they coalesced, and gave rise within the epithelium to droplets of such size that they impaired the surface contour of the epithelium, and hence impaired the mirror properties of its surface. At the same time it was conceivable that the transmitting qualities of the epithelium so affected were sufficiently poor that the view through it of deeper structures, such as the iris pattern, was poor. In connexion with this droplet formation it might be pointed out that Vogt early drew attention to the normal haze, by retro-illumination, of that part of the epithelium which was near its vascular supply—namely, the corneal epithelium near the limbus; this was physiological. Whatever caused this, be it a physiological "oedema," the internal condition of the epithelium was insufficient to disturb its surface contour, and hence the mirror properties of the moist surface of the epithelium here were, in the normal, quite good. These explanations were put forward without intending to furnish a destructive criticism of Dr. George Young's hypothesis. There might be doubling of images when the cornea was pressed on in Dr. Young's experiment; it might be explained simply by the astigmatism caused by pressure on the globe. Mr. Graves had had no previous opportunity of considering Dr. Young's views, which he then heard for the first time. Apparatus made by Messrs. Zeiss was readily available for examination of the eye by polarized light, a polarimeter being available for the arc slit-lamp and an analyser for Koeppe's special microscope made for use with the slit-lamp attachment.

In reply to Mr. Bishop Harman, Dr. George Young said that he thought the disappearance of the steaminess after corneal section was rather in favour of his view than against it, because the dislocation of the corneal layers was likewise released, and it mattered little whether they were relaxed by the miotic or by corneal section.

### SECTION OF ANAESTHETICS.

SAMUEL JOHNSTON, M.D., President.

#### DISCUSSION ON

#### NEWER GAS ANAESTHETICS: SOME COMPARATIVE CONSIDERATIONS.

#### OPENING PAPERS.

I.—F. H. McMECHAN, M.A., M.D.,

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It has been said that the ideal anaesthetic gas should be one (a) with a sufficient solubility in water (plasma) to be carried to the central nervous system, and (b) such a high degree of solubility in the lipoids as to lead to its differential accumulation there. Further, such an ideal anaesthetic (c) should leave the body promptly and entirely unchanged (V. E. Henderson).

#### Contrasting Viewpoints.

Although some of the so-called newer gas anaesthetics have been investigated experimentally and tried out clinically in the past, nitrous oxide is the only anaesthetic gas that has held its place with such anaesthetics as ether and chloroform since the very beginnings of actual painless surgery. In so doing it has lived up to the expectations of Horace Wells, who in his day steadfastly maintained its superiority, not only in dentistry, but in surgery as well. Of course, Andrews of Chicago gave nitrous oxide a new lease of life in establishing its use with oxygen and introducing the non-asphyxial era of gas-oxygen anaesthesia.

## NEWER GAS ANAESTHETICS.

Since then, despite its narrow margin of anaesthesia, its besetting problem of anoxaemia, and the skill and equipment required for its satisfactory use, to those who have mastered both the physics and physiology of its administration nitrous oxide-oxygen remains the unrivalled method of anaesthesia for any and all operative procedures in normal or the "worst risk" patients. Those who maintain this attitude have not found that a comparative balancing of advantages and disadvantages warrants the replacement of nitrous oxide with either acetylene, ethylene, or propylene. Their greatest concession is the use of one or the other of these newer gas anaesthetics as a synergist in combination with nitrous oxide-oxygen. Those who, for various reasons, have not elected to pursue nitrous oxide-oxygen anaesthesia to its ultimate possibilities have found in the newer gas anaesthetics a somewhat less exacting technique, a broader margin of anaesthesia, as well as an extended scope and utility in the domain of surgical procedures without appreciably any more harm to the patients. Dissension among anaesthetists or a scientific feud based on this difference in attitude would be deplorable; especially as interest in the widespread use of the newer gas anaesthetics promises an era of physiological anaesthesia to promote or secure alone. Curiously enough, in a certain sense, this newer era of gas-oxygen anaesthesia harks back to the first conceptions of surgical anaesthesia in an older era of "pneumatics" in which some of the gases now in use were first discovered and used.

*Nitrogen and Hydrogen Anaesthesia.*

In this connexion it should not be overlooked that many of Nature's elements are potentially anaesthetics, and are only inefficiently so because the human body cannot use them in certain chemical forms for entirely satisfactory anaesthetic effect.

Thus nitrous oxide may be considered as the practical form of nitrogen anaesthesia. Since unconsciousness may be produced with difficulty by administering nitrogen with less oxygen than is contained in air, there must be some difference between it and nitrous oxide-oxygen which produces anaesthesia with such ease. This difference seems to be in the comparative solubility of the two gases. Nitrogen is nearly insoluble in the body fluids and leaves oxygen free access; while nitrous oxide is more than one hundred times as soluble in the blood serum as oxygen. Hence, although nitrous oxide of itself has no known action upon the cells and tissues of the body and is only acted upon by other chemical substances with the greatest difficulty, it reaches the tissues more readily and thus restricts the volume of oxygen available for metabolism and induces the anaesthetic effect.

A curious side issue of nitrous oxide-oxygen anaesthesia is this: Its margin of anaesthesia is so narrow that to be entirely successful and satisfactory almost the last vestige of nitrogen must be displaced in the body by nitrous oxide, and this is exactly what is attempted in the clinical technique of "secondary saturation."

From this same viewpoint hydrogen anaesthesia has been the predominant basic method during the past eighty-odd years of actual surgical anaesthesia than a nitrogen-oxygen mixture, but equally difficult to handle. It is not at all surprising, however, that some of the unsaturated hydrocarbons, now challenging attention as the newer gas anaesthetics, should be proving themselves effective, since they are in reality merely gaseous counterparts of the commoner liquid anaesthetics (ether, chloroform, and ethyl chloride) that have withstood the tests of time and routine use.

Now, as during the past, these same two elements, nitrogen and hydrogen, compete for superiority in anaesthesia, but on a more even footing. While certain physico-chemical differentials still persist to the advantage or disadvantage of each, both elements are now being used in their most effective forms by means of perfected gas methods and apparatus as well as impartially with oxygen.

*Theories of Anaesthesia.*

A consideration of certain developments in the theory of anaesthesia will help to a better understanding of these

physico-chemical differentials. Recently an explanation of the phenomenon of anaesthesia has been attempted in relation to the newer physics of the atom. By plying two guinea-pigs in circuit with each other and a very sensitive galvanometer, it was found that, irrespective of different initial potentials, the anaesthetized animal always became more and more electro-positive to the other as anaesthesia deepened, and less positive as anaesthesia disappeared. This may seem rather inexplicable until it is recalled that the only actual electricity is negative. From this it may be assumed that one of the basic reactions of anaesthesia (if not its fundamental mechanism) is a decreasing electro-negative potential.

It is a further noteworthy fact that oxygen is the predominating negative element in nature, and as such, oxidation may be looked upon, in relation to the phenomenon of anaesthesia, as identical with electro-negative potential. Anaesthesia on this basis would involve a decreasing metabolism.

Further investigations on single guinea-pigs under various gas anaesthetics disclosed an interesting differential between nitrogen and hydrogen reactions. The hydrocarbon anaesthetics (ether, chloroform, and hydrogen-oxygen) gave very definite increases in voltage, while nitrous oxide and carbon dioxide almost as proportionately decreased voltage for similar depths of anaesthesia (E. A. Tyler and D. C. A. Butts).

So much for a concept of the phenomenon of anaesthesia that may further intrigue the research physicist and biochemist, and may interpret anaesthetic reaction in subtler terms of protons and electrons as well as the colloidal chemistry of cellular constituents.

Another concept of anaesthesia, the metabolic, offers more practical possibilities to the clinical anaesthetist. This concept has been detailed as a workaday basis of gas-oxygen methods of anaesthesia. Life depends upon oxidation much as a fire in a stove depends upon oxygen. Let the flame represent consciousness (and sensation to pain). Since metabolism, or combustion measured by the oxygen consumption, is reduced in normal sleep and in anaesthesia under various drugs, and since a restriction in the oxygen administered also produces unconsciousness (and pain sensation) anaesthesia is the result of suboxia of the nervous system.

Like the fire in a stove, consciousness without "killing" the flame—may be extinguished without "soaking" fire in at least two ways: First, indirectly by "soaking" the fuel, which physically or chemically hinders combustion even with an open draught. This seems to apply to such anaesthetics as ether and chloroform, since they attack the lipoids contained in all cells, and in addition to producing unconsciousness and loss of pain, also disorganize the specialized functions of the kidney, liver, and other organs containing relatively large amounts of lipoids acted upon by these drugs. The heart is less affected because it contains less lipid, but it also suffers considerably through its connexion with the nervous system, which is not only these substances. Ether and chloroform are not only powerful anaesthetics, but on account of their high boiling point linger in the system and are only slowly eliminated, giving time for undesirable chemical by-effects. In this connexion the newer gas anaesthetics are more desirable than their liquid counterparts because their extremely low boiling points offset their lipid solubility and the rapidity of their elimination obviates serious biochemical complications.

A second method for the reduction of the fire in a stove consists in the ordinary direct regulation of the draught, or the mechanical restriction of oxygen. This is analogous to the control of anaesthesia by the regulation of the oxygen percentage in gas-oxygen mixtures. This is more essentially the way in which nitrous oxide (and carbon dioxide) produces the anaesthetic effect. With practically no action upon the cells, tissues, and organs of the body, nitrous oxide, on account of its solubility in plasma, restricts the volume of oxygen available for metabolism. Anaesthesia then results from reduction of combustion in the nervous system.

In this connexion it must also be realized that the human body is a stove containing many fuels of varying combustibility, and that certain vital functions are carried on

at entirely different levels and intensities of metabolism. Thus nervous tissue requires almost twice as much oxygen as other tissues and also contains comparatively excessive amounts of lipoids; therefore, its special functions may be suspended (1) by the effect of oxygen restriction; and (2) partial saturation with lipid-soluble anaesthetics, long before other vital functions are infringed upon (E. L. McKesson).

#### *The Acid-Base Equilibrium.*

These factors of oxygen restriction and lipid saturation in relation to gas-oxygen anaesthesia involve changes in the acid-base equilibrium, or hydrogen-ion concentration and  $\text{CO}_2$  combining power, which is a further basic consideration in the conservation of the alkaline reserve. These changes, depending on their extent, may both influence the sort of anaesthesia secured and the types of complications presenting.

In making these changes in acid-base equilibrium as negligible as possible certain details of preparation and technical points in administration are essential:

1. Such premedication as will (a) stabilize the circulation; (b) bring the basal metabolic rate as near to normal as possible; and (c) re-establish and maintain the alkaline reserve, should be used to full effect.

2. The oxygen percentage in the gas mixture should approach the permissible maximum that obviates anoxaemia without invalidating the plane of anaesthesia required for the surgical procedure.

3. Rebreathing (preferably fractional) should be utilized to provide carbon dioxide control for any desirable manipulation of respiratory function, especially in avoiding over-ventilation and consequent acapnia.

When these essentials are observed all sorts of gas-oxygen anaesthetics (nitrous oxide, acetylene, ethylene, propylene) may be more easily given, are more efficient, and any possible by-effects are reduced to a negligible minimum.

If the various gas-oxygen anaesthetics have any claim to superiority more important than any other, it is that, even under prolonged administration, the blood pressures are not inclined to fall. To clutch at this, however, it is also vitally necessary to use

(digitalization) as will conserve myocardial efficiency, and such transfusions (blood, salines) as will maintain not only a volume flow sufficient for vital functions, but also a blood stream capable of carrying on oxygenation.

Increased metabolism makes any method of gas-oxygen anaesthesia more difficult because the intensified oxygen need narrows the range of anaesthesia. Plus basal metabolic rates should be brought nearer normal by means of proper sedatives (morphine, hyoscine, quinine, chloral, Lugol's solution, and certain endocrines—ovary, pancreas, liver extract), not only for the safety of the patient, but also for the convenience of the surgeon and anaesthetist in securing more satisfactory anaesthesia.

On the contrary, in the presence of *minus* basal metabolic rates patients may be unusually susceptible to gas-oxygen anaesthesia, and danger may be involved in the further depression of metabolism by the anaesthetic. Under such conditions efforts should be made to raise the basal metabolic rate more nearly to normal by stimulative therapy (atropine, caffeine, and certain endocrines—adrenaline, pituitrin, thyroid).

The problems of anoxic acidosis and acapnic alkalosis are definitely bound up with conservation of the alkaline reserve in relation to the patient's blood and tissue chemistry reactions, as well as to the technique of administration. If the alkaline reserve can be established at the approximate normal by means of carbohydrates, fruit juices, and alkalis, and the toxæmias of disease and pathology can be counteracted by insulin-glucose, then gas-oxygen anaesthetics scarcely affect either the carbon dioxide combining power or the hydrogen-ion concentration unless the technique of administration involves a tendency to acidosis from the anoxaemia of oxygen want, or alkalosis from the acapnia of overventilation and carbon dioxide depletion.

#### *By-Effects of Impure Gases.*

With the fundamental concepts of the phenomena of narcosis already as the other essentials underlying all anaesthesia, only in mind, the various routine use may be comparable to the various aspects and relations.

Surprising as it may seem, even the anaesthetics that have been longest in use are not yet supplied in absolute and constant purity. Witness the efforts to make a purer ether by means of crystallization with benzidine; to prevent deterioration by production and packing in the presence of inert gases; or to enhance potency by the incorporation of synergists. Even now a new chapter in the current literature of anaesthesia is being written on the by-effects of ether deterioration impurities, and promises some rather startling revelations.

Nitrous oxide still provides its quota of occasional drawbacks and impurities—too much moisture, nitrogen dilution, definite nitric oxide and ammonia contamination, as well as variegated organic odours. Witness, again, the effort to dry intensively; eliminate divided metals, and deodorize with activated carbon.

With the newer gas anaesthetics both purification during manufacture and prevention of deterioration during storage are still besetting difficulties. There may be hydrogen or carbon dioxide dilution, as well as aldehyde and peroxide, sulphur, and phosphine, or, worst of all, carbon monoxide contamination. Even oxygen for use with anaesthetics may be diluted with nitrogen or hydrogen, and carbon dioxide for resuscitation may contain carbon monoxide.

The more intensively gas anaesthetics are dried the better they lend themselves to use without inconvenient freezing of valves and connexions, and serious interruptions of flow and volume. It is understood that nitrous oxide can now be dried to a moisture content of 0.005 per cent. The acetone and ether coefficients of acetylene and ethylene seem to provide the same practical advantage while also acting as solvents and allowing an equal gallonage of gas to be compressed in a given cylinder under much lower than the usual pressures.

Seemingly low and inconsequential dilutions of anaesthetic gases or oxygen with hydrogen or nitrogen in the cylinder may so narrow the range of percentage mixtures that anaesthesia may become very difficult or entirely unsatisfactory and the indicated oxygen percentages quite deceptive.

Certain impurities in anaesthetics may merely involve disagreeable odours or tastes (sulphur, phosphine); others may be responsible for nausea and vomiting (aldehydes, peroxides); while still others may induce pathological conditions leading to endangering complications or even death (nitric oxide, ethylene oxide, carbon monoxide). As most of these are effective when present in traces represented by percentages in the second to fourth decimal places, their absolute elimination is imperative.

#### *Comparative Potency and Toxicity.*

There is some confusion about the comparative potency and toxicity of the various gas anaesthetics, partly because most of them, like nitrous oxide, are eliminated intact, and are therefore looked upon as being equally "inert"; and also on account of the fact that some admit of complete and satisfactory anaesthesia in the presence of percentages of oxygen higher than are contained in air, and even further dilutions of the percentage gas mixture with the more insoluble gases.

However, in studying potency and toxicity in relation to minimal and maximal anaesthetic and lethal dosage, the series of gas anaesthetics may be considered as having somewhat the following gradients, with ethylene as unity: nitrous oxide 0.85; ethylene 1; acetylene 1.5; propylene 2.25; butylene 4.5; and amylene 15.

A further clinical concept of these gradients may be had by a comparison of the usual percentage mixtures of these gases and oxygen for the induction and maintenance of anaesthesia. In a schematic way it may be said that each



higher member of the series of gases kills readily at the same percentage mixtures at which the previous one maintains safe anaesthesia.

Normally nitrous oxide has the narrowest margin of anaesthesia and the most limited range of percentage mixtures. Not infrequently in pure gas-oxygen administration a leeway of 1 per cent. in the oxygen percentage may definitely determine the control of anaesthesia. Induction may be accomplished either with 100 per cent. nitrous oxide followed by oxygen or by 93 per cent. nitrous oxide and 7 per cent. oxygen; or a combination of both methods. During maintenance 10 to 15 per cent. oxygen is rarely exceeded, except in the presence of shock, haemorrhage, anaemias, profound sepsis, toxæmia, or cachexia.

Under such conditions the required oxygen percentage may mount to 35, 50, 60, or even higher. Surgical relaxation may be secured by the technique of "secondary saturation" or by the use of synergists. At this point it should be noted that the usual slight dusky colour under nitrous oxide-oxygen anaesthesia is no more an indication of cyanosis than the peculiar rosy blush under ethylene-oxygen is an assurance that no anoxæmia is present.

With ethylene it is usually possible to induce anaesthesia with mixtures of 90 to 85 per cent. ethylene and 10 to 15 per cent. oxygen from the beginning. During maintenance the required oxygen percentage may rise to 20 per cent. or more; and better surgical relaxation frequently follows short periods of oxygen up to 40 and 50 per cent. mixtures. Ethylene is thus shown to be slightly cumulative during its administration; although, on account of its low boiling point ( $-137^{\circ}$  F.), it is almost as rapidly eliminated as nitrous oxide. This slightly cumulative effect, being due to a higher solubility and some sort of undisclosed and transient physical combination with the lipoids, determines the higher oxygen need, a somewhat wider margin of anaesthesia, and a more intensive obtundent or analgesic effect.

The popularity and widespread use of ethylene has been made possible because ethylene and nitrous oxide are so nearly alike in physical properties that apparatus calibrated for nitrous oxide can be used for ethylene with a margin of error that merely gives a slightly misleading idea of higher oxygen percentages than really obtain. Under similar conditions of administration the increased oxygen range with ethylene does not differ much more than from 5 to 7 per cent. in comparison with nitrous oxide. As with nitrous oxide, the pathological conditions already mentioned demand excessive oxygen percentages. The use of synergists with ethylene for surgical relaxation, especially in abdominal operations, is still rather routine. Very curiously some patients who are resistant to nitrous oxide are more susceptible to ethylene and vice versa. Ethylene may readily be used in sequence or combination with nitrous oxide through the same apparatus with proper attachments; many anaesthetists prefer nitrous oxide for the induction and recovery phases of ethylene anaesthesia (A. D. Luckhardt, W. Easson Brown, T. C. Herb).

Acetylene, according to its place in the series of hydrocarbon gases, should be a weaker anaesthetic than ethylene. The fact that it is compressed with acetone, and that acetone has narcotic properties, may account for its apparently increased clinical potency. Ethylene made with an ether coefficient shows this same increased potency.

Acetylene anaesthesia may be induced in the presence of 20 per cent. oxygen, which may be increased to 30 per cent. in a minute or two. During maintenance the greater solubility and cumulative effect of acetylene usually require an increase of 5 per cent. oxygen and a similar decrease of acetylene in the anaesthetic mixture every five minutes. Thus the closing steps of a long operation may be done under 30 to 40 per cent. acetylene and 70 to 60 per cent. oxygen. Apparatus for acetylene anaesthesia should be especially calibrated for that gas, and the acetone vapour may be eliminated by means of a small filter of activated carbon.

The rapidity with which the oxygen percentage has to be increased during acetylene anaesthesia will depend in great measure on the pathological condition of the patient and the necessity for surgical relaxation. It is being found

that, in spite of the apparently greater potency and toxicity of acetylene, it is still sufficiently innocuous that re-breathing during its administration is quite as feasible as with nitrous oxide (H. Wieland, A. and J. D. Goldman).

Propylene is the only other of the newer gas anaesthetics that has been tried out in the operating-room. Experimentally it offered some unique possibilities: (a) it was more potent than ethylene or acetylene without being too toxic; (b) it could be used satisfactorily with percentages of oxygen that obviated anoxæmia and maintained the alkaline reserve; and (c) more than this, a third gas (nitrogen) could be used at the same time to render the anaesthetic mixture non-explosive to static and perhaps to other sources of ignition as well.

While differing somewhat in relation to the sort of experimental animals used, in a general way propylene concentrations of from 35 to 50 per cent. are effective for induction, and 20 to 40 per cent. for continuing anaesthesia. Usually percentage ranges of from 25 to 35 per cent. suffice for meeting the oxygen need, and the remainder of the mixture may be a third gas (nitrogen). At 60 per cent. concentration propylene causes a slow and at 70 per cent. a rapid fall in blood pressure; while concentrations of from 75 to 80 per cent. are rapidly lethal.

Experimentally low concentrations of propylene have a wide margin of safety—thus in white rats anaesthesia may be induced by 70 per cent. propylene within three minutes, and respiratory failure occurs after eighteen to twenty minutes; but while 55 per cent. propylene will also induce anaesthesia in three to six minutes, this concentration may be continued for seven hours before respiratory failure sets in.

Propylene has been used in a brief series (nine) of operations in the three-gases mixture already mentioned (propylene-oxygen-nitrogen), and while induction, anaesthesia, relaxation, and immediate recovery were satisfactory, profound circulatory collapse occurred in all but two of the patients five to seven hours after operation. Fortunately remedial measures were effective and all the patients recovered.

Beginning with propylene, the newer gas anaesthetics of the hydrocarbon series show by-effects that, for the present, challenge their safety and utility in clinical anaesthesia. It must be frankly admitted that the clinical trial of propylene was in no sense final—the apparatus was not calibrated for propylene and was a makeshift for the use of three gases; and further than that, an accurate technique for three-gases anaesthesia has not yet been developed and its physiology is still unrecalled. These considerations are an alluring prospect to the anaesthetist, and offer a new world of conquest. In so far as propylene itself is concerned with remote circulatory collapse, it was found by electro-cardiographic studies that even in non-anaesthetic concentrations it causes ectopic heart beats. Propylene is not entirely free from a tendency to rigidity of a peculiar type that is more pronounced with butylene.

Induction with butylene with just anaesthetic percentages is relatively prolonged and complicated by a clonic type of rigidity of the extremities such as is seen in decerebrate animals under light ether or as so-called "ether tremor" in clinical anaesthesia. This clonus may continue during complete anaesthesia. While 30 per cent. butylene will maintain anaesthesia (in cats), even with this percentage blood pressure is lower than normal, and under 40 per cent. butylene the blood pressure is very low. The same disadvantages pertain to amylene.

Experiments with methane, propane, pentane, and heptane do not offer any hope of a satisfactory clinical anaesthetic. Their anaesthetic action is variable and uncertain; their toxic and anaesthetic doses are too close together; their effects on respiration and circulation are variable and undesirable; and secondary stimulation may persist when anaesthesia appears to be complete (V. E. Henderson, W. Easson Brown, Lloyd K. Riggs, J. T. Halsey, Ausel Chaine).

The several newer gas anaesthetics that have secured a place in clinical anaesthesia seem to have distinctive entities, but their differences are more apparent than real. Conceivably anaesthesia occurs when a certain, still unknown, concentration is secured in the nerve cell, which,

when expressed in volumes per cent., is the same for all anaesthetic gases. This concept is quite applicable to the newer gas anaesthetics under discussion, because their differential variables in (1) concentration in the inspired air, blood, and tissues; (2) solubility in plasma and lipoids; (3) rates of diffusion; and (4) partial pressures during administration, all tend towards establishing a unity of effect in a proportional ratio of the determining factors involved.

#### *Saturation and Elimination.*

In rapidity of saturation for anaesthesia and elimination for recovery, the newer gas anaesthetics conform to the same physico-chemical characteristics and sequence of gradients that determine their potency and toxicity. While nitrous oxide and ethylene, as would be expected, achieve their saturation and elimination more quickly than acetylene, even its rapidity of action is quite remarkable in comparison with that of ether and chloroform. Thus an 88 per cent. saturation of the blood occurs in the first five minutes of anaesthesia, and a complete saturation in seventeen minutes. In one minute after discontinuing administration 85 per cent. of the acetylene has been eliminated, and practically every trace has disappeared in from twenty to thirty minutes.

The patient's own carbon dioxide by rebreathing, or a carbon dioxide-oxygen (5 to 95 per cent.) mixture, may be used with due discretion to speed up both effects through stimulation of the respiratory function. Higher carbon dioxide-oxygen mixtures (30 to 70 per cent.) are being used to bring ether induction, saturation, and elimination within the purview of gas-oxygen anaesthesia; and some anaesthetists are using spurts of 100 per cent. carbon dioxide for emergency stimulation. While this sort of thing may not involve too great a hazard with etherization, it has decided limitations and as yet uncharted dangers in connexion with gas-oxygen anaesthesia. Carbon dioxide has anaesthetic properties, and when used with nitrous oxide or the hydrocarbons in more than normal volumes both gases tend to displace oxygen, and they project the patient and anaesthetist into the unfathomed realms of three-gases physiology.

The rapidity of saturation and elimination of gas anaesthetics accomplish many important and valuable clinical results:

1. The actual duration of anaesthesia is very appreciably shortened in comparison with other methods.
2. Surgical relaxation may be more quickly secured (by secondary saturation or synergists) when desired; and as readily dissipated when no longer needed.
3. Recovery of consciousness and rational control are almost immediate, even after prolonged administration.
4. Bodily functions are scarcely interfered with, and pathological conditions are not aggravated.
5. By-effects of anaesthetic "hang-over" (headache, nausea, vomiting) are avoided or minimized.
6. Thirst may be quenched and nourishment taken very shortly after operation.
7. Anaesthesia may be repeated several times at brief intervals, or oftener at longer intervals.
8. The danger signs of overdose, oxygen want, or carbon dioxide depletion are conspicuous enough to give timely warning, and the leeway for resuscitation in emergencies is fairly wide. The heart is inclined to "carry on" after breathing becomes embarrassed or stopped, and the respiratory centre remains so responsive that often a moment or two of diffusion elimination by withdrawing the anaesthetic, or a few breaths of oxygen under pressure, or brief artificial respiration, suffice to restore vital functions.

Clinically nitrous oxide has been repeated for painful dressings on the same patient every day for more than a month without harmful effects. Ethylene is almost as innocuous. In a series of 1,000 acetylene cases 111 were anaesthetized twice; 45 three times; 6 four times; 3 five times; 2 six times; and 1 seven times within short intervals, often on the same or the next day, with apparently no extra hazard from the repetition (Sollbach).

Experimentally white rats, anaesthetized with propylene every day or so during a period of three or four months, have shown average growth, continued good health, and on being returned to their cages have borne litters of normal young. It is difficult to conceive of any form of

anaesthesia that would have less harmful biological effects than are indicated by these results with the gas anaesthetics (Lloyd K. Riggs).

In passing it might be mentioned that if gas anaesthetics could be given in pressure chambers under one-sixth of an added atmosphere, gas-oxygen anaesthesia would not only be surgically ideal, but also practically foolproof so far as safety is concerned. It has been shown that otherwise lethal doses of even propylene will not kill experimental animals in the pressure chamber in the presence of atmospheric volumes of oxygen (20 per cent.) (Paul Bert, Leonard Hill, J. T. Halsey).

Spectroscopic examinations of the blood under nitrous oxide, ethylene, acetylene, and propylene anaesthesia disclose no bands that would indicate any combination with haemoglobin. Suspicions of such a possible combination aroused by peculiar colour changes of the skin and blood may indicate specific effects of the gas anaesthetics themselves, or may indicate the presence of impurities (nitric oxide, carbon monoxide); or synergists (acetone, ether). Apparently the gas anaesthetics are merely in physical solution in the blood, and in addition are in some sort of transient solubility or diffusion in the lipoids.

#### *Bodily Functions.*

With ether and chloroform anaesthesia there is an immediate and marked lowering of the blood pH, leading to a condition of uncompensated alkali deficit. This may occur independently of respiratory variations, and may go on to profound acidosis (coma) if saturation is excessive and elimination delayed. Nitrous oxide-oxygen anaesthesia leads to an initial alkalaemia, followed by a tendency towards an acidemia; an acapnia plus an anoxic anoxaemia effect. Ethylene-oxygen with anoxaemia present gives the same results as nitrous oxide-oxygen; while ethylene-oxygen without anoxaemia causes a gradual lowering of the blood pH, but not beyond normal limits after forty minutes of anaesthesia. Acetylene-oxygen shows a slight tendency to acidosis if any anoxaemia is present, but its development is not nearly so rapid or marked as with ether, chloroform, or ethyl chloride. Similarly the blood pH under propylene remains within normal limits provided oxygen need is fully met and carbon dioxide depletion is avoided. This again stresses the vital importance of maximum oxygen percentage and controlled rebreathing in gas-oxygen anaesthesia.

Ether and chloroform produce a decided hyperglycaemia during anaesthesia, presumably by inhibiting the internal secretion of the pancreas and disturbing the glycogen function of the liver. Carbohydrate metabolism is thus perverted and a delayed form of acidosis (ketosis) results, which comes on in twenty-four to forty-eight hours after operation and accounts for much of the morbidity and mortality following these anaesthetics. Under nitrous oxide or ethylene-oxygen and the other gas anaesthetics there is an immediate but very mild hyperglycaemia and some formation of ketone bodies; but the entire disturbance of carbohydrate metabolism is of a very transient sort. Properly given the gas anaesthetics tend to increase or stabilize rather than decrease the carbon dioxide combining power of the blood (C. D. Leake).

Ether and chloroform anaesthesia, if at all deep and prolonged, readily lead to oliguria or anuria, especially in the presence of nephropathy or a tendency to kidney dysfunction, on account of the ketosis and the depression of the circulation they produce. On the contrary, the gas anaesthetics are so slightly irritant chemically, pervert acid-base equilibrium so little, and sustain blood pressure so well, that even their prolonged use in the presence of nephropathy does not materially affect kidney function.

There is some complaint that gas anaesthetics increase haemorrhage, especially oozing from raw surfaces. It is difficult to account for this effect from any physico-chemical action of the gas anaesthetics on the blood stream, its constituents, or the circulation. In view of the fact that excess of oxygen and carbon dioxide both hastens clotting and reduces bleeding time, this objectionable feature complained of by some may actually result from the sort of gas-oxygen administration that steers a devious and vacillating course between the extremes of toxemia

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# NEWER GAS ANAESTHETICS.

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and acupnia. That this effect need not be pronounced may be seen from the results in a series of 200 each normal, nitrous oxide, and ethylene labours, in which nitrous oxide in the newborn prolonged the average bleeding time one minute and the clotting time two minutes, while ethylene prolonged the average bleeding time two minutes and the coagulation time three minutes; but both times were back to normal in nine days (Sanford).

It is not surprising that internal hysterograms should show that ether and chloroform have an inhibiting effect on uterine contractions and that gas anaesthetics are more inclined to increase than decrease uterine contractions, while at the same time affording more definite and controllable pain relief and oxygenation. Even in the presence of eclampsia, toxæmia, nephritis, and cardiac decompensation the gas anaesthetics add the least burden to an already embarrassed mother and unborn babe. Gas-oxygen anaesthesia eliminates subinvolution and secondary haemorrhage as well as delayed involution (C. P. Rucker).

Of course, there is a time limit (usually two hours) beyond which no anaesthetic, even nitrous oxide, in clinical use may be relied on to maintain healthy person the blood in surface surgery in an otherwise healthy person the blood pressure levels may hold up well for three and four hours under the gas anaesthetics. Anaemia can be given without fluctuations in control, even the pulse is inclined to maintain its rate. With ethylene and acetylene the blood pressures and pulse rate may fall very slightly after surgical narcosis has been attained, and then remains stabilized for long periods, unless there is operative condition leading to shock. Under ordinary conditions the gas anaesthetics do not show the gradual circulatory depression that usually accompanies ether, chloroform, and ethyl chloride anaesthesia; and in the presence of shock, gas-oxygen anaesthesia has within itself and the technique of its administration remedial measures of incalculable efficiency (E. I. McKesson, John S. Lundy).

Apart from propylene and the higher members of the series, the other routine gas anaesthetics do not seem to have any specific effect on the heart so far as electrocardiographic studies show; and the gas anaesthetics have the least possible effect in exaggerating existing cardiac lesions during their administration. Various heart complications may occur under all anaesthetics (tachycardia, bradycardia, blocks of different kinds, myocardial failure, fibrillation), but such complications are certainly no more numerous under gas anaesthetics used for the worst risk cases than under ether, chloroform, and ethyl chloride, or the fact would be strikingly reflected in the gas anaesthesia death rates. Some have attempted to label the gas anaesthetics as especially dangerous for hysterectomy; and yet of a series of 11 fibroid cases only 2 died under anaesthesia, while 9 died tragic cardiac deaths while up and about or in bed awaiting operation. Myocardial degeneration and profound anaemias hold out an extra hazard of risk under all forms of anaesthesia; they are difficult to evaluate as to their reserve vitality, and their warning signs of danger are all too insignificant even to the expert anaesthetist. They account for many anaesthesia tragedies, and under gas-oxygen anaesthesia the mistake is usually made of expecting them to provide colour and blood pressure reactions which patients with these complications are unable to give.

The actual effects of various anaesthetics on the gastrointestinal tract may offer a clue to the comparative incidence of nausea and vomiting after anaesthesia, apart from any other factors involved. During the surgical stage of anaesthesia with ether or chloroform there is marked loss of tone and almost complete inhibition of both rhythmic and peristaltic contractions in the stomach, small intestine, and colon. During the recovery period the stomach continues to show some degree of depression for an hour or longer. The small intestine develops recover more rapidly after stopping the anaesthetic and show increased activity. The small intestine develops exaggerated peristalsis, while the colon shows a marked increase in tonicity.

The relatively light surgical anaesthesia maintained with ethylene-oxygen causes no marked change in the activity of the gastro-intestinal tract. A slight increase in tonicity and amplitude of contraction has sometimes been observed. During the post-anaesthetic period also there is no marked change in muscular activity. A slight decrease in activity is often observed about an hour after anaesthesia.

Nitrous oxide-oxygen anaesthesia produces a marked increase in the size of contractions of the stomach, ileum, and colon in proportion to the anaemia present. On discontinuing the nitrous oxide-oxygen there promptly occurs a very marked inhibition of activity in these three portions of the gastro-intestinal tract; tone is lowered, peristalsis ceases, and segmental contractions are much diminished. This depression will usually last one hour or longer.

The effects of general anaesthesia on a denervated loop of ileum do not differ essentially from those observed on a loop with intact nerve supply, showing that the effects produced are due chiefly to an action on intrinsic structures (G. H. Miller).

With this résumé of some of the more basic comparative relations, characteristics, and effects of the gas anaesthetics, in the discussion that is to follow we may pass on to a more detailed consideration of their practical administration as well as their scope and utility in various operative procedures of surgery and the specialties.

APPENDIX BY E. I. MCKESSON, M.D.

By request, I shall elaborate Dr. McMechan's paper with regard to the differences in anaesthesia signs between nitrous oxide-oxygen and ethylene-oxygen. There are some outstanding differences between these two agents which should be understood, since a confusion of the signs may lead to embarrassment of the anaesthetist at times. The accompanying table (p. 1112) shows the usual signs indicating light, normal, and deep narcosis with this anaesthetic; a second chart shows the stages and signs of ethylene-oxygen anaesthesia as noted by John S. Lundy.

My experience with ethylene has been gained from the following technique. Induction has always been by nitrous oxide-oxygen, followed by ethylene-oxygen at any stage of the operation in which it has been considered desirable. But in no case is ethylene in my hands used throughout the narcosis. It is usually employed for a few minutes up to half an hour, returning to nitrous oxide-oxygen toward the close of the operation, that as much as possible of the ethylene may be eliminated during the narcosis under nitrous oxide-oxygen.

In major operations and in certain minor cases with complications, the pulse, respiration, blood pressures, tidal respiration, rebreathing, and the percentage of oxygen administered are all determined at frequent intervals and charted in a graphic manner. This is done routinely regardless of the anaesthetic employed. With this information at hand in a considerable number of cases it is rather easy to note the relative effects of the two anaesthetics.

Ethylene resembles ether in many of its effects. It also resembles nitrous oxide in speed and is less irritating to the respiratory tract than ether, but more so than nitrous oxide. Hence it rarely induces a flow of mucus such as ether, but there is more moisture than with nitrous oxide. When ethylene is turned on after an induction with nitrous oxide-oxygen the patient almost never coughs, so that the sequence is easier and smoother than the nitrous oxide-oxygen-ether sequence.

The vomiting reflex with nitrous oxide in about 80 per cent. of cases in which it is a sign is due to deep anaesthesia and is corrected by increasing the percentage of oxygen in the mixture. Ethylene resembles ether in this, and blanching, swallowing, retching, and vomiting are usually due to light anaesthesia, which is corrected by increasing the ethylene percentage. Occasionally this complication prevents the substitution with nitrous oxide-oxygen at the close of the operation, which is an undesirable characteristic of ethylene. Vomiting is not always due to light anaesthesia with ethylene, since a case

## NITROUS OXIDE-OXYGEN SIGN CHART.—E. I. McKesson.

LIGHT ANAESTHESIA. Due to too much oxygen in the mixture.	NORMAL ANAESTHESIA. Due to a properly balanced mixture of $N_2O + O_2$ .	PROFOUND ANAESTHESIA Due to too much $N_2O + O_2$ in the mixture or to partial obstruction of respiratory passages.
<b>RESPIRATION.</b> (a) Superficial slow breathing usually regular. (b) Prolonged inspiration. (c) Phonation due to reflexes or pain. (d) Holding breath, grunting.	<b>RESPIRATION.</b> (a) Full "machine-like" respirations. Regular and faster than normal. (b) Inspiration and expiration nearly equal. (c) No phonation. (d) Continuous uninterrupted respiration.	<b>RESPIRATION.</b> (a) Irregular rhythm (sobby) usually slower than normal. Spasmodic. (b) Prolonged expiration. (c) Phonation due to muscular spasm of vocal cords. Often crowing. (d) Cessation of respiration from spasm of muscles of exhalation.
<b>MUSCULAR PHENOMENA.</b> (a) Movement of rigid muscles. (b) Facial expression of pain or consciousness. (c) Nausea, very rarely. (d) Reflex, or voluntary resistance.	<b>MUSCULAR PHENOMENA.</b> (a) Immobile and relaxed, but having normal muscular tones. (b) Expression of normal sleep. (c) Quiet. (d) Quiet. Relaxed.	<b>MUSCULAR PHENOMENA.</b> (a) Clonic movements, twitching or jerking in early minutes of induction, often start in upper eyelids. (b) Expression wild looking. (c) Swallowing, retching or vomiting, common. (d) Tetanic spasm, marked rigidity—opisthotonos in some cases.
<b>THE EYE.</b> (a) Pupils large, contract to light actively. (b) Conjunctive sensitive. (c) Eyeballs roll. (d) Eyelids resist opening, winks when touched.	<b>THE EYE.</b> (a) Pupils small or medium fixed. (b) Conjunctive insensitve to touch. (c) Eyeballs fixed or slowly roll. (d) Lids often slightly open, relaxed, no winking.	<b>THE EYE.</b> (a) Pupils fixed, enlarge progressively and finally become irregular in shape. (b) Conjunctive insensitive. (c) Eyeballs fixed in some position or jerk. (d) Eyelids stiff. Often wide open.
<b>COLOUR IN SKIN.</b> (a) Pink or no change normally. (b) In anaemics, no colour change. (c) In plethorics, slight cyanosis.	<b>COLOUR IN SKIN.</b> (a) Varies from pink to decided cyanotic tint. (b) In anaemics, no colour change. (c) In plethorics, considerable cyanosis.	<b>COLOUR IN SKIN.</b> (a) Usually cyanotic. (b) In anaemics, slight flushing, rarely cyanosis. (c) In plethorics, almost black.
<b>Remedy.</b> Decrease the percentage of oxygen in the mixture.		<b>Remedy.</b> Increase oxygen in the mixture or in (d) inflate lungs with pure oxygen 1 to 3 times.

## SIGNS OF ANAESTHESIA WITH ETHYLENE AND OXYGEN.—JOHN S. LUNDY.

A. WITHOUT MORPHINE.	B. WITH MORPHINE.
<b>First stage (40 to 60 seconds) 30 per cent. <math>C_2H_4 + 10</math> per cent. <math>O_2</math>.</b> 1. Pupil normal, occasionally a sudden fleeting dilatation. Reacts quickly to light. 2. Skin pink. 3. Relaxation absent. 4. Eyeball moving freely. 5. Temperature of skin unchanged. 6. Humidity of skin unchanged. 7. Pulse rate often increased. 8. Blood pressure often about 20 mm. high or low. 9. Respiration voluntarily normal. 10. Blood pink.	<b>First stage (25 to 50 seconds) 85 per cent. <math>C_2H_4 + 15</math> per cent. <math>O_2</math>.</b> 1. Pupil contracted. Reacts quickly to light. 2. Skin pink. 3. Relaxation slight or absent. 4. Eyeball moving freely. 5. Temperature of skin unchanged. 6. Humidity of skin unchanged. 7. Pulse rate normal. 8. Blood pressure normal. 9. Respiration voluntarily normal. 10. Blood pink.
<b>Second stage (light surgical anaesthesia, occasionally a period of excitement) 2 to 5 minutes, 85 per cent. <math>C_2H_4 + 15</math> per cent. <math>O_2</math>.</b> 1. Pupil normal or slightly dilated. Reacts quickly to light. 2. Skin pink. 3. Relaxation moderate. 4. Eyeball moving. 5. Temperature of skin normal. 6. Skin dry. 7. Pulse rate usually normal. 8. Blood pressure usually normal. 9. Respiration deeper and faster. 10. Blood red.	<b>Second stage (light surgical anaesthesia, usually no excitement) 2 to 3 minutes, 80 per cent. <math>C_2H_4 + 20</math> per cent. <math>O_2</math>.</b> 1. Pupil contracted. Reacts to light. 2. Skin pink. 3. Relaxation moderate. 4. Eyeball moving slowly. 5. Skin normal. 6. Skin dry. 7. Pulse rate slightly increased. 8. Blood pressure normal or slightly lowered. 9. Respiration faster. 10. Blood red.
<b>Third stage (deep surgical anaesthesia) 5 to 15 minutes, 80 per cent. <math>C_2H_4 + 20</math> per cent. <math>O_2</math>.</b> 1. Pupil slightly dilated. Reacts to light. 2. Skin pink. 3. Relaxation good. 4. Eyeball fixed, often turned and fixed. 5. Skin warm. 6. Skin dry. 7. Pulse rate normal or slowed. 8. Blood pressure normal or lowered. 9. Respiration normal as in sleep. 10. Blood pink.	<b>Third stage (deep surgical anaesthesia) 3 to 10 minutes, 75 per cent. <math>C_2H_4 + 25</math> per cent. <math>O_2</math>.</b> 1. Pupil normal. Reacts slowly to light. 2. Skin pink. 3. Relaxation very good. 4. Eyeball fixed, may be turned and fixed. 5. Skin warm. 6. Skin dry. 7. Pulse rate normal or slowed. 8. Blood pressure normal or lowered. 9. Respiration normal as in sleep. 10. Blood pink.
<b>Fourth stage. Pre-mortem (at any time) 97 per cent. <math>C_2H_4 + 3</math> per cent. <math>O_2</math>.</b> 1. Pupil dilated. Does not react to light. 2. Skin blue, black, and finally grey. 3. Relaxation complete. 4. Eyeball fixed. 5. Skin cold. 6. Skin moist. 7. Pulse rate fast, irregular and faint. 8. Blood pressure very low. 9. Respiration shallow, irregular and inhibited. 10. Blood black.	

is now and then encountered in which this sign is corrected by increasing the oxygen percentage.

Ethylene usually resembles ether in its effects upon respiration; it slows the respiration progressively and reduces the tidal respiration as the narcosis is deepened, until it becomes inefficient and stops. Nitrous oxide usually increases the rate and amplitude of respiration as narcosis is deepened until a clean-cut sharp crisis occurs in deep narcosis which is followed by slow, more or less inefficient respiration and apnoea.

The sudden change or crisis is less frequently seen in ethylene, and for this reason is not as safe as nitrous oxide in the hands of the inexperienced. On the other hand, ethylene, in a small percentage of cases, causes rapid instead of slow respiration, and in these cases it does not appear to be as suitable for the patient as nitrous oxide. In changing from nitrous oxide-oxygen to ethylene-oxygen we should expect the respirations to become slower, more regular, and smaller, and it is for this purpose that it is used in some of my cases. If it fails to accomplish this result it is usually turned off.

When producing a slow "secondary saturation" with ethylene-oxygen, if respiration ceases more time is required to resuscitate with oxygen forced into the lungs, which is a disadvantage as compared with nitrous oxide. Perhaps this is due to the more complete fixation of this gas by the lipoids, or it may be caused by the slower circulation in removing the excess of gas from the tissues; finally, some impurity such as carbon monoxide in the gas may be responsible. This peculiarity, however, is not of such magnitude as to prevent its use in producing deep narcosis, providing an apparatus is employed that is dependable for artificial respiration with oxygen by the inflation method.

Ethylene-oxygen in about half of the cases produces a slower pulse by about ten beats a minute than nitrous oxide-oxygen. Sometimes the slowing amounts to a bradycardia. Those cases with a slow pulse seem to do best under its influence. In other cases the pulse rate increases over that of nitrous oxide-oxygen, and these often show a marked fall in blood pressures, resembling shock. In the bradycardia cases the blood pressures may fall somewhat, but not out of proportion unless the blood is being overdosed, which may be quickly determined by a few breaths of oxygen of higher percentage.

The blood pressures under nitrous oxide-oxygen are variable with the depth of anaesthesia, trauma, blood loss, etc., but under normal conditions tend to remain within normal limits. The usual result of ethylene-oxygen is a fall in blood pressure similar to ether after the stage of induction. Time will not permit a full discussion of pulse-blood pressure ratios.

The eye signs, particularly the pupil, are more sluggish and unreliable under ethylene than with nitrous oxide-oxygen. However, deep narcosis usually causes a dilatation of the iris. But when it occurs it is not as promptly remedied by the administration of oxygen as it is after nitrous oxide-oxygen. There is less oscillation of the globes with ethylene.

Ethylene is often used to secure a greater degree of muscular relaxation. While this is usually easier to secure with it than with nitrous oxide-oxygen, cases are not infrequently seen in which nitrous oxide-oxygen is better. When high concentrations of ethylene are necessary to secure relaxation, anaemia frequently prevents it, and in these cases recourse may be had to nitrous oxide or other procedures, such as premedication or ether. My use of ether for this purpose is indeed rare. In 1925 ether was not used in a single case. This year it has been used in five or six cases for various reasons.

Ethylene, like nitrous oxide, co-ordinates well with morphine-hyosine premedication. Occasionally atropine is administered during the narcosis for bradycardia, but never as a routine. We use from 1/6 to 1/3 grain of morphine, usually 1/4 grain in adults, and never more than 1/100 grain of hyosine.

Cyanosis of some degree is not infrequent in the use of nitrous oxide-oxygen. This is most marked in the early minutes of narcosis while saturation is in process. Later in the narcosis, cyanosis is usually absent or of slight

degree. Cyanosis is not a sign of anaesthesia, hence it cannot be relied upon. In ethylene-oxygen anaesthesia cyanosis is not as frequently seen, nor is it the pure cyanosis of anaemia seen in nitrous oxide anaesthesia, but an *ashy hue* associated with a more precarious state of the patient when it occurs.

Blanching or paleness with ethylene is usually due to nausea. Whether the colour of the blood and skin in ethylene anaesthesia is lighter, due to some action upon the haemoglobin or to a greater decrease in general metabolism or to some impurity or contamination of the gas such as carbon monoxide, is not yet established. But it may be due to all three or any one of the three in a given case. For myself, I prefer to use ethylene, not as a routine, but on indication for some desired pharmacological action, the same as one would employ morphine, hyosine, atropine, digitalis, ether, etc., relying upon nitrous oxide-oxygen as the basic anaesthetic.

It appears from the signs that ethylene is more depressing and powerful generally than nitrous oxide.

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#### SOME PHYSICAL FACTORS IN THE ADMINISTRATION OF GASEOUS ANAESTHETICS.

A discussion of this subject may be warranted by the fact that modern anaesthesia is a mechanical application of many of the laws of physiology, physics, and chemistry. An appreciation of the purposes and mechanism of anaesthesia as well as an understanding of the problems of administration comprises about half of the science of anaesthetics, while much of the art may be credited to the apparatus with which to meet the problems in technique and to accomplish these purposes.

In every nitrous oxide-oxygen or ethylene-oxygen anaesthetic the anaesthetist must apply certain, if not all, of those basic principles of administration through which the science and art have evolved up to the present time. A discussion of these factors, therefore, may be helpful in a field not too well understood.

#### Mechanism of Anaesthesia.

The anaesthetist alters the gaseous content of the tissues to effect a reduction of oxidation or metabolism in certain of the more highly specialized nervous tissue without similarly affecting the metabolism of other tissues. This is probably the result, mainly, of a singular combination of (1) solubilities of gases in the body fluids, (2) the difference in oxygen requirements of the several tissues, (3) together with an absence of chemical change of the anaesthetic gas while in the body. The solubilities and oxygen requirements are of paramount importance to the anaesthetist.

#### Solubility of Gases in Body Fluids.

When one considers the transport of gases from the lungs to the tissue cells, or particularly the nuclei, he thinks first of the blood and the carrying power of haemoglobin for oxygen. However, the haemoglobin goes only part way, since it does not actually come into contact with cells outside the blood vessels. And although whole blood carries from 18.5 to 20 volumes per cent. of oxygen, the brain cell, for example, must obtain its oxygen through the plasma, lymph, and finally the cell juices within its own membrane, quite separate from the haemoglobin. Since the plasma carries but 0.24 per cent. O<sub>2</sub> normally, the brain cell must live in a solution containing not more, but undoubtedly less, than this percentage. The haemoglobin, therefore, acts as a store of highly concentrated oxygen, which is liberated or dissociated from the haemoglobin as the tension of oxygen is reduced in the fluids bathing the cell and the red corpuscle. This is an important point for the anaesthetist to keep in mind if he is to visualize what the anaesthetist takes place in narcosis. The plasma also carries probably 1.7 per cent. of nitrogen derived from the air inhaled. It is not metabolized as is oxygen.



The amount of a gas which a liquid will absorb depends upon the character of the gas as well as the liquid and its temperature. Although we breathe about 80 per cent. nitrogen in the air, only 1.7 per cent. is dissolved in the plasma; likewise, we inhale almost 20 per cent.  $O_2$ , yet the blood plasma dissolves only 0.24 per cent. The brain cell obtains its oxygen from a liquid where the ratio of  $N_2$  and  $O_2$  is roughly as 7:1. Carbon dioxide also plays an important role, but it will be disregarded for the present.

"From the standpoint of physical chemistry the partial pressure of a gas in solution is simply the vapour pressure of the dissolved gas."<sup>1</sup> When nitrous oxide is inhaled it diffuses as if the whole body were a liquid in which it was soluble up to a certain tension. Hence it is not so remarkable that more than one litre a minute of this gas is absorbed upon induction. Paul Bert fixed the solubility of nitrous oxide in blood as 45 volumes per cent. This was *in vitro*. Greene<sup>2</sup> has shown that, *in vivo*, anaesthesia is secured in the dog when 26 volumes per cent. are dissolved; that is to say, nitrous oxide is fifteen times more soluble than nitrogen and one hundred times greater than oxygen in the blood plasma, since there is no proof that this gas is carried by the haemoglobin in chemical combination. The ratio of seven molecules of  $N_2$  to one molecule of  $O_2$  is compatible with normal physiology, but when one hundred molecules of  $N_2O$  to one of  $O_2$  are present anaesthesia results.

#### *Oxygen Requirements for Different Tissues.*

Anaesthesia, then, may be due to the dilution or dispersion of the  $O_2$  molecules so that certain cells are unable to find enough oxygen with which to maintain metabolism or chemical activity up to the usual rate; that is, oxygen want or anoxaemia may interrupt such functions as depend upon a maximum oxygen supply. In support of this view the researches of Taschiro<sup>3</sup> show that nervous tissue metabolizes more rapidly, therefore requires a more liberal supply of oxygen molecules, than other tissues. G. H. Parker's<sup>4</sup> investigation of metabolism of dogfish nerve also substantiates certain of Taschiro's findings in this particular.

Upon these grounds it may be assumed that at certain tensions of  $N_2O$  and  $O_2$  in the body juices the activity of certain nerve cells is curtailed, while other cells, such as those of muscle and the more ancient and stable nerve tissue, may find sufficient oxygen for their usual functions unabridged.

Now since the amount of gases which a given volume of liquid will carry in simple solution depends with other things upon the proportions or tensions of these gases in contact with the liquid, the mixture of gases inhaled is the most important determining factor of the tensions of these gases held in solution. Hence the tensions or proportions of the inhaled gases determine the depth of anaesthesia.

Since nitrogen is less soluble than nitrous oxide, it interferes with the production of anaesthesia and must therefore be excluded as far as possible from the gases inhaled. The first requisite to nitrous oxide-oxygen anaesthesia is the exclusion of air. The second is the production and maintenance of the proper proportions of nitrous oxide and oxygen. The variation in mixture compatible with deep anaesthesia is very small indeed. Often as little as 1 per cent. perceptibly alters the depth of narcosis.

Within narrow limits, the chemical adjustments of the patient are extremely flexible, producing certain signs by which the anaesthetist may be guided in the adjustment of the various mechanical elements of control. So important are these mechanical factors in this form of anaesthesia that the best qualified anaesthetist is unable to overcome some of the handicaps of a faulty apparatus and at the same time secure the best results. On the other hand, the tyro with his limited knowledge is unable to utilize fully the factors of control which may be embodied in a well designed instrument.

It is the purpose now to discuss the physical problems of administration which confront every anaesthetist, and to review briefly some of the mechanical methods which have been devised to assist him.

#### *Functions of the Apparatus.*

There are four outstanding functions for an anaesthetizing apparatus. The first of these comprises suitable inhalers, connexions, valves, etc., for the exclusion of air. The second embodies positive control of the mixture of gases to be administered. The third is represented in the control of the pressure of mixed gases in the inhaler. The fourth is the regulation of rebreathing. A fifth might be added as an accessory of great clinical importance—namely, a mechanism for artificial respiration by inflating the lungs with oxygen.

#### *Mixture Regulation.*

The depth of anaesthesia is controlled by the proportion of oxygen and nitrous oxide contained in the mixture, and since this ratio for the ordinary patient is very definite, the means for regulating the mixture was an important problem in the development of this anaesthetic.

Early in the experimental stages some fixed and known mixture was sought by Hewett and others which might produce narcosis. But it was soon learned that no single mixture could be depended upon for all subjects, nor, in fact, for the same patient at different periods in the operation. The necessity of altering the mixture from time to time made some adjustable mixing apparatus essential. The problem therefore became more complicated, and has consumed years of experimentation in reaching its present state of development.

Hewett and others early resorted to rubber bags as containers and a valve between them to proportion the two gases, but, owing to the inability of the anaesthetist to keep the two bags equally filled—that is, to maintain equal pressures in the bags by manual control of valves—the mixture varied so widely that a smooth narcosis by this method was often impossible for long periods.

Mixing two gases in proportions sufficiently accurate to maintain narcosis has been a very difficult procedure to carry out over a long period. There are several reasons. First, gases are composed of rapidly moving molecules with a vacuum between them, resulting in a most mobile body. Secondly, owing to this great mobility, and also to the exceedingly rapid absorption of these molecules by the blood, the effect of any change in the proportions of these two kinds of molecules is quickly reflected in the depth of narcosis.

According to Avogadro's law, that equal volumes of gases with the same pressure and temperature contain an equal number of molecules, and since 1 c.cm. of a gas at 0° C. and 760 mm. Hg contains about 27 trillion molecules, relatively slight changes in temperature or pressure of one of the gases produce tremendous changes in the number of molecules in a given volume of the gas. Again, at any stated temperature a given mass of gas varies in volume inversely as the pressure (Boyle's law). Hence great changes in the depth of narcosis follow any rather slight alteration in these physical conditions of either gas as it passes through the mixing device.

When the gases are drawn from their high-pressure containers both the temperature and the pressure vary. In some machines used in administration the pressure has been the greater source of error, in others the temperature variations. So difficult of control and elusive were these gases under slight differences of pressure that many anaesthetists came to the erroneous conclusion that the gases themselves were inefficient for protracted anaesthesia, and therefore ether in sufficient amounts was vaporized into the mixture to complete narcosis. It is now known, however, that the ether thus administered largely functioned either by compensating for the errors of fluctuations in the mixture or by becoming the dominant agent. But it has been demonstrated in practice for several years past that nitrous oxide-oxygen may be successfully administered for any operation without ether, if the mixture and certain other factors are properly controlled. Gradually these facts became known, and more serious efforts were made to devise some apparatus which might produce and maintain the desired mixtures.

*The Continuous Flow Appliances.*

Twenty years ago it was thought by some anaesthetists that the best way to produce and maintain the mixture for clinical work was to flow the two gases together continuously and uniformly, varying the proportions usually by adjusting the flow rate of the oxygen. This, however, failed at once, since the nitrous oxide tank valve could not be made to deliver this gas uniformly because of freezing, and also because of a progressive fall of pressure in the tank as it was used. Likewise the oxygen varied, although in practice it did not freeze. To overcome this difficulty, a few years later a pressure-reducing valve or regulator was interposed between the tank and mixing apparatus proper, so that the falling pressure in the tank might not so greatly influence the delivery rate. This marked some advance in the evolution of the anaesthetic, but was not completely successful because, however carefully the regulator had been constructed, it was still subject to relatively large variations of pressure and delivery rate when applied to gases for this purpose. Moreover, the very small apertures through which the gases were delivered often became more or less obstructed by small particles of water, ice, or foreign matter, or by changes in temperature, and the mixtures varied accordingly between limits quite incompatible with smooth narcosis.

It seemed that the system followed until that time (sixteen years ago) could not be made sufficiently dependable to warrant the use of nitrous oxide-oxygen for all operations unless some more practical instrument for mixing were devised.

*The Intermittent Flow Method.*

After considerable clinical experience with various forms of mixing apparatus then available, I experimented along another line. The mechanical problem presented many difficulties, but it appeared that if the nitrous oxide and the oxygen bags could be kept equally filled or under equal but very low pressure by some automatic bag-filling mechanism, progress might be made. After several trials, such valves were perfected which automatically replenished the oxygen and the nitrous oxide bags at each breath—stopping the flow from the tanks into the bags while the patient exhaled and paused between breaths. The bags were thus kept equally filled with their respective gases, regardless of the rate or volume of respirations.

Rubber bags are not of uniform thickness or weight, however carefully made; hence the two bags were placed together in a sack of fish net so that any, even very slight, differences of pressure of the two gases within the bags would be equalized by their walls pressing against each other. The pressure in the two bags was then always equal, regardless of what that pressure might have been.

Instead of a continuous flow apparatus this became an intermittent flow device. Certain advantages, however, resulted, among which were a foundation for proper mixture control and relief from attempts at manually adjusting the rate of flow, since the respirations regulated this function much better than the anaesthetist had done before. The possible range of automatic gas delivery was enormous—from nothing to more than 33 gallons a minute, so that no patient could exhaust the supply, however rapidly he breathed. The intermittent flow principle also adapted itself to the technique for intermittent administration in producing analgesia for obstetrics.

Hewett's two bags having a common rubber partition was probably not an attempt to equalize pressures, as there is no such purpose found in the literature, and they certainly could not have so functioned. Levy's<sup>2</sup> recent plan of putting a small oxygen bag within the nitrous oxide bag could have been effective in a limited way had it been possible to see when it was empty or how much oxygen to add to refill it properly.

With the two gases in separate bags but kept at equal pressures the first factor in producing the desired mixture was then satisfied and the construction of a suitable mixing valve mechanism was undertaken. It was necessary in constructing the mixing mechanism to prevent any backward flow of mixed gases into either of the two supply bags during exhalations as well as any flow of gas from one bag into the other. This was accomplished by two check

valves placed over the outlets from these bags. It was also necessary that these check valves should open simultaneously; this was at first accomplished by fastening the check valves or discs together by means of arms on a shaft. Later, a single check or disc accomplished the same purpose when the two outlets were brought closer together. Between the bags and the check valves two plug valves were disposed—one for nitrous oxide, the other for oxygen—with rectangular openings piercing each and graduations on their heads indicating the degree of opening. Later these two valves were combined in one, since it was more convenient and accurate to adjust one valve than two.

The areas of the mixing ports were each made equal to the cross-section of the adult trachea, so that the velocity of gas through either or both of these ports was the same as that in the trachea. This latter type of mixing valve was provided with a partition, while the single check valve referred to closed the communication between the bags. When the latter was lifted during inhalations it uncovered the exits from the two bags through which the two gases passed in those proportions for which the mixing ports had been set. On top of this mixing valve was a graduated dial, indicating the degree of opening of each port. By turning this valve to one point nitrous oxide only was obtained, at another point pure oxygen was delivered, while at the several graduations between these two points any desired mixture was available. This was a convenient arrangement in practice, since this single adjustment regulated the mixture with the least possible effort and in the shortest time. Another section of the dial was graduated for mixtures of air and nitrous oxide, sometimes used in producing analgesia.

The mixed gas was conducted to the inhalers through a wide-bore flexible and non-collapsible rubber tube, making for easy inhalation. Between the mixing valve and the lungs was a volume of mixed gas equal to about two breaths, so that after the mixing valve had been set for any new proportion the effects of this new mixture were observed by the corresponding change in depth of anaesthesia about seven seconds later. This feature meant easier and more immediate control of the narcosis than was afforded when a large mass of mixed gas had to be converted into some new mixture.

Owing to the large size of the mixing ports, the differences in density between nitrous oxide and oxygen or between ethylene and oxygen did not introduce appreciable errors from their actions in accordance with Graham's law, nor did they permit small particles of foreign matter appreciably to obstruct or restrict the flow of gases from the two bags so as to affect the mixture. With the large bags as the immediate source of the supply of gases for mixing, the temperatures were practically equal, minimizing the effects of disturbances from their action in accordance with Boyle's law.

With that combination of elements a mixing mechanism resulted which was extremely sensitive and convenient for clinical work, not only in producing but also in maintaining the desired proportions for an indefinite period. The slightest change in position of the mixing valve alone resulted in a prompt and corresponding change in the depth of anaesthesia. It was responsive to less than 1 per cent., and hence met the preciseness of body demands by an equal accuracy of mixture control.

In addition to the advantages resulting from the intermittent flow principle enumerated, still another unexpected one followed. Whereas freezing of the nitrous oxide either at the tank valve or the regulator nozzle had been a common difficulty in continuous flow appliances, the opening and closing of the valves in synchronism with respiration under the intermittent flow principle caused the ice to be fractured and crushed with each breath, ensuring an adequate delivery of this gas into the bag under ordinary conditions. It also reduced the waste of gases, and thus further lessened the refrigeration in the regulator. Hence artificial heat by means of lamps, electric warmers, etc., was not required, except occasionally in slow tonsil operations, when a rubber bottle filled with hot water placed on the regulator sufficed.

With this apparatus the head of pressure back of the automatic bag-filling valves might fluctuate widely without

altering the mixture so long as there was enough pressure to cause the bags to refill before the next breath was taken, since the mixture is made from the bags and not from the regulators direct. In all continuous flow devices the mixture is always altered by any fluctuation of pressure back of the mixing device. In such devices efforts have been made to eliminate any (although slight) tendencies to freezing by the use of heaters, and more recently by drying the gas before compressing it into tanks. Efforts have also been made to construct regulators which might maintain an exact low pressure, but such have not yet been produced.

More recently, particularly in America, further experiments with continuous flow regulation of mixture have been attempted. Without eliminating the errors enumerated before, other sources of inaccuracy have been introduced in passing gases through very small orifices under variable heads of pressure and with other variable back pressures against the outlets of these orifices. One group employed water columns as indicating the head of pressure used to force gas through very small apertures. In one machine of this group,<sup>6</sup> the glass tubes were graduated in percentages. In another<sup>7</sup> they were graduated in the volume flow for each gas in litres per minute. These water type gas meters as produced excluded the successful employment of nitrous oxide-oxygen for certain operations owing to their limited range of delivery rates, and their use led many to the conclusion that nitrous oxide-oxygen might not be employed in certain operations.

#### *Effusion of Gases through Small Orifices.*

In passing gases through very small orifices (unobstructed by water, ice, or particles of foreign matter) such as were used in continuous flow mixing devices, at a given temperature and pressure the rate of effusion varies inversely as the square root of their densities (Graham's law). Compared with air, the density of oxygen is 1.105 and the square root is 1.049; the density of nitrous oxide is 1.522, the square root is 1.233. Then since they vary inversely, the oxygen would flow at the rate of 1.233 through an aperture which would deliver but 1.049 of nitrous oxide—a difference of 15 per cent.

In drilling very small holes through metal it is impracticable in manufacturing to reproduce such orifices; hence, if accurate, each meter had to be calibrated individually, which was not done. Furthermore, the thickness of the metal usually varies, which adds a variable error of wall friction to the passage of gases along the sides of the tiny tube. Gas analysis as well as clinical observation showed neither method to be within that range of accuracy necessary for the best work in nitrous oxide-oxygen anaesthesia, nor to afford other desirable features in an apparatus for clinical use. Similarly ethylene has a density of 0.969, and, although the difference would be less, the error was in favour of ethylene instead of oxygen.

In another group<sup>8</sup> spring gauges of the Bourdon type were employed. The oxygen gauge, instead of indicating pressure, was calibrated in percentages. The aperture for the oxygen was exceedingly small (71 drill, or about the size of the hole in a hypodermic needle), hence it was frequently more or less obstructed by foreign matter, so that the gauge indications of percentage were often erroneous. Such gauges are not to be depended on for extreme accuracy for any length of time. The nitrous oxide orifice was larger, but the pressure as indicated by its gauge was to have remained constant. In practice this was rarely possible owing to the variations in tank pressure, freezing, and alterations in the rate of delivery for which the apparatus was adjusted from time to time. In the design of this apparatus it was also assumed that by moving a plate of metal toward and away from these two orifices the rate of delivery of the two gases might be decreased or increased without altering the proportions as previously obtained. In practice and by gas analysis this was found not to be true, but, on the contrary, as the rate of the mixture delivered was increased the proportion of oxygen progressively decreased.

#### *Pressure in the Inhaler.*

Until the gases were delivered into the inhaler considerably above atmospheric pressure anaesthesia could not be

maintained for prolonged periods with nitrous oxide-oxygen for certain operations, such as the extraction of teeth, plastic mouth surgery, tonsillectomy, nasal operations, tracheotomy, operations upon the larynx, etc., because the patient inhaled too much air through the open air passage during the operation. Many, in fact, most, anaesthetists at some period of the operation are also improved by added pressure in the inhaler. Again, operations upon the neck often interfere with breathing unless inspiration is assisted by pressure; this is particularly true in some goitre cases. Then again, in thoracic surgery, pressure often is the factor which determines the success of the operation and the outcome of the patient, since collapse of the lungs may cause immediate death. Pressure also increases the absorption of the gases by the blood according to the laws of the solution of gases.

In order to manage such cases it is not only necessary to have pressure which is variable at the will of the anaesthetist, but at the same time the desired proportions of the gases must be maintained. It was the want of this dual control which, until recent years, precluded the use of nitrous oxide in this large group of cases and often embarrassed the anaesthetist in other cases.

In America Teter<sup>9</sup> successfully managed some of these types of operations by restricting the exit of gases from the inhaler while permitting the gases to flow continuously from the tanks into the apparatus. His production of pressure was not at the source but rather at the outlet of the apparatus. His was, therefore, *indirect*, and with any obstruction to the exit of gas through the mouth, such as occurs when the tongue is pushed back by the surgeon, the pressure progressively increased beyond the desired amount. Bags were occasionally ruptured when the supply was not promptly shut off. On the other hand, if the patient began to breathe more rapidly, exhaling through the mouth as in extractions or tonsillectomy, the pressure fell until the patient was able to draw air through the mouth, with the resultant light anaesthesia and occasionally the interruption of the operation. To offset this latter condition it was necessary to increase the rate of flow of the two gases in an effort to maintain the desired pressure. These were constant causes of adjustment and annoyance and a source of uneven narcosis, since the surgeon's necessary manipulations affected the patency of the air passages at frequent intervals. To provide a "blow off" valve to prevent excessive pressure was not permissible because of waste. What applied to Teter's method also applied to all other continuous flow appliances which followed it.

Pressure and flow rate are, therefore, not synonymous, but fundamentally different. Pressure control is the essential factor in these cases. It was recognized that what was needed was some *direct means for simultaneously varying the pressure of both gases* before they were mixed, and thus regulating the pressure itself by automatically varying the rate of flow from the tanks to maintain, but not to exceed, the desired pressure, whether that rate of flow be great or small.

#### *Pressure by the Direct Method.*

I tried several methods with his mixing device, such as tightening the net enclosing the bags and adjusting the bag-filling valves so that they distended the bags more tightly, but the desired result was obtained more simply when a spring and adjusting screw was attached to the automatic bag-filling valves. With this spring set at any desired tension (from 0 to 20 mm. Hg) it kept these valves open until the pressure in the two bags was great enough to overcome the spring tension and either to close the valves or decrease the flow of gases, according as the respiratory requirements of the patient might demand. Although the pressures delivered into the inhaler were subject to change by tightening or loosening the spring, the depth of narcosis was not materially disturbed because the pressures in the bags, whether great or small, were always equal.

This direct method for securing the pressure in the inhaler has worked well. The pressure has enabled the amount of gas admitted into the bags to maintain itself. This function is greatly appreciated when it is desired to

assist respiration by a little pressure without increasing the consumption of gas or causing unnecessary waste. The method has added much to the success and safety of gaseous anaesthetics. It has improved a large field of surgery involving the respiratory tract which was not only difficult for the surgeon and anaesthetist, but also more dangerous for the patient.

#### Rebreathing.

Rebreathing was employed in the earliest administrations of nitrous oxide. Then came a period of years when it was not considered safe; this was followed by a revival in the present period, in which it has been employed upon physiological grounds.

When Gatch revived rebreathing in 1910 it was practised as before, by manually filling a large bag with nitrous oxide and oxygen in which the patient breathed to and fro for some minutes; then the contents were exhaled from the apparatus and the bag was refilled with a new charge of gases from the tanks, and the procedure repeated. This method was immediately followed by two other methods—first the continuous flow method in which the nitrous oxide and oxygen flowed continuously into a bag, larger in volume than the tidal respiration, into and out of which the patient respired, expelling gas from the exhaling valve at irregular intervals depending upon the character of breathing.

#### Fractional Rebreathing.

Following the continuous method which was employed by me for a short time in a modified form, I devised the fractional method in 1910<sup>18</sup> upon the premises that, if rebreathing was to be employed, it should be done accurately to learn what, if any, advantages might accrue from its use other than the conservation of gases. Accordingly a small cylindrical bag, adjustable in capacity and calibrated in cubic centimetres, was constructed. With it the patient's tidal respiration was actually measured to determine if rebreathing were advisable, and then the bag was readjusted to hold any measured volume of exhalation for re-inhalation at each succeeding inspiration.

A variable measured portion of each inhalation thus consisted of previously exhaled gas, and the balance of inspiration was composed of fresh or previously unused gases from the mixing mechanism. It co-ordinated well with the intermittent flow principle.

With this fractional rebreathing it was soon evident that conservation of gas by rebreathing was of secondary importance and that its real value consisted in controlling more accurately the depth of breathing by the restricted elimination of CO<sub>2</sub>. It has afforded the anaesthetist an interesting study of the physiology of respiration under anaesthesia and added a certain finesse of control in correcting respiratory irregularities which has materially aided in the maintenance of deep anaesthesia.

Inhalers and other accessory equipment, although important in adapting gaseous anaesthetics to various operations, will not be discussed, but it is important that a few words should be added regarding oxygen insufflation.

#### Artificial Respiration with Oxygen.

The rapid action of nitrous oxide or ethylene—for they are administered in essentially the same manner and act much alike as to speed—requires careful watching lest the patient be crowded into apnoea. It was for this reason that I first incorporated a means for inflating the lungs with oxygen to re-establish respiration should it fail or threaten to stop. The mechanism incorporated in the apparatus described consists of a special valve which short-circuits the oxygen bag and delivers the oxygen through the inhaler and directly into the lungs. This arrangement was employed because bags would not withstand the necessary pressure to inflate the lungs under certain conditions. And to put oxygen into the lungs promptly and positively was essential.

It was demonstrated that the human lungs were in no danger of overdistension with oxygen, since the inhaler could not be so held even by force until a pressure of 80 mm. Hg might be developed. The dog's lungs will withstand more than 120 mm. Hg without rupture even with the chest open. Moreover, when properly performed,

the oxygen but partly fills the lungs at each inflation, developing little or no pressure therein, and when done at once one or two inflations usually restore the patient to a state of respiration. Hence this method was both effective and perfectly safe, and has proved to be so during many years of clinical use in which many lives have been saved.

When foreign bodies have been inhaled, such as vomited meat, tonsil or blood, gauze or cotton packs, and obstruct or interrupt respiration, a serious situation at once results. With ample oxygen pressure to pass the obstruction and to inflate the lungs, however, one is able to restore the cough reflex in a few moments, which assists in the expulsion of the material from the air passages.<sup>11</sup> Thus the lives of such patients, which were frequently lost by older methods of resuscitation, are now commonly saved by this procedure. Its availability at the moment and under proper control makes oxygen the ideal agent for the purpose—in fact, superior to any other.

#### CONCLUSIONS.

In conclusion it may be said that the physical factors in the administration of gaseous anaesthetics have been discovered and appliances have been devised for their successful application. The most important of these factors are:

1. Suitable inhalers for excluding air.
  2. Regulation of the mixture of gases with means for maintaining any desired mixture.
  3. The direct control and maintenance of pressure above that of the atmosphere, when required, without exceeding the safe pressure desired and also without unnecessary waste of gases.
  4. Means for measuring the tidal respiration, and estimating the patient's ventilation to determine the need for rebreathing. Also means for rebreathing any desired measured volume of each exhalation.
  5. Means for performing artificial respiration with oxygen by inflation as an integral part of the apparatus.
- The intermittent flow principle co-ordinates well the above essentials for an anaesthetizing apparatus.

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#### GENERAL DISCUSSION.

Dr. S. R. Wilson (Manchester) said he had not much sympathy with the electro-chemical theory of anaesthesia, but thought the metabolic theory deserving of careful consideration by all those interested in the newer anaesthetics. Hibernating animals showed the Cheyne-Stokes and Biot types of respiration, and there would appear to be a distinct relation between hibernating animals, the trance conditions of Indian fakirs, hypnosis, and anaesthetic conditions. As regards the newer gases, he wished to be sure of their superiority in many ways to nitrous oxide. It was difficult to be sure of the purity of the new gases, and it was necessary to be certain that they were in fact pure. The colour of the blood could not be relied upon to prove the anoxaemic condition of the blood, since ethylene gave similar results to carbon monoxide. Propylene was definitely out of court, and acetylene had the disadvantage of being explosive and difficult of purification. Dr. Wilson agreed with Dr. McKesson as to the desirability of ethylene in the case of the very old, the very young, and diabetics, but asked whether the normal slowing of the pulse with ethylene occurred in cases of exophthalmic goitre, where it would be a distinct advantage.

Dr. L. L. GREENBLUM (Akron, Ohio) emphasized the necessity of co-operation between the surgeon and the anaesthetist.

Dr. McMECHAN, in reply, stated that the interpretation of phenomena depended a great deal upon the occupation of the interpreter: the physiologist spoke from the physiological standpoint, the physicist from the physical. The duty of the anaesthetist was to seek out those who were doing and discovering things, and to bring forward their views without attempting to say which were correct in theory. Nitrous oxide and oxygen as an anaesthetic suffered from one basic fault in that everyone imagined that satisfactory anaesthesia could be secured by this means without adequate preparation. It was necessary for the patient to be receptive of the gas type of anaesthesia—he must have a blood stream capable of receiving and using the gas supplied. The anaesthetist must know the metabolism of the patient. Patients with myocardial degeneration could not stand anoxaemia, hence nitrous oxide and oxygen might fail. But if these patients were treated with digitaline they would do quite well with this type of anaesthetic. Toxaemic and septic cases were more difficult to anaesthetize with nitrous oxide and oxygen, and the same held true of those suffering from acidosis and ketosis. The purity of the nitrous oxide also made a difference—as, for example, when there was only a 1 per cent. leakage in administration. Controlled rebreathing, correct pressure, and correct method of administration were also necessary so that the patient's metabolism could be controlled. The problem for the anaesthetist to-day was to realize that it was impossible to give an anaesthetic well without knowing the basic signs of the physiology of gases in the blood.

Dr. McKESON, in reply, said that unfortunately ethylene did not slow the pulse in cases of exophthalmic goitre. In these cases he reduced the metabolism before operation by test and morphine. A 10 per cent. reduction of metabolism could be effected by a quarter of a grain dose of morphine. The metabolic theory if applied in clinical work would certainly help. In Toledo both nitrous oxide and oxygen and ethylene and oxygen were being extensively used. In 1925 he personally had not used ether in a single case, and at the Lucas County Hospital one or other of the above anaesthetics had been used in 94 per cent. of cases. This year he had used ether five or six times only.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### RECOVERY AFTER MASSAGE OF THE HEART.

In the JOURNAL of August 28th (p. 404) Dr. Sainsbury has replied to a criticism that was made regarding the chief agent in the recovery of a patient when heart massage and adrenaline injections are combined. In Mr. Glover's note on this subject (JOURNAL, August 21st, p. 342) a case appears to have been resuscitated by heart massage alone, and I now wish to give an instance where adrenaline succeeded in causing contraction of the heart muscle when massage failed. It is not an instance of either agency being successful in restoring life, but I thought it interesting from the point of view of the comparative values of heart massage and the injection of adrenaline.

The case, which was a desperate one from the first, was that of an Indian woman, aged about 35, who was brought to the hospital with another member of her family suffering from cholera. Before coming to the hospital one of the same family had already succumbed to the disease. On admission it was ascertained that the woman was eight months advanced in pregnancy, and her state of collapse was complicated by total suppression of urine.

Intravenous saline injections, given in the usual way, caused a return of the pulse at the wrist, but with no effect on the secretion of urine. The woman had a show of blood from the vagina, and it was found that the cervix was dilating and that the uterus was endeavouring to expel its contents. Owing to the collapsed state of the patient it was obvious, however, that the power of uterine contraction was inadequate to its task, and knowing from experience the high rate of mortality of pregnant women suffering from cholera it was agreed that the only possible way of saving the woman's life was to empty the uterus. The suppression of urine, if labour had not commenced, would have been a sufficient reason to have emptied the uterus.

When the patient was placed on the table the pulse had again disappeared from the wrist, the extremities were cold and clammy, and she was in extremis.

Intravenous saline injection was again given, and after the saline was seen to be flowing into the vein and the pulse returned,

extraction of the foetus was made as rapidly as possible. Owing to the rigidity of the cervix in cholera cases there is such a great loss of fluid from the body that softening of the cervix, as in normal labour, is absent. Version was performed, a leg brought down, and in this way the os was dilated.

Before delivery of the child my assistant, Dr. K. Gupta, who was giving the intravenous saline, reported that the flow into the veins had ceased; whilst the placenta was being expelled artificial respiration was commenced as the patient had stopped breathing immediately after delivery. The stoppage of the flow of saline into the vein in a cholera case is usually sufficient evidence that the patient is beyond recovery; with the cessation of respiration one can abandon all hope.

However, on this occasion the abdomen was opened and the heart massaged, but with no result. The diaphragm was then opened, and direct massage to the heart undertaken, but again with no result. The heart could now be seen through the incision in the diaphragm and an injection of adrenaline was given. To my surprise the patient, what is more wonderful, the heart, what is more into the vein heating, 8 oz. of saline had slowly run in. But during this time, notwithstanding artificial respiration, the woman never showed any signs of breathing, and that she died was no surprise to anyone considering the type of disease from which she was suffering.

This case was as desperate as could possibly be wished to compare the relative efficacy of the two remedies; and although both failed, the chemical stimulant produced some result as against none from the massage.

L. COOK, M.B., F.R.C.S. Eng.,  
Lieutenant-Colonel, I.M.S.

Bhagalpur, India.

### ACUTE HAEMORRHAGIC NEPHRITIS FOLLOWING INFLUENZA.

DURING the week commencing November 17th I saw four cases of acute haemorrhagic nephritis: the history in each case revealed that coryza with subsequent cough and bronchitis had preceded the attack.

Cases 1 and 2 occurred on the same day in the same family, in a boy aged 3½ and a girl aged 6. I was sent for on account of the "black water" they were passing. They both looked very ill; the eyelids were puffed, there was pallor of the face, with fever (101° F.) and bronchitis. Both complained of pain in the back and over the lower abdomen, with headache. Both were very restless. Ascites developed in Case 1 (the boy) on the third day.

Case 3.—A boy, aged 12, after a severe influenzal attack for which I had treated him a week previously, suddenly complained of pain over the lower abdomen and back; the water he passed was described by his mother as "like bovril." His symptoms were identical with those of Cases 1 and 2.

Case 4.—A man, aged 55, had coryza for two days, and then came to me complaining of passing scanty, "black" urine. The temperature was 99° F., and the pulse normal, but of high tension.

Examination of the urine in each case revealed the presence of blood in great quantity, the deposit in each consisting of red blood corpuscles and leucocytes, with cell and blood casts. It did not contain pus, but albumin was present in each case in excess. The specific gravity ranged from 1016 to 1025.

Cases 1, 2, and 3 were examined also by Dr. R. A. Askins, Deputy M.O.H. Bristol, who agreed that exanthematous diseases could be excluded.

Southville, Bristol.

ARCHIBALD S. COOK, M.B.

### NASCENT IODINE IN OTORRHOEA.

THE routine treatment of middle-ear suppuration by nascent iodine, as devised and practised by me, has given better results in both acute and chronic cases than any method of equal simplicity at present available. Applicable to every case, it requires no more skill than is involved in the writing of a prescription. Even in acute mastoiditis, where operation, though clinically urgent, was refused by the patient, it has cured apparently desperate cases.

The method consists in the internal administration of potassium iodide with the local application of hydrogen peroxide drops. An adult patient takes 10 grains of potassium iodide, well diluted, every four hours. Every two hours, or even more frequently, the external meatus is filled with hydrogen peroxide, which is retained for ten minutes. The resulting reaction between the absorbed salt and the applied drops liberates nascent iodine within the tissues of the infected middle-ear cleft. With variations of the dosage of the active salt according to age and idiosyncrasy, the treatment is useful in every case of suppurative otitis media.

Ear and Throat Clinic,  
Leigh, Lancashire.

F. PEARCE STURM, M.Ch.



## Reports of Societies.

### GYNAECOLOGICAL TUMOURS.

A MEETING of the North of England Obstetrical and Gynaecological Society was held in Sheffield on November 19th, with the President, Mr. W. Gowar (Leeds), in the chair.

Miss FRANCES IVENS (Liverpool) showed coloured drawings and histological sections to illustrate a case of melanotic sarcoma of the clitoris. The clinical details were as follows:

A married woman, an 8para, aged about 58, was ten years past the menopause, of healthy appearance, but very stout. She had had an operation for gall stones some years previously, and complained of hæmorrhoids. She had noticed a small lump in the anterior portion of the vulva for about twelve months, but it had given her no pain or inconvenience, nor had it discharged. On examination the clitoris was found to be replaced by a softish nodular growth, pigmented in patches, which extended on to the left labium minus. The prepuce of the clitoris was stretched over the tumour. The growth was movable on the deeper structures. Miss Ivens had operated in April, 1925, excising the whole of the vulva as radically and deeply as possible; no enlargement of the inguinal glands was detected. In addition some large hæmorrhoids were removed. Primary union occurred, and so far, eighteen months after the operation, no recurrence had followed. The tumour consisted of masses of spindle cells with well stained nuclei arranged in an alveolar manner in a connective tissue stroma. Granules of brownish pigment were scattered through the connective tissue, and were present in some of the cells, but in some areas pigment was absent. The tumour was covered by thinned-out stratified epithelium.

Miss Ivens said that cases of melanotic sarcoma of the clitoris were very rare. In 1908 Eardley Holland had collected three among thirty-two of the vulva. Since then Lockhart had reported one, and mentioned two others. He noted the extreme malignancy of these tumours and their tendency to rapid dissemination. In the present case favourable points affecting the prognosis were the absence of ulceration and fixation, the absence of enlarged inguinal glands, and, probably, the fact that pigment only occurred in patches. As regards the mode of origin of this tumour, it was possible that it arose from the chromatophores or connective tissue pigment cells of the skin; it was therefore a melanotic sarcoma, and not a sarcoma associated with altered blood pigment or sarcoma hæmorrhagica.

Dr. J. E. GEMMELL (Liverpool) said he had had a similar case in which recurrence followed within twelve months.

Dr. W. FLETCHER STAW (Manchester) also had had a case of a large densely pigmented tumour of the vulva, which he had removed very widely with the inguinal glands, and had treated with radium, but recurrence followed in four months, and the patient died in fourteen months.

Dr. LEITH MURRAY (Liverpool) considered that a small amount of pigment did not necessarily mean a low degree of malignancy.

#### Ovarian Cysts and Tumours.

Dr. E. O. CROFT (Leeds) then demonstrated a specimen showing axial rotation of a fimbrial cyst. The symptoms were those of twisting of the pedicle of a cyst with pain on the left side. The ovarian pedicle was not twisted, but the cyst had a corkscrew twist. The other ovary was normal and healthy. Professor M. H. PHILLIPS (Sheffield) and Mr. J. ST. G. WILSON (Liverpool) had both encountered similar cases.

Dr. J. W. BRIDE (Manchester) showed an ovarian cyst in a girl aged 15. He said that the cyst was a dermoid which had excited attention by the development of acute abdominal symptoms due to torsion of its pedicle. Persistent vomiting and acute left-sided abdominal pain had followed a menstrual period about a week previously; and there had been regular menstrual periods since the onset of menstruation, but always with dysmenorrhoea. The patient had a pulse of 130 and temperature 101°<sub>0</sub>, great rigidity in the hypogastrium, and inability to pass water. An indefinite mass was felt in the left iliac region. Dr. Bride had diagnosed ovarian cyst with twisted pedicle, and advised immediate operation. He found the cyst, about the size of a foetal head, with numerous fine adhesions, lying in the retro-vesical pouch, and quite black in colour, and he removed it. The right tube and ovary were normal, and the patient made a good recovery.

Dr. BRIDO also showed a case of fibromata of both ovaries with primary amenorrhoea. He said that this interesting and somewhat unusual specimen had been found by him when investigating a case of primary amenorrhoea in an unmarried girl, aged 19 years, who had consulted him on account of pain in the hypogastrium and feeling a lump there. For her age the patient was distinctly childish; she had never menstruated nor had any moulins. On abdominal examination a hard mass, non-mobile and tender, was felt in the left iliac region, and through the vagina the pelvis was found to be filled with hard nodular growths which he had been unable to separate from the uterus. He had diagnosed ovarian tumour, possibly sarcomatous. On operation he had found the large left and smaller right ovarian tumour, and, being doubtful of their nature and feeling sure that all ovarian tissue was destroyed, he performed panhysterectomy. There was no ascites present, and the patient made a good recovery. Dr. BRIDO added that Moon had stated that fibromata might occur at any age after puberty; there might be comparatively few symptoms, ascites did not necessarily mean malignancy, and menstruation was usually normal. The tumours in this case were interesting since they caused primary amenorrhoea, and must have been present for some time. This was supported by the evident calcification of the tumours. The childish condition of the patient at 19 years of age suggested complete absence of the ovarian secretion. Dr. BRIDO thought that the statement in textbooks that ascites occurred so frequently in connexion with fibromata as to be almost a symptom ought to be modified. He had seen a certain number of fibromata, and in none had ascites been present. The previous case on which he had operated was in a woman aged 76, and the tumour weighed 4 lb. There was no ascites. Pain as a diagnostic point against fibroids was an important symptom here.

The PRESIDENT did not agree that ascites was so stressed as a symptom.

#### Endometrioma of the Broad Ligament.

Miss IVENS showed also a specimen of an endometrioma which had been removed from between the layers of the right broad ligament.

A girl, aged 20, had suffered from severe dysmenorrhoea with profuse and prolonged menstruation from the onset at 15 years of age. Bilious attacks had been frequent, and two years previously an attack of severe abdominal pain with vomiting had occurred. Dilatation was performed in January, 1925, but the patient became worse rather than better, and in December, 1925, Miss Ivens had opened the abdomen, removed a swollen, kinked, and unhealthy looking appendix, and incised some small cysts of the ovaries. In the right broad ligament, close to but not adherent to the body of the uterus, there was a swelling the size of a large marble, dark in colour, but with no adhesions. It was enucleated, and the peritoneum stitched. On further examination the little tumour proved to be a cyst containing dark tarry fluid. It was lined by cubical epithelium, and showed in its wall typical endometrial stroma and glands embedded in and surrounded by fibrous tissue.

Miss Ivens said that this case was of interest as it supported the view that endometriomata were due to foetal displacement of Mullerian tissue, and not to endometrial grafts. A somewhat similar specimen had been shown by Mr. Beckwith Whitehouse at a meeting of the Obstetrical Section of the Royal Society of Medicine last year.

Dr. K. V. BAILEY (Manchester) suggested that at a later operation endometrioma of the corpus uteri might possibly be found.

The PRESIDENT thought that all the theories had their points, and that epithelial rests explained the process best.

#### Uterine Neoplasms.

Mr. J. ST. G. WILSON described an unusual case of carcinoma of the cervix.

A nullipara, aged 30, married seven years, had complained of intermenstrual bleeding for four months. On examination the cervix was found to be replaced by a crater, which was ulcerating, friable, and bleeding. The supravaginal cervix was thickened and the uterus fixed. There was albumin in the urine. At operation growth was seen on the surface of the uterus. The patient died ten days afterwards. The specimen showed growth infiltrating the whole of the uterus, and secondary growths were found in the lumbar glands. Microscopically the growth was of the squamous-celled variety.

Dr. CROFT commented on the rarity of spread to the corpus.

Dr. FLETCHER SHAW showed a case of acute torsion of a uterus containing a fibromyoma.

The patient was unmarried and 70 years of age. For eighteen months she had complained of recurrent attacks of nausea, which had been attributed to biliousness, but on the last occasion when her doctor had examined the abdomen he had found a large, hard, tender tumour which, the patient stated, had been there for over twenty-five years. A gynaecologist had advised her not to have any operation performed. The tumour was very hard; it extended to the umbilicus, was apparently fixed to the uterus, and was extremely tender. A diagnosis of a degenerating fibroid was made, and an abdominal section performed the next day. It was then found that the uterus contained a fibroid in the fundus about the size of a foetal head and of stony hardness, due to calcareous degeneration. The uterus and appendages were twisted round in two complete turns, and so had formed a narrow pedicle just above the level of the internal os, no thicker than a man's finger. The broad ligaments and tubes were of a deep purple colour, many of the veins were thrombosed, but in some the blood was still fluid, so apparently there was a small circulation still kept up. The tumour was easily removed at the site of the torsion, and the patient made an uninterrupted recovery.

#### ADVANCED ABDOMINAL PREGNANCY.

Professor PHILLIPS described a case of advanced abdominal pregnancy, and said that his object was to draw attention to the frequent difficulty of eluciating by the ordinary means of examination this diagnosis. The clinical history might, as in the present case, be highly suggestive, and yet a careful physical examination, by the ordinary methods of palpation and auscultation, might fail to give convincing evidence of the presence of a foetus in the large abdominal tumour. This had been his experience in five out of the six cases with which he had had to deal. On this occasion the clinical story was classically descriptive of this unfortunate form of gestation. Therefore, when he had failed to palpate any part of a foetus in the abdominal tumour, he felt pretty confident that an x-ray examination would reveal one. The photograph showed not only a foetus, but also a position and condition of that foetus which could best be explained by its being dead and in an extrauterine sac. The skull was lying in the left iliac fossa; the bones of its vault were overlapping. The spine lay across the upper region of the abdominal tumour, and was compressed into the arc of a circle in such a degree as was hardly likely to occur within the uterus.

The story was as follows:

A woman, aged 30, had had a dangerous attack of pelvic peritonitis two and a half years previously, after a miscarriage at eleven weeks. This was her first pregnancy. Menstruation was scanty afterwards, but she did not miss a period until March of the present year. Her last period had been on February 13th, and there was a slight show unaccompanied by pain nine weeks after. Morning vomiting, secretion in the breasts, and steady enlargement of the abdomen duly followed. She quickened at four and a half months, and felt movements daily until September 4th, when she had severe abdominal pain accompanied by a dark bloody discharge, and also diarrhoea and vomiting. Premature labour was suspected, and she went into a maternity home. The external os just admitted the finger tip, and in the course of six days the pain and vomiting ceased and the patient was sent home. No further foetal movements were felt, and the breasts and the abdomen lessened in size; a slight, very dark, blood-stained discharge occurred daily.

When Professor Phillips saw the patient on October 21st (thirty-six weeks after the last period) there was a globular elastic mass visibly distending the abdomen and reaching from the pelvic brim to a point two inches above the navel. It possessed none of the signs of an enlarged uterus, and no foetal parts could be made out. On vaginal examination the cervix was soft, the os was closed to the finger, and bimanually the slightly enlarged body of the uterus could be palpated behind and to the right of the lower pole of the abdominal tumour, which could just be reached at the pelvic brim. The pelvo-abdominal tumour felt just like an ordinary cystadenoma of the ovary.

The x-ray examination having established the diagnosis, Professor Phillips opened the abdomen on November 12th, thirty-nine weeks after the last period. On incising the peritoneum about a pint of thin, clear fluid escaped from a localized space within which was exposed a second sac—the amnion—closely shrouding the foetus. This sac contained rather less than half a pint of thick, greenish, opaque fluid. Both fluids were odourless. The foetus was lifted out and the cord divided. The sac was now seen to line the true pelvis and the abdominal cavity to above the umbilicus. The transverse colon, adherent to the abdominal wall, formed the upper limit of the gestation

sac. None of the pelvic organs could be seen through the sac. The stump of the umbilical cord with the contiguous amnion and chorion were separated from the placenta, which was found to be plastered on the upper half of the sacrum and the adjacent lower half of the lumbar spine. In doing this, a certain amount of the placental substance also was torn away, but without causing any bleeding. The placental tissue was of a dull grey colour and appeared bloodless. No attempt was made to separate it from the underlying aorta and other large vessels. The sac having been swabbed dry, the abdomen was completely closed in the usual layers, interrupted sutures being used in each layer.

This operation had been performed only seven days ago. So far the temperature and pulso rate had remained normal as they were before the operation, and there had been no abdominal pain or even discomfort.

#### TREATMENT OF OVARIAN CARCINOMA.

At a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on November 19th, the President, Dr. ARCHIBALD DONALD, in the chair, Professor BECKWITH WHITEHOUSE showed a woman with ovarian cancer and peritoneal metastases, who had been treated by transfusion of blood and injections of radiated ascitic fluid: The clinical details were as follows:

A woman, aged 48, the mother of five children, had had her right breast removed in October, 1924, for scirrhus carcinoma. She had consulted Professor Whitehouse in March, 1925, for abdominal distension and progressive weakness. Her abdomen was much distended by ascites, and several hard tumours could be felt; a large mass filled the pelvis, extending above the pubis. The abdomen was opened, and it was found that the ovaries had been replaced by masses of growth which had also infiltrated the omentum and studded the visceral and parietal peritoneum with nodules. The greater part of the ovarian masses was removed, but a portion about the size of a billiard ball was allowed to remain on the left side of the pelvis. Ascitic fluid was collected in a sterile vessel and exposed to 100 mg. of radium element in 1,000 c.cm. of the fluid for twenty-four hours. At the end of the operation the patient was transfused with one pint of blood from a healthy young woman who had reached the tenth week of a normal pregnancy. The patient recovered well from the operation, and was subsequently treated by subcutaneous injections of 10 c.cm. of the radiated ascitic fluid twice a week. The dose was reduced to 5 c.cm. seven months later, and had recently been stopped, a total of 500 c.cm. having been injected. Each treatment with ascitic fluid was followed by a marked general reaction. The patient had subsequently done well and there had been no recurrence of the ascites. The masses of growth previously palpable in the abdomen had disappeared, including the deposit in the position of the left ovary; the patient's general condition had improved very markedly.

Professor Whitehouse considered the result very encouraging, though it was too early to form an opinion as to the final state. The treatment had included two different methods of dealing with malignant disease: the first was the introduction into the circulation of a syncytiolysin by the transfusion of blood from a patient at a period of pregnancy when such a substance, if it existed, was presumably most active. The second method was the employment of the cancer cell vaccine, utilizing the available ascitic suspension, in which the malignant cells had been destroyed by radium and not by heat.

#### Ascites of Unknown Origin during Pregnancy.

Professor HENRY BRIGGS reported the case of a previously healthy woman, aged 40, who had had four children, and had suffered from amenorrhoea for eleven months. The abdomen was increasing in size in consequence of ascites, and marked albuminuria was present. The uterus was enlarged and could be felt as an abdominal tumour; it was removed by laparotomy and the ascitic fluid drained away. No cause of the ascites was found in the peritoneal cavity. The patient made an uninterrupted recovery.

Mr. T. G. STEVENS described the case of a woman who had been under his care during three successive pregnancies in which there was enormous increase in the size of the abdomen due to ascites. On each occasion the patient had a normal full-term delivery, and no cause for the ascites was found at any time. After the first and second pregnancies the ascites rapidly disappeared, but remained for a long time after the third child had been born. The fluid was removed by tapping and no further accumulation occurred.

## TREATMENT OF GANGRENE OF THE EXTREMITIES.

At a meeting of the Section of Surgery of the Royal Society of Medicine held on December 1st, with the President, Mr. V. WARRER Low, in the chair, Professor G. E. GASK opened a discussion on the treatment of gangrene of the extremities.

### *Periarterial Sympathectomy.*

Professor Gask said that his purpose was to restrict the scope of the debate to an exchange of views on the right treatment of an elderly atheromatous patient threatened with gangrene, with special reference to the advisability or otherwise of periarterial sympathectomy. This operation had now been performed often enough to enable some idea of its utility to be formed. The treatment of senile gangrene, either by conservative methods or by amputation, was admittedly unsatisfactory, and it was most desirable, therefore, to know whether this new method was or was not an improvement. The operation first came into prominence from the work of Leriche, who acknowledged that it was suggested to him by Jaboulay, who practised it in 1899 for the treatment of perforating ulcers of the foot. Designed originally to relieve various trophic changes and obscure pains, such as were included under the title of "causalgia"—disorders assigned to disturbances of the vasomotor system—it had more recently been performed for the relief of thrombo-angiitis obliterans, Raynaud's disease, arterio-sclerotic gangrene, and even for ununited fractures, osteomyelitis, and pelvic disturbances in women. After a brief survey of the factors tending to maintain a sufficient blood supply in the limbs, Professor Gask said that the idea of this operation was to divide the efferent sympathetic fibres and thereby abolish the vaso-constrictor control over the whole of that portion of the vessel distal to the point of division. The hypothesis underlying this procedure had, however, been challenged by physiologists, who denied that the sympathetic fibres ran their whole course with the blood vessels, and found that experimental sympathectomy did not increase the temperature or blood flow in the distal part of a limb. It was important, therefore, to consider what happened when this operation was carried out in the human subject, and Professor Gask recounted his own observations in four cases. In one of these (a Jew, aged 34) the operation was completely successful: it was followed directly by a rise of temperature in the affected limb, the blueness of the leg and the pain disappeared, the patient returned to work, and now (two years afterwards) he was still perfectly well. A partial success might be claimed for another case, and in the other two the patients were not improved, though no harm was done. On reviewing the results of this operation as reported in the literature, he could not help being struck by the more or less general agreement with his own results. Sometimes a brilliant success was noted, more often a slight or temporary improvement, and very often none at all. It seemed clear that there was a discrepancy between the findings of the physiologists and the clinicians. Having stated the facts so far as they were known to him, and analysed some of the hypotheses, it seemed that certain conclusions might fairly be drawn. While the results of periarterial sympathectomy were on the whole unsatisfactory, and in senile gangrene good results were not to be expected, it was followed occasionally by an astonishing and unexplained success. In view of the discordant clinical and experimental findings, further knowledge was needed, both about the distribution and function of the sympathetic system and about the more obscure vascular conditions. What, then, was the correct treatment of a patient with actual or impending senile gangrene? Should the leg be amputated, or should an attempt be made to save the limb by rest in bed, warmth, and the application of desiccating powders, aided, perhaps, by sympathectomy? Before looking up the literature he was distinctly in favour of this operation; now he had less belief in it. In conclusion he would say that although amputation might be

called for in senile gangrene as a life-saving measure, yet it was best to stave this off by every means available. Though the work on periarterial sympathectomy might not have helped greatly in the treatment of gangrene, it had not been wasted, since it had broadened knowledge of the sympathetic system and created a bond of interest between physiologist and surgeon—an effect which was bound to be of advantage in the long run.

### *Periarterial Injection of Alcohol.*

Mr. SAMUEL HANDLEY thought that Professor Gask's pessimism about periarterial sympathectomy was not justified by a fair interpretation of his own results. He had shown that in man sympathectomy was followed by an increase in the temperature of the foot, and that fact in itself was sufficient to justify the operation. It was not necessary from a practical point of view to explain these results or to bring them into accord with physiological theories on the subject. Of Professor Gask's four cases one was completely successful, the second a partial success, and in the others at least no harm was done. Sympathectomy gave to these patients an even chance of avoiding amputation. The variable results of periarterial sympathectomy might reasonably be explained as due to anatomical variations in the distribution of the sympathetic nerves, particularly as regards the level at which they joined the artery. It appeared to the speaker that Langley's experiments by no means proved the absence of vaso-constrictor nerves from the outer coat of the arteries, even in the animal experimented upon, and that in any case they could not outweigh the direct clinical observations of the effect of sympathectomy in man. It was a remarkable fact that fundamental observations upon the vaso-constrictor nerves were made by Lister as far back as 1854. Professor Gask would be surprised to hear that he (Mr. Handley) had never done sympathectomy. The method almost universally adopted by neurologists for interrupting the continuity of sensory nerves was to inject alcohol into them, and it appeared to him that this method could be adopted to interrupt the sympathetic nerves upon the outer coat of the artery.<sup>1</sup> His plan had been to inject from two to three minims of alcohol at four points, spaced out around the circumference of the artery and into its outer coat. The artery he had employed had been the femoral in Hunter's canal. Apart from its ease of performance, alcohol injection had advantages over sympathectomy. It was noteworthy that Leriche did not record success in the treatment of actual, but only of threatened, gangrene, so that the alcohol method appeared to succeed in cases not amenable to arterial sympathectomy. He would suggest that in Leriche's operation there were two factors at work: (1) interruption of the vaso-constrictor fibres; (2) a local injury of the muscular coat of the artery causing a local muscular spasm which produced the initial constrictor symptoms. The latter factor was very undesirable, and was easily to be avoided by substituting for sympathectomy the method of alcohol injection. The speaker had performed the operation of periarterial injection eleven times. He gave an account of several of these cases, and recorded three in detail. In the first there was re-establishment of colour in the distal half of the foot which had already become cold and black. The line of demarcation healed up, and fresh lines of demarcation formed round the toes. The toes dropped off, and the patient left hospital three months later with a useful foot, free from pain and able to walk. The second case was one of Raynaud's disease, with gangrene of the tip of the left forefinger. Periarterial injection of the left brachial artery was done, and the patient was discharged twenty-six days later with the finger almost healed and less painful. The third case was one of senile gangrene of the left foot; periarterial injection of the left femoral and Hunter's canal was followed by the arrest of the line of demarcation and complete relief of pain in the limb. The patient, however, died of pleurisy two months after a Syme's operation had been performed. After describing other cases, Mr. Handley said he felt unable to recommend alcoholic injection for any condition other than threatened or actual senile gangrene, although it might possibly be

<sup>1</sup> Sampson Handley, *Lancet*, 1922, ii, p. 173.

of benefit in the gangrene of Raynaud's disease. He had not found in the upper limb such definite effects in raising the temperature of the limb below as were met with in the lower limb. He believed, however, that in senile gangrene, before the word "amputation" was even breathed, a trial should be made of the effects of periarterial alcoholic injection. Even should it fail it might enable a lower amputation to be done than would otherwise be the case. In itself the operation was a safe one, but the danger of absorption of the toxic products of tissue necrosis must be guarded against by doing it early before extensive gangrene had occurred.

Mr. PHILIP TURNER said that although he had never performed the operation of periarterial sympathectomy he had in four cases carried out the periarterial injection of absolute alcohol on the lines recommended by Mr. Handley. The first case was that of a man of 70, with dry gangrene of the right big toe. There had been attacks of pain in both feet for over a year, and since the appearance of the gangrene two months before the pain had been severe enough to prevent sleep. Besides the gangrenous toe there were large discoloured patches on the dorsum of the foot, and the whole foot was swollen and was colder to the touch than the sound foot. The femoral artery when exposed in Hunter's canal was found to be a rigid calcified tube; no pulsation could be detected. The delicate outer coat was injected with 10 minims of absolute alcohol, introduced through four punctures with a very fine hypodermic needle. This produced a grey discoloured area, about half an inch long, round the whole circumference of the artery. Next day the pain had disappeared, two days later the swelling of the foot had gone, a few days later still the areas of apparent gangrene on the dorsum and sole of the foot recovered; in a fortnight the formation of the line of demarcation had rapidly advanced, and in a month the toe had separated after the tendons had been divided with scissors. The patient then started to walk about in comfort, but it was many months before the granulating surface left by the separation of the toe had healed. He continued to do well, and a year after the operation had moved away into the country. The patient's doctor now stated that the wound remained healed two and a half years after the operation, there was no recurrence of gangrene, the patient was well, without pain, and able to get about. Mr. Turner also described his other cases, one of which promised to be a success until cerebral hæmorrhage occurred, and the other two were failures; but in both the patients' condition was so unsatisfactory that they would probably have died in any case. In three of the cases, and to some extent in the fourth, the operation was followed by increased warmth of the foot, which could only have been due to an increased amount of blood in the tissues. The technique was not quite as easy as it appeared at first sight. A very fine needle was essential. One advantage of the operation was that it offered an alternative to amputation. He was decidedly in favour of it, and believed it would help, in Professor Gask's words, "to stave off amputation by every means in our power."

Mr. J. P. ROSS said that Professor Gask had laid stress on the discrepancy between the facts bearing on the sympathetic supply to the blood vessels as discovered by physiologists, and the clinical results of periarterial sympathectomy. A possible explanation of this discrepancy was that in the operation it might not be the efferent nerves to the vessels that were removed, but afferent nerves from the blood vessels to the spinal cord. The muscle of the arteries, especially the arterioles, and the contractile tissue of the capillaries possessed tonus which was controlled by vaso-constrictor and vaso-dilator nerves. Sherrington had likened the control of this tonus to the control of the tone of voluntary muscle, which was regulated partly by a reflex arc—an afferent neurone from the muscle, a synapse in the cord, and an efferent neurone back to the muscle. There might possibly be a similar arc to control blood-vessel tonus. There was plenty of evidence—histological, experimental, and clinical—that afferent fibres did pass from the blood vessels to the central nervous system, and mostly from the proximal portions of the limb vessels. It was conceivable that the arc controlling tonus was broken

on the afferent side by the operation of periarterial sympathectomy, and this would explain why an operation on the proximal part of a limb could affect the distal portion. Two points—one of experimental and the other of clinical interest—might be mentioned in this connexion. Section of the depressor nerve, the great afferent nerve from the aorta, led to vaso-dilatation all over the body. It therefore seemed possible that division of afferent fibres on the femoral artery should lead to vaso-dilatation in the leg. The clinical observation that the operation was immediately followed in all cases by relief of pain suggested strongly that afferent impulses were being blocked on their way to the central nervous system.

Mr. E. G. SLESINGER had performed periarterial sympathectomy fourteen times on eight patients. He could see no advantage in Mr. Handley's alcohol method over the operation of stripping, and thought the danger of injecting alcohol so close to the muscular coat to be just as potent as that of surgical section. The primary vaso-constriction seemed to be due to trauma of the muscle coat and could be avoided by gentle handling. It was most important to verify the tissue removed as being nerve plexus by section; in some cases of failure areolar tissue only might have been removed. Of his cases two were Raynaud's disease affecting the anus, and in both the pain and tingling which had prevented sleep disappeared and the colour improved. Two were cases of thrombo-arteritis obliterans with gangrene, and the pain disappeared. In one case of senile gangrene affecting the heel complete relief followed, and in one of arterio-sclerotic gangrene, with one leg previously amputated, there was marked improvement. The remaining two cases were of obscure pathology. One was a man with calcification of the arteries who had recurrent attacks of phlebitis, with gangrene of two toes and of the other heel. He showed a curious change after the operation, developing what the speaker thought was an acute eczema of one foot and leg. Dr. Semon, who saw the case, considered it to be an exudative condition with no sign of inflammation. The last case, a recent one, was a patient from East Africa who had a chronic ulcer on one heel and gangrene of the opposite big toe. At operation the artery on both sides presented an acutely oedematous condition of the adventitia, with acute injection of its vessels. Periarterial sympathectomy was done, with relief of pain. The ulcer on the heel had healed, and the toe appeared to be doing so, although only six weeks had elapsed. Mr. Slesinger emphasized the lack of knowledge of the state of the vessels in these gangrene cases in the living, and thought that this operation would throw light on that subject. In his view the relief of pain justified the procedure. He had always proposed it as a pure experiment, without promising results, and in all his cases the patient had asked for it to be done on the second limb when two limbs were affected.

#### ZOOLOGICAL NOMENCLATURE IN MEDICAL LITERATURE.

At a meeting of the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine, held at the society's house, 1, Wimpole Street, on Wednesday, December 1st, at 5.30 p.m., the President, Professor R. T. LEHRER, F.R.S., read a paper on the tyranny of nomenclatorial rules in medicine.

Before commencing his paper Professor Leiper stated that he regarded it as a high privilege to follow Sir William Prout and Sir Leonard Rogers as president of the section. With them he was one of the small band of workers who initiated the section, believing that tropical medicine should be given a recognized place among the other branches of the Royal Society of Medicine. The work of the section was in no way antagonistic to the Royal Society of Tropical Medicine, to which every medical man working in the tropics should belong. There was a wide field for both bodies, and support was obtained for that view by the preparations now being made by the British Medical Association to form a Tropical Diseases Section for its Annual Meeting at Edinburgh next year:

members of both societies were being asked to share in the organization of this section.

The announcement, continued Professor Leiper, that a new International Congress of Zoologists would meet next summer made pertinent the subject of the tyranny of nomenclatural rules in medicine. The parasitologist suffered more than most zoologists from changes in the names of the subjects in his own group, and was compelled to keep abreast also in names of an immense number of vectors and hosts.

At first sight the operation of the laws of nomenclature appeared to offer a prospect of stability and nomenclatural tranquillity, but it was discouraging to find that after two decades there was neither certainty nor peace. During his own time Dr. Leiper had seen many changes in the scientific names of the common helminths of man. These alterations had been a source of considerable annoyance to medical men and bitter complaint from medical students; this had been attributed to ignorance of universally applying rules. Everyone, however, was now aware of their existence, and this could hardly be the cause. He did not believe, however, that it could seriously be maintained that the rules were applied as rigidly and consistently to early as to more recent records. The "law of priority" insisted on the employment of the earliest record, provided it was published and accompanied by some definite indication and that the author applied the principle of binary nomenclature. Works previous to 1758 (when Linné published the tenth edition of his *Systema Naturae*) were not regarded as binominal. But many of the workers subsequent to Linné did not consciously put the binary system into practice. Goetze, for example, in 1782, did not accurately follow the Linnaean method; yet the names of several important parasites had been changed during recent years to give priority to his names—for example, *Taenia mediocanellata* has been replaced by *Taenia saginata*. Similarly *Diocotylus* was generally replacing *Echinogylus*, although the name had been used as a colloquialism by its French originator. *Deaenueidus* was merely a vernacular term for the guinea-worm until used by Cobbold in 1864, by which time it had been applied to a group of reptiles many years previously. One of the rules of nomenclature required the citation of the author's name immediately after the specific name in order to hold him responsible and as a bibliographical aid. But this rule was loosely applied to the earlier works—for example, *but* was not originated by Guyot as was usually stated; he merely quoted the word as the native vernacular name for the eye-worm, and it was not made a specific name until 1864, when Cobbold used it as such.

Recently the well known *Filaria bancrofti* had been placed in the genus *Wuchereria*, which was attributed to Arango. On a recent visit to America he had discovered that *Wuchereria* was used by Arango as a specific, not generic, name, and used, too, before *bancrofti*. The name was used in 1921 by Seurat in a generic sense, and the modern name should be therefore *Wuchereria wuchereria* (Arango, 1877), Seurat, 1921. But this also was probably incorrect, as under the rules compound words might form a valid specific name if used to connote a simple object, and this parasite had been called *Filaria sanguinis hominis* at an earlier date than *Wuchereria*. *Filaria sanguinis hominis* was not trinominal; it represented a simple object—namely, the blood of man—and seemed as valid as those quoted by the Commission as acceptable. This parasite might ultimately have to be called *Wuchereria sanguinis hominis*.

This state of affairs appeared intolerable. The International Commission, however, had plenary power to suspend any of the rules which seemed to cause greater confusion than conformity. Steps should be taken to press for an extension of this ruling to place well established names upon a list. The principles guiding the compilation of this list should be (1) the use of the name in most common use, (2) a name if possible describing the disease, (3) a name conforming to the vernacular or technical foreign names, (4) the law of priority should not be applied. Such a list, keeping as much as possible to traditional names, would lighten the task of the teacher,

and of the student, who often wasted valuable time in committing to memory lists of names unfamiliar to him but describing familiar parasites. The alternative was to depart entirely from zoological nomenclature and adopt an agreed scheme of medical terminology which was subject to no rules of priority.

He suggested that some independent body might be willing, after consultation with teachers, writers, and investigators, to undertake the preparation of a nomenclature for medical parasitology.

Dr. MAXSON-BARNI said that he agreed with Professor Leiper in principle, but in the past he had followed the teaching of authorities in the matter of nomenclature. He suggested that names might be standardized as they were at present. Dr. NICOLA agreed that the time had come when some steps must be taken to stabilize medical nomenclature. The International Commission had done much to improve matters, but the constant endeavours of some parasitologists to search old records in an attempt to stabilize matters had caused much confusion. He believed that some plan might be discovered whereby everybody—medical and zoological—might have some common stable scientific nomenclature. Sir LEONARD ROGERS considered that there were too many systems of classification and nomenclature, and suggested that the ordinary terms in textbooks might form the basis of a permanent system.

#### Papers.

Papers were contributed by Dr. S. V. VAN NIEKERK of Natal on two cases of pseudo-hermaphroditism in native labourers in Johannesburg; by Dr. AZIZ on a species of *Etiaria* in rats in England; and by Miss HILES on various methods of diagnosing hydatid infections in man, including the complement fixation test, the precipitin test, and the Casani intradermal test.

### JAMES MACKENZIE INSTITUTE.

#### Arterio-sclerosis.

PROFESSOR ASHLEY MACKINTOSH, on November 9th, reviewed first the groups of causes known to influence or to co-operate in the production of arterio-sclerosis, and emphasized the importance of first removing these in any attempt at treatment of the condition. He mentioned amongst these "wear and tear," especially from worry, and infective or toxic causes, not necessarily of gastrointestinal origin. In this connexion he professed himself a believer in an hereditary variation in the viability of the vessels. The lecturer was emphatic in his belief that the most effectual régime for the sufferer from hypertension was one in which avoidance of any thoughts centred on himself was ensured, as far as possible, and for this reason he deprecated the too frequent recording of blood pressure readings, and insisted on the avoidance of a "hypertension hypochondriasis" (Osler and McCrue). He found greatest benefit from a mode of life which involved as little interference with habits, work, and food as possible, especially in elderly patients, and outlined in detail the ideal diet for the hypertension subject. In this he did not reduce protein drastically, but allowed 3 to 5 oz., especially of white meat, per diem, believing that too much importance had been ascribed to protein overfeeding. Diets must not be cut down so far as to lower the patient's general condition. He outlined the proper care of the skin and bowels, and strongly advocated the weekly or bi-weekly use of calomel. Under medicinal treatment he described those drugs from which he had had beneficial results, but before doing so put the question as to how far hypertension was a compensatory function, and he showed that it was not apparently so in so far as the kidney was concerned, there being no proved relationship between the power of concentrating urea and the blood pressure. He referred to other methods of treatment, such as venesection, by electrical methods, and

Finally, he urged the importance of watching the heart carefully in every case of arterio-sclerosis, and sketched the methods which were of service in the treatment of acute complications, such as anginal attacks or oedema of the lungs.



## Rebuelus.

### DERMATOLOGY.

SOME years ago an American dermatologist, writing in one of the journals devoted to his specialty, expressed his opinion that there were too many textbooks on general dermatology and too few monographs on particular branches of the subject. While this may be true so far as the specialist is concerned, it does not apply to the profession as a whole; indeed, it is only through the agency of the standard works that the practitioner can hope to learn the trend of modern dermatology, and it is significant that Dr. J. H. SEQUEIRA points out in the preface to the fourth edition of his well known *Diseases of the Skin* that its appearance has been unavoidably delayed by, among other things, the enormous output of dermatological literature since the war.

The task of selecting from this mass production of post-war literature what seems of importance, or appears likely to be of permanent value, has been carried out by the author with careful discrimination, and the short bibliographies appended to the sections will be found particularly useful by those who desire to consult the original papers. Throughout the text the reader cannot fail to perceive the impress of the author's great personal experience. We think Dr. Sequeira has been wise to resist the temptation to expand and enlarge the book, which, although it contains much new material, remains of exactly the same size as the previous edition. The same high level of excellence is reached, and we are confident that the book in its new dress will achieve the success its many admirable qualities deserve.

### THEORIES ABOUT CANCER.

ALL questions relating to the causation of cancer are at present so dominated by the recent discoveries of Gre and Barnard that the older theories have to a considerable extent lost colour. Nevertheless, in so far as the latter provide an impetus to the discovery of new facts and suggest lines of investigation, their value is not to be overlooked. A case in point is the volume recently published by Professor van Calcar of Leyden on the cause of cancer.<sup>1</sup> He is convinced of the protozoal origin of cancer, and he has recorded some interesting experiments in support of the theory. Thus, inflammatory foci are found in the livers of dogs and some other animals, which contain a small trematode, the *Metorchis truncatus*; if these worms are placed in a decoction of wheat and studied under the microscope, they will be found to disintegrate in the course of a few days, and in some of the cultures minute flagellate protozoa will develop. Van Calcar found that the protozoa only developed from trematodes which were taken from foci exhibiting atypical epithelial proliferation and not merely simple inflammatory changes. In the case of experimental tar-cancer, again, the author considers that protozoa are derived from the food and the surroundings of the animals, in which they may occur in enormous numbers. If cancer is related to the presence of protozoa the number of positive results should diminish when precautions are taken to protect the animals from contact with protozoa. This was found to be the case; in the great majority none but simple inflammatory changes occurred. Other experiments were suggested by Stahl's experimental production of cancer of the tongue in rats by feeding them on oats, the roughness of the grain causing abrasions of the mucous membrane. Van Calcar has found that smooth grain, such as wheat, will produce the same result, provided an artificial abrasion is made; and he has also shown that protozoa can be cultured from these and other types of grain in abundance. In two experiments he inserted, beneath the intestinal mucosa of dogs, grains of oats and wheat in which protozoa were known to be present; in both he obtained positive results. In another series of experiments he excised away a small area of the gastric

mucous membrane, and fed the animals on food containing protozoa derived from various sources—from grain, from cockroaches, from larvae developed in decoctions of grain, and from foci of metorchis in the liver. In all cases he obtained malignant growths showing atypical proliferation, anaplasia, numerous mitoses, infiltration, and metastases. The instances cited all presuppose a local precancerous condition of some kind. As an example of a generalized precancerous condition the author takes achylia; a dog in which the stomach had been excised two years previously was given water containing protozoa. It became emaciated and died in a few weeks. Numerous small tumours were found in the mucous membrane of the stomach and intestines with metastases in several of the mesenteric glands. Van Calcar discusses fully the histology of these induced carcinomas, and illustrates what he has to say by a large number of microphotographs. His experiments on the culture of protozoa from carcinoma are, perhaps, less impressive. The method adopted was to make an emulsion of tumour substance in sterilized water, distribute the liquid over a number of Petri dishes, remove the cover of the first culture after twenty-four hours, of the second after forty-eight hours, and so on till all the cultures had become dry. The dried mass was then moistened and, as far as possible, distributed through water. In some cases rapid drying by means of a powerful desiccating agent was employed. In the cultures so obtained, both from experimental tumours and from those removed surgically, the author repeatedly met with structures which he considered to be morphologically identical with the spores of protozoa.

Dr. OTTO WARBURG has collected a series of articles on the metabolism of tumours<sup>2</sup> that have appeared in various periodicals during the last eighteen years, and has added some chapters on experimental technique. The volume embraces an important series of observations on the characteristics of cancer metabolism. Having observed that the oxygen metabolism of the ovum of the sea-urchin increased sixfold on changing, under the influence of fertilization, from the resting to the active condition, Warburg conceived that the abnormal activity of the cancer cell might be due to a similar high oxygen metabolism. This proved not to be the case, the cancer cell showing no difference from the normal resting epithelium in this respect. He then suspected that the source of the enhanced energy of the cancer cell would be found in ferment metabolism (glycolysis, or the conversion of sugar into lactic acid). That the cell does actually utilize this source of energy he proved in the following way: A slice of rat carcinoma was placed for twenty-four hours in warm Ringer's solution, saturated with nitrogen to ensure anaerobic conditions and the exclusion of oxygen metabolism. It was found that if the solution contained sugar the tumour could be transplanted as readily as in the fresh condition; but if it contained none the tumour ceased to be transplantable. Ferment action alone, and in the absence of oxygen metabolism, was thus shown to maintain the vitality of the cell. A series of experiments was next planned to show what modification in the anaerobic glycolysis resulted from an access of oxygen. It had already been shown that, in the case of muscle, an access of oxygen will prevent the appearance of lactic acid—that is to say, the glycolysis disappears. In cases, however, where anaerobic glycolysis is large in amount, as in yeast fermentation, and oxidation metabolism is relatively weak, glycolysis persists even in aerobic conditions. Such was found to be the case with the cancer cell. In this respect it differs from the cells of non-malignant tumours; in the latter, anaerobic glycolysis is similar to that in cancer, but oxidation metabolism is much greater, non-malignant tumours producing three to four times less lactic acid per molecule of oxygen absorbed than cancer. It is to be noted that the difference is one of degree rather than of principle. On comparing embryonic tissue with pathological growths, Warburg found that anaerobic glycolysis was similar—that is, it was large in both—but that in embryonic tissue, in contrast with cancer, the metabolism in the presence of

<sup>1</sup> *Diseases of the Skin*, By James H. Sequeira, M.D., F.R.C.P. (Lond.), F.R.C.S. (Eng.). Fourth edition. London: J. and A. Churchill, 1927. (N.B. 8vo, pp. xii + 644; 299 figures, 56 plates. £2 2s. net.)  
<sup>2</sup> *Die Ursache des Carcinoms*, By Professor R. P. van Calcar, Leyden; S. C. van Daeleburgh, 1925. (Roy. 8vo, pp. 66; 45 figures. Fl. 3.60.)

<sup>2</sup> *Über den Stoffwechsel der Tumoren*, Herausgegeben von Otto Warburg. Berlin: J. Springer, 1926. (Roy. 8vo, pp. 263; 42 figures. R.M. 16.50; bound, R.M. 18.30.)

oxygen is a pure oxidation metabolism, glycolysis disappearing under aerobic conditions. This he regards as the main point of difference between normal and pathological growth. It might be supposed that if the oxygen metabolism of an embryonic cell were reduced from any cause the cell would acquire the characters of a cancer cell. This, he thinks, does not happen, because embryonic cells cannot survive under anaerobic conditions, whereas the cancer cell can, as was pointed out above. With regard to adult resting tissues, these are in reality slowly growing tissues and therefore exhibit a slight glycolysis. The relation of cancer metabolism to that of other cells may, according to Warburg, be thus stated: In embryonic cells there is a large anaerobic glycolysis with a correspondingly large oxidation metabolism; in adult stationary tissue there is a small anaerobic glycolysis with a relatively large oxidation metabolism; in carcinoma arising from the stationary condition of the cells the glycolysis is again increased to the embryonic amount, but no corresponding increase in the oxidation metabolism occurs. The experimental data on which these conclusions are based are fully stated in Warburg's book.

Although lucidity is undoubtedly the primary desideratum in scientific writing, there is no doubt that an author adds charm to his literary work by leaving somewhat to the reader's imagination. This, however, can be carried too far, and we think that Dr. Greil's book on the cancer problem<sup>1</sup> is open to criticism in this respect. Voltaire's dictum that language was given to us to conceal our thoughts should not be followed to the point of complete incomprehensibility. Dr. Greil has to some extent compensated for this defect by inserting several critical reviews of his work by writers who are endowed with the faculty of interpretation, and from these it is possible to gather a general idea of his meaning. Thus Dr. Dörck writes as follows:

"Dr. Greil's treatise, which he designates a 'programmatical exposition,' explains tumour formation as a disordered process of early embryonic development. It must be admitted that his manner of rendering his ideas acceptable is complicated in the extreme, not to say eccentric. The language he employs requires a study in itself, and is permeated with conundrums and words of his own coinage. He explains that all growth forms arise from cell-municipal potential acquisitions between daughter cells and neighbour cells, layers and tissues, at the wrong place and wrong time, and in wrong intensity and wrong combination. Among these cell-municipal potential acquisitions are included, the acquisition of layer differentiation, layer support by favourable metabolic conditions, marginal or apical differentiation through tensional release, altior potential of palisade tracts, haemo-vasogenic potential through unequal space differentiation of vascular channels, intercalation in the transit and discharge of reaction products of neighbouring layers with higher potential, distraction potential with demarcation of growth foci, and so on. It is usual to associate language with thought, but with the best will in the world mental processes are nonplussed amid the whirligig of the author's sentences. At every page we are confronted with monstrosities of word and phrase, confounding the understanding. We regret, therefore, that we are unable to express an opinion with regard to the meaning of many of the author's chaotic utterances. If we understand him aright, he considers one of the causes of tumour formation to be the close connexion of the foetus with the mother, the foetus forming a segment of the materno-foetal total constitution; and that abnormal changes in the maternal metabolism react on both organisms. Among these changes Greil reckons a disposition to tumour formation—a neoplastic diathesis—but how this comes about is by no means clear."

We do not recommend this book to those who have not a fair knowledge of the German language; a dictionary is of little assistance.

#### THE CEREBRO-SPINAL FLUID.

The Association for Research in Nervous and Mental Disease makes its contributions to medical literature in the grand style. This society of American clinicians and experimentalists meets annually to deliberate upon some special problem within its field of interest. The complete proceedings are then handed on, without any undue haste, to a larger audience in the form of a large and elegant volume, of which the most recent is the *Human Cerebrospinal Fluid*,<sup>2</sup> being the report of the conference

held at the end of the year 1924. The symposium takes the customary form of a series of papers introductory to general discussions of the subject from various angles. The latter are preserved in the form of question, answer, and spontaneous comment, though competent editing has served to eliminate the equivocations which arise inevitably in unrehearsed discussion. This form certainly enhances the interest and mitigates the severity of the objective contributions with a human note and the sense of the impact of personal opinion and experience.

It is claimed for the book that it is the most comprehensive survey of the physiology and pathology of the cerebro-spinal fluid which we have. The claim must be conceded. Introductory papers deal with the history of the fluid, a résumé of the literature, and a comprehensive analysis of the biological, chemical, and physical characteristics of the fluid in normal and abnormal conditions. Those who find occasion to employ the colloid tests generally advocated will be interested in the record of the comparison in 400 cases of the gum benzoin, colloidal gold, and mastic tests. Full protocols are given, and it is to be observed that discrepancies were encountered in only 16 cases.

Some interesting pressure studies are reported which include observations upon the effect on hypertension of the injection of a variety of hypotonic solutions. A plea is entered for the synchronous determination of pressure at different places in the diagnosis of brain and cord tumours. The value of and risk attending the employment of lipiodol and the method of simultaneous displacement of fluid by air as aids to ventriculography are discussed from the experience of several members. There follows an extensive survey of the changes which are found in the cerebro-spinal fluid in all types of diseases of the central nervous system and in certain extraneural conditions; the concluding section deals with intraspinal treatment, particularly in respect of syphilis of the central nervous system. Over 5,000 recorded examinations form the basis of the clinical contributions, which cover nearly every conceivable pathological state.

It is but two centuries since the ridicule of Gaetlie sought out those who found in the fluid of the cavities of the brain the vehicle of the animal spirits—the very organ of the soul. It is but thirty-five years since Quinke set the fashion for lumbar puncture, which has to-day become routine for diagnostic and therapeutic purposes. For the interpretation of the chemical, physical, and bacteriological assay of the cerebro-spinal fluid and of x-ray and pressure observations, this elaborate—but, alas! costly—volume should become the standard work of reference.

#### THERAPY EXPERIMENTAL AND PRACTICAL.

The publication has begun of a book on practical therapy<sup>3</sup> based on experimental investigation, edited by Professor von den Velde and Dr. P. Wolff. It is one of the big co-operative works which are so much in favour with German publishers just now. The first volume, which is in two parts, contains over 1,100 pages, and deals with the general principles of therapeutics. In the second, the therapeutic measures appropriate to the various diseases are to be considered.

In the preface the editors discuss the present position of therapeutics. They point out that no rational therapy was possible until physiology and pharmacology had developed sufficiently to provide a basis of exact knowledge, and that in consequence the founders of modern medicine in the middle of last century gave attention chiefly to the diagnosis of disease based on the exact science of morbid anatomy. Virchow expressed the general attitude to therapeutics of the leaders of medical thought in all countries when he said: "Therapeutics must free itself from empiricism, and by the help of pathological physiology rise to be a science, which to-day it is not." Unfortunately this development has been very slow in coming. Virchow's school, which had many influential adherents among English teachers, performed a great service in

<sup>1</sup> *Das Krebsproblem*. Von Dr. Alfred Greil (Innsbruck). Leipzig: J. A. Barth, 1925. (Med. 8vo, pp. viii + 382. R.M. 6.)

<sup>2</sup> *The Human Cerebrospinal Fluid*. An Investigation of the Most Recent Advances as reported by the Association for Research in Nervous and Mental Disease. New York: P. B. Hoeber, Inc. 1926. (Med. 8vo, pp. xxvi + 568; 68 figures. 10 dollars.)

<sup>3</sup> *Handbuch der Praktischen Therapie*. Edited by Prof. Dr. P. Wolff and Dr. P. von den Velde. Erster Band. Leipzig: J. A. Barth, 1926. (Sup. 10y. 8vo; Part I, pp. viii + 544, 4 figures; Part II, pp. 593, 11 figures, 2 plates. R.M. 66; bound, R.M. 73.50 the two parts.)

medicine by their nihilistic attitude, which resulted in clearing away a mass of irrational empiricism, but unfortunately nothing was put in its place, and new devils entered into the chambers which were swept but not garnished. The editors of the volume under review believe that the modern developments of physiology and pharmacology are now adequate to provide a scientific basis for a large part of the art of therapeutics; their object has been to collect this information, and to this end they have enlisted some fifty contributors, including many of the best known leaders of the medical sciences in Germany.

The first few articles of the first part of the first volume are introductory and historical; one of the most interesting of them is by the veteran Professor H. H. Meyer, who writes on the importance of experiments to clinical therapeutics. He has watched the birth of pharmacology as a separate experimental science, and has himself played an important part in its development. He emphasizes the fact that although animal experiments are essential yet they remain incomplete unless linked up with clinical observations, and reminds the younger school of pharmacologists of the debt that science owes to the founders of pathological physiology, most of whom were clinicians.

Other interesting and even amusing articles are on senseless and harmful therapeutics, by Professor von den Velden, and on pharmacological impossibilities in therapeutics, by Dr. Oppenheimer. Both are written from the practical standpoint, and contain numerous examples from actual medical practice. Subjects on the border-line of pathology and pharmacology are dealt with in a series of articles. One by the late Professor Wassermann deals with the fundamentals of serotherapy and immunotherapy; in other articles are described the general principles of non-specific protein therapy, anaphylaxis, climatotherapy, balneotherapy, radiotherapy, electrotherapy, and the influence of exercise and diet on health. This list of subjects will serve to indicate the very wide field covered by the volume.

The second part of this first volume deals with the pathology and therapy of each system in turn; lastly come a few articles on the relation of therapeutics to forensic and preventive medicine.

The general ideas which led to the compilation of this volume are excellent, for the amount of information collected is the best proof that a sufficient amount of accurate knowledge of the physiology of the body in health and disease exists to permit at least the foundations of a science of therapeutics to be laid, even though in many cases this knowledge is still insufficient, and only an empirical basis is as yet possible. This first volume is a well planned attempt to collect the data available to form a basis for rational therapy; it deserves careful study by all who are interested in the advance of therapeutics.

#### LATENT PULMONARY TUBERCULOSIS.

THE tuberculous lesions covered by the title of the book on latent pulmonary tuberculosis,<sup>7</sup> by J. RIEUX, include all those of the ganglio-pleuro-pulmonary system that cannot be shown by our present clinical methods nor by the discovery of tubercle bacilli in the sputum to be in a state of evolution. This definition necessarily includes abortive, quiescent, and regressive tuberculosis. The author is, however, interested not so much in following the retrogressive phases of a lesion that has once been open as in deciding on the activity or non-activity of a lesion that has never been clinically manifest. It is with the object of helping the practitioner to form an opinion on this point that the book has been written. We may say at once that the author has nothing new to contribute to the technique of examination; no infallible laboratory test to relieve the clinician of the responsibility of personal diagnosis; no wide generalizations by which every observation may be interpreted; his method is rather to inquire into the various means of diagnosis that are at present available, and to assign to each a particular value. With thirty-five years of experience in the French army behind him he is well qualified to do this.

<sup>7</sup> *La Tuberculose Pulmonaire Latente*, par J. Rieux. Paris: G. Doin, 1925. (Med. 8vo, pp. xvii + 247; 12 plates. Fr. 36.40.)

His main thesis is that, with care, it is possible in a large proportion of cases to arrive at a diagnosis of latent tuberculosis. The means he employs are three: (1) clinical, in which particular attention is paid to the patient's past history and to the physical examination; (2) radiographical, especially photographs taken with a stereoscopic camera; and (3) biological, among which the anti-reaction and the complement-fixation test figure most prominently; the former he prefers for children, the latter for adults. It is interesting to note the respect that the author entertains for the complement-fixation test. Unfortunately the weight he places on it is out of proportion to the evidence he can bring to support it. His argument appears to be this: because 85 per cent. of patients with open pulmonary tuberculosis give a positive reaction, and because there is good reason for regarding it as specific, is it not probable that any person suspected of tuberculosis who reacts positively to the test is actually suffering from the disease? This may appear to be a sound argument, but as yet it is nothing more. From experience, however, the author has come to regard a positive reaction in a suspected patient as extremely suggestive of active tuberculosis; a negative reaction, of course, is of much less importance. If he could only prove his case he would render the diagnosis of latent tuberculosis very much more simple.

#### NOTES ON BOOKS.

ONE of the "Psyche Miniatures" published in connexion with the quarterly journal of that name is on the subject of *Over-Population*.<sup>8</sup> Its author, Mr. P. SARGANT FLORENCE, is lecturer in economics at Magdalene College, Cambridge. It constitutes an inquiry into how far recent statistical and theoretic contributions fit into the Malthusian argument that population is necessarily limited by the means of subsistence, and is regulated by preventive measures of checks on birth rate and by the positive checks of misery and vice in increasing the death rate. The tendency of population is to respond to and outrun any increase in the means of subsistence, and this tendency is manifest in existing unemployment. The author favours the Malthusian theories of this tendency to over-population, and points out that Malthus's aim was to urge people to avoid the positive check on over-population, that led through misery to death, by using moral restraint, which was in his day the leading method of preventing births. Recent views of statisticians, such as those of Mr. Yule in his presidential address to the Royal Statistical Society in 1924, attacked the supposed correlation of birth rates with the use of preventive checks, and substituted variations in fertility as the important factor in limiting increase in population. Mr. Sargent Florence does not agree with this, and brings forward considerable evidence to illustrate his point that the great decline in birth rates of European countries is synchronous with the knowledge of contraceptives and birth control. He favours the view of those who urge a limitation of the families of the poor parallel to the existing limitation among the rich, and believes that the future curve of population will be affected by influencing the poor, just as the propaganda of Bradlaugh and Mrs. Besant affected the curve in the past by its influence on the middle classes.

Dr. CHANDLER wrote his little book on *Animal Parasites and Human Disease*,<sup>9</sup> not primarily as a textbook for the parasitologist, but as a readable volume which could be understood and appreciated by all interested in the progress of science and civilization. That he has been successful in his aim is shown by the fact that a third edition has been found necessary within eight years of the publication of the first. In style and substance it has changed little. The chapter on kala-azar has been revised, while the therapeutical portions of those dealing with sleeping sickness and dysentery have been modernized. Recent work on the treatment of hookworm disease and on the biology of the flukes has been incorporated. Otherwise the third edition is unchanged save for minor corrections; there are still a number of these to be made, however, and the references should be brought up to date. Nevertheless, the volume remains a useful survey of human parasitology, and no better elementary textbook can be recommended.

<sup>8</sup> *Over-Population: Theory and Statistics*. By P. Sargent Florence. *Psyche Miniatures: General Series*. London: Regan Paul, Trench, Trubner and Co., Ltd. 1926. (4 x 6½, pp. 66; 1 figure. 2s. 6d. net.)

<sup>9</sup> *Animal Parasites and Human Disease*. By Asa C. Chandler, M.S., Ph.D. Third edition, revised. New York: J. Wiley and Sons, Inc.; London: Chapman and Hall. 1926. (Med. 8vo, pp. xiii + 573; 254 figures. 22s. 6d. net.)

It is not easy to surmise what object Sir Bampfylde Fuller had in view when he wrote his book *The Law Within*.<sup>10</sup> In his introduction he says that during the last fifteen years his thoughts have been occupied with endeavours to discover the laws which underlie human nature, "to bring within the domain of scientific generalization man's various activities—whether in industry, politics or war, in self-centred, social or religious life, in science or in art." The author confesses that although he has written several books on the subject they have received scant attention, and perhaps we may help with the suggestion that his purpose lacks clearness, that his method is discursive, and his length inordinate. Apparently, having found no satisfaction in biology, physiology, and psychology; Sir Bampfylde feels the need of a new science, to which he gives the name "biohymology." Psychology, he thinks, has failed because it has practically ignored the law of evolution; while biology and physiology have closed their eyes—strange to say—"to the quality which must exist in the constitution of all living organisms—whether animals or plants—that are formed by the combination of two sexual elements." Biologists, influenced by the utilitarian spirit of the age, have clung to the belief that changes which have come about through evolution have always been purposeful; whereas, according to Sir Bampfylde, evolution may be expressive as well as useful, and Nature may be as magnificently purposeless as Art. In developing the thesis—whatever it may be—a vast amount of ground is covered. We learn that feminine energy is inclination, and therefore practical and purposeful; while masculine energy is expressive and emotional. We are given as the argument against socialism the statement that idealism, being a motive of expression, "cannot maintain its ardour against the chilling effect of practical considerations." We are told that admiration is not as powerful as apprehension in withstanding onsets of cupidity or anger; consequently that the League of Nations will hardly hold its own against outbursts of national feeling so long as it has no punitive powers. It will be seen, therefore, that "biohymology" has a very wide range.

In *Nomogenesis or Evolution Determined by Law*<sup>11</sup> Leo Berg, professor of geography in the State University of Leningrad, states the case against Darwinism with much ability and wealth of detailed argument. He contends that evolution does not depend on chance variations and the survival of the fittest in the struggle for existence, but is based on laws, and is in great measure an unfolding of pre-existing rudiments. As Professor D'Arcy Thompson says in his genial introduction, the book is interesting and contains much of recent Russian work; but the views expressed are hardly likely to be universally accepted. It has been admirably translated from the Russian, and, since the last edition, has been supplemented by much new matter. A feature, not always noticeable in foreign books, is the frequent reference to British biologists.

Messrs. Churchill have now issued the *Medical Directory*<sup>12</sup> for 1927. Its general arrangement and appearance are unchanged, and the work as a whole follows the familiar lines which have made it so useful a reference book during the past eighty-two years. The numerical summary of the medical profession, to be found immediately after the table of contents, shows that the number of names in this edition is 52,558, being 1,405 more than in the last. All areas show increases. London has 367 more names, the Provinces 515, Wales 51, Scotland 130, and Ireland 145. The section relating to practitioners registered in this country but living abroad has 275 more names. The only section in which there is a decline is that for the Services, where the total has dropped again, this time from 3,283 to 3,205. Excluding these and the "abroad" entries, nearly one-fifth of the practitioners whose names appear have addresses in the wide London postal area. The directory of dentists which used to form part of this volume was removed two years ago, and the publishers now issue it separately. A section on the spas and climatic health resorts of the British Isles and of New Zealand is again contributed by Dr. R. Fortescue Fox; this appears among the introductory matter. The "late list" (new names and recent changes of address) follows items of miscellaneous information at the end of the directory. Of the work as a whole we need only say that the very high standard of accuracy in previous issues appears to be maintained, and we shall be surprised if daily reference to it during the next twelve months brings to light any errors for which the editors or printers are responsible.

<sup>10</sup> *The Law Within*. By Sir Bampfylde Fuller, K.C.S.I., C.I.E. London: Regan Paul, Trench, Trubner and Co., Ltd. 1926. (Demy 8vo, pp. viii + 295. 12s. 6d. net.)

<sup>11</sup> *Nomogenesis or Evolution Determined by Law*. By Leo S. Berg, D.Sc. Moscow. With an introduction by D'Arcy Wentworth Thompson. Translated from the Russian by J. N. Rostovtsov. London: Constable and Co., Ltd. 1926. (Demy 8vo, pp. xviii + 477; 33 figures. 28s. net.)

<sup>12</sup> *The Medical Directory*, 1927. London: J. and A. Churchill. 50s. net.

## THE HEALTH OF THE SCHOOL CHILD.

(Continued from p. 1071.)

LAST week we gave an account of the first and more general part of the annual report of the Chief Medical Officer of the Board of Education on the health of the school child. We now propose to give some account of other parts of the report.

### MEDICAL TREATMENT.

There has been during recent years a steady growth in the amount of treatment provided by local education authorities for the common defects, and with this there has been a tendency to widen the scope of treatment. The determining factors have been the needs of the children, the presence or absence of existing facilities for treatment, the possibility of treatment by the private medical practitioner, and finance. New schemes are submitted to the Board of Education; present-day financial conditions require a strict scrutiny of the money available, both local and national. Thus it may happen that the Board is unable to approve proposals which, however desirable, are too costly, and the needs of large numbers of children are still unmet. This is particularly true of conditions where prolonged treatment is required for special defects, and there it is thought voluntary funds should come to the rescue. Contagious skin diseases and external eye defects make up the bulk of the cases dealt with at minor ailment clinics. These minor ailments may do irreparable damage to sight and hearing unless treated early and continuously. Reports show a general decline of scabies and also of ringworm; but common impetigo has not decreased. The treatment of ringworm by x rays has been most effective, and some urban districts report that no cases exist.

### Defective Vision.

Defective vision and its treatment swells the work of the school clinics as much as ever. This year a separate record shows that the cases of squint reported number no fewer than 26,402, or one-sixth of all the cases of defective vision. Note is made of the necessity for the early discovery of these cases of squint if there is to be satisfactory treatment. More attention is being paid to the need for making allowances for the children in the schools, not only by securing satisfactory lighting arrangements in classrooms, but also by modifying the curriculum where necessary to avoid eye-strain. The London County Council's regulations now prohibit the teaching of needlework by artificial light except when the school medical officer is satisfied that the artificial light is sufficient.

A hint of the importance of continuing to wear spectacles and not to abandon them at the end of school life is given in an interesting note by Dr. Joseph of Warrington in respect of 163 children for whom glasses had been provided and who had left school during the year. Among the 27 boys and 30 girls still wearing glasses there were no instances of unemployment, whereas out of 56 boys and 50 girls who had ceased to wear them 6 boys and 10 girls were unemployed.

### Enlarged Tonsils, Adenoids, and Otorrhoea.

Enlarged tonsils or adenoids of a degree sufficient to require treatment are found in about 5 per cent. of unselected school children examined. The incidence differs widely in different places, but this may be due to variations in local standards. Local conditions, however, appear to have some influence, for the condition is more frequent in damp, low-lying districts than in warm, dry, and sunny parts. An illustration of an apparent increase is recorded in London, where the number of routine cases referred for treatment rose from 8,944 in 1924 to 12,876 in 1925—an increase of 44 per cent. This was due partly, not to an increase in the prevalence and severity of the condition, but to an alteration in the standard of diagnosis and increased facilities for treatment, especially in-patient treatment. The total number of children treated by operation throughout the country during the year was 23 per cent. more than in the preceding year. The after-results of operation have been the subject of investigation by several school medical officers; the results as regards the unfavourable symptoms associated with the condition have been generally satisfactory.

A careful analysis of 85 cases followed up after operation by Dr. Cramb of Brighton gave the encouraging result that deafness was cured in 88.5 per cent., and otorrhoea in 90.3 per cent. Experience showed that the principal practical points were:

1. That enlarged tonsils and adenoids may be focal sources of serious infection and therefore require careful attention.
2. That slight conditions do not require operation and should be otherwise treated.
3. That after operation patients should be detained in hospital for at least one night.
4. That following up and supervision are needed in all cases.

For the treatment of otorrhoea by ionization, provision has been made by twenty-six authorities. In London six special centres have been formed. An analysis of 602 cases treated by ionization in eight representative areas shows that 415, or 68.9 per cent., were cured during the year. An excellent account of this method of treatment is supplied by Dr. Alfred Friel, assistant nurse to the London County Council; it should be read by every school doctor and clinical assistant in the aural departments of hospitals. There can be no doubt of the advantage of the successful treatment of these cases of discharging ears. Not only is a most disturbing and foul-smelling discharge removed, but other and greater risks are avoided. The aural surgeon to the Leicester education authority comments upon the decreasing number of cases of mastoid disease largely owing to this increasing care and attention.

"The number of mastoid operations this year was only 13, a further diminution as compared with 1924, when it was 18, and a very considerable difference if we turn back to 1921, when 64 mastoid operations were done. It is doubtful whether the number of these major operations will become still less, considering the large numbers of chronic discharging ears that are always under treatment."

#### *Crippled Children.*

There has been a considerable development during the past year of schemes for the treatment of crippling defects, including provision for hospital treatment, and for after-care clinics, in 85 areas. But there is still need for a great increase in hospital accommodation if crippled children are to be dealt with in comprehensive fashion. It is not practicable to form a national estimate, but local authorities should not find it difficult to ascertain local needs. The problem is not only that of the school child. A large proportion of the crippling has its origin during earlier years, and any effective scheme must take into account children under 5 years of age. The success that has attended the use of heliotherapy in the treatment of certain conditions, especially of rickets, of lupus, and of bone, joint, and glandular tuberculosis, has led to the trial of artificial sunlight for these cases. The biological action of the ultra-violet rays is at present only imperfectly known, but so far experience has shown that the radiations are beneficial in these cases of surgical disease, also some skin conditions and certain cases of general debility. Some account is given of the use of the rays in certain areas. Note is made of some of the risks involved—for example, burns, eye affections, blood changes, unsuitability to febrile cases, liability to headache, nausea, and fatigue. There is much work to be done before it can be held generally suitable for school clinics.

Summing up the section on medical treatment, it is said:

"No new form of treatment is sanctioned by the Board which infringes the principles which have from the commencement governed this work, and to which reference has frequently been made in these reports, viz., that the treatment cannot be better provided otherwise, that it is the most economical method, that the due regard is paid to existing facilities and private medical practice, and that the convenience and welfare of the children, as well as the responsibility of parents and authority, are considered. It is obvious that the continual growth of school clinics calls for vigilance to secure that they do not become mere out-patient departments with their manifold disadvantages and that the treatment provided, whether by general practitioner or whole-time officer, is effectually supervised."

#### THE SCHOOL BUILDING IN RELATION TO HEALTH.

There is a most interesting section on the effect upon health of the school premises. In the earliest days of organized provision of school buildings the one and only guiding principle to which the architect had to work was that furnished by the educationist, but there has since been a steady and increasing influence of ideas of health upon design. Edwin Chadwick, in a small pamphlet published nearly sixty years ago on *Sanitary Principles of School*

*Construction*, showed a modern appreciation of the social and health side of school work. The plan of central hall and surrounding classrooms lent strong support to mechanical systems of ventilation, which were indubitably better than the earlier schools. But mechanical effects had their disadvantages, and these systems have given place to natural ventilation. About 1910 there came the pavilion or cross-ventilated type, the first of which was built by the Staffordshire local education authority at the suggestion of the late Dr. George Reid. The soundness of the principle of the plan was at once recognized, and since then it has become the dominant plan of school building. Of existing buildings it is stated that it is common knowledge that many fail to reach a minimum standard of sanitation and suitability. The Board has recently carried out a survey of elementary schools, with the result that 664 were classified as unsuitable and incapable of improvement, but that a larger number might be reconditioned. Defects pointed out are often of a character that would require little cost to remedy—far less than a new school—and in some cases no expenditure at all, merely the more intelligent use of existing accommodation and appliances.

#### SPECIAL SCHOOLS.

The report contains a very lucid account of the curriculum of the blind school written by Dr. Eichholz. It is found that there is sufficient accommodation for blind children, but not enough for the partially blind, and no general arrangements for the after-care of the partially blind. In London, however, of 437 children who left the night classes in 1921 and 1923, as many as 304, or 69 per cent., were known to be employed; and 49, or 11 per cent., were unemployed but employable; 20, or 5 per cent., were under further training; of 64, or 15 per cent., no record was procurable. In a summary of conclusions on the training of the blind, it is stated that a "main requirement" is "Provision of residential accommodation in preference to day schools for blind scholars of all ages—in the interest of true nurture of health; and of outlook and proper setting for educational training."

This sweeping statement is in striking contrast to the finding with regard to the education of mental defectives. For these no such stereotyped generalization is advocated. We read:

Experience in this country, and indeed elsewhere, also suggests that the "special school" is not the only, nor always the most effective, way of extracting and developing citizenship out of unlikely material. For the worst type of case it is not proving as serviceable as was formerly believed. In such cases custody, occupation, and segregation are generally necessary. For the higher grade defective special educational training is, however, the obvious development. In the rural districts where institutional training is impracticable or unavailable, much may be done by domestic supervision and employment in suitable forms of agricultural labour. *Each case must be adjudicated on its merits, and patient, intensive, and experimental methods are our only hope, followed up by consistent after-care.*

The italics in this passage are ours; the statement italicized should be related to the generalization thought desirable for the blind.

#### CONCLUSION.

In concluding his report, Sir George Newman gives an answer to the question he put at the beginning: Is the service worth the cost? He concludes that it is. In the year two and a half millions of children were medically inspected, a million cases of defect were treated, three-quarters of a million more had dental treatment, all the children in the schools have been regularly supervised as regards personal cleanliness, and in every area much has been done to encourage good habits and good physical training. "All this cannot have been without beneficial effect. Indeed, we can specify more exactly what the effect has been." Scabies, rickets, and ringworm are vanishing. Gross forms of deformity from malnutrition and congenital syphilis are rare. And on the positive side the child who is leaving school at 14 is better physically in every way than was the "leaver" of twenty years ago, and this child is less handicapped than formerly in obtaining and keeping employment. The prompt treatment of ailments has improved school attendance, and the mental "educability" has been raised. Another unlooked-for result is the better appreciation of fresh air. The English people are becoming an open-air race.



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SATURDAY, DECEMBER 11th, 1926.

## THE NOMENCLATURE OF PARASITOLOGY.

Nearly sixteen years ago (December 24th, 1910, p. 1989) the BRITISH MEDICAL JOURNAL drew attention to the chaotic state of zoological nomenclature, especially as it affected medicine, and stated that: "What the mass of zoologists want is a system which will secure stability, which will obviate the necessity for antiquarian research, which, at the same time, will reject enigmatical descriptions, and will insist on the reference of all species to a central authority." It is interesting to note that Professor R. T. Leiper, F.R.S., in his presidential address to the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine (which is reported elsewhere in this issue), expressed the view that zoological nomenclature as applied to medicine is producing the utmost confusion, and interfering to a very considerable extent with the teaching of the subject. In 1910 we stated that "assiduous individuals have spent their days and nights ransacking dusty archives and long-forgotten tomes. From these they have extracted a galaxy of paradoxically new yet old names which they have tacked on to the familiar friends of our youth." These archaeoparasitologists are still busy, not only in helminthology, as has been so vividly demonstrated by Professor Leiper, but in all those ancillary medical sciences which come under the control of the biologist. We have all learnt that the virus of yellow fever is carried by the mosquito *Stegomyia fasciata*, yet we read nowadays that the vector is *Aedes aegypti*. We are acquainted with the helminthic parasite *Filaria bancrofti* and its association with elephantiasis, yet we are disconcerted to learn of a disease, which seems very similar, caused by *Wuchereria wuchereria*, and it is only after considerable research that we discover that the second of each of these combinations is but a new name, the old having been changed, not by deed-poll, but by the activities of the excavators.

The cause of this confusion is the "law of priority" of the International Rules of Nomenclature, which, strictly applied, causes names in forgotten tomes and buried minutes to be resurrected and foisted on an unwilling body of workers. The law is, however, somewhat peculiar in its application. Old writers habitually wrote in Latin, and their latinized popular vernacular names necessarily resembled in outward form the binominal system, although, in fact, their users had no intention of being thus understood. Thus, for example, an old writer, Werner by name, wished to describe a round-worm from the dog, and he called it the lumbricoid of the dog, or, in Latin, *Lumbricus canis*. This has been seized upon by our excavators and hailed as a specific binominal combination, which, as anyone can see, it is not. And yet our ultra-modern textbook writers have adopted it without inquiry, and rendered nomenclature even more confounded. A similar state of affairs exists among the spirochaetes, although a recent authority has simplified matters by abruptly discarding all the fancy names and placing the whole lot in the one old well known genus. The fungi are similar, and a spate of new generic names,

hailing from America, threatens to reduce bacteriology to a state of utter confusion; yet the astonishing plethora of letters and strains, of paras and pseudos, makes that subject sufficiently complicated for the ordinary reader.

Surely this is all unnecessary. After all, the name is of little value by itself, provided we can understand its connotation. Professor Leiper has suggested two alternative remedies: either we should adopt a special medical terminology for the parasites of importance—a course which is open to obvious objections and should only be adopted if the second fail—or we should stabilize the well known names of the parasites without regard to the law of priority and without reference to ancient minutes and abstracts, or to modern descriptions and paragraphs which form the source from which many of these replacement names have been taken. Professor Leiper appears to suggest that some independent body might be willing to undertake the duty of preparing an agreed list of names of parasites, animal and vegetable, in consultation with medical teachers and writers, so that harassed readers, and teachers also, may escape from the labyrinth wherein the nomenclators have east them. This could be done with the active co-operation, where found desirable, of zoologists and botanists, who even now have the power under the international rules to insist that, where these rules operate too arbitrarily and cause too much confusion by their strict application, exceptions should be made. This has already been done in some instances, and there is no reason why the creation of such a list of "flat" names should be beyond the forensic powers of our biological and medical legislators. We fear, however, that Professor Leiper's plea will bring him neither tranquillity nor peace, unless it be that of the spirit which rides the storm.

## POLIOMYELITIS IN INSTITUTIONS.

THE controversy in the public press regarding the measure of dispersal adopted at Uppingham School for dealing with the occurrence of cases of poliomyelitis there, and the recent occurrence of cases at the Royal Military Academy, Woolwich, has brought into prominence the divergent views of members of the medical profession on the question of dispersal or isolation of institutions when cases of this nature arise. The latter method has been adopted at Woolwich, as it was in boarding schools at Broadstairs, but the Uppingham and Woolwich conditions are not exactly comparable. Poliomyelitis is more widely spread than usual throughout the country, and isolated cases are occurring from time to time in many places. It is not surprising, therefore, that one or two schoolboys at Uppingham and cadets at Woolwich should have acquired the disease.

The first case at the Royal Military Academy occurred at the end of October. The early symptoms were those of mild influenza, but on the development of paresis of the palate an examination was made of the throat exudate at the Queen Alexandra Military Hospital, Millbank, when a micro-organism similar morphologically to the bacillus of diphtheria was isolated, although no culture was obtainable. The patient was accordingly sent to the London Fever Hospital as a case of diphtheria, but eventually, after a further extension of the paresis, the diagnosis of poliomyelitis was made. In the meantime a cadet at Woolwich belonging to the same term, who had been in constant association with the first case, although each had a separate room, was admitted to the cadet

hospital with influenzal symptoms on November 4th; on the appearance of paresis of the arm and leg the case was diagnosed as one of poliomyelitis and transferred to Queen Alexandra's Military Hospital. No other case occurred until November 21st, when another cadet, also of the same term, developed symptoms of influenza when at home on week-end leave. He returned to Woolwich on November 26th, and was placed in hospital under observation. Three days later he developed slight paresis of the deltoid, and the diagnosis of poliomyelitis was made. Since then another case has occurred in Edinburgh in an officer of a battery that was transferred from Woolwich on November 10th.

The measures taken from the first by the army medical authorities followed the usual lines on the occurrence of infectious disease of this nature, but more extensive restrictions and isolation have been enforced after a consultation last week with members of the Army Medical Advisory Board and the Hygiene and Pathological Committees. The cadets and staff are confined as far as possible to the academy grounds. Rugby football and other recreations involving crowding together are stopped, and cadets are not allowed to work in one another's rooms. With the exception of the first-term cadets, who have a comparatively large room for every two, the cadets have each a separate room. All feeding utensils are sterilized after use. There is a daily medical inspection by the officer of the R.A.M.C. in medical charge; and each cadet has to gargle thrice daily with 1 in 5,000 potassium permanganate in normal saline solution. Football matches and competitions of every kind with other institutions have been cancelled. These indicate the general measures adopted for isolating the institution from the outside community and for preventing spread of infection within it. Although cadets are thus restricted to the academy grounds, we understand that parents have been informed that, if they so desire, they may remove a cadet to his home, but are recommended not to do so.

Epidemics of poliomyelitis among young adults in military institutions are not uncommon, and in the years before the war were of considerable gravity in some Continental barracks, so that the importance of thorough measures for dealing with early cases in institutions such as the R.M.A. and R.M.C. should not be minimized. The age of the cadets is roughly that of university undergraduates; there are 205 at present at the Royal Military Academy, and 465 at the Royal Military College, Sandhurst, where similar restrictions have been imposed in order to prevent risk of infection being introduced from the local civilian population, amongst whom three cases have been reported. There is, however, nothing in the extent or nature of the cases that have occurred either at Uppingham or Woolwich to create alarm, although the publicity given to them has had the effect of perhaps exaggerating their importance. Fortunately we are at a season of the year when the incidence of the disease usually declines.

#### MR. COLERIDGE ON DIABETES.

In *The Pilgrim's Progress* we read of certain giants, one of whom has been dead many a day, "and as for the other, though he be yet alive, he is, by reason of age, and also of the many shrewd brushes that he met with in his younger days, grown so crazy and stiff in his joints, that he can now do little more than sit in his cave's mouth, grinning at pilgrims as they go by, and biting his nails because he cannot come at them."

There was, perhaps, a time when the antivivisection giant was more formidable to pilgrims than he is to-day, when there was a real risk that the progress of knowledge might be arrested at the bidding of this giant, but that was a good many years ago, and Mr. Stephen Coleridge's revival of the old play (in the *Times*) is instructive without being successfully offensive. The assumption that men of science have no sympathy with or affection for dogs needs no comment, but Mr. Coleridge's reasoning about the value of insulin in diabetes merits a few words of amplification. "I harbour the belief," he writes, "that if a treatment fails to lower the death rate per million living persons it cannot be doing any good as a means of preventing people from dying of a disease."

Let us see where this aphorism leads us. Many years ago the surgical treatment of cancer of the breast was one of the gloomiest pages in our textbooks. Thanks to Halsted and other great surgeons, the technique of the operation was revolutionized. Halsted believed that when cases were treated early 75 per cent. of the patients might live three years. Many thought this too good to be true. We now know it to have been a modest estimate. Within the last year an official report on experience in this country<sup>1</sup> has recorded that as many as 90 per cent. may survive, not three, but ten years—results which are, as the author says, "at once a challenge to pessimism and a stimulus to efforts to secure operative treatment at the earliest possible stage of the disease." But the death rate from cancer of the breast is not falling, it is rising. The inferences the ordinary educated man would draw (even the ordinary antivivisectionist, for the surgery of the breast is the business of surgeons, not of hard-hearted Fellows of the Royal Society) are, first, that the actual incidence of cancer of the breast may be increasing; and second, that the proportion of sufferers who reach the surgeon's hands early enough to be effectively treated is still too small to influence the total mortality. These conclusions would lead him to spread abroad the knowledge of what surgery can do, in the hope that lives now sacrificed might be saved. But, according to Mr. Coleridge's logic, all this is foolish. The Registrar-General's figures show that cancer of the breast is increasing; we must therefore "harbour the belief" that Halsted was a self-deceiver, that the evidence published by the Ministry of Health is worthless, and that the less women with cancer of the breast have to do with the surgeon the better, for the death rate has not been lowered. *Per contra*, we shall perhaps infer that as infant mortality since 1918 has never regained the pre-war level, the best means of infant welfare are great European wars.

But, in fact, this kind of statistical "reasoning," farcical as it is when applied to a surgical instance, is not so absurd as in the instance of diabetes. There has been a certain regularity of increase in the death rate from cancer of the breast. But the death rates from diabetes have fluctuated in a manner which statisticians have not yet explained. There have been changes which can in no way be related to methods of treatment. Dr. Stevenson<sup>2</sup> has called attention to the changed relation of the sexes. Before 1920 the death rate on males was always higher than upon females; since 1920 this has been reversed. Dr. Young and Mr. Russell<sup>3</sup> note other peculiar features of the

<sup>1</sup> Ministry of Health: *Reports on Public Health and Medical Subjects*, No. 31. A Report on the Late Results of Operation for Cancer of the Breast. London, 1926.

<sup>2</sup> *The Registrar-General's Statistical Review of England and Wales for the Year 1924*. Text, pp. 65-67.

<sup>3</sup> *Quarterly Journal of Medicine*, vol. xx, 1926. Pp. 87 et seq.

statistics. The simple fact is that enough is not known of the etiology of diabetes to enable these statistics to be fully analysed. Years ago it was pointed out that statistically diabetes was increasing; various attempts have been made to associate this increase with that of cancer, but they have not thrown any light upon the subject, yet Mr. Coleridge has not refrained from handling the statistics in the crudest possible manner. Etiologically considered, diabetes is an unsolved epidemiological problem, but ignorance of one side of a problem must not be made an excuse for denying that we have knowledge of a different aspect of it—the clinical. Dr. Elliott and Sir Walter Fletcher term this appeal to ignorance “pitiable casuistry.” That is too charitable a judgement. Casuistry requires some intellectual subtlety. This is the *ignoratio elenchi* of a schoolboy set out in pompous language. It is shown by the direct clinical observations of independent physicians, basing themselves upon a statistically adequate number of instances, that a particular method of treatment is successful. No attempt is made to refute those observations by the submission of similar clinical statistics pointing to a different result. Instead, statistics relevant to a totally different issue are produced.

What would a judge say to a prosecuting counsel who attempted to refute specific evidence that the prisoner at the bar had not committed a particular murder by quoting statistics to show that undetected crimes of violence are increasing?

#### LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

A MEETING of the court of governors of the London School of Hygiene and Tropical Medicine, when Sir Halhutt Waring, chairman, presided, was held on December 7th in the Council Room of the House of the British Medical Association. A unanimous vote of condolence with the widow of Dr. J. C. McNail was passed. The second annual report of the board of management included a detailed description by Dr. Andrew Balfour (director) of the work of the tropical division for the year ending July 31st, 1926. The average number of students each term had been rather higher than in the previous year, and the total was satisfactory in view of the increased length of the course and the higher fee. Emphasis was laid on the necessity of safeguarding the clinical side of tropical diseases at the school, inasmuch as the Seamen's Hospital Society might not continue to maintain the hospital at Endsleigh Gardens for more than a limited period. If and when it was closed the school would be deprived of the long-existing facilities for clinical and pathological study. The Minister of Health had appointed a committee with broad terms of reference, under the chairmanship of Sir Alfred Mond, to consider how the emergency might be met. The board had decided to apply the capital of the Milner Research Fund, as well as the income, to the extension of research work. On the invitation of the Royal Society the board had nominated Dr. A. W. Grace, a former student of the school, to undertake research in the West Indies into the bacterial complications of filariasis. Towards the cost of this expedition the school was making a contribution out of the Milner Research Fund of £500 a year for a period of two years and possibly more. It was announced that the work of the Institute of Agricultural Parasitology was being expanded under the direction of Professor Leiper, and that Winches Farm was nearing completion as a field station, the cost of maintenance of which would be met out of funds provided by the Development Commissioners at the instance of the Minister of Agriculture. Sir William Hodgson suggested

that this important side of the research activities of the school might be further extended, and that some aspects of foot-and-mouth disease might be considered. The chairman stated that the deficit taken over with the London School of Tropical Medicine on August 1st, 1924, had now been entirely wiped out, partly through an extra grant of £5,000 a year from the University Grants Committee, and partly by a generous donation from the executors of the late Mr. Alfred de Rothschild. Warning was given that the work of the tropical division would be inevitably carried on at a loss if the amount of available Exchequer assistance remained at £2,200, unless there was a substantial increase in the endowments and annual subscriptions; additional funds might, perhaps, be obtained from colonial Governments and commercial sources. Representations had been made through the Minister of Health to the Treasury early in 1925 that the commitment of £25,000 a year entered into by the Government at the time of acceptance of the gift from the Rockefeller Trustees would fall far short of the requirements of the staffing and upkeep of the school when fully functioning in the new building. The organization of a great graphic museum is in the hands of Sir Wilfred Beveridge. An account of the proceeding on the occasion of the laying of the foundation stone of the new building by Mr. Neville Chamberlain, which we reported on July 10th (p. 75), was presented to the court of governors. It was announced that the progress in building had been seriously delayed by the dispute in the coal-mining industry, but Sir Walter Fletcher announced that the Education Committee was exploring a possibility of commencing the teaching of hygiene in temporary premises, in view of the demand for trained research workers manifested in the proceedings of the recent Imperial Conference, a demand to meet which the school was primarily established.

#### RHEUMATIC INFECTION IN SCHOOL CHILDREN.

IN his annual report for 1925 the Chief Medical Officer of the Board of Education returns to the subject of rheumatism in school children, which was afforded considerable space in the volume for the previous year. As usual, the report deals particularly with the work of the school medical service, and we do not look in vain for information such as could be gathered only by such a service. Several eminently useful facts are noted. Dr. Menzies, for instance, estimates that there are not fewer than 10,000 school children in London who are suffering, or have suffered, from rheumatic symptoms, and that from 600 to 700 children are absent from school for long periods on account of this infection. These figures represent 25 per cent. of the chronic invalidity among children. Again, we learn that over 1,000 children suffering from rheumatism and heart affections are being educated in the London schools for the physically defective. An inquiry addressed in respect of thirty open-air day schools elicited the verdict that rheumatism of any severity was unsuitable for treatment on such lines—a conclusion that most workers in metropolitan hospitals will endorse. When we consider the problem of the early detection of rheumatism and the prevention of heart disease, we must own that the assistance given by the school medical service is at present very slight, and the number of cases detected and referred to hospitals by it extremely few. This is due largely to the infrequency of the periodic examinations made. In the report for 1924 there were laid down (pp. 104-107) some excellent suggestions for local education authorities whereby an improvement might result. In the present report these suggested “lines of action” are repeated, and “considerable advance” along them is reported. Further details would have made pleasant reading. The problem of rheumatism among the children of this country is a large matter, and to set going any organized scheme of prevention on a big

seale will take both time and patience. Yet it is all to the good that the gravity of the infection as a national disease is increasingly recognized, and we do not doubt that as the medical profession as a whole, and the hospitals in particular, set about to deal with the disease with greater stringency, the school medical service will rise to the occasion and give valuable aid in co-operating with them.

#### TREATMENT OF CANCER BY LEAD.

WE publish elsewhere in this issue (p. 1135) a note by Dr. R. G. Canti of the observations he made while attending in Liverpool a demonstration given last week of the method of treating cancer by lead. Similar demonstrations, some of them extending over a longer period, have been given on several occasions, and one of these Dr. Canti had attended, so that he was prepared to take full advantage of the rather strenuous programme planned by the Liverpool Cancer Research Organization for Tuesday, November 30th. It had been arranged in order to meet the convenience of a deputation from the Executive Committee of the British Empire Cancer Campaign, and Professor Blair Bell was good enough to invite the BRITISH MEDICAL JOURNAL to send a representative. We are much indebted to Dr. Canti for consenting to accept this invitation on our behalf. The deputation consisted of Mr. P. Lockhart-Mummery (chairman of the Executive Council, Sir C. Gordon-Watson (chairman of the Preliminary Inquiry Committee), Professor Lazarus-Barlow (chairman of the Intelligence Committee), Sir William Willcox and Mr. Sampson Handley (members of the Executive Committee), Dr. Hopwood (Professor of Physics in St. Bartholomew's Hospital Medical College, and a member of the Radiology Committee) and Mr. E. J. C. Chapman (secretary). The deputation will make its report to the Scientific Advisory Committee, which will in due course transmit it, with any observations it may deem proper, to the Grand Council of the Campaign, and not until that body has considered it will anything be published. We are informed, however, that all the members of the deputation were impressed by the sincerity of the work, and formed the opinion that relief had been given to a considerable number of sufferers. The principles upon which the treatment rests, the histological changes found in cancerous tissues treated with lead, the clinical effects of lead, and the nature and purpose of the Liverpool Cancer Research Organization, were fully described in the report of the proceedings on the subject in the Section of Medicine at the Annual Meeting of the British Medical Association this year, published in our issue of November 20th (p. 919). We understand that arrangements are being made at St. Bartholomew's Hospital for carrying out further researches into the efficacy of lead in cancer.

#### RADIUM AND UTERINE CANCER.

THE London Association of the Medical Women's Federation has established a Cancer Research Committee, and its work during the first six months of its activities has been recorded in a report to the British Empire Cancer Campaign, entitled "The radium treatment of cancer of the uterus." Deaths from cancer of the uterus number more than 4,000 a year in England and Wales alone. In February, 1925, the women's committee was lent 300 mg. of radium bromide by the Medical Research Council. The work has been carried out under a subcommittee of all the members of the gynaecological staffs of the women's hospitals co-operating. A summary of the work already done in this connexion, which has from time to time been recorded in the pages of the JOURNAL, is followed by a useful bibliography. It was decided to choose so far as possible cases of cancer of the cervix for treatment, since the disease is localized for some time at the site of origin,

and in comparatively few instances are the pelvic glands invaded. After discussing the various modes of application, the reasons for the choice of the methods in favour at the Radium-Hemmet, Stockholm, are given. In it cross-radiation is obtained. One or two tubes are inserted into the cavity of the uterus, and are supplemented by radiation from applicators placed in the vault of the vagina. Not the least of the advantages of the method is that it can be applied in many cases without a general anaesthetic, with trifling disturbance to the patient, and with no injury to the tissues other than that caused by the radium. Comparatively heavy doses of radiation were given in preference to weak doses, which, it is considered, have been shown to be not only ineffectual, but even harmful. After appropriate preparation of the patient and disinfection of the parts, the radium is inserted and kept in place by a firm gauze pack, which also serves to protect the vaginal mucous membrane and prevent too close contact of the radium with the bladder and rectum. Three applications were made, the second one week after the first, and the third two weeks after the second. Each application lasted twenty-two hours. The total dose varied between 5,000 and 7,500 mg. hours. An account is given of 42 cases of carcinoma of the cervix so treated. Of these, 29 were inoperable cases: 6 cases had completed treatment only recently; 14 treated for six months are symptom-free, and no local disease is apparent; 4 are symptom-free but evidence of disease is present; 4 are going downhill; 1 died three months after radiation without recurrence of local symptoms. Headache is complained of by the majority of the patients, but it is not severe; nausea and vomiting, chiefly after an anaesthetic, were observed, but the vomiting ceased immediately the radium was removed. There is transient rise of temperature, and diarrhoea is common. In one case there was pyometra, and in another peritonitis due to an abscess. This report on radium treatment, together with similar communications from other organizations, is included in the annual report of the Medical Research Council on the medical uses of radium, of which an account is given on page 1136 of this issue.

#### "ACCIDENT PRONENESS."

REPORT No. 38 of the Industrial Fatigue Research Board is a "Psychological study of individual differences in accident rates," by Messrs. Eric Farmer and E. G. Chambers, investigators to the Board. The investigations were made on 611 boy apprentices employed in naval dockyard or Royal Air Force shop work, and on 40 women engaged in manufacturing and packing sweets. The investigators came to the conclusion that inequality in accident liability among individual workers was not solely determined by external factors or by chance. In an appreciable degree the inequality was due to measurable individual differences. In the pursuit of the problem it was found necessary to coin and define several new terms. Accidents were more frequent in those with poor "aesthetico-kinetic co-ordination," a term invented to avoid the use of "sensori-motor" or "neuro-muscular," which have already well defined scientific meanings. Similarly, "accident proneness" is used to mean a personal idiosyncrasy predisposing the individual to a relatively high accident rate, while "accident liability" includes all the factors determining accident rate. Nervous instability was found to be related to frequency of accident, but no relation appeared to exist between accidents and the higher intellectual processes. There was slight indication that the accident-prone were industrially inefficient and more liable to report sick. The authors are contemptuous of those who say that accidents are due to carelessness, and who, when asked to define carelessness, leave little doubt that they simply mean having an undue number of accidents. They are careful,

however, to warn us not to make accident incidence *per se* a measure of accident proneness. They note also that at present the reliability of the tests they used has not been established, and that until this is done the tests cannot safely be used for prognosticating the accident proneness of individuals. It will be seen, therefore, that the matter, like some other subjects under consideration by the Industrial Fatigue Research Board, is still in the pioneer stage. With further study it is possible that the ideal of the investigators may be attained, and arrangements may be made to place unsafe persons in occupations involving the minimum of risk to themselves and others. But the ordinary man, we expect, will long continue to use the term "carelessness" in preference to "accident proneness."

#### FRACTURE OF THE NECK OF THE THIGH BONE IN ADULTS.

THE unfortunate elderly people who suffer fracture of the neck of the femur are in too many cases much to be pitied, for the pain and disability which attend upon it when not successfully treated are such as to embitter the evening of life and compel an otherwise sound person to become an invalid. The Section of Orthopaedics of the Royal Society of Medicine did well, therefore, to choose this subject for discussion at its meeting on Tuesday evening last. The subject was introduced by Mr. S. L. Higgs, and a number of speakers well qualified by their experience kept up the debate until a late hour. As regards treatment, two main questions presented themselves: first, what is the best routine treatment which could and ought to be followed by practitioners in general; and, secondly, what is the best course to pursue in a hospital equipped with the necessary skilled staff and appliances. The balance of opinion was in favour of Whitman's method of full abduction, traction, and rotation inwards, maintained by a long plaster-of-Paris spica in the first case, while there was a lesser approach to unanimity as to the ideal method of treatment in an orthopaedic hospital or department. Mr. Hey Groves, whose work in this connexion and whose recent lecture before the Royal College of Surgeons are well known, advocated open operation and fixation of the fragments with beef-bone pegs, for only by exposing the site of injury to ocular inspection can one be sure that the fragments are not separated by soft tissues, which complication is so fruitful a cause of non-union in the fracture of the patella and other bones. There seems little doubt that in fracture of the neck of the femur, as in others, the most important and the commonest cause of non-union is the separation of the fractured surfaces from one another. Since the introduction of radiography we are in possession of knowledge as to the position of the fragments which was unobtainable a generation ago, but, as was pointed out, the information so given is imperfect, and it is only by the use of the stereoscope that we can obtain any knowledge of the relative position of the fractured surfaces in an antero-posterior plane. Thus an appearance of impaction may be conveyed by the shadows of structures which may actually be separated by an inch or more. Similarly, we may be deceived into assuming that almost complete absorption of the femoral neck has occurred when its disappearance is really in whole or in part due to external rotation of the femur. No speaker maintained that these injuries are in general well treated in our great teaching hospitals, but speaker after speaker, some of whom are on the staffs of such hospitals, admitted that if treated at all they were not so dealt with as to instruct students and future practitioners in efficient, up-to-date methods. Unfortunately, this reproach is too widely justifiable as regards fractures in general, as well as regards this particular injury. It is also worthy of remark that the bugbear of surgeons of thirty years ago—hypostatic pneumonia and the dangers

of prolonged recumbency in elderly patients—is no longer feared. Such scant reference as was made to it consisted in its dismissal as a baseless fear. Better methods of nursing and dieting, as well as improved orthopaedic appliances, are probably to be thanked for this.

#### STANDARDIZATION OF DISINFECTANTS.

AN addendum to the report of the Medical and Health Department of Western Australia for 1923-24 presents an account of the examination of certain disinfectants by Dr. John Dalo and Mr. J. G. C. Campbell. The work, which includes both chemical and bacteriological tests, was carried out in the laboratory of the Public Health Department at Perth, W.A., during the year 1921 on a series of disinfectants tendered by manufacturers for hospitals and Government departments. They were chiefly coal-tar preparations of the emulsifying and non-emulsifying groups. In their bacteriological tests the authors adopted the suggestion of Chick and Martin to test germicidal power in the presence of organic matter. They found that its efficacy was enhanced by sewage and not obviously depressed by 50 per cent. urine. Blood serum in 50 per cent. concentration produced only a slight depreciation of germicidal power, and put a more marked one. A control series of tubes containing a standard disinfectant was included in each day's experiments. Carbolic acid was used as the standard at first, but was discarded later in favour of sanitas sypol, a preparation containing 50 per cent. phenol. Among the conclusions reached are that cresol soap solutions are effective in proportion to their content of phenols as shown by chemical analysis, and that the presence of organic matter calls for an increase of strength. The ratios of increase are: for pure carbolic acid 1.4, for cresol soap solutions 2.4, and for emulsions 8.2. The coefficients found for the coal-tar disinfectants and their depreciation factors are stated in tabular form. Chick's observation that the depreciation of the emulsifying group is much greater than that of the non-emulsifying group is confirmed. No information is given as to the purity of the phenol contained in sanitas sypol. Had the authors used absolutely pure phenol at first they might possibly have retained it as a standard in preference to a member of the lysol class. This painstaking and thorough investigation has rendered useful service by confirming certain conclusions reached by previous workers. It should prove of much value also by affording guidance to the Government of Western Australia and others in the choice and purchase of suitable disinfectants. In some instances it does not sustain the claims made by advertisers.

#### HEALTH OF ALL NATIONS.

THE Health Committee of the League of Nations, which was appointed on a three years' mandate, held its concluding regular session at Geneva last month. From the reports submitted to it by the special commissions to which it had remitted inquiries on various health problems some interesting features emerge. The Cancer Commission has established that the differences of mortality from cancer of the breast and uterus observed in different countries are genuine, and are not to be explained by local differences in diagnosis, registration, and the like. It has found no association between race and cancer mortality in certain European countries investigated. It thinks that the efficacy of early operation should be more generally recognized. The Permanent Standards Commission, which has studied the question of international agreement on methods of determining the activity of biological products, reports that for antidipltheria serum the national standards are now identical. For antitetanus serum the international unit is defined as double the American unit,



and the State Serum Institute of Denmark is to collate national standards in order to ensure conformity. The Permanent Standards Commission is also of the opinion that there is a need for further study on the standardization of antidyserentery serum and tuberculin, and on the recent specific methods for the diagnosis, treatment, and immunization of scarlet fever, and views with satisfaction the world-wide use of the international standard for insulin. The Health Committee decided that the Malaria Commission should continue, and that the malaria courses at the Institutes of Tropical Medicine in London, Paris, and Hamburg should be repeated in 1927. It approved the wish of the Conference of Child Welfare Experts that information should be obtained as to the instructions given in various countries to students of medicine, nurses, midwives, and district nurses on infant welfare and hygiene. The topics of school hygiene, international nomenclature of causes of death, public health administration, and health insurance also engaged the attention of the committee. The report of the medical director of the Epidemiological Intelligence Service indicated that Albania, Chili, China, Costa Rica, Luxemburg, Peru, Anglo-Egyptian Sudan, and Transjordanian had been added to the list of countries supplying information. The Epidemiological Bureau at Singapore is in working order, and receives reports regularly from 112 stations in Asia, Australasia, and East Africa. From these transactions, which will be reported to the December session of the League, it is plain that the activities of the Health Committee have ranged both far and wide. Some of its work makes an obvious appeal. An intelligence service receiving regular epidemiological reports from practically every country in the world which is capable of preparing returns must impress the minds of all. The value of its work on the standardization of curative serums and insulin will be cordially recognized by the medical profession, though fully appreciated perhaps only by experts in these particular fields. But in all its enterprises, whether simple or complex, the committee appears to be building securely, and by drawing together scientists of so many countries in the common interests of all it is helping to promote that comity between all nations which is a primary object of the League.

#### NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

ABOUT two months ago the National Association for the Prevention of Tuberculosis became the tenant of rooms in one of the houses which have recently come into the possession of the British Medical Association at the corner of Tavistock Square. It holds its council and committee meetings in the House of the Association, and the vice-chairman of its council is Sir Robert Philip, President-Elect of the Association. The address of the National Association is 19, Tavistock Square, W.C.1. Its annual report reviews the events of the year, including the annual conference at Glasgow last July, which was reported in our columns at the time (July 10th, p. 66). In an appendix to the report the working of the Burrow Hill Colony, in its third year, is described by Dr. A. H. Macpherson, the resident medical superintendent. The number of men in residence at the beginning of 1925 was 43, at its end 63. There were 214 admissions during the year: of these 139 were ex-service men, of whom 12 were admitted for systematic training. Convalescent patients are largely employed in occupational work in the colony's market garden and grounds; it also has a farm, with cows, horses, pigs, and poultry, and a number of men have been trained in the pig and poultry section. The cows, which are tubercle-free, yielded a supply of milk ample for the colony, which has also a carpentry and joinery department; the men there under training did work for the institution, and also made

and erected portable buildings, fencing, and gates for local residents. In March, 1925, inquiries were sent to 90 men who had completed their course of training; 71 replied. Of these 25 were following the occupation for which they had been trained, 12 some other occupation, and 13 had been unable to obtain work; 8 had been on treatment allowance since leaving the colony; 8 had relapsed after beginning to work; 1 had emigrated to Australia; and 4 had died. Of the 194 patients who ceased to be residents during the year 150 improved, 36 experienced no change, 6 became worse, and 2 died. Another activity of the National Association which is perhaps not as well known to the medical profession as it deserves is the set of films it possesses; these are described in an appendix, and are of a popular character; one shows the production of certified milk, and another the life and work at the Burrow Hill Colony. A third appendix gives a list of lantern slides, statistical and bacteriological, of non-pulmonary tuberculosis, and of the cripple institutions at Alton and Hayling Island, of Rollier's sun school at Leysin, and of certain sanatoriums and open-air schools. Both the films and the slides can be hired on terms which can be obtained on application to the secretary.

#### HEALTH AND WELFARE OF SEAMEN.

LAST summer an international conference on the health and welfare of merchant seamen was held at Oslo under the auspices of the Norwegian Red Cross Society and the League of Red Cross Societies. We published a very full account of its proceedings, and printed the resolutions containing the recommendations at which it arrived, in our issue of July 31st, 1926 (p. 205). The official report has now been published by the League of Red Cross Societies (2, Avenue Vélasquez, Paris; price 2s. 6d.). One of the chief recommendations was that bureaus should be established in all seaports throughout the world, to furnish either treatment or information as to where medical advice and treatment could be secured, postal facilities, and particulars of local recreations and social facilities, and sleeping accommodation. It also invited the League of Red Cross Societies to co-operate with the International Labour Office, the Health Organization of the League of Nations, and other similar organizations, in appointing a standing committee on the welfare of seamen; it would investigate facilities for the medical treatment of seamen, including the standardization of ships' medicine chests, the issue of manuals, the preparation of a wireless code for medical consultations at sea; it would also take steps to forward the education of ships' officers in first aid, and generally to promote health propaganda among seamen and to improve welfare conditions on board and in port. The first part of the report contains an account of the proceedings at the conference, and the second data on legislation and other measures for the protection of seamen.

#### THE HASTINGS LECTURE.

SIR BERKELEY MOYNIHAN, Bt., President of the Royal College of Surgeons, will deliver the Hastings Lecture of the British Medical Association in the Great Hall of the Association's House, on Monday, January 24th, when the Minister of Health, Mr. Neville Chamberlain, will take the chair at 8 p.m. After the lecture questions and a short discussion will follow. The lecture is intended for the general public, and is thus an extension of the practice of the Association to arrange a public lecture at its Annual Meetings. Admission will be free, and tickets can be obtained from the Financial Secretary, British Medical Association House, Tavistock Square, London, W.C.1. The subject Sir Berkeley Moynihan has selected is "Cancer and how to fight it."

## LEAD TREATMENT OF CANCER.

ACCOUNT OF A DEMONSTRATION BY THE LIVERPOOL MEDICAL RESEARCH ORGANIZATION.

BY

R. G. CANTI, M.D., CANTAB.,

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On November 30th, 1926, a demonstration was given at Liverpool to representatives of the British Empire Cancer Campaign and others interested in the lead treatment of cancer. After introductory remarks by Professor Blair Bell on the history of the organization and the rationale of the treatment, short addresses were given by Professors Dilling, Glynn, and Lewis, and Drs. Brooks, Cunningham, Jowett, and Millett, on their various subjects. The nature of the physico-chemical and pharmacological research at present being undertaken was fully entered into, and the details of the chemical manufacture of the lead preparation were fully demonstrated in the laboratories. Visits were made to the Royal Infirmary, the Northern Hospital, and to the laboratories and nursing homes in Rodney Street, where 49 cases had been collected for clinical examination. The histories of these cases were fully entered into, and the histological preparations (which are systematically taken), microphotographs, ordinary photographs, and radiographs of the cases were shown.

The organization has already been fully described elsewhere (BRITISH MEDICAL JOURNAL, November 20th), but it is to be noted that apart from some monetary help received from outside sources the investigation is to a large extent self-supporting. All fees collected from patients for consultations, operations, biochemical examinations, injections, and nursing-home accommodation are received by the committee, and this body defrays the expenses in connexion with both the clinical work and the laboratory investigations.

The co-operation and "team" spirit of the various workers in widely different fields were the admiration of those present, and it may confidently be said that this centralization of control and close co-ordination of workers has set an example to the whole country.

### THE TREATMENT.

The rationale of lead treatment is now well known, and is based on Professor Blair Bell's work on the action of lead on the syncytial cells of chorionic villi. These cells have certain characters in common with malignant cells in that they are rapidly growing, and infiltrate the decidua and, in some cases, other tissues. The administration of certain of the heavy metals has long been known to produce abortion. Their action on pregnant does has been investigated at Liverpool, and it is claimed that lead has a specific action on the syncytium, causing necrosis and thus giving rise to abortion. Other metals, including copper, act in a different way—namely, by producing haemorrhage.

The analogy between new growth and chorion has given rise to the suggestion that lead might have a specific action on new growth. Subsequent investigations tend to confirm this, both from clinical experience and from the various chemical and pharmacological investigations, which show, *inter alia*, that after this treatment the new growth has a high lead content.

### Technique.

The lead is introduced intravenously in the form of a coarse colloid suspension containing 0.5 per cent. of lead. In this form it has no immediate poisonous effect, and considerable quantities can therefore be introduced with safety. The lead becomes fixed in the various tissues; it is suggested that it acts by its gradual ionization, and that the most poisonous effects occur in those tissues where it has been fixed in largest quantities. This, while accounting for the necrosis in the new growth, is probably also the cause of the damage which may be produced in the liver, kidneys, blood, and certain other organs; and therefore before commencing treatment it is necessary to ascertain that these organs are not already the seat of any gross lesion.

### Contraindications.

The more important contraindications are hepatic insufficiency, renal disease, advanced morbus cordis, marked anaemia, and wasting. Extensive preliminary investigations, chiefly of a pathological nature, are therefore carried out with a view to passing the patient as fit for treatment.

### The Course of Treatment.

The treatment is spread over four or five months; ten or twelve doses are usually given, and the total quantity of suspension injected is 120 c.cm.—that is to say, 0.6 gram of lead.

In the course of treatment the patient suffers to a greater or less degree from lead poisoning, and in some cases this effect is so severe that it may be necessary that it should be controlled by the intravenous administration of calcium chloride. Much useful experimental work has been directed to a better knowledge of lead poisoning, which in itself is a matter of great importance, quite apart from the question of malignant disease. It is remarkable that, a few months after the treatment is finished, the patients lose all signs of the effects of lead, and look particularly robust and healthy.

### RESULTS.

It is as yet too early to judge the results of treatment by statistical methods, but when the cases are critically examined it becomes evident that they must be divided into two groups:

1. Those in which the growth has been treated by lead and by no other means.
2. Those which have been treated by lead, and in addition by surgery or irradiation, or both.

It is obvious that only those cases which have been treated by lead alone are of real importance. The second class of case—namely, that in which other treatments have been employed, whilst clinically of great significance, are not of such value from a scientific point of view. For example, it is within the experience of most surgeons that from time to time when an avowedly incomplete operation is performed, the patient yet remains apparently well for a considerable time before there is any recurrence of signs.

### CONCLUSIONS.

Remarkable and impressive as are certain of the cases in which lead alone has been used, it cannot be too emphatically stated that the importance of the research being carried out at Liverpool lies, not in the wonderful individual results obtained (which form only a small percentage of the cases treated), but in the fact that it is the first time in history that a generalized treatment has been found that brings about a local disappearance of a cancerous growth.

From a scientific point of view malignant disease differs from any other disease in that control cases are not required, the chances of the spontaneous disappearance of a malignant tumour being negligible. If, therefore, with any given treatment really malignant tumours do disappear then it may be regarded as certain that it is due to the treatment given. The necessity for further investigation into the exact action of the lead cannot therefore be too strongly advocated. In the case of radical surgical operation, or the use of the actual cautery, the principle involved is simple—namely, that of removing all the malignant cells, so that none remain behind to grow; but in the case of lead and of radiotherapy the exact sequence of events leading to the disappearance of the growth is but little understood. The scientific worker is buoyed up with hope that the solution of this problem will lead to discovery of the fundamental principles which, when embodied in some form of treatment (whether akin or otherwise), will with reasonable certainty cause the disappearance of every malignant cell, and thus go far beyond the limitations of surgery.

At no other period in the history of medicine has so much attention been paid to the investigation of malignant disease as at the present time. The public expect a specific cure to be found, and the press is on the tiptoe of expectation. They do not understand that scientific discoveries are evolved little by little, and unfortunately, moreover, their anxiety that this goal should be reached

makes them exaggerate the importance of any new work. The workers themselves are appalled at times to find that some purely scientific statement has been taken up and so turned and twisted as to suggest that a panacea has been evolved. By none is this more keenly felt than by Professor Blair Bell and his co-workers, who have never claimed that lead treatment is an infallible cure for malignant disease, but they have approached the matter from a scientific standpoint, a fact which is evident to all who visit Liverpool.

## NERVOUS AFFECTIONS OF THE OESOPHAGUS.

SEMON LECTURE BY DR. A. BROWN KELLY.

The Semon Lecture under the auspices of the University of London was delivered in the Robert Barnes Hall at 1, Wimpole Street, on December 2nd, by Dr. A. BROWN KELLY of Glasgow, who took for his subject "Nervous affections of the oesophagus." The chair was occupied by Dr. ANDREW WYLIE, President of the Laryngological Section of the Royal Society of Medicine.

Dr. BROWN KELLY said that he intended to deal mainly with spasm of the upper and of the lower end of the oesophagus, and only very briefly with paralysis. He first gave a close description of the structure and function of the oesophagus, and remarked how little was known—and that mainly of a negative character—about the influence of the sympathetic system on the gullet. With regard to spasm of the upper end of the oesophagus, he uttered a warning against the passage of bougies blindly before endoscopic examination had been made. In some cases, when spasm had been present for years, malignant disease supervened, and if in such cases a bougie was inserted with the force necessary to overcome the spasm fatal damage might be caused. The patient should be placed under a general anaesthetic, and a thorough examination made. The treatment of this affection consisted in stretching the muscle; the immediate benefit of stretching was that the patient was able comfortably to swallow food which for years he or she had been unable to take. It was important to convince the patient of his new power of deglutition, and he should be required before leaving hospital to eat a variety of foods hitherto impossible. The lecturer thought that the relation of pharyngo-oesophageal spasm to anaemia would be a fruitful subject for investigation. This association, though recognized by endoscopists, had not been placed on a scientific basis.

Turning next to spasm of the lower end of the thorax, which occupied the main portion of his lecture, Dr. Brown Kelly pointed out that it was in the hiatal region that cardiac spasm was seen. Spasm at the lower end of the oesophagus differed essentially from that at the entrance of the canal owing to dissimilar conditions in the two situations. The muscle, which at the upper end was striated and strong, was at the lower end unstriated and yielding. The upper end was closed except during deglutition, while the lower end expanded and contracted with the movement of the chest. The onset of the disease was insidious and excited little attention, so that the patient, when first seen by the doctor, might have a history of an affection extending back for months or years. His complaint was of occasional difficulty in swallowing and pain in the lower chest. As the symptoms caused only temporary discomfort they might be borne for a long period before advice was sought, but gradually they became more pronounced and the patient became unable to take a meal without obstruction and regurgitation. In the absence of appropriate treatment, death from starvation might terminate one of the periods of enforced fasting. The lecturer exhibited a chart showing in the case of one patient that in the course of four meals in one day he had swallowed 116 oz. of food, of which he had regurgitated 69 oz. and retained only 47.

He next described the method of making the x-ray examination in such cases, and mentioned the interesting investigation by the cinematograph of the part played by the oesophagus during deglutition as revealed by x rays. The appearance of the dilated oesophagus in cardiospasm was usually fairly uniformly sausage-shaped. Mottling or

fuzziness was often seen in the upper part owing to the presence of air, and an irregularity at the deepest part might be due to retained food. Sometimes the oesophagus was spindle-shaped. Dilatation of the oesophagus was met with in other obstructive diseases, but in none did it attain such great dimensions as in cardiospasm. In cancer, cicatricial stricture, and compression stenosis the dilatation was not comparable with that met with in this condition.

For endoscopic examination the patient should be placed under a general anaesthetic which permitted a thorough inspection of the oesophagus. In introducing the oesophagoscope rather more resistance was met with than in the normal subject. When the oesophagus was entered a large quantity of cloudy fluid rushed along the tube and could be drained off. At the lower end soft masses of food were usually collected. Besides dilatation the oesophagus would be found to have undergone elongation. The average length of the oesophagus from the upper teeth was 40 and 39 cm. in men and women respectively, but in a series of cases of spasm it was found elongated by an average of about 3 cm., without taking into account the fact that the average stature of the group of patients taken was rather below the normal. Heightened reflex activity at the hiatus was looked for in 18 patients with cardiospasm, and found in 17 of them, whereas in patients with affections of the oesophagus other than cardiospasm it was absent in all. This was, therefore, an important sign of cardiospasm. The patient himself could do much to assist in controlling this disturbance, especially by his choice of food, and by the care he exercised in swallowing it. All food must be thoroughly masticated and swallowed with an effort. Several efforts at deglutition might be necessary before it was accomplished, and the presence of a stranger at table, especially if he appeared to the patient to be watching him, might frustrate the act. Similarly, a faulty position of the body might hinder the accomplishment. Some patients felt compelled to eat their meals standing up. Sedatives were not called for in treatment. The passage of bougies assisted deglutition at once, but the improvement as a rule quickly passed off. The surgeon should aim at stretching the cardia to a greater degree than could be attained by the largest bougies, and he gave an illustrated description of an apparatus whereby a rubber pack which could be distended with water was used for this purpose.

The lecturer concluded with some account of a toxic variety of spasm as observed by him in two victims of "botulism" whom he had the opportunity of examining during the food poisoning outbreak in Scotland in 1922, when, as a result of eating some sandwiches, eight persons died of this condition. There was palsy of the ocular muscles and gradual involvement of the throat, larynx, and tongue. The toxic effects were apparently limited to the motor neurons, for intelligence was preserved until the end. He understood that this outbreak was the first of its kind in this country, and that there had been none since.

## RADIUM THERAPY.

REPORTS FROM RESEARCH CENTRES.

THE Medical Research Council is entrusted by the Government with a stock of radium salt for distribution to suitable institutions, and a summary of reports from these centres is published annually; that for 1925<sup>1</sup> has just been received. In the JOURNAL of December 20th, 1924 (p. 1170), we dealt with the report for 1923, and in our issue of April 24th, 1926 (p. 747) we referred at length to the report for 1924. The present report contains a summary of results from nine clinical centres: the Middlesex Hospital, University College Hospital, St. Bartholomew's Hospital, King's College Hospital, the London Hospital, St. Peter's Hospital, Birmingham General Hospital, Cardiff Royal Infirmary, and Aberdeen Royal Infirmary. In addition to these the London Association of the Medical Women's Federation receives radium for use in a group of hospitals; reference to its work appears at page 1132 of this issue. Radium salt is also allocated to the Irish

<sup>1</sup> Medical Research Council, Special Report Series, No. 112. Medical Uses of Radium: Summary of Reports from Research Centres for 1925. London: H.M. Stationery Office, 1925. Price 1s. 3d. net.

Public Health Council, Dublin, for distribution in Ireland. No reference is made to the treatment of rodent ulcer or to non-malignant conditions, but in the introduction it is mentioned that in the first case the suitable lines of procedure are generally known, and the technique for menorrhagia does not require further research. It is added that radium has been shown to be valuable therapeutically in myeloid and lymphoid leukaemia, though the benefit is only temporary as a rule. No radical change has been made in the radium therapy of malignant disease during the last five years, but there is now a tendency to use numerous comparatively small sources of radium for long intervals (for seven to ten days) in place of applying single intense sources for shorter times.

#### Clinical Investigations.

The investigations considered in the report are classified under six headings—namely, cancer of the breast; cancer of the uterus; carcinoma of the mouth, nasopharynx, larynx, and oesophagus; carcinoma of the rectum, bladder, and prostate; sarcoma and lymphosarcoma; and experimental investigations.

1. Cancer of the breast was treated by surgical radium therapy at the Middlesex Hospital. Of fourteen cases of recurrent carcinoma in this situation a radical operation had been performed in eleven, and in the remaining three there had been local removal before commencing radium treatment. It was found that in advanced cases without hope of cure treatment by radium would prevent ulceration of the recurrence, and so save the patient from very much pain. In earlier cases large doses often caused the tumour to disappear or retarded its growth. At St. Bartholomew's Hospital eight primary breast tumours and eight recurrent were treated, and it is stated that the results of the primary carcinoma of the ordinary type with a small growth are very encouraging. Apparent cure followed in three cases out of eight, and the remainder showed good local results. In recurrent carcinoma the results of treatment were extremely bad, and in no case was life appreciably prolonged. From Dublin reports were received upon four cases of recurrence after operation, one case in which radium was associated with operative treatment, and four inoperable cases. Judicious radium applications were found to give effective assistance to subsequent surgical work. Surface radium therapy of carcinoma of the breast was used at the Middlesex Hospital for primary breast cases, for inoperable supraclavicular recurrences, and for nodular recurrences. It is noted that in many cases the existence of a second nodule is evidence, not of a localized, but of a widespread condition, and that therefore radium treatment often fails to benefit the patient, though the actual nodules dealt with may disappear.

2. Cancer of the uterus is considered mainly from the point of view of technique rather than of statistics, and the reports from ten centres show that there was much variation in the procedure adopted and the dose. The introduction of 50 to 100 mg. of radium element into the cervical canal for twenty-two to twenty-four hours was used by all except St. Bartholomew's Hospital, where a study of the effect of much smaller quantities acting continuously for six days is in progress. For tumours which could not be reached by radium tubes in the cervical canal the procedure differed considerably. In some cases applicators were packed round the tissues involved; in others needles were inserted into the growth. Statistical data were received from University College Hospital, Birmingham General Hospital, Cardiff Royal Infirmary, St. Bartholomew's Hospital, and Dublin. By collating the data it is shown that of 178 patients with inoperable disease reported not less than one year after treatment, 120 had died, 27 were apparently free from the disease, and 31 were alive but not cured. Of 16 border-line or operable cases, 4 had occurred in 4, 6 patients were apparently cured, and 6 were alive but not free from the disease. Reports on cancer of the body of the uterus were received from Cardiff (11 cases), from the Medical Women's Federation (6 cases), and from Dublin (1 case).

3. Carcinoma of the mouth is the subject of reports from St. Bartholomew's Hospital, Middlesex Hospital, Birmingham, Aberdeen, and Dublin. At King's College Hospital ten cases of cancer of the oesophagus were treated with

immediate benefit as far as pain and swallowing were concerned. After a few days there was usually some return of the symptoms in consequence of inflammatory reaction. The growth occasionally became less vascular and appeared firmer and denser, but actual fibrosis and arrest were not obtained. Birmingham reported good results of the combination of diathermy and radium, while in Dublin three cases were treated with combined local and surface application with temporarily good results.

4. Carcinoma of the rectum was treated by radium in four cases at St. Bartholomew's Hospital, in eight cases at King's College Hospital, two cases at Aberdeen, four in Dublin, and one at Cardiff. St. Peter's Hospital, London, reported upon the treatment of two cases of carcinoma of the bladder and one of the prostate. Cardiff and Dublin returned one case each of carcinoma of the bladder.

5. Sarcoma of bone was treated with success in two cases at the Middlesex Hospital which prior to the introduction of radium therapy would have been considered almost hopeless. Both patients are alive and apparently free from growth more than eighteen months after the first appearance of the growth. Aberdeen reported the treatment of two cases of sarcoma, St. Bartholomew's Hospital three, Cardiff five, King's College Hospital one, and Birmingham and the London Hospital two each. Included in these reports were four cases of spindle-celled sarcoma, with good results in three and a questionable result in one case; three round-celled sarcomata, with success in one and failure in two cases; one lymphosarcoma, and one polymorphic-celled sarcoma, each with a bad result; and one osteosarcoma which ended favourably.

6. Experimental work was continued at the Radium Institute, and two investigations were published in 1925. The first, in the *British Journal of Experimental Pathology*, dealt with the artificial cultivation of tissues with reference to the production of cancer by means of radium and  $\alpha$  rays; the second investigation, entitled "The reaction of the skin to a radium exposure repeated after varying lengths of time," was published in the *British Journal of Radiology*. In the first case it was shown that extracts of normal tissues inhibited the growth of normal cells cultivated *in vitro*, and that the exposure to radium or  $\alpha$  rays of normal tissues, either *in vitro* or *in vivo*, destroyed the inhibiting factor, thus suggesting that cancer might be the result of the destruction of growth-inhibiting factors. The second investigation indicated that a certain small extent of skin production of growth-stimulating factors. The second dose of radiation could be obtained by administering a small dose of radiation. Dr. J. C. Mottram communicated to the Royal Society a paper upon the effects of beta rays upon the growth and division of tumour cells. Radium salt was also supplied to Sir Ernest Rutherford at the Cavendish Laboratory, Cambridge, for purely experimental work.

#### CONFERENCE ON MENTAL WELFARE.

A CONFERENCE, called by the Central Association of Mental Welfare, was held at Westminster on December 2nd and 3rd. The subjects discussed were the after-effects of encephalitis lethargica, borderline cases and delinquency, the training of teachers for special schools, and the care of defectives outside institutions. The large majority of those present being lay people it was, of course, the social and administrative side of mental deficiency rather than the medical side which was discussed.

#### Lethargic Encephalitis.

Sir ARCHIBALD BODKIN, director of public prosecutions, who presided over the session which discussed encephalitis lethargica, referred to the interesting report on the cases in Sheffield, the result of the investigation prompted by the Sheffield Division of the British Medical Association (*JOURNAL*, November 27th, p. 1008), and hoped that more appropriate, perhaps more humane, treatment for this class of offender would be the result of the bill recently introduced into the House of Commons.

Dr. A. F. TREDGOLD raised the question whether the mental sequelae of encephalitis lethargica were temporary or permanent. He had seen cases in which both serious intellectual impairment and marked conduct disorder had,

in the course of time, undergone very great improvement; on the other hand, there were cases which, even after a lapse of three or four years, showed no appreciable change. One of the obstacles to treatment was a narrow interpretation of the clause in the Mental Deficiency Act whereby, to permit of certification for institutions under that Act, the defect must have been present from birth or from an early age. He himself thought an "early age" might include up to 16, but others took a much narrower view. At present there was no adequate provision for these children, in spite of the fact that they were numerous and constituted a severe social menace. The best solution would be the foundation of special establishments under medical supervision.

Dr. F. C. SHRUBSALL said that the Metropolitan Asylums Board had opened one such institution, but the period had been too short to permit of any definite deductions; the experiment had shown, however, that two types of cases presented special difficulty—namely, mentally deranged and violent cases, and those showing symptoms of Parkinsonism. The latter might ultimately require to be dealt with at some home for incurables, and the former placed under prolonged and possibly permanent care in a mental hospital or certified institution.

Dr. E. MAPOTHER said that a great deal still remained to be done in the investigation of Parkinsonism and of the analogous mental "stiffness." The difficulty of the situation arose from the obscurity of onset of encephalitis. He was inclined to make the time interval between the onset of the disease and the mental after-effects even longer than the two years which Dr. Tredgold had suggested. The provision of special institutions would not solve the question. He favoured the appropriate use of existing arrangements. It would be impossible to provide in numerous localities all the specialized kinds of institution which cases of encephalitis lethargica might need, and any institution for all the sequelae would be of the most heterogeneous description. What was needed for these cases was what was required for mental cases generally—namely, some institutions for early treatment without certification. He commented on the refusal of magistrates to grant detention orders in cases of conduct impairment, though they were ready enough to do this in cases which exhibited hallucination and delusion, which the post-encephalitic did not show. He thought every first offender should be seen by a doctor.

#### *Borderland Cases.*

In the discussion on borderland cases Dr. W. R. K. WARSON, senior medical officer at Brixton Prison, estimated the number of subnormals at 3 per cent. of the general population and 5 per cent. of the prison population. Many subnormals, of course, were not delinquent at all, but were of the most harmless and amiable character. The subnormals in prison were unfit for ordinary prison discipline, and were not exposed to it. They were regarded as medical cases and located in hospital or in a reserved part of the gaol, and their treatment approached as closely as conditions permitted to that given in a mental hospital. He advocated a certain specialization in function in prisons, with the setting apart of one or more prisons for borderland delinquents, with medical staffs selected for their knowledge of and interest in mental work. Dr. E. GOODALL (Cardiff Mental Hospital) gave some account of the out-patient clinic which was started at the Cardiff Royal Infirmary six years ago for dealing with patients who, though certifiable, need not and should not be certified. Its work had been not without result as an object lesson, for the Poor Law authorities, in drawing up plans for an important hospital near the city, had made provision for the indoor treatment of early psychoses and psycho-neuroses in the shape of a separate building on the estate. He was opposed to outdoor clinics in psychiatry unless indoor clinics were associated with them.

#### *Teachers for Special Schools.*

At the session which dealt with the training of teachers for special schools, over which Dr. H. B. BRACKENBURY presided, Lord ECSTACE PERCY, President of the Board of Education, described this as the most difficult problem to be faced in education, in view of the wide and varied range of mental defect.

## England and Wales.

### LONDON SCHOOL OF MEDICINE FOR WOMEN.

THE annual dinner of the London (Royal Free Hospital) School of Medicine for Women was held at the Savoy Hotel on December 2nd, when Lady Barrett, dean of the school, presided over a company of nearly four hundred. Sir John Rose Bradford, P.R.C.P., proposed the toast of the evening, and spoke of the school as having a very creditable past and a very ambitious future. He remarked that medical schools, if they were to fulfil their high functions, must be not only centres of training but of research. With regard to the hospital, he rejoiced that the voluntary principle appeared now to be more firmly established in this country than it had been for many years past. Voluntaryism in hospitals signified more than the obtaining of voluntary funds from the public; it stood for disinterested and voluntary service of various kinds, and in this respect the Royal Free Hospital had been exceptionally fortunate. Lady Barrett, in responding, referred to the fact that at the previous dinner those present had received from their late beloved dean (Dame Aldrich Blake) what proved to be her last message. After referring to the approaching completion of the new children's ward, to be opened by the Queen early next year, and to the approaching centenary of the hospital, she said that a few years ago large numbers of students who had qualified were applying for and obtaining posts in the public health services, but later there came what she described as a most extraordinary and un-British regulation forbidding the occupancy of such posts by married women. Every normal young woman wished to marry, and the regulation was regarded as a restriction on liberty; but it had had the effect of bringing about a great change in the kind of work undertaken by those graduating. They were now, to a much larger extent than formerly, entering general practice, and there was no sphere of work in which women were more likely to come into their own, for in general practice one of the first duties was preventive medicine. Women in general practice would assist in clinical research into the origins of disease. Moreover, with the increase of cottage hospitals and public laboratories, the life of the general practitioner was likely to be more full of interest than hitherto. The toast of "The Guests" was proposed by Mr. Ulysses Williams in a very amusing speech, and responded to by Dr. Franklin Sibly, who said that the University of London would shortly have to take in hand the very serious task of co-ordinating the work of the colleges and schools from the point of view of organizing a much larger measure of post-graduate medical study. He was sure that in that enterprise the Royal Free Hospital and School of Medicine would play its due part. The health of the Chairman was proposed by Dr. Mary Blair.

### THE HOSPITAL SAVING ASSOCIATION.

The Hospital Saving Association seems to be establishing itself in a strong position. The object of the association is to enable persons of small means to make provision for hospital treatment for themselves or their dependants, if it should become necessary. The provision is made by means of small weekly contributions collected from groups of contributors in many different occupations; and from the fund so gathered distribution is made to hospitals, whether co-operating in the scheme, non-co-operating, or rate-aided, in accordance with the number of contributors treated and the duration of their stay in hospital. About a thousand representatives, chiefly group secretaries, met in the Kingsway Hall, London, on December 1st, to receive from Viscount Hambleden the annual report of the association, and to listen to an address by Lord Dawson of Penn. Lord Hambleden stated that the number of contributors to the scheme was 267,000, representing with their dependants about three-quarters of a million persons for whom hospital treatment could be provided. With the final distribution to co-operating hospitals recommended by the executive council, the total payments for the year made to hospitals and other institutions amounted to over



£80,000. But this sum represented less per head of patients treated than in previous years. Three explanations for this reduction were given by Lord Humbleden. First, a deficit in the working of the association in 1925 had to be paid off; secondly, there had been an excessive increase in the demand for hospital treatment during part of the year under review; thirdly, heavy expenses had been incurred for extra hospital benefits. It had been found necessary to curtail these extra hospital benefits to a maximum of 15 per cent. of the contributors, and to suspend altogether dental benefit for dependants. From Lord Humbleden's speech it was evident that one of the problems encountered by the association was the tendency of people to join when there was a prospect of themselves or their dependants requiring hospital treatment. The Hospital Saving Association possesses an organ called the *Contributor*, with a circulation of 60,000 copies. Lord Dawson, in his address to the meeting, described the progress in knowledge which was obtained through hospitals. Mr. McAdam Eccles was re-appointed a member of the executive council. From the size of the organization it is evident that the ideas of the late Dr. Gordon Dill have taken root and are fructifying.

#### JUBILEE OF UNIVERSITY COLLEGE, BRISTOL.

In celebration of the fiftieth anniversary of the foundation of the University College, Bristol, a reception was held on December 3rd at the University, and afterwards a meeting in the Great Hall, when the chair was taken by the Vice-Chancellor, who said that the men and women of fifty years ago sowed the seed of which to-day the harvest was being reaped. There was no better reply to those who were apt to scoff at the Victorian age than to ask them to contemplate the magnificent optimism of the men and women who in the great cities of the country laboured to found university colleges out of which so many flourishing universities had grown, or to read the list of distinguished men who with real missionary zeal taught in these university colleges. Balliol College and New College, Oxford, took a very generous part in financing University College, and both were represented.

#### The Function of a University.

The Master of Balliol (Dr. A. D. Lindsay) recalled what Professor Jowett had said about University College, Bristol. The chief point he stressed in his speech was the need he felt for the universities to extend their borders, adding that it was intolerable that university education should be confined to a small minority. Another point in the speech was the need for combining a liberal education with a scientific education, and he welcomed the fact that the medical school at Bristol was among the foremost in insisting that the arts side should be taken in with the scientific side. The other point he stressed was that college was a place where men lived together and learnt together, and that if they forgot that they forgot a great deal of what went to make up a university. It was extremely important that our universities should be the centre of our national life, and he was proud of the part University College had played in founding this centre of inspiration for Bristol. Professor Lloyd Morgan said old students had told him how much they owed to men like Professors Silvanus Thompson, Rowley, and Faushawe. The difficulty in the early days was to keep the arts side alive. This, however, was done under distinguished men like these. Mr. F. Richardson Cross, Dr. T. D. Sibley (principal officer of the University of London), and Dr. H. S. Hele Shaw also spoke.

#### PRE-IMMUNIZATION AGAINST TUBERCULOSIS.

In November a report was presented to the Port Sanitary and Hospitals Committee of the city of Liverpool by Dr. J. G. Moyles, who is chairman of the committee, and Dr. C. Rundle, medical superintendent of the Fazakerley Hospitals, describing a visit they had paid to Dr. Calmette at the Institut Pasteur in Paris. The report describes the theories upon which Dr. Calmette bases his use of B.C.G. for the pre-immunization of infants against tuberculosis. The views and methods of Dr. Calmette were stated in detail in the *BRITISH MEDICAL JOURNAL*, March 27th, 1926, p. 581. Drs. Moyles and Rundle found that the results claimed for the inoculation in infants were very striking; but at the same

time the disparity between the figures for alleged infantile mortality from tuberculosis in many Continental cities and the mortality from the same cause in Liverpool was such that the observers could only suppose that there must be a divergence in standards of diagnosis. Drs. Moyles and Rundle obtained, by the courtesy of Professor Calmette, a small quantity of B.C.G. This is now being examined by Professor J. M. Beattie, the city pathologist, and a similar investigation is said to have been undertaken by the Ministry of Health. As is usual when reports such as that of Drs. Moyles and Rundle are made, the lay press produced articles headed "Stamping out of consumption." Whether the public benefit or not by these premature announcements need not be a matter of much concern to the investigator. But it is important that the claim of a scientist such as Professor Calmette should be properly examined, whatever the effect may be on present notions about tuberculosis and its treatment.

#### BRISTOL MEDICAL DINNER.

The annual dinner of the Bristol Medical School was held on December 2nd on the premises of the University Union at the Victoria Rooms. About 150 past and present students and members of the staff attended. Professor Fawcett, F.R.S., dean of the Faculty of Medicine and professor of anatomy, presided, and Dr. J. T. Wilson, F.R.S., professor of anatomy in the University of Cambridge, was the guest of the evening. In proposing the toast of "The Bristol Medical School," he congratulated it on its close association with the University. In the profession of medicine it was not mere craftsmen, but men of broad outlook and culture, who were wanted, and it was this which distinguished a graduate of a university from a student of a technical college. He referred to his thirty years' experience at the head of the medical school in Sydney, where he had watched the numbers of students increased gradually from a mere dozen until they exceeded a thousand. Dr. R. S. Statham and Mr. J. Newton replied for the medical school. Mr. A. J. M. Wright proposed the health of the President. After the dinner a most successful reception and dance was given in the same building by the wives of the staff.

#### STREET ACCIDENTS IN LONDON.

The London County Council is calling for a full inquiry as to the measures which can be taken to lessen the great loss of life and limb due to street accidents in London, and is asking the London and Home Counties Traffic Advisory Committee, which is the authority for advising on measures for facilitating and improving the regulation of traffic, to summon a conference of all concerned. The number of deaths in street accidents in the metropolitan police area during the first nine months of 1926 was 710, as compared with 840 for the whole year 1925. The number of persons killed yearly has increased nearly fivefold in twenty-five years, and the number of injured (40,175 last year in Greater London) has increased in much the same proportion. Nearly three-fourths of those killed are pedestrians, and between one-third and one-fourth of them are children. With regard to comparisons with other cities, the London streets seem to be more deadly than those of Paris, but less so than those of New York, where, with a population equal to three-fourths of that of Greater London, it is admitted that the attitude of a number of the victims adds to the difficulties of the problem. Subways are provided, but people will not take the few steps necessary to make use of them, and prefer to take risks in getting among the traffic. It is considered that regulations should be made on the assumption that pedestrians will frequently not exercise the necessary care, and that the use of streets by vehicles must be governed accordingly. The need for retention of speed limits in urban areas should be thoroughly investigated. The provision of more street refuges appears to be essential. Experiments with definite street crossings, with and without police, should have useful results, and is called for to diminish, not only cases of dangerous and negligent driving, but the inconsiderate use of the streets by drivers of motor vehicles.

## REGISTRATION OF NURSING HOMES.

The report of the Select Committee on the inspection and supervision of nursing homes has been approved generally by the London County Council, but it takes exception to the recommendation that appeals against refusal or cancellation of registration may be made to a referee appointed by the Ministry of Health. It believes that the procedure laid down in regard to lying-in homes in London is preferable—namely, that such appeals should be made to a magistrate's court. Another recommendation, that the supervising authorities may delegate their powers to a committee upon which both doctors and nurses shall have some representation, is also regarded as open to objection, and it is considered that the County Council should have complete freedom of action either to delegate this power to one of its existing committees or to a specially constituted committee which may include a specified proportion of persons of experience appointed by the Council.

## EWELL COLONY.

Ewell Colony, after its evacuation by the Ministry of Pensions, is to be used by the London County Council during the next two years for the accommodation of 100 men and 329 women patients certified under the Lunacy Acts. Dr. Leonard Henry Wootton, M.C., deputy medical superintendent of Colney Hatch, who has been acting at Ewell while it has served as a hospital for pension cases, has been appointed medical superintendent as from February 1st next at a salary (based on pre-war rates, and subject at the moment to an addition of £195) of £800 a year, together with an unfurnished house.

## Scotland.

## SCOTTISH ASYLUM REPORTS.

THE 106th annual report of the Dundee Royal Lunatic Asylum shows that during the year ending June 21st, 1926, 83 patients had been treated. Among these there had been 7 deaths, all due to natural causes; 2 were of epileptics who had suffered from that disease for many years; 6 of the 15 persons admitted were voluntary patients, which shows that increasing advantage is being taken of early admission before the derangement has become so marked that compulsory certification is necessary. The directors' report shows that the sum received for the board of patients in Gowrie House was £5,148, and that during the year seven patients had been admitted at reduced rates of board, varying from £50 upwards.

The report of the Royal Asylum of Montrose for the year ending May 15th, 1926, shows that the number of patients on the register at the end of the year was 726, and that the total number of cases treated during the year was 854. The average age on admission was 45.1 years, while one patient was under 15, seven under 20, and thirteen over 70 years of age. In 39 of the admissions there had been a previous attack of mental disorder. As a general rule the health of those admitted was much below par, and 36 were very weak. The general experience had been that as physical health improved under treatment there was usually a corresponding mental change. The effect of the present depression in trade had been shown by an increase of cases due apparently to unemployment; they numbered 13, as compared with 6 in the preceding year. The increase in attacks apparently due to alcohol—18 as compared with 7 in the preceding year—might, it was thought, partly result from the same cause. Attention is drawn to the fact that too little recognition is given by the public to the tendency in cases of mental depression to develop suicidal tendencies. Out of 39 cases of melancholia, 24 were acutely suicidal on admission, and 12 had made attempts on their lives before being certified. At the beginning of the year there were 23 voluntary boarders, and 16, or 32 per cent., of the total private admissions came under treatment in this way.

The sixty-second annual report of the Inverness District Asylum, covering the year to May 15th, 1926, shows that there were then on the register 717 persons, and that 867

patients had been under treatment during the course of the year. The admissions during the year numbered 162, and were 39 more than in the preceding year. They included 72 cases of melancholia, 47 cases of mania, 33 cases of dementia, of which 12 were secondary to other mental disorder, and 19 associated with senile decay; there were also 7 cases of congenital mental deficiency. Hereditary or family predisposition was found to exist in 69 of the 162 cases, and in 58 of the cases there had been at least one previous attack of mental disorder. Senility was the assigned cause in 39 cases. The marked increase of admissions during the present year is explained as being related to the admission of private patients to public mental hospitals and the reception in these hospitals of voluntary patients assisted by the rates.

## ROYAL INFIRMARY OF EDINBURGH.

At a meeting of the board of managers of Edinburgh Royal Infirmary, held on November 22nd, it was reported that the managers had received the property of Beechmount, Murrayfield, valued at £15,000, bequeathed by the late Lady Mary Anne Anderson; it is to be converted into a convalescent home; the same donor had also left a sum of £5,073 to the institution. It was reported also that the number of cases awaiting admission to the infirmary at November 1st, 1926, was 1,856. Attention was drawn to the fact that the waiting list had for a long time stood at over 2,000, and it was explained that the fall in numbers was the result of the opening of new wards in the ear, nose, and throat department. The number of cases now awaiting admission to that department was 97, as compared with 237 in the previous month.

## CHILD WELFARE IN GLASGOW.

A pamphlet explaining a scheme for maternity and child welfare in Glasgow has been prepared by Dr. A. S. M. Macgregor, M.O.H. for the city, on the instruction of the health committee. The basis of the child welfare scheme is to be the consultation centre, working in combination with a system of regular home visitation of trained and voluntary visitors. The child welfare staff in Glasgow includes eight medical officers (women) and thirty-nine nurses. The expenditure involved in connexion with the maternity and child welfare work carried out during the year to May 31st, 1926, was £122,215, of which approximately £50,000 was received from Government grants. The charge of £72,000 against the rates was equal to 1.663d. in the £. For the current year the net charge is estimated at £63,450, equal to a rate of 1.417d. in the £.

## BENEFACTIONS TO GLASGOW MEDICAL CHARITIES.

The late Mr. Robert Allison of Paisley, who died recently, has left a large number of legacies to various medical charities and other benevolent institutions in the West of Scotland. The total sum is £25,500; the residue of his estate, which is expected to be considerable, is to be divided between Paisley Infirmary, Glasgow Royal Infirmary, Glasgow Western Infirmary, and Glasgow Victoria Infirmary. Among the other medical charities that will benefit to the extent of £1,000 each are the Paisley Eye Infirmary, Glasgow Eye Infirmary, the Glasgow Samaritan Hospital for Women, Glasgow Cancer Hospital, and Glasgow Royal Hospital for Sick Children; the Glasgow Hospital and Dispensary for Diseases of the Ear, and Glasgow Hospital for Skin Diseases, will each receive £500.

## EDINBURGH CONVALESCENT HOME.

The Astley-Ainslie Institution for convalescent patients from the Royal Infirmary of Edinburgh is now proceeding with the second portion of its scheme. The first portion was sanctioned about a year ago and two pavilions for male and female patients, each accommodating about forty persons, are now nearing completion. The second portion of the scheme provides for the erection of three new blocks, including a nurses' home, sitting-rooms, lecture room, and other administrative buildings. The whole is planned for 150 convalescent patients, and is designed to act as an auxiliary hospital between a convalescent home and a hospital in which treatment is

provided. The scheme is to a great extent on the lines of the chief recommendation made by the Departmental Committee of the Scottish Board of Health for the establishment of subsidiary hospitals connected with general hospitals to relieve the congestion in the latter.

## Ireland.

### MEDICAL RESEARCH IN IRELAND.

A discussion on medical research was held on November 19th by the Section of Pathology of the Royal Academy of Medicine in Ireland. Dr. J. W. Bigham, professor of pathology and preventive medicine in Dublin University, who was in the chair, gave an opening address, in which he limited himself to laboratory research, describing its motives, prospects, methods, and embarrassments. The difficulties of the research worker were partly inherent in his work and partly forced on him by the necessity of engaging in teaching, routine diagnostic work, or public health; it ought not to be necessary to hold over research work until such daily duties had been finished. The present position in many university laboratories of pathology and bacteriology was a serious bar to progress in research. He pleaded for the adequate payment of research workers and for the encouragement of medical research in Ireland, where hitherto it had been much neglected. Dr. T. G. Moorhead dealt with clinical research, of which, he said, there was as much need to-day as there had ever been. The tendency to replace the teaching of therapeutics by education in scientific pharmacology was, he thought, a mistake, since the action of drugs on healthy animals might differ from their effect on sick patients. To ensure collaboration between clinicians and laboratory workers, he credit should be given to the clinical aspect of the laboratory worker. Dr. Moorhead deplored the meagre salaries of university teachers generally, and hoped that a new spirit of progress in the Irish Free State would result in a considerable increase in the endowment of medical research. Mr. W. Doolin referred to the fame of Dublin as a centre of medical investigation in the time of Abraham Colles, Cusack, and Henry Marsh. In the present state of poverty of the country Ireland was unable to keep up with wealthy countries, such as America, in the race of scientific progress, and it was impossible to carry on research at present on a grand scale. Clinical research needed greater consideration than it was receiving, and very correctly performed surgical operation was a physiological observation, the operating theatre being the laboratory of the surgical worker. A whole-time teaching and research surgical unit should be established for the study of such problems as the true significance of Graves's disease, the prevention of intraperitoneal adhesions, and the physiology of bone. The present inadequate training of students in research was lamented by Dr. T. T. O'Farrell, who considered it the cause of lack of interest in research, which accounted for the paucity of investigators. Professor J. M. O'Connor agreed that all research work should be associated with teaching so far as possible. Elaborate equipment was relatively unimportant, and much valuable research could be done with inexpensive apparatus. Dr. W. MacFetridge thought it was impossible to expect funds from the Government; the only chance of obtaining money lay in private generosity. He believed that by providing in Ireland a body corresponding to the Medical Research Council some support would be obtained. Whole-time research workers were needed in Dublin and England the Medical Research Council had first been financed by money derived from the National Health Insurance scheme, and thought that something similar might be done in the Free State. More young men should be admitted to hospital staffs; in some cases small salaries were already being paid to enable them to carry on work in hospitals after graduation. In Dublin men were needed to direct research as much as to perform the actual investigations.

## Correspondence.

### LEPROSY: ITS TRANSMISSION AND TREATMENT.

Sir,—Of recent years a number of statements have appeared, both in the medical and the lay press, on the curability of leprosy by various forms of treatment. Certain of these statements have been made by men with long and close experience of the disease, who have had ample opportunity of testing the value of the particular treatment they advocate, in a large number of cases and over a long period of years. Equally forcible statements have been made by others, based on isolated cases, without having them under observation for a sufficient time to know if any improvement which may have occurred was permanent.

In the present state of our knowledge statements with regard to the cure of leprosy, in the ordinary sense of the term, as understood by the lay mind, are to be deprecated, as they are not only misleading to the public, but are apt to cause bitter disappointment to the patients themselves. Everyone with considerable experience of the treatment of leprosy has had cases in which the disease has undergone periods of more or less complete remission while under some form of treatment. These remissions have been too often temporary, and, after a longer or shorter interval, especially in early cases, a recrudescence has almost invariably occurred. It is necessary, therefore, before making definite statements with regard to cure, that the treatment employed should be thoroughly tested, and that the cases in which it is being used should be observed over a period of years.

Another instance of a claimed cure appeared in the last issue of the *BRITISH MEDICAL JOURNAL*, in a paper by Dr. E. Graham Little, under the heading of "Acute nodular leprosy originating in this country and cured by vaccine treatment." As this case has only been under the writer's observation for about six months, it seems to us that it is premature to regard it as cured, however much the appearance of the patient has improved during the treatment.

There is another point in the title of the paper which is misleading and somewhat alarming—namely, the description of the case as having originated in this country. The case was that of a Chinese student, who was shown at the Royal Society of Medicine in May, 1926, and who had only arrived in this country in November, 1925. He was seen by one of us on May 28th, when, in addition to the nodular leprosy for an indefinite period, certainly longer than six months. Both his ulnar nerves were thickened, there was anaesthesia in the area of distribution of the ulnar nerve on the left hand, and commencing "main en griffe."

Three contact cases of leprosy, to our knowledge, have originated in this country of late years in patients who have never been out of the country, and who have been infected by long and close contact with relatives, who brought the disease from abroad. These were reported by one of us in the *BRITISH MEDICAL JOURNAL* (1925, vol. i, p. 107). The case referred to above does not belong to that category.—We are, etc.,

GEORGE C. LOW.  
J. M. H. McLEOD.  
PHILIP MANSON-BAHR.  
JAMES H. SEQUENNA.

December 3rd.

### ADVISORY COMMITTEE ON SPIRITUAL HEALING.

Sir,—We, the undersigned medical members of the Archbishop of Canterbury's Advisory Committee on Spiritual Healing, should be grateful to any medical practitioner who could supply us with information regarding patients who have received benefit from spiritual healing, whether through an organized mission of healing or individually. We appreciate that names could not be given without the permission of the patients concerned, and although we should like to have them where consent is given, we should, nevertheless, be glad to receive any information that can properly be supplied, as the desire of the committee is to

collect evidence as to the value of spiritual healing, and the type of person most likely to be helped by it.

Letters may be addressed to any of the signatories.—We are, etc.,

WILLIAM BROWN.  
H. CHARLES CAMERON.  
J. WALTER CARR.  
W. McADAM ECCLES.  
PERCIVAL H. S. HARTLEY.  
MAURICE CRAIG,

London, N.W.1, Dec. 6th.

Honorary Secretary.

### THE PUBLIC, THE DOCTOR, AND THE MASSEUSE.

SIR,—Those branches of treatment that are described collectively as "physical" are rapidly increasing in scope and importance, and consequently a situation has arisen that needs very careful review.

The number of qualified medical men who have studied these methods seriously is very small. The number of patients who seek it is very large. Consequently the vast majority of these must place themselves in the hands of masseuses who lack the competent supervision that they need.

To avoid unnecessary detail I will dismiss the subjects of massage, and that part of medical electricity that comes under the general heading "galvanism" and "faradism," with the remark that they are, as a rule, free from danger, and their practice by those of mediocre understanding leads merely to results that fall far short of those attainable by a fully qualified doctor who is an adept at this particular branch of medical study.

When we come to the subject of diathermy and artificial phototherapy, however, the case is much more serious.

The diathermy current is being used more and more as time goes on, and it is found to be of great value in stimulating the physiological action of certain tissues, and as a destructive agent in various "surgical" operations.

Fortunately the nature of the application in these "surgical" methods places them out of reach of the unqualified operator, but the "physiological" application of this current—that is to say, the passage of moderate diathermy current through portions of the body in the treatment of rheumatoid and other affections—is constantly carried out by masseuses, and entails much danger to the patients.

The effect of the current is to raise the temperature of the deep tissues through which it passes. If the current is applied through the skin by means of large electrodes the heating effect on the skin may be slight, but deep tissues traversed by the current may be heated up to the point of destruction without any sensation of pain or discomfort being felt by the patient.

Not very long ago I saw a patient who had been treated by a masseuse for brachial plexus neuritis. Pads had been applied to the outer aspect of each shoulder, and the diathermy current passed through the shoulder-joints and intermediate cervical region between the two pads. The arms had been placed in such a position that the current had been concentrated through the shoulder-joints. No pain was felt, but after several treatments one of the shoulder-joints was rigidly ankylosed by the destruction and sealing up of the synovial membrane and capsule, the condition being absolutely incurable. The movement of the opposite shoulder was permanently limited.

When the current is passed through the sacral region in a careless manner between electrodes placed on the sacrum and the vesical region of the abdomen in front, or else from hip to hip, there is a great danger of concentration of the current through knuckles of gas-filled intestine. The result of this may easily be ulceration and adhesions coming on at a later date and quite unsuspected by the doctor whom the patient may consult for the serious symptoms that ensue. Again, the simple passage of more than a safe measure through, say, the ankle-joint, may seal up lymphatic vessels, with permanent and serious results.

The board of examiners of the Chartered Society of Massage and Medical Gymnastics, after special consultation, decided to exclude diathermy from the curriculum and

examination of the massage students, yet large numbers of them practise it daily.

The pity is all the greater because in the safe and competent hands of a doctor who has specialized in this form of treatment, diathermy is magnificently successful in many cases of chronic inflammation.

Phototherapy is another form of treatment that offers much danger to the patient in incompetent hands. The constitutional effect of treating the skin by ultra-violet rays is obtained by the radiation of cholesterol in the cutaneous cells. A factor is produced which profoundly influences the general nutrition of the body. Many patients are very sensitive to this factor. The danger of overdose arises particularly when the skin has ceased to be inflamed by any ordinary intensity or duration of the radiation. The constant production and absorption of the factor above referred to in excessive doses may then produce marked symptoms of malaise and exhaustion in even a healthy person. In those who are already ill the result is often very harmful. Patients who are losing weight under a certain dosage may put on weight when the dosage is reduced.

The symptoms produced by phototherapy being (except the easily detected dermatitis) constitutional, the treatment should therefore only be given by doctors, or properly qualified hospital nurses, who are trained to observe them. To place it in the hands of others is a great mistake. Even the trained nurse should have the actual supervision of a doctor who has really studied the treatment, and the growing tendency of nurses to set up in "private practice" with clinics of their own is much to be deprecated. In the case of the masseuse the danger is infinitely worse.

Consideration of what has been said here must surely lead to much uneasiness as to the direction in which physical treatment is drifting.—I am, etc.,

London, W.1, Nov. 28th.

G. MURRAY LEVICK.

### ERYTHEMA NODOSUM IN MEMBERS OF A FAMILY.

SIR,—In his interesting communication on this subject (BRITISH MEDICAL JOURNAL, December 4th, p. 1049) Mr. D. Gordon Robinson states that on searching the literature he can find no record of such a seemingly "infectious" nature of erythema nodosum. In the *British Journal of Children's Diseases*, London, 1925, xxii, p. 133, after referring to the association of erythema nodosum with various infectious microbes septicaemias besides "tuberculous bacillæmia," I wrote:

"In many cases, however, the cause or causes of erythema nodosum remain altogether obscure, so that there is some justification for the term 'nodal fever' (*febris nodosa*), introduced by Dr. A. A. Lendon in 1905. . . . Such a view would account for the occasional small epidemic outbreaks, such as have been described by E. Ledoux (*Revue de Médecine*, Paris, 1923, xl, p. 321). A familial constitution ('familial soil'), in addition to familial exposure to infection, might help to account for familial occurrence, as that noted by P. Woringer in his paper on familial erythema nodosum (*Journ. de méd. de Paris*, 1923, xlii, p. 241)."

—I am, etc.,

London, W.1, Dec. 5th.

F. PARKES WEBER.

### TREATMENT OF ACUTE POLIOMYELITIS.

SIR,—There are certain statements in Sir Robert Jones's letter in your issue of November 27th (p. 1018) which, coming as they do from such an acknowledged authority, will become axiomatic in the treatment of acute poliomyelitis unless they are shown to rest on an incomplete appreciation of the recent developments and possibilities of electro-physics in relation to physiology.

The first of these is the statement that "it is certain that the child is in considerable danger from premature massage and electricity." A patient suffering from acute poliomyelitis is in no danger from either the one or the other, provided always that a fully medically qualified physio- or electro-therapist be consulted, as he is, or should be, equally aware with the orthopaedic surgeon of the need for complete rest and the importance of refraining from any procedure involving exposure, movement, or stimulation.

The second statement to which I desire to draw attention is, "In the presence of acute symptoms it is dangerous to stimulate the peripheral ends of nerves connected with haemorrhagic and inflamed centres." This statement by itself is unexceptionable; in its context, however, it obviously means that all "electricity" must necessarily be stimulating and cannot be sedative, and therefore is dangerous. If this reading of his meaning is accurate, then Sir Robert's data are incorrect, as all "electricity" is not, *ipso facto*, stimulating, as electro-therapeutical currents exist which are entirely sedative.

If the injured cord lay more superficially and Sir Robert Jones could, with a minimum amount of movement, foment it where the "haemorrhagic and inflamed centres" exist, would he not unhesitatingly do so? I feel convinced he would. Has he ever propounded this problem to a competent electro-therapist and made trial of the resulting suggestion? If he has not and will do so, I can assure him, from personal experience, that he will be pleasantly surprised with the results. —I am, etc.,

London, W.1, Nov. 30th.

C. B. HALLID.

Sir,—The necessity for and the great value of rest in the treatment of acute poliomyelitis was stressed by you, in your leading article of November 20th (p. 947), and also by Sir Robert Jones in your correspondence columns of November 27th.

While recognizing the essential importance of rest as a curative factor in the treatment of the paralysis left by this disease, it seems to me that there does come a time when this Palian policy—as Sir Robert Jones calls it—should give place to, or rather should be combined with, a more active form of treatment. Rest as the only form of treatment must, if logically pursued, finally result in immobilization.

Sooner or later every practitioner in charge of a case of poliomyelitis has to face the question of the possibility of his patient's return to an active life. Whether rest has been followed out for twelve months or for two years—and personally I favour at least twelve months' recumbency in lower limb paralysis—it must ultimately come to an end.

The final judgement of parents on our management of a case of poliomyelitis is based on the subsequent proportional ability of the individual to lead a normal life and to earn a living. Put shortly it is this—can our patient ultimately walk (if a lower limb paralysis), and can he use his hands and arms to obtain a livelihood (if an upper limb paralysis)?

A long view of this character must be taken from the beginning of treatment if full ultimate success is going to be obtained. When careful attention has been paid to the details of rest, as so frequently and so ably laid down by Sir Robert Jones, this particular part of the treatment is comparatively easy.

The real difficulties of treatment are experienced when the attempt is made to regain movement. Much has been written and many investigations made regarding the prevalence, infectivity, etc., of this disease. The statistical region, as it might be called, has been very fully explored; but from the practitioner's point of view the much more important questions concerning recovery of movement and of function have been only lightly touched upon.

It cannot be a heresy to agree that rest and the prevention of deformities are vital parts of treatment, but at the same time to argue that these alone are insufficient to obtain the greatest possible amount of recovery of voluntary movement. It will possibly be stated that if muscles do not recover with rest and relaxation of opponents they will never recover at all. Also, if they do not recover, splints such as walking callipers, etc., will be necessary for the remainder of the patient's life.

This method of treatment has never completely satisfied me. I hate to see an individual permanently encumbered with a splint. When one is convinced that the acute inflammatory process has quite subsided—in many cases three months after the onset—a beginning should be made with the attempt to obtain re-education of the "apparently paralysed" muscles. Every effort should be made to obtain as much recovery as possible while the patient is

recumbent—that is to say, during the first twelve to twenty-four months. Recovery after this period, when the patient is up and about, is much more difficult.

These "apparently paralysed" muscles, although very responsive to proper methods of treatment, are exceedingly delicate structures, and if subjected to fatigue they rapidly waste and lose strength. This fatigue has to be carefully guarded against, and considerable skill is required to re-educate muscles satisfactorily. While fully aware of the danger of fatigue, the practitioner should always attempt muscle re-education (the principle of the minimal load), as without it the child has a definitely reduced chance of making a useful recovery.

I do not believe in the use of electricity in this disease, and I consider that the role of massage is very limited. —I am, etc.,

London, W.1, Nov. 20th.

CHARLES MACKAY.

Sir,—My experience as an orthopaedic surgeon brings me into daily contact with these cases. From the onset of the epidemic at Grays, and elsewhere in Essex, I have had the privilege of seeing, advising, and treating nearly all the patients, in consultation with Dr. Boul and other medical men.

As cases are still occurring, and now throughout England, I feel we cannot emphasize too strongly the following points: the deadliness of the disease, the importance of segregation and prophylaxis, the absolute necessity of prolonged treatment, and the very great risk of spreading the disease by the closing of boarding schools.—I am, etc.,

B. WHITCHURCH HOWELL, F.R.C.S.

London, W.1, Dec. 6th.

#### SURGERY IN GENERAL PRACTICE.

Sir,—I entirely agree with Sir James Berry. I am a Fellow of the College of Surgeons in general practice. For more than ten years I have given up all but minor surgery as a mute protest against what I see. When such operations as gastro-enterostomy and excision of the upper jaw are undertaken by general practitioners who do not perform a dozen major operations in a year, it is time that someone spoke out.—I am, etc.,

November 30th.

F.R.C.S.

Sir,—Sir James Berry does not appear to realize that many general practitioners who do major surgery and who are members of the staff of the hospital in the town in which they practise make considerable efforts to qualify themselves for the surgical work which they are called upon to perform.

Commencing their training whilst holding one or more house appointments at a big hospital, they supplement their knowledge and experience by taking out courses in operative surgery and by periodical visits to the operating theatres in London or other large centres, where they see the latest improvements in methods and technique.

The Fellowship of Medicine, in the development of which Sir Arbuthnot Lane has taken great interest, has, in recent years, enabled many men to pay these periodical visits under the most advantageous conditions.

As Dr. Gordon Taylor says, we general practitioner surgeons have to live among the people upon whom we operate, and if the results obtained were not sufficiently good, our colleagues would soon cease to ask us to operate on their patients, and our own patients would no longer ask us to operate upon them or on other members of their families.—I am, etc.,

December 6th.

M.D., F.R.C.S. (In general practice.)

Sir,—This appears to me to be another onslaught on the general practitioner, who has but recently survived the charges of being an incompetent obstetrician.

The general practitioner will not undertake that surgery which he knows he cannot accomplish. Moreover, the claims (to do surgery) of many men engaged in general practice are sometimes greater than those of some "half-baked specialists." Some of us have but recently taken to general practice and have probably done more surgery



than anything else; we cannot announce our claims to the local world as we take our place in the practitioner ranks; but we are thankful to get the opportunity of doing surgical work when it comes our way.

I have known a lady whose appendix was removed by a consulting surgeon "as a placebo." (He told me so.) I met her accidentally through the nurse sending for me (as an emergency) because the patient had a severe secondary haemorrhage in the region of a post-operation faecal fistula. I tied the artery and reported to the surgeon, who had been unable to come himself. Accidents will happen, but suppose this state of affairs had occurred to a general practitioner's case? He would probably cease doing appendicectomies! But do not these pronouncements from some of the consulting class, whether on surgery or on obstetrics, savour of an intolerable egotism?

The general practitioner is usually the unpaid agency through which many cases are introduced to the consultant. There are many consultants—surgeons and non-surgeons—whom it is not only a pleasure but an education for me as a general practitioner to meet professionally, and most men in general practice will endorse this view. But in every class, political or surgical, there are irritating extremists to be found.—I am, etc.,

Swansea, Dec. 4th.

L. W. HEFFERMAN.

#### TEAM WORK IN A SMALL HOSPITAL.

SIR,—Your correspondents have already made a strong protest against the remarks of Sir James Berry severely criticizing the work of the operating general practitioner. My object in writing is to suggest a policy that will enable the operating practitioner to increase his usefulness and enlarge the scope of his activities. This policy has been adopted and is working well in a small provincial hospital of eighty beds. After the great war, when practically all the staff had served in France or the Far East, the advantage of team work was realized, and we tried to put our house in order. As five at least of the staff of ten honorary physicians and surgeons had acted as surgical specialists in the R.A.M.C., there was little difficulty in inaugurating a scheme of work.

The details of the arrangement are, briefly: Each member of the staff is to devote himself, in addition to his ordinary routine, to one special branch of surgery or medicine. We have therefore the following departments: (1) Diseases of children; (2) diseases of women; (3) nose, throat, and ear; (4) radiology and electro-therapeutics; (5) eye department; (6) venereal diseases; (7) pathological department; (8) urinary diseases; (9) orthopaedics.

Each member of the staff took the subject in which his inclination and previous experience enabled him to make a good beginning in the specialty of his choice. The municipal authorities have already recognized the value of the system by appointing those of the staff whose work justified the choice to do special obstetric, throat and ear, and eye work in connexion with school children and other activities of the medical officer of health. This happy arrangement has only been rendered possible by good feeling and professional enthusiasm in a body of men who take a pride in their local hospital.—I am, etc.,

Lowestoft, Dec. 6th.

H. MUIR EVANS.

#### SANATORIUM TREATMENT.

SIR,—It is with diffidence that I again make use of your columns on this subject, but I think Dr. Clarke's letter (November 27th) calls for a reply.

I have been accused by Dr. Gillespie (October 30th) of "resorting to a controversial device"; whether I did misrepresent him as saying what he did not say I am content to let your readers decide, but I will reply to Dr. Clarke's points by a method which presumably I may be allowed to use without question, by producing statistical evidence, much of which can be found in the memoir itself.

1. Though it is true that the *mean* time before admission of the incipient group of patients to sanatorium was as stated by Dr. Clarke, 114 out of the 170 cases, or two-thirds, were admitted within six months, and 97, or 57 per

cent., within three months of their first visit and classification. In considering histories over a long period like six years the *mean* latent period gives an erroneous impression, since it is unduly increased by a very small group of cases admitted three, four, or five years after first coming under observation.

2. The progress of the 114 cases admitted within six months, 85 per cent. of whom were admitted within three months, has been separately assessed in Tables III to VII, and their progress shown to be apparently no better than those admitted after a longer delay or not at all. A considerable proportion of these cases (about 75 per cent.) were recommended for sanatorium immediately, on the basis of the first examination, allowing no opportunity for selection on the basis of progress such as Dr. Clarke postulates.

3. The possibility of such selection coming in, which he says we "appear to have forgotten," is, in fact, examined on p. 440 of the memoir by the most accurate method available for such purpose—namely, by measuring the fall in weight of adult patients subsequently chosen for sanatorium in the interval between first visit and admission. For incipient cases this fall in weight averaged about half a pound, as compared with a mean increase of about the same amount in those not chosen for sanatorium (over a similar period), and the conclusion was that "the average loss here is too small to be appreciable in influencing selection" (p. 440), and certainly too small to be responsible for any considerable differences in ultimate progress of the groups.

4. In case body-weight be objected to as an insufficient index of progress during the waiting period, my colleague Miss N. Karn has taken out the following figures for adult male patients, using the general assessment of progress employed in the memoir.

Percentage of Adult Male Patients Classified as "Stationary or Worse" amongst the Total Still Alive and Under Observation.

	During first 3 months.			During second 3 months.
	Li.	La.	Li and La.	Li and La.
Men subsequently sent to sanatorium	59.1 ± 7.1	62.5 ± 4.5	62.2 ± 3.8	53.2 ± 3.8
Men not so sent	51.8 ± 5.2	64.9 ± 3.1	62.1 ± 2.6	55.6 ± 3.1

There are no significant differences here, and I think I have said enough to prove that the manner in which the patients were progressing between classification and selection for sanatorium was actually not a factor of much importance in that selection.

The question as to whether the "methods of reasoning" used in the memoir are "faulty" or otherwise can be safely left for experts in such matters to decide. One thing, however, is certain: if the ultimate curative value of sanatorium treatment for patients in the aggregate cannot be proved by statistical methods it cannot be proved at all. I would venture to suggest that a more convincing and useful form of argument than any of those which have been used would be the production of other figures which, to the satisfaction of experts, lead to a conclusion contrary to the one we have reached. It cannot be denied that the difficulties to be faced in such an inquiry are very considerable, but they are not insurmountable, and the issues involved are of sufficient magnitude to justify repeated attempts and the expenditure of much ingenuity and labour in an effort to reach the truth. If the present discussion has done anything to make clear the need for a repetition of this investigation by similar or improved methods on other municipal tuberculosis records, it will not have been fruitless. To throw doubt on the real curative efficacy of sanatoriums without being able to suggest a better substitute must be a task neither inspiring nor congenial, but to continue to leave in doubt a matter of such importance through lack of the courage or will to face it is a policy which will do us no credit.—I am, etc.,

PERCY STOCKS.

Galton Laboratory, University College, London.  
Nov. 23th.

### A MEDICAL ASPECT OF MINERS' SHORTER HOURS.

SIR,—The conclusion of Dr. G. Arhoun Stephens, in his letter in the *BRITISH MEDICAL JOURNAL* of November 13th (p. 906), is that the nine-hour day is better for the miners than the seven-hour day, because it is less exhausting, enables food to be partaken of when underground, and lessens the "pace" of the work. Dr. Stephens claims that these factors, together with certain recent methods of working the coal, result in more colliers giving up day-work for piece-work on account of heart and nerve trouble at 50 years of age. Obviously, medical data are not forthcoming and need to be collected before his conclusions can be seriously considered.

There is, however, another medical aspect to shorter hours—namely, the number of accidents arising from industrial fatigue. The Labour Research Department in a circular of August, 1926 (p. 171), states that there are no properly analysed and comparative statistics of industrial fatigue for coal-mining. There is, however, clear general evidence that what matters is the cumulative strain of longer working hours. This shows itself in the reduction of the total number of accidents following on the reduction of hours in 1919. (See Mines Department Report below.)

There is shown to be a reduction in all accidents when the seven hours became operative. From 1922 onwards there has been a worsening of the miners' wages; their endurance has been weakened and the result has been more accidents. Both lower wages and longer hours lower the average physical condition.

*Accidents at All Mines.*

Average.	Fatal Accidents per 100,000 Employed.	No. Seriously Injured per 1,000 Employed.	No. Injured per 1,000.
1904-1912 ... ..	136.3	5.6	145.6
1913 ... ..	151.5	5.1	154.9
1919 ... ..	97.5	3.6	97.7
1920 ... ..	69.0	3.5	93.8
1922 ... ..	91.8	4.1	158.6
1923 ... ..	105.8	4.3	172.9
1924 ... ..	97.7	4.0	158.2

Figures for 1921 are not included as they were affected by the stoppage.—I am, etc.,

Plymouth, Nov. 20th.

F. G. BUSHNELL, M.D.

### THE THEORY OF DIAGNOSIS.

SIR,—Dr. F. G. Crookshank's Bradshaw Lecture, as reported in the *BRITISH MEDICAL JOURNAL* of November 20th (p. 955), bristles with interest. I see he states that Galen was himself largely "to blame" for the woodenness into which mediæval Galenism lapsed; this will be news to many people, as I think it has been always understood that the fault lay essentially with Galen's successors.

But this by the way. Dr. Crookshank's address was mainly a brave plea for nominalism (or, more exactly, conceptualism à la William of Occam). In other words, it was a convincing attack on present-day entity-worship in medicine—on the dangerous tendency shown by our art to become dominated by words. There is one other point. Do those who agree with Dr. Crookshank's contention also realize how the danger is being added to by the growing bureaucratization of medicine, with its insistence on schedule-filling, "exact diagnosis," etc.? After all, is not this largely a psychological matter, and, if so, what have the psychologists to say about it?—I am, etc.,

North Queensferry, Fife, Nov. 23rd.

A. J. BROCK.

### APPENDICITIS AND VEGETARIANISM.

SIR,—Mr. Hamilton Bailey's letter in the *JOURNAL* of September 18th (p. 545) is of particular interest to those practising in India. In certain parts of India a fair proportion of the people is strictly vegetarian, and the occurrence of appendicitis among them is not an uncommon

thing, though not so common as in Western countries. During the last two months I have operated upon two cases of recurrent appendicitis, and both the patients were lifelong vegetarians.—I am, etc.,

Sadia, India, Oct. 18th

D. D. VARIJAYA, F.R.C.S. Edin.

SIR,—The infrequency of appendicitis among natives of India, to which further reference was made in your issue of December 4th, is undoubtedly a very definite fact. On several occasions on which I held charge of surgical work among Indian troops I was struck by the quiescence of their appendixes. I have seen one or two cases among Gurkhas, who are certainly Northerners though hardly Indians; but during one appointment, lasting over twelve months, as surgical specialist for Indian troops, Rawalpindi Divisional Area, I did not find cause to remove a single appendix.

In my experience the immunity, as far as army personnel is concerned, appears to fall fairly evenly on all natives, although the martial Northern races naturally come under wider review.—I am, etc.,

London, N.W.3, Dec. 5th.

B. FRASER BEATSON,  
Major, late I.M.S.

### Obituary.

DR. LIONEL WYKHAM HAYWARD, who died at Adelaide, on September 12th, aged 45, was the second son of Colonel W. T. Hayward, C.M.G., LL.D., at one time chairman of the Australian Federal Committee, and well known to many members of the British Medical Association in England. He was educated at St. Peter's College, and graduated M.B., B.S. of the University of Adelaide. After practising for some time at Port Adelaide his health broke down, and he went up country to Loxton, where he became closely associated with the tuberculosis sanatoriums at Bedford Park and Myrtle Bank. He took an active part in the founding of the Tubercular Soldiers' Association in 1920, and until the time of his death remained closely connected with it. Dr. Lionel Hayward was a strong advocate of the provision of permanent pensions for this disability and a keen supporter of preventive work, particularly among the young. Like his father he was a member of the South Australian Branch of the British Medical Association. His brother, Dr. Lancelot Hayward, is in practice at Perth, Western Australia.

DR. FREDERICK HARRISON TETLEY died on October 4th at the age of 74. He received his medical education at Glasgow, and obtained the L.R.C.P. and L.R.C.S. Ed. diplomas in 1877. He practised in Bungay for ten years, during which time he was surgeon, and later, consulting surgeon, to All Hallows Hospital, Ditchingham. In consequence of the failing health of his wife he gave up that practice in 1901, and for ten years spent the winters abroad, chiefly in Las Palmas, where he continued to practise and served as honorary surgeon to the Victoria Hospital to Seamen. He then retired from practice and devoted himself to travelling until the onset of the war, when he resumed his medical work, and for eighteen months carried on the practice of Dr. T. L. Ingram at Walford, near Rugby. After the death of Dr. Ingram, who was killed in action in 1916, Dr. Tetley was appointed surgeon to the Gnards at Caterham, and subsequently became physician to the City of London Hospital at Epsom, where he contracted typhus, which affected his health for some years. He also acted as chairman of medical boards in various parts of the country, and after the war served in the same capacity on pensions boards at Portsmouth, Dover, and elsewhere.

DR. WALTER ERNEST FRY, who died on November 11th, after a short illness, was born in 1869, and received his medical education at the London Hospital, obtaining the diplomas M.R.C.S., L.R.C.P. in 1895, and the D.P.H. in 1909. After experience as clinical assistant in the medical and ear departments of the London Hospital, resident clinical assistant to the Queen's Hospital for Children, and clinical assistant to the medical department of the West

London Hospital, he practised in Hammersmith, where he served as medical officer to the infant welfare centre since its commencement in 1911. He was surgeon to the throat and ear department of the London County Council school clinic, surgeon to the Parkside Maternity Hospital, medical officer to the Hammersmith school for mothers, and honorary secretary of the Hammersmith District Nursing Association; he had also acted as honorary secretary to the West London Medico-Chirurgical Society. For many years he gave active support to the British Medical Association, and was a member of the Metropolitan Counties Branch Council from 1913 to 1919, and again in the present year; he was vice-president of the Branch in 1921. From 1913 to 1919 he was honorary secretary and treasurer of the Kensington Division, and chairman from 1922 to 1925. Dr. Fry was a deputy representative from 1921 to 1925. He leaves a widow, one son, and two daughters.

Dr. C. J. LINTON PALMER of Stoke House, Gosport, who died on November 12th, aged 54, from pneumonia, was educated at University College, Liverpool, and took the diplomas of the English Conjoint Board in 1898. He served as resident medical officer at the City Hospital for Infectious Diseases, Parkhill, Liverpool, and later became resident medical officer to the lock, eye, and ear department and house-surgeon of the Liverpool Royal Infirmary. He removed to Gosport just before the war, and when hostilities broke out he became civil medical practitioner in charge of troops in the Gosport district. He subsequently took a temporary commission in the R.A.M.C., and served on the small hospital ships plying between Dover and Boulogne. Dr. Palmer was a member of the Portsmouth Division of the British Medical Association. He is survived by his widow and two children. The funeral service was attended by a large congregation representing all sections of the community.

Dr. RICHARD JONES OWEN, formerly of the Army Medical Department, died in London on November 17th, aged 87. He was the son of Dr. Owen Owen, took the M.R.C.S. and L.S.A. in 1861, and entered the army as assistant surgeon on March 31st, 1862, serving in the Royal Artillery, but resigned his commission on December 1st, 1865, over sixty years ago. He subsequently went to Australia, where he was in practice at Ballarat, Victoria, the famous goldfield for several years, and surgeon to the Ballarat Hospital; but retired from practice long ago. His name disappeared from the *Medical Directory* in 1883.

Dr. JAMES DOIG McCRINDLE, who died at his residence in Northampton on November 19th, at the age of 53, received his medical education at Edinburgh University and Guy's Hospital. He graduated M.B., C.M. Edin. in 1896, and obtained the D.P.H.Camb. in 1901. In 1897 he was appointed resident medical officer of the Birmingham City Hospital for Infectious Diseases, and held similar appointments at Nottingham from 1898 to 1900, and at Croydon from 1900 to 1902; at the latter place he was also bacteriologist and deputy medical officer of health. He was appointed medical superintendent of the Birmingham City Small-pox Hospital in 1902, and two years later became assistant medical officer of health. In 1907 he went to Northampton as medical officer of health, which post he held until his death. He was a prime mover in the establishment of the Creighton Sanatorium, which was built by voluntary subscription in 1910, and he remained an active member of the executive committee of this institution. He was a member of the South Midland Branch Council of the British Medical Association.

Mr. EDWIN WEISE COATHUPE, who died on November 23rd at Boscombe, was born as long ago as 1837. After studying medicine in the medical school and Royal Infirmary at Bristol, he obtained the diploma of M.R.C.S. in 1859. He was then appointed assistant surgeon to the Tredegar Iron Works, but, three years later, gave up

medical practice and was appointed to the detective branch of the Metropolitan Police, which at that time consisted of two inspectors and ten sergeants. After three years' service in London he returned to Tredegar as chief surgeon, but a year later resigned this appointment in order to become chief constable of Manchester at the time of the Fenian outrages. In 1876 he was chosen out of 122 candidates as chief constable of Bristol, an office which he held until 1894. After his retirement he lived abroad for some years, principally in Rome. During his period of office at Bristol the police force there doubled in size and was entirely remodelled. In accordance with his suggestion the city was divided into divisions, the rank of superintendent created, and the police fire brigade and the river police were established. He also introduced the general use of police vans, and was responsible for a great advance in the reputation of the police system in Bristol; many men trained by him obtained high positions in various parts of the country. At his retirement he was presented with an address and a cheque by the Bristol justices. We know of no other instance of a medical man quitting the practice of his profession for service in the police force and becoming a chief constable.

Dr. ALEXANDER LAWRENCE died at Chester on November 23rd, aged 81 years. He was born at Cullen, Banffshire, in 1845, and was educated at Aberdeen University, where he graduated M.A. in 1866, M.B., C.M. in 1869, and M.D. in 1872. After serving as clinical clerk to the West Riding Asylum, Wakefield, and superintendent of Chalmers Hospital, Banff, he became second assistant medical officer to the County Asylum, Chester, in 1870, and twenty-five years later succeeded Dr. Davidson as medical superintendent. In June, 1910, he retired on superannuation, when a presentation was made to him by the asylum visiting committee and staff. He was for many years a member of the Chester Society of Natural Science, and of the Chester Division of the British Medical Association.

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

At a congregation held on November 27th the following medical degrees were conferred:

M.B., B.Chir.—H. COSE, H. R. Youngman.

The number of medical students in the University this term is 457. Of these 163 are in their first year, 142 in their second, and 115 in their third year; there are 26 fourth-year medical students, and 11 in their fifth or later years.

### UNIVERSITY OF LONDON.

THE Paul Philip Reitlinger Prize, offered this year for the best essay embodying the result of some research work on a medical subject carried out by the candidate, has been awarded to William Stewart Duke Elder, M.A., M.D., F.R.C.S., who is now working at University College, London, for his essay on "The ocular circulation: its normal pressure relationships and their physiological significance." Next year the prize will be awarded for the best essay on "The nature of belief and its place in human experience."

The following candidates have been approved at the examination indicated:

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—(With special knowledge of Psychiatry): R. G. Anderson, D. H. Cameron, H. Harris. (With special knowledge of Mental Deficiency): R. M. Macfarlane.

### UNIVERSITY OF BIRMINGHAM.

Dr. OSCAR BRENNER has been appointed part-time assistant and Mr. Cecil C. Harris assistant to the Department of Pathology and Bacteriology.

Professor G. Elliot Smith, M.D., F.R.S., will deliver the Huxley Lecture in the medical theatre of the University on February 1st, 1927, at 5.30 p.m.

### UNIVERSITY OF EDINBURGH.

The following candidates have been approved at the examination indicated:

FINAL M.B., Ch.B.—H. E. S. Abuza, J. du R. Ackermann, A. Ahmed, J. B. Annau, T. W. Banks, F. W. Clark, A. R. Cowan, I. R. Guthrie, V. Dyreum, W. D. Forsyth, E. H. Griffiths, Euphemia T. Guild, Janet W. Jackson, Eva G. John, Isabella M. Marshall, E. P. L. Mason, W. H. Moore, Katherine M. Muirhead, K. B. Mukerjee, G. Nalajiet, J. G. Paul, M. R. J. Peters, F. W. Pringle, W. H. Rees, Janet C. Ronaldson, Roma M. Ross, G. A. Rylie, J. Singh, Marie Steven, E. Sutherland, Winifred E. Wall, Marjorie S. Waterston.

## UNIVERSITY OF ABERDEEN.

THE Munday Prize in the Faculty of Medicine has been awarded to Frances E. Bruce and John H. Oddy (equal) and the Vein Prize in the same Faculty to Brennan S. Cran and Anne F. Emmanuel (equal).

Prof. or Marnoch has been appointed and Professor Mackintosh reappointed assessors to the University Court, the former for the period to November, 1928, in succession to Professor Matthew Hay, and the latter for the period to November, 1930.

UNIVERSITY OF DUBLIN.  
SCHOOL OF PHYSIC, TRINITY COLLEGE.

F. W. PIENAR has been approved for the degree of Master in Obstetric Science (M.A.O.).

The following candidates have been approved in Part II of the Final Medical Examination:

M.B.—E. G. Monticouery, Margaret H. Donaldson, E. P. N. M. Farly, J. C. T. Sanctuary, M. L. M'Cauley, S. Margaret E. Deane-Oliver, J. B. Patrick, D. Blawitt, Rachel E. Port-r, J. J. Fitzgerald, R. Kahn, S. Gurevich, J. O. Bennett, H. A. Ferguson, R. A. J. Holmes-Lavers, J. Quigley, G. D. Edwards, C. F. M. Wilson, M. Hoffman, Kathleen R. Byrne.  
B.Ch.—V. St G. Vaughan, L. B. Somerville-Large, E. H. Harte, V. G. Horan, A. J. Conlin, Stella C. Ross, Annette K. Wood-Martin, E. P. N. M. Farly, D. W. Bingham, E. G. Monticouery, A. N. B. Odbert, Norma M. Smith, A. H. Gray, A. E. A. O'Dwyer, J. B. Patrick, D. A. O'Connell, L. A. Ellis, Rachel E. Port-r, W. P. Knobel, Gladys L. Craig, J. Johnston, J. J. O'Dwyer, C. F. M. Wilson.  
B.A.O.—W. F. Lane, A. H. S. MacFarlane, R. S. P. Hennessey, T. C. M. Corbett, S. D. K. Roberts, Wilfred D. C. T. Pigott, G. M. Smith, J. Jeaneon, P. Branigan, G. H. Henry, J. H. Stephens, M. F. N. Griffin, C. L. Day, Christina M'Donald, Ethel M. Weir, L. E. Bamber, H. C. Weir, G. M'Donald, S. R. Fimes, D. M. Brink, A. Sachs, T. J. O'Reilly, J. O. Bennett, A. C. C. Charles, S. B. Dalrymple, Norma W. Brown, C. F. Coyle.

\* Passed on high marks.

## ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

THE annual meeting of the Royal College of Physicians of Edinburgh was held on December 2nd. Dr. George M. Robertson was re-elected President for the ensuing year; Sir Robert Philip was nominated Vice-President; Drs. G. Lovell Gulland, R. A. Fleming, Robert Thin, John Orr, and Edwin Matthew were re-elected to form the Council.

At an extraordinary meeting held the same day Drs. Edward Arnold Carmichael and John Robert Lord, C.B.E., were elected Fellows of the College. Drs. William Russell and John Orr were elected representatives on the board of management of the Royal Infirmary of Edinburgh.

## ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

AT the monthly business meeting of the College on December 3rd the President duly admitted to the Licences in Medicine and Midwifery the following successful candidates at the Winter Final Examination under the Conjoint Scheme with the Royal College of Surgeons in Ireland:

D. P. P. Barry, J. J. Lee, P. H. M. McEntee.

## The Services.

## MEDICAL DIRECTOR-GENERAL, R.N.

UNDER revised regulations for the retirement of officers, the Medical Director-General of the Royal Navy is to be retired on ceasing to hold the appointment, or, if not previously superseded in the appointment, to vacate it and be retired on attaining the age of 65.

## DEATHS IN THE SERVICES.

Surgeon Commander William Henry Daw, R.N. (ret.), died at Lydford on November 14th. He was educated at the London Hospital, where he was scholar in practical anatomy in 1891; after taking the M.R.C.S., the L.R.C.P. Lond., and the L.S.A., in 1895, he served successively as house-surgeon at the London Hospital, house-physician and resident medical officer at the Royal Hospital for Diseases of the Chest, and surgeon to the Royal National Mission to Deep Sea Fishermen; afterwards he entered the navy as surgeon. He attained the rank of surgeon commander in 1912, and retired some six years ago. He was the author of a small work, *The Care of Consumption*, and of the articles on adenoids and craniotomy in *The Complete System of Nursing*.

Colonel Denis Moriarty O'Callaghan, C.M.G., Army Medical Service (ret.), died at Budleigh Salterton on November 6th, aged 64. He was the youngest son of the late Robert O'Callaghan, I.R.D., of Holton, Suffolk. He was educated at Queen's College, Cork, and at the Carmichael School, Dublin, and took the L.R.C.S.I. in 1884 and the L.K.Q.C.P. in 1885. He entered the army as surgeon on July 28th, 1886, was gazetted colonel in the long war promotion list of March 1st, 1915, and retired on November 11th, 1918. He had a long list of war services: Ashanti expedition, 1895-96 (star); Nile campaign of 1898, battle of Khartoum, mentioned in despatches in the *London Gazette* of September 30th, 1898 (medal, Egyptian medal with clasp); South African war, 1900-01, operations in Orange River Colony, including action at Wittebergen, and in Cape Colony (Queen's medal with three clasps); war of 1914-18, mentioned in despatches four times, and received the C.M.G. on June 3rd, 1917.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE principal debate in the House of Commons this week was on the vote of censure moved by the Labour party on December 8th, which challenged the conduct of the Government during the coal dispute. The official end of that dispute was marked on December 10th by the submission to the House of a resolution approving the cancellation of the Emergency Regulations.

On December 6th the Housing (Rural Workers) Bill, the Public Health (Smoke Abatement) Bill, and the Prisons (Scotland) Bill were passed through Report and third reading by the House of Commons. On December 7th the University of London Bill was read a third time and passed, and several small bills were advanced. Thursday and Friday were assigned to the remaining stages of the Judicial Proceedings (Regulation of Reports) Bill, the purpose of which is to prevent full reports of divorce cases where publication may do harm.

In the House of Lords the Workmen's Compensation (No. 2) Bill passed through Report on December 6th. The Births and Deaths Registration Bill was read a second time on December 7th.

The Coroners Bill was considered in a Standing Committee of the House of Commons on December 7th, and was set down again for December 8th.

## Housing Subsidy.

In the House of Commons, on December 2nd, Mr. Neville Chamberlain moved a resolution approving the draft order of the Minister of Health and of the Scottish Board of Health (presented on November 25th) which proposed to reduce the housing subsidy after next September by £2 in the £6 annual subsidy for twenty years under the 1923 scheme, and by £1 10s. in the £9 subsidy for forty years under the 1924 scheme. So long as it was understood that the subsidy would continue to be paid until the demand for houses was satisfied or until the price fell, there would be no fall in the price of houses. Mr. Wheatley said that national interest demanded healthy housing for the working class. The needs of London were estimated at 72,000 houses. Manchester still required 46,000 houses, and Liverpool had a waiting list of 20,000 applicants, every one of whom had at least two children. The case of Birmingham was equally bad. Leeds had 33,000 back-to-back houses, which it could not demolish till there were houses for the displaced population. He opposed the motion. Lord Henry Cavendish-Bentinck said Nottingham had 4,000 applicants on its waiting list and 3,000 houses unfit for human habitation. In Middlesbrough, of 1,679 tuberculous patients on the register, 486 were sleeping in beds along with persons who were not tuberculous. There were 220 houses each occupied by two families, and in each one family had tuberculous patients. In Birmingham Sir John Robertson reported that he had investigated a group of 527 houses, of which 130 were uninhabitable. Mr. Charleston said that in Leeds health corresponded exactly with the district of residence. Mr. Harris said that in London the pressure on housing had been as great during the last twelve months as in the year before. In the past year the London County Council had received 120,000 personal or written applications for housing accommodation. The L.C.C. list had been closed for some months. Mr. Montague said the nation was paying £80,000,000 to £86,000,000 annually for social services, and a great part of that expenditure was due to the bad health and inefficiency which came from overcrowding and bad housing. Mr. Gibbins said that in Liverpool houses which had long been condemned were still occupied by three or four families. Commander Kenworthy spoke of visiting houses in Hull, a hundred years old, with only one water-tap in a yard shared between twenty houses and with disgraceful sanitary arrangements. Dr. Baden Guest said that the arrears in normal housing had not been overtaken; housing was a living nightmare for the people. Mr. Greenwood said a large proportion of the Addison houses were occupied by bank clerks and professional people because the rents were too high for working-class people to pay. The rents of municipal houses were too high. In Nottingham, out of 4,500 applicants for houses, 1,300 wished to move from corporation houses into smaller and worse houses because they would be cheaper. Dr. Frenantle had made an estimate, which had never been refuted, that the annual cost of sickness to this country was £150,000,000, and Mr. Greenwood asserted that sum to be spent largely through the housing conditions. The late Mr. C. P. Child, in his presidential address to the British Medical Association, had said the country could spend without loss £50,000,000 annually in clearing slum areas if thereby the cost of sickness and disability were reduced by a third. Sir Kingsley Wood said that it was vital to the poorer members of the community that the cost of building should be reduced. Of 768,000 new houses built in this country since the war, nearly half had been completed in the last two years. The indications were that during the next twelve months the 200,000 mark would be passed. A Labour amendment was defeated; and Mr. Chamberlain's motion was carried by 181 to 111.

*Rural Housing.*

In the House of Commons, on December 6th, the Housing (Rural Workers) Bill was considered on the Report stage. Mr. C. Edwards, the Labour member for Bedwellty, moved an amendment providing that no assistance should be given for the repair of a house unless the local authority was satisfied that the house, when altered, would contain a fixed bath and that the walls or other partitions of the bedrooms would comply with the requirements of decency. Mr. Chamberlain, Minister of Health, resisted the amendment. He pointed out that in the Act of 1923 as amended by that of 1924, discretion was given to the Minister with regard to the provision of a fixed bath "in a bathroom." The amendment would give no discretion. If it were carried either a large number of proposals would be scrapped because the owners would not undertake the additional expense, or the fixed bath in a bathroom would be provided at the expense of some other alteration or improvement. In reply to further questions, Mr. Chamberlain said that he would consider whether he should issue a circular to the local authorities expressing an opinion that it was desirable to have a fixed bath in the houses. The amendment was defeated, and the bill was read a third time.

**University of London Bill.**

The London University Bill was passed through Standing Committee on December 2nd. Lord Eustace Percy (Minister of Education), in discussing its provisions, said a strong memorial, signed by many teachers of the University, pressed for the passage of the bill in the present session, but made one proviso—that the Government should make it clear that the Statutory Commission would have power to consider how the relations of the Council to the Senate should be defined in case of difference of opinion between the two bodies. He did not, however, see how any deadlock could arise, because questions of pure detail within particular university departments would not be dealt with by the Council, but by the Senate; but if the Statutory Commissioners, having laid down the general principles of the Council, and having defined the powers of the Senate, would have final authority in the matter that still there might be a deadlock. He thought that the Council would have power to consider any machinery which might solve that deadlock.

On Clause 4, relating to powers and duties of commissioners, an amendment requiring the commissioners, in framing statutes, to give effect to a number of directions for the constitution of the Senate and its standing committees, as set out in a tabled amendment to the schedule, was negatived.

A new clause making provision as to the appointment by the Crown of members of a council of the University was added to the bill. The bill was read a third time by the House on December 7th.

**Insurance Benefits.**

Mr. Chamberlain has stated, in answer to questions, that the amounts of sickness and disablement benefits paid to members of approved societies during the first nine months of 1925 and of 1926 could not be given, these figures only being returned for calendar years. From January 1st to September 30th, 1925, £13,046,000 was issued from the National Health Insurance Fund to approved societies in England and Wales to defray the cost of benefits and administration, and for the corresponding period in 1926 £15,740,000. During the same period of 1925 the income from contributions in England and Wales was £18,321,000, and the State contribution was £5,489,000. For the first nine months in 1926 the respective figures were £16,368,000 and £4,725,000.

Mr. Chamberlain told Colonel Applin that the new scale of fees for dental treatment had not been laid down by regulations, but had been reached by agreement between representatives of approved societies and the dental profession. A few societies had not adopted the scale. If it became clear that the adoption of the scale by a society was essential to the provision of a satisfactory service he would take the necessary steps.

The Minister of Health has decided, in view of the coal stoppage and consequent unemployment in various trades, that arrears of contributions under the National Health Insurance Act might be accepted up to January 31st, 1927, in cases where a society was satisfied that the delay in discharging arrears was due to financial difficulty arising out of the industrial situation. This decision was being conveyed to all approved societies.

*Sickness Benefit.*

Mr. Chamberlain stated, on December 6th, that the total amount of sickness and disablement benefit paid in 1925 to contributors to the National Health Insurance schemes in England and Wales, during periods of illness which rendered the contributors incapable of work, was, approximately, £13,849,000. It was estimated that the total number of weeks of sickness represented by this payment was upwards of 25,000,000. In making this estimate account had to be taken of a number of uncertain factors, and the result could only be regarded as a rough approximation.

In reply to another question, he said that it was an essential feature of the National Health Insurance Act that money payable by way of benefit should not be diverted to Poor Law authorities or otherwise used to relieve local rates. Benefit was not assignable.

*Dental Benefit.*

In an answer to Mr. Rhys Davies, Sir K. Wood said the new agreement on the scale of charges and conditions of service for the dental treatment of members of approved societies was arrived at by direct negotiation between representatives of the societies and of the dental profession. It involved some increased charge on the surplus funds of societies above that which would have arisen under the scale previously in operation, but the great majority of societies thought the additional advantages to be

secured under the new arrangement justified the extra cost. A few societies had not yet decided to adopt the new scale, but the Minister of Health did not think that the position called for any special action on his part at present. There was no reason to apprehend that the other societies, representing about 80 per cent. of the total, were likely to alter the existing arrangements, to which their representatives had agreed.

Mr. Blundell asked whether Sir K. Wood was aware that the dentists were following in the footsteps of the doctors. He asserted that unless some steps were taken they might in very many cases obtain remuneration out of proportion to the services they rendered. Sir K. Wood replied that approved societies and members of the dental profession both thought they had made a bad bargain. Consequently he inclined to think this a fair arrangement.

Replying to Mr. Rhys Davies in writing, Mr. Chamberlain said the number of claims for dental and other treatment benefits in proportion to membership undoubtedly varied between the different approved societies, but he had no evidence that this was to be explained by the failure on the part of some societies to carry out the requirement that they should send notice to all their members of the additional benefits provided. He did not think it necessary to inquire of every society as to the manner in which this requirement was carried out.

**Mental Deficiency Bill.**

The Mental Deficiency Bill came before a Standing Committee on December 7th. On the motion of Dr. Vernon Davies the word "strong" was omitted from the definition of "moral defective" as a "person in whose case there exists mental defectiveness coupled with strong vicious or criminal propensities." Mr. Chamberlain said he could accept the amendment, and Dr. Fremantle supported it, saying that to define mental deficiency was most difficult. The amendment was carried.

Mr. Atkinson called attention to the fact that there were no words in the definition of mental deficiency which would cover cases of encephalitis lethargica in an adult. The definition was limited to "arrested or incomplete development of mind." He moved to add "mental disturbance" to cover cases where the mind was deranged by disease after full development. Mr. Chamberlain said the Board of Control had never heard of moral imbecility following encephalitis lethargica in an adult. The exclusion of adults from this bill was deliberate, and even if cases of such sequelae occurred in adults they should still be excluded. The colonies contemplated by the bill were only suitable for young persons. At present adults could only be dealt with as lunatics. Dr. Fremantle said the separate system of dealing with mental deficiency in young persons had been deliberately built up—something quite distinct from mental hospitals—but the ordinary law of lunacy should be developed to allow of more treatment in mental hospitals. The number of institutions available for mental defectives in the ordinary sense was inadequate and should not be employed for adults. Answering a question, Mr. Chamberlain said he was informed that the maximum age at which mental development was completed was 25. Dr. Fremantle pointed out that the structure of the mind was deemed to be completed at 17 to 21. Mr. Atkinson's amendment was defeated. Dr. Vernon Davies moved similar amendments to extend the bill to "perverted" development of mind at any age as well as "arrested" development. Mr. Chamberlain said the addition of "perverted" would include adults, and he could not accept it. The Committee supported Mr. Chamberlain. In reply to Mr. R. Morrisou, Mr. Chamberlain said that the original definition of mental deficiency had proved too narrow. It was now recognized that mental deficiency need not be innate. Causes beside disease and injury might subsequently be recognized, and elasticity should be allowed lest unfortunate persons should be deprived of the protection of the bill. After some remarks by Dr. V. Davies the motion was not pressed. The Committee accepted an amendment by Mr. Chamberlain to make plain that the bill allowed mental defectives to be placed under supervision or guardianship or sent to an institution. Mr. Atkinson moved that three years should be substituted for five as the period during which the mental defective could be detained in an institution without re-examination. Mr. Chamberlain said that with the doubtful case of encephalitis lethargica there was scarcely any prospect of improvement in three years. The Board of Control would inspect the institutions twice a year and had absolute power to discharge at any time children thought to be cured. Dr. Davies said the investigations of the Royal Commission showed that no cases of illegal detention could arise. Mr. Chamberlain reminded the Committee that the first detention was for one year, not for five. There was no danger of cases of improvement being overlooked. Mr. Atkinson's amendment was defeated. The same member then moved that the Board should see that the mental defective was informed of his right to be examined by an independent doctor. Mr. Chamberlain gave a pledge that this would be done administratively. Sir Kingsley Wood moved to extend the safeguards of the bill to mental defectives placed in an institution by a parent or guardian. The Committee agreed. Dr. Davies moved that examination should be separately made by two medical men. He did this to protect medical men, who were nervous of these cases, fearing that they would be sued for damages. Mr. Chamberlain pointed out that the examination referred to in the bill was only of persons absent from an institution. The amendment was defeated. The Committee agreed to a proposal to authorize the local authorities to provide "occupation" where mental defectives could not benefit by "training," and consequential amendments were made. In reply to Mr. Tom Williams, Mr. Chamberlain said that only a small proportion of counties had provided institutions for mental defectives, but some had made arrange-



ments for the reception of children in other ways. The deficiency was serious, and pressure was being exerted on the county councils to provide institutions. After further minor amendments the bill was reported to the House.

### Smoke Abatement Bill.

The House of Commons, on December 1st, commenced to consider the Public Health (Smoke Abatement) Bill as amended in committee. Mr. Scurr said the bill was in many ways admirable. An agreement had been made for exempting certain processes in Sheffield, but there was no justification for giving the Minister power, as the bill did, to exempt other industrial processes. When consideration of the bill was resumed on December 6th Mr. Scurr's amendment was defeated. Rear-Admiral Beamish moved an amendment to bring within the scope of the bill the chimneys of domestic dwelling-houses in London. It was high time to make the same effort in regard to smoke as had been made in regard to drains. Sir A. Holbrook seconded the amendment.

Mr. Chamberlain said that the amendment would apply only to London and would deal, not with new houses only, but with all houses, and was therefore quite impracticable on account of the cost. A further difficulty was that there would not be enough gas and electricity to go round. The amendment was negatived.

Sir A. Holbrook moved to include private dwelling-houses in Class 5, which gives the urban authorities power to make by-laws requiring the provision of such arrangements for heating or cooking as were calculated to prevent or reduce the emission of smoke. The motion was supported by Mr. Hardie.

Dr. Hadow Grist said that the effect of the exclusion of houses would be that the smoke trouble would not be abated for a very long time. The direct effect of smoke was to cause a large increase in certain respiratory and other diseases. The indirect effect of smoke, especially in London and other great towns, by cutting off the rays of the sun, was to produce disease of a different character, not directly respiratory. These two factors would increase the health and efficiency of the country to such an extent as would make a substantial reduction in the amount of money actually paid in sickness insurance, for hospitals, and in other ways.

Mr. Chamberlain said that while it was perfectly true that domestic smoke was responsible for much more of the smoke nuisance than industrial smoke, yet that smoke was produced by the chimneys of some 8,500,000 existing houses in the country. The amendment only applied to new houses. It might be assumed that the number of new houses erected by local authorities provided for the methods which they desired to be employed in them, while a large number of houses erected by private enterprise were fitted with exactly the same appliances. Therefore only a trifling number of houses a year could possibly be affected by the amendment. It was not the function of the bill to provide research was devoting its attention and spending a substantial sum of money in investigating this subject. If a certain proportion of houses now built by private enterprise had the open fire instead of the gas fire, it was because the people who inhabited them desired it, and he was not prepared to deny it to them until there was a reasonably cheap, economic, and satisfactory alternative.

On the motion of Lieutenant-Commander Astbury, the coming into operation of the bill was postponed from January 1st to July 1st next.

The bill was afterwards read the third time.

### Lead Paint Bill.

Mr. Rhys Davies asked the Home Secretary why the chief medical officer of the Factories Department of the Home Office resigned his post. Sir W. Joynson-Hicks said the senior medical inspector of factories, having reached the pensionable age, applied to be allowed to retire, giving as his reason that he did not wish to be concerned in the administration of the Lead Paint (Prevention of Poisoning) Bill, and his application had been granted. Mr. Rhys Davies asked whether the resignation had been given when the Lead Paint Convention was adopted, and that mostly due to the fact that the chief medical officer was not in question. The Home Secretary replied: I do not know about his having carefully negotiated the Convention was adopted, and that he did not agree with the views which I have taken and the Government has taken with regard to the matter. I am expressing no opinion on the resignation. He could have served another couple of years possibly. He is quite entitled, if he desires, to resign his position, which he has done.

**Infantile Paralysis.**—On December 6th Sir Kingsley Wood told Colonel Gielton that no further cases of infantile paralysis had been notified in Rutland since the occurrence of two cases at Uppingham School during the week ended November 13th. In the present state of knowledge of this disease it was the practice of the Ministry of Health to recommend that patients who had been attacked by it should be isolated for six weeks from the onset of the disease. Asked how many cases of encephalomyelitis had been reported during the last six weeks, Mr. Chamberlain answered that encephalomyelitis was a generic term including conditions due to a variety of causes, some of which were not notifiable.

**The General Medical Council.**—Lord Sandon asked Major Hennessy, as representing the Lord President of the Council, whether the Lord President would select a non-professional member to fill the vacancy in the General Medical Council in January, and when his name would be announced. Major Hennessy said it was impossible to say in advance what action the Lord President might see fit to take when the occasion arose for filling this vacancy. Lord Sandon asked whether this meant that there was no parliamentary control in the matter. No answer was returned.

**Experiments on Animals.**—In an answer to Captain A. Evans, the Home Secretary said 1,059 vivisection licences were in force. Only one class of licence was issued. Particulars of the different certificates required for certain experiments were issued in the Home Office annual return. Mr. Macquisten asked whether there was any indication of whence the investigators obtained dogs and whether the animals were stolen or not. The Home Secretary said there was no indication. Captain Evans asked whether there were only two vivisection inspectors for the whole of Great Britain, and whether the Home Secretary would consider increasing the number. The Home Secretary said there was a strong tendency against such increase. One laboratory there was a notice, which showed the inspectors were doing their work well. In a further reply to Sir Robert Gower, the Home Secretary said he could not give reliable information on the number of dogs reported to the Metropolitan Police as missing or stolen during the past twelve months. Many owners did not notify the police of the return or recovery of a dog. On December 6th Captain Hacking (Under Secretary to the Home Office) stated that since January 1st 825 dogs had been used for experimental purposes in premises within the London area which were registered under the Act. All but a very few of the animals were kept under complete anaesthesia during the whole time of the experiment and were destroyed before recovering from the anaesthesia.

**Orthopaedic Treatment of Children.**—In a reply to Mr. Gaidner, Mr. Chamberlain said that orthopaedic treatment was provided for children of all ages suffering from surgical tuberculosis by the county and county borough councils under their schemes for the institutional treatment of tuberculosis, and for non-tuberculous crippled children under school age by the local authorities responsible for the maternity and child welfare service. It was open to the local education authorities to provide orthopaedic treatment for non-tuberculous children of school age in accordance with arrangements sanctioned by the Board of Education. An Exchequer grant was available in aid of these services amounting to 50 per cent. of the approved expenditure of the local authorities.

**Medical Attendance under the Insurance System.**—Mr. Chamberlain states that few specific complaints are received by the Ministry of Health regarding the medical attention afforded to pauper patients, and nothing has come to his notice since the publication of the Report of the Royal Commission on National Health Insurance which would justify any further inquiry. The Royal Commission exhaustively investigated the efficiency of the medical service under the National Health Insurance Act, and its report continued a very favourable verdict. He had received no report from the Kent Insurance Committee containing certain complaints in this matter.

**Opium in India.**—On December 6th Mr. C. Wilson asked whether, as a result of the Government of India's decision to reduce by 10 per cent. per annum the export of opium except for medical and scientific purposes, the imports into British dependencies in the Far East would be proportionately reduced; and whether an assurance could be given that opium for purposes of smoking would not be imported from other sources to compensate for the reduction in the imports from India. Mr. Amery said no such reduction would, in his opinion, be practicable at present.

**Research Stations in Palestine and East Africa.**—During the debate in Committee of the House of Commons on December 1st, when the Palestine and East Africa loans guarantee was considered, Mr. Ormsby-Gore, for the Colonial Office, said the reason why only a small proportion of the loan was set aside for research was that the Treasury would only give money out of loan funds for capital expenditure in connection with research. Money would be forthcoming for any further capital re-equipment of the Amari Instituto (East Africa), which would be turned into a first-rate scientific research institute, a link in the proposed chain of tropical research stations, of which Trinidad was the first.

### Votes in Brief.

Mr. Chamberlain hopes that the report of the committee investigating cases of encephalitis directly following vaccination will be published before long.

The number of pensions awarded to widows in England, Scotland, and Wales is 170,459. These include allowances for 269,100 children. Pensions have been awarded to 15,180 orphans.

The Minister of Health does not propose, as at present advised, to take any action concerning the Foundling Hospital site, as the question of its uses will come before Parliament on a private bill.

The total net cost of combating foot-and-mouth disease during the financial year ending March 31st, 1926, was £311,980.

Antimalarial measures making collections for hospitals, which have been made since 1920, will not in future be allowed.

Governmental measures undertaken in India by the provincial certain towns, the formation of antimalarial co-operative societies, and the systematic distribution of quinine at low prices. The area under cinchona cultivation is being steadily increased with a view to making India self-supporting in the supply of quinine.

## Medical News.

WE have received a copy of the Labour party's *Report on the Nursing Profession*, which is to be submitted to a conference of nursing and kindred organizations at the Caxton Hall, Westminster, on January 28th. The report, which has been prepared by a subcommittee of the Standing Joint Committee of Industrial Women's Organizations and the Labour Party's Advisory Committee on Public Health, says it is undoubtedly the case that the nursing profession, consisting of those who have undergone a course of long technical training, is relatively worse off with regard to remuneration, hours, and general conditions of labour than any other similar group of workers. For probationers in hospital service, a forty-eight-hour week and an eight-hour day are recommended, together with a minimum salary of £40 a year, better living accommodation, an annual holiday of three weeks, no night duty during the first year's training, with not less than one full day a week and one week-end a month off duty. In regard to fully trained nurses in the hospital service, the report declares that the only way in which they can deal effectively with their conditions and exercise any sort of equality in bargaining power is for the profession to be organized on trade union lines. Until a national joint council, representative, on the one hand, of the nursing services, and on the other hand, of the State, municipal, and other employers concerned, can be inaugurated, certain minimum standards are laid down which the report states those responsible as employers should endeavour to see carried out. These include a forty-eight-hour week, not less than four weeks' annual holiday with full pay, rates of pay high enough to enable a nurse to live comfortably, to take a good holiday, and to contribute to a pension scheme which would give her the right to a pension at the age of 55 upon which she can live.

THE Central Midwives Board for England and Wales held a usual and an ordinary meeting on December 2nd. It was announced that the Ministry of Health had approved, subject to certain minor alterations and additions, the new rules for a period of one year from December 31st, 1926. A resolution recording the Board's appreciation of the valuable services rendered by the late Dr. W. E. Fothergill as an examiner at the Manchester-Liverpool centre was adopted.

THE managers of the Royal Institution have elected Mr. Julian Huxley, M.A., to be Fullerian Professor of Physiology. He has been Professor of Zoology at King's College, London, since 1925, and was formerly senior demonstrator in zoology at Oxford. He is the eldest grandson of Thomas Henry Huxley.

A NEW hospital for Dunbar is being prepared and will shortly be ready. The old Battery Hospital on the north side of Dunbar New Harbour has been closed, as it has suffered considerably from recent storms and is in a dangerous state.

DR. REGINALD S. PEARSON, Mayor of Lambeth, has called a meeting of medical men at his house, "The Hawthorns," 193, Clapham Road, S.W.9, to hear an address by Dr. Camac Wilkinson on tuberculin in the diagnosis and treatment of tuberculosis. The meeting will take place on Thursday, December 16th, at 4 p.m. All medical men interested are invited to attend.

THE last of the series of lectures arranged for this session by the Fellowship of Medicine and Post-Graduate Medical Association will be given by Mr. Ernest Clarke, on emergencies in ophthalmic practice, on Thursday, December 16th, at 5 o'clock, at 11, Chandos Street, Cavendish Square. This lecture is free to members of the medical profession. A further series of lectures on emergencies in medicine and surgery is being arranged for January, February, and March. There will also be a series of clinical demonstrations in ophthalmology and surgery, of which particulars will be announced later. Queen Charlotte's Hospital provides practical courses in obstetrics, lasting from two to four weeks; weekly courses in obstetrics and child welfare are undertaken by the staff of the City of London Maternity Hospital; and the Fellowship can arrange for clinical assistantships at the Samaritan Hospital. The following special courses will be held in January: a fortnight's intensive course in medicine, surgery, and the specialties at the Prince of Wales's General Hospital from January 10th to 22nd; a fortnight's all-day course in cardiology at the National Hospital for Diseases of the Heart, from January 17th to 29th (entries limited to twenty); a fortnight's course in diseases of children at the Royal Free Hospital and the Children's Clinic, from January 10th to 22nd; a month's course (Tuesdays and Saturdays at 11 a.m.) in psychological medicine at the Bethlehem Royal Hospital, from January 11th to February 5th.

Syllabuses of the special courses, the programme of the general course, and copies of the *Post-Graduate Medical Journal* can be obtained from the Secretary of the Fellowship.

THE Post-Graduate Hostel will hold three meetings next week at the Imperial Hotel, Russell Square, W.C.1, at 9 p.m. On Tuesday, December 14th, Professor C. A. Lovatt Evans, F.R.S., will discuss capillary circulation; on December 15th Mr. A. E. Mortimer Woolf will read a paper on pain; and on December 17th Dr. T. Wilson Parry will discuss the various holes discovered in the skulls of prehistoric man. Dinner at 8 o'clock (5s.). All medical practitioners are welcome.

A CHADWICK public lecture on legal conceptions of public health will be given by Mr. William A. Robson, B.Sc., Ph.D., Barrister-at-Law, in the Lecture Hall, Royal Sanitary Institute, 90, Buckingham Palace Road, on Monday, December 13th, at 8 p.m. Admission is free. Further information about Chadwick public lectures may be had from the secretary, Mrs. Aubrey Richardson, O.B.E., at the offices of the Trust, 13, Great George Street, Westminster.

AT an evening meeting of the Pharmaceutical Society of Great Britain, on Tuesday, December 14th, Mr. F. H. Carr, C.B.E., F.I.C., will open a discussion at 8 o'clock on the vitamins in their relation to pharmacy. The meeting will be held in the society's house, 17, Bloomsbury Square, W.C.1, and medical friends of members will be welcomed.

A CONGRESS of the Royal Institute of Public Health will be held in Ghent, from June 1st to 6th. The work will be divided into five sections—namely, State Medicine and Municipal Hygiene; Naval, Military, Air, and Tropical Diseases; Industrial Hygiene; Pathology, Bacteriology, and Biochemistry; and Women and the Public Health. The inclusive charge for first-class travelling, hotels, and excursions to Bruges, Brussels, and the Flanders battle-fields will be twelve guineas. It is stated that the Minister of Health is prepared to consider applications from sanitary authorities for sanction of the payment of the reasonable expenses of delegates, and that similar sanction has been obtained from the Scottish Office. Further information may be obtained from Dr. T. N. Kelynaek, 37, Russell Square, W.C.1.

THE eighth Congress of the International Society of Surgery (to which Germans will be admissible) will be held at Warsaw, under the presidency of Professor Hartmann of Paris in July, 1929, when the following subjects will be discussed: (1) Causes and mechanism of post-operative embolism. (2) Results of resection of the stomach for gastric and duodenal ulcer. (3) Treatment of Graves's disease. Further information can be obtained from the general secretary, Dr. L. Mayer, 72, Rue de la Loi, Brussels.

THE thirty-sixth French Congress of Surgery will be held in 1927, under the presidency of M. Bégouin of Bordeaux. The subjects to be discussed include drainage in abdominal surgery, chronic pericollitis and epiploitis, and the results of periaortic sympathectomy in affections of the limbs.

AN international post-graduate course will be held in Vienna from February 7th to 20th, and will deal with neurology and psychiatry from the therapeutic standpoint. Further information may be obtained from Dr. A. Kronfeld, 22, Porzellangasse, Vienna IX.

THE Fourth English-speaking Conference organized by the National League for Health, Maternity and Child Welfare was held from July 5th to 7th, and attracted an audience of nearly 1,000 people from twenty-four different countries. The verbatim report of the proceedings has now been published and may be obtained from the headquarters of the League at Carnegie House, Piccadilly, W.1, price 2s. 6d. Among the subjects dealt with are the prevention of rheumatic heart disease in young children, the care of children in the first five years of life, and publicity methods in maternity and child welfare.

THE address of the Board of Control (Lunacy and Mental Deficiency—England and Wales) is now Caxton House West, Tottil Street, Westminster, S.W.1. Telephone number: Victoria 8540. Telegraphic address: Aricenna, Sowest, London.

THE Council of the Harveian Society of London has selected the following subject for the Buckton Browne Prize: "The pathology, diagnosis, and treatment of new growths originating in the walls of the urinary bladder." The prize, consisting of a medal, together with the sum of £100, will be awarded for the best essay on this subject. It is open to any member of the medical profession registered in the British Isles or Dominions, and is limited to candidates under 45 years of age. Essays must be sent in by November 1st, 1927. Further particulars may be obtained from the honorary treasurer, Dr. G. de Bee Turtle, 81, Cambridge Terrace, Hyde Park; W.2.

ON his retirement from the position of school medical officer at Hull Dr. James Fraser has been presented by the education authority with a framed resolution of appreciation of his service, engrossed on vellum.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the British Medical Journal unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the British Medical Journal must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the Journal, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the British Medical Journal are **MUSEUM 9861, 9862, 9863, and 9864** (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

EDITOR of the British Medical Journal, *litology Westcent*, London.

**FINANCIAL SECRETARY AND BUSINESS MANAGER** (Advertisements, etc.), *Articulate Westcent*, London.

**MEDICAL SECRETARY, Medicine Westcent, London.**

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus*, Dublin; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshagh Gardens, Edinburgh (telegrams: *Associate*, Edinburgh; telephone: 4361 Central).

## QUERIES AND ANSWERS.

"W. J. K." asks for advice in the treatment of a long-standing, progressive, and pronounced case of obesity.

## TREATMENT OF TINNITUS.

"Dr. P." would like to know whether success has ever followed puncture of the tympanum in cases of very troublesome tinnitus. Every other treatment has been tried without avail. The patient is 56 years of age.

## NERVOUS RITCHING.

"S. P. S." writes to suggest that "H. T.'s" patient should try sucking small pellets of camphor.

"M.B., B.Ch., B.DENT.Sc." writes in reply to "H. T.": May I suggest (1) that the filing away of the back of an upper denture and the production of a line (thin edge) are often sufficient, but in cases of very nervous patients (2) a message of the hard palate by the patient with the back of a small teaspoon, after sucking a "Rhodia" pastille containing scintiformin (made by L. Duraud, 21, rue Jean Goujon, Paris 8<sup>e</sup>), and (3) the application of a little oil of cloves to the painful surface of the denture will, in a short time, overcome the nervous itching.

## LICE ON DOGS.

Dr. J. AUBREY IRELAND (Strewsbury) writes with reference to the reply given on December 4th (p. 1087): As one who has bred show and working dogs for the last thirty years I have from time to time had trouble with lice, and, after trying many methods, I am convinced that much the best way is to use oil of sassafras (synthetic). A little (a drachm or two for a 20 lb. terrier) shaken over the dog from a sprinkler-top bottle (and well rubbed in, particular attention being paid to the neck and around the ears, will disinfect the dog in a couple of days; he should then be washed. Care must be taken that he is kept in any place, as if shut up in a close box he is liable to be overcome by the fumes. I have not found it necessary to repeat the dressing, but of course the bedding, etc., should be cleansed or renewed.

## TREATMENT OF PRURITUS ANI.

Dr. ALFRED A. MASSER (Penistone) writes: I note with satisfaction the importance attributed to the cleansing of the hands following defaecation. As your readers probably know, it is part of the ritual of the Jewish race to wash the hands after defaecation with the uttering of a prayer. I feel confident that the rarity of parasitic intestinal worms in this race is to great extent attributable to this ancient rite, which is closely observed by most Jews. Water is also poured over the hands prior to partaking of any food, which traditional law might be put into practice with great benefit by other races. In my own experience of the treatment of pruritus ani, where no general or local cause can be found, the application of pure liquor picis carbonis on three successive nights, together with frequent cold douching of the anal region, has given great relief, and in many cases resulted in rapid cure.

## INCOME TAX.

*Sole of Practice.*

"Nestor" is likely to sell his practice as from September, 1927. How should his liability for 1927-28 be calculated, and should he pay certain expenses this year and so ensure that they affect the liability for that year? Past assessments have been on the "cash" basis, as regards both receipts and expenses.

\* Assuming that the change from the three years' average to that of the previous year takes effect for 1927-28, "Nestor"

In connexion with the scheme drawn up by a committee of the International Society of Medical Hydrology for teaching this subject at the universities and medical schools, nearly sixty medical graduates and students of Bristol University recently visited Bath. A lecture demonstration was given at the Royal Mineral Water Hospital by Dr. Vincent Coates, dealing especially with rheumatic affections of muscular and fibrous tissue, infective arthritis, metabolic arthritis, and osteo-arthritis, cases being shown to demonstrate each type. This was followed by a visit to the Royal Baths, where demonstrations of hydrotherapy were given, and to the necessary department of the bathing establishment, which included ultraviolet rays, radiant heat, Bergoule treatment, diathermy, etc.

A description of the now radiological department at the Royal Infirmary, Edinburgh, appeared recently in the *Electrical Review*, and has now been reprinted in pamphlet form by Watson and Sons (Electro-Medical), Ltd., who were responsible for the supply and installation of the X-ray and electro medical apparatus. The reprint is fully illustrated and gives a good idea of the excellence of the department, the opening of which by the Duke of York was reported in our issue of October 16th (p. 710).

The late Mr. Oscar Wilkinson by his will bequeathed £1,000 each to the Scarborough Hospital and Dispensary, the Scarborough Cottage Hospital, the Scarborough Convalescent Home for Children, the Hull Royal Infirmary, the Sheffield Royal Infirmary, the Cancer Hospital, Brompton, St. John's Hospital for Diseases of the Skin, Leicester Square, W.C., and St. Dunstan's Hostel for the Blind.

The eighth edition of Treves's *Surgical Applied Anatomy*, revised and enlarged by Professor C. C. Choyce, will shortly be published by Cassell and Co., Ltd. It includes a number of new illustrations.

In the October number of the *Quarterly Review of Biology* there is an illustrated article on the foetal growth of man and other primates, by Adolph H. Schultz, of the department of anatomy of the Johns Hopkins University. He finds that human racial differences, and all distinctions between man and apes or monkeys, increase during some periods of embryonic growth, and never become less with advancing development. This is held to support the current theory of one common ancestry for all the primates. The journal may be obtained from Messrs. Baillière, Tindall and Cox, Henrietta Street, Covent Garden.

The annual report of Livingstone College for 1925 to 1926 quotes warm appreciations of the work of the college by missionaries in Labrador, Kenya, Siam, and North China. In addition to the full session of nine months' medical training for missionaries from October to June, a vacation course is held in July, and intensive three-day courses of lectures in the care of health in the tropics are given in March, September, and December. Further information may be obtained from the Principal, Livingstone College, Leyton, E.10.

The late Mr. Thomas Martin of Pollokshields has by his will bequeathed £2,000 to the Royal Hospital for Sick Children, Glasgow, to endow a "Margaret Inglis Sim" cot; £1,000 to the Glasgow Royal Cancer Hospital, to be used especially for research work; £1,000 to Biggart Hospital Home, Prestwick, to endow and name the "Margaret Inglis Sim" cot; and £1,000, or such sum as may be required, to the West High and Cottage Hospital, to endow the "Margaret Inglis Sim" bed. The residue of the estate, subject to other legacies and certain annuities, is left in equal shares to the East Park Homes, Glasgow, the Maternity Hospital, Glasgow, and the Samaritan Hospital, Glasgow.

The sanitary condition of Moscow, according to a statement in the *Münchener medizinische Wochenschrift*, is in many respects better to-day than in 1913. Several epidemic diseases are less prevalent than before the war, as is shown by the following figures: typhus, 320 cases in 1913, 240 in 1925; relapsing fever, 64 cases in 1913, 50 in 1925; dysentery, 800 cases in 1913, 320 in 1925; diphtheria, 4,600 cases in 1913, 2,000 in 1925; small-pox, 217 cases in 1913, 10 in 1925. Enteric fever is an exception to the rule, owing to the bad water supply and consumption of raw milk, there being 2,500 cases in 1925 as compared with only 1,000 in 1913.

On the occasion of the thirtieth anniversary of the foundation of the Dutch Dermatological Association, on October 24th, Drs. J. J. Jadassohn of Breslau, E. Finger of Vienna, Darier of Paris, C. Rasch of Copenhagen, P. G. Unna of Hamburg, Levaditi of Paris, G. Pernet of London, B. Bloch of Zürich, and J. Almkvist of Stockholm were elected honorary members.

At Exeter police court, on December 2nd, a man was sentenced to two months' imprisonment for the theft of a stethoscope, collodium, and soda tablets from a chemist. He is stated to have obtained these by pretending to be a qualified medical practitioner.

should see that any expenses which would ordinarily be paid in 1926 are not postponed to 1927, but it would perhaps be unwise to anticipate payments which would normally fall into 1927. If the inspector of taxes has reason to suppose that owing to any departure from the usual procedure the cash basis has ceased to reflect the full earnings of the practice, he would be quite justified in refusing to accept that basis. For 1927-28 "Nestor" will be liable in respect of one-half of the assessable profits; the balance of the assessment will have to be dealt with by his successor.

#### Motor Car Transactions.

"J. H. P.'s" transactions have been as follows: In August, 1925, he bought a motor cycle for £45, and in May, 1926, sold it for £25 and bought a motor car for £149. In August, 1926, he sold the motor car for £135 and bought another for £235. The changes were effected because the original cycle and car were unsuitable.

"In his assessment for 1926-27 "J. H. P." is entitled to depreciation on the vehicle held at the end of 1925-26 *plus* (as an expense of the year 1925-26) the cost of replacing the cycle. The inspector is, perhaps, a little lenient in making the second deduction, as the exchange does not seem to have been due to obsolescence. On the whole the total allowance made seems reasonable, but it should, of course, be greater next year owing to the use of the more expensive car.

"A. B. C." bought a car in 1923 for £265 and replaced it in 1925 with a bigger, better car costing £360. The inspector of taxes refuses the "obsolescence" allowance on the ground that the car was not obsolete.

"If, as may very well have been the case, the 1923 car had become unsuitable for the work required of it, we consider that "A. B. C." was fairly entitled to regard it as obsolete for his purposes and to claim the obsolescence allowance. If that ground of claim fails, "A. B. C." might consider whether it would not be better for him to give up his claim to the percentage allowance on the new car, and continue now and in the future to deal with the question by claiming the costs of renewal as and when incurred. We assume that he did not receive a depreciation allowance for 1925-26.

#### LETTERS, NOTES, ETC.

##### OSTEO-ARTHRITIS OF THE HIP-JOINT.

Dr. W. J. MIDDLETON (rse of a note on Dr. Warren Crowe' (November 6th, p. 834), emphasizes the non-specific toxin was used over a long period. Dr. Middleton maintains that there is no difference etiologically between osteo-arthritis and rheumatoid arthritis, and attributes the pain in the former case to muscular spasm. By crossing the foot of the affected limb over the tibia of the other leg great pain is elicited, and this he regards as diagnostic. He has successfully treated a case of osteo-arthritis by multiple acupuncture and irritants, and another by galvanocautery of the back, close to the spinal column. He refers to Petersen's theory that the effects of the cautery, blister, and seton come under the heading of non-specific protein therapy.

##### TREATMENT OF CARBUNCLE.

SIR JOHN O'CONNOR (Buenos Aires) invites surgeons who, irrespective of coincidental diabetes, treat carbuncle by excision, crucial incisions, or falguration, to give the following physiological method a trial and note the result at the end of fourteen days. Except when the patient is asleep, apply fomentations of a hot corrosive sublimate (1 in 3,000) every hour, avoiding employment of any impermeable tissue in the superimposed dressing, which should consist merely of a good pad of absorbent wool and a bandage. In combination with this local treatment the patient should be fed up, not omitting his co-efficient of alcohol.

##### MAD DOGS.

SOME of the more excitable portions of the lay press have recently given considerable prominence to accounts of what they call viciousness or treacherousness among some of the larger breeds of dogs, and it may be of interest to explain what really is happening.

Shortly after the war a breed of dog was introduced into this country from the Continent and it immediately became popular under the very misleading name of the Alsatian wolfhound—misleading because it was not an inhabitant of Alsace, has no connexion whatever with a wolf, and is not a "hound." This breed of dog has been known for centuries on the Continent as the German or Continental sheep dog or shepherd dog—titles which adequately describe the dog and its function. It is very closely related to our own collie, and in pure bred litters of "Alsations" pups are sometimes met with which are almost indistinguishable from a short-haired collie. Like the collie, it is a highly strung and extremely nervous, but very obedient, dog, and very after the war caused very intensive breeding with it came all the evils of inbreeding by the continued importation of fresh blood from

abroad, but in some cases this was not done, and this is, in part at least, responsible for the recent scare. In a few cases dogs, otherwise affectionate, suddenly became mad—became, indeed, the canine equivalent of a homicidal maniac—and savaged their owners. This is liable to happen in all breeds of dogs—and, indeed, several of the recent cases were in other breeds—but the popular belief, fostered by the name, that the Alsatian was crossed with a wolf, has caused the discredit of all of these cases to be given to this breed. The treachery of a half-bred wolf differs much from the cases under notice. Though such an animal may be obedient to its master, it never has the affection of the dog (and the "Alsatian" is "all dog"), and its behaviour is such as to make one expect treachery if given a suitable opportunity. It is unfortunate that a pure dog should have been so unsuitably labelled; it is the more unfortunate because the wolf-like characters are really dog characters which have been less distorted by the breeder than in most of the other animals which have come under their charge.

It is important, too, for laymen in general to understand that rabies does not now exist in this country, and that, under the very stringent conditions of quarantine imposed by the Ministry of Agriculture on all canine animals entering Britain, it is unlikely ever to gain a foothold here. The layman does not understand this, nor does he understand that a bite from a dog (even from a mad-dog) which is not rabid will have little more result than a bite from any other animal. It may cause a local abscess or even more general symptoms, but it can never cause hydrophobia. The medical profession could do a considerable public service and allay much public apprehension by giving prominence to these facts.

##### AN ANCIENT NEEDLE.

DR. SEYMOUR W. DAVIES (Wallasey) writes: The note by Dr. G. Varian in the *BRITISH MEDICAL JOURNAL* (September 18th, p. 513) entitled "An Ancient Needle" reminds me of a case I saw about three years ago. A man, about 55, who has tabes dorsalis in a mild form, which does not prevent him from following his occupation of accountant, complained of a sudden pain in his left thigh, about Scarpa's triangle. The pain was followed by ecchymosis and a tender hard nodule in the skin. I ordered lead and opium lotion and Donovan's solution, thinking that he had phlebitis or thrombosis. Ten days later the swelling fluctuated and I aspirated 2 drachms of altered blood. A week later I felt a foreign body under the skin, injected novocain and extracted a shining needle 4 in. long and clean, though discoloured. The only explanation was that the needle had slipped from his desk into his "lap," and had been driven inwards by flexion of the thigh. His tabetic state would presumably account for his not noticing pain, though his sensibility to the pain of the events described above was normal enough. I may say that he is a sober man and the case has remained a puzzle to me.

##### MEDICINE IN FICTION.

IN the current number of the *Newcastle Medical Journal* Dr. Hugh Dickie, following in the footsteps of Sir Squire Sprigge, sets forth something of the "Nosology of the novelist," illustrated by excerpts from works by modern authors. Thus from *The Great Babylon Hotel* of Mr. Arnold Bennett he calls what is probably the most complete account ever written of the symptoms of that mysterious disease, "brain fever": The patient, Prince Eugen, had a flushed face and unequal pupils. He muttered and whined. When he got up he staggered and fell in a swoon. At this point his eyes closed, and he breathed through his nostrils. His fingers contracted, and from time to time general convulsions occurred. It is satisfactory to learn that prognosis in these cases is good, and that perfect recovery in body and mind is possible. After such a formidable disease the description by Hugh Conway of a patient operated on for double cataract at one sitting, with immediate restoration of sight and without the need for glasses, seems comparatively tame. Sir A. Quiller-Conch has a doctor who fortunately carries a bottle of bromide in his pocket, and when called to treat a madman who has just committed a murder, produces sleep and sanity with a dose of this potent drug. "Sapper," on the other hand, shocks the shade of Harvey by making the arteries convey to the heart a dreadful poison which has been placed upon the skin. Dr. Dickie suggests that the literary giant should consult his family doctor before committing these medical concepts to paper.

##### AN OPHTHALMOLOGICAL CURIOSITY.

A CORRESPONDENT sends us an extract from one of the Scottish newspapers describing the impressions produced upon an American journalist by an audience with Signor Mussolini. It Dace, according to this keen observer, "has a very winsome smile, looks at you with distinct directness, has brilliant black eyes, with a trick of enlarging them, showing wide rings of white cornea around the retina." This annular corneo-retinal phenomenon has not, we believe, been described hitherto in any detail.

##### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 33, 39, 40, 41, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 251.



British Medical Association.  
PROCEEDINGS OF SECTIONS AT THE ANNUAL  
MEETING, NOTTINGHAM, 1926.

SECTION OF LARYNGOLOGY AND  
OTOLOGY.

A. BROWN KELLY, M.D., D.Sc., President.

DISCUSSION ON  
THE AFTER-TREATMENT AND RESULTS OF THE  
SIMPLE AND RADICAL MASTOID  
OPERATIONS.

OPENING PAPERS.

I.—GEORGE J. JENKINS, F.R.C.S.,  
Aural Surgeon, King's College Hospital.

THE SCHWARTZ OPERATION FOR ACUTE MASTOIDITIS:  
AFTER-MANAGEMENT OF THE WOUND.

The selection of a title for this paper presents some difficulty, as for the moment we are concerned, not with the actual operation, but only with the after-treatment of the wound. No doubt some of us may contend that this depends on the details of the operative procedure, but I think that for the basis of the discussion we must assume that the operation has been done with meticulous care, and that all diseased tissues have been removed.

Whatever method of treatment is adopted, the primary object should be the prevention of an extension of the septic process. It is, however, important to consider how the ear may be left as near normal as possible, and how both these objects may be attained with the least loss of time. Let us in the first place have a clear understanding as to the purpose of the operation. It is a general rule in surgery that a pyogenic abscess or a septic region should be drained as freely as possible, as it has been found that, unless the whole of the affected part can be removed, efficient drainage is the best preventive in our power against extension of the inflammation. As to how long the drainage should be maintained, this seems to depend upon the relation of the degree of resistance of the patient, to the virulence of the infection, and also upon the time required for permanently damaged tissue to be absorbed or thrown off. Thus we find a single tapping of an abscess may be sufficient to promote recovery, whereas in other cases efficient drainage may have to be maintained over a long period.

It seems to me that what we have chiefly to consider is the application of this principle to the treatment of the operation wound in acute mastoiditis. In this condition the region infected includes, in a majority of cases, the nasopharynx, Eustachian tube, tympanic cavity, mastoid antrum, and possibly an extensive system of cells in the mastoid. When the middle-ear tract has been infected we dread the dangers of an extension of the infection beyond the mucous membrane, and for this reason we establish drainage. By the Schwartz operation we remove, as far as possible, the damaged tissues behind the aditus, but at the same time we should make quite sure that the tympanic cavity is sufficiently drained either by spontaneous opening or by paracentesis. It is also important to deal with all systems of cells in the mastoid, including those which may not appear obviously infected. The position then will be that behind the aditus the whole of the diseased tissue will have been removed, and there will be sufficient drainage of the tympanic cavity. The walls of the mastoid wound, no matter how carefully cleaned, or what antiseptics are used, must be regarded as infected with an organism which has been responsible for the acute mastoiditis and is capable of causing still further extension of disease, in spite of the resistance of the individual. The object of this paper is to direct your attention to the after-management of this septic wound.

*Primary Suture.*  
It is well known that many septic wounds after careful cleaning, and with or without the use of antiseptics such as iodoform or bipp, can be closed and primary healing occurs, though even when the greatest care is taken this procedure sometimes fails. The same principle is seen in the occasional recovery after a simple puncture of an abscess. We know also that the tissues are capable of dealing with a certain dose of organisms, this dose varying with the resistance to the organism in question. It is obvious, therefore, that if by some misfortune a massive dose is left in any part of the wound, or a smaller dose in a favourable situation, such as a blood clot, then a reinfection will occur and the wound will break down. In many parts of the body this may not be serious, or of sufficient moment to outweigh the advantages of primary union of the wound. In the particular region with which we are dealing such a recurrence of active inflammation may be a matter for grave concern. Since war experiences many of us have tried primary closure after the Schwartz operation. When considering the question of primary closure I came to the conclusion that there were certain extensive irregular cavities where the soft tissue could not be brought into intimate contact with the deep bony parts, and that in such circumstances primary suture was not likely to succeed and was unsafe. The only cases in which I have attempted this method of treatment have been those in which the cavity was of such a form that after cutting the bone edges away the soft tissues fell in contact with the bone, leaving only a comparatively small cavity near the meatal wall.

Two other considerations have influenced my procedure in this connexion: first, the general condition of the patient clinically, and secondly, the appearance and character of the purulent exudate. In cases where this was thin and watery-looking, suggesting an inadequate local resistance, I have not attempted primary suture. It is impossible, even with the aid of sterile iodoform or bipp, to be certain that the wound is sufficiently clean, or that reinfection from the middle ear will be prevented. Even in my selected cases primary suture without drainage has occasionally failed, and I have felt that the risk and disturbance to the patient was too great, and the result, even when successful, not always satisfactory. In some of the instances in which primary suture was successful the organization of the clot under the skin was evidently feeble, and the result in some cases was a large cavity thinly covered by skin, while in others there was very marked depression.

*After-Treatment by Maintenance of an Open Wound.*

This has been practised by using the whole or part of the mastoid incision, or by making another drainage wound into the meatus and closing the original wound. I propose to deal first with the latter of these two methods. I propose to me that an opening into the meatus cannot afford efficient drainage for a great many of the cavities following a Schwartz operation, since such an opening can only provide drainage for the immediate neighbourhood, such as the antrum and the antero-superior part of the mastoid cavity. From this it would appear that the only suitable cases for this method of treatment are those in which the wound cavity is small, and in these I cannot see any advantage in favour of meatal drainage over drainage from the lower part of the mastoid incision after closure of the upper part. In fact my experience teaches me that, even in selected cases, drainage from the lower part of the mastoid wound is more effective, and the healing is as rapid and is less painful. I cannot help saying that I feel that the advocates of meatal drainage allow themselves to be biased too much and are not sufficiently influenced by the sometimes unpleasant effects of meatal drainage. At times treatment of the meatal wound is difficult and painful—at least it has been in some of my own cases, in which granulations had to be treated and meatal dermatitis overcome. Occasionally, even when healing was satisfactory, the depression in the meatus caused trouble for some time afterwards. In short,



I cannot myself see any advantage in mental drainage. I have boldly made this statement because I feel it is a point on which there will be difference of opinion, and on which there should be discussion. I know it is the practice of not a few men for whom I have the greatest respect to use mental drainage, and I would ask them to give clear and definite reasons for their preference for this method over the other.

We have now to consider a variety of treatments of the wound by drainage through the mastoid incision. The problem will vary with the conditions. At one extreme there will be a small smooth-walled cavity, of the dense mastoid, and at the other will be the large irregular cavity with tracks in various directions, and rough irregular bony walls. Sometimes the cavity is necessarily deep even at the edges, and at other times it is shallow. No two cavities are alike, and the appropriate treatment for each type must be considered. I do not think hard and fast rules can be drawn up for the adoption of any particular method; the operator must be influenced by the conditions present, and, apart from the extreme variations mentioned, there must be a difference of opinion in certain cases. The form of the cavity is not the only factor, as I am sure most of us would take into account the acuteness of the infection and the character of the pus, and also the general condition of the patient.

I now propose briefly to describe my ordinary practice. I syringe out all wounds, first with hydrogen peroxide (10 vols.) to remove finer particles of bone or tissue which may have escaped notice, and subsequently with some bland sterile lotion; all the walls are then lightly smeared over with sterile fine iodoform prepared as follows: iodoform in fine powder is soaked in absolute alcohol; the excess of alcohol is run off and the iodoform used as a paste. When there is a small well defined cavity, such as a simple gutter in the anterior part of the mastoid, it is my custom to stitch up the upper part of the incision, and to drain from the lower part of the wound. Two-inch ribbon gauze impregnated with iodoform is loosely packed in the part of the cavity below the antrum; there is a certain amount of room for the blood clot to form in contact with the walls of the cavity. The gauze is there merely to maintain an exit for septic exudate. At the subsequent dressing, about the third day, a similar gauze dressing, perhaps a little smaller, is placed in the wound, and fresh clot usually forms which sometimes organizes very quickly. It is often advisable, even for such a light dressing as this, to administer gas. Two or three rubber tubes in the place of the ribbon gauze make an equally satisfactory drainage system. The process of healing is commonly uneventful, and the resulting scar is not in any way objectionable.

When the wound is very large it is my custom in most cases to leave the whole of the incision open and to pack lightly all parts of the wound with iodoform gauze. Such a large packing necessitates gas anaesthesia for the first dressing on the third or fourth day. The wound is practically always healthy by this time, and the repacking is done much more lightly and less extensively. This method of treatment has not given me any cause for anxiety or regret, whereas simple drainage of the cavity from the lower part of the incision by means of tube or gauze has often resulted in general toxic effects. In some of the extensive cases, where the cavity is very shallow and other conditions are suitable, I allow the soft tissues to come into contact with the bony wall, but I always pack the lower and anterior part of the cavity. I am quite well aware that many of the cases treated as indicated above would heal by primary union, provided the middle-ear condition was satisfactory, but it is the odd case with serious disturbances resulting from reinfection that drives me to a method that has been proved safe and satisfactory, though it may mean a prolonged after-treatment.

If there is any serious delay in healing, or if there is a tendency for the epithelium to dip into the wound, I strongly advocate secondary suture, which very rarely fails if carefully performed. For this procedure I like to see the communication with the middle ear shut off, or almost completely closed; by this time a considerable part

of the wound has been filled with granulations and the cavity is practically aseptic. My method is as follows. The cavity is thoroughly cleaned out with 2 per cent. solution of iodine. The edges of the wound are cut away back to healthy skin, the skin is underpinned very widely and the flaps are made as thick as possible. The whole surface of the cavity is lightly smeared with iodoform, and the edges are brought together accurately without tension. The patient is able to go about in three or four days, and the wound is usually soundly healed in ten to fourteen days. Secondary suture gives the soundest scar and the best cosmetic result of any of the methods of treatment that I have tried, and also shortens the period of convalescence considerably.

I have not referred to the persistence of sinus or fistula, as in my opinion this condition is due to an imperfect operation, or imperfect treatment of the infection in the more anterior part of the middle-ear tract. Considerable delay in the healing of the Schwartz wound may be caused by a septic nasopharynx, and for this reason I often remove the tonsils and adenoids when for any reason a second anaesthetic becomes advisable. The main object of this paper is to direct your attention to certain differences of practice in the after-treatment of the Schwartz wound. You will discuss primary suture. Some of us contend that when primary suture fails there is a certain amount of gain. I personally feel that the disturbance and risk to the patient from the occasional secondary infection is too big a price to pay, and also I do not think the ultimate result satisfactory, even when there is primary healing. Again, you will consider mental drainage—a method used by a number of men who have had large experience. I do not practise mental drainage for the reasons given above. You will criticize the various methods of treatment of the cavity through the original mastoid incision, and also secondary suture.

In this discussion we shall be inclined to support those procedures that promise for the patient an easy convalescence and a rapid return to normal, but we should disapprove of any procedure that promises these benefits if it involves the least risk of sacrificing a small degree of safety.

## II.—J. S. FRASER, M.B., Ch.B.Ed., F.R.C.S.Ed.,

Surgeon to the Ear and Throat Department, Royal Infirmary, Edinburgh.

BEFORE considering the after-treatment and results of the radical and modified radical mastoid operations we must ask ourselves what objects we hope to attain by these procedures. The first and most important is to place the patient in a position of safety as regards life—that is, to free him or her from the possibility of an intracranial complication, or, as the modern slogan has it, "safety first." The subsidiary objects are to stop the aural discharge, and to improve, or at least retain, the hearing in the affected ear. In twenty years Dr. Logan Turner and I have known of only one case in which an intracranial complication occurred in a patient who had had a radical mastoid operation, but we have known of several in which a patient suffering from chronic middle-ear suppuration, without any acute symptoms, came for examination, had his name entered on the waiting list, and had to be taken in as an urgent case of intracranial complication before his turn came for admission.

### INDICATIONS.

The indications for the operative procedures under consideration do not come officially within the scope of this paper. I do not intend to say anything about the indications for the radical mastoid operation except that we must all admit that now and then we operate on a case in which we find at operation little or no sign of serious disease in the antrum, aditus, or attic. Many of these cases, attending as out-patients, ought to be cured by conservative treatment, including ionic medication. The difficulty is to get efficient conservative treatment in the cases of patients who live in the country. If we had sufficient hospital accommodation to admit these patients for two or three weeks it is probable that many of them would not come to the radical operation.

With regard to the modified radical operation, my practice has been to limit this operation to cases of chronic

middle-ear suppuration with good hearing in the affected ear, or to cases in which the "other ear" is very deaf, or at least more deaf than the ear to be operated upon. In many of these cases the perforation is in the attic region, or is a posterior marginal one; both are very frequently associated with cholesteatoma, so that a slight risk is incurred by omission to perform the complete operation. This risk is, however, justifiable.

Brühl does not favour the modified operation, and says that, since using the Bárány noise box to exclude the sound ear, he no longer finds "good hearing" in the ear to be operated upon. Further, he finds that patients in whom the "conservative" operation has been performed by others hear just as badly as his own "radical" cases.

I do not perform the modified radical operation in cases of acute middle-ear suppuration, as recommended by Mr. Heath, because I hold that the Schwartz or simple mastoid operation is more suitable. In most of these acute cases the diseased cells extend down to the tip of the mastoid, which lies at a lower level than that of the meatal floor.

#### TECHNIQUE.

Without a word or two about the technique of the operations under discussion, it is almost impossible to deal with the after-treatment and results, which depend to a very large extent on the operative methods employed. I will not enlarge on the necessity of removing the whole of the lateral wall of the antrum, aditus, and attic, of curetting very thoroughly the Eustachian tube, of lowering the bony floor of the meatus and the facial spur to the limits of safety, of removing the remains of the drumhead, including its tendinous attachment to the annulus, of removing polypi and granulations and curetting diseased areas on the inner wall of the bony cavity with due regard to the danger areas—the window regions. Two points, however, deserve detailed attention—namely, the meatal plastic and the immediate skin graft by Marriage's method.

**Meatal Plastic.**—Recently Bárány has omitted the meatal plastic, packing the mastoid cavity and leaving the post-auricular wound open for a period. Dan McKenzie and probably others have used a similar technique in this country. The object is to get rid of the tendency for collections of wax and cast off epidermis to form in the operation cavity. I have no personal experience of this method, but Dr. W. T. Gardiner tried it in one case, without success. Brühl does not favour Bárány's innovation. The objections to the method are that either the posterior wound would have to be left open and packed for a very long time or, if it were allowed to close, there would be a danger of the collection of pus under tension in the antrum. Brühl holds that Bárány's method will result in recurrences and further operation. My own preference is for the Körner plastic and a very large meatus; indeed, I usually excise a considerable piece of cartilage and stitch back the flap with a mattress suture. A large meatus not only facilitates inspection and after-treatment, but also tends to give a dry cavity. We have had very little trouble with perichondritis of the auricle. Brühl, after using the Panso and Stacko flaps for many years, has adopted, or readopted, Körner's method.

**Skin Graft.**—With regard to the primary skin graft I can confirm Mr. Marriage's claim that the operation cavity heals much more quickly, that the outline of the inner wall is preserved in almost all cases, that the first dressing is nearly painless and subsequent dressings are unnecessary, that the duration of the patient's stay in hospital is greatly reduced, that a dry and satisfactory cavity results in a larger percentage of cases than with other methods, and, finally, that the results as regards the hearing power are better than when the skin graft is omitted.

**Modified Radical Mastoid Operation.**—This procedure has several variations. After opening the antrum, we may remove only a small part of the posterior wall of the bony meatus; secondly, we may remove almost the whole of this wall, including part of the lateral wall of the aditus, exposing the short process of the incus and lateral canal prominence; thirdly, we may remove the incus (Sidney

Scott); fourthly, we may take away the outer wall of the aditus and attic, exposing the body of the incus and head of the malleus; finally, we may or may not skin-graft the cavity. The choice of operation depends on the type of case with which we have to deal—for example, in cases with attic perforation and cholesteatoma it is advisable to do a "liberal-conservative" operation and to remove the outer wall of the aditus and attic, whereas in cases without attic perforation and cholesteatoma, a "very conservative" operation may be all that is called for. In any case we must admit that the modified operation is rather less likely than the radical to yield a dry ear. I usually explain to the patient that the modified operation is to be performed to safeguard his hearing, and that it may be necessary to complete the radical operation at a later date. Brühl is against the modified operation, and believes that those who are now trying it will in a few years return to the radical. Only one out of eleven cases operated upon in his clinic according to Bárány's method was a success.

#### AFTER-TREATMENT.

In the great majority of cases which have been skin-grafted there is very little to be said about the after-treatment. I apply the graft to the bony surface at the time of operation, by means of a long string of iodoform worsted which is packed into the cavity. Other surgeons use different methods (Mosher). The case is dressed on the fourth or fifth day, the silkworm-gut skin stitches, including that retaining the meatal flap, are taken out, and the iodoform worsted packing is removed. As a rule there is no bleeding and no necessity to clean out the cavity. In most cases I put in fresh iodoform worsted packing and apply gauze wool, and a trofoil bandage for another two days. At the end of this period all dressings are omitted in the daytime and the meatus is left open. At night a piece of iodoform gauze is inserted into the meatus, and cotton-wool and a bandage are applied so as to avoid staining the pillow. The case is now treated morning and night as one of chronic middle-ear suppuration, by means of peroxide drops, syringing with lukewarm boracic lotion or dilute lysol solution (half a teaspoonful to the pint), drying out with gauze strips and the instillation of spirit drops containing 10 grains of boric acid in each ounce. The superficial layers of the graft come away of their own accord and should not be forcibly removed. The patient is, as a rule, able to leave the ward in fourteen days, either for the convalescent house or for his own home. Cases are usually seen at the end of three weeks after leaving hospital. Almost the only trouble I have known in these skin-grafted cases is the formation of a small abscess at the lower end of the retro-auricular wound about a week or ten days after operation, the upper part of the wound remaining soundly healed. We must remember that the patient is lying in bed and that any discharge in the operation cavity gravitates to the lowest part. Further, if after cutting the Körner flap the vessel in the lower cut edge of the cartilaginous meatus requires a ligature, the catgut may form the starting-point of such an abscess. As a rule, however, the retro-auricular wound gives no trouble. This may be due to the fact that in Edinburgh we make the incision in the hair margin so that the wound is united over periosteum and bone and not over the operation cavity itself.

In cases in which a skin graft is not applied the after-treatment is more troublesome on account of the formation of excessive granulations which grow up from the facial spur and downwards from the cut edge of the attic and aditus and tend to form about the level of the isthmus a membrane which shuts off the deeper part of the cavity. Frequently this membrane has a small hole in it through which pus exudes. In several of these cases I have operated again, and on the second occasion have employed the skin graft with success.

Such applications as scarlet red in rectified spirit and brilliant green do seem to promote the early epithelialization of the operation cavity, though sometimes they cause irritation of the skin. Sometimes there is a tendency of the auricle to droop to a lower level than that on the normal side or to stand out further from the head. I do

not know if this slight deformity can be avoided by using mental plastic methods other than Körner's as I have never tried them.

#### After-Care of the Operated Ear.

Even after the patient has apparently made a satisfactory recovery and the cavity has been completely lined with epithelium, some attention is necessary if things are to remain satisfactory. Unless the operation cavity is cleaned out at regular intervals wax and epithelium accumulate, so that in time the cavity is lined with a layer of debris beneath which there is some pus. Printed instructions are now given to all "radical mastoid" patients on leaving hospital. Further, they buy, or if too poor they are provided with, an efficient metal ear syringe. In very many cases, however, we find that the instructions have not been followed and the syringe has not been used. As a rule patients confess, when they report for inspection, that nothing has been done to their ears since shortly after they left the infirmary. In some the auricle and mastoid region have not even been washed with soap and water. This question of "after-care" is a very weak spot in regard to the operation. I often envy the abdominal surgeon who, at the end of the operation, closes up the wound; the patient gets better or dies, but, if he recovers, all he has to do is to wash the scar in his daily bath, if he is cleanly, or not to wash it if he is not. There is no operation cavity and no wax.

#### Causes of Failure to Obtain a Good Result.

Apart from inefficient operation we may enumerate:

(1) Failure to close the Eustachian tube and to get rid of the tubal air cells. Many of these cases occur in children; they are really cases of tubo-tympanic catarrh or suppuration, and are not suited for the radical mastoid operation. In such cases we should treat the nose and nasopharynx, try vaccine therapy, syringe out the tube either through the Eustachian catheter or from the external meatus by means of a bulbous-ended syringe, followed by inflation and injection of silver nitrate, argyrol, or collargol. I have no experience of artificial closure of the tube by means of bone splinters, or skin flaps and catgut. I always tell patients and their doctors that I cannot promise a perfectly dry ear after the radical mastoid operation, but since the introduction of Marriage's skin-grafting method our results as regards closure of the tube have been much better. In cases in which the radical operation has been performed Brühl, who does not believe in closing the tube, recommends drying out the cavity with hot air, probably by means of a dental appliance. He also mentions the application of trichloroacetic or lactic acid to the tubal region and exposure to roal and artificial sunlight.

(2) A faulty state of the patient's general health. During the war, when we were operating on young and otherwise healthy men, it was remarkable how well the radical mastoid cavity healed—much more quickly than in ordinary hospital cases.

(3) Narrowness of the external meatus and want of care of the operation cavity have already been dealt with.

#### PROGRESS.

With the object of obtaining statistics as accurate as possible I requested all patients operated on in the years 1919 to 1925, inclusive, to report at the infirmary for re-examination. At first I tried to do this work myself, but found that it took up so much time on waiting days that I could not get through the ordinary work in a proper way. I therefore asked my clinical tutor, Dr. J. P. Stewart, to examine the patients who reported, to note the condition of the operation cavity and to test the hearing. I am greatly indebted to Dr. Stewart for the care with which he carried out this work, and to my secretary, Miss Cadzow, for the preparation of this report.

In order to get at the results in as large a number of cases as possible, I have included in this paper not only the results of Dr. Stewart's work but also the findings obtained at two previous inquiries on this subject—namely, that by Dr. J. K. Milne Dickie of Ottawa and that by Dr. W. T. Garretson of Detroit. These specialists were kind enough to examine patients operated upon by me before 1911 and 1919 respectively.

#### Progress after the Radical Mastoid Operation—with and without Skin Graft: (Total cases, 628.)

Uninterrupted recovery while in hospital, 387; the skin graft was entirely unsuccessful in only 11 out of 377 cases; unexplained fever for several days after operation, causing anxiety but with eventual recovery, 13; tonsillitis, 4; septic rash (surgical scarlet fever), 12; erysipelas, 6; stitch abscess or marked suppuration in posterior wound, 35; dermatitis of external meatus, 3; perichondritis (slight and severe), 10; keloid in scar of incision, 2; giddiness with nystagmus to sound side (serous labyrinthitis), 19; purulent labyrinthitis, 2; facial paresis present on day after operation, 3 cases; coming on more than twenty-four hours after operation, 8 cases; severe haemorrhage from cut edge of external meatus, 3; operation broken off on account of haemorrhage but completed later with success, 1; death following radical mastoid operation, 3 in 628 cases—less than 0.5 per cent.

Shortly after the appearance of a previous paper, by Dr. Milne Dickie and myself, on the mastoid, labyrinthine, and intracranial complications of middle-ear suppuration, one of the followers of Mr. Charles Heath wrote as follows: "The risk to life from Heath's operation is practically nil, whereas the radical mastoid operation boasts a death rate of at least 16 per cent." In a subsequent paper, written in collaboration with Dr. Garretson of Detroit, U.S.A., I tried to make it clear that the fatalities, with two exceptions, had occurred in cases in which labyrinthine or intracranial complications were already present when the patient was admitted to hospital, and that the radical operation *per se* had nothing to do with the fatal ending. The result would have been the same if the modified radical operation had been done in place of the radical. In order to avoid any misunderstanding I am omitting from the present paper all cases in which a labyrinthine or an intracranial complication, such as brain abscess, septic sinus thrombosis, or purulent leptomeningitis, was present on admission.

The three fatalities following the radical operation were as follows:

1. Aural septicaemia or bacteraemia; the cranial blood sinuses were normal *post mortem* (*Journ. Laryngol., Rhinol., and Otol.*, vol. xxxiv, 1919, p. 380).

2. A child fell out of bed on the day following operation, and afterwards became unconscious. Lumbar puncture yielded clear fluid under normal tension. *Post-mortem* examination refused. Cause of death uncertain—status lymphaticus? septicaemia? acidosis? injury to skull? (*Ibid.*)

3. The patient had pneumonia on admission, and was slightly cyanosed and delirious. Death occurred three days after the radical operation on the left ear and two days after the modified radical operation on the right ear. *Post-mortem*—pneumonia.

#### RESULTS.

The cases have been divided into two groups: Group I, with immediate skin graft; Group II, without immediate skin graft.

#### Group I.—Radical Mastoid Operation with Immediate Skin Graft (1916-1925 inclusive).

In this group there were 293 cases; of these, 14 had both ears operated upon, making a total of 307 ears. Of the 307 ears 185 were re-examined, and showed the following results:

**Operation Cavity.**—The cavity was epithelialized and quite dry in 61 (33 per cent.); the outline of the inner wall was retained but one or two small areas of moist pink mucosa were present (want of cleanliness) in 92 (50 per cent.); there was therefore a satisfactory result in 83 per cent. Pus was present with swollen congested mucosa or granulations in 20 (10 per cent.). There was much pus, polypi, and narrow meatus (failures) in 12 (7 per cent.).

**Hearing.**—The hearing was tested in 172 cases. In 27 (15 per cent.) it was much improved, and in 80 (46 per cent.) it was improved—61 per cent. therefore had improved hearing. In 41 (23 per cent.) the hearing was as before operation, and in 24 (14 per cent.) it was worse.

#### Group II.—Radical Mastoid Operation without Immediate Skin Graft (1907-1925 inclusive).

The total number of cases in this group was 268; the re-examinations numbered 157.

**Operation Cavity.**—There was a satisfactory result in 83 (52 per cent.); the operation cavity was epithelialized and quite dry or showing only want of cleanliness—that is, after removal of wax and cast-off epithelium the outline of the inner wall was retained but the cavity showed one or two small areas of pink mucosa on the inner or posterior wall. There was an unsatisfactory result in 74 (47 per cent.)—that is, there was membrane formation or pus and granulations (polypi) in the cavity.

**Hearing.**—This could be tested in only 132 cases when the patient reported. It was improved in 59 (44 per cent.), the same as before operation in 42 (31 per cent.), and worse in 31 (23 per cent.).

#### Stay in Hospital.

**I. Radical Mastoid Operations with Skin Graft (1919-1925 inclusive).**—Of a total of 238 operations the stay in hospital was noted in 221 cases. In the other 17 cases the stay in hospital

could not be noted because the temperature charts had been lost, or the patient had developed scarlet fever or erysipelas and was transferred to the fever hospital. The period was 14 days or less in 108 cases (49 per cent.); 11 to 21 days in 74 (33 per cent.); over three weeks in 39 (only 18 per cent.).

**II. Radical Mastoid Operations without Skin Graft (1919-1925 inclusive).**—Of the 45 cases in this group the stay in hospital was noted in 41. The period was 14 days or less in 11 (27 per cent.); 14 to 21 days in 19 (46 per cent.); over three weeks in 11 (26 per cent.).

*Modified Radical Mastoid Operations—with and without Skin Graft (1907-1925 inclusive).*

A modified radical mastoid operation (either with or without skin graft) was performed in 80 cases during the period dealt with. The results were as follows: uneventful recovery in 55 cases; haemorrhage from the external meatus in 1; the posterior wound suppurated in 11; serous labyrinthitis with recovery, 2; slight cellulitis of auricle, 2; erysipelas, 7; surgical scarlet fever, 1; fatal result, 1. In this last case—a miner who had been injured in the pit and had much coal dust in the tissues of the auricle and skin of the mastoid, with, in addition, almost complete stenosis of the external meatus—erysipelas developed; the patient was transferred to the fever hospital and died there of septicaemia sixteen days after operation.

Of the 80 cases 48 reported for re-examination. (In the majority of the cases an immediate skin graft was applied to the mastoid antrum and cut edges of the bony meatus.)

**Operation Cavity.**—The cavity was epithelialized and quite dry in 26 (54 per cent.); the outline of the inner wall was retained but one or two small areas of moist pink mucosa were present in 16 (33 per cent.); there was therefore a satisfactory result in 87 per cent. Pus was present with swollen congested mucosa or granulations, polypi, and narrow meatus in 6 cases (12 per cent.). These results correspond very closely with those given by Mr. Donald Watson of Bradford,<sup>2</sup> who examined patients on whom the modified radical mastoid operation had been performed at the Royal Infirmary, Edinburgh. Mr. Watson found that out of 50 cases 23 were cured, 17 still had some meatal discharge, and 8 had come to the radical operation.

**Hearing.**—Of the 48 cases the hearing was improved in 31 (70 per cent.), the same as before operation in 10 (20 per cent.), and worse in 4 (8 per cent.). Here again our results correspond with those obtained by Mr. Watson, who found that 64 per cent. of the cases examined by him had good or fairly good hearing after operation, whereas only 35 per cent. had similar hearing before operation.

*Stay in Hospital.*

**Modified Radical Mastoid Operations with Skin Graft (1919-1925 inclusive).**—Of the 23 cases in this group the stay in hospital was noted in 27, as follows: 14 days and less, 12 (44 per cent.); from 14 to 21 days, 10 (38 per cent.); more than 21 days, 6 (18 per cent.).

**Modified Radical Mastoid Operations without Skin Graft (1919-1925 inclusive).**—The duration of the patient's stay in hospital was noted in 22 of the 23 cases in this group, as follows: 14 days and less, 8 (36 per cent.); from 14 to 21 days, 10 (45 per cent.); more than 21 days, 4 (19 per cent.).

REFERENCES.

<sup>1</sup>Journ. of Laryngol., Rhinol., and Otol., vol. xxvii, 1912; <sup>2</sup>Ibid., vol. xxvii, 1919. <sup>3</sup>Ibid., vol. xxxvii, June, 1922.

### III.—PROFESSOR HEINRICH VON NEUMANN, Vienna.

MASTOIDITIS can be considered from many points of view, since the lesions are both various and variable. As its clinical aspect is indefinite, so is its diagnosis often uncertain, the latter being often a matter of opinion rather than a question of objective signs.

Further, as we are apt to include in the term "mastoiditis" both its diagnosis and its operative treatment, our ideas as to its meaning become even more vague, particularly as the indications for operation vary in relation to both the surgeon and the locality in which he lives.

A disquisition on the clinical aspect of mastoiditis is unnecessary, but I think it is worth while to describe our procedure once the disease is diagnosed. In the first place, I would urge that we should endeavour, by pathological, anatomical, and clinical research, to treat successfully acute inflammatory affections of the middle ear by conservative means. Up to the present, and in spite of extensive histological research, we have no definite conception of the conditions demanding operation, inasmuch as we are unable to describe the conditions under which spontaneous cure may result.

Acute otitis media is an acute inflammation of the mucous membrane of the tympanic cavity; it probably always extends more or less to the cellular structure of the mastoid process. The inflammation in the membrane lining

the mastoid cells differs in character from that affecting the mucous membrane of the middle ear, since the former is not a true mucous membrane and should not be so described. Its histological structure is not yet decided, but the modern view is to regard it as a muco-periosteum or endosteum.

In the majority of cases of acute otitis media the mastoid inflammation resolves, and the disease is limited to the middle ear. At times, however, there is a progression of

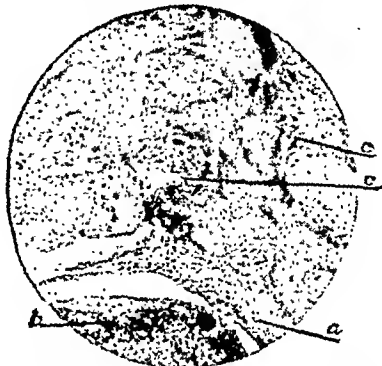


FIG. 1.—Early mastoiditis. (a) Inflamed mucous membrane of air cells; pus in cavity. (b) Adjacent inflammatory changes. (c) Osteoclasia.

inflammation in the mastoid cells, and their bony walls become involved. We are then confronted with a true osteitis with which it is necessary to deal by operation. As to the factors on which this extension of inflammation depends and progresses we can only speculate. Amongst others are certainly the kind and degree of virulence of the infection, the so-called individual power of resistance, and the anatomical and histological structure of the temporal bone itself.

We have endeavoured to determine the processes concerned in the progress of mastoid disease, and have, in this investigation, examined tissues removed during operation. While such material has been taken from cases both in the early and later stages of disease, we have only been able to determine therefrom an approximate idea of the histological conditions preceding mastoid osteitis.

Although we have obtained much positive knowledge, the inferences gathered from the data are not conclusive. Fig. 1 shows an early condition of mastoiditis (osteitis). The membrane lining the cells is thickened in many places and undergoing cell proliferation. In the cell spaces themselves there is free pus. In the neighbouring canal system osteoclasts are seen which have already destroyed the struc-

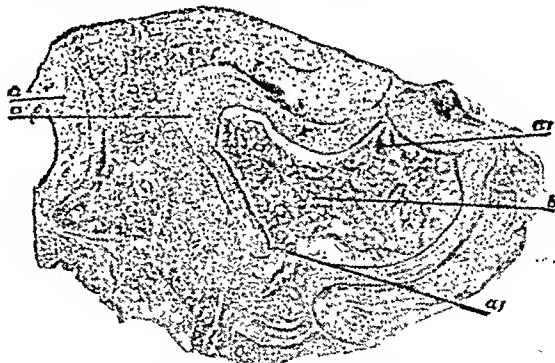


FIG. 2.—Mastoiditis in third week. (a) Thickened lining of air cells with (a') proliferation into the exudate at (b).

ture of the bone. We are thus examining a specimen at a time when the cells are filled with pus and a destructive osteitis has spread in the canals. The spontaneous recovery of such a condition is both questionable and unsupported by histological research. In Fig. 2 we see an intermediate stage in which the cell proliferation of the membrane lining the pneumatic spaces has proceeded a stage further and has invaded the inflammatory exudate, which is already

becoming organized. Still later, in Figs. 3 and 4, there are outgrowths of rapidly formed spongy bone which are filling the original cavities of the pneumatic cells. The more advanced the disease the more this irregular growth of bone is evident.

There is no relation between the clinical symptoms of mastoiditis and its histology. There may be the most severe

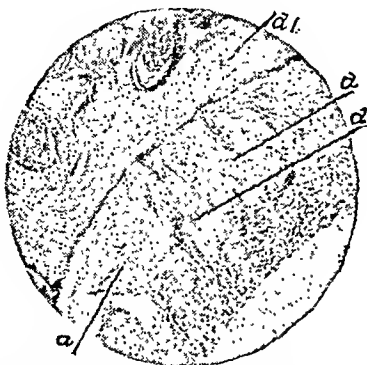


FIG. 3.—Mastoiditis in sixth week. (a) Newly formed bone in thickened lining of air cell contrasted with lamellar structure of original bone (a').

clinical manifestations associated with insignificant pathological changes, or, on the other hand, an almost complete destruction of bone with an almost complete lack of symptoms, especially if the *Streptococcus mucosus* is responsible. Mastoiditis, therefore, is a clinical condition not lending itself to accurate definition, and the indications for its operative treatment remain, as has been already stated, largely a matter of individual opinion. Radiography does not assist us in deciding upon the stage of the disease, since even the presence of an exudate in pneumatic cells will cause a shadow and give no definite information on the state of the bone. The best time to operate is when the inflammatory process has subsided and become restricted, and before complications have occurred. The period at



FIG. 4.—Column of newly formed bone in lumen of cell.

which such complications are most likely to occur is best determined by a statistical investigation from one clinic.

From a series of 800 cases of acute otitis media which we have collected during the past six years (arranged below in tabular form) it appears that the occurrence of complications has a general relationship with the duration of the disease. Although it is true that a large percentage of complications occurs during the first week (8 out of 14 cases, of which 3 patients died of meningitis, in a further 3 the sinus wall was involved, and in 2 sinus thrombosis had occurred, with ultimate recovery), the greatest number supervene during the sixth week and after. We therefore should not postpone operation until this time; most authors agree that operation should not be delayed beyond the third or fourth week of the disease. Operation at an earlier period—that is, in the second or even the first week—will generally be declined, and as a surgical reason against the

Table showing Percentage of Complications in 800 Cases Operated on for Acute Otitis Media.

	Week during which Operation was Performed.								
	1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	Later than 8th.
No. of cases operated on	14	105	143	165	112	72	41	62	86
Complications (347) and death (41) = 5%	8 (57%)	32 (31%)	50 (35%)	64 (39%)	44 (29%)	42 (58%)	22 (55%)	34 (55%)	51 (60%)

so-called "early" operation, the lack of obvious delimitation of the inflammatory process is urged.

It is very difficult to distinguish between diseased and healthy bone, and the possibility thus exists of disseminating the disease and infecting portions of the bone hitherto healthy, thereby prolonging the after-treatment and risking a second operation either for a recurrence of the disease or for the repair of a retro-auricular fistula. A small group of otologists holds the opinion that the early operation should be advised, and recommends it in the earliest stages of the disease with a view to preventing the development of complications. It is obvious that the earlier operation is done the larger will be the number of operations performed with their ensuing accidental risks, such as wounding of the sinuses, the dura, the brain, or the labyrinth; those associated with the anaesthetic; the possibility of infecting an exposed sinus; the development of erysipelas, pneumonia, and so on. It is doubtful if the mortality will be decreased by a general acceptance of the proposals for early operation. A still smaller group defer operation until the sixth week—that is, of course, if no alarming symptoms, such as high temperature, rigors, or cerebral disturbances, demand immediate surgical relief. The statistics, however, of these late-operated cases appear to us to give too large a number of complications, especially perisinus and extradural abscess.

We have based our ideas as to the indication for operation on the result of statistical inquiry, and indeed this is the only practical method when clinical symptomatology fails. According to our statistics, then, as we have shown, it would appear that the third and fourth weeks are the times of election for operation; but this, too, is a statement which requires qualification, in that its accuracy is influenced by whether or not the case has been under observation since the onset of the disease; in the former the mortality is only 1 per cent. This reaches 5 per cent. in those cases coming to operation at the same period but which have not been previously under observation.

Removal of bone in order to give us an idea of its condition before operation is neither practical nor would it be of much assistance, since we do not know under what conditions a spontaneous cure may result. As is seen in the illustrations, there is an active process of regeneration in progress at the time we usually operate, and the longer the disease has existed the greater the new bone formation. What we remove at the operation with chisel and curette is for the most part new bone, as histological examination shows. We therefore destroy and remove vast masses of regenerating tissue. The paradox of removing regenerating bone in order to cure osteitis is more apparent than real.

The existing inflammation is responsible, first, for bone destruction, and secondly, for its regeneration. Therefore, destruction and regeneration are proceeding *pari passu* and in close relation with each other, and consequently we find healthy unaffected bone, necrotic bone, and new bone at the time of operation. It is impossible to say, however, by inspection of the tissue what is healthy or what can recover; the new bone, deficient in calcareous matter, is soft to the curette, and for the greater part embedded in granulation tissue, while the infected bone is as hard as, or even harder than, normal.

On these considerations, and on the complicated arrangement of the pneumatic cells of the temporal bone, depends the failure of many operations. The pneumatic structure and the placing of the mastoid cells has always been a



matter of zealous investigation by anatomists, embryologists, and especially clinicians; the work of Cheate comes prominently before the mind in this connexion.

The expert operator, benefiting by an experience bought with great pains, knows when he has removed all that is necessary, but the tyro is not so easily able to recognize when he has completed a mastoid operation. We have therefore permitted ourselves to frame a definite technique for didactic purposes in order to prevent the operator young in experience from leaving behind diseased tissue.

After opening the antrum we remove all cells in the neighbourhood of the zygomatic process, which often appear separated from the main collection of cells by a definite partition, and may be easily overlooked. Then we open up the cells which lie on the posterior aspect of the mental wall, along the course of the Fallopian canal (the retrofacial cells). It must not be forgotten that this group of cells often extends behind the horizontal semicircular canal beneath the labyrinth, and, further, that the retrofacial cells are in connexion with the peribulbar cells, and that these latter are in continuity with the medial and lateral cells in the neighbourhood of the digastric groove and the apical cells. Lastly, we deal with those cells around the sinus in the posterior portion of the mastoid which we describe as "marginal cells"; through this area run one or two emissary veins. Upwards these cells are in

We do not hide from our patients and their friends the fact that mastoiditis is not to be regarded as harmless, or an operation without risk; we explain that it must entail a certain risk, and that the question of a neat scar is of secondary importance, and should not in any way influence the thoroughness of the operation. After all, the operation scar lies behind the ear, and can neither be seen from the front nor in profile, and in the case of women can readily be covered by an arrangement of the hair.

To recapitulate a few points: By the systematic removal of the cells as described above we are relieved of any doubt as to the extent of the disease, what bone should be removed or what may be left; it is scarcely possible to overlook an infected cell which might be the source of complications later.

Inasmuch as the marginal cells are removed, we have naturally to take away the cortical portion of the bone behind the sinus as deeply as possible—sometimes to below the knee of the sinus—and thus a somewhat wide, open funnel-shaped cavity results, which can often be improved by removal of the outer portion of the posterior mental wall.

The apex of the mastoid process is not usually resected, unless the disease makes this imperative; incidentally such a resection is responsible for most indrawn and visible scars, since the origin of the sterno-mastoid is interfered with.

The post-operative progress is usually uneventful, if we

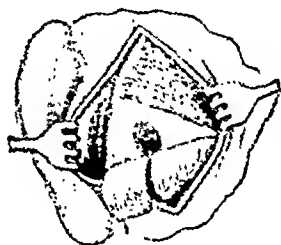


FIG. 5.

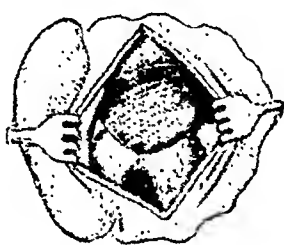


FIG. 6.

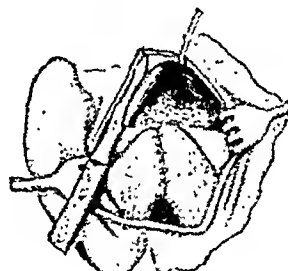


FIG. 7.

FIGS. 5, 6, 7.—Stages in operation.

connexion with the cells of the petrous bone, which latter are interposed between the lateral sinus and the dura of the middle fossa; they are often of considerable size, and extend far backwards.

In the pneumatic type of mastoid all these groups of cells are more or less developed, and according to our method of operation systematically sought for and opened, leaving a characteristic operation cavity with relatively smooth boundaries, in which the bony covering of the sinus stands out in relief. If the resulting cavity is too narrow its width may be increased by removal of the outer boundary of the posterior mental wall.

Since we adopted the above procedure in our clinic no secondary operations have been necessary. The operation cavity left after the method of operating described is naturally larger than the usual one, and the question of after-treatment is raised; this will, of course, be of longer duration, but we consider this to be counterbalanced by the result in view. After-treatment is prolonged if the wound is left quite open, as it must always be if the sinus or dura is exposed; it is shorter if the upper part of the wound is sutured, and this procedure will also give a neat-looking scar.

It is said that the after-treatment is concerned in the possibility of recurrence. We have seen no difference in this respect between our method and the usual method of operation. In the repair of a large or small operation wound in the mastoid the cavity is filled with fibrous tissue consisting more or less of a system of spaces in communication with the antrum. This is followed by a new growth of bone which, after a thorough operation, is very slight, and in no way corresponds to that production of bone resulting from inflammation.

The larger scars resulting from this operation are a disadvantage, and compare unfavourably with those left after a simple anterotomy. Work on plastic operations and efforts towards closing the operation wound would almost give rise to the impression that the whole problem of mastoiditis is referred to the cosmetic appearance of the scar!

except those cases in which exposure of the sinus or dura may render the course more difficult.

It should be mentioned that the earlier operation is undertaken the more probable are complications of the soft parts; if, however, undue respect is not paid to the cosmetic result such complications are rare. It is wise, therefore, to leave the wound widely open, especially in its lower part, where such undesirable sequelae usually begin.

It has been urged by many that the possibility of a retro-auricular antral fistula is a disadvantage of our method. As a fact, we but rarely meet with them. In our view a large mastoid wound is not responsible for a fistula. Rather is it to be referred to an incomplete operation, the leaving of unopened cells and areas of diseased bone; such residua cause long persistence of a discharging wound and the ingrowth of epithelium into its cavity.

It may not be out of place to describe the method we employ in closing a retro-auricular fistula, as it has given us infinite satisfaction. (See Figs. 5, 6, 7.) We remove the old scar, reflect the skin forwards and backwards, and fashion two periosteal flaps with bases below. These flaps are laid into the freshened bony cavity and united with a few sutures; the cavity is further filled up with flaps from the temporal muscle, varied in size and shape to fit individual cases. The skin is united and a small gauze drain left in the lower angle of the wound. The dressing is changed on the fourth day, and the gauze drain removed and not replaced. The result is favourable whether the stitches hold or not; healing should follow by first intention; if small pockets remain in the wound the closing of them is only a matter of time.

In this address I have attempted to give our attitude towards the question of mastoiditis, based on our experience for the last few years. As in other questions in medicine, we do not claim that the last word has been spoken, but we propose to persist in this method and practice until possibly other methods and further research compel us to adopt other treatment.

## GENERAL DISCUSSION.

Mr. LIONEL COLLEDGE (London) thought that it ought not to be necessary to remind aural surgeons that they could not disregard the well established principles of surgery by leaving dead spaces undrained and by neglecting to arrest haemorrhage, proceedings which were, however, still recommended and practised. It was such a common experience for patients to present themselves with an abscess bulging out a post-aural scar in cases where the presence of stitch marks showed that the wound had been sutured after a Schwartz operation performed several months or perhaps a few years earlier, that, however cynical this remark might sound, it was fully justified by experience. On reopening such wounds a cavity with rough overhanging edges of bone was found full of pus and septic granulation tissue, showing that healing had never occurred. If the operator wished to close the wound after a Schwartz operation it was much better to do so as a secondary measure when the cavity was lined with healthy granulations at the end of five to ten days, and then only if the stitches could be so applied as to obliterate the cavity. This was possible if the cavity was not too wide. Bipp applied to the bone was useful, but there was no magic in it, and an occasional apparently brilliant result did not justify the departure from sound principles. If the wound was stitched primarily the lower end should be left wide open and drained. A better method if the cavity was large and could not be obliterated, and especially if it was heavily infected, with a sloughing lateral sinus or dura mater, was to adopt Carrel's method of wound treatment—a method particularly suitable for bone wounds. The wound was left wide open and the cavity was filled with half-inch ribbon gauze which had been soaked in eusol; into the middle of this an india-rubber tube closed at the lower end with a silk ligature was introduced. There should be only one fairly large hole in the side of the tube, just above the silk ligature, and the tube should be so arranged in its nest of gauze that the hole looked directly inwards. A gauze dressing with a round hole for the passage of the tube and a crescentic opening for the auricle was applied over this. The tube should be just long enough to project outwards between the upper folds of the bandage. The skin should be smeared with vaseline to protect it from the action of the eusol. With a small syringe the nurse injected a drachm of eusol down the tube every two hours. This dressing should be changed daily. As it was wet it did not stick and was painless, and it was gratifying to observe how in a few days sloughs disappeared and the cavity became quickly obliterated by bright red firm granulations. If the lateral sinus had been opened and obliterated with packing the constant soaking made the removal of this a very simple matter. There was a further advantage that the epithelial edges appeared to spread in very rapidly under the influence of eusol. When the cavity had become quite shallow it was sufficient to dress the granulating surface with boric powder to prevent the dressing from sticking to the surface.

In the management of the cavity left after the radical operation Mr. Colledge was among those who preferred to graft. If there was any contraindication to grafting such as an opening into the labyrinth and exposure of the facial nerve, it did no harm to smear the cavity with a little bipp and pack it lightly. The packing was removed in five or six days, and thereafter the cavity was filled daily with boric powder. The worst results were produced by prolonged packing with ribbon gauze. Carrel's method did not lend itself unless the post-aural wound had been left open, in which case it was very useful, provided that a large mental flap had been cut. The speaker believed that whenever possible the cavity should be lined with a graft, which secured healing more rapidly, and with more certainty; the hearing afterwards was, in his opinion, better. In some cases of double radical operation in which only one side had been grafted he had always found that the result was better and the hearing better on the side grafted. The graft might be applied primarily at the time of the operation, but he thought it was safer and more satisfactory to do this at the end of

about a week. Of the various ways the easiest and most effective was that of Mesher. The Thiersch graft was spread over a hollow cone of gauze impregnated with paraffin wax. The paraffin wax made an exact cast of the cavity, so that the graft fitted accurately; nor did it adhere to the graft, so that when the cone was withdrawn in a week's time the graft was left in perfect position. If the post-aural wound had been left open it was very easy to do this, and there was no difficulty if it had been closed, because the cone, being hollow, could be made to collapse and be withdrawn through the meatus. A few days later the superficial layer of the graft was cast off as a slough, leaving the bone completely covered with epithelium. At the present time Mr. Colledge believed that this method was superior to all others.

Mr. CHARLES HEATH (London) said that at the Downs Hospital for Children, which was, he believed, the largest ear hospital in the world, they aimed at the prevention of those calamities which could not be avoided when the operations under consideration were adopted; these operations were Schwartz's so-called "simple" mastoid operation and Stacke's "radical" one. He hoped to explain how these calamities could be prevented, as deaths from appendicitis had been. An appended note to an article by Dr. Anthony Wrench, entitled "Some guiding principles in the post-operative treatment of mastoid disease," was as follows:

"These remarks apply to the radical and Heath's conservative mastoid operations. The Schwartz operation is now never performed at the Downs Hospital, as this method of dealing with mastoid disease has not infrequently been found to be followed by dangerous recurrences. The dressings also are more painful. The scar is unsightly. And, the worse fault of all, the site of the aural cavity and the drumhead are left practically inaccessible."

There were thus four counts in his indictment of Schwartz's operation. Mr. Heath considered that Schwartz operation wounds, whether left open or sewn up, were liable to dangerous recurrences, which he had seen, at the Downs and at fever hospitals. They brought about conditions as bad as or worse than those existing at the time of the original operations—namely, pus in the antrum and under the skin behind the ear. In consequence of a death, due to septicaemia and meningitis, resulting from a recurrence after a Schwartz operation performed at a seaside town, which came under observation at the Downs Hospital, he had felt constrained to point out the dangers of recurrences after Schwartz operations and their absence in recurrences after conservative ones. He was glad, therefore, to learn, from Dr. Wrench's article, that Schwartz operations had been given up. Further, the surgeons at this hospital had experience which was unequalled elsewhere and justified a decided attitude regarding this or, indeed, any other mastoid operation. Were it not that the "after-treatment and results" of this operation were down for discussion and that they saw sad recurrences after its use, he would have imagined that it was obsolete and that he was "flogging a dead horse." Twenty years ago (1906) Dr. Percy Jakins, surgeon at the Central London Ear and Throat Hospital, after seeing the conservative operation performed by Mr. Heath at the Throat Hospital, Golden Square, said: "Your operation will take the place of all Schwartz and most of the Stacke radical operations"; he had performed no Schwartz operations since. The senior aural surgeon at one of the large teaching hospitals in London had recently informed the speaker that he never performed any mastoid operations except by the conservative method.

Painful dressings were complained of when the Schwartz wound was left open—an important matter at the Downs Hospital, with 150 children who could not tolerate them. The after-treatment of mastoid operations was an art, and the operative technique should be designed to facilitate it; this had been done in the conservative one. For example, a baby, aged 3 months, with aural discharge and polypus operated on by the speaker only required four subsequent dressings. The after-treatment at the Downs Hospital allowed of one person dressing over 100 patients in a morning; after the conservative operation these dressings were performed more easily than after any other, because

the antrum—the only part packed—was a cavity of remarkably little sensibility."

If after Schwartz operations the wounds were left open, operations needed to remove them. An operation requiring this was not ideal. At the Downs Hospital recurrent fresh incision, close to the ear, a conservative mastoid operation was performed; secondly, the old scar (and suppurating sinus if there was one) was excised and the wound was sewn up; in this way danger and disfigurement were both removed.

An inaccessible antrum was the great cause of danger from recurrences after Schwartz operations, because this cavity was not open to the air, as it was after the conservative one. Indeed, in the technique of the latter the dangerous antrum was cut off from the middle ear altogether; it became a part of the outer ear, was always open to the air, and was therefore safe—a surgical rearrangement of the hinder end of the middle ear, which Mr. Heath had devised to ensure the future safety of the patient by providing a permanent safety-valve.

Other indictments of the Schwartz operation had to be added, including the prolonged after-treatment, as compared with the conservative operation. Fourteen days after the performance of conservative mastoid operations on two nurses the patients were working in their wards; neither had an ear dressing of any kind, not even a small piece of wool. In that short time the perforation in the drum of each had healed; their ears were sound and safe. Quick recoveries occurred in the majority of these cases, and were equally rapid when both ears had undergone operation at one sitting by this method.

In the Schwartz operation there was also the liability of dislocation of the incus bone, causing deafness, in consequence of the surgeon's inability to locate it precisely, because the tympanic ring and drumhead were not exposed for this purpose in Schwartz operations, as they were in the conservative one. This would explain some of the cases of deafness following Schwartz operations hitherto inexplicable.

Suppuration within the sheath of the temporal muscle occurred both in Stacke's (radical) operation and in that of Schwartz because the sheath was opened during these operations; since aural discharges before and after operations on the ear were septic, the exposed muscle might become involved in the septic process. The opening of the sheath was avoided in the technique of the conservative operation; in consequence of this and its other advantages this technique was largely followed, at the Downs Hospital, in every mastoid operation performed there, even the radical ones.

The Schwartz so-called "simple" mastoid operation was too simple; it was a crude proceeding, like the earliest abdominal operations, and a disfiguring emergency measure, hurriedly devised to save life by providing drainage for an acute abscess in bone in a dangerous locality. It made no provision against an equally or more serious recurrence, and might or might not assist in the preservation of the hearing; it was not devised for this purpose. The objectionable features inseparable from Schwartz's operation had all been overcome in the conservative one.

The present position of Stacke's (radical) operation could not be maintained, because of the deafness it left, and because timely conservative operations did not leave deafness. In addition to the handicap of deafness, patients were so long in hospital after radical operations that the output per bed was small, whereas patients that the home in a week or less after mastoid operations that the conservative lines. With the present accommodation at the Downs Hospital they could turn out from five to ten times as many good ears after conservative operations as they did now if patients were sent in before their ears were damaged by disease. This would entail more operations, but the timely performance of operations had proved so effective and safe in appendicitis that it was satisfactory to know that mastoid operations could be equally so. As a rule Mr. Heath's patients were not walking three days after mastoid operations, and were not so ill as those who underwent the removal of tonsils. The conservative operation, therefore, could justly be regarded as a small matter

compared with the great importance of saving hearing and ending the futile time-wasting out-patient treatment.

With regard to treatment by ionization, Mr. Heath said that this not only failed to cure (because of physical difficulties due to the anatomy of the ear), but it failed to prevent the destruction of hearing by disease. Its general use, therefore, for this ear disease was not justified. In a shorter time than the ionization treatment was spread over discharging ears could be cured by conservative mastoid operations. There were aural conditions, however, in which ionization was occasionally useful. Mr. Heath used it, not before, but after mastoid operations in cases of long-standing disease which were slow in healing, because after operation the ear could be completely filled with the ionizing fluid; before operation this could not be done, hence the failure of the treatment then. The ears which were likely to derive benefit from ionization alone were the very badly damaged ones, which would never be sound again even if dry.

Mr. E. D. D. DAVIS (London) said that an experience of over 500 mastoid operations had shown that the amount of after-treatment depended very much on the efficiency and type of operation performed; the less the after-treatment the better and more efficient the operation. In the case of the radical mastoid operation performed for suppuration of long duration there were certain details which helped to eliminate after-treatment. It was important, at any rate in the case of children, that unhealthy tonsils and adenoids should be removed before operation, and as a preliminary to this the mouth and teeth should be put in order. In a few cases where this had been done the mastoid operation had been rendered unnecessary. The mastoid operation should be performed as early as possible after the more conservative treatment had failed, and the less radical the operation the better. Mr. Davis was in favour of the modified radical operation described by Logan Turner and others. The removal of a large area of bone was rarely necessary, and the lateral sinus and middle fossa dura should not be deliberately exposed unless signs and symptoms demanded this. The middle ear and auditory meatus should be treated as gently as possible. Cretting was decidedly harmful, and after removal of the malleus and incus the remainder of the drum should be left to cover over the orifice of the Eustachian tube.

The continued Eustachian discharge was the disadvantage of many radical mastoid operations, and the speaker had tried every known form of treatment to close the Eustachian tube, with little success; he had come to the conclusion that in those cases in which there was no Eustachian moisture a fulso membrane or scar had sealed the orifice of the tube, and this scar formation was helped by leaving the remnants of the drum. Grafting failed to close the tube, and he did not think grafting was worth the trouble except in cases where there was a large cavity and extensive removal of bone. The method of treatment he preferred was to pack loosely with gauze soaked in fluid hippo the aditus and opening in the posterior mental wall left by the cutting of the flap. The ear was dressed as conditions. The first dressing was done four to five days after operation, when the gauze packing was changed, and subsequent dressings followed not more than once every other day. When the post-mural wound had healed the outer dressing was left off and the patient went home at the end of a fortnight, being told to keep the meatus clean by gentle mopping with boric lotion, and to avoid plugging with cotton-wool so far as was practicable. Mr. Davis was convinced that hydrogen peroxide spirit drops, or any other drops, did more harm than good. The patient was seen once a week until the mastoid had healed, which, in the simple or Schwartz operation he had been in the habit of performing a very complete extirpation of all the cells, like that described by Professor Neumann, also of incising the drum to drain the middle ear. The wound was closed with the exception of a small drainage tube, to be removed at the end of forty-eight hours. He strongly condemned the popular packing of the wound, which he considered unnecessary. Complications occurred,

not as the result of a closed wound, but owing to the unopened suppurating cell. He was also opposed to the cutting of a moatal flap for drainage through the meatus, because stenosis of the meatus frequently followed, healing was delayed and a secondary sepsis occurred, too frequent and painful dressing was required, and the result was certainly no better than that of the simple mastoid.

Mr. HERBERT TILLEY (London) said that much of the pain caused by removal of the first dressing could be obviated by inserting a layer of oil-silk between the edges of the skin wound and the gauze strip when this material was used for plugging the wound. He quite appreciated Mr. Jenkins's apprehensions as to the possible dangers involved by primary and complete suture of the skin wound after the Schwartz operation. Some ten years ago Mr. Tilley had shown at the Otological Section of the Royal Society of Medicine a series of ten consecutive cases in which primary suture had been performed; in one patient the lateral sinus had been exposed by the disease. In no case was there any complication, and the patients were about in a fortnight, with a completely healed scar, intact tympanic membrane, and hearing as good as resulted from any other type of operation. It was essential to success that every infected cell should be removed as far as the naked eye could judge. The bony wound was freely cleansed with hydrogen peroxide, then with alcohol, and finally and freely smeared with bipp before suturing. A large number of patients had been operated on by this method by Dr. McNab of Johannesburg and Dr. Guthrie of Edinburgh. For the last few years Mr. Tilley had inserted a narrow bundle of silkworm-gut strands into the lower end of the wound; he removed them at the first dressing and then applied firm pressure over the bony wound. This seemed to obviate any possible danger in case there had been failure in removing all sepsis at the time of operation, and the delay in primary union was practically negligible. He only wished to maintain, in favour of the method, that it was a great time-saver of after-treatment.

Mr. NORMAN BARNETT (Bath) thought that a very advisable procedure in the after-treatment of the operation for acute mastoiditis was to wash out the middle ear through the aditus before the patient left the operating table. In this way a large amount of pus and debris was got rid of and healing was much more rapid. His experience with bipp and/or primary stitching of the posterior wound was not encouraging. He considered that the better treatment was to stitch up the upper part of the wound, to leave drainage, and to pack with iodoform gauze, or, in the case of a very foul condition, to fill the space with iodoform emulsion as well as packing it with gauze. In the later stages a sinus might refuse to heal, and for this he found that weak iodine was of value.

The object of the modified radical operation was to save the hearing apparatus of the middle ear; it was therefore necessary that this should be rendered as healthy as possible, and in his experience this was best achieved by washing out the middle ear through the aditus, which was reached by a large flap made in the posterior soft wall of the external auditory meatus. Through this a nozzle was passed into the obliterated mastoid antrum, and from an attached bag air was blown through the aditus into the middle ear and out through the opening in the tympanic membrane, carrying with it a considerable amount of debris. This was followed by washing out the middle ear gently with bland substances, such as normal saline or colloid silver, or a vapour of iodine and camphor might be passed through. In this way all disease products were gradually driven out from the middle ear and a healthy condition of the structures was promoted; there was then a very great likelihood of healing with restored function. Irrigation or inflation was continued for a varying period, according to the nature of the case and the amount of diseased tissue to be cleared. After this, in the great majority of his cases, the tympanic membrane healed even where it had been widely burst or was almost non-existent; this was true at almost any age. He had been greatly surprised to observe, even in elderly subjects, that the

tympanum might become wholly closed in by a new tympanic membrane growing from an insignificant margin. It was a wrong attitude towards such a method of modified radical operation to suggest that it was simply an alternative draining through the external auditory meatus instead of behind. One of the great objectives of the method was to facilitate treatment of the middle ear afterwards, and to obviate the removal of this important part of the hearing apparatus.

Dr. W. JOHNSON HORNE (London) had found the opening papers refreshing inasmuch as after going out in various directions for new treatment these had brought them back to where he started from thirty years ago. It was impossible to lay down hard and fast rules for the treatment of the mastoid antrum. He was in favour of a "large meatus," and he had seen advantage in meatal drainage in combination with post-auricular drainage with a small drain of gutta serena tissue. At the same time he was not in favour of completely closing the lower part of the post-auricular incision. After primary suture of the upper part, secondary suture was not required. The drooping auricle, or displacement of the auricle forwards, could be prevented by suitable bandaging. That was another reason for doing the dressings personally. He agreed that sepsis, when it occurred, was due very often to leaving the after-treatment to others. At times it was difficult for the surgeon to keep the after-treatment entirely in his own hands. A general anaesthetic for the first dressing was not required and was best avoided; it was apt to create an erroneous impression that a second operation had become necessary, in spite of the assured success of the first. The fewer the drops, the more simple and the less irritating the solutions or applications used, the better. Last, but not least, that unaccountable hurry to get the patient out of bed on the third or fourth day, and back at work by the end of the week, must be condemned. After a simple or radical mastoid operation a fortnight in bed should be the minimum amount of rest allowed to a human being who valued health and the organ of hearing.

Mr. ANDREW WILLIE (London) agreed with Mr. Jenkins's procedure and reproached the use of antiseptics during and after operation. He disapproved of packing a radical mastoid cavity, his own practice being to irrigate it gently each day with an unirritating lotion.

Mr. C. A. S. RIDOUT (Portsmouth) left a wide posterior opening in mastoidectomy, particularly when severe infection was present. After about ten days secondary suture might be performed. He had seen many entirely successful results of the modified radical operation, and considered that careful after-treatment had an important bearing on a subsequent perfect result.

Dr. SCOTT STEVENSON (London) said his practice was to perform the Schwartz operation in acute mastoiditis and to suture the wound. This did not imply that the wound was to remain closed for ever; if necessary the sutures were removed.

Dr. W. S. SYME (Glasgow) thought the success of the Schwartz operation depended very largely on the thoroughness with which the cells were dealt with. He believed in removing the tip of the mastoid, and was grateful to Professor von Neumann for drawing attention to the retrofacial recess.

Sir WILLIAM MILLIGAN (Manchester) considered that, taking cases as a whole, it was better to have the wound open after a Schwartz operation. His experience was that hearing improved in many cases after the radical operation, and he held that an important item in procuring a good result was not to send the patient out of hospital too soon. He agreed that grafting shortened the after-treatment materially, robbed it of pain, and allowed the patient to go about his life again much sooner than he could otherwise do.

Mr. NORMAN PATTISON (London) asked Professor von Neumann whether, in doing a modified radical operation under a local anæsthetic, it was his practice to remove the incus. Professor von NEUMANN replied that in about 80 per cent. of cases of chronic otitis the incus was disarticulated from the stapes, and in these circumstances he removed it; its removal did not adversely affect the hearing.

Mr. G. J. JENKINS (London), in reply, supported Professor von Neumann in advising meticulous care in the opening up of all cells of the mastoid and neighbouring regions in operations for acute mastoiditis. He was familiar with the group of cells between the dura of the posterior fossa and the facial nerve, and examples of this group could be seen in Mr. Cheate's collection in the Royal College of Surgeons. He knew of two abscesses of the cerebellum, just above and external to the jugular foramen, which seemed to be associated with the infection of this group of cells.

Mr. J. S. FRASER referred to tubal catarrh being responsible for the continuation of discharge after a radical mastoid operation, and spoke of the impossibility of curing it. His own experience of primary closure in a simple mastoid operation, undertaken against his wish and only from motives of dire necessity, had been followed by a fatal result.

## PHARYNGEAL AND OESOPHAGEAL DIVERTICULA.

BY

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THERE is probably no group of lesions in the descriptions of which so much ignorance and inaccuracy have been so frequently perpetrated and perpetuated as in those appertaining to the various etiologically, topographically, and clinically distinct types of diverticula of the pharynx and of the oesophagus. The taking stock and the straightening out of this subject which I have undertaken are long overdue. Pouches originating in the former region, the pharynx, are almost invariably described under diseases of the oesophagus, and with great frequency they are actually, but wrongly, designated oesophageal pouches and occasionally pharyngo-oesophageal pouches. They are neither. Moreover the textbooks, both general and special, ignore at least four separate varieties of pouch which I shall emphasize later—two forms being truly of pharyngeal, and the other two of oesophageal origin.

The following is a classification of the various species of diverticula of the upper alimentary tract which, whilst presenting some features more or less in common, are for the most part etiologically, patho-anatomically, and in their clinical signs and symptoms separate and unrelated entities. Their presentation in tabular form will help to clear away many of the prevalent misconceptions which have obscured in the past and still obscure these lesions.

### A. Pharyngeal in Origin.

1. Congenital centrally placed anterior diverticula.
2. Congenital lateral post-faucial diverticula. (Synonyms: *Aerocèles*; *branchial diverticula*.) The mouth of these pouches is usually in the region of the palato-pharyngeal fold, but may be lower down in the glosso-epiglottic and in the pyriform fossae or near-by these. These pouches are due to embryonic developmental errors in the region of the branchial clefts. They form swellings on one side of the neck and of considerable size when of long standing. They contain air and mucous secretions, but rarely food, as the orifice on the lateral wall of the pharynx is usually so small.
3. Deep pharyngeal pressure diverticula or pouches. (Synonyms: *Pharyngeal pulsion pouches*; *Rokitansky's pulsion pouches*; *Zenker's pulsion diverticula*.) The mouth of these pouches is invariably situated posteriorly and mesially at the line of junction of the upper oblique and lower transverse sphincteric fibres of the inferior constrictor muscle. They are fairly common. (Pulsion pouches of the pharyngo-oesophageal junction—the *Grenz diverticula* of Rosenthal—and of the Lannier-Hackerman area at the upper end of the gullet are a figment of the imagination of untrustworthy and incompetent observers, and no *post-mortem* confirmation is obtainable

of their occurrence. Most authors misleadingly include these alleged varieties, but on insufficient evidence and faulty observation.)

### B. Oesophageal in Origin.

4. Traction diverticula, situated mostly more or less at the level of, posteriorly to, the hilus of the lung—for example, to the bronchial glands area (Rokitansky). They may, however, occur elsewhere—for instance, in the supraclavicular gullet (Chevalier Jackson), and in the epiphrenic segment not far from the level of the diaphragm (Starek, Luschka, Arnold, von Brosch, Halstead, Hurst, and others). (Synonym: *Rokitansky's traction diverticula*.) They are not really rare, apparently, though not often diagnosed during life, as symptoms are usually absent.

5. The traction-pulsion diverticula of Starek. In these a pouch originating by traction subsequently becomes expanded by food pulsion. Food lodging in these pouches was held by Rokitansky to be a frequent source of septic mediastinitis and various suppurative diseases of the lungs and pleura of hitherto unexplained origin. Such sequelae, however, have not been considered common by subsequent authorities.

6. Leugart's post-bronchial ledge pulsion diverticula, situated behind the level of the left bronchus above Leugart's ledge. These diverticula are rare.

7. Epiphrenic pulsion diverticula, situated in the lower third of the gullet not far above the diaphragmatic level (Zenker, Bousaude, Kraus, Starek, Hurst, and others). They are rather rare.

8. Dissecting diverticula.

9. Diverticular sinuses.

### CONGENITAL CENTRAL ANTERIOR DIVERTICULUM OF THE PHARYNX.

Considering the frequency of anterior centrally placed fistulae, sinuses, and cysts at the base of the tongue (second branchial cleft survivals) diverticular *aerocèles* might be expected to occur there, and also in connexion with the third and fourth branchial clefts lower down; but the only recorded instance, probably of this nature, with which I am acquainted is a case recently reported by Hurst, in which there was stated to be a central opening on the posterior pharyngeal surface of the cricoid plate with a diverticulum passing down between the trachea and oesophagus; this filled up with food, causing dysphagia. This could evidently be capable of surgical extirpation by a lateral incision in the neck. Although of congenital origin it was evidently increased in size by food pulsion. This exceptionally, if not uniquely, placed diverticulum was discovered by radiography, to which recourse was had to explain the dysphagia.

### CONGENITAL LATERAL PHARYNGEAL DIVERTICULAR SINUSES AND AEROCÈLES OF ABNORMAL BRANCHIAL CLEFT ORIGIN.

Branchial fistulae opening both externally and internally, and branchial sinuses ending blindly in the neck, opening either externally only or, less commonly, internally only, are by no means rare lesions, and are well known to be due to embryonic developmental irregularities in the devolution of the branchial clefts; cysts, dermoid and otherwise, can be traced to the same source; it is only very exceptionally, however, that a sinus passing into the neck from an internal pharyngeal orifice expands into an *aerocèle*. Godlee and Bucknill, however, in recording such a case in 1901, referred to a comprehensive paper by Kostanecki in 1890 which, whilst dealing generally with lesions of branchial origin, such as cervical fistulae, sinuses, and cysts, mentioned a number of recorded cases in which an internally opening sinus had developed into a well marked diverticular *aerocèle*, which presented as an obvious air-filled swelling in the neck.

Watson of Edinburgh recorded the first case of this form of diverticular *aerocèle* in 1875; found in a dissecting-room subject, it reached the level of the clavicle and resembled a Florence flask with a very elongated neck, which opened by a small orifice at the favourite spot just behind the tonsil on the palato-pharyngeal fold.

The next record was also British. The elder Wheeler described and illustrated an enormous air-filled cervical diverticulum (*aerocèle*); it was as large as a fair-sized orange. At operation it was found to extend in front of the sterno-mastoid, and was covered by a thin layer of muscle which I surmise was the platysma; it reached the



clavicle below and the middle line over the thyroid cartilage in front. The stalk was traced upwards between the two carotids, and entered the pharynx in a space bounded by the palato-pharyngeus and the stylo-pharyngeus laterally and the middle and superior constrictors above and below. This diverticulum, Wheeler states, could be traced to the right sinus pyriformis, and the opening was apparently large in contrast to that of the lesions described by Watson and by Godlee. After removing this sac Wheeler unexpectedly discovered another diverticulum lower down, originating posteriorly from the deep pharyngeal pulsion down behind the oesophagus. This true pharyngeal pulsion diverticulum was the size of a walnut, the distinction of being Wheeler had, therefore, in 1886, the distinction of being the first to operate on, and to remove successfully, a congenital lateral pharyngeal diverticulum with survival of the patient; though the latter procedure of removing a pharyngeal pulsion diverticulum with survival and cure of the patient had been previously (in 1884) performed by Nishans and von Burckhardt, but with a fatal result in each instance.

These diverticula, though more commonly having a small opening in the region of the posterior faucial pillar just behind the tonsil, may, as in Wheeler's case, open lower down; the neck in Godlee's case passed through the lateral part of the thyro-hyoid membrane, and in another instance the opening was large enough to admit a finger somewhere in the region of the glosso-epiglottic fossa. Although the records describe these sacs as containing air and some secretions, and in one instance grumous material, it would be imagined that, where the pharyngeal opening happens to be large, food must sometimes get in; but perhaps there is a valvular condition of the orifice which prevents this happening as a rule. Certain it is that the presence of food in the sacs is not mentioned in any of the records I have consulted; but I cannot claim that my search has been exhaustive.

#### HISTORICAL NOTES ON PULSION DIVERTICULA OF THE DEEP PHARYNX.

According to Zenker the first recorded case of such a pouch was made by an Englishman (Ludlow) in 1764, and the specimen, a large one which extended into the thorax, is preserved in the Hunterian Museum of the Royal College of Surgeons. Zenker and von Ziemssen give references to no fewer than twenty-two cases, in which the diagnosis was rendered unequivocal by post-mortem examination, which were recorded between 1746 and 1879, and they add five cases of their own in the same category. In this list are included four English cases—namely, Ludlow's mentioned above, and one by Sir Charles Bell in 1816, one by Worthington in 1846, and one by Ogle (which is in the St. George's Hospital Museum) in 1865. Zenker also refers to seven recorded cases, in which, however, there was no autopsy, including one described by Dendy in 1848 and another described in the *Edinburgh Medical Journal* in 1856.

I have already alluded to the important case reported by Wheeler of Dublin in 1886, which was of especial interest in that it was not only the first one cured by surgical removal by a lateral incision, but the case was complicated by, and operation was undertaken for the removal of, a very large congenital lateral post-faucial diverticulum of congenital embryonic branchial cleft origin. The lower pharyngeal diverticulum was unsuspected, and only discovered during the course of the operation, and of course it was removed at the same time as the large lateral air pouch.

The first description, in any way approaching accuracy, of diverticula in the region under discussion dates from a communication by Mondirre in 1833. In 1840 Rokitansky placed the subject on a sure basis. He was who classified these pouches under two main headings—namely: (1) pulsion or pressure pouches, and (2) traction pouches. Although he devoted most attention to, and laid the foundation of our knowledge of, traction pouches of the middle region of the oesophagus, he showed remarkable perspicuity in pointing out that the pulsion pouches found high up really originated from the lower pharynx. Yet in spite of this clear statement, and the fact that the point was empha-

sized in 1887 by Zenker, these pulsion diverticula of Rokitansky, originating high up in the alimentary tract, have been almost habitually included under the heading of "Diseases of the oesophagus," and have been described as originating either at the extreme upper end of the gullet or else at the pharyngo-oesophageal junction, and the importance of Killian's dehiscence in the inferior constrictor, with hernia of the mucous membrane through the same, has been almost ignored even to the present day.

After Rokitansky, the next comprehensive and really illuminating account of diverticula of the pharynx and of the gullet was set forth with, on the whole, considerable accuracy by Zenker, writing independently in 1876, and also in collaboration with von Ziemssen in 1877, in the *Encyclopaedia of Medical Practice*, edited by the latter, the English edition of which appeared so far back as 1878. In volume viii of this work, under the section dealing with diseases of the oesophagus, they included, it is true, diverticula of the pharynx, for they write:

"In a careful investigation of the subject we must overstep the true limit of the oesophagus and consider also the lower portion of the pharynx at the same time, since some of these diverticula, strictly speaking, belong to the pharynx. . . . In the literature such pharyngeal diverticula are repeatedly and erroneously described as oesophageal."

This statement is surely sufficiently definite, yet even at the present day this erroneous nomenclature as regards these herniae of the pharynx is perpetuated in our textbooks, both general and special, and in the report of cases in current journals. Zenker, following Rokitansky, divided diverticula in the upper food tract into those resulting from (1) pulsion and (2) traction, and stated that the two forms "are so totally distinct and different that it is impossible by grouping them to give a general description of the disease. Although this has been done by nearly all writers, excepting only Rokitansky and Heschl." Zenker thought that pressure—that is, pulsion—diverticula were limited to the true pharyngeal diverticula, corresponding to the true pharyngeal diverticula, and that traction diverticula were limited to the gullet. The latter statement is apparently true, but it is not a fact that pressure diverticula do not occur far remote from the pharynx—that is, unequivocally in the oesophagus, and mostly in the middle third, but exceptionally both high up and quite low down. In reference to pressure diverticula, however, they state later that "they are located, as it appears, exclusively (certainly only with rare exceptions) at the lowest part of the pharynx just at the upper boundary." Although it turns out they were more right in not postulating too absolutely that these pulsion pouches were limited to the pharynx, they were not strictly accurate in placing them "at the lowest part of the pharynx just at the upper boundary of the oesophagus," for the pouches really originate, as was first definitely shown by Killian, at the junction of the oblique and transverse fibres of the inferior constrictor (cricopharyngeus) muscle and at least a centimetre above, not "just at the upper boundary of the oesophagus." Zenker, however, fully realized that the pouch was, in many cases, at all events, surrounded at its neck only by "the transverse continuous fibres of the inferior constrictor muscle of the pharynx"; and further on in the article Zenker, alluding to his dissections, disposed of the erroneous statement of others that the pouch has a muscular coat, more especially in the smaller sacs (Klebs); he and von Ziemssen assert this view to "be untenable when we consider the arrangement and origin of the fibres of the inferior constrictor through which the mucous coat passes."

In spite of this clear statement that these herniae of the lower pharynx pass through the fibres of the inferior constrictor, many writers (from Butlin in 1893 down to those of the present day—for example, Chevalier Jackson, Shallow, and the Mayo staff) have taught that they are at times situated at the junction of the pharynx and gullet, and imply that they are as much oesophageal as pharyngeal in origin in some instances. In my opinion they are wrong.

Others, again, have considered that some of these pouches originated definitely just below the lower margin of the pharynx and through the posterior wall of the

extreme upper end of the oesophagus, in the alleged Lannier-Hackerman weak area. Killian proved conclusively that there were no known museum specimens which supported this oft-quoted view. Killian also showed that the pouch in the early stages consisted, as held by Zenker and von Ziemssen, of the fibrous submucous and mucous coats only of the pharynx. The fact that muscular fibres are found round the neck of moderately advanced and larger specimens is, in my opinion, explained by the fact that the hernia, when it attains a large size, tugs on the margins of the separated oblique and transverse portions of the inferior constrictor, and thus enlarges the mouth of the sac by traction and pulls down some of the fibres around the neck.

As regards the statement that there is a weak triangle at the postero-superior aspect of the extreme upper end of the gullet, where the muscular fibres are stated to be either sparse or absent, this heresy owes its origin to Lannier and Hackerman, and has been repeated, on absolutely insufficient evidence, by many writers in textbooks and special articles. In 1910 Waggett and E. D. Davis made a number of examinations of excised gullets in the post-mortem room, and conducted pressure experiments, and found that there was little warrant for such an assertion; as a matter of curiosity I repeated these observations and confirmed them.

The long and short of the matter is that what are usually known as Zenker's pulsion diverticula are entirely pharyngeal in origin, and do not bulge through either the pharyngo-oesophageal junction or through the extreme upper segment of the gullet in the region of the Lannier-Hackerman triangle, and any nomenclature which suggests any origin other than through Killian's dehiscence—that is, between the two portions of the crico-pharyngeus—is not warranted. Amongst writers who have promulgated the erroneous views that some pressure pouches occur in this situation below the lower margin of the inferior constrictor are Morell Mackenzie, Butlin, Zesas, Knott, Halstead, Starek, Stetten, and the majority of British and foreign writers on the subject, down to contributors this year by Shallow and Chevalier Jackson. John Morley, like StClair Thomson in his authoritative *Handbook*, correctly describes these pouches in the text, but Morley, under the wrong title of diverticula of the oesophagus, and Thomson deals with them under the section devoted to oesophageal diseases. A recent notable exception deserves mention—namely, the paper on pharyngeal diverticula by Wilkie and Hartley in the *British Journal of Surgery* (1922), which is refreshingly free from the usual errors of fact and from misleading nomenclature.

#### DIAGNOSTIC SYMPTOMS AND SIGNS OF PHARYNGEAL PULSION POUCHES.

The classical symptoms recorded by Rokitsansky, and later by Zenker, well back in the last century, were so much to the point that they stand to-day. Dysphagia, intermittent in the early stages and very gradually getting worse and more constant after years; immediate regurgitation of food at times, as in other forms of stenosis of the pharynx and gullet, but associated also with slight regurgitation of portions of food long after a previous or a meal or even two before the last; variable discomfort in swallowing rather than any difficulty in getting down ample nourishment is the rule and this not merely in the early stages, so that extreme loss of flesh is most exceptional and slight loss not so frequent as might be expected, even when the pouch is of long standing; aphagia necessitating gastrostomy appears amongst the records of last century; gurgling noises due to the mingling of swallowed air with the food stagnating in the pouch; in advanced cases there may be an obvious, visible, and palpable swelling on one or other side of the neck, more usually the left; external pressure may lead to ejection of the contents when food is present in the pouch. Discomfort rarely amounting to actual pain may occur from temporary overdistension and imprisonment of ingesta in the sac. Pouch patients are also liable to get distressing fits of choking and congluing sometimes, becoming actually cyanosed when food ejected from the pouch finds its way out suddenly and overflows into the air passages. In a case described and illustrated

by Robinson of Sunderland the pouch extended upwards towards the base of the skull behind the middle and upper pharynx as well as a long distance downwards behind the gullet, and when the patient swallowed water the neck swelled out laterally like the pouter pigeon, and for a few minutes at times presented the appearance of goitre.

A stricture high up in the gullet may exceptionally bear a superficial resemblance in symptoms, for a time, to a pouch, but a definite diagnosis can always be made, when efficiently carried out in the correct position, by an x-ray examination in conjunction with barium or bismuth paste. It is often useful partially to fill the sac through a rubber tube with paste instead of allowing the patient to swallow it. The endoscopic findings are characteristic but rarely really necessary for diagnostic purposes alone. The orifice of the sac is easily seen through the endoscope, but the lumen in the deep pharynx leading to the mouth of the gullet is often difficult to find even by experts. It can, however, be located by the swallowing of a shotted string.

#### TREATMENT OF DEEP PHARYNGEAL PULSION POUCHES.

When Zenker wrote his articles in 1876 and 1877 the only treatment recommended when the condition of the patient approached aphagia, and when there was failure to insert easily a rubber or gum-elastic feeding tube through the prolapsed pharyngo-oesophageal orifice into the gullet, was the performance of gastrostomy. He and von Ziemssen wrote, however, as follows:

"The radical cure of diverticula by operative procedure from without is one of our vain wishes; yet we should hope that even this operation conducted on Lister's plan might at some future day be performed without danger."

This "vain wish," first suggested by Kungo in 1864, and then by Hamburger in 1871, and attempted, but not with survival of the patient, by Niehans in 1884, was first successfully realized by Wheeler of Dublin in 1886, when he encountered a deep pharyngeal pulsion pouch whilst removing an enormous congenital lateral pouch or aercle, and he promptly excised both. Zesas and Niehans, von Bergman, Kocher, and Butlin repeated this operation between 1888 and 1892, and primary excision has remained the method of choice in the main ever since. A few operators—for example, Stetten—recommend a preliminary gastrostomy. This appears to me to be neither necessary nor even justifiable; at all events my seven cases were successful without it.

Primary excision of the pouch through a cervical incision along the anterior border of the left sterno-mastoid and dissecting down to the side of the pharynx and gullet, severing the omo-hyoid muscle, tying the superior thyroid vessels, and displacing the left lobe of the thyroid gland, is a comparatively easy procedure, and has been described in detail by Butlin and others. Operation should always be preceded by what the earlier operators called the "toilet of the pouch"—namely, washing it out clean with some mild antiseptic beforehand. A bougie in the sac and another in the gullet considerably helps to define these structures and aids in the subsequent separation of the pouch by blunt dissection. If a bougie does not pass readily into the gullet beforehand, it can easily be manipulated into it when the deep preliminary dissection to the region of the side of the gullet is made. When the pouch has been freed from its bed considerable difference of opinion prevails as to the method of cutting through the neck close to Killian's area of dehiscence. I think, however, that simple incision is sufficient, though some operators still prefer to ligature the neck first, and divide it distally with the electric cautery knife.

The crux of the whole operation depends largely on the method of sewing up the orifice left when the pouch has been removed. Formerly the mucosa was invaginated and the fibrous coat sewn up by Lembert's method of suture. At the present day, however, most operators resort to some form of purse-string suture. The method of Wilkie and Hartley will be alluded to later. John Morley advocates the technique adopted in closing a duodenal stump in a Polya gastrectomy, and considers that excision of a pulsion diverticulum "should only be attempted by those who have

served a long apprenticeship to the technique of gastro-intestinal surgery." It would be thought that familiarity with the surgical anatomy and experience in surgical operations in this region of the neck were rather essential to operative confidence and success, and that one need not be an abdominal surgeon to carry out any method of suture for closure of the hiatus, in the lower pharynx, left after excision of the diverticulum.

Several alternatives to simple primary excision have been either advocated merely or else actually carried out. The former include painting the interior of the sac with silver nitrate (Dendy); dissecting out the sac free from its bed by a lateral incision, and then invaginating it into the food tract (Girard); the orifice being stitched up posteriorly to endeavour to prevent recurrence to the original position, which, however, has occurred sooner or later in several cases, and the method has fallen into disfavour on that account. Another method advocated, but not carried out, was that of Chovallier Jackson, of passing a volsella through the endoscope down to the interior surface of the fundus and endeavouring to perform internal traction invagination into the pharynx without making an external cervical approach. As I remarked in reviewing Jackson's larger work twelve years ago, the suggestion showed that he had no experience of dissecting out a pouch free of its adhesions, or he would have known that the latter would not yield to internal traction.

Statistics compiled by Stetten in 1910 showed that there was a mortality of no less than seven in the first thirty recorded cases of simple primary excision alone, though carried out by first-rate general surgeons for the most part. This high mortality of over 23 per cent. would probably have been greatly exceeded if he could have got at the number of unrecorded fatal cases. It is, however, significant that there were only two deaths in the next eighteen recorded cases, and, on the other hand, Stetten found that of five other cases, in which primary excision was preceded by gastrostomy, there was only one death, and that was avoidable probably, because obviously due to very injudicious after-treatment. Stetten recommends this preliminary measure which he himself followed, but I regard it as only exceptionally justifiable.

It was probably the high mortality that led up to the Goldmann operation of removing the pouch in two stages.

The two-stage excision is generally credited with having been first successfully carried out by Goldmann in 1907, but Halstead, in his article in *Surgical Clinics of Chicago* in 1919, claims that he first practised it, though he gives no reference to priority of publication over Goldmann, who recorded two successful cases in 1907. It does not appear to have been performed very frequently on the whole, though some operators prefer it in all cases, but others especially reserve it for very large pulsion pouches (Colledge).

The first stage of Goldmann's operation consisted of freeing the pouch from its bed by an incision along the anterior border of the sterno-mastoid and subsequent dissection as in the operation for the primary excision; instead, however, of cutting off the pouch at its neck, it was turned up with the fundus above, and the latter was stitched up to the upper angle of the operation field, the neck was lightly constricted with catgut, and the skin incision was then sewn up except at its lower end. Ten or more days afterwards, when the cervical lymphatics were presumed to have been sealed and the risks of mediastinal infection reduced, should subsequent leakage occur, the wound was reopened, the pouch excised, the neck suitably sutured, and closed as in the operation of simple primary excision.

Subsequently Goldmann tried a modification of this method: the pouch having been dissected free, a catgut

was tightly—not lightly as in the first method—tied round the neck of the pouch so as to ensure strangulation and necrosis of the pouch, which was packed up with gauze high up in the wound; the skin incision was only partially sewn up, being left open at the upper as well as at the lower end. The second stage consisted in removing the pouch when it had separated at its neck by sloughing a week or two later. This, of course, meant leakage. It was a dirty procedure and proved not to be free from risk, though Marsik and others adopted it for a time. When the Goldmann two-stage method is mentioned to-day it is the first type which is usually referred to.

Wilkio and Hartley modified the first Goldmann operation, which they prefer to primary excision, by incising the pouch and performing a submucous resection of the mucosa, which they remove, leaving the fibrous coat, which they then invaginate and sew up by purse-string sutures.

Bevan's method of obliterating the cavity of the pouch without excision, in order to reduce the risk of leakage, is theoretically ingenious. The sac having been dissected out free from its bed under local anaesthesia, Bevan proceeds, if the pouch is of moderate size, not more than 2 inches long, "to invaginate with three purse-string sutures of black silk or Pagenstecher linen one-half of the diverticulum into the other half, then the rest of the diverticulum should be obliterated by longitudinal sutures, six or eight, running parallel with the long axis of the diverticulum." When the operation is completed the area of the mouth of the pouch at Killian's dehiscence presents as a firm rounded button or knob on the posterior surface of the lower pharynx. In dealing with a large long diverticulum another method is employed by Bevan.

"The diverticulum can be crushed at its centre with a pair of heavy forceps, tied with a silk ligature, and the portion distant to the ligature cut off with the electric cautery. The remains of the diverticulum which are then no larger than one's thumb can be treated by invaginating them into the oesophagus" (meaning pharynx) "with three purse-strings just as we handle the smaller diverticula."

The patient is fed by a feeding tube passed for each meal for ten days.

Bevan does not allude to any cases in which these operations have been

carried out, so we know nothing as to whether they were successful for a time, or whether there was any recurrence of symptoms, as occurs sometimes after Girard's invagination; nor is anything said about subsequent leakage ever having happened. The latter would appear to be not unlikely in any but a pouch with an extremely thick wall instead of the usual thin wall; and considering that from nine to eleven sutures are inserted it seems extremely likely that the wall would be perforated, and possibly leakage and sepsis result. In the significant absence of any statistical record of the cases operated on and the immediate and remote results, judgement must be suspended as to the value or otherwise of Bevan's really ingenious proposals.

My operation of upward suspension and fixation of the freed and inverted pouch was described under the name of "diverticulopexy" in connexion with a case in which I carried out this operation, shown at the Laryngological Section of the Royal Society of Medicine in 1917 and recorded in the *Proceedings* in 1918. It consists essentially of the first stage of the Goldmann operation. The pouch having been freed from its bed by dissection and isolated is then turned down-side up and the fundus stitched up as high as possible to the upper angle of the operative field by sutures to the side of the pharynx and to the deep cervical fascia under the sterno-mastoid. In order that stitches shall not perforate the sac wall and shall hold it, it is essential not to make a clean dissection of the sac, but to leave as much areolar tissue as possible adherent to

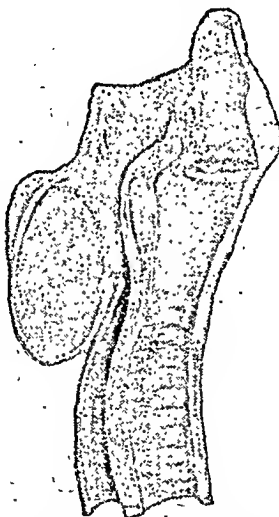


FIG. 1.—Typical posterior pharyngeal pulsion diverticulum showing the marked prolapse of Killian's lip.

its wall; before stitching the pouch up I pass a catgut ligature around the neck of the sac, but do not draw it sufficiently tightly to produce strangulation. The object of this is to prevent food entering the pouch in the first weeks following operation.

For a very large intrathoracic pouch, really too long for successful suspension, it might be advisable to do the second stage of the Goldmann operation if a radiographic examination showed that the pouch was inclined to prolapse after a short period. I do not recommend the operation for a small walnut-sized pouch, as in the only case in which I did a "pouch" in such circumstances the symptoms recurred from prolapse a year later, and I then resorted to excision. The method, therefore, is probably liable to fail in extremely long pouches extending well down into the chest, and also in rather small pouches. In addition to the case of the small pouch which recurred, I have done four other cases of suspension, with complete relief in each up to the present—that is, for five years or more. I also assisted Sir James Dundas-Grant in dealing with a rather long pouch by this method. There is, of course, no chance of leakage if the wall of the sac has not been perforated by suture and the dreaded mediastinitis is eliminated.

The cause of dysphagia in these diverticular cases is not, as is usually held, so much due to pressure on the oesophagus from behind by food in the pouch, as to prolapse or downward displacement of Killian's lip, which forms the lower border of the mouth of the pouch; this prolapse displaces the plane of the pharyngo-oesophageal junction from a horizontal into a more or less vertical plane, and prevents the normal opening up of the mouth of the gullet during deglutition. The suspension and fixation upwards of the pouch corrects this marked prolapse and draws up Killian's lip together with the posterior wall of the cervical gullet, into its normal position, and the patients are able to swallow normally the same evening in most instances. The prolapse of Killian's lip is well shown in museum specimens, but the point has not, I think, been previously emphasized.

Morley states that I and König advise suspension by suturing the sac to the hyoid bone or to the omo-hyoid muscle; that is the method described in 1922 by König, but has not been hitherto carried out by me. It may be worth while to use these points as additional attachments for the pouch.

Of course, the tendency of most "pexies" is to recur, but this only happened to me in the one instance of the small pouch above mentioned.

#### TRUE DIVERTICULA OF THE OESOPHAGUS: THEIR ETIOLOGY, SYMPTOMS, AND TREATMENT.

Very few pouches in the gullet have been recorded other than the traction diverticula of Rokitsansky behind the roots of the lungs; whether these latter are as prevalent as he asserted, though latent, and whether they are so often as he believed, the determining factor in serious lung and pleural abscesses and in mediastinitis, when decaying food is retained, is still a moot point.

Traction diverticula are usually unsuspected till found at necropsies; their cause is, on the other hand, evident, as they can always be traced to a previous breaking down of a suppurating lymph gland which forms an inflammatory adhesion to the outside of the wall of the gullet, which gets dragged out of position by subsequent healing and cicatricial contraction. They are rarely observed at any spot other than in the middle third of the gullet behind the area of the glands in relation to the bronchi and trachea. Jackson has, however, recorded a traction diverticulum of the supraclavicular gullet, and they have also been observed low down near the diaphragm, presumably from the adhesion of breaking down mediastinal glands. Traction pouches, which are normally narrow

funnels, may very exceptionally become greatly expanded by food lodging in them, and when this stagnation ectasia happens we have the traction-pulsion diverticula of Stark.

The rare true pulsion diverticula of the gullet, which occur usually in the lower half, though occasionally higher up, may sometimes be due to increased deglutitory pressure when there is either a benign inflammatory or a functional stricture of the gullet, as suggested by Hurst, but this would hardly apply to such pouches higher up, or where there is no obvious stricture. When pressure pouches are associated with and result from functional or from cicatricial stricture at the level of the diaphragm the treatment is obviously that of relieving the causal obstruction. Pouches which have no underlying stricture in the gullet, excepting Lengart's variety, do not themselves appear to have often any recognizable symptoms; they are at times accidentally discovered either at necropsy or when making radiographic or oesophagoscopy investigations, and there is no *ad hoc* surgical or other treatment either necessary or even possible beyond, perhaps, lavage.

Lengart's pouching is extremely rare. I have only seen one well marked example—namely, in a case I was asked to examine with Atkinson at the Central Throat and Ear

Hospital. In this case there was a well marked lateral recess in association with a prominent horizontal ledge projecting internally from the anterior and left lateral wall of the gullet at the level of the left bronchus. Both Lengart himself and Halstead thought that the gullet was actually compressed by the left bronchus itself in these cases; this is obviously wrong, as the ledge passes backwards and to the left, which is not in any way the direction of the left bronchus, of course, and the latter never comes directly in relation with the wall of the oesophagus. I think the probable explanation is that contracting connective tissue bands pass from the bronchus outwards and backwards to the left side of the body of that dorsal vertebra which lies behind the gullet at the level of the left bronchus. I have on many occasions when making an endoscopic examination observed a slight ledge in this position, and it is so frequent as to have been alluded to as marking the

site of the alleged bronchial constriction of the gullet. The enlargement of this not uncommon, though usually slight, ledge so as to intercept large, fairly undivided portions of ingesta—for example, large portions of potato—is very rarely observed, but in time a recess may form in which solid portions of food get arrested, pouching follows, and slight dysphagia is observed; at least, that is what apparently happened in Atkinson's patient. Here, again, cutting endo-oesophageal surgery is not advisable, but the passage of large bougies might possibly be useful, or else stretching by Brüning's dilator.

To render this review comprehensive I must not omit to mention that a dissecting diverticulum has been recorded passing down between the coats of the gullet. This condition probably resulted from ulceration down to the muscular coat, and subsequent separation of the coats by pulsion.

Another rare form is a narrow diverticular sinus of varying length and unknown origin, though traumatism, or ulceration, may be suspected. I had an instance of this lesion an inch and a half long, which passed backwards, downwards, and outwards near to and parallel with the diaphragm, *post mortem* in a case of phreno-cardiac stenosis.

To sum up: diverticula of the gullet, in contrast to diverticula in the pharynx, are rarely suspected during life, rarely cause obvious symptoms, and are rarely susceptible of or influenced by any treatment, even should they accidentally be discovered during life. We hear very little of them, and for the above very obvious reasons.



FIG. 2.—Typical traction diverticulum of the oesophagus.



FIG. 3.—Interior of the same diverticulum showing the mouth of the diverticulum situated well below the level of the bronchial glands.

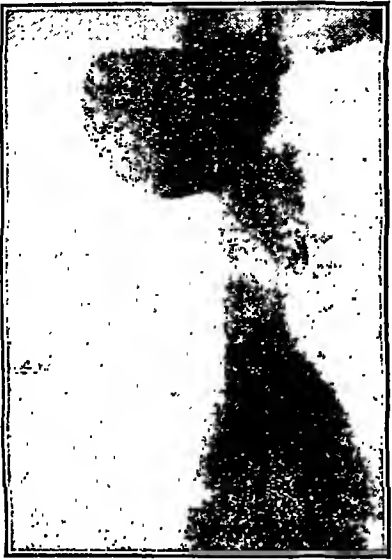


FIG. 1.



FIG. 2.



FIG. 3.

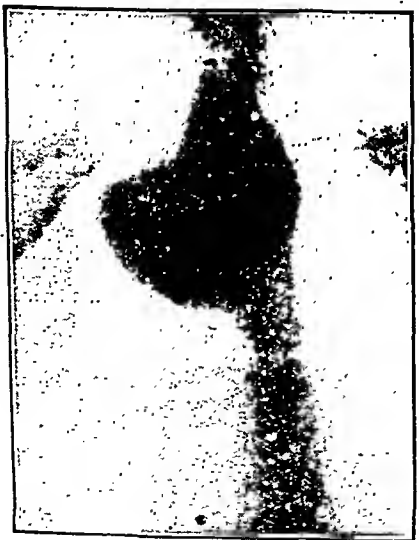


FIG. 4.



FIG. 5.



I desire to acknowledge my indebtedness to Dr. Irwin Moore for the use of the original drawings from which the figures illustrating this paper have been reproduced.

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## LARGE PHARYNGEAL DIVERTICULA.

BY

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The following details relate to two patients with large pharyngeal pouches of long standing which had not been operated upon. The first had been present for over forty years.

#### CASE I.

The patient was a man, aged 76, who sought admission to Rutlin Castle early in 1924, for an affection of one hip-joint, stating that he was otherwise in good health. When giving his history he said that a pressure pouch of the oesophagus had been diagnosed by Sir (then Mr.) Henry Rutlin, thirty-eight years before. He had managed the pouch for the whole of this time, the only serious disadvantage being that occasionally at a meal it might discharge involuntarily through the nose. This accident was rare and often did not occur for several months, but the fear of it is present when he is obliged to dine in public rooms in hotels or on a ship. He had lived a very active life, travelling, riding to hounds, and walking long distances, even recently as much as twenty-five miles a day.

With a barium meal a large pouch of clear outline can be seen extending into the thorax as low as the fourth vertebra and below the level of the aortic arch (Fig. 1). It is a little more to the right side than the left.

The procedure which the patient has evolved for managing the pouch is as follows: he retires after each meal, bends forward and makes an effort to increase intrathoracic pressure, putting the closed hand, the back of the first phalanges, against the left side of the neck above the clavicle, and ejects part of the contents of the pouch through the mouth. He then takes a glass of water, evacuates again, and is comfortable and safe from disturbance.

Since the lower part of the pouch is not mainly on the left, it appears that the placing of the back of the hand on that side probably supports the upper part of the pouch or protects a weak place, and this aids in raising thoracic pressure without discomfort. When this procedure was carried out with a barium and buttermilk meal, the first evacuation got rid of three-quarters to four-fifths of the contents of the diverticulum (Fig. 2).

With subsequent meals the glass of water was taken as usual, but some barium returned at the end of the day. The patient believes, however, that with ordinary food there is complete emptying after each meal. In a recent letter to my colleague Dr. Anderson this patient states, for the benefit of anyone in a similar plight, the result of his forty years' experience as follows:

1. All food left in the pouch must be expelled within a few minutes after a meal and the throat gargled with cold water.
2. The saliva should be expelled also before getting into bed.
3. Alcohol must be regarded as a poison; "I allow myself one glass of Madeira to my dinner, however."
4. Beef should be avoided unless minced.
5. Devonshire cream is recommended as a good lubricant which is well borne.

#### CASE II.

In this patient, a man aged 70, also not operated upon, the symptoms dated back sixteen years. It was first noticed that food began to be arrested on swallowing, and that a piece of meat would return. Twelve years later—that is, four years ago—the symptoms became worse and weight was lost. At the time of the first consultation, twenty months ago he could take only soft food, mainly cereal, with milk, milk pudding, butter, bacon fat, and some fruit pulp. Food tended to come back and had to be swallowed again or rejected. Fits of choking occurred, when food might return through the nose. The pouch could be emptied voluntarily. On one occasion this was done in my presence. About half a pint of brown fluid was produced, with the odour of coffee; some fat was floating on the surface. The fluid was acid to litmus, but contained no free acid.

On x-ray examination with a barium meal a large pouch was seen which, in an antero-posterior view, extended into the thorax well beneath the level of the clavicles as low as the fourth dorsal vertebra, most of it being to the right side of the middle line. It was irregular in outline. In the lateral view it can be seen to come below the level of the aortic arch. The mouth of the diverticulum appeared to arise from the posterior part of the pharynx just above the junction of the gullet. It was found on the x-ray table that food passed into the oesophagus more easily in the prone position (Figs. 3, 4, and 5).

This patient was recommended to take food lying forward on the right side. A year later he was holding his own; the weight was the same and he had little discomfort. He found it better not to empty the pouch during the day, as if it were kept full food would pass over it into the stomach. It was then emptied each evening after the last meal.

These were regarded as pressure pouches. Such diverticula have been called congenital, just as have the diverticula arising from the second part of the duodenum, and with no pure evidence. They both arise in adult life at a part of the alimentary tube where there are frequent rises of pressure from the contraction of the muscular tube above and where the tube is weak from the divergence of muscular fibres. There may be a sphincteric contraction below, as described by Wilkie and Hartley.<sup>1</sup> When the pharyngeal pouch is once formed we may add to these factors a definite obstruction below; for the neck of the filled pouch will pull upon the gullet at its origin (Fig. 5, lateral view). During swallowing the lower part of the pharynx then becomes a closed cavity, the pressure in which will distend the diverticulum more and more.

In neither case was there any unpleasantness or putrefaction in the contents of the pouch.

Both of these men would be much better off had the pouch been successfully removed. In the first case operation was refused by the patient many years ago. His last consultation with Mr. Rutlin was about 1893. At that time he was told that the mortality of the operation was about 50 per cent. It must be admitted that he has done well by his own methods. He does not suffer, casual acquaintances have no idea of the disability, and he has lived, and still lives, an active interesting life.

In the second case failure of nutrition set in definitely four years ago, but on considering the patient's age and physique, two surgeons advised independently against operation. By experiment and observation, including the finding out in the x-ray room in what position food entered the oesophagus most easily, the patient (who is a retired medical man) and his advisers have evolved simple means of diet and living which have enabled him to hold his own.

The photographs shown are by Mr. O. A. Marxer.

#### REFERENCE.

- <sup>1</sup> D. P. D. Wilkie and J. N. J. Hartley; *Brit. Journ. Surg.*, 1922, x, 83.

#### DISCUSSION.

Dr. Irwin Moore (London) agreed with Dr. William Hill that such diverticula should not be described as oesophageal. The site at which a pressure pouch originated was in every case so definite and constant—namely, the posterior wall of the deep pharynx, between the oblique and transverse fibres of the crico-pharyngeus muscle—that there was no reason whatever why such pouches should be described as other than pharyngeal. Again, frequent endoscopic examinations had confirmed the fact that the slit-like opening of the lower pharyngeal orifice was always situated at a slightly lower level than the mouth of the pouch, which was definite proof that such pouches were pharyngeal in origin. Their lateral relationship to the oesophagus was probably the reason why they were frequently and erroneously described as oesophageal.

Dr. Irwin Moore pointed out that Dr. Hill had omitted to include in his classification acuto diverticula, which were, however, very rare. Hoffmann in 1899 had recorded such a condition in a man, aged 31, who died after accidentally swallowing a piece of china. At necropsy an opening was found in the "upper region of the oesophagus" (? deep pharynx) which was lined with mucous membrano. Again, Dr. Hill had not mentioned artificial pouches, produced by habitual criminals in India for the purpose of concealing stolen money. A specimen in the museum of St. Bartholomew's Hospital, removed after death from a convict, who had made a pouch in his throat for keeping money, showed a pouch formed by the prolongation downwards of the left sinus pyriformis. Lead weights, varying in weight from 12 to 70 grains, were used to increase the depth of the sinus pyriformis. These discs were attached by a piece of string to one of the teeth to prevent them from being swallowed. Criminals with coins secreted in these artificial pouches might be inverted and shaken without the coins coming away. Dr. Irwin Moore also pointed out that under the heading of "congenital lateral pharyngeal aerocoeles of abnormal branchial cleft origin" Dr. Hill had included the case recorded as a "pharyngeal pouch" by Godlee and Bucknall, in 1901. This case appeared, however, to have been wrongly described by them, for it was undoubtedly a "laryngocoele," since the sac contained air and its origin was laryngeal. The late Professor Shattock was of the opinion that, etymologically, the term "pneumatocoele" would be a better term than "aerocoele" in cases where it was thought desirable to indicate the fact that the sac contained air and not fluid. In a paper published in 1922 on "The so-called prolapse of the laryngeal ventricle and eversion of the sacculus laryngis" Dr. Irwin Moore had specially investigated this case with the help of Professor Shattock, and had come to the conclusion that there were no grounds for describing the tumour as a pharyngeal pouch. Professor Shattock also stated that, at the time the case was published, Professor Arthur Keith had expressed the opinion that it was an enlarged air sac. When first seen by Rickman Godlee and Bucknall the tumour looked like an enlarged thyroid gland on the left side of the neck at the level of the hyoid bone, and in front of the sterno-mastoid muscle. It was soft and tympanic on percussion, freely movable over the deeper parts, except at the top of the larynx, to which it was fixed, and the movements of which it followed during deglutition. Pressure caused diminution in size. When seen six months later the tumour had reached the middle line of the neck, and extended to the posterior border of the sterno-mastoid muscle up to the angle of the jaw and down to the clavicle. Not only did it give a tympanic note on percussion, but, on holding the breath and blowing, the patient could slightly inflate the tumour, producing a change in the percussion note. At operation the pedicle, which was secured and ligatured outside the larynx, passed through the thyro-hyoid membrane, and careful probing failed to discover an actual communication with the pharynx. This case therefore came obviously under the group of "laryngocoeles"—a term introduced by Virchow in 1867 to describe those cases of thin-walled air sacs which arise in connexion with the laryngeal ventricle (pneumatocoele of the sacculus laryngis).

Dr. Irwin Moore next referred to the etiology of pharyngeal pouches. Two hypotheses had been put forward: (1) that they were congenital, but no evidence had been submitted which supported this view; (2) failure of the circular muscle fibres of the crico-pharyngeus to relax in the process of deglutition—in other words, a spasm of the lower sphincter orifice of the pharynx, followed by arrest of the bolus of food and dilatation of the hypopharynx, giving rise to increase of intrapharyngeal tension, the upper portion of the inferior constrictor acting as a force-pump, and causing the mucosa to bulge at the part where there was admittedly the least muscular support. Pressure of the pouch when filled with fluid or food helped to increase the difficulty of swallowing and to increase the size of the pouch.

There was no question that the thinness of the wall of the gullet as a whole—in this position—was very marked as compared with its thicker walls lower down. In the

speaker's opinion the latter view of the formation of these pouches was the correct one. The majority of these pouches had a narrow mouth and neck, the mouth averaging one inch in diameter. The relationship of the orifice of the pouch to the lower sphincter orifice of the pharynx was well shown in a view from above in a specimen in the museum of St. George's Hospital.

To illustrate further the position and formation of retraction pouches of the oesophagus Dr. Irwin Moore showed a drawing of a specimen in the museum of University College Hospital, to which the following description was attached:

"The pouch is in the anterior wall of the oesophagus, 3 cm. below the bifurcation of the trachea. It is of small size and its opening about 1 cm. in diameter. The interior is lined with normal mucous membrane. In the bifurcation of the trachea is a group of pigmented and calcareous glands, and to the lowest gland is adherent the apex of the conical protrusion of the muscular wall of the oesophagus which forms the pouch. From a man who died in University College Hospital of pulmonary tuberculosis."

With regard to the treatment of pharyngeal pouches, Dr. Hill had only dealt with the surgical and not with the medical treatment of these cases. Many surgeons had declared that only extirpation or other operative procedures could be recommended, and that without operation the case must inevitably go from bad to worse until starvation, sepsis in the neck, mediastinal abscess, or septic pneumonia ensued. Among a number of cases which had been through his hands there were two, which he had recorded, in which no operation had been performed, and it was interesting to note their later history.

#### CASE I.

The first patient, a lady aged 64, had consulted him, at the advice of Dr. Lewarne, Cricklade, in August, 1912. From her symptoms it was thought that she was suffering from malignant stricture of the oesophagus. She had been weakly since childhood, and for four years she had had difficulty in swallowing any dry food unless it was first moistened and softened. Tough or stringy meat had to be taken with gravy. All foods, and even liquids, had to be swallowed very carefully, slowly, and in small quantity, otherwise they caused irritation, coughing attacks, and regurgitation. She expectorated a considerable quantity of mucus, especially at night. Her weight was 10 st. 2 lb.

This case was first diagnosed under cocaine anaesthesia by the oesophagoscope. In passing through the cricoid pharynx the tube entered a cavity posteriorly, with its walls lying in folds, coated with stale-smelling slime. The further progress of the tube was abruptly stopped, and no outlet could be found. On withdrawing the tube the slit-like opening of the lower pharyngeal orifice was seen anteriorly and at a lower level. The tube could be passed with great ease in and out of the posterior aperture, but could not be passed into the oesophagus. The diagnosis of a pouch was confirmed later by x rays and a bismuth meal, the swallowing of which was carefully watched. It was observed that the bismuth at first passed quickly out of the mouth for a short distance, then was suddenly held up. As more bismuth was swallowed the outline of the diverticulum became gradually depicted in the neck—situated almost centrally in the middle line. The upper border appeared to be situated at the level of the cricoid cartilage, and the lower extending downwards for 1½ to 2 in. As the pouch became overfilled and stretched with the bismuth a portion of the latter was seen to well over the top of the sac into the oesophagus, where it was momentarily delayed before descending slowly, but without further arrest, into the stomach. This phenomenon occurred with every fresh mouthful of bismuth swallowed, and suggested that the walls of the pouch were contractile, but further investigation proved that the patient emptied the pouch by contracting the muscles of the neck.

This patient was advised to live on soft food, to eat very slowly, and have the pouch washed out occasionally. In 1913 Dr. Lewarne reported that he could not persuade her to have the washing done, and that her present condition was no worse, and he had heard no further complaints. The patient herself reported, in 1915, that her throat was "certainly much better," and she swallowed with greater ease and comfort, though there was still some expectoration at night. In 1917 she wrote that her throat was much better, she could feed very well, though occasionally, with anything irritating, she had a "little choke." Her weight and general health kept up to the normal. Dr. Lewarne also wrote: "She has been wonderfully well without any treatment." On July 9th this year Dr. Lewarne wrote: "She is now 78 years of age, and going strong, and is quite active and able to get about. She still makes extraordinary noises during and after meals, but being very deaf these do not worry her."

#### CASE II.

The second patient, a lady aged 78, was first seen in June, 1916, recommended by Dr. Soltan Fenwick. She complained that while lunching in May, 1915, she suddenly had a choking feeling and swelling in the throat, followed by regurgitation of a small quantity of food. This occurred on two or three occasions during the year. Food had occasionally stuck "against a ledge" at the level of the sternal notch, and then had been regurgitated. There had been no trouble with liquid foods. She had suffered from

indigestion and constipation for years. This case was not examined endoscopically at the advice and wish of her physician, but was diagnosed by x rays.

Treatment for this patient's indigestion was prescribed and she was recommended to live on soft foods, also to swallow her food slowly and in small quantities.

In October, 1916, the patient wrote that her swallowing was no worse, though the "catching of food" was just the same. She was taking ordinary food, but had to eat and swallow very carefully or food might stick. There was no regurgitation of food. She had noises during swallowing, but mostly when lying down. She not only looked but felt very well. Dr. Soltan Fenwick wrote on July 2nd of this year that he had not seen her since 1916, but that he had heard that the symptoms had not increased. This patient is now 88 years of age.

These two cases showed that attention to feeding and digestion might be all that was required in some cases to improve the distressing symptoms caused by pharyngeal pouches and to prolong life, and that operative procedures might not be necessary in a number of cases.

Dr. Irwin Moore expressed the opinion—judging from the appearance of the x rays—that the case of a large pharyngeal pouch exhibited by Mr. Hall Tawse at the previous day's clinical meeting might be similar to an unusual specimen of a pharynx which he had come across in the museum of University College Hospital, and had been removed *post mortem* from a patient, aged 76, who had been under the care of Sir Rickman Godlee, and who died from bronchitis and pneumonia. To the lower extremity of this pharynx a pouch was attached measuring vertically 2 inches and from side to side  $2\frac{1}{2}$  inches. The speaker was struck with the unusual appearance of the pouch in this specimen, which had not been well dissected, and obtained permission from Mr. Lawrence to investigate the specimen with Professor Shattock, who carefully dissected the sac and bisected the specimen.\* In this specimen the pouch, which was particularly capacious, was unusual in that it rose as high as the upper level of the cricoid plate, and had a mouth of exceptional size. Like the summit of the pouch, the upper edge of its mouth lay at the same level; the sac involved much of the lateral as well as the posterior walls of the pharynx.

Dr. Irwin Moore considered that in Mr. Tawse's case a careful endoscopic examination with a medium-sized oesophageal tube which could be orientated would decide the actual size of the pouch opening and settle the question of operation. Again, a full lateral x-ray photograph would also help to decide the size of the pouch mouth, for in this position a much more accurate picture was obtained than in the anterior, antero-lateral, or posterior position.

The danger of an oesophagoscopy examination, or of dilating an oesophageal stricture co-existing with a pharyngeal pouch, should not be overlooked in these cases, for the oesophagoscopy tube invariably entered the pouch, and considerable difficulty might be experienced in finding the slit-like oesophageal lumen. If the mucous wall of the pouch was very thin, as might be the case, it was extremely easy to perforate the sac with the tube. This risk was well shown in the case of a male patient, aged 71, who died from mediastinitis forty-eight hours after the endoscopic passage of a bougie for a supposed co-existing oesophageal stricture; the bougie perforated the sac wall. When this patient was first examined by x rays with a bismuth feed, the bismuth was seen, in the first instance, to enter the oesophagus with difficulty—that is, a spasm occurred at the sphincter opening—and very little food passed down the oesophagus. After a few seconds the rounded shadow of the pouch could be clearly seen. When this had fully filled up, the passage of the bismuth down the oesophagus appeared to be facilitated, and the spasmodic movements observed at the commencement of the examination ceased. The bismuth remained in the pouch during the whole of the examination—from the commencement to the time the plates were taken—occupying about half an hour. The x-ray pictures were taken in two positions—namely, antero-posterior and left antero-lateral oblique. In the latter position there appeared to be a constriction at the entrance to the pouch. There was a distinct gap in the bismuth shadow below the pouch, then a fairly wide shadow continuing down for about an inch. A slight constriction at

this point gave the impression that there might be a narrowing of the lumen, hence the suggestion of a possible stricture of the oesophagus below the pouch. At necropsy the wall of the pouch was found to be so thin that it seemed surprising that spontaneous rupture had not previously taken place. The diameter of the oesophagus was found to be so reduced that it would only admit the little finger; it measured 14 mm. (nine-sixteenths of an inch). Dr. Irwin Moore considered this case of great interest in supporting the view that the predisposing cause and starting of a pharyngeal pouch was a spasmodic contracture of the crico-pharyngeus muscle.

Mr. LIONEL COLLEDGE (London) said he bore a message from Sir StClair Thomson, who regretted that he was prevented from attending the meeting by an attack of gout. Sir StClair had received a courteous rebuke from Dr. William Hill for including "pouches" under "diseases of the oesophagus" in the new edition of his textbook. Sir StClair was well aware of the pathological anatomy of the condition, but declined to be bound by any particular method of classification. The symptoms were oesophageal, and in a book which was essentially clinical in its outlook he preferred, after careful consideration, to rely on a clinical rather than on a pathological classification, which might even savour of pedantry in such circumstances.

Mr. KELSON (London) described the treatment of two cases by excision without subsequent leakage. One patient lived for four years and died of bronchitis; the other lived for a longer period and died of malignant disease.

Mr. E. D. D. DAVIS (London) said that the pathology of the propulsion pouch was similar to that of hernia, and was related to the weakness of the pharyngeal wall between the fibres of the inferior constrictor. Mr. Waggett considered that the increased pressure was due to swallowing and inco-ordination of swallowing with a spasm of the crico-pharyngeus muscle; most of these patients gave a history of dysphagia of long duration. The treatment was that of the radical cure for hernia. In any type of operation the weakness of the pharyngeal wall must be strengthened. In excision recurrence had followed in several cases, and after excision the wound in the pharynx should be carefully sealed and the sterno-mastoid pulled over and stitched over the opening. Diverticulopexy had failed in some cases, and in one case the pouch sloughed and a fistula resulted. Girard's or Beran's method of inversion had also failed and recurrence ensued.

The PRESIDENT (Dr. Brown Kelly, Glasgow) referred to the symptoms of saliva in the throat and a gurgling noise on swallowing being useful in diagnosis. It was important to remember that operation was undertaken on account of serious symptoms such as dysphagia and loss of weight, rather than for the purpose of removing the pouch *per se*. Some patients possessing pouches consumed all manner of food and reported no loss in weight. He had been rather surprised that Dr. Hill did not pay more attention to endoscopic diagnosis than to x rays.

Dr. HILL, in reply to a question by the President, whether primary excision was to be considered as the operation of choice, said that in his historical review of operative methods down to 1892 he had stated that primary excision had remained in the main the method of choice ever since. He had in view the point that it was the choice of the majority of operators. Personally he preferred fixation suspension in suitable cases. Comment had also been made on the fact that no stress had been laid on endoscopy as a diagnostic method. Dr. Hill's view was that the diagnosis could be confirmed by endoscopy, but it might be dispensed with in all but doubtful cases, since a survey of the classical symptoms confirmed by radiographic findings was absolutely definite for purposes of diagnosis in most cases. The suggestion of Keith, mentioned by Dr. Irwin Moore, that "pneumatocelo" was a preferable term to "aerocele," he was prepared to accept, but he could not agree with the suggestion of Dr. Moore, following Sir Arthur Keith, that the pneumatocel recorded by Godlee and Bucknill was a

\* By arrangement with Mr. Lawrence one half of the specimen was returned to the museum of University College Hospital, while the other half was included in the museum of the Royal College of Surgeons.

laryngocelo; the neck had been traced through the thyro-hyoid membrano, and therefore it must be outside the larynx, and, of course, a pharyngocelo, to which group Goddoo rightly assigned it. Mention had been made of his omission to include the artificial enlargement of the pyriform fossa with the aid of leaden discs by natives of India and South Africa for depositing stolen coins and precious stones; he had been dealing exclusively with hernias and diverticular sinuses, not with mere artificial enlargements of natural cavities—with pouches, not with pouchings—and therefore had rightly excluded from illustration and consideration the interesting specimen in St. Bartholomew's museum.

## THE SORROWS OF THE SEPTUM.

BY

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THE text of this article is taken from Pliny's *Historia Naturalis* (Bk. XI, Chap. 91): "Man is the only creature from which the blood flows at the nostrils; some persons bleed at one nostril only, some at both."

Pliny made that observation nearly nineteen centuries ago. It is so simple. It is so true. It is, as I shall show, the *fons et origo* of all the sorrows of the septum.

There is no hæmorrhage of greater frequency, and no hæmorrhage that is sooner forgotten. For the latter reason I found it difficult when I wrote the article "Epistaxis" more than a quarter of a century ago for the *Encyclopædia Medica* to obtain very accurate statistics of its frequency. At that time I had the opportunity of putting questions to many hundreds of patients of both sexes, of all ages, and in all conditions of health. I found that one hundred and forty-two people in a thousand had recollection of the blood dropping from the nose. For the reason stated that must be accepted as a low estimate.

I further found that epistaxis was of more frequent occurrence in the male sex. Here let me anticipate by reminding you that deformities of the nasal septum are more frequent in males than in females. We now know—and this Pliny did not tell us—that the bleeding point in the vast majority of cases is to be found in the cartilaginous septum at a spot where there is a very free anastomosis of the terminal twigs of the vessels supplying the septum.

The human face, in comparison with that of the lower animals, is characterized by being extended vertically instead of horizontally. This characteristic determines the development of the septum, and the septum determines the development of the nose. The structures entering into the formation of the septum in man are subject to delayed or excessive development. The developmental activity continues, not only up to puberty, but, in a greater or less degree, some years afterwards. With that activity there must be an increase of newly formed blood vessels, resulting in a greater tendency to epistaxis and to deformities of the septum, as shown by the formation of ridges, spurs, and deviations. The development of the septum varies with the type of race; the higher the type the more prolonged is the developmental activity and the more common are the septal deformities.

It has been necessary for me to enter into nose-bleeding as peculiar to the human race as it is the cardinal point. It is difficult to remember any condition of the septum we are called upon to treat that is not vascular in origin.

In a paper strictly limited in words it is possible to mention only the more common of these conditions—such as hæmatoma, abscess, fibro-angioma, septal thickening, out-growths, ridges, spurs, crests, and, last but not least, deflections of the septum. In the group of fibro-angiomata must be included not a few of those cases diagnosed and treated as sarcoma. Further, in this group must be included the "bleeding polypus of the septum." Remembering the papers which have been written, the discussions that have taken place, the time that has been spent by general practitioners in absorbing that literature on this and similar simple septal growths, how true becomes the

difference drawn between the general practitioner and the specialist—the one always struggling to make less and less about more and more, the other always straining to make more and more about less and less.

Deflections and deformities of the septum are so common that the observation of Pliny might be amplified by stating that man—that is, civilized man—is the only creature in which the septum of the nose is not perpendicular. The higher we go in the human race the more correct this statement becomes. The collective result of independent investigations of a large number of human skulls has shown that deformities of the septum are present in 80 per cent. of European skulls. Those investigations were made on dried specimens in which the cartilago was generally absent. Clinical experience teaches us that some irregularity of the cartilaginous portion of the septum is the rule rather than the exception; so that in the higher types of races the abnormal becomes the normal. On the other hand, statistics based upon the examination of skulls of the lower types showed the reverse—the septum was free from deflections and irregularities in 80 per cent.

This "sorrow of the septum" has been handed down to us in art from the days of Pliny. Some scientists, after taking the most minute measurements of the nose of the Venus de Milo in the Louvre, came to the conclusion that the septum was not absolutely in the plumb. It is conceivable that had the missing arms, which have given rise to so much discussion among would-be restorers, been present, Venus, instead of holding up her drapery, would have had the left arm uplifted and holding a mirror, and the forefinger of the raised right hand adjusting the pros and cons of undergoing a submucous resection of the nasal septum.

In making a routine examination of the nose in all cases of affections of the ear, nose, or throat, it is truly remarkable how frequently we meet with ridges, spurs, and deformities of the septum, causing no inconvenience, no symptoms, and in no way material to the ease, while their presence is not known to the patient. On the other hand, it is equally remarkable that, in the eyes of some rhinologists, the very presence of a spur or a deviation is a menace to the health of the patient, and that some orthopaedic surgery in the nose would cure almost any malady. Time will not permit me to enter into detail of the indications and contraindications for surgical intervention. Experience has shown that the nasal symptoms complained of are frequently in no way due to any irregularity of the septum that may be present, and that they can be completely removed by other means without removing or operating upon the nasal septum. Those other means must be left for another occasion.

This brings me to the much smaller group of cases in which orthopaedic surgery upon the septum is called for. First of all the choice of the operation. Here again time will not permit me to enter into the relative merits of the numerous operations that have been devised for the correction of septal deformities, and of the one for the removal of the offending septum. It is now some twenty years since the operation for the removal of the septum, bony as well as cartilaginous, by submucous resection was introduced. The number of instruments that have been devised for the operation, and the number of septa that have been dealt with by submucous resection, justify the statement that it would be difficult to mention an operation in minor surgery that has received so much attention, and (judging by the way it is referred to by the younger surgeons as the septum operation), we might add, to the exclusion and in ignorance of all other operations upon the deformed septum. It has become a fetish. There is increasing evidence that the general public has had enough of the removal of pieces of gristle from the nose. The end-results, however gratifying to the surgeon, are not always equally satisfactory to the patient.

The operation from the first appeared to me to be faulty surgery, inasmuch as it deprived the patient of a rigid septum and thereby impaired the nose as an organ of respiration. The nasal passages after the operation are left at times too patent, the septum too thin, and patients complain of symptoms due to the flapping of their membranous septum in the passage of air. Further, in



spite of reduction of the anterior ends of the middle turbinated bodies at the time of the removal of the septum, very considerable hypertrophy of these structures has ensued. The patient, as the result of the above, then seeks relief for tightness across the upper part of the nose and nasal obstruction.

The operation is extremely difficult where it is most needed. In the worst rumpled septa, however experienced and skilful the operator, sloughing and perforation often result, leaving the last state of that septum worse than the first. The cases in which it is least needed yield the best results; those in which it is most required are at times wisely left alone. Further, general anaesthesia for operations upon the upper air passages, particularly when prolonged, is attended with greater risk. Lastly, it is questionable whether the end-results of rectifying the nasal septum by removing it by submucous resection are any better than those formerly obtained by other operations.

To avoid unnecessary discussion let me say I am in favour of a limited submucous resection in removal of spurs and ridges, and of the septum when badly rumpled. The procedure I follow when orthopaedic surgery on the septum is inevitable may be described as a modification of Moure's operation.

Owing to their complete obsession by the submucous resection and removal of the septum there must be among the rising generation of rhinologists many who have not seen Moure's operation performed, and have not even seen the instruments. In spite of the arguments about the resiliency of cartilage, I may claim to have got good results, and certainly never the unfortunate troubles that have followed submucous resection and removal of the septum. Bear in mind that Nature has decreed that the nasal septum of civilized man is not to be in the plumb; that would be, as I have shown, abnormal and peculiar to the savage types. Therefore, why should we try to improve upon Nature by depriving a person of a rigid septum—necessary for respiration?

The results of the submucous resection and removal of the septum taken on the whole are not satisfactory; for reasons I have given it is not sound surgery. The paper has been written to review the position and to promote discussion. The time for half-truths has gone by; I cannot expect those who have spent years in acquiring skill in the submucous resection operation to agree with me, and I shall be sadly disappointed if this paper is not criticized.

#### DISCUSSION.

Dr. W. S. SYME (Glasgow) said that partial nasal obstruction was not detrimental to hearing in a marked degree. The aim of the operation should be functional rather than anatomical. He emphasized the importance of removing deformities of the lower part.

Mr. HERBERT TILLEY (London) said that no inconsiderable amount of the disrepute that had fallen on the operation was due to its imperfect performance. He instanced four of the common causes of failure: (1) Leaving untouched a prominent premaxillary crest in the postero-medial region of the vestibule, against which the ala nasi was drawn during inspiration. (2) Neglect to remove a prominent teat-like prominence at the junction of the vomer, central plate of the ethmoid, and the cartilage of the septum. (3) Failure to reset a posterior deviation of the central plate of the ethmoid and vomer. (4) The overlooking of a deviation of the bony "nasal crest" of the superior maxilla. If the cartilage alone was removed, the septum would still be held across to the crest when healing was complete. Mr. Tilley held that in long-established deafness due to what was termed "chronic otitis media," resection of a deviated septum produced no improvement in the hearing. If, however, inflation of the tympana brought about a temporary but definite increase in hearing, then any form of nasal obstruction should receive appropriate treatment, and good results might be anticipated by removing catarrhal conditions of the middle-ear cleft. No condemnation could be too severe of those who performed submucous resections in cases of genuine oto-sclerosis. Such operations must be due either to ignorance of the pathology

of that condition or to other considerations which it would be scarcely worth while to discuss. To abuse the confidence of patients by telling them that the proposed nasal operation might not cure the deafness but it would probably prevent it from getting worse, at least suggested the question, "How can you prove that?" Such operations not only added to the "sorrows of the septum," but also to those who were jealous of the fair fame of this special department of medicine.

Mr. NORMAN BARNETT (Bath) found that rigidity of the septum rapidly returned after submucous resection, and that failure in procuring a good result was often due to overlooking enlarged posterior ends of the inferior turbinals.

Mr. ERNEST B. WAGGERT (London) said that the septum operation was not performed often enough, nor well enough. He added that leaving a spur from the vomer was a common cause of failure.

Mr. E. D. D. DAVIS (London) spoke glowingly of his personal experience of undergoing submucous resection; his previous troubles of nasal obstruction and prolonged "colds" had quite disappeared. He mentioned that one reason of unsuccessful result was that the septum was not always responsible for the obstruction. He urged submucous resection before operations on the sinus, and particularly on the ethmoid, if the septum was deflected, both to provide access at the time of operation and to facilitate drainage afterwards.

Dr. IRWIN MOORE (London) said that, in his opinion, the secret of success in the operation of submucous resection of the septum was the removal of as little of the cartilage as possible. The majority of deviated septa were developmental in origin, the obstruction being caused by the lower margin of the cartilaginous septum slipping off the superior maxillary ridge, followed by ossification in this situation. In these cases he separated the cartilage with scissors from the maxillary ridge, after which he removed the bony mass obstructing the inferior meatus. The "spring" (deviation) of the cartilage not removed could be counteracted by incising the cartilage (from above downwards) at distances of a quarter of an inch (from before backwards), which allowed the attached segments to adjust themselves in the vertical position. If this method was pursued no "flapping" of the septum would follow the operation. He had operated upon a very large number of patients and seen a great deal of the work done by other operators, and he was satisfied that the operation of submucous resection of the septum, as carried out in the majority of cases, was a credit to the specialty in this country.

Dr. DOUGLAS GUNNIE (Edinburgh) advocated the use of local anaesthesia in this operation. Dr. W. HILL (London) said that the exigencies of hospital practice necessitated the extensive resort to local anaesthesia in septal and other nasal operations. In private practice, however, he relied mostly on a general anaesthetic, as a certain number of patients complained afterwards of the want of absolute efficiency of local anaesthesia. In his own person he would prefer a general anaesthetic if he had to have a septal operation. Local anaesthesia was much more frequently and extensively used on the Continent and in America than here, not merely for septal operations and tonsillar excisions, but for such major procedures as radical antral and mastoid operations and excisions of the larynx. Dr. SCOTT STEVENSON (London) advised deep general anaesthesia. Mr. H. BELL TAWSE (Nottingham) said that, with the exception of two cases in children under 14 years of age, he had for the past twenty years used local anaesthesia. Referring to "flapping" as an occasional sequel of submucous resection, he asked how it might be remedied. Mr. E. B. WAGGERT (London) replied that such a condition was readily cured by making a perforation in the posterior part of the septum sufficiently large to allow the air pressure to be equalized in both nostrils. Mr. DONALD WATSON (Bradford) favoured local anaesthesia; his personal experience under it was that he felt no discomfort, only a sensation of cracking of bone.



Mr. A. R. TWEDIE (Nottingham) mentioned that one of the reasons for lack of success in the operation was a pre-existing collapse of the alae nasi. He referred to the iniquity of operating on the septum in oto-sclerosis and giving the patient to understand that the hearing would benefit. In the case of catarrhal deafness not only did he require improvement in hearing after inflation before advising operation, but also a positive Gellé test and a mobilo membrane, always assuming that bone conduction was at least normal. He used local anaesthesia as a general rule, even in children of 8 years. He recommended an operation for access in intranasal operations. After removing the deformity he replaced any cartilage he could.

Mr. KELSON (London) objected to packing the nose after operation.

The PRESIDENT (Dr. Brown Kelly) pointed out that nasal obstruction often varied from day to day, was frequently mainly due to turbinal turgescence, even though the septum was deflected. Submucous resection was performed not only to widen the narrow nostril but also to narrow the too-open side. He deplored mutilating the inferior turbinals, and did not favour operation in patients younger than 17 years of age.

Dr. JOHNSON HORNE in reply, expressed his pleasure at the favourable way in which his paper had been received. One speaker had completely and concisely expressed one contention of the paper—that an operation upon an obstructing nasal septum should aim at a functional and not at an aesthetic result. Regarding the choice of local or general anaesthesia, his guiding principle had been that in hospital such work should be done as would be required in private practice; in the latter general anaesthesia would be preferred more often than not. He was glad that reference had been made to the enlargement of the posterior ends of the turbinated bodies as a factor in nasal obstruction. Had time permitted, that was one of the causes, other than irregularity of the septum, he had intended to touch upon. The importance of posterior rhinoscopy as a routine part of an examination of the nose could not be overstated, and the surprises encountered at times would fill a chapter.

## ACUTE RETROPHARYNGEAL ABSCESS IN CHILDHOOD.

BY

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Two varieties of retropharyngeal abscess are distinguished in most textbooks. Bokai,<sup>1</sup> whose classical paper on the subject deals with 287 cases, showed that many were of lymphatic and not of spinal origin. Indeed, the spinal variety is relatively rare, coming to the notice of the surgeon on account of well marked signs of tuberculosis of the cervical vertebrae, and, as a rule, presenting little difficulty in diagnosis. The acute variety of abscess, on the other hand, is probably fairly common. Insidious in origin and often showing no characteristic sign or symptom, it frequently escapes diagnosis, or is only discovered at *post-mortem* examination. The condition perhaps more frequently escapes recognition than any other acute disease in childhood, and, if untreated, almost invariably ends in death. On the other hand, when a retropharyngeal abscess is recognized and opened the prognosis is good and the patient recovers rapidly.

**Anatomical Data.**—In order to understand the pathology of retropharyngeal abscess various anatomical facts must be kept in mind. The prevertebral fascia passes in front of the cervical vertebrae and prevertebral muscles, and separates the visceral compartment containing the trachea and oesophagus from the vertebral compartment containing the vertebrae and muscles. In front of the prevertebral fascia, and closely adherent to it in the middle line, is the mucous membrane of the posterior wall of the pharynx. Between the fascial and mucosal layers, in the potential space on either side of the mid-line, known as the space of Gillette, lies a group of lymphatic glands.

These are retropharyngeal glands, which are present in infancy, but gradually atrophy and disappear as the child grows older. They are in direct communication with that chain of glands which lies behind the internal carotid artery sometimes called the posterior carotid chain.

**Pathology.**—Infection of these posterior carotid glands may readily pass to the retropharyngeal glands and give rise to abscess formation; this is probably the usual sequence of events in acute retropharyngeal abscess. In two-thirds of the cases there is obvious enlargement of cervical glands; this enlargement may be of tuberculous nature. Although McLean and von Hofe<sup>2</sup> state that retropharyngeal lymphadenitis is rarely tuberculous, unless accompanied by vertebral caries, we have in two cases of retropharyngeal abscess found definite evidence of tuberculosis in the cervical glands, which were subsequently excised. The most frequent cause of abscess formation, however, is the streptococcus, and this organism may be isolated from the pus in the majority of cases. Waugh<sup>3</sup> regards the tonsil as the source of infection, as the condition is never found in children whose tonsils have been removed. Definite enlargement of the tonsils is present in about 80 per cent. of patients who suffer from retropharyngeal abscess. Trauma is a possible cause; thus Alexander<sup>4</sup> saw two cases following the attempted removal of adenoids, and Bokai includes a case caused by the impaction of a metal button in the nasopharynx. Another possible cause of retropharyngeal abscess is the direct spread of pus from the middle ear. Middle-ear suppuration was present in one-fifth of our cases, but there was also glandular enlargement in each, so that no case could be regarded as "otitic pharyngeal abscess," a rare condition which has been described by Dan McKenzie<sup>5</sup> and others. Even rarer is the acute non-tuberculous osteomyelitis of the cervical vertebrae observed by Kirmisson.<sup>6</sup>

**Etiology.**—The condition appears to be commoner in boys than in girls, and is said to be more prevalent in winter, although eight of the twenty patients noted in the accompanying table came to hospital during the months of May, June, and July.

Table to illustrate the Writer's Series of 20 Cases of Retropharyngeal Abscess.  
(Boys 14; Girls 6.)

Age.					
0 to 1 year	...	...	...	...	7
1 to 2 years	...	...	...	...	4
2 to 3 "	...	...	...	...	3
3 to 4 "	...	...	...	...	2
4 to 5 "	...	...	...	...	1
5 to 6 "	...	...	...	...	1
6 to 7 "	...	...	...	...	2

### Diagnosis.

Dyspnoea	...	...	...	...	All
Dysphagia	...	...	...	...	3
Enlarged glands	...	...	...	...	13
Otitis	...	...	...	...	4
Nasal obstruction	...	...	...	...	6
Epistaxis	...	...	...	...	1
Temperature over 100° F.	...	...	...	...	8
Temperature under 100° F.	...	...	...	...	5

### Result.

Abscess opened (cure)	...	...	...	...	14
Spontaneous rupture	...	...	...	...	2
Swelling subsided	...	...	...	...	1
Death (sudden)	...	...	...	...	3

The organism was found in 8 cases (streptococcus in 6; pneumococcus in 2).

**Age Incidence.**—Most of the patients are under 1 year of age. McLean and von Hofe report 77 cases, of which 55 (71 per cent.) were under 1 year, while Frank<sup>7</sup> relates 74 cases, of which 4 were adults. The remaining 70 were all under 10 years, and 66 (90 per cent.) under 3 years of age, the youngest patient being an infant aged 3 weeks. Koplik<sup>8</sup> observed 77 patients under 10 years of age.

**Symptoms.**—The most characteristic symptom, almost invariably present, is difficulty of breathing. This may be attributed to bronchitis or laryngeal diphtheria, and may even lead to the fatal mistake of performing tracheotomy, as in one of the cases reported by Pearson.<sup>9</sup> If the abscess extends far up into the nasopharynx it will, of course, cause nasal obstruction, but, as a rule, the abscess tends to "point" just opposite the upper aperture of the

larynx. The larynx in the infant is relatively small and is situated at a higher level than in later life, so that dyspnoea is readily produced. Difficulty of swallowing is not so common as dyspnoea. It was noted in only 4 of 77 cases (McLean and von Hofe), and in 3 of the present series of 20 cases. The early stages are often marked by croupy cough and a "throaty cry, resembling the quack of a duck"; the latter is often described, though seldom heard. The head is held stiffly and often inclined towards the affected side. The temperature is seldom very high and may even be normal. The diagnosis, however, is merely a matter of conjecture until the throat is examined. In a good light the observer will note a swelling of the posterior pharyngeal wall to one side of the middle line, but as this is covered by normal mucous membrane it may be difficult by inspection alone to appreciate the altered contour. Digital examination is the most certain diagnostic test, but should not be practised unless one is prepared, if necessary, to open the abscess forthwith, as death during digital palpation has often occurred.

**Diagnosis.**—Considering the vagueness of the symptoms, and the fact that the abscess may escape notice even on inspection, it is easy to understand why the condition often passed undiagnosed. Nasal obstruction and discharge suggest adenoids, and, in my experience, this is the most frequent diagnostic error. As has already been mentioned, the symptoms may closely resemble laryngeal diphtheria, or a foreign body in the larynx may be suspected. Lymphosarcoma of the retropharyngeal region may, of course, simulate abscess, but is much rarer. Cervical scoliosis causes a unilateral projection of the posterior pharyngeal wall, and even in normal subjects, when the head is strongly turned towards one shoulder, a swelling, caused by the transverse process of the second cervical vertebra, may be seen behind the tonsil, as first pointed out by the present writer.<sup>10</sup> In such cases the swelling is, of course, of bony hardness.

**Treatment.**—If left to itself the abscess will cause death from suffocation, or it may rupture and flood the air passages. Should the patient survive this event, death from septic bronchopneumonia may follow, although it is noteworthy that two patients in the present series survived

from the mouth and nose and relief is immediate. Convalescence is surprisingly rapid in many cases.

**Fatal Cases.**—Fatalities during the operation will be largely avoided if the above method is adopted. Of three fatal cases in the present series, the first patient died on the way to hospital (see figure), the second immediately after admission, and the third, a feeble infant, died just after the abscess had been opened. Fatal haemorrhage has been recorded by Sokoloff<sup>11</sup>—a child aged 2—and also by Wylie and Wingrave<sup>12</sup> in a woman aged 21.

#### Conclusions.

1. Retropharyngeal abscess is not an uncommon disease, but is very liable to be overlooked.
2. For the anatomical reasons described, infants are the chief sufferers.
3. Dyspnoea is the principal, and often the only, symptom.
4. The abscess should be opened from the mouth, but no general anaesthetic should ever be used.

#### REFERENCES.

- <sup>1</sup> Bokai: *Jahrb. f. Kinderheilk.*, vol. 10, 1876, p. 168. <sup>2</sup> McLean and von Hofe: *Amer. Journ. Med. Sci.*, 1925, p. 540. <sup>3</sup> Waugh: *Lancet*, September 29th, 1906, p. 845. <sup>4</sup> Alexander and Montague: *New York Med. Journ.*, vol. 18, August 2nd, 1913, p. 227. <sup>5</sup> Dan McKenzie: *Journ. of Laryngol.*, vol. 30, January, 1915, p. 12. <sup>6</sup> Kirmison: *Presse Méd.*, 1909, No. 38, p. 337. <sup>7</sup> Frank: *Journ. Amer. Med. Assoc.*, vol. 77, August 13th, 1920, p. 617. <sup>8</sup> Koplik: *New York Med. Journ.*, vol. 30, January, 1915, p. 12. <sup>9</sup> Pearson: *Lancet*, October 26th, 1901, p. 1117. <sup>10</sup> Guthrie: *Journ. of Laryngol.*, November, 1916, p. 479. <sup>11</sup> Sokoloff: *Monatschr. f. Ohrenheilk.*, vol. 45, 1911, p. 333. <sup>12</sup> Wylie and Wingrave: *Lancet*, 1906, vol. 1, p. 1042.

#### DISCUSSION.

Mr. BELL TAWSE (Nottingham) referred to a child, aged 4, who developed a retropharyngeal abscess after tonsils and adenoids had been removed.

Mr. E. D. DAVIS (London) had seen retropharyngeal abscess develop some time after efficient enucleation of tonsils. One case was possibly tuberculous. He advocated the use of the Davis gag in opening such abscesses. The head was extended over a sand-bag so that it was lower than the larynx; the gag was then inserted and an excellent view obtained.

The PRESIDENT (Dr. Brown Kelly, Glasgow) asked Dr. Guthrie if it was a fact that the pharynx was attached posteriorly to the prevertebral fascia in the middle line. He did not think so, nor was it his experience to find the abscess on one side or the other of the middle line, but rather diffused behind the pharynx. This was important from the diagnostic standpoint: deep cervical abscesses pointing in the pharynx pushed the deep cervical fascia and the deep vessels towards the middle line and were confined to one side; retropharyngeal abscess pushed these vessels outwards. He emphasized the importance of opening retropharyngeal abscesses without an anaesthetic.

Dr. DOUGLAS GUTHRIE, in his reply, said he was quoting Waugh in suggesting that detonsillized patients were immune from retropharyngeal abscess. He would further investigate the anatomy of the part concerned in view of the President's criticism.

#### CLINICAL MEETING.

DURING the afternoon of July 21st and 22nd a number of extremely interesting and instructive cases were shown by Mr. A. R. TWEEDIE and Mr. BELL TAWSE.

Four cases of laryngo-fissure for epithelioma of the larynx were demonstrated. Periods of from ten years to six months had elapsed since operation without recurrence. Three of these had had one and a half vocal cords removed.

Regeneration of the front of the skull was exhibited in the case of a young man, the subject of acute frontal sinus suppuration in 1923. Osteomyelitis of the frontal and parietal bones developed before operation. The affected areas were incised and drained. The sinusitis was attacked by resecting the septum, clearing out the ethmoids, and performing Howarth's operation on both frontal sinuses, the intersinus septum not being present. X-ray photographs showed the progress of bony restoration.



FIG. 1.—Acute retropharyngeal abscess in child aged 14 months, who died on the way to hospital.

wrapped in a blanket with the arms fixed to the side. A gag is then inserted and the point of a long sinus forceps or peritonsillar forceps plunged into the most prominent part of the swelling and opened in a vertical direction. The operation must be performed rapidly, as the introduction of the gag may arrest respiration by pressing the abscess against the larynx. At the moment of opening the child is turned on his face with the head slightly dependent and the gag is removed. Pus flows

An example was given of non-recurrence of cancer of the tongue in which the growth, involving the right tonsil and pillars, had been excised seven years ago, and the palpable cervical glands had been treated by x rays.

A case of endothelioma of the right nostril and maxillary sinus was treated by 50 millicuries of radium salt in the antrum and 40 millicuries in needles of 2 millicuries each in the right ethmoid for twenty-four hours. There was remarkable stimulation of the growth by the radium, followed in three months by its complete disappearance. This case illustrated Hastings Gilford's view that radium destroys cancer cells by stimulating their growth beyond their viability—that is, by shortening their life cycle.

The views expressed on an example of rhinotalia aperta drew attention to the necessity of excluding such a condition before removing tonsils or adenoids.

An instance of left temporo-sphenoidal abscess causing contralateral paralysis of the right arm and leg, together with aphasia, aroused much interest. Meningitis complicated the issue, and during the illness the cerebro-spinal fluid was turbid, contained polymorphonuclears and organisms, and was deficient in chlorides. The abscess was opened, and recovery was uneventful. Such findings as the above in the cerebro-spinal fluid would appear to have stamped the meningitis as the malignant variety. (See report on combined discussion of the Sections of Medicine, Otology, Neurology, and Laryngology of the Royal Society of Medicine, *Proc. Roy. Soc. Med.*, vol. xviii, Part 3).

Opinions were invited in a case of extensive epithelioma of the hard palate as to whether diathermy was indicated. Mr. NORMAN PATTERSON considered the primary growth amenable to such treatment in spite of the bone involvement, and suggested x rays for the associated glands.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### MIGRAINE AND ACETONURIA.

THE negative result of a careful search throughout the extremely interesting discussion on migraine, reported in the *JOURNAL* of October 30th, and the editorial under "Sick headache" on a subsequent page, for any mention of the association of migraine and acetonuria prompts me to put forward a plea for the routine examination of the urine for acetone, in addition to ophthalmic and other investigations, in all cases of sick headache.

In the pursuit of a busy country practice on the northern slopes of the South Downs examination for acetonuria of all cases of headache and vomiting coming under observation has elicited the presence of acetone bodies in far too big a proportion of cases for the possibility of mere coincidence.

The following case, recently under observation, would appear to be of sufficient interest to be reported in detail.

A professional man, aged 42, physically fit, with no previous history of migraine, had a sudden attack while walking in his garden. Giddiness, headache, and a visual disturbance, described by the patient as partial blindness, came on so quickly that he experienced difficulty in staggering back into the house, where he collapsed on a bed without undressing. Vomiting supervened, and giddiness was so distressing that he was unable to sit up unaided. The possibility of hyperpiesis was considered, but the maximum systolic blood pressure proved to be 130 mm. The temperature was subnormal, and examination of the heart, lungs, and abdomen failed to elicit any abnormal physical sign.

Routine bedside examination of the urine for albumin, sugar, acetone, and diacetic acid, by means of capillary tubes containing appropriate reagents, revealed the presence of excess of acetone as the only abnormality.

While this examination was being made the patient complained that the least movement of his head produced nausea resembling sea-sickness, both the bed and walls of the room appearing to move as if in a seaway.

An alkaline mixture and later glucose were given by the mouth, but as both were vomited, an enema was administered containing two heaped-up teaspoonsful each of sodium bicarbonate and glucose. Much to the surprise of the nurse who gave the enema a pint and a half was completely retained, the patient passing a semiformed motion some seven hours later. In the meantime improvement was very gratifying, the patient slept and dozed

alternately, and was then able to get up without nausea or giddiness to go to bed. Glucose, alkalis, and then light food were given by the mouth; in twenty-four hours the urine was free from acetone, and the patient felt himself again.

Routine examination of the urine for acetone of all children attended since resuming civil practice after the war has revealed many cases of vomiting associated with acetonuria. These attacks appear to be due to excitement, indiscretions of diet, and intestinal stasis, and can actually be prevented or controlled by careful dieting and a course of alkalis. The attack itself is best relieved by administration of glucose. Some of these children, now well on in adolescence, suffer from sick headaches without vomiting. These attacks are also associated with acetonuria, appear to have the same etiology, and to be relieved by the same treatment as the periodic attacks of vomiting of early childhood.

Routine examination for acetonuria in these cases over a period of years has afforded me a most fascinating problem for speculation, study, and possible further research.

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#### ADRENALINE AND THE STOPPED HEART.

So much interest has recently been evoked as to the effect of adrenalin in reviving the heart in moribund cases that we are prompted to add our testimony as to its efficacy in the following case.

A Chinese farmer, aged 36, was admitted on September 20th complaining of distension of the abdomen and swelling of the legs, which had been going on for about a month. He lived a quiet and sober life and denied any venereal infection.

The abdomen was much enlarged and palpation elicited well marked fluid thrill. The distension was so great and with venous engorgement that the colour of the abdominal skin was purpuric. Before paracentesis abdominis could be performed at 5 p.m. on the same day, he suddenly became breathless and lost consciousness. He was found pulseless and no heart sounds could be heard on auscultation; 10 minims of a 1 in 1,000 adrenaline solution were injected into the heart and artificial respiration begun; after about five minutes the heart sounds became audible again, the pulse returned, and he regained consciousness. He died a second time at 12 midnight—that is, five hours after the adrenaline was given. We rather regretted we did not give him another injection and watch whether the heart would respond again to that stimulant. As the relatives refused a *post-mortem* examination the cause of the ascites still remains obscure.

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#### ACUTE SUFFOCATIVE PULMONARY OEDEMA.

The following case may be added to those which have recently been published in the *JOURNAL*.

A married woman, aged 54 years, has been under my care for over five years on account of myocardial degeneration and arteriosclerosis. During the last five months she has had twelve attacks of acute suffocative pulmonary oedema. The attacks always come on at about 9 p.m., soon after she has retired to bed. They are very typical. She sits in bed looking desperately ill, and with a vessel in her lap, into which she coughs frothy, blood-stained fluid. She is grey and pallid, with a cold sweat on her face and chest. The pulse is regular, rapid, and feeble. Râles are heard all over the lungs.

Each time I have given a hypodermic injection of 1/4 grain of morphine and 1/100 grain of atropine sulphate. In about half an hour she is breathing easily, the cough has stopped, the pulse is slower and stronger, and in about two hours she is asleep. The next morning she feels practically none the worse for what she has gone through the night before.

My experience is the same as that of Dr. W. W. MacNaught (*BRITISH MEDICAL JOURNAL*, October 30th, p. 780) in that the onset is very sudden and without warning symptoms, that there is no loss of consciousness and no general oedema, and that morphine and atropine given hypodermically control the attacks.

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## Reports of Societies.

### THE EXANTHEMATA.

At the Medical Society of London, on December 13th, a discussion took place on recent advances in the etiology, diagnosis, prophylaxis, and treatment of the exanthemata. Sir HUMPHRY ROLLESTON, President of the Society, was in the chair, and called upon his brother to open the debate.

Dr. J. D. ROLLESTON said that in no field of medicine had the collaboration of clinicians and laboratory workers been more fruitful than in the acute exanthemata, though the fruit had not always attained maturity. With regard to the etiology of scarlet fever three rival schools might be mentioned: the Italian school, who maintained that the pathogenic agent in scarlet fever was a diplococcus which was always present in the blood, cerebro-spinal fluid, and bone marrow during the eruptive period; the Dicks and others in the United States, who maintained that a variety of the streptococcus was the organism; and certain workers in Budapest and in Zürich, who deprecated the excessive importance attached to bacteriological research and maintained that scarlet fever was not due to a specific organism, but depended on a variety of different causes. The bacteriological diagnosis of this disease was not so simple a matter as that of diphtheria. His experience of the Dick reaction was that it was too frequently negative in the first few days of the eruption and too frequently positive in convalescence to be of great diagnostic value. Nor did he think the Schultz-Charlton test a very trustworthy guide. In discussing the prophylaxis of scarlet fever it must be borne in mind that the condition was not highly contagious; various preventive measures had received undue credit owing to failure to realize this fact. Numerous enthusiastic reports of the treatment of scarlet fever by a specific streptococcus antitoxin had been made, but he regarded as an instance of excessive zeal the claim of some writers that antitoxin should be administered as routine treatment. Unless a specially concentrated serum were used—and the cost of this was considerable—there was always a risk of the serum reaction being far more severe than the original attack of scarlet fever. Altogether, with regard to scarlet fever, his conclusions were that the *Streptococcus haemolyticus scarlatinae* described by the Dicks had more claim than any other organism to be regarded as the causal agent; that active immunization by injection of scarlatinal toxin was still in the experimental stage, but was full of promise, and that the use of concentrated scarlet fever antitoxin deserved trial from an early stage in all severe cases.

On the etiology of measles there was as little agreement among bacteriologists as on that of scarlet fever. The diplococcus described by Tunncliffe was more likely to be the causal organism of measles than any other hitherto described. The bacteriology of measles was not yet sufficiently simple or firmly established to be of service to the clinician. Prophylaxis by the injection of convalescent serum was of great value in affording temporary protection from an attack or in diminishing its severity if it occurred. Immunization, whether active or passive, against measles was specially indicated in the case of ill-nourished rachitic children, among whom the disease was particularly dangerous, but he did not think it necessary to urge its application in well-to-do families where measles usually ran a mild course.

With regard to other exanthemata, varicella was rarely a dangerous disease; he had seen only two fatal cases in twenty-six years' fever practice. The small-pox now prevalent in this country was of a remarkably mild character, but there was no justification for regarding this mild type as a distinct disease, and occasionally it gave rise to a rapidly fatal haemorrhagic form. No discussion on the subject would be complete without an allusion to herpes febrilis and herpes zoster. The viruses of the two conditions, though closely related, were sufficiently distinct to justify a separate etiology.

Dr. R. A. O'BRIEN said that the recent change of policy of public authorities with regard to scarlet fever would probably result in a larger number of cases being treated

at home, so that the consultant and practitioner would have a livelier interest than heretofore in the final diagnosis and treatment and the protection of the household contacts. With regard to etiology, the full proof that the *Streptococcus scarlatinae* was the cause of scarlet fever would require that it should, when inoculated into non-immune subjects, produce the typical disease which should be infectious to contacts. The Dicks and Nicolle had apparently supplied part of the proof, for they each had produced with a culture of the streptococcus what they regarded as typical scarlet fever. Until this culturally produced scarlet fever was proved to be infectious to others, it was not possible to deprive of their last argument those who believed that some other agent caused the spread. He himself had been for long unconvinced, but what had finally broken down his scepticism was the fact that the serum of horses injected with the filtrate made from cultures of the streptococcus derived by a few hundred subcultures from the original patients, contained a specific antibody which in high dilution produced the Schultz-Charlton blanching, and when injected into contacts protected them against scarlet fever and had a definitely specific action on the symptoms of patients suffering from this complaint. With regard to the diagnosis of scarlet fever, the Dick test and the Schultz-Charlton test were of definite assistance in doubtful cases. A positive Schultz-Charlton reaction was practically absolute evidence that the disease was scarlet fever. Unfortunately, in connexion with the negative reaction, there were occasional discrepancies not yet fully understood, and a negative result, though it should suggest a careful reconsideration of the diagnosis, did not definitely exclude scarlet fever. Dr. O'Brien entered into a discussion of some possible explanations of the failures, one being that in a certain number of tests the right dilution might not be used. The optimum amount to use in the Schultz-Charlton test was still not known. With regard to the Dick test, a positive reaction here merely indicated that the patient was susceptible to scarlet fever, and it was therefore compatible with a diagnosis of scarlet fever, but unfortunately again a negative reaction to the strength of Dick toxin at present used did not definitely exclude scarlet fever. In time it might be possible to arrive at such a strength of Dick toxin that a negative response might be held to exclude. It had been difficult to get conclusive evidence of the value of antitoxin in the treatment of scarlet fever; the disease in most parts of the world was now very mild. But if serum were of complete efficacy in the treatment of all forms of early and late scarlet fever, toxic, and with septic complications, evidence would soon accumulate. In the treatment of septic complications it was doubtful whether any serum available to-day was of much use, except that the serum might help the patient over the "toxic" part of his attack and enable him to deal with the "septic" part of it himself. There was sufficient evidence from numbers of hospitals in which serum had been used that antitoxin was effective in the treatment of uncomplicated and toxic cases of scarlet fever, and those who had most used it would continue to do so. With regard to prevention, there was little doubt that Dick-positive reactors could be turned negative, and so protected against scarlet fever, either with from 2 to 5 c.cm. of antitoxin, which gave protection probably for two or three weeks, or by active immunization, which protected for a long period.

With regard to measles, Dr. O'Brien remarked that on the assumption that the green diplococcus of Tunncliffe and others was the causal agent, several horses had been injected with an "anti-serum"; the matter was still in the experimental stage. He added a few words about erysipelas. The haemolytic streptococcus isolated from cases of erysipelas seemed to be serologically indistinguishable from that of scarlet fever, and in rabbits it had been possible to show a certain degree of specific neutralization of the culture which, when injected alone intradermally into these animals, produced a lesion very like human erysipelas.

Dr. FOORD CAIGER was in agreement with Dr. Rolleston's conclusions except as to the value of the Schultz-Charlton reaction as a test in scarlet fever rash. In 1924 he made

a series of tests and found that out of 100 consecutive cases of undoubted scarlet fever the serum, which was supplied by Dr. O'Brien from horses he had immunized with the haemolytic streptococcus, showed positive results in about 90 per cent. The success of that test did not depend, as one might have expected, on the concentration of the serum, but the results were equally or more successful in the higher dilutions. With regard to the Dick test, his experience at the South-Western Hospital was quite on the lines that Dr. Rolleston had indicated; the majority of cases coming into the hospital reacted positively, and then they were rather disappointed in a number which failed to show immunity at the time expected, though ultimately a large proportion did become immune. Reports of observations made in America led them to expect that the test would show a negative reaction at an earlier date than it actually did. It had been a satisfaction to him that the Metropolitan Asylums Board should have altered its policy in dealing with measles. Having regard to the fact that scarlet fever admissions were very much larger than those of measles, it seemed a pity that a disease like scarlet fever, which had about 1 per cent. mortality, should take up beds which might be more usefully allocated to a disease like measles, with about 10 per cent. mortality. A larger number of measles cases would now be admitted at the expense of scarlet fever cases. The connexion between varicella and herpes was interesting, and he was sorry that Dr. Rolleston could not throw more light on the subject than to suggest that the concurrence of eruptions was a pure coincidence.

Dr. F. PARKES WEBER asked whether any case had been known in which tuberculosis followed an attack of measles when that attack had not been accompanied or followed by a bad bronchopneumonia or pneumonia. A bad attack of bronchopneumonia did predispose to tuberculosis or aggravated a quiescent condition. As to the connexion between varicella and herpes zoster, an attack of herpes zoster was followed not rarely by an outbreak of disseminated vesicles on the skin. Little attention was usually paid to these, the patient was not frightened about them, and it was only by accident if the doctor's attention was drawn to them at all. It was not possible yet to be sure that this should be considered as an attack of varicella. He had heard of and seen a few striking cases in which the connexion seemed to be almost certain, but, of course, it was difficult to exclude chance.

In further discussion, Dr. LENNOX WAINWRIGHT asked what result would be obtained if the Dick test were applied to German measles, often confused with scarlet fever. Dr. GEORGE GRAHAM asked at what stage the streptococci, almost invariably present in scarlet fever, disappeared. Dr. C. E. LAKIN commented on the usefulness of the Schultz-Charlton test in deciding as between scarlet fever and enema and other rashes. Mr. ZACHARY COPE asked what recent work had been done on the relationship between tuberculosis and measles; he believed tuberculosis had been observed to follow measles much more commonly than to follow scarlet fever or other exanthemata. Sir J. DUNDAS-GRANT spoke of the ease with which scarlet fever patients could be isolated in the family, as compared with measles, where isolation at home was much more difficult. Sir HUMPHRY ROLLESTON asked whether there was any justification for thinking that the different varieties of scarlet fever might be due to different types of the haemolytic streptococcus, and whether, if the Schultz-Charlton reagent did not comprise all these types, this might explain its failure in some cases.

Dr. J. D. ROLLESTON, in replying to the discussion, said that recent work by German observers claimed to show that measles did not give rise to tuberculosis so often as had been thought. With regard to the treatment of erysipelas, he expressed himself disappointed with the anti-erysipelas serum, and also with antistreptococcal serum generally in the complications of scarlet fever.

Dr. R. A. O'BRIEN, also in reply, said that in distinguishing scarlet fever from German measles and enema rashes serological methods might help to some extent. If streptococci were found and the Dick and Schultz-Charlton tests were both positive, one should be careful before saying that the case was not scarlet fever. Unfortunately, the

negative did not hold so definitely, except that if haemolytic streptococci were not present the chances were that the case was not scarlet fever. The fact that streptococci were almost invariably present in scarlet fever was not always borne in mind by clinicians when faced with these troublesome rashes. There were not enough observations to say dogmatically when streptococci disappeared—apparently during the second or third week. It was attractive to think that different serological types were responsible for different phases of scarlet fever. In the case of diphtheria, from time to time it had been conjectured that there were different types of the diphtheria bacillus, and that the antitoxin might protect against one strain and not against the others. That, however, was almost certainly fallacious, and he rather thought it would be so in scarlet fever, but he would like to see a concerted investigation in which in the unexpectedly Dick-negative and Schultz-Charlton-negative cases the organisms might be isolated and worked out in their agglutination groups.

### ABNORMAL BLOOD PRESSURE AND EAR DISEASE.

A COMBINED meeting of the Sections of Otolaryngology, Medicine, and Neurology of the Royal Society of Medicine was held on December 3rd, when a discussion on the relation of abnormalities of the blood pressure to diseases of the ear was opened by Sir WILLIAM MILLIGAN.

Sir William Milligan stated that the vascular supply of the internal ear formed a terminal or closed circulation, anastomosis with the middle-ear vessels being negligible. The two main branches of the labyrinthine artery supplied the entire vestibule and the canals, the sacculus receiving a separate supply from an independent branch. The blood left the internal ear by a vein in the internal meatus and draining the cochlea and vestibule, a vein running along the aqueductus cochleae and draining the cochlea, and a vein passing along the aqueductus vestibuli, draining the semicircular canals and the vestibule. This arrangement materially lessened the risk of back pressure; one segment might be put out of action by embolism or atheroma without affecting other parts of the ear. Any pathological abnormality was, therefore, most likely to affect the cochlea or the vestibulo-canalicular systems. The auditory nerve was the most sensitive of the cranial nerves, and responded to variations in arterial pressure very readily, as shown by sudden and transient attacks of vertigo and tinnitus; the latter might result from either high or low blood pressure and was usually bilateral unless due to a local organic lesion. Sudden vertigo and rushing tinnitus gave often the first danger signal of high blood pressure. The transient vertiginous attacks in high pressure were probably due to arterial spasm with resulting labyrinthine anaemia, and not to a definite exudate. Nicotine had a marked effect in raising blood pressure by inducing contraction of the arterioles, partly by stimulating the medullary vasomotor centre, and partly by local action. Repeated vertiginous attacks of the labyrinthine type, following sudden head movements and unaccompanied by deafness, were frequently forerunners of fatal angina pectoris. Persistent tinnitus in middle-aged, plethoric, and constipated women leading sedentary and luxurious lives was a signal of commencing high-pressure. Sudden severe vertigo in petit mal, migraine, and severe nerve shock was probably due to angio-spasm, with resulting labyrinthine anaemia; such vertiginous attacks were also common in hypertension. When the symptoms were permanent secondary changes due to effusion or to toxic infection were probably present. In Bright's disease and certain cardiac conditions an exudation formed suddenly in the tympanic cavity, with deafness, tinnitus, and possibly vertigo; such hydrops tympani might be the first indication of contracted kidney in middle-aged men. Hypertension occurring in such conditions as severe anaemia, neurasthenia, and influenza might cause temporary loss of hearing, tinnitus, and vertigo from venous stasis in the internal ear. Primary disease of the internal ear was comparatively rare, and most cases of tinnitus and vertigo, with or without deafness, were due to vascular abnormalities associated with organic disease elsewhere in the body. In



all cases where the clinical symptoms did not suggest internal ear disease there should be a detailed examination of the heart, the kidneys, and intestinal tract; records of blood pressure should be made.

Dr. Lewis Smith could not agree with Sir William Milligan's conclusions as to the frequent relation between abnormal blood pressure and ear disease. For the purposes of this discussion he had carefully analysed a series of cases examined by himself. In 50 cases of hyperpiesis in adults, with a systolic blood pressure of 200 mm. or more, he had found that only ten patients mentioned giddiness among their prominent symptoms. In 20 cases of pronounced low pressure in adults, with a systolic blood pressure of 110 mm. or lower, only four mentioned vertigo. In 50 cases complaining of vertigo as their main trouble, he found only 13 whose blood pressures were markedly above or below the normal, and in 40 cases of neural vertigo—Ménière's symptom complex—29 showed a normal blood pressure. He considered these figures conclusive evidence against a common causal relation between abnormal blood pressure and ear disease. He discussed the complex causation of vertigo and emphasized the frequency of a nervous factor, either exhaustion or anxiety, in its production. He also laid stress on toxic factors, notably tobacco and alcohol. Some of the cases were undoubtedly epileptic. He dealt in considerable detail with the clinical features of Ménière's symptom complex, in which he thought there was often evidence of organic disease of the internal ear, and discussed various forms of treatment. He pleaded for a more careful investigation of all cases of vertigo, which were often too loosely ascribed to high blood pressure or arterio-sclerosis. In his series of 40 cases, only seven had been correctly diagnosed; a considerable number of the sufferers were living in a quite unnecessary dread of cerebral trouble, and the fear of "strokes."

Dr. W. J. Arne, after commenting on the limitations imposed by the title of the discussion, said he thought he could best promote discussion by adopting an extreme view. He would therefore attempt to defend the view that there was little or no direct relation between disorders of the blood pressure *per se* and disease of the ear. Tinnitus and vertigo were common in disorders of the central nervous system. If auditory impressions succeeded in reaching the medulla they were always perceived in spite of most extensive lesions of the brain stem and cerebellum; hence the presence of deafness indicated a lesion of the ear or eighth cranial nerve, but the localizing value of tinnitus or vertigo without deafness was not certain. The only cases that deserved serious consideration in this discussion were those with deafness and vertigo or tinnitus. The association of these symptoms with disorders of the blood pressure was common, but there was nothing to prove that it was more than an association. There were two possibilities: the degenerative changes might occur in the ear side by side with degenerative processes in other parts, such as the arteries or kidneys, or the degenerative changes might be the results of a defective blood supply to the ear. Whatever their origin it was certain that the same processes and exactly the same symptoms might and did occur in persons with high, low, and normal pressures. They were too apt to correlate the blood pressure with certain symptoms. If a patient with high blood pressure had a stroke, it was thought to be due to haemorrhage, whereas if the pressure was low thrombosis was diagnosed; but thrombosis was extremely common in the diseased arteries of persons with a high blood pressure. Sir William Milligan was right when he said that the symptoms they were discussing called for a complete overhaul of the patient; the fact that the pressure was often low or normal did not justify the conclusion that there was little connexion between these symptoms and certain general disorders. Dr. Adio felt sure that the greater number of older patients with these symptoms had also arterial disease. His point was that the blood pressure was of little importance, the state of the vessels all-important. Hypotension in debilitating diseases sometimes caused symptoms that were certainly neural in origin, but these cases were rare. Attacks of dizziness or giddiness were frequent in patients with an unstable vasomotor mechanism or other circulatory dis-

turbance, and in various functional and organic diseases of the nervous and other systems, but it was probable that the vertigo in most of these cases was of central origin. In many cases the site of origin of the symptoms was uncertain; even when they were certainly of neural origin the blood pressure varied. Hence they might conclude that though symptoms referable to the ear were commonly associated with general circulatory disturbances, the relation between disorders of the blood pressure *per se* and actual diseases of the ear was at most indirect and relatively unimportant.

Mr. G. J. Jenkins said that such auditory and vestibular symptoms and signs were only part of the general manifestation of blood pressure insufficiency. Patients might continue in apparent health with blood pressures considerably above or below normal, and without any auditory symptoms. It seemed that our views as to the relation of blood pressure to these symptoms must remain, to a large extent, speculative until we found a measure of efficiency of the blood pressure in a particular individual. He doubted whether very high systolic pressure had ever produced ear symptoms without there being some local change. With high pressure compensating for the existence of diseased vessels there was often evidence of labyrinthine disease; this local affection was probably part of the general disease, and not due to the blood pressure. Bone conduction was much diminished, and there was loss of high tones, the low tone limit being about normal. The conversational voice might be well heard, though whispers were almost inaudible. Vestibular tests often gave normal results. Most of these patients carried on well except for diminished hearing, but some had persistent tinnitus and dizziness, and in others it was difficult to decide whether their symptoms were due to inefficient blood pressure or to labyrinthine disease. When such affection of the labyrinth was more marked in one ear, it was possible that this organ might be affected by abnormally low pressure earlier than the other. The tinnitus and deafness might be limited to that ear, with nystagmus to the opposite side, and other localizing signs. This group of unilateral cases supported the suggestion that the fall in blood pressure caused the ear symptoms by affecting the labyrinth. Mr. Jenkins had found no evidence of pathological changes being caused in the ear by too high or too low pressures.

## THE HOSPITAL AND PUBLIC HEALTH.

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on November 26th, Dr. S. Moxerton Copeman, the President, occupying the chair, Dr. GEORGE F. BUCHAN read a paper on "The hospital in relation to the public health."

Dr. Buchan estimated that, for a community of 100,000 inhabitants, of average age and sex constitution, 250 hospital beds would be required for public health services, 177 for the notifiable infectious diseases, 28 for maternity and child welfare, 13 for school medical work, 3 for venereal diseases, and 29 for further hospital treatment of certain cases of measles, whooping-cough, orthopaedic cases, rheumatic fever and heart diseases, and cancer. Three-fifths of this accommodation was already provided in isolation and tuberculosis hospitals and sanatoriums. The remaining two-fifths would be similar to that already provided by the voluntary general and special hospitals throughout the country. Discussing the methods of provision of these additional beds, Dr. Buchan hoped that the question would not be further complicated, as had been suggested, by the transfer of rate-supported beds from boards of guardians to other authorities which were not always the authorities at present responsible for the consideration of public health problems involving extension of hospital accommodation. The suggested transfer would not unify, but would still leave hospital accommodation under different authorities. Since there were already provided in this country 179,772 beds by local authorities, 50,460 beds by voluntary hospitals, he was of opinion that the need for erection of new hospitals by local authorities would seldom arise. For practical purposes, therefore, the discussion was limited to questions of extension

of isolation hospitals, Poor Law hospitals, and voluntary hospitals. Assuming that the Poor Law hospital would be transferred to the local health authority for the area, he did not think that the problem presented serious difficulty. Extension would obviously be undertaken at the largest hospital, whether isolation, Poor Law, or voluntary, in the area. Doubtless there were still those who considered that infectious and non-infectious cases should not be housed on the same site. Such a view appeared to be opposed, not only to the experience of other countries, but also to the general principle on which the pavilion type of hospital had been established. If such a tenet were accepted it followed that a scarlet fever pavilion should not be on the same site as a diphtheria pavilion, particularly when the increased susceptibility of a scarlet fever patient to diphtheria was borne in mind. It was also contrary to his own experience. In Willesdon during the four years 1919 to 1922 there were treated at the Willesdon Municipal Hospital, which was built on the pavilion system, 1,617 cases of maternity and diseases of women, 1,541 cases of school children, 1,018 cases of children under 5 years of age, and 260 cases of general diseases of adults, as well as 4,590 cases of infectious diseases, or 9,026 patients in all, without infection spreading from the one side of the hospital to the other. He concluded, therefore, that there was no medical reason why a hospital suitably planned on the pavilion system should not admit all the diseases for which a local authority might make provision. Some might argue in favour of special hospitals for special categories of disease, as opposed to the large general hospital with its necessary special departments. He was one of those who favoured the latter. Multiple hospitals meant multiple equipment and increased cost of administration, with, to some extent, loss of efficiency because of that lack of interchange of ideas and opinions, both generally and in respect of individual patients, between a medical staff engaged in different forms of medical work under a common roof. Another advantage of the single hospital was that a definite economy in the number of beds to be established could be effected. Diseases were not all prevalent at once, and wards set aside for one disease might therefore be utilized from time to time for other diseases when not required for their normal purpose. Local authorities were empowered by the Public Health Act, 1875, to build hospitals for the reception of the sick inhabitants of their district. By the Public Health Act, 1925, they were further empowered to make subscriptions or donations to voluntary hospitals serving their area. Which of these two courses would be followed would depend on the views of the authorities concerned on the relative merits of voluntary or municipal enterprise. As examples of municipal enterprise he cited the Danish State Hospital and the Municipal Hospital at Copenhagen, and stated that, judging from his own observations during the present year, these were as efficient in respect of equipment and staff as the best examples of the voluntary hospital system in this country.

The public health hospital could be best staffed on the same principles as a large voluntary hospital, with specialists in charge of the departments and a sufficient number of resident medical officers for clinical purposes, the general administrative control of the hospital being vested in a medical superintendent. Medical officers entering the hospital service of an authority could make it a career either for hospital administration or for specialism in one or other of the departments, or utilize the appointment as a preliminary experience for general practice. In Copenhagen the heads of the principal departments, including the hospital for infectious diseases, were appointed university professors; Dr. Buchan commended this idea to our own local and university authorities. Dealing with the question of research, the speaker emphasized the need for inquiry into the antecedents of patients and for more intensive investigation of the factors influencing the production of disease. Research also likely to bear fruit was illustrated by the work recently undertaken in Leeds in relation to the post-operative longevity of patients with cancer of the breast. Concurrent investigation into the post-hospital conditions of the patient would also throw valuable light on the extent to which these hindered

recovery, determined relapse, or accelerated the known sequels of the disease.

Dr. J. D. ROLLESTON referred to the practice in Paris of having pavilions for infectious diseases as part of the general children's hospitals, and said that the same principle was followed to a great extent on the Continent. He considered this an advantageous arrangement as it gave the best men an opportunity of devoting their attention to infectious diseases, which had given such excellent results as those of the immunization work done by the staffs of Continental children's hospitals, to which Dr. Monckton Copeman had alluded in his presidential address.

Dr. JANET LANE-CLAYTON referred to Dr. Buchan's estimate of the additional hospital provision required, and asked whether experience actually showed that there was a shortage of beds. Dealing particularly with cancer, she stated that it appeared that there was no delay in admitting patients for treatment in London. If by propaganda patients could be taught to apply while still operable, the need for cancer beds might be increased, but before providing extra beds throughout the country it would be well to know how far in fact there was a need for them.

Dr. ARNOLD referred to the large fluctuations in the number of beds required for infectious diseases, and suggested that if one hospital were used for all varieties of diseases economy in beds could be obtained by using the spare beds for cases which were not urgent and could wait without disadvantage. He thought that the fact that infectious diseases were treated in special hospitals in this country was a result rather of the special circumstances in which official public health measures were initiated than of any definite idea among sanitarians that it was necessary to have separate hospitals.

Dr. CLARE TROTTER supported the idea of a general hospital for infectious and other diseases. With regard to the provision of cancer beds he did not see why advanced cases of cancer should not receive treatment in the same way as advanced cases of tuberculosis. He disapproved of these being left to be dealt with under the Poor Law. He thought Dr. Buchan's paper was of special value in showing that a hospital to which cases could be referred when necessary by the public health department was of definite value to the community; the nature of the disease was of no importance from the public health point of view, as the object aimed at was the end-result—facilities for proper recovery.

The PRESIDENT agreed that it was desirable to get rid of the taint of pauperism associated with Poor Law infirmaries. He could not accept the suggestion that the majority of patients with inoperable cancer found their way into Poor Law institutions. Those that did so, as a rule, were admitted only a short time before death. It was obviously undesirable from the public health point of view that cancer cases, especially when in the stage of suppuration, should be treated in dwellings with a minimum of accommodation. If, under such a scheme as Dr. Buchan had outlined, the difficulties and possible dangers incidental to the care of patients under such conditions could be eliminated a notable advance in hygiene would be attained.

#### VACCINE THERAPY IN GENERAL PRACTICE.

At a meeting of the Leeds and West Riding Medico-Chirurgical Society on November 19th, with Dr. CRAWFORD WARSON in the chair, Dr. W. EDGECOMBE (Harrogate) read a paper on vaccine therapy in general practice.

After referring to the prophylactic and curative sides of immunization, he discussed the specific and non-specific reactions excited by vaccines, and said that while prophylactic immunization depended mainly on the specific reaction, curative immunization by vaccine therapy appeared to be chiefly associated with the non-specific factor. Inasmuch as general, focal, and local reactions might be produced by the injection of a non-specific vaccine, it was not legitimate to assume that a vaccine causing such reactions was necessarily related etiologically to the disease. Three conditions must be fulfilled before vaccine therapy was undertaken in chronic infective

diseases: the organism from which the vaccine was made should be the true causal organism of the disease; the vaccine should be autogenous; and the source of infection should be determined and removed if possible. These principles were exemplified by illustrative cases. The more closely the conditions were fulfilled the greater was the chance of a successful result. Dr. Edgecombe condemned "speculative" vaccines made from the bowel or other sources, on the assumption, without adequate proof, that therein lay the source of infection. Any good resulting from such vaccines must be due to the non-specific reaction, of the same order as the familiar protein shock reaction. His own experience of the vaccine treatment of chronic fibrositis, neuritis, and arthritis, of supposed infective origin, was that in those cases in which no definite source of infection was found "speculative" vaccines made from the bowel were of little use. In those cases where a definite focus of infection was found, but was not removed, the results were equally poor. In those cases in which a focus of infection was found and removed the results were good. A similar or greater number of cases of the same type, however, recovered equally well without the use of vaccines. Prophylactic immunization by vaccines in certain diseases, such as small-pox and typhoid, stood upon firm ground. Curative immunization was on a less secure footing, and much of the vaccine therapy of the present day was purely empirical.

#### Clinical Cases.

Mr. E. R. FLINT (Leeds) showed a case of cervical rib in a schoolmistress, aged 23, who had complained of pain during the previous eighteen months in the whole limb occurring towards the end of the day, with neuralgic pain shooting into the inner side of the right arm and hand and some wasting of the intrinsic muscles of the hand. The rib was attached to the thoracic rib in front, and the subclavian artery and inner part of the plexus lay in front of the lower part of the cervical rib. Great improvement had followed its removal one month ago. There was also a small cervical rib on the left side which did not produce symptoms.

Dr. WILLIAM MACADAM (Leeds) demonstrated a case of intermittent hydrarthrosis. A woman, aged 25, otherwise healthy, had suffered from periodic attacks of synovial effusion of the ankle- and knee-joints, lasting three or four days, and preceded by loss of appetite, dyspepsia, and polyuria. There were also attacks of angioneurotic oedema occurring at times apart from those of the joint swellings and affecting one side of the face, the hand, and the subcutaneous tissues of the lower limbs. During a year's arsenical treatment there had been one attack of a localized erythema of the lower limbs, but no recurrence of the synovial effusions.

Dr. J. STEWART (Leeds) showed a female patient from whom he had removed two stones from the common duct during an attack of haemorrhagic pancreatitis two years ago.

#### MULE-SPINNER'S CANCER.

At a meeting of the Manchester Pathological Society held at the Manchester University on December 8th, with Dr. E. M. BROCKBANK, the President, in the chair, Dr. JAMES ROBERTSON (M.O.H. Darwen) read a paper on "Mule-spinner's cancer."

Dr. Robertson recalled that since 1920 the attention of those engaged in cotton-spinning had been directed towards scrotal cancer because of its increased incidence among mule-spinners. Anxiety among employers had also arisen since the judgement given in 1922 in a Lancashire county court that, upon the evidence laid before it, this disease arose out of and in course of the workman's employment. The evidence was to the effect that the mineral oil used to lubricate the spinning-mule was thrown off by the rotating spindles on to the circular steel rod known as the faller shaft and on to the spinner's overalls. The friction of the shaft on the scrotum as the man leant over it, together with the irritation of the oil, were stated to be the causes of the disease. The question first arrested

Dr. Robertson's attention in 1923 in the course of official visits to cotton-mills. Observation led him to doubt the prevailing opinion as to the cause of mule-spinner's cancer. He began investigations which led him to express these doubts in his annual report for that year, and to advance a counter-opinion. The starting-point of his inquiry was the article by Southam and Wilson.<sup>1</sup> After describing the mechanism of the mule and its faller shaft, and the process of oiling, and his experiments to determine the duration and extent of oil spray from the spindles, Dr. Robertson adduced evidence showing that no mineral oil reached the workman's overall from the spindles or shaft, and that no friction or pressure from the shaft was exerted on the scrotum; from this he concluded that these could not be the cause of spinner's scrotal cancer. Further investigation convinced him, moreover, that none of the oil absorbed from the workshop floor by the overall reached the scrotum under ordinary working conditions, and that mineral oil could not therefore be a factor in the causation of this disease. While the dirty scrotum, the mineral oil, and the movements required of the workmen had not changed since 1880, this form of cancer had only lately become serious, and he looked about for some recent factor or factors acting upon the scrotum and on a definite part of it. Until 1905 cotton-spinners wore soft white overalls of fustian, free from chemicals. But about that time blue overalls of a hard cheap material began to be used and gradually displaced the others. These stiff blue overalls were worn next the skin and held up by cloth straps over the shoulders. In the movement of piecing together broken ends of thread the pull of the overall, with its rough seam at the fork, caused slight pressure and friction on the exact points of the scrotum where epithelioma was usually found. Dr. Robertson accordingly suggested that these rapid intermittent frictions, some 240 in an hour, acting upon an unprotected and dirty scrotum, and in the presence of an aniline dye, were the cause of the disease, the friction and pressure being aggravated by the use of an inelastic brace. In support of this view he had ascertained that wool-spinners, who scarcely ever suffered from this disease, wore their overalls over a soft undergarment, and that the French cotton-spinners of Lille (among whom such cases were unknown, although they worked under the same conditions) wore similar overalls, but kept them up with waist-belts. Thus neither in the wool-spinner nor in the Lille cotton-spinner was there any friction of the overall upon the bare scrotum when the workman leant over the shaft to piece his broken thread. Although the Lancashire cotton-spinner worked in his naked feet on the oily floor of the spinning-room, yet he never suffered from cancer of the foot, or even sores on the sole.

In short, Dr. Robertson's conclusion was that this disease was not due to conditions in the mill, but to the friction (*plus* the scrotal state) resulting from the shoulder pull upon an inelastic brace, causing the fork of the overall to rub against the skin. Out of 29 cases seen by him who had been operated upon, 28 wore blue overalls. His experimental work convinced him that the spinner should wear a white fustian overall supported by an elastic brace, or if he wore a hard overall should have next his skin a soft undergarment of soft material, and should wear an elastic brace or a waist-belt. The worker must also keep his scrotum clean. Further, since these investigations had proved that all the oil found on overalls came from the floor, the spinning-room floor ought to be washed at least every two years.

In the discussion which followed, Dr. BROCKBANK remarked on the absence of scrotal cancer in the wool-spinning industry.

Mr. A. H. SOUTHAM said that the skin of the sole of the foot was very different from the scrotal skin, and was not so liable to cancer. He had seen two cases of epithelioma of the air passages (one of the tonsil and one in the larynx) combined with scrotal cancer. He suggested that scrotal friction might also be present in other occupations, such as coal-heavers. Yet these people were not liable to scrotal cancer.

<sup>1</sup> BRITISH MEDICAL JOURNAL, November 16th, 1922.

Dr. PROSSER WHITE had noticed keratosis of the skin and "irritative papules" of the forearm in mule-spinners who had been away from their work for as much as two years. He did not advocate the radical removal of the inguinal glands in cases of scrotal cancer, as he regarded this condition as a localized one, and he cited 33 cases in which removal of the inguinal glands had been followed by bad results.

Mr. J. MORLEY mentioned the case of a man who for thirty years performed only unskilled labour in the mill, but who had epitheliomata of the scrotum, face, and arm. There was no question of local friction in this case. He had seen tar workers with keratotic papules of the skin where they had been splashed. He asked if the scrotum and penis were soiled with oil by the hands during micturition. He strongly advocated the removal of the inguinal glands in cases of scrotal cancer, which, he said, always resulted in glandular metastases. He emphasized the difficulty of this operation and the bad results which might accrue, especially if the field of operation were soiled by lymph from cut vessels.

Dr. POWELL WHITE cited cases of scrotal cancer occurring years after the cessation of work. Dr. J. SAVATARD showed lantern slides of a case—a mule-spinner with a keratotic nodule of the scrotum and epitheliomata of the face and arm—and drew attention to the relationship between epithelioma and the conditions of xeroderma and ichthyosis of the skin. He suggested that the general atmospheric conditions prevailing in Lancashire had something to do with the incidence of skin cancer.

Dr. VEITCH CLARKE congratulated Dr. Robertson on his "field work." He mentioned the high incidence of cancer among chemical workers—where there was no local friction. He suggested that a specific reaction might take place between mineral oils and the sebaceous oil of the skin in bringing about the onset of cancer of the scrotum.

Dr. ROBERTSON, in reply, pointed out that a wool-spinner wore an undergarment, hence there was much greater protection. Coal-heavers wore soft trousers, and often no braces. All workers' hands were thoroughly cleaned after oiling the machines. If oil were on the scrotum, he thought that the incidence of cancer might be even greater. The late cases of scrotal cancer might be those that would occur in the ordinary way, apart from occupation. Chemical workers did not need to be as careful with their hands, hence contamination was easier. He strongly advocated the abolition of braces and their replacement by belts in mule-spinners.

### SURGICAL DIATHERMY IN CANCER.

At a meeting of the Manchester Medical Society on December 1st, Dr. F. CRAVEN MOORE in the chair, Mr. H. H. RAYNER read a paper on surgical diathermy in the treatment of cancer.

Mr. Rayner described the principle and technique of surgical diathermy, and dealt with its employment in the treatment of malignant disease of the skin and of the breast. Cases of buccal carcinoma were not included because the value of the method in these was now widely recognized. The advantage of diathermy in the treatment of cancer was threefold. It eliminated the possibility of implantation of living cancer cells in the operation wound; this reduced the liability to local recurrence after treatment. It sealed divided lymphatic channels in the open wound, which probably diminished the chances of the rapid development of distant metastases after operation. His experience in the removal by diathermy of massive breast cancer, as a palliative measure, led him to suggest that the ordinary cutting operation in these advanced cases was responsible, in some of them, for the rapid outbreak of metastases, and that such a sequel was less likely after diathermic removal. The third advantage was that the sterilization of the wound produced by the intense heat eliminated the chance of serious sepsis. This property made it possible to employ diathermy without fear of septic infection for the removal of foul ulcerating growths of the skin or breast, or growths about the anal margin, or in other positions prone to infection. The slough produced by the heat of the current provided a reliable protective

barrier during the time that an ordinary open wound was most prone to infection—before the formation of a floor of granulative tissue. The cases quoted included fourteen cases of carcinoma of the skin—eight cases of rodent ulcer, two of lupus epithelioma, four of ordinary skin epithelioma, two involving the skin of the perineum and invading the anal canal. All these had been treated by diathermic excision within the past three years; there had been no instance of local recurrence in any of these. One of the patients with anal epithelioma died of internal metastases two years after operation without local recurrence or trouble. This man had, at the time of operation, an extensive and foul fungating growth invading one lateral wall of the anal canal—he had been sent into hospital for colostomy. Nearly all the rodent ulcer cases and the two lupus epithelioma cases were extensive and had been previously treated by x rays, radium, or operative excision, sometimes by all of these methods. Ten cases of massive and inoperable breast carcinoma had been submitted to diathermic removal of the breast as a palliative measure; no attempt was made to remove the axillary glands in these. Of these patients three died within eight to fifteen months of the operation, while seven were alive at periods ranging from one to two and a quarter years after the operation. Eight of these ten were considered to have received substantial benefit from the operation, most of them being able to lead ordinary lives for at least a year after operation. The type of case for which diathermic removal was advocated was that presenting a massive enlargement of the entire breast with ulceration, or impending ulceration of the skin, and unaccompanied by clear evidence of metastases except in the axillary glands. Lantern slides to illustrate the results of treatment in several of the skin carcinoma cases were shown, and some also to indicate the types of mammary cancer considered suitable for diathermic removal.

### Habit Formation in Blood Vessels of the Skin.

Dr. P. B. MUMFORD, in a paper on this subject, said that the blood vessels of the skin, by constant usage of their power of contractility and dilatation, might acquire a habit of responding to lessened stimuli. Such stimuli might be external or internal in origin. They might be chemical, thermal, mechanical, or nervous in type, and the development of hypersensitivity to one form of stimulation was not necessarily specific for that form of stimulation only. The continual demand on capacity for rapid contraction or dilatation induced a markedly labile condition of the arterioles and capillaries affected. Dr. Mumford next showed that a distinction must be drawn between continuous and intermittent demand for dilatation, as the former often appeared to induce a paralytic change. Both "specific" and "non-specific" sensitization of the skin to external stimuli occurred. The vascular habit might be produced as a remedial measure in conditions such as perniosis.

### SURGICAL ASPECTS OF JAUNDICE.

At a meeting of the Nottingham Medico-Chirurgical Society on November 10th, with the President, Dr. J. C. BUCKLEY, in the chair, Mr. A. H. BURGESS, surgeon to the Manchester Royal Infirmary, gave a lecture on the surgical aspects of jaundice.

Mr. Burgess, after defining jaundice, said that owing to the work of van den Bergh there was now recognized a "latent" jaundice in which the bile pigment in the blood was increased above the normal, but not sufficiently to overcome the kidney threshold and appear in the urine. He briefly described the van den Bergh test and the different results—immediate, delayed, and biphasic—explaining that the result depended upon whether the pigment had or had not passed through the liver. Mr. Burgess further discussed the work of Maun and Aschoff proving that the bile pigments were not formed in the liver, and the part played in their formation by the reticulo-cellular system, principally in the bone marrow and spleen, and only to a very small extent in the liver.

He then mentioned the different varieties of jaundice and the diagnostic significance of the van den Bergh test in obstructive and acholic jaundice. In dealing with obstructive jaundice he stated that, while deep jaundice of short duration was not a severe surgical handicap, in long-standing cases it made the patient a very bad surgical risk, owing to liability to haemorrhage and other complications, such as an increase in bile secretion with a decrease in its quality. He mentioned the various measures to overcome these risks, such as blood transfusion and the intravenous injection of calcium chloride, and entered a strong plea for a two-stage operation with a minimal interference in very bad cases. He pointed out that in chronic jaundice, for all practical purposes, the diagnosis lay between that of common duct obstruction due to stone and that due to cancer of the head of the pancreas. He stressed the importance of the slightest diminution, however temporary, of the jaundice as denoting in favour of stone obstruction, and discussed Courvoisier's law and the importance of a distended gall bladder in the differential diagnosis of these conditions. He mentioned the usefulness of cholecystogastrostomy and various drainage operations in malignant and other forms of bile obstruction, and referred to the value of splenectomy in non-obstructive jaundice.

### ENCEPHALITIC NYSTAGMUS.

A CLINICAL meeting of the Devon and Exeter Medical-Chirurgical Society was held at the Royal Devon and Exeter Hospital on November 18th, the President, Mr. R. WORTHINGTON, in the chair.

Dr. W. GONNOR showed a case of encephalitis with nystagmus in a boy aged 9. There was a history of sudden onset with headache and pain in the back of the neck. On admission to hospital he looked dazed, but answered questions intelligently. The cerebro-spinal fluid redness Fehling's solution markedly. The boy developed coarse nystagmus and paresis of the right arm. The symptoms were beginning to clear up. Dr. Gordon stated that inco-ordination of the eye was now associated with encephalitis lethargica. In his case the possibility of infantile paralysis had been suggested, but the symptoms cleared up rapidly, whereas in true infantile paralysis this was not usual. There was, as a rule, more destruction of cells in infantile paralysis, whereas the injury might be transient in encephalitis.

Dr. HERON DATE said that Dr. Gordon's experience was somewhat opposed to his own; in school investigation during outbreaks it was by no means uncommon to find the ambulatory type of infantile paralysis. As a point in the differential diagnosis, the eye inco-ordination was certainly new to him. Dr. EAGER recounted his experience of patients who showed post-encephalitic sequelae with paraplegia, and evidence of permanent damage to the nerve cells. He recommended hyoscine in treatment.

Dr. GONNOR, replying, said that he had dealt only with immediate effects, and not with sequelae; severe localizing symptoms of a stationary type at the onset were more likely to indicate infantile paralysis, whereas the transient and diverse symptoms occurred more frequently in encephalitis. He had not had any experience of hyoscine, but he had found belladonna useful. As regards treatment, injections of potassium permanganate by rectum had been given in this case. Another form of treatment advocated was that of Letters, who produced an aseptic abscess on some part of the body, such as the thigh, using turpentine as the local irritant, the idea being to create leucocytosis.

### Tuberculous Pyonephrosis.

Mr. WAYLAND SMITH and Dr. ACHESON showed a married woman, aged 32, with tuberculous pyonephrosis. She was first examined in March, 1925, having had pain on micturition for ten months. There was a hard mass on the right side of the abdomen. She was cystoscoped and pus was found coming from the right ureter; tubercle bacilli were present. Nephrectomy was performed. The patient's weight in April, 1925, was 7 st. The after-treatment at her home, which was in one of the poorest quarters of Exeter, was conducted by Dr. Acheson. Her weight now

was 8 st. 7 lb., and a catheter specimen taken last August showed a few pus cells, no organisms or tubercle bacilli, and no growth was obtained on culture.

Mr. A. L. CANNON commented on the success of the operation in spite of the presence of advanced open tuberculosis; it had apparently resulted in complete recovery.

Mr. WAYLAND SMITH emphasized the value of the after-treatment; carried on in spite of the most unfavourable surroundings and structural obstacles, open-air treatment had been maintained throughout convalescence.

Dr. ACHESON gave a short account of the case and of the great difficulties he had encountered in providing the requisite treatment. Having, with considerable trouble, obtained an area of sun-exposed roof, and established the patient there for some weeks with great benefit, there was a subsequent and most disappointing eviction, and now he was doing as well as he could for the woman in one room shared with her husband and child.

### Fracture of the Acetabulum.

Mr. WAYLAND SMITH showed a man, aged 63, with a fracture of the acetabulum caused by a fall from a scaffold in June, 1925, the patient landing on his left hip and buttock. Two months later he complained of pain in the knee and back of the thigh when he tried to move it. There was marked wasting of the left buttock and tenderness along the line of the sciatic nerve. X rays showed a fracture of the left acetabulum with a partial dislocation of the head of the femur into the pelvis. The fifth lumbar vertebra was also displaced and spondylitis deformans was present. The patient was treated by massage, radiant heat, and exercise. There was now flexion to the extent of 30 degrees at the hip, but the patient could bend the hip to a right angle, and walk with the aid of a stick. The interest of the case lay in the unusual type of fracture, and the subsequent return of function, although the diagnosis was only made two months after the fracture.

### JAMES MACKENZIE INSTITUTE.

#### Acidosis in Children.

Dr. H. CHARLES CAMERON (London), on November 16th, read a paper on "Some forms of acidosis in children," limiting his remarks to periodic or cyclical vomiting and allied conditions. He reviewed recent advances in knowledge of the biochemistry of the blood bearing on the subject, especially the factors involved in regulation of pH and in the formation of the ketone bodies. He showed that in the ketosis of cyclical vomiting the pH of the blood was unaltered though alkaline reserve was diminished and pulmonary ventilation increased. The acidosis was, therefore, in the majority of cases a compensated one, and the symptoms were due to the effort of the body in keeping the hydrogen ion concentration constant. Once this compensatory mechanism failed the condition became one of extreme danger, and the symptoms were referable to the alteration in pH. He emphasized the importance of intake of a correct carbohydrate-fat ratio showing that excess of fats resulted experimentally in ketosis, while carbohydrates had an antiketogenic action. Comparatively little biochemical research had been done in connexion with cyclical vomiting, but Wilson Levine and Rivkin had made observations which suggested that the subjects of this condition assimilated fats with greater readiness than the normal child. Turning from the biochemical aspects of the matter, the lecturer gave a vivid picture of the type of child in whom cyclical vomiting occurred—nervous, amyotonic, with unstable peripheral circulation, and showed that minor degrees of periodic illness, not reaching the level of severe vomiting, were characteristic of these children. He dealt fully with the management of such children, showing the value of diminishing the ketogenic elements in diet and of maintaining the alkaline reserve. He specially urged the importance of avoiding those environmental factors which experience had shown to be liable to precipitate attacks—for example, overexertion, excitement, febrile affections. Dr. Cameron concluded by emphasizing the importance of careful study of the early symptoms and constitutional peculiarities of the subjects of cyclic vomiting.



## Reviews.

### A TEXTBOOK OF SCHOOL HYGIENE.

By the publication of his book *The Fundamentals of School Health* Dr. JAMES KERR, formerly school medical officer for London, has filled a gap in medical literature. Many excellent books on school hygiene, among them two by Dr. Kerr, have been written, and some of them have gone through several editions; they have stressed some one or other side of school work with which the author has been most familiar. The administrator in school medical affairs has rarely had an equal familiarity with the purely medical, or what is commonly called the "clinical," side, while those most engaged in the clinical work have been less cognizant of, or perhaps less interested in, the administrative side. So that it has come about that until now there has been no work on school hygiene in any way comparable to the admirable "systems of medicine" which we have had for generations down to Allbutt's and Osler's. But the deficiency has been made good. Dr. Kerr has had the good fortune to be both clinician and administrator. He was a clinician first, and throughout a long and distinguished career of administrative work of the greatest responsibility, both in Bradford and in London, he has never lost his enthusiasm for clinical work. He has remained a clinician. Accordingly, his book exhibits in a high degree the outlook of the accomplished administrator inspired by clinical insight.

It is no easy matter to give a fair impression of a volume of this order within the compass of a review. It contains nearly nine hundred well filled pages, and is obviously the result of patient recording and checking of accumulated facts during many years. Dr. Kerr has in fact been concerned with school medicine from the beginning. He was the pioneer of school medical work in Bradford, and again in London. The great organization that now exists in these two cities and in every part of the country came into being contemporaneously with his work. Few have any conception of its vastness, even if attention is confined to London. It is all based upon beginnings that were venturesome, or so thought at the time, though they have proved sound. Dr. Kerr's original ventures were planned with rare good sense, so that there has been little "reconstruction," but always further growth on the original lines of the conception. In writing this volume Dr. Kerr has gathered up his experience and followed it to the present-day development of an established system of health culture the like of which has never before been seen. Such an achievement is as rare as the privilege of seeing ambitions fructify in the fashion that he has seen his.

The book is a library. No side of school work is forgotten. Each section is dealt with, whether it be heredity, growth, physique, play, nutrition; or the more medical conditions of dental hygiene, nutritional diseases, and malnutrition as shown in crippling effects; or the educational side as exemplified in the conditions of elementary schools, of special schools, and the desiderata of sunlight, good artificial light, sanitation, facilities for washing, warming, and the choice of building sites. We have the whole gamut of clinical entities such as speech defects, eye, nose, and ear defects, and mental disabilities and their numerous correlations. All these are effectively dealt with and in well balanced style. The achievements of the growing company of workers in school medicine are liberally recognized. References abound to original literature. Withal the book is intensely practical. It is intended for the use of workers in the field, in the schools, for their assistance in their daily endeavour to secure better and still better conditions for the children.

Criticism of minutiae would be hypercriticism. But in a second edition—and we judge there will certainly be an early demand for one—we should welcome a fuller index of facts, a separate index of authors, possibly also an

extended bibliography, giving titles of papers referred to as well as of publications in which they appeared. Such additions would assist research workers. They would take some additional space, but some saving might be made by the omission of a few of the less necessary illustrations.

Every local education authority in the country might well provide its medical staff with a copy of this work; and it is likely that the technical staff, besides the medical staff, would be diligent readers of it.

### DISORDERS OF METABOLISM.

PROFESSOR ACHARD is so much in earnest about the special argument of his book *Troubles des Echanges Nutritifs* that he has been at pains to introduce some hint of it into the title. In translating this as "Disorders of metabolism" we therefore do the author something less than justice, though, perhaps, we more adequately describe the scope of the book than would a literal translation. Professor Achard insists that the time has arrived in the evolution of medical thought when abnormal conditions should be described no longer by the symptom-complex in evidence, but rather in terms of the departure from complete physiological orderliness which is involved. With such an aspiration few will quarrel, but they will perceive that its logical pursuit in a comprehensive textbook demands a dogmatic physiology and a very definite conception of what a well ordered animal is.

The author defines the living organism as a system in equilibrium with its environment. Physical chemists will find occasion for pause, but the definition will serve, and for the present purpose it serves very well, for it gives to metabolism a special significance which Professor Achard uses to good purpose. The nutritive exchanges comprise the whole traffic with the outer world which is involved in the maintenance of this equilibrium, and find expression in physical or chemical balance sheets of intake and output. In the case of the organism with which medicine has particular concern the system is not once complicated and simplified by the presence of a stabilized environment in the form of a circulating fluid, and so the equilibria between blood and the exterior, on the one hand, and between blood and the tissues, on the other, must occupy the chief attention of students of metabolism. Whatever prejudicial alteration occurs in the external environment, whatever is responsible for defective absorption or impaired exchange, whatever leads to imperfect utilization of nutritive materials within the tissues or impedes the necessary disposal of waste products will be betrayed in the balance sheets as a disturbance of the nutritive exchanges—a disorder of metabolism. Among the defects of the environment there are considered natural and artificial changes in the gaseous atmosphere leading to disturbances in the respiratory exchange and the chain of readjustments, notably in the electrolyte balance of the blood, which these set in motion. Again, an unbalanced diet, lack of certain minerals, vitamins, or efficient proteins are defects in the same category which will have consequences uncovered in the nutritive exchanges. Disorders of the circulation, be their origin pulmonary, cardiac, or nephritic, errors of utilization, absorption, or excretion, whatever be the primary lesion, failure of co-ordination by nervous, vascular, or endocrine agencies, all invade the field of nutrition through the modifications which they impose on the equilibria of the blood. The author takes a catholic view of nutrition. He demands much of physiology, and sometimes we find him quoting confidently relations which are yet unproven and straining a little beyond the cortitudes of knowledge, filling in detail where the eye has not yet been focused.

The book appears in two volumes for the suitable reason that it is too bulky to be constrained conveniently within one cover. The first and larger volume deals with gaseous, aqueous, and mineral exchanges, and each chapter involves a physiological introduction, a pathological discussion, and a consideration of the therapeutics in the disorders

*Fundamentals of School Health.* By James Kerr, M.A., M.D., Consulting Medical Officer, London County Council. London: Allen and Unwin Ltd. 1926. (Roy. 8vo, pp. xvi + 893; 163 figures.)

*Troubles des Echanges Nutritifs.* Par Ch. Achard. Paris: Masson et Cie. 1926. (Roy. 8vo: Vol. I, pp. vi + 695; 107 figures. Vol. II, pp. 625; 60 figures. 110 fr. the two volumes.)

uncovered. In the second volume, following the same plan, there come under review the nutritive exchanges of carbohydrate, fat, protein, urea, uric acid, ketone bodies, and other intermediate metabolic products.

The argument upon which the diagnosis rests is carried over into the therapeutics. The problem is to re-establish a normal equilibrium either by removal of the cause of disturbance or, if this be impracticable, by such modification or artificial compensation of the environment as will tend to reimpose the normal balance. To this environmental therapeutics the author brings many inventions of man to assist. Control of diet naturally takes prominent place, and it is pleasant to record that so enthusiastic a dietetician makes the caution that since the intention of a régime is that it should be followed, it should therefore be followable and of such sort as to minimize the inconvenience and distaste inevitable in any disciplining of the appetites.

The form of presentation which has been described involves the appearance of some specific disorders in several chapters, so that the whole story of a particular disease cannot be found in one place. But what has been done has been done with intent, and the path of the desultory and of the purposeful reader is rendered easier by an ample index. Professor Achard deserves our thanks for a sincere attempt to bring closer the ways of the clinician and the ways of the physiologist. He merits thanks also for providing a book which, apart from its special argument, is a sound review of the state of knowledge in the field of normal and disordered metabolism. The price fixed by the publishers is not extravagant.

#### DISEASES OF THE EAR.

It is nearly twenty years since the late Mr. Hunter Tod published a book on *Diseases of the Ear*.<sup>3</sup> It was of moderate size and gave in plain language a simple and adequate account of the subject, and its excellence was proved by the large circulation it soon acquired, for it was reprinted three times. The untimely death of Mr. Tod, a source of profound sorrow to numerous friends and colleagues, prevented him from producing a second edition, and Dr. Cathcart has undertaken this task; he has retained the general style and appearance of the original edition, but, although he has endeavoured to make it as he believes Mr. Tod would have made it, the long interval has rendered necessary so many changes and additions that this effort has not, and could not from its very nature, have been entirely successful. It is a commonplace that it is more difficult to write a comparatively small book of this kind than an exhaustive treatise, because it is so difficult to know what should be left out. Dr. Cathcart, in trying to say what he believes Mr. Tod would have said, shows an inclination to touch on some fresh matters so lightly that the information is insufficient, though everything new has been introduced in a sympathetic and understanding spirit. Apart from this criticism of a feature which was perhaps unavoidable, there can be nothing but praise for the care and accuracy with which the new edition has been compiled, and it remains a safe and rational guide to the practitioner and student for all conditions commonly encountered. The illustrations are fairly numerous and suffice for their purpose, but a few are crude and in an artistic sense fall below the standard of the book, both in its text and general style. The new edition should retain the popularity of the former, whilst there will be many grateful to Dr. Cathcart for this graceful tribute to the memory of Hunter Tod.

*Politzer's Text-book of Diseases of the Ear*<sup>4</sup> has long been the sheet-anchor of every serious student of otology, and must be in the possession of every aural surgeon for

reference. There is no other book which gives so broad and comprehensive a survey of otology, whilst at the same time every detail relating to anatomy, physiology, and pathology is studied with minute care. The sixth edition will therefore be welcome, but the responsibility for any changes now rests with Dr. BALLIN, who translated the last two editions at the request of the late Professor Politzer. These changes are not actually very numerous, but they are more important than a casual inspection might suggest, for the editor gives very few references to his sources of information, whilst the original references of Politzer are retained in almost precisely their previous form. A certain amount of obsolete matter has been omitted to make room for these alterations, and the editor might have been even more drastic, but it has to be remembered that the work is Politzer's, and that for many years it will remain the classical work on otology, based on sure and unchanging foundations. The editor therefore has exercised good judgement in restraining the temptation to alter the original, whilst at the same time he has actually omitted nothing of essential importance that has been produced during the last fifteen or sixteen years. This refers chiefly to the labyrinth, and there is a sufficient account of the various operations that have been proposed, most of which only differ in minute details, the objective for the most part being the same. The prognosis of meningitis is possibly not quite so gloomy now as it was in 1909, and in this part more recent observations might have been mentioned. The main consideration, however, is that this great work is still preserved almost intact, the attempt to give it a modern setting being in reality almost unnecessary. The general style of the volume is almost unaltered and the familiar illustrations, so many of which were from anatomical and pathological specimens in the author's collection, are retained, and are by no means the least instructive part of the book.

Dr. CATHEART introduces his book on *The Treatment of Chronic Deafness by the Electrophonoid Method of Zünd-Burguet*<sup>5</sup> with a robust but unconvincing defence of empiricism. It is a commonplace that much medical treatment is empirical, but this is a misfortune and calls for apology rather than defence. The fact that the treatment recommended in this book is empirical in no way discredits it, but how much better the author and reader would feel if it had a sound scientific basis. After calling attention in this manner to a weak point in his thesis without any real necessity, the author then discusses the prevention of deafness, the best method of removing adenoids, and a variety of other matters on which he holds strong opinions. This all makes interesting reading, but it is not apposite, and the reader is half-way through the book before arriving at the "osses." The second half of the book begins with an historical note on methods of auditory re-education. There follows a careful description of the apparatus of Zünd-Burguet and the manner of employing it. Finally there are records of a hundred cases of deafness, showing that sixty-eight improved. It is not possible to tell from any tests made beforehand whether the treatment will be successful, and it is necessary to give twelve sittings to ascertain this. The author says of this, "There is a factor in deafness as yet unrecognized, the presence of which—or it may be the absence of which—determines the result." In the cases treated the pathological lesions were very varied, and this suggests that the factor to which the author refers may be a functional one, for a functional defect is often added to the initial lesion in the hard of hearing. It must be obvious to anyone dealing with the deaf or partially deaf that the "malady of not marking" is only too frequent, and this may explain the possibility of re-educating some of them. The most remarkable claim is the relief from tinnitus, a condition of which such patients frequently complain more than of their deafness. It is quite clear that the method to which the author has devoted much time and study is worthy of serious attention.

<sup>3</sup> *Hunter Tod's Diseases of the Ear*. Revised and largely rewritten by George C. Cathcart, M.A., M.D. Second edition. Oxford Medical Publications. London: Milford, Oxford University Press, 1926. (Cr. 8vo, pp. xiv + 333; 87 figures, 4 plates. 10s. 6d. net.)

<sup>4</sup> *Politzer's Text-book of Diseases of the Ear*. Sixth edition, revised and largely rewritten by Milton J. Ballin, M.D., Ph.D. London: Baillière, Tindall and Cox, 1926. (Med. 8vo, pp. xii + 776; 302 figures. 31s. 6d. net.)

<sup>5</sup> *The Treatment of Chronic Deafness by the Electrophonoid Method of Zünd-Burguet*. By George C. Cathcart, M.A., M.D. Oxford Medical Publications. London: Milford, Oxford University Press, 1926. (Cr. 8vo, pp. viii + 88; 1 figure. 4s. 6d. net.)

## TECHNICAL EDUCATION FOR INDIANS.

*Technical Education*\* is written for Indians, by the Principal of the School of Chemical Technology, Calcutta, as a guide to careers in the Indian public services and in commerce and industry. In a foreword Sir Willoughby Carey describes it as an excellent effort to clear up much confusion of thought which still exists as to the meaning of technical education in Bengal and its uses in assisting to reduce unemployment amongst the educated middle-class young men of the province.

Mr. GHOSH, the author of the book, goes further, and endeavours to show how technical education is a means of providing permanent and profitable employment, not only for the educated middle class, but also for the artisan class, the agriculturist, and the Anglo-Indian. In an opening chapter on the evolution of technical education in India he emphasizes the failure of previous attempts to introduce this form of education amongst the natives of India, chiefly because an erroneous distinction was made between technical and industrial education. Indian youths have been mistaken in persuading themselves to believe that the attainment of literary qualifications carried chances of employment, whereas their best chances are in becoming educated in agricultural and technical chemical sciences and in the crafts. From this point of view the author outlines a scheme of technical education which is suitable for the artisan or any other class, and which will give a prospect of earning a living by independent professional or technical work. By this he means that each caste or class should continue its traditional occupation, but should be trained to a higher degree of efficiency in it in the light of modern science. He remarks, for example, that the agricultural caste must remain agricultural in spite of a higher education. Much space is devoted to the subject of chemistry, especially in connexion with agriculture, medical research, and pharmacology, in all of which branches of knowledge technological education affords prospects of employment to the Indian student.

Mr. Ghosh takes long views and wide views of the subject, and he writes with the object of rousing his fellow countrymen from that lethargy which disinclines them to accept manual work and leads to a false sense of dignity in office and administrative work requiring literary qualifications. More than half of the book consists of twenty-six appendices of information regarding the regulations for admissions to, pay and appointments in, and latest particulars of, all-India and provincial public services, and of careers in commerce, trade, and industry. A book of this kind should prove of much value to Indians, and we heartily wish its author success in his attempt to deal with the problems of unrest and unemployment among his fellow countrymen, and to provide them with what he calls an introduction to health, wealth, and happiness.

## NOTES ON BOOKS.

DR. J. F. HALLS DALLY's manual on *High Blood Pressure: Its Variations and Control*,† which was reviewed in our columns three years ago (1923, ii, 1101), has now been revised and enlarged in the second edition, which costs rather more, and has been somewhat delayed by, among other causes, destruction of the type. The work has been kept thoroughly up to date—for example, Major's work on hepatic extract in reducing high blood pressure is recorded, but it does not appear that the author has employed it. An investigation of the blood pressure in the two arms in pulmonary tuberculosis does not support Dr. R. J. Cyriax's conclusions as to the significance of differences between the two sides. There are references to the late Sir Clifford Allbutt's posthumous book (1925), to the discussions at the Annual Meeting of the British Medical Association at Bath and at the Royal Society of Medicine on hyperpiesia, and Dr. R. Fortescue Fox has provided a section on the treatment by baths and waters. This edition preserves the useful character of the manual.

\* *Technical Education*. By J. C. Ghosh, B.Sc. (Mech.), F.C.S. Calcutta: Thacker, Spink and Co., 1926. (Cr. 8vo, pp. ix + 316. Rs. 4.8 or 8s. net.)

† *High Blood Pressure: Its Variations and Control. A Manual for Practitioners*. By J. F. Halls Dally, M.A., M.D., B.Chir. Cantab., M.R.C.P. (Lond.). Second edition. London: W. Heinemann (Medical Books), Ltd., 1926. (Demy 8vo, pp. xvi + 156; 20 figures. 12s. 6d. net.)

Even in the early days of training the mental nurse is liable to be faced with situations which demand prompt and efficient action. It is therefore desirable that she should be supplied at the outset of her career with a guide indicating the rules to be observed in dealing with patients and how to react to emergencies. Such information is supplied in Dr. RICHARD KAGEN's compact little volume on *Hints to Probationer Nurses in Mental Hospitals*,\* the second edition of which has now been issued. It is a book which the probationer will do well to obtain, and, as the author advises, to read over frequently during the first few months of her training. The first part deals with rules, emergencies, fire, ward duties, homicidal patients, and "escapes"; the second provides a brief introduction to psychology which will help the nurse to understand the more detailed account of the mind given in the larger nursing manuals.

A recent review in these columns reported the reappearance of Dr. OTTO FÜRTH's book on problems of physiological and pathological chemistry† in a new guise. From the travails of re-editing the "problems" had emerged, east in a wider mould, as a textbook. Only the first part of the first volume was then in our hands, and we did not hesitate to commend it, finding that the spirit of the parent volume remained in the more comprehensive treatment which merited the change of title. This section dealt with the organic chemistry of the substances of living origin and with the chemical characterization of the blood. Of the second part it need only be said that it deals in a similar manner with the mechanism of the muscle process, with the chemistry of the brain, connective tissue, and bone, and with the secretory function of the liver, kidney, mammary gland, and thymus. All is adequate, up to date, judicious, and alive. The first volume will be completed by a section on the chemistry of the organs of internal secretion, and a promise is made that this will be followed by a second volume devoted to the chemistry of metabolism.

Dr. PIERRE LEREBOUTLET's little work on influenza,‡ which forms the latest addition to the series entitled "Les actualités médicales," is based on his experience of the disease during the pandemic of 1918-19 and of sporadic cases since. The book has five parts, devoted respectively to epidemiology and bacteriology, symptoms and complications, morbid anatomy, diagnosis, and prophylaxis and treatment. The bibliography consists of references to French literature almost exclusively, but the work of some British and American observers receives recognition in the text. The book may be recommended as being a lucid and practical exposition by a leading French physician.

\* *Hints to Probationer Nurses in Mental Hospitals*. By Dr. RICHARD KAGEN, M.D. (Aberd.), Major R.A.M.C. 2nd Class. London: Lewis and Co., Ltd., 1926. (Demy 16mo, 12s. 6d. net.)

† *Lehrbuch der Physiologie*.

‡ *Physiologie*.

II. *Leber*.

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10 figures. 8 fr.

† Otto Fürth. Leipzig: 116. M. 15.

‡ Par 16 Dr. Pierre

6. (51 x 71, pp. 144;

## ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the committee forty cases were considered, and £440 was voted to thirty-one applicants. The following is a summary of some of the cases relieved.

Daughter, aged 66, of L.R.C.S. who died in 1883. She used to make about 25s. a week by teaching, but since an attack of influenza two years ago she had been unable to work. A friend left her £42 a year, and she receives £10 from a relative; her rent is 6s. a week. Voted £18 in twelve monthly instalments.

Widow, aged 68, of L.R.C.P. was a clerk until Christmas, 1924, but has found it very difficult to get a post since. Her late husband was an annuitant of the Fund. The applicant receives £52 from the rent of a house, but has to pay interest on mortgage and ground rent and repairs. Voted £5 while seeking employment.

Daughter, aged 63, of M.D. who died in 1913. She has maintained herself by taking temporary posts as a clerk, but owing to recent illness has asked the Fund for further assistance. She has an annuity of £40. Rent and gas amount to £44 per annum. Private typewriting and clerical work brought her in about £78. Relieved twice £17 10s.; voted £12 in twelve monthly instalments.

Daughters, aged 64 and 66, of M.R.O.S. who practised in Wales and died in 1873. They live in a two-roomed but for which they pay £1 per annum ground rent. One has the R.U.K.A. annuity of £26; they made £5 from poultry, and friends gave £7. Relieved ten times jointly £154. Last year voted £24 each in monthly instalments, which was renewed.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., C.B., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 58, Great Marlborough Street, W.1.

## British Medical Journal.

SATURDAY, DECEMBER 18TH, 1926.

### EPSOM COLLEGE.

EDUCATION on right lines is an almost indispensable precedent of success in life; it is also an essential condition of the progress of any science which requires from those engaged in it an unselfish outlook, together with patient and honest work. The medical profession as a whole is, therefore, under a double obligation to support the only public school which has as a primary aim the provision of special facilities for the sons of medical practitioners to receive such training as will enable them to take up the study and practice of modern medicine. Epsom College, as we have often had occasion to mention, is leaving no stone unturned to ensure that the first stages of the long medical curriculum should be adequate in the instruction given, and in the inculcation of those ideals of scientific discrimination without which diagnosis is impossible and treatment becomes empirical. We referred on July 31st (p. 218) to the opening of the new chemical block, with its unsurpassed facilities for teaching this important preliminary in the medical course. The provision for instruction in biology has also received the fullest possible attention.

Something more is still required, however, since Epsom College should furnish a similarly high standard in all respects. We therefore invite special attention to the appeal of Dr. Raymond Crawford which is published at page 1195 of this issue. Dr. Crawford pleads for such assistance as will enable the sanatorium accommodation of the College to be brought up to date and made fully adequate. At present this is patently not the case. The wooden hut which is the only building available at the College at present for the isolation of all varieties of infectious disease is far from fulfilling the most elementary requirements for a school of its size. In the light of modern knowledge the sanatorium must also be considered unsuitable; it is not only inadequate, but also uneconomical to administer. The situation of the general school buildings is fine and the régime healthy, and so far no serious emergency has arisen; but the steady growth of the College, due to its increasing popularity, has created a problem which the council is compelled to face without further delay. As Dr. Crawford observes, the College, with its Royal Medical Foundation, ought to be a model for other schools in respect of its medical equipment, instead of being compelled to look enviously at many other institutions where better conditions obtain. The provision of a modern, but not luxurious, sanatorium, and of an adequate isolation block, is an urgent necessity, and the estimated outlay of £25,000 cannot be regarded as extravagant. Experience shows that for a school of this size the main sanatorium should afford accommodation for twenty boys, and the isolation block be ready to receive forty in the event of an epidemic. It is a reproach that the sons of medical practitioners during their education should be at a disadvantage

in respect of their safety from infection and their treatment during illness as compared with boys who are being educated in schools less intimately associated with the medical profession. We can therefore support the appeal of Dr. Crawford with confidence that its justice will be widely recognized, as a matter of sympathy with individuals and of corporate pride in a great medical scholastic institution.

We have previously suggested that many would gladly contribute if they understood that even small donations were welcome. If every registered practitioner contributed 10s. this would supply the whole amount required; it is probable that very many would be glad to help if the claim of the College on their generosity were clearly presented to them. In the event of Branches and Divisions seeing their way to support the appeal shortly to be made by the British Medical Association Charities Fund, Epsom College, in common with other charities, will derive considerable benefit. Co-operation between the Association and Epsom College is becoming increasingly close, as is only right, and it may be mentioned that such difficult problems as the continuance of the education of a boy at the College when the death of his father—a medical practitioner—renders this impossible for financial reasons, are being sympathetically and practically considered. In our advertisement columns will be found information concerning the College, its foundation scholars and pensioners. Armed with such details medical practitioners may be able to bring the claims of the institution to the knowledge of those of the general public whose circumstances will permit them to make a return to the profession as a whole for services received from its members. Gratitude expressed in this way would be of lasting benefit to a school which has already achieved much and promises still greater results in the future.

### BACKFIRE FRACTURES OF THE FOREARM.

EVER since internal combustion engines, which the driver had to start with his own hand, came into general use fractures of the forearm have been well known to occur from the engine backfiring while the chauffeur is in the act of turning the starting handle. The exact mechanism of these fractures and their varieties have been little investigated, and their treatment has been passed over by most authors, who have included them in general terms among fractures of the same region from other causes. It was time that more exact knowledge of their pathology and treatment was put on record, as Mr. Harold C. Edwards has done in the October number of the *Journal of Bone and Joint Surgery*,<sup>1</sup> the official publication of the American Orthopaedic Association and of the British Orthopaedic Association. Mr. Edwards deals with an experience of forty-two fractures which were treated in the fracture department of King's College Hospital.

All these fractures occurred in the lower third of the radius, but sometimes the styloid process of the ulna is broken off, or more rarely the shaft of the ulna may be fractured. From the histories given it is in some cases impossible to decide whether direct or indirect violence caused the fracture, for the shock of the explosion and the rapidity of the movement causing the injury may render the subject of it unable to follow the sequence

<sup>1</sup> *The Journal of Bone and Joint Surgery*, vol. viii, No. 4 (Old Series, vol. xxiv, No. 4), Boston, Mass., October, 1926, p. 702.

of events. In some instances the history given is clear, to the effect either that the handle was torn from the grasp and flew round and struck the forearm or wrist, or that, despite the explosion, it did not leave the chauffeur's hand. But in other cases all that the sufferer knows is that something happened and he found himself nursing a damaged limb. The precaution adopted by many chauffeurs of keeping the thumb behind the handle, parallel with the second metacarpal bone, instead of encircling the handle, does not seem to be very efficacious, probably because the consequent position of dorsiflexion is obnoxious.

Out of the forty-two cases recorded by Mr. Edwards, ten were situated at the junction of the middle and lower thirds of the shaft of the radius. (In one the ulna also was fractured.) These were all almost certainly due to direct violence. In eight the fracture was through the base of the styloid process of the radius, with or without fracture of the styloid process of the ulna. There were seven cases of "Colles" fracture, usually from indirect violence, six of "high Colles"—that is, from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches above the lower articular surface of the radius—probably due to direct violence. In four the lesion was separation of the radial epiphysis, and in two fracture through the styloid process of the radius and posterior margin of the radial articular surface. The remaining five cases are classified as "mixed types," including injuries to the carpal and metacarpal bones. It thus seems probable that far more fractures are caused by indirect than by direct violence. It is of interest to note that in young persons (15 to 20 years), instead of separation of the epiphysis, as might have been expected, fracture occurs.

As to treatment, Mr. Edwards prefers Carr's splint after manual reduction, verified by x rays after the splint is applied. Early massage is to be avoided. When the fracture cannot be correctly reduced, or in old neglected cases, open operation and osteotomy is recommended. It is most important to correct the backward tilt of the lower fragment, which interferes with the proper play of the extensor tendons. In old cases the excision of a wedge of bone or the performance of a curvilinear ("ball and socket") osteotomy may be necessary to achieve this. For other interesting details of diagnosis and treatment we refer the reader to the original paper, which is worth study.

With the increased use of self-starters this injury may be expected to become rare among the drivers of light passenger and private cars, but the engines of the enormous and increasing number of heavy lorries, omnibuses, and charabancs are still started by hand, so that we must look forward to a continued supply of backfire fractures among their drivers for some time to come.

The publication of this paper, based on experience obtained in the fracture department of King's College Hospital, illustrates the advantages of this form of specialization. Had these forty-two cases been scattered among the services of various surgeons their systematic treatment and their collection and study would have been more difficult, and such results as could have been attained and recorded would almost certainly have been less valuable to the student and pathologist, and, last but not least, less satisfactory to the patients. We devoutly hope that the example of King's College and some other hospitals in the provinces as well as London will be generally followed as regards the treatment of fractures.

#### GIFT FOR MIDDLESEX HOSPITAL NURSES.

At a recent meeting of the court of governors of the Middlesex Hospital it was announced that Dr. W. Essex Wynter, consulting physician to the hospital, had formulated a proposal to devote, after his and Mrs. Wynter's deaths, his house, known as Bartholomew Manor, Newbury, and two groups of sixteenth century cottages, together with an endowment fund for their maintenance and upkeep, to the Middlesex Hospital, to be held in perpetuity as a home for retired members of the nursing staff. Bartholomew Manor is possibly the oldest intact dwelling-house in the country. As a social unit the manor certainly existed in Saxon days, consisting at the time of the Conquest of thirty primitive huts or hagea. Pembroke, the Earl Marshal, owned the manor in Stephen's time, and, siding with Matilda, he was involved in a dispute with the Church and was cursed, him and his seed; though each of his five sons succeeded to the manor of Newbury none left male issue. In the reign of Richard II the manor was valued at £3, while later the manor house and demesne lands were associated with Sandford Priory in the diocese of Salisbury. The ownership finally passed into the hands of the Crown, and Charles I granted the manor to the town of Newbury for a consideration, while the Church became possessed of the demesne. The Ecclesiastical Commissioners eventually parted with the freehold in 1888. Dr. Wynter is now in possession of the manor house, a demesne of four acres, and two groups of cottages. One group of four cottages fronts upon the pre-Roman road from Gosport to Birkenhead at the eastern boundary of the manor, and faces inwards over a little courtyard and low brick wall to where, across a long lily pond, lies the old garden of the manor. The other group lies south of the manor, and consists of twelve cottages built in 1550. These buildings were recently acquired from the corporation of Newbury on the undertaking that the group should be preserved in perpetuity. The manor house itself has been reverently and sympathetically restored, and the cottages are gradually being reconstructed with contemporary material, purchased here and there all over the country, so that the design and character of the beautiful old buildings is being preserved, while the interiors are being arranged to provide a comfortable sitting room, bedroom, kitchen, and modern bathroom. Two retired sisters are already living in two of these self-contained homes, and eventually there will be accommodation for some sixteen sisters and nurses, each independently housed, yet with a community interest and with spacious beautiful rooms in which to meet. This magnificent gift, unique alike in its beneficent purpose, its self-sufficiency, and its historical and artistic interest, has been received by the authorities of the hospital with the deepest gratitude. For many years Dr. Wynter has been devoting himself to the work of restoration and preparation, and by his thoughtful generosity he is providing a place of great comfort and happiness to which members of the nursing staff of the Middlesex Hospital will be privileged to retire. They will be fortunate.

#### THE WELLCOME RESEARCH INSTITUTIONS AND MUSEUMS.

THE reconstructed and enlarged museum and laboratories of the Wellcome Bureau of Scientific Research, which were reopened by the Minister of Health on December 8th, would surely have delighted the late Sir Jonathan Hutchinson, who put so high a value on the teaching power of a properly arranged and equipped museum, and showed his faith in them by maintaining three such at his own cost. Mr. Henry S. Wellcome, whose absence was regretted at the ceremony, may be said to have the Hutchinsonian vision, and fortunately is blessed with much greater means



of carrying out his ideas. Some men would have rested content with having founded and supported such institutions as the laboratory at Khartoum and the Historical Medical Museum in London, but these, great as they are in interest and in usefulness, form a comparatively small part of Mr. Wellcome's contributions to the progress of research and of scientific education. The ceremony was held in the hall of the new house erected by the Society of Friends in Endsleigh Gardens. Mr. Neville Chamberlain, who presided at the opening ceremony, attributed the extraordinarily rapid advances in scientific knowledge of late years to the free intercommunication of ideas and discoveries between workers all over the world. No doubt there is much in this explanation, but we are more inclined to lay stress on the development of education and the enormous increase in the numbers of those who give their lives to research and invention, fostered by endowments, and by the enlightened self-interest of leaders of industry such as Mr. Wellcome. Sir Walter Fletcher gave an address on research and citizenship, in the course of which he drew attention to the way in which capitalism had rendered scientific advances possible, whether the capital in question was in private hands or had been given by public-spirited individuals to public institutions or corporations. He mentioned Charles Darwin, among others, as an instance of the former kind, and Sir Isaac Newton of the latter. Trinity College, Cambridge, supplied Newton with the necessities of life as well as with instruments of research, and Darwin could never have devoted himself to his life-work had he not inherited private means. As Sir Walter Fletcher pointed out, while the Bureau of Scientific Research and the laboratories are devoted to discovery, the museum is intended to be a great educational force—"a sumptuously illustrated textbook" designed to supersede to a great extent the old oral method, which was well enough when books were few and museums non-existent. The museum is intended to interest and instruct the layman as well as the professional student, so that he may realize in some degree the meaning and the importance of scientific research; and the lessons somewhat tardily learned by the captains of industry during the last quarter of a century may be also driven home to the minds of the great body of intelligent citizens, who will thus learn to "understand something of the difficult and lonely path the pioneer investigator has to follow." Sir John Ross-Bradford, in proposing a vote of thanks, drew attention to the fact that the meeting was held in the building erected by the Society of Friends, and that one of that body—Mr. Joseph Jackson Lister, father of Lord Lister—rendered minute investigations more practicable by his improvements of the achromatic microscope. Inspection of the museum and laboratories followed on the formalities of reopening, and all must have been struck by the excellence of the arrangement of the wealth of material displayed and the systematic way in which the intended lessons were set before the beholder. Mr. Neville Chamberlain showed his interest by spending a good deal of time in the museum, guided by the director-in-chief, Dr. C. M. Weuyon. The museum consists of twenty small halls and numerous laboratories and workrooms, as well as a library; but we are told in the handsome illustrated book presented to visitors that, large as the exhibit is, it can only be regarded as a beginning. We wish continued success and expansion to all the institutions under the control of the Wellcome Foundation Limited.

#### AN ULTRA-VIRUS OF TUBERCLE.

Struck by the high mortality among infants born of tuberculous mothers, Drs. Calmette, Valtis, and Lacomme have carried out at the Baudelocque Clinic in Paris investigations into the causes of their death. Observations on 357

infants born from 356 tuberculous mothers, together with reports by the three investigators on a certain number of those infants who died or were born prematurely, were communicated last month to the Académie de Médecine by Dr. A. Couvelaire. Dr. Calmette and his colleagues have come to the conclusion that, apart from trans-placental transmission of tubercle bacilli *in utero*, which must be very rare, it is legitimate to assume that there can be transmitted through the placenta a virus of tubercle, which does not produce any specific anatomical lesion, but is indicated by the presence of an acid-fast bacillus in the lymphatic glands and viscera of the infant. The fluid from the glands or viscera, even after filtration through porcelain, will cause the same acid-fast bacillus to appear in the glands when injected into guinea-pigs. The result is the same whether the fluid is obtained from prematurely born foetuses, from infants who die in the first few weeks, or from those who die of common complaints and without progressive malnutrition. The infants from whom the fluid was obtained had been entirely separated from their mothers, and had not received doses of the vaccine B.C.G. Drs. Calmette, Valtis, and Lacomme have thus been brought to assert the existence of an ultra-virus of tubercle, capable of transmission through the placenta as through a filter; a virus of which Koch's bacillus is a resistant form. Dr. Couvelaire's report brings out also the interesting fact that since 1923 the mortality among the infants of tuberculous mothers in the clinic has been reduced from 33 to 7.2 per cent. The higher mortality was due to imperfect separation of the infants from their mothers. The improvement has been brought about by employing wet-nurses, by the careful introduction of artificial feeding, and by the employment of trained and attentive nurses.

#### MIRROR-WRITING.

THE classic instance of mirror-writing is the notebooks of Leonardo da Vinci. Leonardo is supposed to have deliberately adopted this style of script as a sort of code to protect his writings from ecclesiastical censorship. But in certain of his drawings also the obliquity of the shading suggests that the pencil was held in the left hand, and Cardinal Louis of Aragon, who visited him during the last two years of his life, stated that he was suffering from some form of paralysis which impaired his manual power. It seems possible, therefore, that the mirror-writing of the man whom Browning assigned to cover one of the walls of the New Jerusalem was a consequence of right hemiplegia. Dr. Macdonald Critchley, who read a paper to the Neurological Section of the Royal Society of Medicine on December 9th, showed a number of examples of mirror-writing by right hemiplegics, but he added that the same phenomenon was found in some normal children just learning to write, as well as in more backward and feeble-minded children, in whom it was particularly associated with left-handedness. He recalled that mirror-writing was not uncommon among the insane also, and it was seen, again, in cases where there was partial switching off of consciousness or attention, as in certain states of hysteria, during the effect of depressant poisons, and in mediums at spiritualistic séances. Mental abstraction might in some cases lead to mirror-writing, and telegraphists had been observed to jot down messages mirror-fashion with their left hand while their right hand was on the keys. Dr. Critchley expressed the view that an adequate explanation of the condition would include both physiological and psychological causes, which entered in different proportions into different cases. From a physiological point of view it had to be remembered that centrifugal movements were the most common for both hands, and that most of the natural movements of one hand were the mirrored replica of those

of the other. The right hand, for instance, drawing a line with chalk on the blackboard, would draw naturally from left to right, and the left hand from right to left; the circle would be drawn clockwise with the right hand, anti-clockwise with the left. The repetition of such a highly complex act as writing facilitated subsequent performance of the same act, which became more automatic and less a matter of attention. But the question was, why did not everyone write mirror-fashion when using the left hand? The main reason, he suggested, was education. People had learned, as the result of experience, that writing, in European languages, ran from left to right; consequently mirror-writing struck them as being incorrect. But in certain cases in which this faculty of perception was in abeyance mirror-writing was apt to appear, and severe damage to the left brain also favoured this manifestation. Even in the normal and educated child the habit of forming such letters as "s" and "m" the wrong way round might persist for some time. Except in hemiplegia and congenital word-blindness, the mirror-writing patient usually realized that something was wrong with his script, and as a rule he could not read it. Dr. Critchley had also some interesting reflections to make on the influence of the ancient alphabets. The Phœnician, from which the modern alphabet was derived, ran from right to left, and for a long period there was considerable doubt as to the orientation of words. In some ancient inscriptions the lines were found reading alternately from right to left and from left to right. A change in direction probably corresponded to an alteration of the handedness of the race. In the ensuing discussion Dr. George Jones said that although he had had the opportunity of observing many who wrote Hebrew, which was written from right to left, he had never come across one who wrote in the reverse direction, and it was interesting to speculate what sort of script would be produced by a writer in Hebrew or Arabic, the only two living Semitic languages, who took to mirror-writing. Dr. Critchley, however, said that he had had one patient who, though she spoke English, could write only Hebrew; and she had right hemiplegia, and thereupon wrote Hebrew mirror-wise—she still wrote the words as a whole from right to left (the proper direction), but she formed the letters the wrong way round, so that, to give an illustration in English, the "b" would be a "d." Dr. Percy Smith said that in his experience of mental cases he had not come upon one case of mirror-writing, but he himself, having been originally left-handed, and acquiring right-handedness, was able to do mirror-writing, and he recalled that a fellow student of his at St. Thomas's many years ago used to keep his notes in mirror-writing, apparently to prevent cribbing. Dr. Millais Culpin, in some interesting remarks on left-handedness, expressed the view that at some period the Semite peoples must have been left-handed, and he quoted two passages in the Book of Judges (iii, 15-21, and xx, 16) in which emphasis was laid upon the skill of the left-handed. In Dr. Culpin's view left-handedness persisting in a right-handed race might be originally an expression of antagonism to environment or an unconscious protest against arbitrary conventions. Stammering, too, which resulted when the left-handed was constrained to use his right hand for the purposes for which he had hitherto used his left, was in the nature of a protest. A left-handed father frequently had a stammering child, possibly because, being a person of gentle obstinacy, he had pushed the child firmly and steadily along a particular road, and the stammer was a symptom of rebellion. As an instance of the curious manifestations of these reversals, Dr. Culpin mentioned the case of a girl who, when writing to her mother, always used her left hand and wrote mirror-fashion, but to her father and others wrote in the normal way.

## SIR JAMES CRICHTON-BROWNE.

In his long life (for, in spite of perennial youth, he has many years of experience, grave and gay) Sir James Crichton-Browne has played many parts: as a scientific alienist he trained many in his special subject, and made the West Riding Asylum famous for the men who worked there for a time, such as Sir Clifford Allbutt, Sir William Turner, and Sir David Ferrier; as Lord Chancellor's Visitor in Lunacy for many years; at the Royal Institution; and as prince of speakers, especially after dinner. In *Victorian Jottings from an Old commonplace Book* he has followed the example of his brother, the late Balfour Browne, in revealing some personal reminiscences, but they are veiled in the form of extracts from notes kept since student days, and, indeed, going back in substance to even earlier times. The reader, as he turns the pages full of kindly wit and shrewd wisdom, and now and then varied by deep feelings, as in the few lines on "The Death Chamber," can hardly help recalling Sir James's spoken words, with over happy phrase and appropriate story to adorn his point. Though a number of the "jottings" concern the humours of his professional experience, they do not, so to speak, smell of the shop. How seldom it is that a book like this, brimming over with stories, does not serve up at least a few venerable chestnuts; but Sir James has apparently given us only of his private store, and of personal experience. Many are the interesting personalities who appear, and of his own profession no one except Lord Lister has left such a deep and gracious impression as Dr. John Conolly of Hanwell, described as "a Wilberforce who devoted his life to the abolition of slavery of a particularly grievous kind." The coloured frontispiece is a most pleasing and life-like portrait of the author by "Spy." It is safe to predict that these jottings, which are Victorian only in date, will rapidly be sold out, for everyone who reads them will be struck with the idea that the book would make an appropriate Christmas present for his friends.

A UNIT FOR THE RESIDUA OF ENCEPHALITIS  
LETHARGICA.

LAST year the Metropolitan Asylums Board decided to establish at its Northern Hospital, Winchmore Hill, an experimental unit of 100 beds for children between 3 and 16 years of age suffering from the after-effects of encephalitis lethargica. Patients were admitted on November 13th, 1925, but the accommodation was not fully used until last April. The Board has now received from Dr. G. A. Borthwick, medical superintendent of the hospital, a report on the first year's working of the unit. Observation and research were at first hampered by the difficulty in securing resident medical officers, and no very definite curative results have been obtained so far; but the experiment has been full of interest, and the unit should at least prove valuable as a clearing house for patients suffering from the residua of encephalitis lethargica. On the advice of Dr. S. A. Kinnier Wilson, consulting neurologist to the Board's mental hospitals, no patient below the age of 3 years was accepted; hopelessly bedridden and slight cases with very few physical or mental symptoms were refused; patients reduced to the level of mental defectives were sent elsewhere; and no case of doubtful diagnosis was taken. The number of cases admitted during the year was 133. Of these, 12 have been discharged much improved, 6 were found to be in such a condition that further improvement was unlikely, 4 cases were unsuitable for the unit, and 18 patients were removed by their parents. The remainder are still under treatment. No death occurred during

*Victorian Jottings from an Old commonplace Book.* By Sir James Crichton-Browne, M.D., LL.D., F.R.S. London: Etcchells and Macdonald. 1926. (Demy 8vo, pp. vii + 344; 1 plate. 15s. net.)

the year. The report gives a summary of the protean sequelae—moral, emotional, intellectual, and neurological—of the disease. The routine procedure in the unit is to give at first no treatment except ordinary school and hospital discipline. Later a complete physical and mental examination is made, and the patient is classified, and thereafter a record of progress is kept. Pituitrin and thyroid extracts have been given when endocrine balance is upset, and hyoscine, belladonna, nicotine, and parathyroid in Parkinsonian cases; sunlight treatment, massage, gymnastics, and electricity have also been used, and luminal and bromides in restless cases. Most of the children showed psychic changes; milder cases did well with the ordinary discipline of the unit, away from home surroundings and the liability to be spoilt or brutalized. Severe cases, with querulousness, outbursts of temper, lying, thieving, sexual eroticism, etc., improved only slightly, and showed a tendency to relapse. Dr. Northwick advised that the unit should be continued for at least another year for further observation and research, and his recommendation has been approved by the Metropolitan Asylums Board. The report concludes with observations by Dr. T. H. Whittington, the visiting oculist, on ocular signs in 99 of the children. His general impression is that the ocular signs so common in the acute stage of the disease are comparatively rare in the post-encephalitis stage. Nineteen children, however, showed weakness of convergence; in twelve cases there was marked external strabismus; while the screen test showed the same symptom in six other cases.

#### THE CARE OF THE MENTALLY DEFECTIVE.

SEVERAL circumstances have lately combined to draw attention to the question of the provision that should be made for the mentally defective. At the recent conference held under the auspices of the Central Association for Mental Welfare one session was devoted to a consideration of the care of the mentally deficient outside institutions, and another to the need for the careful selection of children for special schools and the training of teachers for service therein. The Mental Deficiency Bill, which has been before Parliament this session, has been withdrawn, owing to the opposition which has developed at a late stage, due, it would appear, chiefly to objections to the definition of mental deficiency it contained, which is considered to be too wide. With the bill the hope of an administrative reform which has long been desired disappears; the bill proposed to give additional powers both to education and mental deficiency authorities in the classification of children leaving the special schools. It would have allowed education authorities to notify to the mental deficiency authorities children leaving the special schools, not merely for institutional care and for guardianship as hitherto, but for supervision also. Several important institutions for the feeble-minded have just issued their annual reports, and it is interesting to note and compare two of these which have been sent to us from the same area—that of the Royal Albert Institution, Lancaster, for the feeble-minded of the northern counties, and that of the Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded, with special reference to the Sandlebridge Institution. It is increasingly recognized, as was emphasized at the conference above referred to, that while feeble-mindedness must always of necessity remain a lifelong condition, quite a large proportion of those so afflicted are by no means anti-social in their behaviour, and can even be described as not entirely unsuccessful members of the community in the more humble spheres of life. With suitable instruction in the special school up to the leaving age of 16 years they are able, with a small amount of sympathetic supervision and control, to fill a useful place in society. A large number of mentally

defective persons, though probably a minority of those above the class of imbeciles, need permanent care in institutions or colonies. They need this for their own safety and happiness, for the relief of those who would otherwise be overburdened and crippled by the care they would have to give them in their homes, and in order to protect the community from their anti-social behaviour and relieve it from their complete economic uselessness. The former of the two institutions named above has the permanent care of some 800 inmates, and the latter of about 320. They are supported by payments from public authorities on account of feeble-minded persons for whom such authorities are responsible, and by voluntary contributions. A large number of devoted workers, paid and voluntary, medical and lay, are associated with their work and contribute to its success. The accommodation provided by such institutions throughout the country is as yet quite inadequate to the needs of the situation, and further pressure from public opinion and further increase of private benefaction are both required in order to stimulate further provision. The general nature of the work done in such institutions can be gathered from their annual reports. The variety of occupations or trades in which the inmates are instructed and engaged is very wide, and it is interesting to note how largely many of these, especially gardening and farming, are carried towards economic success, in addition to their great value for mental activity and social usefulness.

#### VISUAL STANDARDS FOR MOTOR DRIVERS.

THE increase in the number of accidents due to motor vehicles is naturally arousing a good deal of public attention, and there have been demands for the routine physical examination of drivers, especially of heavy commercial vehicles, before a licence is granted. It may be interesting, therefore, to recall the recommendations made about a year ago by the Ophthalmological Section of the American Medical Association with regard to vision of drivers of motor vehicles; they are two in number. The first was that the applicant must have vision of at least 20/50 in one eye and of at least 20/100 in the other eye, with or without glasses; applicants with less vision than 20/100 in the poorer eye may, under certain conditions, be qualified by a special board or county board. The second was that double vision shall disqualify. Each State was advised to establish a board consisting of two general practitioners or surgeons and one ophthalmologist, and that to it should be referred doubtful cases. It was suggested that persons with vision less than 20/100 in the worse eye, or even when this eye is blind, may in some cases be passed provided the vision of the remaining eye is superior to the general standard, and reaches 20/50 without the aid of glasses. It was ascertained that fifteen States required all drivers to be licensed; twenty require licences for those who drive for pay; owner-drivers do not need licences. Thirteen States require no licences at all. Thirteen States provide that all applicants for drivers' licences must pass a specified examination. The tests are varied; some relate to vehicle regulations, others to the mechanism of motor vehicles, personal road demonstrations, and one subjects wage-earning drivers to both an oral and a written examination. Twenty-two require no examination. Pennsylvania is the only State in which the law is mandatory for all drivers, providing that no licence shall be issued to any person who is physically incapacitated. A physically incapacitated person is defined as "any person who has lost the use of one hand or both, or who has lost the use of both feet, or whose eyesight is so impaired that with the aid of glasses he cannot distinguish substantial objects clearly at a distance of 150 feet, or who shall have less than 20 per centum of normal vision . . . or shall have less than 2 per centum of normal hearing."

## THE MEDICO-LEGAL SOCIETY.

LORD JUSTICE ATKIN AND MR. JUSTICE GREER ON  
"IRRESPONSIBILITY."

THE annual dinner of the Medico-Legal Society took place on December 10th, with Lord Justice ATKIN, the president of the society, in the chair. Among the guests were Mr. Justice Greer, Sir John Rose Bradford, P.R.C.P., Dr. A. H. Coley (president, Law Society), Sir T. R. Hughes, K.C. (president, Council of the Bar), and Lieut.-Colonel C. T. Samman (warden, Apothecaries' Society).

The toast "Medicine and the Law" was in the hands of Dr. A. S. WOODWARD, who gave some amusing instances of how medical men in the witness-box had "floored" the cross-examiner. He himself appeared as witness in one case which turned upon the question whether a head injury could have been inflicted with a hammer. In reply to repeated questions from the barrister, he maintained that the injury could equally have been inflicted by a hammer or by a fall, and added that there was no standard for the force with which a hammer might be used. "That is what I understood you to be saying for the last five minutes," said the magistrate; "there is no standard for the force of a hammer, or for the thickness of a skull!"

SIR JOHN ROSE BRADFORD elaborated the customary parallels between the legal and the medical professions. Both had the same objects, the elucidation of truth and the welfare of the community, but they went about it in different ways, and he confessed that the way in which the law arrived at its conclusions, by opposing arguments before a jury of twelve persons, struck him as curious. Perhaps the main difference between the problems which the law had to solve and those which confronted the medical profession was that the former were set by men and the latter by Nature. The latter, accordingly, were the more complex and difficult, and there was no appeal. Dr. COLEY, who also responded to the toast, quoted a dictum which he attributed to Gladstone—that the two professions must always flourish, because the one is founded on disease and the other on dissection.

Mr. Justice GREER, who proposed the health of the Medico-Legal Society, said that members of both professions had to make important inferences from imperfectly ascertained facts. The medical man had to judge a patient's health or malady without absolute information as to his interior condition, and to some extent from subjective symptoms; while those who sat on the bench had to decide an issue on the evidence of witnesses whose observations might be imperfect, and whose honesty, in some cases, left much to be desired. But on the whole both professions arrived at sound conclusions. Their work was not entirely on parallel lines, for they were often brought into contact, and occasionally into conflict. In two branches of work medical men and lawyers were alike interested. One of these was the effect of nervous shock. It was extremely difficult to judge the precise nature of such an effect, and for his own part he was always inclined to give the benefit of the doubt to the sufferer. The other subject was mental disease. Here many doctors took a different view from the lawyers, though he did not think there was so much difference between the two as at first sight appeared, because the problems which the two professions had to investigate were not the same. The problem at a trial was not whether an accused person was suffering from mental disease, but whether the mental disease was of such a character that he was not responsible for his actions, or, to apply the M'Naghten test, whether his mind was in such a condition that it was not influenced by the fear of punishment. People who could be influenced by the fear of punishment should, in the interests of society, be punished for wrong-doing. But it did not follow that a man who was held to be not insane within the meaning of the criminal law was a man not subject to mental disease. The law was compelled to act with great stringency, though the effect of it might at times be modified by those who advised His Majesty in the exercise of his prerogative of mercy. Personally he thought that juries were inclined to take the medical view, influenced no doubt by what was known as the "unwritten law," and to find insanity where,

strictly, according to the criminal law, it ought not to be found.

Lord Justice ATKIN, in responding, said that the Medico-Legal Society was in a very healthy condition, with a membership of over 300. The interesting proposal had been made that the society should be represented at the meeting of the British Medical Association in Edinburgh next July, when the Section of Forensic Medicine would meet under the presidency of one of the society's distinguished members, Professor Harvey Littlejohn. He himself had been asked to serve as Vice-President of the Section, but unfortunately the meeting was held at a time of year when his judicial duties made it impossible for him to attend. Taking up a remark of Dr. Woodward's to the effect that while the law dealt in dogmatism and certainty, the doctor was concerned with theories and possibilities, the Lord Justice said that he was not sure that, unaided, he would have arrived at that conclusion. He was bound to defend legal procedure, and he thought that there was no better way of arriving at truth than a close examination and cross-examination of witnesses, and if medical men practised a similar method in dealing with their cases they might be more sure of their diagnoses. Sir John Rose Bradford had said that it must be difficult for a jury to arrive at a verdict. Certainly it was, especially because, on occasion, the twelve honest men had to decide, not only when lay testimony conflicted, but when eminent doctors gave contrary evidence, so that from medical evidence it might not even be possible to say whether a collar-bone had been broken! Nevertheless, he thought that both doctors and lawyers achieved a considerable degree of success.

On the question of insanity and criminal responsibility (Lord Justice Atkin continued) there was a time when the two professions were in constant opposition, but to-day the conflict between insanity as understood by lawyers on the one hand and by doctors on the other had lost its sharpness. The reconciliation of the views of the two professions was very important, and he begged all concerned to abstain from epithets and from language which indicated a want of appreciation of the other point of view, and tended to emphasize the differences between the two professions. He went on to allude to the recommendations of the Committee on Insanity and Crime, appointed by the Lord Chancellor in 1922, over which he (the Lord Justice) presided. The view of the committee was that if a person, owing to insanity, was totally incapable of restraining his actions because of an irresistible impulse produced by the disease, he ought to be held criminally irresponsible. A high judicial authority had pronounced that idea fantastic, but so far from being fantastic the Lord Justice thought it unanswerable. ("Hear, hear.") The doctrine was recommended to the committee by the British Medical Association and by the Medico-Psychological Association, who, although they wanted much more than that, at all events accepted that point of view. It was accepted also by the lawyers composing the committee, including such eminent authorities as Sir Archibald Bodkin, Sir Richard Muir, Sir Herbert Stephen, and Sir Ernie Blackwell of the Home Office. There had never been since English law was administered four men of more complete experience and knowledge of the phenomena connected with crime and the responsibility for crime. Another member of the committee was Sir Edward Troup, formerly Under-Secretary of State for the Home Office, and those who knew Sir Edward regarded as extremely amusing the idea that he would commit himself to anything "fantastic." The Lord Justice instanced a typical case, that of a mother with an impulse to kill her child, who fought against it, prayed to be delivered from it, but gradually found the impulse gaining ground until at last she yielded. The woman knew what she was doing, and knew it was wrong, because she had prayed to be delivered from it; and it appeared to him to be a ridiculous suggestion that in such a case the woman was not criminally irresponsible by reason of the impulse which arose from a diseased mind. The real fact was that every humane person on the bench would see to it that in such a case she would be held criminally irresponsible, even under the present law. It

was quite impossible for judges or other people to dig themselves into the trenches and to resist the gradual development of the law in respect to matters such as these:

In conclusion, the Lord Justice added that there was another medical question which had become of very great importance in the sphere of law of recent years. It had been his lot during the last few weeks to deal with cases under the Workmen's Compensation Act, and he had been very much struck with the large proportion of cases which arose now in connexion with industrial diseases. The schedule of industrial diseases had been extended from time to time, and would be further extended as medical knowledge increased and as administrators became more receptive to the advance of such knowledge. There was no doubt that this was a most humane provision. He thought it would be to the great advantage of members of the legal profession who practised in such matters that they should become more or less familiar with the kind of problems that arose in respect to industrial disease, and very important for medical practitioners also who practised in industrial districts that they should familiarize themselves with the questions of law that arose in the working of the Act. There were a good many pitfalls in the Act still, and he could imagine nothing more useful than a mutual arrangement of lectures on the subject, lawyers lecturing to doctors on the one hand, and doctors to lawyers on the other.

## England and Wales.

### COMPLIMENTARY DINNER TO SIR BERKELEY MOYNIHAN.

SIR BERKELEY MOYNIHAN, Bt., P.R.C.S., was entertained at dinner at Leeds, on December 8th, by his colleagues of the British Medical Association in Yorkshire. Mr. Alfred Gough, chairman of the Leeds Division, presided, and proposed the toast of the evening, "The President of the Royal College of Surgeons." He said that the election of Sir Berkeley Moynihan did not amount to the conferment of a distinction, but rather the recognition of distinction. Sir Berkeley Moynihan had been for a quarter of a century one of the most prominent figures in British surgery, and his supremacy was unchallenged in the sphere of the upper abdomen. His wide knowledge of literature, art, music, and the drama was well known, and his marvellous physical energy and capacity for work resulted in a uniform efficiency of 100 per cent. Mr. A. L. Whitehead, consulting ophthalmic surgeon to Leeds General Infirmary, referred to the association of Sir Berkeley Moynihan with Jessop, McGill, Ward, Littlewood, and Mayo Robson at Leeds Infirmary, and added that he had acquired the best from all of them. The publication of his book *Abdominal Surgery* had aroused the profoundest interest throughout the world, and particularly in America. After referring to Sir Berkeley's insistent attention to detail and his wide general outlook, Mr. Whitehead said that his great powers of organization and administration had brought him fresh honours during the war, while as a writer he had produced many works of great distinction, literary value, and clarity of expression. His latest effort—the appeal for the Cancer Research Fund, which had brought in £130,000—owed its success to his great influence and power of putting a case. Dr. A. Hawkyard paid special tribute to Sir Berkeley's gift of oratory and his mastery of the written word.

Sir Berkeley Moynihan, in response to the toast, mentioned that he had been originally intended for the army, but he had chosen the path of saving life rather than destroying it. In his student days, and later, he had owed everything to Jessop and McGill. The pre-eminence of Leeds in surgery was due to its having produced such men with great creative minds as Spencer Wells, William Hey, and Mayo Robson, together with many great exponents of the new ideas in surgery. When he first joined the staff at Leeds Infirmary there was little reciprocity between surgeons, and so he had established the first surgical club in England; that club had now three

descendants, only one of which had flagged. After a great many difficulties the *British Journal of Surgery* had been founded to give to surgery a chance of expression through the medium of a periodical devoted exclusively to its science. The real heritage which a man could give his profession was the training of men inspired by his ideals. He thought that the chapter of the Listerian epoch was now closed, and that surgery would now advance by harking back to biology in its broadest sense, and by proceeding hand in hand with physicists, biochemists, chemists, and pure physiologists. Such was the conception behind the present Cancer Campaign, and he was proud to know that Leeds had at its disposal for research more money than any other place in Europe. The tribute he had received that night touched him very deeply as relating to something he valued even more—namely, the tradition Leeds had set up a century and a half previously, and had never allowed to weaken since. He valued most the acknowledgement by the people among whom he had lived and worked that he had been loyal to this great tradition.

### PROPOSED SPORTS GROUND FOR LONDON UNIVERSITY.

An appeal for funds for an athletic ground and boat-house is being issued by the University of London, and eleven medical members of the Senate have addressed a letter in support of it to all medical graduates of the University and medical practitioners who were educated in the metropolitan medical schools. Some twenty-eight acres of land have been secured at Motspur Park, near Wimbledon, for about £18,000, and for the boat-house two acres of land at Chiswick at a cost of £4,000. The total cost, including the preparation of the ground, the building of the boat-house, and an endowment for running expenses, is over £70,000, half of which it is estimated will be met by contributions from the colleges, schools, and students. The Chancellor, Lord Rosebery, has given £5,000, and the Senate has also granted £5,000. In view of the prominent position in the University of the faculty of medicine and the existence in London of so many leading medical schools, it is hoped that members of the medical profession will subscribe generously towards these urgently needed facilities for students. Cheques should be made payable to the "University of London Athletic Appeal Fund," and be sent to the Financial Officer, University of London, South Kensington, S.W.7.

### MEDICAL AND DENTAL TREATMENT OF LONDON SCHOOL CHILDREN.

It was reported to the London County Council on December 14th that the attendances of school children at the treatment centres had been satisfactory during the past year. The demand had been greater than could be conveniently dealt with at the centres, in part owing to the reluctance of the general hospitals, except under the Council's scheme, to treat school children to the same extent as formerly. Some 4,000 additional children requiring eye treatment were noted at the routine inspections during 1925 as compared with 1924. Five in-patient centres for throat operations have been approved; three of them are open, and the other two will be ready in January. Arrangements have also been made with the Princess Louise Hospital, North Kensington, and the Victoria Hospital for Children, Chelsea, for the treatment of 500 and 440 throat cases respectively a year as in-patients. The gradual decline in the number of cases of ringworm, owing to the successful results of x-ray treatment, continues; provision is to be made for only 1,300 such cases next year. The six centres at present in operation for remedial courses for stammering children are to be continued. The total cost of the arrangements during the next financial year will be £97,878, of which treatment for diseases of the eye, ear, nose, and throat, and for ringworm accounts for £23,066, of minor ailments for £27,066, and of dental cases for £43,916. The total represents an increase of just over £3,000 on the expenditure authorized for the current year.

### PRACTITIONERS' FEES IN MIDWIFERY CASES.

The Midwives and Maternity Homes Act, 1926, provides that any medical practitioner called in to the assistance of a midwife shall submit his claim for payment within two



mouths of the date on which he was summoned. The London County Council, immediately the Act came into operation, took steps to notify those practitioners who were known to the Council to undertake these cases, but with regard to others it placed reliance upon notices which appeared in the editorial matter of the professional journals. In several instances practitioners have submitted claims after the expiration of the two months prescribed, but the Council took the view that they were not aware of the provisions of the Act, and that it would not be politic to insist upon strict compliance with the law. It was understood that the Minister of Health would be prepared to consider favourably an application by the Council for permission to pay such claims if submitted before the end of 1926.

## Scotland.

### GLASGOW MATERNITY AND CHILD WELFARE SCHEME.

BRIEF reference was made in the JOURNAL of December 11th (p. 1140) to a pamphlet describing a scheme for maternity and child welfare in Glasgow prepared by Dr. A. S. M. Macgregor, M.O.H., at the instance of the health committee of the corporation. The scheme is under the general direction of the medical officer of health, and the child welfare staff includes eight medical women and thirty-nine nurses. The home supervision of children is carried out by co-operation with a voluntary Infant Health Visitors' Association. There are fourteen local clinics or consultation centres, of which three are new and specially designed. The West Govan clinic, just completed, was erected at the cost of the city. It will be conducted and partly maintained by a voluntary association, under the convener'ship of Lady Helen Graham, which has for long done pioneer work in the area. In 1925 there were three ante-natal clinics, and three more have since been added. The Glasgow Royal Maternity Hospital forms an important link in this part of the scheme. An infant consultation and an ante-natal clinic are held there and twenty-five beds are reserved for ante-natal cases. Artificial light treatment is provided in the new annexe to the municipal buildings. The running cost for current and carbons has been less than 3d. for each exposure, which, at an average of twenty-four exposures, amounts to about 1s. 6d. a course. Venereal cases emerging in maternity and child welfare work are treated at district clinics, which constitute a part of the scheme. Milk and meals for expectant and nursing mothers and children up to 5 years of age are supplied to necessitous cases on conditions. There were 1,650,796 pints of milk issued during 1925, at a cost of £17,000. The day nurseries or crèches directly managed by the corporation are five. A kindergarten at Phoenix Park, which belongs to the city, and a similar institution in Anderston under the Queen Margaret College settlement, which is aided by a grant from the city, are staffed by voluntary workers. Three country homes are maintained under the scheme at Mount Vernon, Scotstoun, and Mount Blow for children suffering from rickets, malnutrition, or debility after acute illness. The Garscube Cottage Hospital, to which Sir Archibald Campbell makes an annual contribution of £300, is maintained by the corporation as a country home for mothers. Beds for ophthalmia cases, where required, are available in an adapted reception house. Domestic helps are supplied during the lying-in period, or if a mother is ill and her children are under 5 years of age; they are paid by the corporation at the rate of 5s. a day without food. The charge against the family is graded according to circumstances. Refresher courses are provided for midwives at the Royal Maternity Hospital. During the financial year 1925-26 the total expenditure on the scheme was £122,215. Deducting revenue, mainly Government grants, the balance was £71,895, equal to a rate of 1.663d. The city of Glasgow is to be congratulated on the scope and purpose of the foregoing activities. It is a notable feature of the scheme throughout that, where it comes into touch with voluntary organizations, it co-operates—it does not displace. Administratively this is common sense; it makes for elasticity

which, as Dr. Macgregor says in the booklet, is essential to a child welfare scheme, and it secures the practical sympathy of many whose goodwill is highly conducive to the progress and development of such work.

### INDUSTRY AND FATIGUE.

An address on industrialism and fatigue was delivered on December 10th by Dr. A. K. Chalmers, late M.O.H. for Glasgow, to the Glasgow Charity Organization Society. The avoidance of industrial fatigue was now, he said, based on accurate knowledge of many factors affecting health. Legislation during the nineteenth century had resulted from the public recognition of conditions injurious to health, but in the twentieth century it had gone further, and inquired into the conditions necessary for maximum efficiency of workers. The present view seemed to be that maximum efficiency was reached gradually with each day of the week, whereas, according to older views, it was supposed to be reached early in the week. It had been found that the best temperature for heavy work was 55° F., and for light work, such as that done in an office, 65° F. Efficient ventilation was also a necessity, as well as adequate food. The new spirit underlying the industrial welfare movement was important, and ought to be extended.

### ENTHUSIASM FOR HEALTH.

A lecture was delivered by Professor J. Arthur Thomson on December 7th, under the auspices of the Glasgow Corporation. Taking as his subject "Education towards health," the lecturer made a plea for fostering an enthusiasm for health, which should mean much more than the absence of disease, for it included positive vigour, resisting power, initiative, and joy in living. In schools, the enthusiasm for vigour and fitness might be achieved by hero-worship, by appraising health achievements, by broadening the concept of play, and by evoking admiration for the superb healthfulness of wild animals. The three great informative studies were history, the world without, and the laws of health and happiness. The last were badly in need of emphasis. Every young citizen should understand the general working of the human body, the common-sense ways of fostering health and avoiding disease and the fundamental facts in regard to heredity. For lack of these progress was hampered. When the growing person fell into sub-health a vicious circle was apt to be set up, because energy for exercise, open air, and resistance was sapped and the bodily tone deteriorated. On the other hand, when the thrill of health was increased by exercise, games, excursions, and the like, a virtuous circle was produced, for it was a feature of healthfulness to wish to be healthier still. More biology and natural history should be taught in schools, not only for their own sakes, but as the essential counter-activities in a mechanical age.

### VITAMINS IN RELATION TO INDUSTRY.

At a joint meeting of the Edinburgh and East of Scotland Sections of the Society of Chemical Industry and of the Institute of Chemistry on December 8th a paper on vitamins in their relation to industry was read by Mr. F. H. Carr, C.B.E. After tracing the history of vitamins during the past fourteen years, he discussed the action of the different vitamins. Deficiency of vitamin A caused a failure of growth in experimental animals, and of vitamin B a form of neuritis. The absence of vitamin C over a long period was productive of scurvy. Insufficiency of vitamin D in the food of children led to rickets; it appeared to be a substance distinct from vitamin A, with which it had long been confused. For the first three vitamins animals and man were dependent on the vegetable kingdom, but vitamin D appeared to be produced in the animal body by the influence of sunlight or other source of ultra-violet rays, so that when diet was deficient in this vitamin rickets was not developed so long as the growing body obtained a sufficient amount of radiation. Recent work had pointed to the presence of a fifth vitamin, known as vitamin E, which was present particularly in the germ of wheat. The practice of eating white bread, he considered, was thoroughly to be condemned, because it was lacking both in vitamin B and vitamin E. Mr. Carr described methods whereby the

vitamin-containing parts of food materials could be extracted in highly concentrated form, and he also demonstrated the test by which the vitamin activity of cod-liver oil could be ascertained as satisfactorily as by animal experiments.

## Correspondence.

### EPSOM COLLEGE.

SIR,—I ask every medical practitioner to be so patriotic to his profession as at least to read this letter. Epsom College needs a new sanatorium and isolation block. The existing one is out of date in its accommodation and arrangements, is uneconomical in its working, and affords no facility for the isolation of infectious cases. This purpose, of such paramount importance in a public school, is at present effected by a wooden hut, which is licensed only for a few years more. The vacated sanatorium would, however, with a limited amount of internal adaptation, provide excellent residential quarters for at least forty more boys, and so enable the council to house some of the numerous applicants whom it has to refuse annually.

Epsom College, as the offspring of the medical profession, should show a sanatorium that would be a model for all other schools to copy. Such an object should appeal to the pride as well as to the philanthropy of the profession, and some £25,000 is a sum that would enable us to gratify both. We cannot hope for many large donations from a profession in which few are rich, but no other profession has more ready access to rich laymen, who may desire to bestow some of their wealth on suitable objects of charity. Here is an object that combines an educational with a philanthropic purpose.

There are over 50,000 practitioners on the *Medical Register*. Ten shillings from each would provide this haven of rest for the reception of sick sons of generations of medical men, and perhaps for your own. But as experience has taught us that such a unanimous response is not to be looked for in our, or indeed in any, profession, we ask those who can to send larger donations to compensate for those who send nothing. Annual subscriptions do not even afford the balance required for maintenance, so that for all structural improvements we have to depend on legacies and extraordinary donations. Remember "Qui facit per alium facit per se," and great gratitude will be due to those who can supplement their own gifts by influencing donations from others.

The donor of £10,000 may give his own name, or the name of any person whom he or she desires to commemorate, to the main block of the sanatorium, and the donor of £5,000 may do likewise to the isolation block. A large ward may be named for £3,000, and a small ward or the casualty department for £1,000, while £100 may determine the name of a single bed. Each medical school might well confer its name on a single bed. Votes at the annual elections of foundationers and pensioners are given for subscriptions and donations to the new sanatorium fund.

This complete scheme should not be beyond the ready accomplishment of the profession with the help of some of those not rare persons who feel that they owe a debt of gratitude to some honoured medical attendant. We can do it, if we have the will to do it, but this condition is an essential prerequisite.

The *British Medical Journal* and the *Lancet*, of their goodness, have promised to publish lists of all subscribers, both small and great, from time to time. I beg you to figure on these lists by sending what you can to the "Sanatorium Fund" to the Secretary at the Epsom College Office, 49, Bedford Square, W.C.1, or to the office of either of the above-named journals to the credit of the fund.—I am, etc.,

RAYMOND CRAWFORD,  
Chairman of the Council of Epsom College.

### TREATMENT OF CANCER BY OÖPHORECTOMY.

SIR,—In his observations on the Liverpool demonstration of the lead treatment of cancer (December 11th, p. 1135) Dr. R. G. Canti makes the statement that "it is the first time in history that a generalized treatment has been found that brings about a local disappearance of a cancerous growth." I consider this is incorrect, for the same thing has taken place in mammary cancer under oöphorectomy—in every respect a generalized treatment, and it has done this, not only in my own hands, but in that of others. We have Lett's exhaustive study of 99 cases in support of this fact, and I have in my possession a letter from the late Dr. Hermann of London telling me of a case under his care where for an extensive recurrence after removal of the mamma the late Sir Frederick Treves advised amputation at the shoulder-joint. The suggestion was not carried out but oöphorectomy done, with the result that within a year all local traces of the disease had disappeared, the patient living for eight years and dying eventually of a renal tumour. Again, the late Sir Alfred Pearce Gould in his Bradshaw Lecture on cancer (December 7th, 1910) gives two very typical cases of mammary cancer illustrative of the salutary effects of oöphorectomy, and in conclusion, speaking of one of the cases, he says: "I saw this patient last month (November, 1910), after an interval of ten years, and found her enjoying excellent health; the scars of her numerous operations are the only signs that she has ever been the subject of cancer." In veterinary work, Mr. Frederick T. G. Hobday of London wrote me in 1922 that he also finds oöphorectomy serviceable in vaginal cancerous growths of animals.

In view of evidence such as the above I feel I am justified in calling in question the correctness of Dr. Canti's statement that the lead treatment has been the first in history to bring about the local disappearance of a cancerous growth. This effect was observed as far back as 1896 under oöphorectomy. I admit the results in the oöphorectomy cases were often not permanent, and time may show the same feature in the lead-treated cases that now promise well. An explanation of non-permanency in the oöphorectomy cases may be the fact to which Mr. Hobday drew my attention, and that is, that I was wrong in stating that oöphorectomy permanently maintained the milk supply in cows. In three or four years its effect passed off. This being so, the same may take place in the human subject, and account for the reappearance of the cancer. This does not, however, alter the fact that while the effect of the operation remains the cancer is controlled and overcome. I still feel that if we could fathom the *modus operandi* of oöphorectomy in cases of cancer we might get a clue to the nature and etiology of the malady, and that to ignore these results or sweep them aside as valueless is not a wise policy, nor is it prudent to indulge in over-laudation of a remedy until time has set its stamp on its real worth.—I am, etc.,

Glasgow, Dec. 12th.

GEORGE THOS. BEATSON.

### LEPROSY: ITS TRANSMISSION AND TREATMENT.

SIR,—Dr. Graham Little reports in your issue of December 4th (p. 1034) an interesting case of leprosy "cured" by vaccine treatment—a method which has been used for several decades either as tuberculin, which gives reactions in leprosy, or as killed lepra bacilli, with occasional recoveries such as occur after almost any treatment. When he goes on to say that "it is the general experience" that the products of chaulmoogra oil have not fulfilled the hopes held out by me, I am at a loss to know whether he is in ignorance of the many hundreds of early leprosy cases which have been cleared up recently by injections of the soluble products of chaulmoogra oil in Hawaii, Fiji, the Philippines, Korea, India, and elsewhere; or whether he seriously contends that the few negative results reported by London dermatologists (mostly in fairly advanced cases, which no one, as far as I know, has ever claimed to be able to clear up with certainty) completely outweigh the positive results in hundreds of cases treated by leprologists with infinitely more experience than it is possible to obtain in this country, working in the endemic areas with many

early and more amenable cases. If, however, he meant "the general experience of London dermatologists" I am quite ready to accept his statement—for what it is worth!

As a joint meeting of the Dermatological, Therapeutical, and Tropical Diseases Sections of the Royal Society of Medicine has already been arranged, at the request of the dermatologists themselves, for 5.30 p.m. on February 2nd, I suggest that it may be well for the medical profession to suspend judgement until a full report is available of what should prove a very interesting occasion.—I am, etc.,

London, W.1, Dec. 8th.

LEONARD ROGERS.

SIR,—While Dr. Graham Little is to be criticized for having omitted the word "apparent" before "cure" in his communication on the case of acute nodular leprosy, those of us who have lepers under our care should be grateful to him for bringing to our notice a new method of treatment.

The letter of Drs. Low, MacLeod, Manson-Bahr, and Sequeira, on the other hand, contains no useful information at all, and it would be interesting to know if any of these gentlemen have given this vaccine treatment a trial before making these discouraging remarks. Personally, I have already used Dr. Hasson's vaccine on a very advanced case of leprosy, which, for many other reasons too, had been given a hopeless prognosis. I am glad to be able to say that, although I have not achieved a cure in four weeks, I have had results which have been very encouraging, not only to myself, but also to the patient and her friends.

The extravagant claims for chaulmoogra oil by men "with long and close experience in the disease" were made in face of much evidence that, in this country at least, the drug has proved useless. Regarding the possible disappointment experienced by lepers who have happened to read the *BRITISH MEDICAL JOURNAL*, I would suggest that no patient nowadays of average intelligence expects his doctor to cure him, but he does expect that he will do his best, and at least prefers enthusiasm to despair.—I am, etc.,

Brighton, Dec. 13th.

J. H. T. DAVIES.

SIR,—May I answer my friendly critics very briefly?

I used the word "cured" upon the analogy of general experience in tuberculosis, to which leprosy is in so many respects similar. If a case of pulmonary phthisis loses under treatment all physical signs of the disease, and also all evidence of the presence of bacilli, the patient is currently regarded as cured, and for practical purposes he usually is. The salient features of the case I reported are, I submit: (1) The conversion of an apparently moribund man into a person who would pass anywhere as being in normal health; (2)—and most significant—the complete elimination of bacilli in blisters produced upon the site of lesions, a feature which is of radical importance, as bacilli are so readily demonstrated in leprosy as compared with tuberculosis; (3) the complete disappearance of clinical symptoms such as cutaneous manifestations, thickening of nerves, and alteration of sensation. I naturally emphasized the dermatological aspects of the case, which bring it into my province of practice; and I may have been influenced by the remarkable change in this respect to take a too optimistic view of the possible future developments. To meet criticism, I am prepared to qualify the word "cured" with the addition "as far as clinical and bacteriological evidence goes."

With regard to the second point made by my critics, the duration of the disease: The history which I gave seemed very definitely to date the onset with acute nonritis some weeks prior to the appearance of the rash. The incubation period of leprosy is known to be very uncertain. Norman Walker has reported a case in which there was evidence for a latent period of some forty years, and I have recorded leprosy in a German lady who developed the disease in England nearly thirty years after she had left a country where it was endemic, and where she had lived as the wife of an English engineer for eleven years.

My description of the case now under consideration claimed no more than the fact that clinical symptoms seemed to date its perceptible onset at a time when the

patient was residing in England, but did not exclude a much longer latent period, the estimation of which is largely guesswork, in which I do not propose to follow my critics.

It happens that, as I write, I have before me a letter from a provincial dermatologist, received within the last few days, giving results of a case treated with the same vaccine as that mentioned in my paper subsequently to the exhibition of my patient last October. In this new case, after a comparatively very short period of injections, the disappearance of clinical lesions was as swift and complete as in the case reported by me. Doubtless the method will be extensively tested, but so far as my—of course, very small—experience goes, I do not recall any other means of treatment which has shown such astonishingly rapid amelioration, as evidenced by bacteriological as well as clinical tests. Perhaps I may emphasize the fact that the method which I praise is not my discovery, nor have I taken any credit for it, so that my enthusiasm is entirely disinterested.—I am, etc.,

London, W.1, Dec. 10th.

E. GRAHAM LITTLE.

### THE PUBLIC, THE DOCTOR, AND THE MASSEUSE.

SIR,—Dr. G. Murray Levick's letter (December 11th, p. 1142) is most opportune. The increasingly important part in medical practice which diathermy and actino-therapy are destined to play will be generally acknowledged. It is therefore of supreme importance that these valuable remedial agents are not carelessly allowed to pass into unqualified hands. The remedy, which rests almost entirely with the medical profession itself, is, however, very simple.

In such conditions as early rheumatoid arthritis, Parkinsonism following encephalitis lethargica, neuritis, hay fever, and dysmenorrhoea (to mention only a few conditions at random), when medicinal treatment alone has been disappointing doctors should avoid telling the sufferer that nothing more can be done; this advice generally results in the patient rushing to the nearest unqualified practitioner. In suitable cases it is the bounden duty of medical men to advise their patients to have appropriate physical treatment.

When some doctors do advise the administration of diathermy or ultra-violet radiotherapy they often short-sightedly send their patients to the unqualified for treatment. These naturally, through lack of competent knowledge, generally obtain inferior results, and if a disaster, such as those described by Dr. Levick, should occur, it is often the doctor who sent the patient to the masseuse who incurs the brunt of the blame.

Rash suggestions like those recently made by an eloquent lecturer, not, however, in practice himself, advocating the universal installation of ultra-violet lamps in the home, are greatly to be deprecated, as they directly encourage the indiscriminate exploitation of physiotherapy by the unqualified.—I am, etc.,

Newcastle-on-Tyne, Dec. 12th

W. KERR RUSSELL.

### THE INFECTIVITY OF ERYTHEMA NODOSUM.

SIR,—Dr. Robinson's account in the *JOURNAL* of December 4th (p. 1049) of three cases of erythema nodosum occurring in close succession in three members of the same family living in the same house raises the interesting question of infectivity. Though the records are scanty, observers in this country, in other parts of Europe, and in America have recorded multiple cases in the same family and also small localized outbreaks in institutions, schools, and districts. In the *JOURNAL* for 1921 (vol. ii, p. 741) J. O. Symes of Bristol suggests that erythema nodosum is an acute specific fever. The evidence for this view is not convincing, and there is no proof that the disease produces immunity. Second attacks and relapses are known to occur. E. S. Stubbs had a patient with five attacks and another with three.

It would appear that erythema nodosum develops in the course of septic and bacillary infections. In moderate cases

the temperature rises to 102° F. for some days; in severe cases pyrexia may be present for a period up to three months. In streptococcal infections of the tonsils and teeth joint pains sometimes occur, but usually without swelling or redness of the joints. There may be transient systolic murmurs or tachycardia, followed by prolonged convalescence. The condition corresponds with a mild septicaemia, and the nodes would be analogous to the rose spots in enteric and the secondary eruption in syphilis. On this assumption infective material may conceivably pass from one member of the family to another and reproduce the same symptoms, including erythematous nodes.

The bulk of cases of the disease seems to be sporadic. In addition to septicaemia another important cause is a tuberculous bacillaemia. Such a well known investigator as Calmette upholds this view. I reported two cases associated with tuberculous bacillaemia in the JOURNAL for 1924 (vol. i, p. 422), and in the *British Journal of Tuberculosis* for January, 1925, reported other cases and reviewed recent literature dealing with its association with tuberculosis.—I am, etc.,

Derby, Dec. 6th.

JOHN A. WATT.

#### MINER'S NYSTAGMUS.

Sir,—I have just returned, on a visit, from Malaya, and received my copy of the *BRITISH MEDICAL JOURNAL* for October 23rd, in which is a letter from Dr. Percival, wherein he states that his assertion that there was a notoriously high percentage of cases of nystagmus at the South Moor Colliery twenty-five years ago is correct. Dr. Percival states that his assertion is corroborated by two owners' representatives and one representative of the men, and quotes figures showing the number of men employed.

In justice to myself, I hope you will allow me to make a further statement in support of my contention that the percentage was not anything like so large as inferred from the particulars given to Dr. Percival. In the first place, as to the number of men employed. I have a very good reason to know that in March, 1899, I was receiving contract pay from over 840 miners employed at the South Moor Collieries, of whom at least 800 were householders. This number did not include sons of miners living at home and working in the mines. Besides, there were many other householders and lodgers, employed at South Moor, who were attended by other doctors in the district, so I fail to understand how this number could have shrunk to 300 by 1901; in fact, I know that the number of men employed increased during that period. If Dr. Percival should choose, he could probably obtain from the South Moor Colliery offices, Newcastle-on-Tyne, a detailed account of all cases of illness or accident due to employment during the period he mentions, as all such cases were attended by me and a list of them sent to the company every year. This list would include all cases of nystagmus.

I quite well remember the objection to electric lamps at South Moor, but it was on account of the weight of the lamps themselves, and not any objection to the light as such.

I can only conclude that Dr. Percival's figures may refer to one pit only of those included in the South Moor Colliery, and even so, I must disagree with his contention that the number of cases amounted to anything of importance.—I am, etc.,

R. E. INGRAM-JOHNSON.

North Cross, Windsor Forest, Dec. 7th.

#### THE MEDICAL REGISTER: "UNTRACEABLE" PRACTITIONERS.

Sir,—The list published in the SUPPLEMENT of September 11th attracted my attention, but the interest became more personal when I found that my son's name graced it; scanning the list more carefully I discovered the names of five Adelaide residents. It then struck me that perhaps the heading was scarcely justified. "Untraceable" practitioners should mean persons who cannot be traced by any means short of those employed by the greatest talent at Scotland Yard, or by the eminent Mr. Sherlock Holmes. Had the General Medical

Council's officers noted that there were five graduates of the University of Adelaide on the list it might have occurred to them to have communicated with the University itself, or with the Medical Board of South Australia, which annually forwards a copy of the *Register* to the office of the General Medical Council, and made inquiries as to their whereabouts. If the brilliant idea had occurred to them to ring up Tavistock Square they might have ascertained that all five were still regularly paying their subscriptions to the British Medical Association, and receiving their JOURNALS at the usual address. Had they communicated with the editor of the *Medical Directory* they would probably have received similar up-to-date information. Far be it from me to blame the General Medical Council itself—its members have lately been getting into hot water too frequently—but I do think the methods of the office somewhat offete.

One of the "untraceables" told me to-day that he had taken the trouble to register his second reply, as the first might have miscarried.

A Vice-President of our Association, Dr. W. T. Hayward, C.M.G., some years ago had to pay a considerable fine in order to have his name restored to the list; so too had our Inspector-General of Hospitals (Dr. B. H. Morris). Surely no such fee ought to be charged where it is not the unhappy victim's fault that he cannot be traced, but rather the ineffectual methods of the General Medical Council's officers. Of course, if it is necessary to do this to raise sufficient revenue for the Council's purposes it is of no use protesting.—I am, etc.,

October 20th.

YOUR ADELAIDE CORRESPONDENT.

#### RESEARCH IN GENERAL PRACTICE.

Sir,—In your note in the *BRITISH MEDICAL JOURNAL* of November 6th (p. 844) on "Research in general practice," you state that "the great mass of clinical work in this country is done by general practitioners." With this statement of fact we all agree; but later you sorrowfully remark that general practitioners "are not able to take advantage of the opportunities that offer themselves." It is with this latter statement that I find fault. Why are general practitioners unable to take advantage of their opportunities in clinical medicine and surgery?

The answer is the abominable "closed" hospital system that pertains in this erstwhile free country. Our patients are our patients till they develop some symptom or symptoms of interest which can only be elucidated in an institution with further investigation—radiological or biochemical—and once the hospital swallows them up, their family doctor, who is conversant with the early symptoms and maybe with the patient's previous illnesses as well, is generally ignored. His notes of the case are never asked for, and if the patient himself ventures to suggest that Dr. X treated him for such and such a disease, he is sternly requested to forget all that!

Anyone who has done the work of a medical referee under the National Health Insurance Act will agree with me that the "history" of the case, as supplied by the patient's own doctor, is of immense value in helping to arrive at a correct diagnosis; and if this is so in panel practice, why not in general practice?

If followed out intelligently and sympathetically it certainly should be all to the patient's good and help the science of medicine. At present there is not that liaison between the family attendant and the hospital specialist that is so desirable if good results are to be attained. With the present system our patient goes into hospital and thereupon disappears from our ken, to come back weeks or months later with a garbled account of what was found the matter, or, maybe, an obituary notice in the local press leaves us wondering! In other cases, if an operation is required it is the exception for the family doctor to be informed as to when it is to take place. You further say, "The doctor in populous districts will have to train himself to be much more of a specialist than he is at present." How is he to train himself, cut off as he is from direct access to all the more modern methods of investigation, and unable to command the help of laboratory facilities? Your suggestion

of recourse to post-graduate instruction does not fill the bill, since what the general practitioner wants is not instruction but the help of modern methods of investigating disease and the opportunity of watching his patients, either alone or with the help and guidance of the hospital specialist.

And as to the teaching hospitals, they are of the least use to the general practitioner; they take his fees when a student and teach him nothing in return, at least in midwifery, if we are to believe some of our professors in midwifery, and they should know they did their worst on him.

And now, Sir, you want to send us back to the scene of our misfortunes, where we shall be re-instructed in the importance of sending all our patients to the hospital specialist! May I suggest that the British Medical Association turn its attention to serious consideration of this matter and agitate for the freedom of all hospitals to every man or woman on the *Medical Register*, instead of, as at present, bolstering up an offete system of hospital monopoly for the few?—I am, etc.,

VINCENT P. NORMAN, M.D.,  
F.R.C.S.Ed.

Bradford, Nov. 14th.

### CARCINOMA OF THE TONGUE.

SIR,—In the lengthy discussion on carcinoma of the tongue, published in your current issue, there is some talk about sepsis but not much about its prevention. This recalls to my memory that over a quarter of a century ago a distinguished surgical colleague of mine had several deaths in rapid succession from septic pneumonia after removal of the tongue. I suggested that I should prefer being called in before the operation rather than after. I advised that in future cases the patient should have large doses of calcium chloride for the preceding week and an injection of 10 c.cm. of antistreptococcal serum on each of the three days before the operation. Any good antiseptic mouth-wash should be freely used, and for this purpose pure unadulterated whisky, as recommended by Jonathan Hutchinson, was as good as anything else; moreover, if the patient did swallow a little of it there was no danger of poisoning. The operations went on as usual, but there was no more pneumonia.—I am etc.,

London, S.W.1, Dec. 11th.

JAMES BARR.

### Obituary.

C. B. ROSCROW, L.R.C.P., L.R.C.S.Ed.,  
L.R.F.P.S.Glas.,

Late Medical Superintendent, City Mental Hospital,  
Winson Green, Birmingham.

WE regret to record the death of Dr. Cecil Beaumont Roscrow, in a nursing home in Sutton, Surrey, on December 8th, at the age of 56. Dr. Roscrow received his medical education at Edinburgh University, and obtained the diplomas L.R.C.P., L.R.C.S.Ed., L.R.F.P.S.Glas. in 1894. After acting as assistant in general practice to Dr. A. Houldsworth Davis in Sunderland, doing similar work in London, and serving as ship surgeon, he went to the City of Birmingham Mental Hospital at Winson Green as senior assistant medical officer. At the end of eight years' service there under the late Dr. E. B. Whitcombe he succeeded him as medical superintendent, and, as recently as June of this year, retired on pension after twenty-three years' service, and went to live at Sutton with his two sisters.

He had for the last five or six years suffered from diabetes, and this illness influenced him in retiring so soon after he became eligible to do so. A week before he died he developed what appeared to be a large carbuncle in the neck, but this proved to be more extensive than at first thought (involving the spine) and despite two operations he passed away.

Dr. Roscrow was a man of strong character, exceedingly well read and practised in his profession, and extremely conscientious. He had an intense dislike of publicity, and two years ago when persuaded by his chairman to allow

certain press representatives to see over the hospital and "write up" what the hospital was doing in the treatment of general paralysis by malaria, etc., he did so only with great reluctance and on condition that the names of the officers should be kept out. It was characteristic of him, too, that, when the late Dr. Whitcombe died, he made no movement to secure the position to which he was afterwards appointed. He continued the Winson Green tradition of homeliness, and it was always his proud boast that he knew each of his 800 patients by name. He had a ready wit, and this carried him through very often when dealing with an "awkward" patient. He was strict in the supervision of his staff (especially if patients were concerned), but he had the inestimable gift of being able to turn a blind eye to many little delinquencies when he judged that was the proper course. As a result he was loved and very highly respected by his staff and by the patients, who felt they had one they could confide in. He was never very keen on games (although earlier he had played in the hospital cricket team), but he loved to study astronomy, geology, and architecture. Many of his old colleagues will remember his "two in the morning" lectures on the heavens. Although he had travelled abroad a good deal, he became interested, after the war, in the various architectural features of this country, and he motored all over England in his search for architectural knowledge. At Winson Green he greatly increased the giving of "parole" to patients, the sending out on trial of patients, and the payment of money allowances to those out on trial. He made Winson Green one of the earliest of mental hospitals to introduce the "improved breakfast." Other improvements, such as cinema, mechanical spreaders, mixers and so on, were added as soon as brought to his notice.

He was lecturer in mental diseases (clinical) in the University of Birmingham, and a member of the British Medical Association and the Royal Medico-Psychological Association; only last year he was photographed with nearly 70 per cent. of his nursing staff, all of whom had gained the certificate of the Royal Medico-Psychological Association. Dr. Roscrow never married, and he used to quote the late Lord Kitchener in support of his contention that the married man's interest in his work was subordinate to his interest in his home. At any rate he himself made his hospital his whole interest, and it is extremely sad that one who thoroughly deserved a well earned retirement should have been so soon cut off. When he retired last June he was the recipient of many gifts from committee, staff, and patients, and at his funeral on December 10th many representatives from the hospital went to pay a last tribute to his memory.

G. E. S.

Dr. HERBERT DAVID CROOK of Irchester, Northamptonshire, who died suddenly on November 15th, while returning from a visit to a patient, received his medical training at Bristol and Leeds. In 1877 he obtained the diplomas M.R.C.S.Eng. and L.R.C.P.Ed. For some time he held an appointment in Leeds, but on the outbreak of the Russo-Turkish war he joined the Turkish army, and during this campaign saw much active service. Towards the end of it he gave valuable assistance during the small-pox outbreak in Constantinople. On the termination of hostilities he went to South Africa, and was attached to a big-game hunting party for about two years. This expedition carried him well north of the present Rhodesia; during part of it he became acquainted with Seleus, in one of whose books he is mentioned. He then settled down in Kimberley, and for many years practised there. While in Kimberley he was medical adviser to some of the large diamond mines, and from time to time took an active part in digging. At this time he was intimate with Dr. Jameson, in whose biography he is mentioned. He went from Kimberley in 1899 to Salisbury in Rhodesia, but had only been there a few months when the Boer war broke out. He immediately volunteered for service and came south, but being unable to get to Kimberley travelled by boat to Capetown. From there he was sent to Johannesburg and put in charge of a large concentration camp. While there, in 1901, he married



Miss Alendorff of Kimberley, and remained in Julianenburg until 1906. He then returned to England, and settled down at Bath, but after four years he migrated to Canada, and took up farming on a large scale in Alberta. In 1921 he again returned to England, and engaged in practice at Irchester, where he was very much beloved and respected by all who came in contact with him. He was a Fellow of the Geographical Society, a member of the British Medical Association, and had just attained the office of president of the Wellingborough Medical Society when he died. He leaves a widow, one son, and two daughters, with whom sincere sympathy is felt.

Dr. SAMUEL CLARKE NOBLE, who died on December 2nd, was probably the oldest medical practitioner in Westmorland. He belonged to a family connected with the medical profession in Westmorland for three generations, and was the son of Dr. James Noble of Kendal. He was born in June, 1837, and received his education at the Kendal Grammar School, Christ's Hospital, and the Middlesex Hospital. He took the diplomas of M.R.C.S.Eng. and L.S.A. in 1859. He carried on his father's practice till 1889, with the exception of some seven years, when he temporarily retired through ill health. Upon the restoration of his health he resumed practice till his final retirement in 1899. Dr. Noble was one of the first members of the staff of the Kendal Hospital, now the Westmorland County Hospital, and was for some years surgeon to the Kendal Prison. He was surgeon major of the 2nd Border Regiment (Volunteers), and during the great war, although nearly 80 years of age, he undertook without remuneration the medical examination of all military recruits in Westmorland. He was a justice of the peace and deputy lieutenant of the county of Westmorland, and a member of the Kendal Division of the British Medical Association.

The following well known foreign medical men have recently died: Professor LUIGI LUCATELLO, rector of the University and director of the medical clinic at Padua; Professor LEO VON LIEBERMANN, professor of hygiene at Budapest; Dr. VIDAL of Hyères, member of the Académie de Médecine and a writer on climatology and infant welfare; Professor BINES, professor of pathology in the Bucarest Faculty of Medicine and director of the anti-rabic institute of Rumania; Professor LE DENTU, honorary professor of surgery at the Paris Faculty of Medicine and member of the Académie de Médecine, aged 85; Dr. CORNELIS DE MOOY, formerly lieutenant-general of the Dutch army medical corps, and inventor of a suture needle and automatic dismountable trephine, aged 72; and Professor H. FRANZ, a Berlin gynaecologist.

## Medico-Legal.

### PROCEEDINGS UNDER AN ACT NOT YET IN FORCE.

The Court of Criminal Appeal (consisting of the Lord Chief Justice, with Salter and Talbot, JJ.) on December 14th allowed the appeal of John Kynaston, retired Lieutenant-Colonel R.A.M.C., against his conviction at the Old Bailey of aiding, abetting, and procuring Rowland Pawsey, whom he was treating for catarrh, to obtain powdered opium, contrary to the Dangerous Drugs Act, 1925, on the ground that a section of that Act provided that it should "come into operation on such date as His Majesty may by Order in Council appoint," and as there had been no such Order the Act had not come into force.

The accused first appeared at the Marlborough Street Police Court on two charges, the second charge being that of falsely describing himself as a recognized licentiate in medicine and surgery by the use of the descriptions "M.R.C.S., L.R.C.P.Lond.," contrary to the Medical Act, 1858, and the stipendiary magistrate adjourned the case on this charge *sine die*, committing him for trial at the Old Bailey on the first charge under the Dangerous Drugs Act. At the Old Bailey the jury, on the direction of the Common Serjeant, found the accused guilty, and a nominal fine of £10 was imposed.

The proceedings at the Marlborough Street Police Court and at the Old Bailey were reported in the BRITISH MEDICAL JOURNAL of October 16th (p. 716) and of November 20th (p. 964).

The appellant, who appeared in person, complained that the prosecution arose as a result of the wrongful removal of his

name from the Medical Register by order of the General Medical Council for advertising in 1922—"an offence which has been copied by a number of distinguished men much more than I have ever done."

The Lord Chief Justice said that the point that the appellant's name ought still to be on the Medical Register was not open to him. The case started with the fact that he was an unregistered medical man.

The appellant said it was a disgrace for anyone to have a conviction under this Act recorded against him. It was particularly important for him, not only because he was a member of the medical profession in the ordinary acceptance of the term, but also because the Secretary of State had power, on a conviction under the Act, to take away a right he still had to keep a shop and sell medicines and poisons under the Pharmacy Act, 1868. There was nothing in the Dangerous Drugs Acts to prevent an unregistered medical practitioner from properly carrying on his ordinary practice. The object of the Acts was to prevent the improper use of the drugs which came within their regulations. When Section 34 of the Medical Act, 1858, provided that words in any Act of Parliament which imported persons recognized by law as medical practitioners should be construed to mean registered medical practitioners, it was not apprehended that the General Medical Council would assume powers to which it was not entitled.

### An Appeal with no Real Merits.

Mr. H. D. Roome (who appeared for the Director of Public Prosecutions) here intimated to the court that it had only just been brought to his attention that the Dangerous Drugs Act, 1925, under which all the proceedings had progressed, had never been brought into operation by Order in Council, as it had to be.

The Lord Chief Justice: If you had known that this pleasant method of legislation by a hypothetical and contingent Order in Council had been adopted, your conduct of the case would have been somewhat different.

His Lordship, giving the judgement of the court, said the appeal had no real merits, but they were compelled to quash the conviction. By one of those devices referred to in that phrase of Hallam's, which told them that they must "venerate what we cannot presently comprehend in the British Constitution," the Dangerous Drugs Act, 1925, by Section 7, Sub-section 3, provided that the Act "shall come into operation on such date as His Majesty may by Order in Council appoint." There had been no Order in Council, and the Act had therefore not come into force. That prosecution was conducted on the assumption that it had. It thus resembled nothing so much as pulling a bell handle without a bell at the other end.

The appeal was allowed, as stated, and the conviction quashed.

## The Services.

### No. 14 STATIONARY HOSPITAL.

THE annual dinner of the No. 14 Stationary Hospital was held at the Trocadero Restaurant, London, on December 10th. Lieut.-Colonel J. R. Harper, C.B.E., who was in the chair, contributed numerous reminiscences, and many of those present added others. The pleasure of the evening was considerably enhanced by fuller information than usual being available about the present activities of officers who had been on the hospital staff, and in this connexion special thanks were extended to Dr. H. L. Tidy, the organizer of the dinner.

### DEATHS IN THE SERVICES.

Colonel Edmund John Erskine Risk, A.M.S., who died on December 7th, aged 68, received his medical education at St. Bartholomew's Hospital, where he won two scholarships and distinguished himself in rowing. In 1880 he obtained the diplomas M.R.C.S.Eng. and the L.R.C.P. and L.M. Edin. He joined the Army Medical Service in the following year, and served throughout the Egyptian campaign, being present at the battle of Tel-el-Kebir. He was then sent to India, but in 1891 was invalided home with dysentery and malaria; subsequently he served in the Aldershot Command for three years, and in the West Indies for nearly six years. During the Boer war he was in charge of the surgical division at Elandsfontein. After a period of service at Southampton and in Ireland he became senior medical officer at Bultfontein, Orange River Colony; in 1910 he was appointed assistant medical officer to the Northern Command in Ireland, and in the following January commandant and director of studies of the R.A.M. College, Millbank; at the end of the following year his health failed, and in 1913 he retired. He received the medal for Egypt, 1882; the Khedive's star, 1882; and the Victoria medal for the South African war. At his funeral on December 11th the War Office and the Director-General, R.A.M.C., were represented. He leaves a widow and one daughter.

Lieut.-Colonel Robert Alexander Chambers, O.B.E., Indian Medical Service, died of pneumonia at Lahore on November 8th. He was born on October 1st, 1861, and was educated at Edinburgh, where he graduated M.B. and Ch.B., with second class honours, in 1894. He entered the I.M.S. as lieutenant in September, 1906, and became lieutenant-colonel on March 1st, 1926. Most of his service had been spent in civil employ in the Punjab, where he was for some years civil surgeon of Amritsar, and principal of the medical

school at that station; from that post he had recently been transferred to the chair of medicine in Lahore Medical College. He served during the recent great war, in Mesopotamia in 1916 and in 1917-18, and on the North-West frontier in Waziristan in 1917, was mentioned in dispatches in the *London Gazette* of April 13th, 1919, and of January 12th, 1920, and received the O.B.E. on January 1st, 1919.

Brigade Surgeon Lieut.-Colonel Henry James Hazlett, Madras Medical Service (ret.), died in a nursing home at Bonnemouth on November 6th, aged 86. He was born at Lurgan, Armagh, and was educated in Dublin, where he took the L.R.C.S.I. and L.K.Q.C.P. in 1866. He entered the I.M.S. as assistant surgeon on April 1st, 1867, became brigade surgeon in March, 1891, and retired in 1897.

Major James Harman, R.A.M.C. (ret.), died in London on October 14th. He was born in Dublin in 1853, and educated at Charing Cross Hospital, where he was medallist in surgery in 1876; he took the L.S.A. in 1877, and the L.R.C.P. and S. Edin. in 1880. He entered the army as surgeon on July 31st, 1880, became surgeon major after twelve years' service, and retired in 1901. After his retirement he lived for some years at Portsmouth.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

IN view of lack of time and threatened opposition, the Government has decided to drop the Mental Deficiency Bill for this session. It passed the House of Lords, was read a second time in the Commons without opposition, and passed through a Committee of the Commons in one day. On December 13th, however, the Prime Minister stated that there seemed little prospect of the measure going through now because so many amendments had been put down. If they were withdrawn he would see what could be done, but otherwise there would be no time. Inquiry showed the Government that the opponents of the bill would not be conciliated. On the Opposition side objection was taken on the ground that it interfered with the liberty of the subject. Conservatives feared that expense would be incurred, and some of the medical members of Parliament were not satisfied with the proposed definition of mental deficiency. The dropping of the bill leaves local authorities powerless to provide for cases of mental deficiency following encephalitis lethargica if the patient is over 16 years of age. There is doubt whether the Ministry of Health will be able to introduce a similar bill next session, as that department is already claiming a large share of the legislative programme.

The Parliamentary Medical Committee has given consideration to the possible business of Parliament in 1927. It looks forward to a bill relating to the Poor Law and local government, and to action on the Royal Commission reports on lunacy and on National Health Insurance. It expressed its satisfaction with the Parliamentary Notes in the *BRITISH MEDICAL JOURNAL* as a summary of business of medical interest transacted in the House of Commons. From other sources it is learnt that the Government has little hope of passing a Lunacy Bill next session.

The University of London Bill was read a third time by the House of Commons on December 7th, and returned with amendments to the House of Lords. The amendments were considered and agreed to on December 13th, and the Births and Deaths Registration Bill was read a third time and passed by the House of Lords on the same day.

Parliament was prorogued on December 15th, the session of 1926 being thus ended. Bills which then awaited the Royal Assent included Merchandise Marks, Electricity, University of London, Births and Deaths Registration, Housing (Rural Workers), Coroners (Protection against Poisoning), and Public Health (Smoke Abatement).

The session of 1927 will probably commence on February 8th.

### Coroners Bill.

A Standing Committee of the House of Commons commenced the examination of the Coroners Bill on December 7th. Mr. Rhys Davies moved an amendment to provide that coroners should have both a medical and a legal qualification; this had been the practice in London for some years, and he could not understand why a single qualification should suffice in towns like Manchester, Liverpool, or Leeds. He did not think the medical qualification alone was quite sufficient for these posts, and he was sure a legal one was insufficient. Captain Hacking (Under Secretary for the Home Office), who was in charge of the bill, said the number of coroners in London was small compared with the number throughout the country—about 300 in all. The choice would be most restricted by insistence on a dual qualification. Large towns

could impose that dual qualification as a condition of appointment if they desired. The amendment was negatived. The clause abolishing franchise coronerships was accepted, as was that relating to the salaries of county and borough coroners, a provision being added that in default of agreement between a borough coroner and the council his salary should be payable at a rate fixed by the Home Secretary. Captain Hacking announced that the Duchy of Lancaster was going to surrender all its franchise coronerships, and that there would soon be none. On the question of summoning a jury in inquests arising out of industrial and traffic accidents and in other stated circumstances, Mr. Lee moved that the word "shall" should be substituted for "may." Captain Hacking said the coroner could always evade the word "shall." Mr. Batey said that in the North of England in cases of fatalities at the pits the men's societies had found it much better to deal with a jury than with a coroner. They might find the coroner absolutely ignorant of pit work. The amendment was withdrawn. On Clause 14, covering the viewing of the body and the issue of a burial order, the wording of a subsection was altered to read:

"Subject to the provisions of any rules made under this Act an order of a coroner authorizing the burial of a body upon which he has decided to hold an inquest may be issued at any time after he has viewed the body."

The clause must work in connexion with the Births and Deaths Registration Bill, and the Home Office thought it should have an opportunity of issuing regulations and rules, rather than lay down something in this bill which might prove unworkable when the other bill became an Act. The Lord Chancellor would make the rules, which would be simple.

On a subsequent clause, Mr. Lee moved that the coroner within whose jurisdiction the accident happened should hold the inquest, and if he deemed it expedient should keep the bodies within that jurisdiction pending the inquest. Mr. Batey said the practice in the North of England for a hundred years had been to take the body of a man killed in a pit straight home, but last year a coroner had refused permission. Captain Hacking said that in many cases it was advantageous that the inquest should not necessarily be held at the place where the accident happened. Several people might be badly injured in a colliery accident, and might be taken to the nearest town where there was a hospital, and if they died there it would not be advisable to remove the bodies to another district to hold the inquest. It might be for the convenience of everyone that the inquest should be held at the place where the bodies were. It would be better that the bodies, if necessary, should be collected together and the inquest held in one place, to save the expense of the coroner and witnesses going from one place to another. The amendment was rejected.

On the clause allowing a coroner to order a *post-mortem* examination in a case where he thought that might show that an inquest might be unnecessary, Sir Richard Luce moved to insert words providing that the coroner should also have power to call for a report from a duly qualified medical practitioner recently in attendance on the deceased if of opinion that this might render an inquest unnecessary. This principle already existed in Scotland, where the Procurator Fiscal obtained a formal written report from the medical practitioner in attendance. A departmental committee had recommended, in 1909, that this feature of the Scottish system should be adopted in England. It was in operation in a coronership in Durham, had never been challenged by the courts, and, according to the coroner concerned, it had halved the number of inquests. Sir Richard Luce added that from personal experience he could say a large number of inquests were needless. Mr. Rhys Davies said the amendment would practically transfer the work of the coroner to the medical practitioner, but he agreed that the certificate of the medical practitioner would be very important in most cases. Dr. Fremantle said the amendment would regularize a practice that had existed. The doctor would simply give the coroner a preliminary report on which he could make up his mind. Captain Hacking said the coroner must accept full responsibility, and could not delegate it to anyone else. It was open at present for the local authority to undertake any reasonable and necessary expenditure in obtaining a report from a doctor. The Durham County Council allowed 10s. 6d. for a report, and there was no reason to believe this was illegal. The doctors, instead of asking for legislation to impose such a fee, should get local authorities to exercise their existing power to provide in schedules for such a fee. Later the backward authorities could be brought into line by the Home Secretary. Mr. Batey supported the amendment as an agent of the Durham Miners' Association, saying that in Durham, where the practice of accepting reports prevailed, there had not been a single complaint. Sir Richard Luce put the case of a patient suffering from heart disease who died suddenly without having seen the doctor for a few weeks. The coroner almost invariably held an inquest, and the doctor was not allowed to give a certificate of the cause of death. At the same time the doctor knew all about the patient, and could give the coroner full information in writing, if asked, which would avoid the need for an inquest. The amendment was defeated by 21 to 7.

On the provision that the coroner might direct a legally qualified medical practitioner to make a report Mr. Smithers moved that this should be a written and signed report on oath. Captain Hacking said the principle of the amendment could be met by enjoining the medical man to report to the coroner in writing. The section was amended, and the section was moved another amendment, *desi* that there was nothing underhand in the it was held subject to the coroner's orders. Captain Hacking gave an assurance and the amendment was withdrawn. On Clause 22, relating to the power of a coroner to request specially qualified persons to make *post-mortem* and special examinations, Mr. Gates

mored to extend the provision to franchise coroners, but Captain Hacking said the clause applied to franchise coroners. Mr. Leo moved that notice of intention to hold a *post-mortem* examination should be given to the trade union representative of the deceased, and that the union should have the right to be represented at the examination by a qualified medical man. He said that there was a prevailing idea among the families of men who died as the result of accidents that the medical man appointed by the coroner was in some way hostile to their interests. He knew from experience that there was not much ground for that suspicion. There was no difficulty with regard to the coroner knowing who was the trade union representative.

Dr. Fremantle said the medical profession was always glad to have other medical evidence brought in to assure suspicious minds among the lay public that the medical men had done their best and had been accurate. The family ought to be represented, and could, if necessary, notify a trade union representative. Mr. Cape said he thought the intention of the amendment was that the family doctor should be brought to attend the examination. Sir Richard Luce sympathized with the principle of the amendment, but saw considerable difficulties. Employers would also wish to be represented, and most places where *post-mortem* examinations were conducted were not suitable for a large number of persons. Mr. Diney said trade unionists agreed that, while the trade unions should have the right to appoint a medical man, which was essential for compensation purposes, the employer's doctor should be there too. Captain Hacking agreed with this last contention, but said the matter ought to be for the discretion of the coroner. It had been shown that in practice the trade union was notified, and a medical officer appointed by them with the consent of the relatives, as well as the doctor representing the employer's organization. There appeared to be no necessity for putting this into the bill and making it a hard and fast rule. The Home Secretary had power to make rules through the Lord Chancellor. Mr. C. Edwards said he had been a miners' agent in a district where there were two coroners. One in every case informed him; the other refused to give information of inquests. The amendment was rejected by 16 to 10.

Mr. Leo proposed that at the inquest the trade union might call and examine the medical practitioner who had attended the examination on its behalf. Captain Hacking suggested that the committee should have a little more confidence in coroners, and asked to be told of a case where a medical man had attended a coroner's court and had not been called to give evidence. Mr. Cape said medical men had dignity, and would not attend to see whether the coroner would allow them to give evidence. Captain Hacking said that if in practice evidence were not admitted the Home Secretary would cause an inquiry to be made. The amendment was defeated. Discussion was resumed on December 8th. On the proposal that "where a person states upon oath before the coroner that in his belief the death of the deceased was caused partly or entirely by the improper or negligent treatment of a medical practitioner or other person, that medical practitioner or other person shall not be allowed to perform or assist at any *post-mortem* or special examination made for the purposes of the inquest on the deceased," Mr. Smithers moved to make the statement on oath unnecessary and allow the coroner to act on information received. Captain Hacking said the bill afforded a better procedure in these rare cases. The coroner could request any legally qualified practitioner to make examinations. The oath could be taken before any justice or commissioner, or before the coroner. If it were placed at the discretion of the coroner to say that a certain doctor should be prohibited from performing a *post-mortem* examination, it would be casting a very obvious slur on certain members of the medical profession before any inquiry had been carried out. A person making an accusation against a medical practitioner in the coroner's court would be privileged. The amendment was withdrawn. Sir Richard Luce moved that the medical practitioner to whom objection had been taken should have the right to be present or represented at the examination. He said he had known of no case where a coroner had refused this. The provision that the medical man should not assist or direct at the *post-mortem* examination was put into account of a case in which a medical man was suspected of murder by poison. He joggled the elbow of the man who was performing the *post-mortem* examination and upset the contents of the stomach so that they could not be examined afterwards. Do so appeal by Mr. Rhys Davies, Captain Hacking offered to add the words "but such medical practitioner or other person shall have the right, if he so desires, to be represented at any such *post-mortem* examination." Sir Richard Luce said there might be chemical tests of great importance which a representative should have a right to attend. Captain Hacking said the special examination might last many days, and an analytical test might easily be upset by anyone who desired to do so. If the coroner thought that the medical man impugned should be present he could still attend. Sir Richard Luce withdrew his amendment. On the clause relating to the fees of medical witnesses, Captain Hacking moved that for attendance at any inquest at which no *post-mortem* examination had been made by a practitioner the fee to that practitioner should be one and a half guineas for each day he was required to attend, in place of the inclusive fee of a guinea proposed in the bill. Captain Hacking said he would later suggest a two-guinea fee for a *post-mortem* examination. He thought these fees reasonable. Mr. Cape, while criticizing the proposal, admitted that one guinea was too small a fee for a *post-mortem* examination. Mr. Lee thought it unfair that the medical man who had to travel miles to attend should be paid the same fee as the doctor on the spot. Dr. Fremantle said few doctors were on the spot, and in many cases a whole morning or a whole day of the doctor's time was occupied. The doctor's fees had not been

increased since 1844. Mr. R. Davies asked whether the Government had considered that where the inquest was on a pauper patient the doctor would already be paid to the end of the quarter under the National Health Insurance Act. The amendment was accepted by 18 to 2. Captain Hacking then moved that the fee for a *post-mortem* examination without subsequent attendance at the inquest should be two guineas. Sir Richard Luce moved a further amendment to make the fee three guineas; he said that one guinea was a disgraceful fee for performing so important and often dangerous a duty. He supported his view with a quotation from the Departmental Committee of 1903-10. The figure of two guineas was accepted by the Committee. The Committee then agreed that for a *post-mortem* examination followed by attendance at an inquest, the fee should be three guineas for the first day of attendance, and one and a half guineas for each subsequent day on which the medical practitioner is required to attend.

Mr. Rhys Davies asked the Labour members of the Committee to divide against this clause to protest against the way the Government had succumbed to the medical profession. Captain Hacking denied the implication of pressure, and said that the Home Office considered the present fees too small. The clause was added to the bill by 14 to 6. A new clause providing for superannuation on pension of county and borough coroners was added to the bill as an amendment to make the pensions contributory being negatived. On a new clause dealing with payments and allowances Sir Richard Luce moved an amendment to provide that medical men should have allowances for distant journeys. Captain Hacking said the legality of paying such allowances had never been challenged. In case of difficulty appeal could be made to the Home Secretary. The amendment was withdrawn. Other proposed new clauses were withdrawn and the bill was reported to the House.

The Report stage of the Coroners (Amendment) Bill was taken on December 13th. Mr. Gates moved a new clause on behalf of the London County Council, providing that whole-time coroners appointed after the passage of the Act should make contributions towards their pensions at the rate of 5 per cent. of their salaries, and that they should be paid pensions calculated according to their length of service. The amendment, however, found no second and so fell through.

Mr. Pilling moved to omit Clause 23, which provides for fees to medical witnesses who, at the request of a coroner, make a *post-mortem* examination or attend an inquest. Captain Hacking (Under Secretary for Home Affairs) said that the effect of the amendment would be that medical men would not get any fees at all.

Mr. Rhys Davies said that the amendment was put down as a protest against the manner in which the increase of fees had been made in committee. He asked if there were not some communications between the Home Office and the British Medical Association in the first instance as regarded the amount of fees to be inserted in the bill. Dr. Fremantle denied that there had been any machinations between the Government and the British Medical Association. He had personally come into the House of Commons untrammelled by any responsibility to the British Medical Association. He only supported an increase of medical fees in so far as he thought that it could be justified by the needs of the case from the point of view of the State. In this instance he and others had had a very hard job to convince the representative of the Home Office of the necessity and right of their cause.

Dr. Vernon Davies protested against the attack made on the medical profession by the mover of the amendment. It was entirely unnecessary to make a comparison between doctors and miners. Speeches of that nature were apt to give a very wrong impression. Anything which endangered the good feeling between medical men and their patients was detrimental. If a guinea was a fair fee in 1844, surely at this time there should be some increase. There was a tendency in the Labour party to belittle the medical profession, and the harm that this might do in the country might be very great.

The amendment was negatived.

The Report stage was concluded. On the motion for the third reading Mr. Rhys Davies said that the Labour party had a very high regard for the medical profession.

In reply to questions, Captain Hacking said that the Home Secretary would direct coroners to allow trade union representatives to attend inquests and to allow medical men representing relatives to be present at *post-mortem* examinations.

The third reading was agreed to.

In the House of Lords, on December 14th, the Commons amendments to the Coroners Bill were accepted.

**Acute Poliomyelitis.**—The Minister of Health is advised that the claim made in America that the virus of acute poliomyelitis had been found in the dust of sickrooms has not been confirmed, and that there is no direct evidence that it is transmitted by uncooked food.

**Vaccination and Poliomyelitis.**—On December 10th Mr. Groves asked the Minister of Health why no mention of vaccination was made on the death certificate of the young man of 19, whose name had been privately given to his department, who recently died from acute anterior poliomyelitis fourteen days after vaccination. Mr. N. Chamberlain said the certification of the cause of death rested entirely with the medical practitioner in attendance. Inquiries had, however, been made into the circumstances of the death in question, and he learnt that vaccination was not entered on the death certificate because in the opinion of the certifying practitioner vaccination was not a primary, secondary, or contributory cause of death. In an answer apparently referring to

the same case, Sir K. Wood said that the vaccination of a young man of 19, who recently died about fourteen days after vaccination, was not performed with Government lymph. The case had not been reported to the Committee on Vaccination now sitting.

**Crippled and Physically Defective Children.**—The President of the Board of Education told Mr. R. Morrison, on December 9th, that provision is made for the education of physically defective children at special schools in 263 areas of England and Wales, and in about 140 for the treatment of crippled children by orthopaedic or similar schemes. In about 40 areas no provision had been made, and he would press local authorities to carry out their duties. In 1925 the number of children returned as physically defective within the meaning of the Education Act, 1921, was 142,889. They included those suffering from tuberculosis, and those classed as cripples or as "delicate." Of these, 25,769 attended special schools, 94,332 were at public elementary schools, and 3,857 at other institutions, while 18,931 were not attending any school. Most of the delicate children only required a relatively short period at an open-air school, while the majority of the cripples could be so far benefited by orthopaedic treatment as to make them fit to profit from instruction in ordinary schools. Lord Eustace Percy did not think the country needed better ascertainment and but it was out of harmony with the tendency to suppose that all physically defective children should be taken to special schools.

**Insurance Benefits.**—In a reply, on December 9th, to Mr. Rhys Davies, Mr. Chamberlain said he was aware that a few approved societies in Lancashire and elsewhere were still reluctant to adopt the new scale of fees and conditions of service for dental benefit. The opposition to the new scale was, however, daily growing less as the advantages of the new arrangements drawn up by the Dental Benefit Joint Committee became more fully appreciated. The Public Dental Service Association had called the attention of dentists to a warning notice issued by the Dental Board against anything in the nature of canvassing by or on behalf of dentists with a view to securing work by an offer to accept fees below those of the new agreed scale. Mr. Chamberlain added that he saw no need to take action, as an agreement had already been reached. Answering Mr. Thurtle on the same day, Mr. Chamberlain said the money paid by way of contributions to the health insurance scheme in England and Wales for the seven years from January 1st, 1919, to December 31st, 1925, was £154,000,000. Of £143,000,000 spent on benefits in England and Wales during the same period, £86,000,000 represented amounts actually paid out to insured persons by way of benefits, and £57,000,000 the cost of medical benefit provided for them through insurance committees.

**Spallinger Treatment of Cattle.**—On December 13th Mr. Hurd asked the Minister of Agriculture if his department had received a copy of the report of the Geneva State veterinary surgeons recording the success, which they stated to be beyond all hopes, of the Spallinger tests, now completed there, with anti-tuberculosis vaccine on cattle, and whether he contemplated any further steps to estimate the value of these reported results. Mr. Guinness replied that the Ministry's knowledge of the tests of M. Spallinger's vaccine which had recently taken place in Switzerland was limited to accounts published in the press. In 1921 a committee was formed under the chairmanship of Commander Bayley, R.N., which included prominent agriculturists, doctors, and veterinary surgeons. This committee had formed complete plans for experimental trial of the vaccine, but was unable to obtain any vaccine from M. Spallinger, and therefore the matter dropped. He understood that the committee was still in being, but he was unable to say whether it would be prepared again to undertake the trial of this vaccine.

**Research in East Africa.**—In the debate on the second reading of the Palestine and East Africa Loans (Guarantee) Bill on December 7th, Dr. Henden Guest said that the House should have more particulars concerning the proposed expenditure of £100,000 on research into native welfare. Every time railways were built or public health improved in Africa native habits were uprooted and native traditions upset. Statistics showed that from 1901 to 1921 there had been a decrease in the population of Uganda and Kenya, a slight increase in Somaliland, considerable increase in the Sudan, and a steady increase in Nigierin. Where the Government had been best the social conditions were best, and there was a steady increase in population. This bill would bring on a slate of things in which the population of tropical Africa might largely increase. Mr. Ormsby-Gore said that in some areas of Africa the British had stopped the tribal wars, had broken up the old customs, but the males were doing absolutely nothing. The sooner that came to an end the better. Mr. Ormsby-Gore added that the Colonial Secretary and he would get every penny they could to promote scientific research within the Empire. He himself had found glaring instances of the shortcomings of his fellow-countrymen in research. He had to preach to very unconverted people, and would continue to do so. Research meant not merely investigation of the diseases of plants, animals, and human beings, but more fundamental research into economic and social relations. A much larger staff for research was needed. The bill was read a second time. It passed through Committee on December 8th, and through Report stage on December 10th. The bill was read a third time in the House of Commons on December 13th, and was afterwards read the first time in the House of Lords.

**Experiments on Dogs.**—Captain Hacking informed Sir R. Gower, on December 13th, that 1,247 dogs had been used for experimental purposes at University College, London, during 1925 and 1926. Of these, 21 were used for demonstrations before students.

Section 3 of the Act laid it down that experiments for this purpose could only be performed if a certificate was given by two of the scientific authorities specified in the Act that the experiments were absolutely necessary for the due instruction of the students with a view to their acquiring physiological knowledge or knowledge which would be useful to them for saving or prolonging life or alleviating suffering. Such experiments were required to be performed under anaesthetics, and the animals must be killed before recovering consciousness. All but 28 of the total number of animals were kept under anaesthetics during the whole of the experiment and destroyed before recovering from the anaesthetic. On December 14th Captain Hacking told Sir R. Gower that since January 1st, sixteen dogs had been used for experiment at University College, and five at the Brown Institution. He could not undertake to give details of individual experiments, but the object of the experiments was in seven cases the investigation of dental diseases, in five insulin research, in four investigation of diseases of the tonsils, and in five investigation of the relation of the gall bladder to intestinal diseases. The Act required that before any experiment could be performed which involved keeping the animal alive after it recovered from the anaesthetic, a certificate must be given by two of the scientific authorities mentioned in the Act to the effect that killing the animal before it so recovered would necessarily frustrate the object of the experiment; and further, that before any such experiment was performed on a cat or dog an additional certificate must be given by two of the same scientific authorities that for specified reasons the object of the experiment would be necessarily frustrated unless it was performed on an animal similar in constitution and habits to a cat or dog and that no other animal was available for such experiment. These certificates were duly given in each of the cases mentioned above.

#### Notes in Brief.

A proposal for the compulsory registration of charities on the principle of the War Charities Act is being considered by an inter-departmental committee.

In 1925 five persons in the pottery trade died from lead poisoning; their average age was 58. Corresponding figures for 1924 were 18 and 52.

The Minister of Health suggests that local authorities during the first part of 1927 should abstain from the use of food preservatives in F. T. foodstuffs.

Of 2,000 steel houses in Scotland for which Parliament has made a special grant, 1,086 had been completed at the end of November, and 906 were building. Favourable reports had been received from tenants who had lived in steel houses both summer and winter.

The Government is considering the co-ordination of the research work carried on by or under it in this country.

The Minister of Health doubts whether there is sufficient agreement on facts or conclusions to justify the introduction of legislation making it a punishable offence to marry or cohabit with the marriage of any person certified as a mental defective.

The total number of applications for old age pensions received in the six months to November 1st, 1926, in England, Wales, and Scotland was 216,814.

The Foot-and-Mouth Disease Research Committee has presented a second progress report, which is being printed.

No milk is being brought from Ireland into England and Wales.

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

DR. W. E. DIXON, F.R.S., has been re-elected assessor to the Regius Professor of Physics for the current academic year.

At a congregation held on December 10th the following medical degrees were conferred:

M.B., B.Ch.—J. Holmes, E. W. P. Thomas, W. Richards.  
M.D.—C. J. P. Grosvenor, C. G. Taylor.  
B.Ch.—W. S. Hunt.

### UNIVERSITY OF LONDON.

The following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—H. A. C. Dalzell, \*H. Hariston, \*H. M. Mitman, \*H. H. Steele (*University Medal*), Dorothy R. Adams, C. E. Allen, H. Ayrton, S. C. Bakke, J. R. Beagley, S. A. Beards, L. F. Beecle, E. H. J. Berry, E. H. D. Bowie, R. J. Cann, Rose A. Carter, Evangelina A. Clark, J. S. Coloman, H. A. Cooper, A. C. Counsell, Anne A. Craig, S. S. Cruden, H. J. Davies, Muriel Davies, Doris L. Delittle, J. C. G. Dickinson, J. D. Durand, Elaine G. H. Earenger, D. C. Fairbairn, M. Fishman, W. Fletcher-Barrett, W. F. Galeford, S. C. Gawn, P. L. Goitein, Minnie Gordon, C. W. Greenfield, J. I. Griffiths, R. D. Gross, L. W. Hale, J. G. Hamilton, K. P. Hare, R. B. Hawes, F. E. Heath, Frances M. Hester, J. C. Hewatson, N. G. Hill, F. D. M. Hocking, D. P. Holmes, B. B. Hosford, D. V. Hubbard, Amelia M. Ison, C. James, H. K. James, Iorwerth H. Jones, R. O. Jones, Isabel M. Jordan, Gladys Kay, Greta M. Langdon, R. H. Leigh, R. H. Little, G. K. Loveday, Elsie



Lyon, Margaret B. MacDonald, N. W. Macketh, Evelyn P. D.  
 Maclean, D. H. MacLeod, J. McPherson, Dorothy H. Mearns,  
 Marr A. Marshall, S. K. Montgomery, J. G. Maran, Dorothy  
 L. Seale, G. J. V. Nelson, G. A. H. Norman, H. L. O'ershaw,  
 Catherine L. Orr-Fraser, Evelyn M. Pakeman, W. F. Parry, C. F.  
 Parsons, A. D. Page, G. E. O. Peirce, L. M. J. R. Pilot, L. Price,  
 Henrietta Procter, Muriel P. Prou, D. M. Pryce, Bertina M. Rix,  
 L. H. Savin, J. W. Schabert, J. S. Scherach, L. G. Seward, Mary  
 M. Shillo, A. S. Simpson, A. J. D. Smith, W. E. Snell, I. P. Spurrell,  
 E. P. Stead, Edith A. Sinker, S. W. Strong, D. L. Thomsen, J. D. B.  
 Thomas, O. G. Tippley, J. H. Tree, Reuben E. Waters, P. Ruth M. Webb,  
 A. S. Wesson, Violet M. Weston, L. A. White, Doris Williams, Jane  
 C. Williams, Emily A. C. Wilson, H. C. Wilson, J. T. Wybourn.

\*Became. †Distinguished in Medicine ‡Distinguished in Pathology.  
 §Distinguished in Surgery. ¶Distinguished in Midwifery.

## UNIVERSITY OF LIVERPOOL.

Major W. SCOTT PATTON, I.M.S.(ret.), lecturer in medical entomology in the University of Edinburgh, has been appointed to the Dutton Memorial Chair of Entomology in the School of Tropical Medicine of the University of Liverpool, in succession to Professor Robert Newstead, F.R.S., retired.

## UNIVERSITY OF ST. ANDREWS.

The court concurred with the University of Edinburgh in nominating Dr. R. W. Johnstone (Professor of Midwifery, University of Edinburgh) to be the representative of the two universities on the Central Council of the Midwives Board for Scotland, in succession to Professor Watson.

The appointment of Dr. Annie Fulton as an instructor in relation to the advanced medical school (in succession to Dr. Andrewina Laine) was agreed to.

Principal Mackay was reappointed the representative on the General Medical Council for five years from January 7th next.

## UNIVERSITY OF DUBLIN.

At the first winter commencements in Michaelmas term held in the theatre of Trinity College, on December 10th, the following degrees and licences in medicine were conferred :

M.D.—J. A. Acheson, M. Hawley, J. C. J. McIntire.  
 B.S., B.N., B.A.O.—E. W. Birmingham, A. J. Casella, Gladys F. Craft,  
 H. B. E. Deane-Oliver, Margaret H. Donaldson, L. P. N. M.  
 Early, H. E. E. Emerson, E. H. Harle, R. A. J. Holmes-Jevers, V. G.  
 Horat, J. Johnston, E. C. Kiley, C. J. Montgomery, A. T. A.  
 O'Byrne, J. R. Patrick, Rachel P. Pender, A. O. O.  
 Oshlacz, Stella C. Ross, A. Sachs, J. C. T. Sanctuary, Norma M.  
 Smith, L. B. Somerville-Large, V. St. G. Vanchao, C. F. M. Wilson.  
 Annette K. Wood-Martin.

LICENSE IN MEDICINE, SURGERY, AND OBSTETRICS.—A. N. B. Odibert.

DIPLOMA IN MEDICINE, SURGERY, AND OBSTETRICS.—A. N. B. Odber.

NATIONAL UNIVERSITY OF IRELAND.

At the meeting of the Senate on December 10th Dr. Alexander Anderson, D.Sc., LL.D., President of University College, Galway, was elected Vice-Chancellor and Dr. Denis J. Coffey, LL.D., M.B., President of University College, Dublin, was elected one of the three pro-Vice-Chancellors of the University. The Senate decided that the degree of D.Sc. (Public Health) should be awarded to William D. O'Reilly, M.D., D.P.H., University College, Dublin, upon published works lodged by him. A report from the outgoing Vice-Chancellor, Dr. Denis Coffey, as representative of the University on the General Medical Council was approved.

UNIVERSITY OF SYDNEY.

UNIVERSITY OF SYDNEY.  
The following appointments are announced by the Senate:

*Professor of Psychiatry:* William S. Dawson, M.A., M.D., Ox., Hill, London, vice Professor Sir John Macpherson, *Lecturer in Guy's Hospital Medical School, London, vice Mr. S. H. Stroud, Newcastle-on-Tyne, vice Associate Professor J. A. Schofield.*

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.  
An Ordinary Council meeting was held on December 9th, when the President, Sir Berkeley Moynihan, Bt., was in the chair.

### Representation of Members.

*Representation of Members.*  
The resolution carried at the annual meeting of Fellows and Members asking the Council to take a postal vote of Fellows and

Members on the question of admitting Members to direct representation on the Council of the College was referred to a committee for consideration.

*Court of Examiners.*

Mr. E. Roek Carling, surgeon to the Westminster Hospital, Mr. A. E. Webb-Johnson, surgeon to the Middlesex Hospital, and Mr. C. Fraulau, surgeon to St. George's Hospital, were elected members of the Court of Examiners.

Mr. O. H. Howkins, dental surgeon to the Birmingham Dental Hospital, was elected a member of the Board of Examiners in Dental Surgery.

### Diplomas and Licences.

The report of the Court of Examiners stated that of the 101 candidates at the Fellowship Examination 70 were rejected and 31 passed. Diplomas of Fellowship were granted to the following 27 candidates; the other four successful candidates (H. A. Brews, C. I. N. Morgan, F. T. Ridley, and A. J. Wrigley) have not yet complied with the regulations.

J. S. Rowlands, P. B. Kittie, R. C. Brown, E. A. Coldrey, P. R. Howe,  
L. J. Levy, A. J. P. Jeffery, N. Asherson, W. E. Barnie-Adhead,  
H. H. Savin, V. W. Dix, K. W. Harrison, W. Mitchell, A. C. King,  
K. O. Parsons, S. J. H. Grubb, R. Robb,  
P. Malpas, T. S. M. Barnett, A. Harris,  
P. Kitchy, L. D. A. McCrea, P. A. Mitchell,  
J. G. Sacks.

Diplomas of membership were conferred upon A. C. Jepson, P. N. Jahrt, and L. A. Richardson.

Licences in Dental Surgery were conferred upon 83 candidates.

### Appointment of Representatives.

Sir Berkeley Moynihan was reappointed a representative of the College on the Court of Governors of the University of Birmingham.

Mr. Victor Bonney was appointed a representative of the College on the Central Council for District Nursing in London.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS  
OF GLASGOW.

The following have been admitted Fellows of the Faculty :

W. C. Gray, I.M.S., P. C. Lal, I.M.S., A. S. M. Macgregor, O.B.E., B. T. Rae, J. Rutherford.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

At a special business meeting of the Fellows, held on December 10th, the President admitted to the licences in medicine and midwifery of the College the ..... who had been successful at the white ..... the conjoint scheme with the Royal Coll .....

T. A. Caraher, W. Monnelly, Patricia O'Kane, D. L. Trant, T. Walshe.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

Mr. ADAMS A. M'CONNELL, M.B., B.Ch., B.A.O., F.R.C.S.I., has been appointed Professor of Surgery.

## Medical News.

THE proposed pension scheme for hospital officers and nurses, to which we referred on August 14th (p. 321), has now been accepted by eighty-eight London hospitals, comprising 11,579 beds. Steps are being taken to obtain quotations from insurance companies for the various benefits contemplated. It is expected that these will have been received by the end of the first month or six weeks of next year, and that the scheme will be ready for starting shortly afterwards. A memorandum dealing with the present position of the scheme has been issued by the provisional council, and may be obtained from the printer, G. Barber, 23, Farnival Street, E.C.4.

THE Livery dinner of the Society of Apothecaries of London was held at Apothecaries' Hall on December 14th under the chairmanship of the Master, Dr. Alfred Hepburn, and was made the occasion of the presentation to Professor W. E. Dixon, M.D., F.R.S., of the first award of the Society of Apothecaries' gold medal. On the obverse of this medal is a finely moulded bust of Galen, and on the reverse Science, represented by a female figure, is shown instructing a youth in the right use of herbs: an apothecary's oven is also indicated, and the insignia of Aesculapius. The toast of the Royal Colleges was proposed by the senior warden, Dr. R. Whiteside Statham, and was acknowledged by Sir John Rose Bradford and Sir D'Arcy Power. The junior warden, Lieut.-Colonel C. T. Samman, R.A.M.C.(ret.), proposed the health of the guests, and Mr. Arthur Deussen, clerk of assize in the South Eastern Circuit, responded.



THE Prince of Wales presided, on December 14th, at the distribution meeting of the general council of King Edward's Hospital Fund for London. It was announced that the sum for distribution was £284,750, including a special grant of £39,750 from the Wells estate. Further particulars will appear in a later issue.

THE house and library of the Royal Society of Medicine will be closed from Thursday, December 23rd, to Tuesday, December 28th, both days inclusive.

THE Royal Society of Medicine will hold its next social evening at 1, Wimpole Street, Cavendish Square, on Monday, January 17th. At 8.30 p.m. the guests will be received by the President and Lady Berry, and at 9.30 Professor A. V. Sheen, C.B.E., M.S., will give a short address, entitled "Medicine in Ancient Greece," with lantern illustrations. The library will be open, and various objects of interest will be exhibited. Music and light refreshments.

THE Fellowship of Medicine announces that from January 10th to 22nd the Prince of Wales's General Hospital will hold an intensive course in medicine, surgery, and the specialties. A fortnight's course in diseases of children by the Royal Free Hospital and the Children's Clinic will start on January 10th. From January 11th to February 5th there will be a series of lecture demonstrations on psychological medicine, on Tuesdays and Saturdays, at 11 a.m., at the Bethlem Royal Hospital. From January 17th to 29th an intensive course in cardiology (limited to 20) will be held at the National Hospital for Diseases of the Heart. Courses in practical obstetrics can be arranged at Queen Charlotte's Hospital to last two weeks or a month. Each week the City of London Maternity Hospital holds a course in obstetrics and child welfare, personal application for which must be made to the office of the Fellowship of Medicine. The Fellowship can also arrange for clinical assistantships at the Samaritan Hospital. The series of lectures on emergencies in medicine and surgery will be continued from January 27th; demonstrations in clinical surgery and ophthalmology will also be resumed in January. Copies of all syllabuses of the special courses and the programme of the general course of work can be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

A DISCUSSION on the inebriate woman will be opened by Commissioner Adelaide Cox, C.B.E., of the Women's Social Service Department of the Salvation Army, at the meeting of the Society for the Study of Inebriety to be held at 11, Chandos Street, Cavendish Square, W., on Tuesday, January 11th, at 4 p.m.

TWO sets of post-graduate courses have been arranged at the Royal Northern Hospital, Holloway Road, N. 7. The first course is open to all medical practitioners free of charge, and will consist of weekly lectures or demonstrations by members of the staff on Tuesdays, at 3.15 p.m., commencing January 4th, 1927, and intensive courses, each of one week's duration, to be held in February, May, and October. The second course on recent advances in medicine is suitable for the M.R.C.P. and other higher examinations. Full particulars can be obtained on application to Dr. E. G. B. Calvert, Dean, Royal Northern Hospital, Holloway Road, N. 7.

THE Old Epsomian Club held its forty-seventh annual meeting and dinner on December 9th at the Trocadero Restaurant, the President, Mr. H. A. T. Fairbank, in the chair. In reply to the toast, "Floreat Epsomla," proposed by him, the headmaster gave an account of the successes of the College during the year in all departments. He referred particularly to the success in obtaining guarantors and subscribers towards the £3,000 required to build a new cricket pavilion. The toast of "The Visitors" was proposed by the Right Hon. Sir H. J. Mackinder in a humorous speech, and Dr. G. E. Waugh, proposing the health of the chairman, referred particularly to Mr. Fairbank's distinguished services during the war.

THE seventh Latin-American Medical Congress will be held at Mexico on March 15th, 1927.

**Tuberculous Disease**, which is, to quote the sub-title, "a study in continuous and quasi-continuous temperature records of man and animals in health and disease." This is a reissue of papers by the late Sir Germaine Sims Woodhead and Dr. P. C. Varrier-Jones, together with the results of Dr. Varrier-Jones's further experiences at Papworth. It has been printed and bound, and will be published by the consumptive ex-patients in the printing department of the Papworth Village Settlement.

LORD D'ABERNON, G.C.M.G., has accepted the chairmanship of the Industrial Fatigue Research Board, to which he has been appointed by the Medical Research Council. Mr. William Graham, M.P., has relinquished the chairmanship under the pressure of other public work, but will remain a member.

THE Canadian Department of Health at Ottawa has issued in pamphlet form a list of the public, private, and Red Cross hospitals of Canada. The institutions are arranged according to the various provinces, and the number of general and maternity beds is given in each case. A map of the Dominion is appended showing the distribution of hospitals in each province. Copies of the pamphlet are obtainable from the department.

THE Bureau of the Far East at Singapore reports that during the week ending October 30th there were 9 cases of plague with 5 deaths, 6 cases of cholera with 2 deaths, and 33 cases of small-pox with 5 deaths; during the week ending November 6th there were 18 cases of plague with 10 deaths, 32 cases of cholera with 22 deaths, and 26 cases of small-pox with 6 deaths; and during the week ending November 13th 76 cases of cholera with 38 deaths and 26 cases of small-pox with 6 deaths.

THE centenary of the Ludwig Maximilian University at Munich, which counted among its members Liebig, Pettenkofer, and Röntgen, was celebrated last month.

UNDER the will of the late Mr. George Paterson Walker the Kilmarlock Infirmary received £2,000. The late Captain Athelstane Robert Price has bequeathed £1,000 each to the Royal Salop Infirmary and to the Shrewsbury Eye, Ear, and Throat Hospital for Shropshire and Wales.

THAT small-pox is still occasionally as virulent as ever is shown by the fact that out of 1,908 cases at Rio de Janeiro from January 1st to August 14th 945 died—a mortality of 44.2 per cent.

THE Health Organization of the League of Nations has published in two volumes the Public Health Code of the Kingdom of Belgium, printed throughout in French. The first volume, of 388 pages, comprises the laws and regulation concerning hygiene and public health; the second, of 132 pages, those relating to the practice of medicine.

PROFESSOR GALLENIAERTS of Brussels has been nominated president for 1927 of the Royal Academy of Medicine of Belgium, with Professors Léon Frédéricq and Malvoz of Liège as vice-presidents.

BY a recent enactment the use of alcoholic liquors has been forbidden to persons under 18 years of age in all the college and educational establishments throughout Italy.

DR. CHAGAS, professor at the faculty of medicine of Rio de Janeiro, and Dr. Medin, professor at the faculty of medicine of Stockholm, have recently been made doctors *honoris causa* of the Paris faculty of medicine.

THE first congress of the Latin medical press, which was to have been held at Paris in October, has been postponed to April. The chairman of the executive committee is Dr. M. Looper, president of the Association of the French Medical Press. Further information can be obtained from the general secretary, Dr. L. M. Pierra, 12 Rue de Babylone, Paris VII.

THE subjects to be discussed at the eighteenth congress of the Italian Society of Psychiatry, which is to be held at Trent next year, will include endocrinal tension and its relation to neuroses and psychoses, changes in the structure of the cortical cells in mental disease, and the civil capacity of mental patients and abnormal persons according to present legislation.

In reply to a request for information from the Union of School Hygiene Societies of Japan the London Education Committee has expressed its opinion that it would be advantageous if the International Congress of School Hygiene were revived and arrangements made for a meeting at as early a date as practicable. The congress has met four times since 1904; arrangements made for a fifth meeting in Brussels in 1916 were broken off on account of the war.

WE have received a copy of *Boletín del Departamento de Salubridad Pública*, a quarterly publication issued by the Mexican Department of Public Health. In addition to an account of the work of the department and the various services under its control, the bulletin contains statistics of deaths from all causes in the City of Mexico, with separate tables for infectious diseases and the causes of intrauterine death.

UNDER the title *Dust of Gold* an account of the work of the Church of England Zenana Missionary Society among the blind and deaf of India, China, and Ceylon has been written by Mrs. M. E. Hume Griffith. A list is given of five schools for the deaf and blind which are supported by the society, and accommodate 489 children. The booklet is well illustrated, and may be obtained from the society, 27, Chancery Lane, W.C.2, price 1s.

WE have received the twelfth and thirteenth volumes of the *Archivio Italiano di Chirurgia*, which contain eighty papers on various subjects of surgical interest, dedicated to the Senator Professor Antonio Carle of Turin by his friends and pupils in commemoration of his thirty years of teaching.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **The Editor, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal*, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBERS of the British Medical Association and the *British Medical Journal* are **MUSEUM 2251, 2252, 2253, and 2254** (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

EDITOR of the *British Medical Journal*, *Antiology Westcent, London*.

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London*.

MEDICAL SECRETARY, *Mediverna Westcent, London*.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Brilish, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshough Gardens, Edinburgh (telegrams: *Assocate, Edinburgh*; telephone: 4361 Central).

### QUERIES AND ANSWERS.

#### CARBON DIOXIDE IN RESPIRABLE AIR.

"RE-PIRATORIOUS" asks for information about the percentage of carbon dioxide in air which can be breathed without apparent harm—as, for example, in submarines.

#### PTYALISM.

Dr. W. ERLE FARMER (Birmingham) asks for suggestions for the treatment of a patient from salivation to such an extent that saliva pours out. There is no dental sepsis or any other obvious cause.

#### ULTRA-VIOLET LIGHT IN RAYNAUD'S DISEASE.

The question Dr. Sidney Matthews (Crawley) desired to put was misunderstood (p. 1057). He wished to know whether ultra-violet light had been used in the treatment of Raynaud's disease. He has a case of the second degree under his treatment at the present time, but has not advised ultra-violet treatment.

#### PCS CELLS IN URINE.

"A. R. L." writes: Is the presence of a few pus cells in the urine significant of very much? I have a patient in whose urine there are some pus cells and epithelial debris; clinically there is nothing at all the matter with my patient beyond a little dental trouble, with, possibly, the existence of a focus or two of pus at the roots of old stumps, which are being cleared out.

#### THE DETERMINATION OF SEX.

Dr. A. J. COLBY TINGBY (Hastings) writes: Dr. McConnell Boyce (November 15th, p. 918) gives his opinion that when conception takes place prior to a menstrual period a male child results, and a female when conception is after a period. It is rather remarkable that Mrs. Montell Erskine as a result of her observations should have arrived at exactly the opposite conclusion—namely, normal male conceptions occur between the eighth and fifteenth day counting from the very beginning of the period, and female conceptions from twenty-first to twenty-eighth day (see *Sex at Choice*, Chap. IX and XI). It is not my intention to recapitulate Mrs. Erskine's arguments because they are accessible to the medical profession and the general public. I should, however, like to submit two propositions: either (a) one of the above-mentioned observers must be mistaken, or (b) the riddle of sex is still unsolved.

Dr. H. W. EVANS (Brundall, Norwich) writes: I can endorse Dr. Boyce's opinion that conception immediately preceding a menstrual period results in a male child. A patient of mine, having three daughters and desiring a son, took precautions that insemination only occurred during this time. His care was rewarded by the birth of a boy. As Dr. Boyce says, it is a fact worth knowing, and, though I can only quote this one case, I think it worth recording in support of his theory.

#### TREATMENT OF LEUCODERMA.

Dr. RAWEL CHAND SURI (Rawalpindi) writes with reference to the inquiry by Dr. D. S. Puttanna (July 31st, p. 235) about treatment of a girl, aged 7, suffering from patches of leucoderma on the face and extremities. Dr. Suri suggests that iodine tincture should be painted twice a day on the spots, and thinks this is effective in about a week's time in early cases. Persistent and deep infections may be treated with a saturated solution of sodium thiosulphate.

#### TINNITUS IN MENIÈRE'S DISEASE.

Mr. F. FRANK STUMM, M.Ch. (Ear and Throat Clinic, Leigh, Lancashire), writes: Menière's disease is a generic term which conveys no definite information. If "H. S." (*BRITISH MEDICAL JOURNAL*, November 27th, p. 1027) is sure that his patient's tinnitus is not tubo-tymppanic, oto-sclerotic, nor retro-labyrinthine in origin, he should try half-grain doses of guaiac sulphate thrice daily for a month, and if these fail, 3-grain doses of sodium salicylate as frequently for the same period. Both of these drugs have lulled labyrinthine tinnitus. No case, whatever its apparent background, should be regarded as hopeless until the tubes have been investigated by the electric endoscope of Holmes and dilated by the Eustachian bougies. True organic stricture of the Eustachian tube is so rare as to be a curiosity, but entartial hyperplasia (non-organic stricture) is not only common but frequently overlooked, and may cause a high degree of deafness, vertigo, tinnitus, even spontaneous nystagmus—in fact, all the symptoms of Menière's complex except the vomiting. It may be cured by a correct Eustachian catheter technique. The drugs mentioned by "H. S." are of value only where tinnitus depends upon systemic blood pressure abnormalities. In every case of the so-called Menière's disease there is the possibility of a tumour of the nervus acusticus in or near the porus internus.

Dr. A. BETTS TAPLIN (Liverpool) writes in reply to "H. T." regarding nervous retching, also to "H. S." with reference to tinnitus in Menière's disease, to say that both these troubles can be successfully dealt with by a course of suggestive treatment.

"D. M." writes in reply to "H. S.": As a personal sufferer I have found Dr. Dan McKenzie's paragraphs on treatment in his *Diseases of the Throat, Nose, and Ear* most helpful. He divides all cases into three groups: (1) those with high blood pressure; (2) those with low blood pressure; (3) toxic cases. For the second group, in which I classed myself with a moderate blood pressure, he advises extractum ergot liq. 20 minims three times a day. Since I started this treatment I have undoubtedly had more freedom from the noises in the ear, as well as from the sensation of not far distant giddiness. At present I am taking 3-grain tablets, sometimes two in the morning and one three times a day and variably. I am satisfied that sodium bromide, which used to help me in 1909 at the age of 34, does not now do so, but increases the tendency to giddiness.

#### INCOME TAX.

##### Motor Car Transactions.

"MOTORS" has owned and used two cars for over six years. Car A was bought in 1920 for £775 and sold in 1925 for £70, a second-hand car being bought for £615; car B was bought in 1920 for £632 and is still in use.

It has to be borne in mind that, apart from the "depreciation" allowance, there is no income tax allowance for lost capital as such; the deduction that can be claimed is for the out-of-pocket cost of replacement. When car A was replaced the actual amount expended was £615—£70=£545, and "Motors" cannot legally deduct more. So far as car B is concerned the authorities are strictly correct in computing the loss by wear and tear during the year according to the value of the car at the beginning of that year. Our correspondent should remember that when car B is replaced he can claim the "obsolescence" allowance, calculating it at the net cost of replacement less the amount of the depreciation allowances he has actually received in respect of that car. When that allowance has been claimed in due course the disparity between the total loss of capital and the total amount allowed for tax purposes will not be so serious as it seems to be at present. The forthcoming change from the three years' average will apparently work adversely, but perhaps our correspondent would like to send us the figures when preparing his 1927-28 return; in that case he should state the date in each year at which he closes his accounts.

### LETTERS, NOTES, ETC.

#### A MEDICAL ASPECT OF MINERS' SHORTER HOURS.

Dr. NOEL H. M. BURKE (Orington) writes: Does not Dr. Bushnell's interpretation of figures (December 12th, p. 1245) contain a fallacy? He argues in terms of accidents per 100,000 miners employed to show that reduction of hours leads to reduction of accidents. If 100,000 men work for seven hours a day there are 100,000 fewer man-hours of exposure to risk of accident than when eight hours are worked. This time factor should be allowed for.

#### SERACEOUS CYSTS: A POINT IN DIAGNOSIS.

Mr. A. P. BERTWISTLE, M.B., F.R.C.S.Ed., writes to draw attention to the peculiar sudden blanching of the field of operation when the wall of a sebaceous cyst is properly injected with adrenaline-novocain solution. "As I have never known it to occur with dermoids (or lipomata), it is a point in differential diagnosis, when both cysts may occur, such as at the angles of parietal bone and orbit, or in the neck, where dermoids of thyroglossal or branchial origin may be encountered. Incidentally such blanching is of the greatest service in localizing the injection and rendering the field anaesthetic."

## DIFFICULT OCCIPITO-POSTERIOR PRESENTATIONS.

DR. JOHN T. MACLACHLAN (Glasgow) writes: These presentations often worry young practitioners, who find that the head, after it has come well down to the ischial spines, obstinately stays there. Teachers advise patience and caution, as rotation is said to occur in the vast majority of cases of persistent occipital presentations. The chief difficulty appears to be that the head is not properly flexed, and its long diameter thrown across the pelvis. Young practitioners in such cases should be warned against pushing the head back and turning. I have known of two deaths brought about in this way from rupture of the uterus. I have usually succeeded by applying forceps and extracting slowly. I have known one or two young practitioners fail, as the forceps kept sliding off the head. This can be overcome, in my experience, by, in the first instance, pulling towards the sacrum, before making the pubic turn, with the instruments. Many years ago, when I was inexperienced, I put a woman across the bed on her knees and elbows, slipped my fingers up the rectum over the occiput, and pulled the occiput down, thus flexing the head; the head, thus well flexed, was born immediately.

## RAPID DELIVERY IN PLACENTA PRAEVIA.

DR. CHARLES J. HILL AITKEN (Kilnhurst, Rotherham) writes: After the second haemorrhage in a marginal placenta praevia in a primipara the membranes were ruptured. The os was only opening and the child was large, so turning was considered inadvisable. There was no further haemorrhage. A day later labour had not set in and the patient was febrile. Although knowing the danger of rapid delivery in placenta praevia (BRITISH MEDICAL JOURNAL, October 2nd, p. 555), the risk was considered less than what might happen if we waited. Pituitrin 1 c.cm. was injected, and within ninety minutes the child was born. There was no bleeding during the third stage, so presumably there had been no tear of the rapidly dilated cervix. There was no post-partum haemorrhage.

## "NIGHTCAPS" FOR THE AGED.

DR. T. D. HARRIES (Aberystwyth) writes: Now that we are in the grip of winter a few remarks concerning "nightcaps" might be of interest to those who have to administer to the care and comfort of the aged. There are many kinds of nightcaps worthy of consideration. The old man's nightcap is usually understood to be a covering for the head during cold winter nights, and so well known is the comfort it affords by the way of procuring sleep that its use is almost universal amongst those who dwell amid the Welsh mountains. The caps are of knitted wool, at which the Welsh women are adepts. Another class of "nightcap" is for internal administration, in which a variety of potions are included, some being of great antiquity, such as "rum punch," which is too well known to require comment, beyond that it is of an agreeable nature and produces a feeling of comfort sufficient to ensure a comfortable night's rest. Other useful "nightcaps" are bovril or milk at blood heat; the milk might under certain conditions be usefully reinforced by the addition of a well whipped egg and a tablespoonful of brandy or rum, which renders it more digestible and palatable. There is another time-honoured "nightcap," familiar to those who can recall the old coaching days, when, on arrival at certain stages, spiced ale, better known as "purl" in those days, was kept in readiness to restore the vitality of the shrivelled-up passengers, who were suffering from cold feet, numb hands, cold ears, pinched noses, glued lips, and silent tongues. The transformation following a deep quaff of the elixir was beyond description—a glow of warmth was experienced, proclaimed by a natural flush of the face and restored waggle of tongues, the feeling of comfort and joy, brought forth good-natured liveliness, which continued until the happy passengers were in the arms of Morpheus. Some of the "nightcaps" referred to have for ages passed the experimental stage, and have proved their worth in providing mental and bodily comfort during the closing stages of life, and should not be abandoned to make room for the deadly dopes which have become so fashionable of late years. Of all "nightcaps" the one I advocate for the use of old people who are denied peaceful sleep from lack of vitality is "spiced ale," which is made of strong ale brought to the boil, to which is added sugar, butter, ginger, and nutmeg. As to the therapeutic properties of this cordial, we need not trouble as long as we know that it acts as a harmless prop to the old and decrepit who have gone beyond the age of being revitalized by "vitamin" or rejuvenated by "monkey gland."

## FRENCH MEDICAL PROPAGANDA IN THE FAR EAST.

THE General Secretary of the Académie de Médecine of Paris, Professor Charles Achard, recently went on a mission to Japan for the purposes of studying methods for bringing about more intimate intellectual relationships between that country and France. Incidentally he visited also Southern China and Indo-China, and in the course of his journey called upon French professors in the universities of Quebec and Montreal. In a communication to the Académie, Dr. Achard reported that while Japanese doctors are acquainted with English and German medical literature, publish their works in English or German, and even receive visits from German professors, French publications are few, and French medicine consequently little known. There is, however, a Franco-Japanese House in Tokyo, which could be used as liaison agent between the two countries, and could distribute medical publications amongst the libraries. It is hoped to organize visits of Japanese doctors to France, and to send delegates to congresses in Japan. Dr. Achard attended various discussions, and addressed a congress in Tokyo on anti-

typhoid vaccination. He concludes his communication to the Académie by stating that the field for French medical propaganda in the extreme East is very large. In Japan, where medicine hardly differs from European medicine, except in method, interpretation, or expression, French propaganda should consist in making better known the scientific publications, the welfare efforts, and the social medicine of France. In China, on the other hand, European medicine is little practised; and France ought to assist in organizing scientific medicine in that country, especially, perhaps, at Canton. Indo-China is French, so that propaganda is hardly needed. But every effort should be made to impress French influence on this population. Native doctors must be trained; medical teaching developed; welfare schemes multiplied; and scientific research endowed. Every nation, says Dr. Achard, which wishes to exercise influence in the world, in the intellectual domain no less than in that of material interests, must without ceasing display its flag. In the Far East France must make the necessary effort, no less than her rivals, to unfurl the national colours.

## THE TOOTH-BRUSH: BOON OR BANE?

DR. J. M. writes: Now that the tooth-brush has become one generation the question might be asked—good or harm? On visiting the average house I see lying somewhere about the bathroom a tooth-brush of any age from three to six months, which probably has never been sterilized, and which smells accordingly. Teeth and gums may be infected already, but what of the infection that is forced into the gums with this ragged instrument, which scarifies before it infects? Attention has been directed recently to the finding of septic germs about the teeth and gums, but what of the dead matter and the resulting sapraemia which, after prolonged action, paves the way for septicaemia? Can the ordinary tooth-brush remove the particles from between the teeth, or does it give but an appearance of superficial cleanliness? Some dentists believe that a rubber tooth-brush with vulcanite handle, which can be readily sterilized by boiling, is more efficient and does less injury to the gums. Is the tooth-brush efficient, or should some other means be encouraged to remove dead and decaying matter from between and behind the teeth?

## AN ENTERTAINING TRADE JOURNAL.

THE indefatigable Dr. Cabanès, whose books on curiosities in medicine we have noticed from time to time, has just published a new volume entitled *La Chronique Médicale*, which review of historical, literary, and magazine appears to be financed by a firm of manufacturing chemists, but, modestly, they do not occupy more than a page of letterpress and all the advertisement space with descriptions of their wares, leaving the rest to Dr. Cabanès. An article in a recent issue was written by a collector named Froehner, who died in 1925, and is entitled "Anthropology of Greek vases." He sought to show how all the words used by the Greeks in describing different parts of vases, bottles, and other vessels had reference to various portions of the human body. The fiftieth anniversary of the death of George Sand leads Dr. Cabanès to a series of thoughts and impressions which he calls "Sandiana." George Sand at one time was accustomed to dress in male attire, for purposes of economy it is said. Dr. Cabanès reproduces a caricature of the period, and a glance at the authoress in a *redingote-guêrite* makes it easy to agree with the writer who said there was nothing very seductive in her appearance. *La Chronique Médicale* indulges also in ghost stories, and a number of miscellaneous notes, such as that, on account of his vivacity, the Prince de Ligne was forgiven the lice with which his armchair was beset.

## THE PREPARATION OF ANTIVENIN SERUM.

A GRAPHIC account of the process of collecting the venom of rattlesnakes at the San Antonio station of the Antivenin Institute of America is contributed by Colonel Martin L. Crumminis of the *Journal of the American Medical Association* for November 13th. The rattlesnakes are snared with a leather loop at the end of a whipstock, or the snake is pinned to the ground by a forked stick. The snake is then grasped behind the head, which is held over a Petri dish; with the right thumb and forefinger the venom glands are pressed, causing the venom to be ejected through the fangs into the dish. The venom, which dries rapidly, is pipetted off about every ten minutes and centrifugalized, when four layers can be distinguished, the top being amber, the second opalescent, the third colourless saliva, and the fourth cells. The upper two layers are dried in an incubator at 37° C. for from two to four days, when crystals appear. Two hundred Texas diamond-back rattlesnakes (*Crotalus atrox*) produce about 2 oz. of liquid venom, which yields 1 oz. when crystallized. The venom is sent to the Mulford Biological Laboratories, where twenty horses are immunized in a similar way to that employed in the case of diphtheria and tetanus.

## VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 43, 44, 45, 48, 49, and 50 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at page 46.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 255.

## Remarks.

ON

## THE CAUSATION OF THE INCREASED INTRACRANIAL PRESSURE ASSOCIATED WITH TUMOURS WITHIN THE CRANIUM.

(Preliminary Note.)

BY

JOHN S. B. STOPFORD, M.D.,

PROFESSOR OF ANATOMY AND DEAN OF THE MEDICAL SCHOOL,  
UNIVERSITY OF MANCHESTER.

Many theories have from time to time been suggested to explain the etiology of the increased intracranial pressure which is so frequently associated with tumours within the skull. Nevertheless the matter is still largely shrouded in mystery, although careful observations made upon large series of cases by a number of investigators offer some significant information. Although clinical evidence of raised intracranial pressure as manifested by headache, vomiting, and choked disc is not an absolutely constant accompaniment of tumours within the cranium, it is generally agreed that it occurs at some time in the course of the disease in upwards of 80 per cent. From researches which have been made with regard to the presence or absence of increased intracranial pressure it is clear that the anatomical site of the tumour is of first importance. The rate of growth and size of the tumour also have some influence, but they appear to be of much less significance than the anatomical situation. The histological character of the growth apparently bears no relation to the occurrence or absence of increased intracranial pressure.

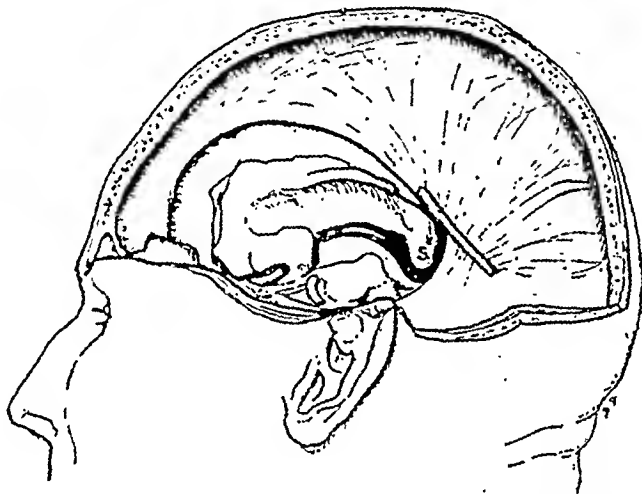
Since the site of the tumour is the factor of fundamental importance, it would seem that the causation of the increased pressure might probably be of mechanical origin. The influence of rate of growth and size of the tumour is also compatible with a mechanical origin, since a slow-growing or small tumour would often permit some compensation for the mechanical disturbance, which is less possible in the case of growths rapidly increasing in size. When we examine the situation of tumours which are most frequently associated with manifestations of raised intracranial pressure further light is shed upon the problem. It is well known that tumours of the mid-brain and subtentorial growths practically always cause intracranial tension, whereas tumours of the pons do not as a rule, unless they invade neighbouring regions. Furthermore, on studying records of patients it is found that signs of increased tension are frequently absent in the case of growths of the frontal region, and less frequently absent in the parietal and occipital regions. The constancy of the occurrence of increased intracranial tension with subtentorial growths might at first sight suggest pressure upon the lateral sinuses, leading to interference with the absorption of cerebro-spinal fluid and its accumulation, with resultant rise of pressure within the skull; further reflection, however, makes such a contention untenable, and it is quite unnecessary in this paper to discuss the overwhelming evidence against such a theory.

Reflecting upon the information cited with reference to the situation of the tumour, compression of the great vein of Galen appears, on anatomical and physiological grounds, to be a much more likely cause for the increased pressure.

With this in mind I recently re-investigated the exact course and relations of this vein, and found them strikingly different from those figured in most anatomical textbooks. By the usual anatomical approach the falx cerebri and the tentorium are disturbed before the vein is examined, and its precise relations and direction are consequently grossly modified. Removing a segment of the calvarium by means of a horizontal saw-cut above the level of the tentorium and a sagittal one about half an inch lateral to the superior longitudinal sinus, it is possible to dissect away the cerebral hemisphere and display the origin, full course, and termination of the great vein of Galen as it really exists with the parts in its immediate vicinity intact. Such a dissection is shown in the accompanying drawing, and it will be seen that the vein passes at first backwards and upwards, and then forwards and upwards, to reach the hinder end of the inferior longitudinal sinus, curving round and in contact with the splenium of the corpus callosum. The relation with the splenium is always found to be most intimate, and the vein opens into the sinus as the meningeal tributaries open into the superior longitudinal sinus—that is to say, against the flow of the current in the sinus. Taking this course, which is much more vertical than horizontal, it will at once be noticed that anything which elevates the

tentorium is certain to exert tension upon the vein and cause it to be compressed against the splenium. Lateral deflection of the falx cerebri, owing to its attachment to the tentorium, will similarly raise the tentorium and cause the same effect, although not so readily as direct elevation of the tentorium from below. The more rapidly the tension on the vein is applied, the greater must be the risk of compression.

Generally speaking, subtentorial growths and tumours in the parietal and occipital parts of the cerebral hemisphere are obviously more likely to produce this tension, and the suggested consequent compression of the vein, than those occurring in



Drawing of dissection described in text, to show the relation of the great vein of Galen to the splenium. Part of the inferior longitudinal and straight sinuses have been incised to display the termination of the vein. S.—splenium.

the frontal region, which will only deflect the narrower apical part of the falx cerebri. Reference to the position and form of the falx cerebri and its attachment to the tentorium will show that very considerable lateral deflection would be required in the frontal region, and much less in the parietal and occipital regions, to produce elevation of the tentorium. Mid-brain tumours must be so near to the vein at its origin that direct pressure upon it, or compression of it against the splenium, is exceedingly probable in practically all cases. Tumours of the pons, on the other hand, are not likely to cause any interference with the vein for anatomical reasons, unless they invade neighbouring regions.

The question still remains to be answered as to how compression of the great vein of Galen can cause increased intracranial pressure. Compression of this vein near its origin will produce obstruction to the venous drainage from the choroid plexuses of the lateral and third ventricles, since the veins from these plexuses are tributaries of the two veins of Galen which lie in the vena interposita and fuse to form the great vein of Galen. Such obstruction must produce an increased capillary pressure in the choroid plexuses, which is likely to lead to an increased production of cerebro-spinal fluid. Fortunately there is convincing experimental evidence to prove the latter statement. Dandy<sup>1</sup> has recently proved that occlusion of the great vein of Galen in dogs, provided it occurs at the origin of the vein and the development of a collateral circulation is thus



prevented, causes internal hydrocephalus on account of the overproduction of cerebro-spinal fluid. As would be anticipated, Dandy found that the hydrocephalus developed more slowly than if caused by occlusion of the aqueduct of Sylvius. In addition to this experimental evidence, a few cases have been reported of internal hydrocephalus, caused by thrombosis of the great vein of Galen or pressure upon the straight sinus. These suggestions may be criticized, owing to the fact that obvious internal hydrocephalus is not an invariable or essential accompaniment of increased intracranial pressure from tumour. With reference to this it must be remembered that in Dandy's experiments, and in most of the reported cases, the venous obstruction was complete, and the cerebro-spinal fluid was produced in such large quantities that internal hydrocephalus was induced. Less complete obstruction is likely to cause less overproduction of fluid, and slight or negligible dilatation of the ventricular system, but sufficient to produce an increased intracranial pressure.

## SUMMARY.

1. It is shown that the great vein of Galen is situated in such a position that it may be compressed against the

splenium of the corpus callosum indirectly or directly by tumours occupying sites which are known to give rise most constantly to increased intracranial pressure.

2. Such compression is not so likely in the case of tumours occupying situations which are known to cause less frequently increased intracranial pressure.

3. Experimental and clinical evidence has been submitted by Dandy and others that occlusion of the great vein of Galen leads to internal hydrocephalus from overproduction of cerebro-spinal fluid.

4. It is suggested that moderate compression without complete occlusion of the vein is likely to give rise to increased intracranial pressure, accompanied by slight or negligible dilatation of the ventricles.

5. If the views put forward in this paper are correct, the increased pressure caused by intracranial tumours is due to an excessive production of cerebro-spinal fluid, the fluid being produced in such quantities that absorption cannot keep pace with production, and the intracranial pressure being consequently raised.

## REFERENCE.

<sup>1</sup> Dandy, W. E.: *Experimental Hydrocephalus*, *Annals of Surgery*, vol. 70, 1919, pp. 129-142.

## British Medical Association.

## PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

## SECTIONS OF ORTHOPAEDICS AND OF DISEASES OF CHILDREN.

E. MUIRHEAD LITTLE, F.R.C.S., in the Chair.

## DISCUSSION ON SPASTIC PARALYSIS.

## OPENING PAPERS.

I.—WILLIAM J. ADIE, M.D., F.R.C.P.,

Physician to Out-patients, National Hospital, Queen Square, London.

I ASSUME that the organizers of this discussion, when they chose the title of "spastic paralysis," intended that we should accept the word "spastic" in a strict sense and confine our attention to conditions in which stiffness and weakness of the muscles result from disease of the pyramidal system. Rigidity, paralysis, contractures, and deformities from extrapyramidal motor disease and from disease of the lower motor neurone or of the bones and joints, therefore, are outside the limits of our subject.

Further, we are concerned in this Section with spastic paralysis in children; hence the inflammations, degenerations, and compressions that account for most of the cases of spastic paralysis in adults, though many of them occur in children, may well be excluded from the medical part of our discussion, so that we may devote our time to some special morbid processes that produce their effects before or during birth or in early life—the cerebral diplegias, infantile hemiplegias, diffuse cerebral sclerosis, and certain familial diseases.

The commonest and therefore the most important of these is the form of cerebral diplegia generally known as Little's disease. Strictly speaking, Little's disease is a spastic diplegia associated with abnormal birth, characterized by a preponderance of rigidity over paralysis, the legs being most affected, and a tendency to recovery, but it is customary now to apply the name to all cases, whether birth is normal or abnormal.

To the accurate clinical description given by Little, an orthopaedic surgeon, more than eighty years ago, nothing material has been added, but controversy still rages concerning the pathogenesis of his disease. According to many, injury to the brain at birth is the most important etiological factor; according to some, the cause, whatever it is, acts during intrauterine life. In his presidential address delivered before the Neurological Section of the

Royal Society of Medicine Dr. James Collier gave a memorable exposition of his personal views on the pathogenesis of cerebral diplegia, and set forth the following conclusions: hereditary and familial influences are extremely rare; maternal ill health during pregnancy has been placed in an important position by many writers, but without justification; abnormalities of birth are common but by no means constant associates of diplegia, and they may be excluded as causal factors; the essential anatomical lesion is a primary degeneration of cerebral neurones from causes at present unknown; the evidence demands the verdict that meningeal haemorrhage should be deleted as a causal factor of any infantile spastic state.

Dr. Collier has shepherded or engelled most of us into what he considers to be the way of truth in this matter, but the last word has not been said and the subject is still open for discussion. Those who oppose his view are likely to marshal an array of facts which are not easily set aside; they would strengthen their position materially if they took their stand upon "birth injury," rather than the more particular "meningeal haemorrhage," as the most important etiological factor.

It has been said that such dissimilar factors as premature precipitate birth and prolonged and difficult labour could not produce the same effects. But cerebral lesions are most frequent proportionately in premature infants, while it cannot be denied that injury is likely to occur readily during a protracted labour. It is said, too, with truth, that in many cases of diplegia the labour was normal in every respect. But the brain may have been injured nevertheless, for one of the most important factors in producing birth injuries is one to which little consideration has been given in discussions on this subject, for the good reason that its existence was unknown. I refer to the mechanism described by Schwartz, who has shown that injury frequently occurs in the brain under the presenting part of the head, due to differences in intrauterine and atmospheric pressures.

This factor may be very important when labour is normal in its time of onset and in its duration. The remarkable researches upon the mechanism of birth injuries and the pathological changes produced thereby that are being carried out in Frankfurt by Schwartz and his associates demand the careful attention of obstetricians, paediatrists, and neurologists alike. Many hundreds of brains from children who have died during the first seven months of life have already been examined; in 65 per cent. of them pathological changes due to birth injury were visible to the naked eye; by comparing the appearances in brains from children who lived a few days only with those who died after weeks, months, or years, it has been possible to follow the changes that occur in and around birth injuries and to recognize them at all ages.

Perhaps the most important part of Schwartz's work is



the new light it throws on the mechanism of birth injuries, his demonstration of their great frequency, and of the decisive part they play in producing much of infantile mortality that is at present attributed to other causes. The part that is pertinent to our present subject is that which deals with the appearances in children who have survived some years.

In many of these the lesions are gross; in most they are confined to the white matter; but in some they are cortical, and in a few they are indistinguishable from the atrophic and lobular scleroses that have been found in many cases of cerebral diplegia. Significance has been given to the fact that in some cases of diplegia there is no gross lesion, only a fine microscopical change; any gross change that may be present in other cases—atrophic scleroses and the like—is held to be a natural consequence of the primary neuronic degeneration. However this may be, it is certain that diplegia without a gross macroscopical change in the appearance of the brain is extremely rare, and Schwartz's work seems to prove that atrophic scleroses may result from injury to the brain sustained at birth.

In thinking over this subject I asked myself if injury to the brain during life ever produces effects comparable with Little's disease, and I recalled the remarkable clinical picture presented by men who had sustained a gunshot wound of the vertex with injury to the superior longitudinal sinus, a condition of which I saw many examples during the great war.

These men lay with legs extended, the arms flexed and adducted; the degree of rigidity in the limbs was astonishing; it affected the legs most, diminished upwards, and in the hands free. The upper parts of the motor cortex suffered most because their veins drain into the superior longitudinal sinus; lower parts suffered less because they are drained through other channels. In adults this rigidity passes off rapidly; but it is conceivable that vascular disturbances over the vertex of the kind that Schwartz has described in infants may produce more lasting damage to their young and more vulnerable cortical cells.

I do not wish to stress the point unduly, but for the purpose of promoting discussion I mention the facts—first, that the brain is often injured during birth beneath the presenting part; and secondly, that certain vertical lesions in adults produce a transitory clinical picture of Little's disease in its purest form.

There are two features of ordinary diplegia that I find hard to reconcile with the notion of primary neuronic degeneration as the essential anatomical cause. One is that the disease is hardly ever familial; the other is that in practically all the conditions in which primary neuronic degeneration is generally accepted as the anatomical cause the course of the disease is progressive to death, or up to a point peculiar to the disease or to the affected family, whereas a tendency to improve is highly characteristic of ordinary non-familial diplegia.

Familial cases, indistinguishable clinically from the common isolated cases, have been recorded, but I am impressed rather by their great comparative rarity than by their actual occurrence. In the familial cases, I suspect, pathological examination would reveal changes very different from those usually found in the common non-familial form. In spite of rare exceptions the rule holds that non-familial diplegia from birth tends to improve, whereas post-natal and especially familial diplegia tends to progress.

Whatever the significance of this may be with regard to pathogenesis the distinction is a very important one in practice, and it causes me to express the opinion that non-familial diplegia from birth is entirely distinct from the various forms of non-familial post-natal diplegia. My own feeling is that Little's disease is a clinical syndrome, and that the etiology differs in different cases.

After all, it matters little for practical purposes whether the damage is pre- or intra-natal; the important fact is that diplegia from birth, whatever its cause, tends to improve; in these cases much can be done by appropriate surgical treatment, but the cases must be carefully chosen. Gross mental defect is a contraindication, but where this is moderate, operation, by enabling the child to move about

and get into touch with its surroundings, animate and inanimate, may bring about an improvement in the mental state.

I find that there is a tendency to overestimate the severity of the mental impairment in diplegic children. A grotesque appearance and speech which is so dysarthric as to be unintelligible to a stranger may be present in a highly intelligent child. I see a girl from time to time who at first sight would be taken for a hopeless idiot, but who is highly educated, an omnivorous reader, and a leading light in the local Girl Guides. In any competition from which her physical disabilities do not preclude her she is a regular and easy winner.

I remember well a friend of my childhood who was diplegic; his speech was so defective that he was nicknamed Dutchy, but he was the brains of any company in which he found himself, and took the lead naturally in all our games and escapades. I have observed remarkable and, to me, quite unexpected improvement in the mental condition of many of these children, and I should not be inclined to look upon mental defect as a bar to operation unless this were obviously very gross.

Diplegia and epilepsy is an unfavourable combination; my impression is that fits which are symptomatic of organic brain disease are more difficult to control than idiopathic epilepsy; if the fits are not easily controlled by appropriate remedies the surgeon should hesitate before operating on the limbs, as the prognosis for the mental condition is bad. We see epilepsy more frequently as a complication of post-natal infantile hemiplegia—for example, after poliomyelitis—than with diplegia from birth; here again it is not an absolute bar to operation if the fits are infrequent or controllable.

Operation is hardly worth while when involuntary movements are a prominent symptom. Athetoid and choreiform movements at rest are most often seen in hemiplegias and double hemiplegias, whereas in diplegia from birth, if they are present at all, they are more likely to occur on voluntary movement only, but the distinction is not absolute.

Of the familial diplegias amaurotic family idiocy merits special mention, as our knowledge of this disease is increasing rapidly. The classical form is that first recognized from its ocular changes by Waren Tay in 1881, and more fully described later by Sachs. It appears in infants during the first year of life, chiefly, but not entirely, in the Hebrew race, and is characterized by progressive mental impairment, progressive spastic paralysis, and progressive loss of vision, with a cherry-red spot at the macula; it usually ends in death before the age of 2 years. For a time it was thought that the disease existed in this form alone, for the same symptoms, the same course, and histological changes identical with those described by Kingdon and Russell, and eight years later by Schnfer, characterized all the published cases.

In 1903, however, Batten described some cases that differed from the Tay-Sachs form in their later onset, slower course, non-racial incidence, and different ophthalmoscopic appearances. This form is known as the Batten-Mayon type and as the infantile form of Spielmeyer and Vogt. Later still Jansky and Bielschowsky described the late infantile form that begins in the third or fourth year. Finally, a number of cases have been observed at ages beyond childhood—the late forms.

For descriptive purposes it is perhaps expedient to retain the names of these forms, so long as we remember that there is nothing distinctive about them and that transitions occur from one to the other. The infantile Tay-Sachs form is fairly constant in its manifestations, but the post-infantile forms show great variations in their course and symptomatology, although the classical triad—blindness, paralysis, and dementia—characterizes them all. The post-infantile forms are seen most often in Gentiles.

The cherry-red spot at the macula is confined to the infantile form and is present in almost every case. In the post-infantile form the characteristic ophthalmoscopic change is a disturbance of retinal pigment, a kind of retinitis pigmentosa, in the macular region. It is by no means constant, however; in some cases it is associated with pallor of the disc, in others this alone is present, in others vision is unaffected and the fundi are normal. Defective

vision with normal fundi and pupillary reactions has been observed: in these cases the lesion causing the visual disturbances must be in the optic radiations or in the occipital lobe.

In one member of a family illustrating the juvenile form that I showed last year before the Children's Section of the Royal Society of Medicine characteristic disturbances of the retinal pigment were detected more than a year before other symptoms appeared; I was thus able to foretell that this unfortunate boy would ultimately succumb to the disease as his elder brothers had done.

The age of onset varies in different families but is remarkably constant in each. In the late infantile form it is usually between the third and fourth years; in the juvenile form it is usually between the sixth and tenth years; in the late forms it has occurred as late as the twenty-sixth year. As a rule the course is shorter the earlier the onset; most infants with the Tay-Sachs form die before the second year of life is completed; in the late infantile cases the duration is usually about three or four years, in the juvenile cases it is usually several years longer, but remarkable exceptions occur. One patient who had been mentally defective from the age of 2 years died in his twenty-third year; another, normal till the age of 10, also died at 23; another child began to fail mentally at the age of 10, had fits from the age of 13, and survived till 26; another, whose symptoms appeared in his twelfth year, died aged 21. Finally, a young woman who had been normal in every respect until her twenty-sixth year lived till she was 38. The diagnosis in all these cases was confirmed by microscopic examination of the brain. The brother of the last mentioned patient showed his first symptoms at the age of 10 years, and was still alive at the age of 38.

Another generalization I should like to make is this: the younger the onset, the more likely it is that all the children in the family will succumb to the disease. I have seen a healthy young Jewish adult three of whose younger brothers died of amaurotic family idiocy, so my rule is not absolute, but it is very nearly true.

The chance of some of the children escaping improves slightly in the late infantile and juvenile forms; in the late forms, where the onset is at 10 or 12, or later, and life is prolonged into the twenties and thirties, most members of the family are normal, and in some instances only one child is affected.

I should like to record here my conviction that *ad hoc* examinations of earlier generations of amaurotic families will reveal evidence of a degenerative tendency in the stock with a frequency that is at present not suspected. Holmes and Greenfield state without comment that an uncle of one of their patients was mentally defective and unable to read; in another family an aunt was blind and demented; in another the father and an aunt, though normal in other respects, had defective vision, which was found to be due to retinitis pigmentosa. It happened that the affected children in this family had normal vision and normal fundi. I suggest that, just as in another heredo-familial disease—dystrophia myotonica—cataract occurs in the otherwise healthy parents and more remote ancestors of children who present the muscular and other manifestations of the disease but may or may not have cataract, so pigmentary degeneration of the retina may be found in the otherwise healthy ancestors of children with amaurotic idiocy who may or may not present retinal signs.

In addition, then, to the cases of amaurotic idiocy with classical symptoms and a uniform course there are many that present atypical features. The cardinal symptom, blindness, may be absent; the fundi may be normal; sometimes no evidence of familial incidence can be obtained; feeble-mindedness far short of idiocy may be the only clinical manifestation of the disease; far from being steadily progressive it may remain stationary for decades. Nothing is constant except the pathognomonic change in the brain.

It is my practice to consider the possibility of amaurotic idiocy being the cause in every case of idiocy, feeble-mindedness, epilepsy, or diplegia, and I look upon an inquiry for visual troubles in the parents and other relations; and an ophthalmoscopic examination of them when

possible, as a part of the routine investigation of such cases. I need hardly say that the disc and the macular region must be examined carefully in all children with these diseases.

I suppose we shall retain the name "amaurotic family idiocy" for this disease; but you will agree that it is hardly suitable for cases without blindness, familial incidence, or idiocy. "Progressive cerebro-macular degeneration" is no better, for the macula may be healthy and the disease may remain stationary for many years.

In a special class among the diplegias, with spastic paralysis as a cardinal symptom, I place together the familial forms to which the name of the writer who first described them is usually attached. I shall not attempt to name them all; the clinical features—increasing spastic paralysis, mental deterioration, and sometimes blindness—are common to each form, but the pathological changes vary.

The Merzbacher-Pelizaens "disease," of which much has been written, has been found in members of one family only, but Merzbacher thinks that some of the earlier cases of diffuse sclerosis described by others were examples of his disease. Krabbe found almost identical changes in two unrelated families and in one apparently isolated case; Scholtz found very much the same changes in another family. Otherwise, although the changes are the same in different members of the same family, each family constitutes a so-called form or type in itself. The onset in these familial cases is almost always definitely post-natal, and the course is almost without exception steadily progressive to death.

In a third class I place the heredo-familial spastic spinal paralyses and the closely related ataxic and non-ataxic forms of Friedreich's disease. Their features are well known and I have nothing new to say about them.

Finally, progressive spastic paralysis, mental deterioration, and sometimes blindness, characterize non-familial cases that are included under the comprehensive title of diffuse sclerosis. It is not yet possible to give a classification of the different pathological conditions that comprise this group, but its limits are being gradually narrowed as one form after another is withdrawn from it.

I have mentioned the familial forms of diffuse sclerosis connected with the names of Krabbe, Merzbacher-Pelizaens, and Scholtz—there are many others; of the non-familial forms the one that deserves special mention is that described by Schilder in 1912 as *encephalitis periaxialis diffusa*. Some thirty cases of this disease have been published. You may think that a disease of which so few cases have been published is very rare and hardly worth mentioning; on the contrary, the fact that thirty cases have been recorded since 1912 indicates that it is not very rare, and that it is one which those of us who see many unusual cases will certainly encounter in the course of our lifetime work.

In less than two years I have seen seven most obvious examples of a certain disease; about forty cases have been published abroad; so far it has not been adequately described in English, but it must be very common. We only recognize the things we know.

On considering all the published cases of Schilder's disease I thought at first that it would be impossible for me to give a useful account of it in a few words, as the age at onset, duration, and symptoms varied greatly in different cases, but on analysing the symptoms in children of 14 years and under I find that between these ages its manifestations are fairly constant.

Somewhat less than half of the cases occurred in children under 14. One child was aged 1 year; in the remainder the average age at onset was just under 8 years. In the child aged 1 year and in another aged 12 the duration of the disease is given as a few days only; in the others it varied from two months to two and a half years, with an average duration of just over one year. In the infantile cases males outnumbered females by three to one. The disease is not familial. In Schilder's second case (called by some Faberfeld and Spieler's case) another child of the same parents is said to have died at the age of 8 years of a similar malady; but this child was not seen by

a competent physician, its brain was not examined after death, and the nature of its symptoms is doubtful.

The first obtusive symptom may be difficulty in walking, mental deterioration, failing vision, or epileptiform attacks. The most constant symptoms are spastic paralysis and mental deterioration; then, in order of frequency, speech defects, defects of vision, tonic and clonic spasms, and various signs of increased intracranial pressure.

The mental disturbance begins as apathy and passes on to complete mindlessness; dysarthria, aphasia, or mutism may be early symptoms. Failing vision was noted in less than half of the infantile cases; usually it is associated with papilloedema and defective pupillary reactions, but in several cases, although vision was grossly defective, the fundi were normal and the pupillary reactions were brisk. This, as Dr. Collier has said, is the sign manual of occipital disease. It occurs when the morbid process begins in the occipital region. It was the combination of occipital blindness with spastic paralysis and progressive dementia that enabled Dr. Collier to recognize the first case of Schilder's disease that was diagnosed during life. The same combination with normal fundi has been seen in amaurotic family idiocy, but it is almost pathognomonic of Schilder's disease, and if its incidence is non-familial this diagnosis can be made with considerable confidence.

Fits indistinguishable from idiopathic epilepsy occurred early in some of the cases, and convulsions or spasms of some sort were observed during the illness in about half the cases. In three cases headache and vomiting aroused the suspicion of cerebral tumour.

I do not doubt that as the number of carefully observed cases of this form of diffuse cerebral disease increases, as it is sure to do rapidly, we shall learn to detect Schilder's disease more readily than is possible at present.

The compressions, degenerations, and inflammations that account for most of the cases of spastic paralysis in adults almost all occur in children, but time does not permit me to name them or to refer to their peculiar clinical features.

In some cases of spastic paralysis there is a natural tendency to improvement which may be hastened or increased by operative measures, in some the disease will certainly prove fatal unless cured by surgical measures; in others the outlook is hopeless and surgical treatment is worse than useless.

Sometimes, I fear, unnecessary or unsuitable operations are performed; perhaps these brief remarks on some of the numerous and entirely dissimilar diseases of which spastic paralysis may be a sign will serve to show that close collaboration is necessary between neurologist and surgeon before operative treatment is undertaken for the relief of spastic states.

Finally, with regard to the neurological problems presented by spastic paralysis: recent studies on decerebrate rigidity have added greatly to our knowledge of the physiology of muscle tone, but so far they have given no clear indication for new methods of treatment. Nevertheless the clinician takes a lively interest in experimental work on decerebrate rigidity because, as Dr. Walsho has taught us, the disturbance of tone and the reflex phenomena of spastic paralysis in man are identical with the tonic and phasic reactions described by Sherrington in decerebrate animals.

It is common knowledge that decerebrate rigidity occurs in animals when the brain stem is completely divided at any point between the lower part of the medulla and the upper part of the mid-brain. Transection immediately cephalad to the mid-brain produces little alteration in tone, but if sections are then made more and more caudally, a point is reached when decerebrate rigidity suddenly appears. This has been attributed to damage of various structures by different investigators, but Rademaker has proved conclusively by a series of beautiful experiments that rigidity is absent so long as the red nucleus is intact.

Lesions interfering with other structures at the same level never produce decerebrate rigidity, but one confined to the red nucleus or its efferent fibres in the decussation of Forel produces it constantly. This rigidity is not removed by ablation of the cerebellum, and it occurs in a decerebrate animal from which both labyrinths have been removed (Magnus). It disappears completely when a

section is made across the medulla at the level of the calamus scriptorius just caudal to the point of entry of the eighth nerve. It is not yet known which structure in the medulla is responsible for the rigidity. Deiters's nucleus and the olive have been named; perhaps some day we shall see bold surgeons removing the olives for the relief of spasticity.

A comparison of the results obtained by dividing the efferent fibres of the red nucleus in decerebrate animals and in animals with an intact cerebrum suggests that the pyramidal tracts net with the red nucleus to antagonize the medullary centres. In the decerebrate animal, where the pyramidal tracts are already divided, section of Forel's decussation causes extreme rigidity; in an animal with intact pyramidal tracts this lesion produces rigidity, but it is much less intense.

There is one difference between the results of experiments on animals and the results of disease in man which causes difficulty when one attempts to correlate them. In animals whose brain stem has been divided just in front of the mid-brain—that is, in an animal devoid of its thalamus and with both pyramidal tracts divided—the amount and distribution of muscle tone is normal. In man many disorders of muscle tone appear to result from damage to the pyramidal tracts and the basal ganglia; perhaps some of those who take part in this discussion will develop this aspect of a highly complicated subject.

In conclusion I shall merely mention the alleged sympathetic innervation of striated muscle. It may well be that sympathetic nerve fibres reach striped muscle fibres and exert an important trophic influence upon them, but the evidence available at present does not support the notion that the sympathetic plays any part in the regulation of muscle tone.

Gaskell showed long ago that the sympathetic nervous system is not a separate nervous system interchanging fibres with the cerebro-spinal system, but is formed by fibres given off from the cord; Langley made it clear that the autonomic system, of which the sympathetic is a part, though capable to a certain degree of independent action, functions under the control of higher centres. These higher centres, from which, as I believe, all impulses pass that reach the sympathetic, are situated at a level cephalad to the point of election for the section producing decerebrate rigidity; if my assumption is correct, sympathetic impulses to the muscles, if these exist, are cut off by the very section that produces decerebrate rigidity. However this may be, it is certain that complete ablation of the sympathetic system has no effect on decerebrate rigidity, hence division of sympathetic fibres is not likely to influence spasticity. Perhaps surgeons who have performed sympathetomy in spastic states will communicate their results during the discussion.

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SPASTIC PARALYSIS is not a disease, but a physiological state—the natural physiological result of the anatomical condition present in any given case. It closely resembles, if it is not identical with, the condition known as decerebrate rigidity, which is produced experimentally by section of the brain above the level of the mid-brain. The result of such a lesion is to remove the inhibitory and controlling influence of the cerebral cortex from the parts of the central nervous system below, which parts then enter into a state of abnormal reflex activity.

Chief of these effects is an exaggeration of the postural reflex which normally maintains the upright position of the body, and whose centres are situated in the mid-brain. This is essentially a continuous act of extension of the lower limbs and spino. Secondly, there is loss of the influence of the upper motor neurone which normally correlates the actions of different muscle groups in the performance of voluntary movements. In other words, there is paralysis of reciprocal innervation, so that the muscles on one side of a joint do not relax when those on the opposite side contract. Thirdly, there is loss or impairment of the power of voluntary movement.

This condition is due in the great majority of cases to a permanent defect of the upper motor neurone. It is therefore essentially an incurable condition, and the most that can be expected from surgical treatment is relief from some of its most obvious mechanical or functional disabilities. Briefly, it may be said that anything which interrupts the cortico-spinal or pyramidal tract in any part of its course will give rise to spastic paralysis corresponding in extent and distribution to the part of the tract that is destroyed. The manifold conditions which may cause such a lesion concern the orthopaedic surgeon only in so far as they determine the extent and distribution of the paralysis, its progress, if any, and the complications which may accompany it.

The pyramidal tract may be involved in a congenital defect of development of the brain or spinal cord; it may be injured by direct violence or by haemorrhage, either on the surface of the brain (meningeal haemorrhage of infants) or in the substance of the brain (cerebral haemorrhage of adults), or it may be damaged by inflammatory processes (encephalitis, polio-encephalitis, myelitis) either before or after birth.

The cases with which we have to deal are chiefly, though not exclusively, the cerebral palsies of children—diplegias, hemiplegias, paraplegias, and, less often, monoplegias. By the time such cases come for surgical treatment the primary lesion is almost invariably permanent and stationary, and the spasticity is the terminal physiological state.

Cases of progressive paralysis, both syphilitic and non-syphilitic, occur, but I think they are recognizable by ordinary clinical methods, so that they do not often come for surgical treatment. I confess to having performed routine operations on cases of spastic paralysis for many years without taking any special precautions to exclude syphilis, and I do not remember ever having been caught operating unwittingly upon a progressive case. Occasionally one has operated deliberately upon progressive cases in adults in whom the progress of the disease appeared to be so slow as to be negligible.

In a large proportion of cases of cerebral paralysis there is some degree of mental deficiency. It need hardly be said that idiots are unsuitable for operative treatment. But mental impairment of less degree is no contraindication to treatment. Practically any spastic child can be set upon his feet and made to walk somehow, provided only that he has sufficient intelligence to try to use his legs, and it is generally agreed that the mental state of such children may be materially improved by the relief of their mechanical disabilities. Involuntary movements—athetosis, variable spasm, and associated movements—when well marked, are a contraindication to the ordinary methods of treating spastic contractures.

The treatment of spastic paralysis is operative. It is true that considerable improvement may sometimes be effected in spastic individuals by systematic training or re-education of movements. But, apart from this, non-operative treatment is useless, and I have never yet seen any permanent benefit result from massage, manipulations, or electrical stimulation. Moreover, in the majority of cases the place of re-education is after operation and not before it.

Spastic paralysis commonly gives rise to certain contractures of the limbs, and it is to the relief of these contractures that surgical treatment is almost entirely directed. The typical contractures of the lower extremity are plantar flexion of the foot (spastic equinus), flexion of the knee, and adduction of the thigh; while in the upper extremity pronation of the forearm and flexion of the wrist are most characteristic.

Spastic contracture is a tonic reflex contraction of the muscles. It disappears during deep anaesthesia and when the reflex arc is interrupted in any part of its course. This physiological contracture may persist for a long time without any permanent change occurring in the structure of the muscles. But eventually an anatomical or structural shortening is added to the physiological contracture, and the deformity becomes fixed. When structural shortening exists it must be treated by direct attack upon the shortened muscles or their tendons. But when we are

dealing with pure physiological contracture we have a choice of methods.

It is hardly necessary now to discuss Foerster's operation or posterior root section, since it has been universally abandoned as a method of treating spastic paralysis. It is, however, necessary to say something about the operation of sympathetic ramisection which was recently introduced by Hunter and Royle, and has now been given a fair trial. This operation is based upon the hypothesis that the functions of movement and posture are performed by entirely different sets of muscle fibres, and that the movement fibres are supplied by the ordinary spinal nerves, and the postural fibres by the sympathetic. Spastic paralysis being a state of exaggerated postural activity, it was thought that destruction of the grey rami of the sympathetic would cure or greatly diminish the spasticity of the corresponding muscles.

It may be said at once that the claims put forward for this operation have not been substantiated. While movement and postural activity are undoubtedly different physiological processes, they are nevertheless intimately associated with one another, and the weight of evidence is against there being an anatomical differentiation of these two functions in higher animals. As to the view that the sympathetic is specially concerned with the postural activity of skeletal muscle, the histological evidence is negative and disputed; the conclusions drawn by Hunter and Royle from experiments on animals have been severely criticized by neurologists; but what perhaps concerns us most is the fact that in the hands of others the operation of sympathetic ramisection has not given results at all approaching those claimed by Royle.

I have done this operation ten times. In about half the cases there was no appreciable effect either upon the muscular tone or upon the vascular condition of the limb. In the other half the operation was followed by vaso-dilatation of the limb and a definite but slight diminution of the muscular tone, comparable to what one would expect from the accompanying vaso-dilatation. In no case have I been able to persuade myself that it was of real benefit to the patient. This experience seems to be similar to that of nearly all others who have tried this operation in this country and in America, and similar results also were obtained in two cases specially selected from a large number of cases and operated upon by Royle in Boston in October, 1924. The operation of sympathetic ramisection, therefore, is not likely to survive long as a method of treating spastic paralysis.

For many years orthopaedic surgeons have treated spastic contractures locally by operations upon the contracted muscles or their nerves. I would emphasize the point that whether one attacks the muscles or the nerves, the principle of the operation is the same—namely, to diminish the effective action of the preponderating group of muscles. One can diminish the effective action of a muscle either by lengthening it, so that its effective range of action is less, or by destroying part of it, so that its strength of contraction is less. Good results may be obtained by either method. But I think that the operations on the peripheral nerves—known as Stöckel's operations—have some advantages over those on muscles and tendons, and I will tell you briefly what I think they are.

The correction of the typical deformities of spastic paralysis by muscle and tendon operations entails a long course of treatment; the details of which are, of course, well known to you. Briefly, in a case of cerebral diplegia, the adductors are divided and the thighs widely separated, the hamstrings are divided and the knees kept straight on splints, and the tendo Achillis is lengthened by a plastic operation. Even after excision of portions of the adductors and hamstrings the tendency to recurrence of the contractures is so great that it is necessary to keep the limbs for a considerable time in some form of apparatus with the thighs fully abducted and the knees extended. Finally, in order to prevent relapse, many surgeons have found it necessary to put these cases into walking instruments for a long time after the correction of their deformities.

Now the principle of Stöckel's operations on the peripheral nerves is this. In spastic contracture we have a

powerful group of muscles in a state of tonic contraction so intense that it holds the part in a position of deformity, and prevents movement in any other direction. By destroying a sufficient part of this muscle group we abolish the excessive contraction and get rid of the contracture deformity, while leaving sufficient muscular power for all practical purposes. The simplest way of destroying muscle fibres is to cut out their nerve supply, and Stöffel's operation consists in finding the nerve tracts—usually before they leave the main nerve—and excising a sufficient portion of them.

I will not detain you with details of these operations in different regions. Suffice it to say that for adductor contracture of the thigh one resects the two divisions of the obturator nerve; for flexion contracture of the knee one resects the nerve tracts to the long head of the biceps, the semimembranosus, and part or the whole of the semitendinosus; while for the equinus contracture of the foot one resects one-half to two-thirds, more or less, of the nerve tracts to the gastrocnemius and soleus. In each case the relief of the contracture is immediate and permanent, yet sufficient power is retained to adduct the thigh, flex the knee, or raise the heel from the ground, when required. Similarly, the pronation and flexion contracture of the upper extremity may be relieved by destruction of a sufficient part of the nerve tracts to the pronators and flexors.

To Stöffel we owe the development of the "cable theory" of nerves. He demonstrated that in the main nerve trunks of the limbs the various nerve tracts maintain their identity and independence at least for a considerable distance, and that the cross-section of a large nerve is fairly constant in any given situation. So that, given a knowledge of the position of these tracts, we can pick out and isolate from the main nerve trunk the nerve supply of any required muscle group, and we can then destroy as much or as little of it as we please. The ease with which any main nerve trunk can be exposed in a limb, and the fine adjustment and variation that are possible in dealing with the nerve tracts, give to this operation both a simplicity and an adaptability that are, I think, unattainable by any other method of operating.

As examples of variations from what one has come to regard as the typical operations, I would instance cases in which there is severe flexor spasm of the toes, making walking difficult and painful; others in which there is peroneal spasm causing pronounced eversion of the foot; and yet others in which there is persistent internal rotation of the thigh. In each case the contracture is disposed of by resecting a sufficient part of the appropriate nerve tract—the flexor tract to the toes on the deep surface of the internal popliteal nerve, the peroneal tract in the middle of the external popliteal nerve, and the tracts to the internal rotators of the thigh in the superior gluteal nerve.

I need hardly remind you of the consequences of destroying the nerve supply to a muscle. The muscle immediately becomes completely and permanently paralysed; it is pale, flabby, and atrophic; it has no tendency to shorten; on the contrary, it is very easily stretched, and, when stretched, it stays elongated and relaxed. And this is the outstanding feature of Stöffel's operation as compared with operations directly upon muscles and tendons: that the effect is immediate and permanent; there is no tendency to recurrence of the contracture in the paralysed muscle fibres; there is therefore no need to keep these patients in abduction frames or other apparatus; they can be got up almost immediately after the operation; and they require no walking instruments afterwards. In a word, Stöffel's operation abolishes the prolonged mechanical treatment of spastic paralysis, and in particular the use of splints and apparatus.

Some of these statements, which I have made before, have already been criticized, particularly the statement that the results are immediate and permanent. So that I would like to add that I have seen recurrence of deformity after Stöffel's operation—for instance, equinus deformity of the foot after operation on the internal popliteal nerve. But I do not blame Stöffel's operation for this—I blame myself, for it is due either to faulty judgement or to faulty

technique. Usually the recurrent deformity is a structural shortening of the muscle, and it means that sufficient care has not been taken to exclude the beginning of structural change before doing Stöffel's operation. Even a slight structural shortening will inevitably increase and entirely spoil the effect of the nerve operation. Other cases of recurrence are due to too little of the nerve tracts having been destroyed. For adductor contracture Stöffel recommended that the anterior division only of the obturator nerve should be removed in mild cases, and both divisions in severe ones. But for many years I have removed both divisions as a routine, for here, as elsewhere, the tendency is to do too little rather than too much. And I prefer Stöffel's operation in the thigh to the route through the abdominal wall, because it is a minor operation which divides no muscles and is obviously less disturbing to the patient.

With regard to the end-results, it must be remembered that spasticity is but one of the disabilities of cerebral paralysis. Even after the removal of their contractures the severer cases never walk quite naturally, and they are apt to be awkward and ungainly. Yet, to take a child who cannot even stand upright, and to put him on his feet and get him walking somehow, is at least a result worth having; while in less severe cases there is often a very striking improvement in stability and locomotion. Fortunately, with the exception of idiots, every child instinctively tries to use his legs, so that the only after-treatment required is practice and encouragement, which in most cases can quite well be given at home.

In the case of the upper extremity the conditions are different. A patient with one sound arm and one disabled one will use the sound arm for everything that he can do with it, and there is hardly anything in the ordinary daily routine of life that cannot be done quite well with one arm. So that in hemiplegies at least there is no natural incentive to use the affected arm after operation, and we depend much more upon the patient's intelligence and co-operation in order to obtain a useful result. Still, some of these patients do show a very considerable improvement as regards function, and the cosmetic result alone is sometimes worth having, for the characteristic pronation-flexion contracture is an unsightly deformity, and the appearance of the limb is often much improved by the relief of these contractures.

In conclusion, I would submit that Stöffel's operation is the best method of treatment which has yet been devised for the relief of spastic contracture.

The actual operation in each region is quite a minor operation and easy of performance.

It admits of a degree of precision and adjustment to the needs of individual cases such as cannot be obtained in any other way.

Its results are immediate and permanent.

The very nature of the resulting intentional paralysis makes recurrence of the contracture impossible.

Therefore, prolonged after-treatment and the use of splints or other apparatus are unnecessary.

#### GENERAL DISCUSSION.

Dr. J. BEATTIE (London) said that he had come to demonstrate some cinematographic records of experiments performed on seagulls and goats by the late Professor John Irvine Hunter and Dr. Norman Royle of Sydney. In the seagull it was easy to cut the sympathetic connexions of the wing with the spinal cord without interfering in any way with the somatic nerves, afferent or efferent. After this operation had been performed the bird appeared to be normal at first sight, but if the wings were carefully examined it would be seen that the wing which had been deprived of its sympathetic connexions with the spinal cord was slightly lower than the wing on the unoperated side. When thrown into the air this bird seemed to fly in a perfectly normal manner, except that it tended to fly in a left-handed spiral. After flying for about a hundred yards it came to earth with the affected wing in a flaccid condition. This wing was exhausted and the muscles were undoubtedly in a state of complete fatigue. After allowing time for the effects of fatigue to



pass off the experiment could be repeated and the same effects produced. It was therefore idle to pretend that the sympathetic system was devoid of influence on muscular activity. In another record a goat was shown deprived of the lumbar portion of the left sympathetic cord. After decerebration rigidity developed in the four limbs, but the left hind limb soon tired and became flaccid. This was a definite and constant result of this operation, and it showed that removal of the sympathetic influence did produce a definite effect on the limb muscles. The third record showed the effect of the removal of the bird's corpus striatum in producing a spasticity of all the limbs analogous in many respects to Parkinsonism in man after encephalitis lethargica. Dr. Adie, in his opening statement, while admitting that sympathetic nerve fibres might reach striped muscle fibres and might exert an important trophic influence on them, had said that the evidence at present available did not support the notion that the sympathetic played any part in the regulation of muscle tone. He had also stated that the higher centres from which the impulses passed to reach the sympathetic were situated at the level above the point of election for the section that produced decerebrate rigidity. Dr. Adie considered it certain that complete ablation of the sympathetic system had no effect upon decerebrate rigidity. The records shown seemed to suggest that the denial of any influence of the sympathetic on muscle tone required reconsideration. Dr. Adie had made the further claim that the centres controlling the sympathetic system were high up in the nervous system and must necessarily be cut when the operation for effecting decerebrate rigidity was performed. Here again the facts had been definitely established by two independent series of investigations. In the first place, Professor Hunter had been able to demonstrate that the maintenance of tone was not wholly dependent on Deiters's nucleus, which many years ago Dr. Thiele had proved to be concerned in the causation of decerebrate rigidity. Professor Hunter had been able to demonstrate experimentally in the goat that another centre was present which it was necessary to eliminate before complete flaccidity could be induced after cutting off Deiters's nucleus. This centre was in the formative reticularis a short distance away from Deiters's nucleus in the lower part of the pons. Without any knowledge of Professor Hunter's work, Drs. Bernis and Spiegel in 1925, using the cat and the dog for their experiments, had arrived at precisely the same conclusions. They affirmed that, although the vestibular nuclei played an important part, they were not the only centres for static innervation in the rhombencephalon. Unilateral destruction of the vestibular nucleus and its associated cell groups did not cause a complete loss of tone in the decerebrate animal. Alongside the vestibular nucleus there was a large-celled nucleus in the formative reticularis which played a part as a centre for static innervation. Fibres descended from it in the antero-lateral column of the spinal cord.

The influence of the cerebellum in the regulation of tone (which they had stated could be proved by the stimulation of the anterior lobe) expressed itself in a diminution of the tone of the extremities, and did not act only through the superior cerebellar peduncle. A second efferent system flowed out of the cerebellum to the oblongata and could be demonstrated in the restiform body; in all probability it passed through the tractus fastigio-bulbaris. In addition to the cells of origin of the pyramidal tract, not only the frontal but also the temporal cortex played important parts as places of origin for tone-regulating systems. In quadrupeds like the carnivora the influence of this system was very slight. In face of these very definite conclusions it was difficult to discover any cogency in Dr. Adie's second point.

In attempting to apply to the human subject the results made on mammals other than primates, the utmost caution was necessary, because the nature of the factors regulating tone in man and his nearest relatives differed from those of members of other mammalian orders. This fact had been emphasized by Magnus and his colleagues, and was asserted once more by Bernis and Spiegel. A somewhat analogous, although by no means identical, cephalization occurred in birds. It must be remembered that their

corpus striatum represented not only the homologue of the mammalian corpus striatum, but also of the neopallium. Excision of the corpus striatum exerted a very definite influence upon muscle tone, to which Professor Hunter had called attention in the lectures published in the *BRITISH MEDICAL JOURNAL* in January, 1925. The cinematographic records had shown the effect of the extirpation of the corpus striatum in the bird. The effects were in many respects similar to the post-encephalitic Parkinsonism found in man.

Mr. S. W. DAW (Leeds) considered Dr. Adie's classification of the causes of spastic paralysis to be very complete; as surgeons they should be grateful to him for emphasizing the existence of the various progressive types which were unsuitable for operation. At the same time Mr. Daw agreed with Mr. Bankart that such cases were rarely presented for surgical treatment; when seen, there were usually definite danger signals. Mr. Bankart many years ago had called attention to the value of Stöffel's operation in spastic paralysis, and Mr. Daw was convinced of the great superiority of operations on nerves to those on tendons in suitable cases. It was well known how tedious was the prolonged fixation of the lower limbs in the position of correction; the results of nerve operations were claimed to be immediate and complete. Moreover, the process of muscle education was much simplified and could be begun in a week or two. In cases where there was commencing or pronounced contracture of muscle the methods of nerve section and muscle lengthening should be combined. The speaker emphasized the value of the method of lengthening the soleus muscle after division of its aponeurosis as an alternative to lengthening the tendo Achillis. The procedure could be carried out without making a breach in the continuity of the muscle-tendon unit. Turning to a consideration of the upper limbs, where the deformity was usually unilateral as part of a hemiplegia, he did not think that Stöffel's operation made the same logical appeal. In this case it seemed reasonable to make, if possible, a redistribution rather than a reduction of power. The flexors and pronators practically always predominated and the power of the extensors was reduced. Generally speaking, Mr. Daw had found it satisfactory in suitable cases to perform an operation very much as described by Sir Robert Jones for irrecoverable posterior interosseous nerve injury—namely, to divide the flexors of the wrist and insert their tendons into those of the extensors of the thumb and fingers. At the same operation the pronator radii teres was divided and inserted into the extensor tendons of the wrist. The least that could be expected was a greatly improved cosmetic effect, but there was no doubt that function of the hand might also be decidedly bettered. Even in the presence of athetosis of not too severe a kind this operation was worth consideration.

Mr. NAUGHTON DUNN (Birmingham) defined three factors in spastic paralysis: (1) the mortality of the child, (2) the degree of spasticity of the muscles, and (3) the voluntary control which might or might not be present. These would vary in each individual case. It was agreed that the principal means of helping these children was by re-education in the use of the limbs, and by some operation to diminish the spasticity which interfered with function. In the case of the child whose mentality was severely impaired no operation or re-education was likely to be helpful apart from any procedure which would alter the position of the limbs and so facilitate nursing. In other cases where the child could understand the mother or the remedial gymnast, re-education of control of the limbs was often most helpful, and should be continued until the child itself began to make some effort to use the limbs for the purpose for which they were intended. An operation to reduce the spasticity of certain groups of muscles might then be most helpful. The type of operation, whether lengthening the muscles or diminishing their nerve supply, did not seem to be of great importance. The speaker's usual practice was to operate on the nerve supply of fleshy muscles, such as the obturators, the pronator radii teres, and the gluteus maximus, simply because it was easier. In

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the case of muscles with direct tendinous insertion, such as the tendo Achillis, biceps, and ulnar and radial flexors, he thought a more accurate and satisfactory result was obtained either by their division or elongation. In the case of spasmodic deformity of the wrist and hand he had had good results from tendon transplantation in selected cases, but each case required very careful observation as to the degree of muscle control present. A period of splintage and re-education was often an essential preliminary to operation in these cases. As a rule, unless the patient developed voluntary control of the position of the fingers and thumb, operations to correct the position or control of the wrist, and the extensors of the fingers and thumb, were not likely to be helpful. The question of simply dividing the wrist flexors, or transplanting them, would depend largely on the voluntary control of these muscles. If they remained in uncontrolled tonic spasm they were better divided, the position of dorsiflexion of the wrist to this case being maintained by passing the tendons of the radial and ulnar extensors through the forearm bones, so that they might act as ligaments to maintain dorsiflexion of the wrist. In other cases where voluntary control of the wrist flexors was present and the extensors were weak the flexors of the wrist might be transplanted with advantage.

Mr. H. A. T. FAIRBANK (London) said that in the cases which came to the surgeon it had been stated that there was an exaggeration of the postural reflex which normally maintained the upright position of the body and paralysis of reciprocal innervation. Did these explain the development of the deformities? Admitting that the position of the legs was generally one of extension, why was flexion of the knees, and not uncommonly also of the hips, a feature of the cases, when the hamstrings were not the seat of spastic deformity? Mr. Fairbank agreed with Stöfel that of postural tone? Mr. Fairbank agreed with Stöfel that any spastic deformity could be produced if the limb was held in the requisite position sufficiently long. All the muscles were affected more or less, but the stronger groups, or those netting at a mechanical advantage or helped by gravity, gained the day and produced the deformity. If these stronger muscles had their tendons cut and after-treatment was injudicious, as the opposing muscles became just as spastic and deformity-producing as the original group. Gravity was important in producing deformity. The ulnar deviation of the hand was also due to gravity. The exact extent of the lesion played a part in determining the direction of deformity; how otherwise could an explanation be found of internal rotation deformity was due to the mechanical advantage which the adductors possessed over the abductors. Involuntary movements, when well marked, were a contraindication to operation, but in the milder cases this was certainly not invariably so. Cessation of a particular temporary spasm by operation might materially aid the function of a limb. Massage was useless, but as regards systematic training there arose the question of the age at which operation was advisable, about which nothing had been said. Patients were seen showing signs of walking soon after the age of 2, for instance, but these were best left till at least 3 before operation. In the meantime training in walking could be carried on, and after this time training in walking could be carried on, and after this delay it was easier to determine exactly what deformities required operative treatment. Why did some cases develop required operative treatment. Why did some cases develop anatomical contractures early, while in others this complication was surprisingly late?

As to the methods of treatment, the speaker agreed that two only were worthy of consideration—namely, division or lengthening of tendons, and Stöfel's operation. He thought each deformity must be considered by itself. While Stöfel's operation was best for adductor spasm, the open lengthening of the tendo Achillis was the best for equinus. For the knee flexion in younger children he chose Stöfel's method; in the older children the Stöfel operation with tenotomy. He preferred the oestraperitoneal route, as introduced by Mr. Tyrrell Gray, for excision of the obturators. It was no more severe an operation than stacking the divisions of this nerve in the thigh, and had the advantage of being further removed from the perineum. For internal rotation he preferred to cut the superior

gluteal and its branches above the trochanter rather than further back. For equinus he was strongly inclined to open lengthening of the tendo Achillis, after an experience of Stöfel's operation on the internal popliteal in over sixty instances, in a large number of which the tendon operation had to be resorted to later. He agreed with Mr. Bankart in blaming the operator, but even so, experience had convinced him that the tendon operation was the better, the more certain and lasting in its results, and therefore the easier. The tendo Achillis should be united after division so that the tendon was pulled on just before the foot came up to a right angle rather than at a right angle. If the Stöfel operation was in the least insufficiently performed a deformity could develop later. To avoid this it must be necessary to destroy more nerve fibres, and then came the dangerous possibility of destroying just too much. He had seen patients operated upon by the Stöfel method at 3 or so without any contracture, and though he had been entirely satisfied with the results for a year or two, yet the patients had developed equinus again later. He preferred to deal with the muscular branches as well as the continuation of these upwards rather than the bundles in the main nerves, when using the Stöfel method. As to the length of nerve, it was necessary to excise to prevent regeneration, particularly when only a portion of a trunk was being dealt with, he always cut out at least an inch, and often much more, in the case of the obturator nerve; yet in two cases, one bilateral, making three nerves in all, he had seen the adductors regain their power after several months. In the bilateral case he operated a second time, exposing the nerves in the thigh and finding them and the muscles healthy and responding to electrical stimulation. There was no sign of an accessory obturator nerve. Since there was nothing on the lateral wall of the pelvis which could be mistaken for the obturator nerve, apart from the fact that unmistakable contraction of the adductors occurred when the nerve was seized and cut, he could not believe that he had failed to excise the nerves, and he was forced to the conclusion that he did not excise a sufficient length of them. In another case he saw recovery of the anterior parts of the glutei after excision of the superior gluteal nerve, but in this he admitted that the length of nerve excised was much more likely to be small. As to splints, there were cases where these were necessary for a time. In the case of the foot, he thought a rectangular tin shoe should always be used for at least a year after operation, and daily passive dorsiflexion to the full extent be practised for an indefinite period. This was necessary because gravity favoured a return of the deformity, which was not the case with the other common spastic deformities. He believed that Tubby's operation for pronation was founded on a misconception of the movements of the radius during supination; the results were not good. He preferred the Stöfel operation on the branches of the median, with simple division of the pronator radii teres, if this was contracted. Speaking generally, the results of treatment of a spastic arm were most disappointing, except as regards pronator spasm.

Mr. H. TYRRELL GRAY (London) considered that injury at birth was undoubtedly responsible for a large proportion of cases of cerebral diplegia; but there remained a considerable number in which no such cause could be traced. One of the worst cases in the experience of the speaker was shown to be due to an extensive congenital defect of the coracrum on both sides. If it were borne in mind that so many congenital deformities, such as wryneck, congenital talipes, hare-lip, and cleft palate, were associated with defects in the central nervous system, it was only reasonable to allow that a certain proportion of cases of cerebral diplegia originated in the same manner, independently of injury at birth. The speaker thought that the tendency to improvement did not negative such a view; but this feature might, in some instances, be due to compensation by unaffected parts. Of this power the human body afforded numerous examples. In support of this view the case of hare-lip and cleft palate was quoted. Here defective means of producing certain sounds were compensated by developing the powers of mimicry of normal speech. The parrot was quoted as a notable example of

such close mimicry. If such views were correct the degree to which the desire and ability to walk could be inculcated indicated the extent to which surgery could be helpful, aiming only at removing the mechanical disabilities. Though it was true that the power to walk was an aid to mental development, the main indication for interference was the inclination to walk. Following an operation such as the removal of mechanical disability, education was of paramount importance, and was the keynote of a good result. Of the different types of operation advocated, tenotomy and excision of muscles were practically extinct, and, though Foerster's operation had long been abandoned, the speaker, from an experience of six cases, could not help regretting that an operation which had given such satisfactory initial results had been followed by relapse in every instance. Stöffel's operation, alone or with tendon slide, was the method of choice. The value varied in different regions. For adductor spasm resection of the obturator nerves was the best procedure. He still adhered to the abdominal (extraperitoneal) route, which he had practised for the last seventeen years. For flexion at the knee he performed Stöffel's operation, with, in some cases, lengthening of tendons also. He was inclined to agree with Mr. Fairbank that, for equinus, tendon lengthening was usually necessary, whether Stöffel's operation was performed on the internal popliteal nerve or not; and that the tendon operation alone was frequently the most satisfactory procedure. But whatever views were held as to surgical details, the one essential was patient post-operative education.

Dr. M. R. WALSHE (London) said that since Dr. Beattie was again raising the fallen standard of sympathetic ramisection as a scientifically based procedure it was necessary to be clear about the ascertained facts, anatomical and physiological, upon which this operation was based. Dr. Beattie had retired from the original position taken by Hunter and Roylo, and had, as he understood, allowed that in the human subject the operation was without result; inferring from this that the nervous processes underlying regulation of muscle tone in primates must be different from those obtaining in the lower mammals. All the physiological and clinical evidence available, without exception, indicated that the regulation of tone and of posture was essentially the same in man as in the lower animals in question. Dr. Beattie's difficulty in having to allow the futility of sympathetic ramisection as an operative procedure to overcome spasticity in man was not to be escaped by this entirely speculative proposition. Returning to the evidence brought forward in support of the view that muscle tone was a function of a special element in the striated muscle fibre and was controlled by the sympathetic nervous system, it seemed a reasonable conclusion that the histological evidence was incomplete and inconclusive, and that the existence of a general sympathetic motor innervation of striated muscle was still an open question. As to the experimental evidence, however, the question was not an open one. Not only was it not proved that there were two distinct components of muscle tone, but it was possible to go further and say that Hunter and Roylo's experiments on goats and birds seemed to indicate that there were no such separable components and that sympathetic innervation was not in question. Even if the condition pictured in the cinematograph photographs of the goat shown by Dr. Beattie could be regarded as a constant result of uncomplicated sympathetic ramisection in this animal, it did not justify the theoretical conclusions drawn therefrom by Hunter and Roylo and provided no evidence of the existence of a "contractile" component of tone; it seemed, indeed, to exclude such a possibility. In respect of the cinematographs of birds, an even more conclusive objection to accepting Hunter's interpretations was that similar, more extensive, and more carefully controlled experiments had been performed over twenty years ago by Trendelenburg without impairing either wing posture or the power of flight. In the absence of anatomical controls it was not possible to say what had so disabled Hunter and Roylo's birds, but there was no reason to suppose that posterior root section was adequate to do so.

In short, on every count the evidence advanced to prove that muscle tone was controlled, either wholly or in part, by the sympathetic system was defective.

Dr. E. W. N. HOBHOUSE (London) dealt with the common and non-progressive forms of spastic palsies—hemiplegia and diplegia—with special reference to their treatment in infancy and early childhood. He thought that Dr. Adie had made out a good case for the view that many spastic diplegias were due to birth trauma. The analogy drawn between cerebral diplegias and lesions of the superior longitudinal sinus was certainly very suggestive. Two types were probably included under the name of "Little's disease" which might have different pathogenesis. There was a type which was really a quadriplegia, and certainly corresponded very closely with the superior longitudinal sinus lesions, except that it was fairly common to find flexor contracture of the hand in them. There was also a type with a paraplegic distribution, in which the spasm was not maximal in the distal part of the limb, but was particularly marked in the adductors. Dr. Adie remarked that a primary neuronic degeneration was usually progressive, but it might be that the process here was an agenesis rather than a true degeneration.

As to the treatment of these cases Dr. Hobhouse believed that the problem was quite different from that of adult spastic palsies, and that if the cases came to notice in infancy or early childhood, it was possible to prevent, in many of them, the spastic states which required operative measures. Putting on one side the children with real mental impairment, frequent fits, or any form of hyperkinesia, he thought that there was a wide field of non-operative treatment for the others, and that the results were good in nearly all the hemiplegias and a large number of the diplegias. Mr. Bankart said that the condition was essentially incurable; it certainly was so as far as the affected neurones were concerned, but in the infant, as regarded function, he was not convinced. The infant's brain seemed to be a very plastic organ, capable of developing a large number of new reactions. Personally he was open to the idea of the occurrence of vicarious action of other parts of the cortex, though he recognized that this was quite an unestablished hypothesis, at any rate in the higher animals. But he did believe that in any child in which new reflexes could be conditioned now voluntary movements could be developed, and there seemed to be no reason why, if this could be done, new inhibitory impulses should not also be brought into action, with consequent relief of spasm. In practice, at any rate, he had noticed that if active movements could be re-established from an early age, a condition of severe spasm seldom developed, and no contractures occurred. This might be partly owing to some adjustment of the length of the growing tendons, taking place. Mr. Bankart said that he had seen no good effects of massage, manipulation, or electricity. Dr. Hobhouse agreed with him about the first two, but would go much further in the third. He believed that the faradization of spastic muscles was an absolutely irrational proceeding which was the principal cause of most of the severe spasms and contractures in these children. It had often been condemned by specialists in electrotherapy, and he had never heard a medical man defend it, but the fact remained that the relatives clamoured for it and usually obtained it. He rarely met with a severe case in a patient of over 4 years of age in which it had not been used; on the other hand, he rarely saw a high degree of spasm developing in a child who had not received it.

Dr. Hobhouse's two main principles in treating an early case were to keep the child from electricity and to educate active movement. In a diplegia the great object was to get the child using the legs as soon as possible. He had found that a wheeled frame with adjustable supports under the axilla was of great value in getting the child to learn to walk, and that later on such contrivances as horse-tricycles and kiddie-cars were very useful. But the most surprising results had been in the hemiplegic arm. For this there was only one line of treatment that he had found of any use—namely, to tie up the sound one. In dealing with an adult hemiplegic—particularly with the type of adult most liable to hemiplegia—the difficulties in doing

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this were very considerable, but in the infant it was quite simple if the intelligent co-operation of the mother and nurse could be obtained, and the rapidity with which voluntary movements developed in the free paretic arm was most remarkable. In children in whom a high degree of spasm had developed he had certainly seen Stöckel's operation yield the best results, because this could be followed by the simple re-educative measures mentioned, instead of by immobilization.

Dr. W. F. MENZIES (Cheddleton), referring to upper neurone defects, said that such terms as contraction and relaxation, flexion and extension, agonists and antagonists, voluntary and automatic, should be regarded as of comparative value only. Nerve stimuli arose from the energy of neurones which had only one action—namely, discharge, sudden and complete, on the period and slow recovery. These neurones discharged only in response to an afferent stimulus, exteroceptive, interoceptive, or proprioceptive. They discharged like a continuous and mending machine-gun bombardment from conception to dissolution, countless millions of them, but there must be a lower mechanism somewhere which marshalled them into orderly volleys, passing along the nerves at various rates, usually about fifty a second, for both twitch and tonus were in fact tetanic. Only a few millions out of the countless myriads discharged at once, and these formed patterns of synaptic resistance. If an impulse was determined whether a discharge should eventuate in flexion or extension or reciprocal movement or partial relaxation which was plastic tonus—or what not. A great reflex reserve battery—the olivo-cerebello-pontine—was ready to reinforce certain habitual postures, such as reflex standing in man, seen at its highest intensity in decerebrate rigidity. The only phenomenon which produced a really widespread discharge was the epileptic fit, which resulted in severe neuronic exhaustion—coma; yet it scarcely affected such ancient mechanisms as those in the medulla.

The patterns of synaptic resistance in the cerebral cortex had been worked out by the Pavlov school, but these paths were fairly modern, and concerned mostly the infragranular layers in the higher vertebrates. They were not, of course, so recent as those which represented the cultural development of man, those essentially supragranular paths which were termed "mind," but they were infinitely more modern than the patterns followed in the medulla, that portion of the central nervous system which had remained comparatively stable since the epoch of the segmental levels. Roughly speaking, there were five physiological levels of movement and posture: supragranular, where the more voluntary or directed movements were initiated; the infragranular, most used in the semi-automatic patterns of everyday life; the thalamo-striatal, where automatic ancestral movements, conscious and unconscious, were worked out; the spinal, given over to defence reflexes of a massive type; and the brain stem area.

In aments there were all degrees of cortical underdevelopment. If the supragranular layers alone were affected the children could walk and play and learn to speak only when supragranular involvement was fairly slight, for speech was a very involved system of applied symbolism. If the infragranular layers were to any great extent defective the children could not be taught personal cleanliness; many of them could never walk. In the normal child the Betz axons, which arborized widely round the small granular cells of the cord by means of their very numerous collaterals, were not fully myelinated at birth. Standing was impossible, and there was no rigidity. Automatic patterns were perfect, and owing to supragranular defect the desire, or libido, for directed movements did not exist. These patients could be taught to walk and grasp by educational methods. If ultimate myelination remained incomplete, through partial agenesis of infragranular layers, various deformities arose, lower mechanisms being imperfectly controlled. It was a curious fact that when a start was made in teaching a perfectly plastic-

limbed child to stand, spasticity commenced to appear years earlier than in others who had been left alone. Thus deformities were originated, not because certain patterns of movement were less under the control of higher levels, were stronger than others, but because certain patterns in a general sense the more cortical and striatal the control, the more the spastic postures tended towards extension, whereas in advanced cases of paralysed aments all the limbs were flexed and rigid. This rigidity was indicative of spinal sclerosis. The gradual deterioration was largely regulated by phylogenic antiquity, and it was interesting to observe the simulacra of ancestral postures—fragments of the standing mechanism, as in talipes equinus, which originated when the race came down from trees and emerged from the forests; climbing mechanisms of an earlier date, as in the scissors gait or talipes varus, when caudal extremities were used to grasp boughs; flexor attitudes, when early vertebrates grovelled on the ground. But always the hand had differentiated least, and flexor rigidity prevailed.

After some years of endeavour with ordinary idiots, Dr. Menzies began to think that something might be done for the paralysed and those with spastic deformities; Mr. Mitchell Smith was now treating such cases by the various appropriate methods. It was hoped to get them progressively younger as time went on, so that violent methods might not be necessary. The first task was to combine hand, ear, and eye—seeing objects, grasping them, trying to pull at them. They had little bells and brightly coloured objects dangling within hand reach, and rings by which the child was encouraged to pull himself up. Then they got him on to his feet, holding on by a bar, and eventually encouraged him to bear weight on the legs, and so, aided by the nurse, to walk. If tendon transplantation was required the surgeon must be careful to use muscles the unceasing habit of which was the same as the movement aimed at—not, for example, to attach a muscle whose habit was flexion to a group of extensors. The most useful movement in the hand was the grip, in the shoulder adduction and a right-angled foot. The child learnt to substitute healthy neurones for those missing. It was wonderful to watch how muscle re-education improved the whole mental outlook, but the trouble was to stimulate the desire to try, for the instinct which helped so greatly in dealing with normal children was lacking in the ament.

Why did effort tend to produce earlier spasticity? The evidence concerning the existence of a fronto-pontine tract—by which Dr. Menzies presumed intermedio-precentro-pontine was meant—was contradictory, but the presence of a cortico-striatal connexion seemed probable in lower vertebrates. It was not necessary to presume either of these in man. Tonus was a component of all reflex systems, and when older patterns were imperfectly controlled from higher levels they naturally assumed their inherited biological modes of action, even in the isolated cord. With regard to the sympathetic supply to skeletal muscle, it was realized how predominant was the influence of the afferent sympathetic in determining the feeling-tono arising in plain muscle. Could they deny the same emotional value to it in the case of striped? They had an example in normal life when "fidgets" were relieved by voluntary movement. Might not the affected muscles of the ramisectioned gull or goat lose their "will to endeavour" by the cutting of the efferent grey rami? This was a matter with which consciousness (the cortex) had little to do. The dilatation of arterioles brought about by injury to the final fibrous sympathetic was competent to produce the final fibrous rigidity. An instance of what he conceived to be the influence of the sympathetic fibres in chorioform movements occurred in the case of an idiot boy with hypertonus. In the hope that the movements might diminish if he could learn to stand and walk, both hips and both knees were placed in plaster in extension. He went downhill so fast that he nearly died, but recovered in a few weeks after release. They were now experimenting with one joint at a time, but these cases were at best decidedly unfavourable.

Mr. A. ROOYN JONES (London) said that one striking feature about the cases considered suitable for operation



was their great mental improvement when once they found themselves able to walk with some confidence. Hospital school teachers stated that not only was the child's walking improved, but that the intelligence was quickened and the brain became more receptive to instruction: the child took a new interest in life. Of the operative procedures Stöffel's was undoubtedly the operation of choice, but there were many cases in which a combined nerve and tendon section produced the best result. For tendo Achillis spasm with contracture section of the branches of the interal popliteal nerve with open elongation of the tendon at the same time produced the best result, but the elongation should only be such as to permit the foot to dorsiflex barely to right angles with the leg, as Mr. Fairbank had mentioned. If the foot passed beyond a right angle at the time of operation there was great danger of a calcaneus deformity subsequently. The adductor spasm seemed to be the most difficult to correct permanently. Both branches of the obturator nerve should be cut, and this could be done without much difficulty on the inner side of the thigh through a four-inch skin incision. The extraperitoneal route seemed hardly necessary. It was often an advantage to remove about an inch of the tendon of the adductor longus at the same time. As for the upper limb, the functional result of operation in infantile hemiplegia had been disappointing. Both tendon transplantation and nerve section had singularly failed in producing a more useful hand. Either method would produce a good cosmetic result; instead of the flexed wrist and clenched fingers the hand appeared more natural after operation, but even so, inco-ordination and lack of precision in finger movements were unaltered.

Mr. A. H. Todd (London) hoped he would not be thought retrogressive in thought and doctrine if he pleaded for the older operation of open tendon-lengthening. It appeared from the discussion that Stöffel's neurectomy was in high favour in the treatment of spastic cases at the present time; but he claimed that the older operation still had a very definite place in their surgical armamentarium, and should certainly be retained. Unless he was much mistaken, it was likely to come into its own again when the present vogue of fashion had somewhat subsided. There was no real reason why the Stöffel operation should be more effective than tendon-lengthening, since the object of both operations was the same—namely, the physical weakening of the affected muscles. The whole question turned upon the way in which the operation was performed; lengthening, if efficient, could reduce the physical power of a muscle quite as much as division of its nerve supply. One trouble was that tendons were often not lengthened enough; it must be remembered that these patients were anaesthetized, and that when the effect of the anaesthetic had passed off the muscle and tendon would be very much tighter than they were when their excessive tone was wholly abolished by the effect of the drug. One great advantage of the tendon-lengthening operation was that its effect was absolutely precise, whereas even the most practised exponents of the Stöffel operation had admitted that they had to trust more or less to luck to produce the exact amount of weakening desired. Recently an orthopaedic surgeon of one of the big London hospitals had stated that, while he always performed the Stöffel operation for the adductors and the hamstrings, he always performed open tendon-lengthening upon the tendo Achillis; he naïvely admitted that he did so because he could be quite certain of the effect of the tendon-lengthening. It would surely be logical to operate in a similar manner upon the hamstring tendons, taking care, however, to do enough. Mr. Todd agreed that at the ankle it was desirable to bring the foot to a right angle, and no further, but at the knee the common fault was to lengthen the tendons too little. In the groins the complete excision of three inches or more of the whole adductor mass of muscle was not too much, and gave an excellent effect. As regards the alleged length of after-treatment necessary after the tendon operations, he denied that this was any greater than that required after neurectomy, provided that the operation was efficiently performed. A great deal of the tendency

to contracture at the hip and knee was due, not to the muscles and tendons at all, but to the capsules of the joints, and it was these structures, and not the muscles and tendons, that took so long to stretch in the after-treatment. When contracture was considerable a necessary and integral part of the open operation should consist in capsulotomy. In the case of the knee this could be easily performed by means of one long vertical median incision, the main vessels and nerves being identified and swung, first to the right and next to the left, the capsule being completely divided in a transverse direction and then fully stretched. It would be found that after this operation the knee became completely straight, and remained so, without any tendency to recurrence of flexion. In the case of the hip he had tried various incisions, and found that the best, upon the whole, was one running parallel with Poupert's ligament, but about an inch below it; the various muscles in front of the hip-joint were completely divided, and the whole of the anterior aspect of the capsule of the joint also. The limb was then put up in hyperextension for a short time, and no recurrence ensued.

As regards the results of operation, and the after-treatment, it must be remembered that one important factor was the release of the extensor muscles from over-stretching. After operation the extensors tended to improve spontaneously, but everything possible should be done in addition to cultivate their power by means of suitable exercises and massage. The speaker agreed in condemning the use of electricity in spastic cases; parents always clamoured for it, but many children had suffered much from the ignorant misuse of a faradic coil. He regarded electricity in these cases as being not merely useless, but actually prejudicial. As far as the upper limb was concerned, he had never found any good result from the transplantation of the pronator radii teres muscle with a view to converting it into a supinator; he would regard any possible good that might result from that operation as being due to the subtraction of a pronating force, rather than to the addition of a supinating one. He thought that, apart from the use of a digitated cock-up splint for keeping the wrist and fingers extended, surgical treatment could do very little for the upper-limb affections; but very much could be achieved by the constant educational efforts of a keen parent. He was accustomed to tell parents that everything depended upon their own efforts: they must constantly encourage the child to use the affected limb, and not to follow his natural tendency to discard it in favour of the normal limb. Toys which necessitated the simultaneous use of the two hands were invaluable; such as a wheelbarrow, building bricks, and knitting-needles. They ought to consider seriously whether the present stereotyped treatment was right. They were terribly prone, as a profession, to go on carrying out orthodox treatment, simply because it was orthodox, without stopping to think whether the fundamental principles upon which it was based were right or wrong. In a discussion at the Royal Society of Medicine a well-known neurologist had said that the whole practice of orthopaedic surgeons had been "and corrective movements for the the spastic muscles was wrong; he constantly stretching these muscles they were sent into a condition of still greater spasm, and thus much was done to produce the very conditions which were subsequently treated by tenotomy and the like. He suggested that, on the contrary, they ought to give gentle, soothing, stroking movements to these muscles, if possible under running water. The whole question ought to be seriously reconsidered *ab initio* and a decision taken.

Dr. N. B. Carey (Liverpool) regarded most cases of spastic diplegia as the end-results of intracranial birth trauma, and urged the importance of recognizing this condition in the newborn infant, in order that immediate treatment, especially by lumbar puncture, might be instituted. While adding his tribute to the remarkable results of orthopaedic surgery in helping a damaged body to function more efficiently, he maintained that the prophylaxis of birth trauma was an obstetrical problem, and its essential treatment the duty of the paediatrician.



## Presidential Addresses.

### TREATMENT BY DRUGS:

#### A DIP IN A GENERAL PRACTITIONER'S TOOL-KIT.

DELIVERED BEFORE THE BIRMINGHAM BRANCH OF THE BRITISH  
MEDICAL ASSOCIATION

BY

H. GUY DAIN, M.B.LOND.,

PRESIDENT OF THE BRANCH.

THE choice of the subject for the presidential address to a Branch of the British Medical Association has in its time, I feel sure, been the cause of much searchings of mind or heart, whichever we prefer to consider the real seat of anxieties and the like. For the specialist in some subject or subjects it is possibly less difficult; but when a man has been in general—very general—practice for many years he has been compelled to familiarize himself with numberless questions and subjects, and at the same time prevented from becoming expert enough at any one to find material for a presidential address. I have found it the more difficult because on this occasion I did not want to drag in my particular "King Charles's head" by addressing you on anything to do with National Health Insurance, or, indeed, any other medico-political subject.

There is, however, one question very much in evidence at the moment. I refer to the tremendous consumption of drugs and their consequent unexpectedly great cost, and it has impressed itself upon me that perhaps something useful might be said in consideration of the question of treatment by the use of drugs.

#### Treatment of Disease by Drugs.

To begin with it seems to be often assumed, or at any rate inferred, whenever the subject is dealt with in the press, that drugs in the treatment of diseases are in the main unecessary and useless, and that when a doctor gives his patient medicine to drink, or a prescription to get it with, he is simply pandering to his patient's desire to get his cure that way, when he really does not want any medicine at all, but only requires advice. This is "the fetish of the bottle." I do not in the least agree that this is true as a generalization, though I am fully aware of cases in which it is true; and it cannot be denied that it is much easier and quicker to send off a patient with a prescription, which is all he thinks he wants, than to deal with him more faithfully with advice and instructions as well.

Again, there are among us those whose knowledge of drugs and their uses is, to say the least, elementary and limited to a very short list of common remedies—magnesium sulphate, sodium bicarbonate, rhubarb powder, opium, and perhaps sodium salicylate. These doctors have not taken much interest in drug treatment, and have not increased their repertoire by the useful methods of trial and error and experience. They tend to assume that treatment by medicines is largely a process of faith healing, and they are encouraged and comforted in this belief by the fact, thoroughly appreciated by us all, that the patient is cured by natural processes in himself, and that the cure is not accomplished by the doctor or his medicine. On the other hand, if one has been interested in trying out remedies, the occasions become very numerous when the patient's troubles can be greatly diminished and the course of his disease favourably modified by appropriate remedies, and I propose to relate here some of my own experiences. In these I do not claim to have any explanation, scientific or otherwise, for the actions or effects observed, but I claim the justification of experience.

In our beginnings and before we qualify we have to learn of drugs and their uses, and we have to know and be examined on the contents of that wonderful publication the *British Pharmacopoeia* (the revision and reproduction of which is under consideration now), full of remedies of greater or less potency for all sorts of conditions—many, I am convinced, of very small potency indeed, though widely

prescribed. Shall we take, for example, that popular bitter tonic gentian? The value of this is well illustrated by a story of the late Dr. E. Rickards, whose wisdom was well known to many of you. It was observed by one of his students that he frequently ordered an ammonia and gentian mixture, and in search of knowledge the student asked in what circumstances this medicine was prescribed. Dr. Rickards's reply was that he gave that mixture when he did not know what was the matter, when there was nothing the matter, when it did not matter. Other drugs there are of great and well recognized potency, but I have no intention to dwell on the uses of such as are known to be specific in the treatment of particular diseases—for example, quinine in malaria, mercury, iodide, and arsenic in syphilis, emetine in amoebic dysentery, salicylates in acute rheumatism, or opium in pain of different kinds.

#### Diminishing Use of Opium.

Perhaps the first observation I would make is the steadily diminishing use I find for opium. No! this is not the result of the Dangerous Drugs Act. So many kinds of pain are better relieved by other drugs, and even in the pain of inoperable malignant disease, when we are in the end driven to it, I find that the morphine-relieved patient becomes so miserable and mentally altered, and requires so constantly increased a dose that I always experiment with combinations of other pain-relievers for as long as possible, in what I believe are the best interests of both the patient and his friends.

While speaking of cancer I am reminded that a man whose wife had been found to have inoperable carcinoma of the cervix uteri once came to me with an old copy of the *Lancet*, in which a doctor recommended trial of a formula which contained magnesium carbonate 5 grains, potassium citrate 5 grains, sodium sulphate 2 grains, tincture of opium 2 minims, in cases of malignant disease, and asked if it might be tried for his wife. I of course consented, to find to my surprise that in a few days the pain was relieved and the hæmorrhage and discharges steadily diminished, and for two years while she took the medicine her symptoms disappeared. She could not be persuaded to take it longer as she was satisfied she was cured. After leaving it off for a few months her symptoms returned and the medicine was this time powerless to stay the course of the disease. I have tried the formula since on many occasions, sometimes with apparently helpful results, but only in one other case, and that a pelvic growth, with anything like so surprising an effect.

#### Catarrhs; Aspirin.

Of the many and varied conditions with which the general practitioner has to deal I suppose it will be agreed that the catarrhs, acute and chronic, of all the various mucous membranes easily outnumber every other complaint, and perhaps there are no other illnesses in which the patient is more grateful for relief. The catarrhs of the respiratory passages are, I suppose, specially and peculiarly prevalent and persistent in our English winter climate. Take the common acute "cold in the nose" with its violent sneezing and profuse dripping—most uncomfortable and very depressing. We all know that it will pass through its various stages and disappear in due course, but the effect, upon many people in the pouring stage, of a few doses of ammonium chloride 10 grains, sodium salicylate 10 grains, chlorodyne 10 minims, is almost magical, but if the formula is taken to pieces and each constituent tried separately the same effect cannot be obtained. And when a catarrh has become bronchial and tends to stick I find that I usually turn to eucosote and am rarely disappointed in the result. In combination with potassium iodide this remedy will often benefit cases of chronic bronchitis enormously. I have tried these two drugs in the treatment of acute pneumonia, but without any satisfying results. In the management and treatment of acute pneumonia I suppose that in the course of time we all evolve some general plan, and I am personally persuaded of two things: first, that it is dangerous or even fatal to give saline aperients, especially magnesium sulphate; and second, that expectorants are almost equally undesirable,

as they promote the flow of mucus and increase the risk of the condition which all must have seen where the patient literally drowns in his own bronchial secretion. Hence I usually prescribe, in the early stages, quinine and calcium chloride, hoping to keep the air passages dry, with the addition of opium when there is much pleuritic pain. And I expect it is fairly common knowledge that paraldehyde is often most effective with the sleepless pneumonia patient, and especially useful when nearing the crisis.

In the course of time and many epidemics every practitioner's procedure in dealing with influenza tends to stereotype itself. Curiously, I find in conversation with others that we all use different drugs, which would go to show that many are equally useful or useless, but after trying out all sorts of remedies I find that I get earlier relief of symptoms by the administration of quinine and aspirin (and here again neither is as effective by itself) than from any other remedies. The late Sir John Simon taught his students thirty years ago to give quinine and phenacetin, but I now prefer aspirin.

Of the many and varied uses of aspirin in pains and febrile conditions I do not propose to speak—they must be well known; but when thinking of its effects I always recall a case that surprised me. That is the worst of having no scientific explanation of a result. Another doctor once handed over to my care a chronic alcoholic of long standing with advanced cirrhosis of the liver and ascites. He was well off, and required to be tapped at regular intervals. On one occasion this patient complained of rheumatic pain in his shoulder-joint, and I ordered him some aspirin, to find that not only was his shoulder relieved but a diuresis commenced which so completely relieved his ascites that he never required to be tapped again, although his habits had not altered. A few doses of aspirin would always take it down if it showed any sign of return. This case of ascites is again associated in my memory with another of entirely different origin. A girl with advanced pulmonary tuberculosis had been away to a sanatorium at St. Leonards and made a surprisingly good recovery, but some time after her return home began to complain of indigestion and abdominal discomfort. Examination showed considerable free fluid in the abdominal cavity, and a diagnosis of tuberculous peritonitis was made. Treatment by rest and mercurial inunction produced no improvement, but administration of salol acted like a charm; the fluid and symptoms disappeared, and the patient has remained in good health for the last fifteen or more years. I can only record the observation without explaining the result.

#### *Intestinal Antiseptics: Nerve Sedatives.*

We are told that the intestinal antiseptics, so called, do not act as antiseptics to any appreciable extent, and I agree that it does not seem reasonable that they should; but of the usefulness of many of them in the treatment of intestinal conditions I am perfectly satisfied. Salol in conditions of catarrh or diarrhoea, alike in small children and older people, has come to be one of my sheet-anchors. In cases of gastric catarrh with furred tongue I find that the addition of half a minim of liquid carbolic acid to the ordinary dose of rhubarb and soda mixture often greatly increases its effectiveness. And again, where this is not effective two or three minims of tincture of iodine will often be helpful. In the treatment of mucous colitis, besides the use of salol to which I have referred, many will be aware of a formula advocated with great enthusiasm by Dr. Stacey Wilson: liquid perchloride of iron, liquid perchloride of mercury, and tincture of hyoseyamus, of each 15 minims, given half an hour before food. In some cases I have had excellent results with this, but not all patients respond either to this or to salol, and I have then found great benefit in some very severe and prolonged cases from iron and ammonium citrate 5 grains, liquor hamamelidis 15 minims, tincture of opium 2 minims, the opium being omitted where pain and diarrhoea are not present. Here again I have taken the formula to pieces and used the bits without getting the results. As a matter of fact I am particularly pleased with the use of this prescription, for it has enabled several chronic and miserable invalids to go to work regularly, and if they occasionally relapse, "the

bottle" (as the Scots patient has it) sets them on their feet again.

In these days, when it is so usual, or so fashionable, to suffer from "nerves," it often becomes a problem to know how to help nervy, jumpy, badly sleeping individuals. Bromide is capable of quieting them and helping them to sleep, but is liable to depress them further and may make them dependent on its continued administration. It occurred to me, as it doubtless has to many others, to try adding to the bromide some nux vomica or strychnine. Incompatible, some will doubtless say; they will cancel one another out; but experience has shown that potassium bromide 10 grains with liquor strychninae 3 minims is most helpful to the type of patient I have in mind. Bromide by itself depresses them; strychnine by itself is deadly for them—they become more jumpy and strung up at once. But the two given together produce calmness without depression, and help them to get back their sleep.

Another use of bromide I have in mind is in the vomiting of pregnancy, which I was taught as a student to treat with stomach sedatives—soda and bismuth—a method I found most disappointing until bromide was added to it. Bromide, perhaps with liquor sedans (P. D. and Co.) I have always found most effective in the vomiting of pregnancy. Again, all will be familiar with the indigestion of the tired and harassed business man which is immediately relieved by a dose of 10 grains of potassium bromide half an hour before a meal.

To-day the doctor is constantly being offered new remedies that require to be administered hypodermically—a horrible and increasing bugbear to the doctor, though I believe the modern patient expects and likes it. In the treatment of failing heart muscle the administration of adrenaline is recommended, and we are told that it is only effective when given hypodermically; but I have found that some good result is obtained when given by the mouth, and I have two cases of mitral disease with failing heart muscle in whom the benefit of digitalis is definitely improved by the addition of adronaline, so that they, as well as I, can tell at once when it is omitted.

#### *The National Insurance Drug Bill.*

At the beginning of my address I referred to the great size of the National Health Insurance drug bill, and it would not be inappropriate if I made a reference to cost and economy. It is fortunately a fact that many effective remedies are not expensive, and I find that, by using inexpensive drugs when I can, I am able to order the most costly when I want them without exceeding a reasonable average price. To enumerate a few economies: Tincture of iodine, 5 minims in water, is a cheap and effective method of giving iodine in many cases. I so order it in arthritis, adenitis, and thyroid cases, though I do not find it effective as a substitute for potassium iodide in bronchitis or syphilis. Strychnine hydrochloride with chloroform or peppermint is an excellent tonic where indicated, as also is Easton's syrup, 30 minims in water. A very useful prescribing discovery was that aspirin is soluble in a solution of potassium citrate, so that it is possible to give these in a mixture and save a separate dispensing fee for tablets or the necessity of suspending the undissolved aspirin.

In concluding what I have described as a dip in a general practitioner's tool-kit I feel that apology is needed for presenting so fragmentary a discourse as a presidential address, but when I came to put my experiences together I was not able to find any consecutive scheme or plan on which to hang them. At the same time, I do feel that the publication of their experiences of the effects of the drugs in common use by those who see most of their results—the general practitioners—ought to be both interesting and useful.

I should like to make one further remark, and that is: that in presenting this one aspect of medical treatment I do not wish it to be thought that I am unmindful of the other and frequently more important factors in treatment, but if there are any here who are satisfied that the effects of drugs are mostly psychological, and that a placebo is generally all that is required, then I can only say—that I do not agree, and that such is not my experience.

1924

# INSTINCT AND FUNCTIONING IN HEALTH AND DISEASE.

DELIVERED TO THE ANNUAL MEETING OF THE YORKSHIRE BRANCH

PETER MACDONALD, M.D.,  
PRESIDENT OF THE BRANCH.

I HAVE within recent years been profoundly impressed by a new vista which seems to me to have been opened up by the work and writings of a layman—F. Matthias Alexander—with definite bearings upon the science and art of medicine. As Alexander's activities are almost unknown to the profession, although an appreciative review of his book, *Constructive Conscious Control of the Individual*, appeared in the *BRITISH MEDICAL JOURNAL* of May 24th, 1924, and as I have come to the conclusion that there is a prima facie case that his work is of first-class importance, and, if this be so, investigation by the medical profession is imperative, I decided to make use of this occasion to attract the attention of some members of the profession to it, in the hope that some person or persons better qualified than I am to make such investigations may have their interest aroused.

Perhaps I can start best by telling you how Alexander began his own investigations. He is an Australian, and as a young man was a reciter, and had in Australia a great reputation as such, and as a Shakespearian actor. He lost his voice, having contracted what is sometimes called "clergyman's sore throat," presumably a chronic or sub-acute laryngitis. He did what any other man in like circumstances would have done—he consulted a laryngologist. The laryngologist did what any other laryngologist would have done—he sprayed his throat and gave him inhalations, and prescribed rest, etc.—and the throat recovered. Alexander, accordingly, gave another recital, but by the end of it his voice had again failed. He went back to the laryngologist, who was also a friend, who advised another course of the same treatment which had been successful before. Alexander said "No"; the laryngologist asked "Why?"—and I beg you to note the answer. That answer was: "Do you not see? I went into that room with my throat right, and I was able to recite. I came out of it with my throat wrong, and I was unable to recite. What caused the change from right to wrong? Do you not see? It must have been something I did. I will find out what it was that I had been doing wrong. When I have found out that I will cease to do it. When I have ceased to do it I will get my throat right, and I shall need neither your help nor that of anyone else." Then followed months of patient research. Mainly in front of the looking-glass Alexander made observations of how he used his mechanism—not only how he conducted himself in using his voice, but how he conducted himself generally; how he used that mechanism to sit down on a chair, how he used that mechanism to get up out of a chair, how he used it to walk, how he used it to kneel; how he used it to stand up straight, to bend, to kneel; how, generally, he used himself in the ordinary activities of life.

You will note the use of the looking-glass. Why was this? It was because Alexander had then—although but vaguely—recognized that in man's evolution by far the most stable environment in which he had passed by far the longest period of his life: to the recent rapidly changing environment of what we call civilization, his sensory appreciation (that is to say, the knowledge which he derives from his feelings of what he is doing) is unreliable; so that, for instance, when he thinks he is standing up straight—that is, lengthening his spine—he is often shortening it; when he thinks he is relaxing muscles he is often tensing them; when he thinks he is putting his head forward he is often putting it back—a vague recognition which his researches on himself, and subsequently on others, confirmed.

## INSTINCT AND FUNCTIONING.

From these researches certain conclusions were arrived at, the following being the most important:

(1) The first conclusion is that which I have indicated above—namely, that man's sensory appreciation is generally unreliable, particularly as regards knowledge acquired through the muscular sense. If Bain is right in his theory that of all our senses the muscular sense is the most important—that, for instance, we derive our ideas of space and time; that, for example, I do not see that the wall at the other end of the room is about twice as far away as the chair near the middle of the room, but that I acquire that knowledge largely by the different amount of muscular energy I have to expend in turning my eyes so that they converge on a spot on the wall from that expended when they converge on a spot on the chair, and from the different amount of similar energy I have to expend to focus each eye so that I can have a clear image of the wall in one case and of the chair in the other; and if it be further true that our sensory appreciation is unreliable, and that knowledge obtained through this sense is likewise unreliable, then civilized man is in a danger zone which will inevitably expose him to serious risks.

(2) The second conclusion is that, generally speaking, in the ordinary activities of life man uses himself badly; that he does not know how to get up to the best advantage from a sitting position, nor how to stand up when he is standing, nor how to get down to a sitting position, nor how to walk to the best advantage, still less to run to the best advantage, or to inspire and expire to the best advantage. Now, though the importance of the proper performance of these several functions varies in degree, you will agree that some of these activities, or others cognate to them, are associated with everything man does—whether he is presiding at a meeting such as this, or leading a parliament, or writing a book, or teaching the young, or writing a play, or building a ship, or making a motor car, or ploughing a field, or leading a strike. If Alexander is right, then, generally speaking, throughout his varied activities civilized man fails to function to the best advantage.

(3) Man is a psycho-physical whole, and does not consist of mind and body, or of head and trunk and legs and lungs and heart and liver; he is a unified whole, and if a part seems to be defective the defect is probably one of the whole mechanism, and not of the part. Take, for instance, flat-foot. This is not a defect of the foot alone, the remedy for which is something dealing with the foot alone; it is the result of a defect in the use of the mechanism which controls the carriage of the whole body, and may be got rid of by the means which will rectify this faulty use.

(4) Diseases are inseparable from wrong functioning, and in most of these wrong functioning is primary and disease secondary. Much disease can be prevented by the prevention of wrong functioning, and can be eliminated by the restoration of right functioning.

(5) Man differs from the lower animals in that in their conduct instinct is the important guide, and reason plays a small part; in man's conduct instinct plays a smaller and reason a greater part. Instinct is the result of accumulated racial experiences. Man, in the process of leaving the tree and arriving in this twentieth century in London or York, has taken, say, a million years. For by far the largest part of that time he has been in a state of savagery, or pre-civilization, say, more than 990,000 years; for by far the smallest part he has been in a state of civilization. Instinct, accordingly, is more than 990,000 parts due to the experiences of the savage, less than 10,000 parts due to the experiences of civilization, and only infinitesimally due to the experiences of the civilization of the present day. Instinct, therefore, can be a sound guide to our ancestors. The experiences of our savage ancestors were present conduct only if our experiences are similar to those of our ancestors. Ours is a changing environment, and ever more rapidly changing; hence instinct acquired in a highly stable environment, an unsound environment, and is ever more and more becoming more and more guide to conduct, and it is ever becoming more and more imperative that for it should be substituted a conscious control.

These are among the more important of Alexander's conclusions, and it is not my purpose to-day to attempt to prove them, or to claim that they are all of equal originality or importance. My object is solely to attract attention so that others may be interested to investigate; but I would like to refer specially to the second and fifth of these conclusions.

The second is that, generally speaking, man uses himself badly in the ordinary activities of life. I would ask you to make some observations on your friends who are over 50 years of age, or still more over 60, and I am prepared

to wager that you will find that many of them have a waist measurement as large as, or larger than, their chest measurement, and you will find few in whom there is not present a stoop, with the chin thrown forward and head drawn back, with, if you try to move the head, an accompanying rigidity of the muscles of the head and neck, so that you will find difficulty in pushing the head on one side if you want to examine the ear. As I once before said in one of the Sections at an Annual Meeting of the Association, I do not believe that these manifestations are a result of old age; I believe that the misuse of the organism which brings them about constitutes one of the causes of it. Unfortunately, you find them in young people also, and, I think, increasingly so.

The second of the conclusions I wish to refer to is No. 5, and I will give two instances of how change of environment has converted a useful instinct into a harmful one, the second instance throwing some light, in my opinion, on why instinct, derived as it is from racial experience, tends to lessen health and promote disease.

(a) There is reason to believe that with primitive man, as is the case with many animals, the stranger was an enemy and was killed. This was generally an entirely reasonable process, and was arrived at from observations of experiences that if you did not kill him he killed you; or, where food supply was short, if he obtained the food you had to go without, and accordingly died. Though as regards persons this instinct has largely died out, and we now recognize that an advantage to one person does not necessarily or usually involve disadvantage to others, traces are left. *Hostis* is a Latin word with two meanings—the one is "stranger" and the other is "enemy"; and there used to be a tradition that there were villages where the normal thing to do to a stranger was to leave half a brick at him. But where the horde psychology comes into play, this instinct still continues, and there are persons who still believe that one nation's advantage means the disadvantage of other nations, and we still have hostile action in various spheres between nation and nation or class and class.

(b) My second instance, however, is one with an important relation to the science and art of medicine. I have come to learn from Alexander that health is associated with a satisfactory use of the mechanism which controls the carriage of the body, and that this control should be such that the spinal column is maintained as erect as possible. In other words, the vertebrae should be pulled away from one another rather than pressed together through a co-ordinated use of the mechanism which tends to elongate rather than depress. More particularly the control of the neuromuscular mechanism should be such that the neck portion of the spinal column should be continued up as straight as possible, with the head square on top of it, throughout most of the activities of life. These words "straight" and "square" are used for the moment loosely, and I am aware that they need further definition, or, probably better, demonstration, as I shall indicate later in this paper.

Those of you who know the work of Professor Magnus of Utrecht, and who have read the most important lecture he delivered at Edinburgh on May 19th and 20th on the physiology of posture, in which, for instance, he points out that in his experiments on "attitudinal reflexes" "the whole mechanism of the body acts in such a way that the head leads and the body follows," will see how the conclusion of Alexander as to the importance of the relation between head and neck, neck and trunk, is borne out by laboratory experiments. In fact, Alexander has in his work and in the technique he has devised for re-educating his pupils anticipated some of the results which Magnus and others have arrived at through these laboratory experiments.

If the use of the mechanism concerned with the control of the carriage of the body is thus satisfactory, the tension of the great abdominal muscles will not permit of the pendulous abdomen so often associated with age, with all its liability to visceroptosis and intestinal stasis.

Why is it the case that this right use and satisfactory carriage of the human body is rare? In my opinion it is due to the carrying over of a primitive instinct, which was once sound and helpful enough, into an environment where it has become unsound and harmful. The dominant factor of life in primitive man and the ancestors of primitive man must have been fear, and it is my belief that when man became *Homo sapiens* he dared not stand erect. If he

raised himself erect he was liable to be seen over the shrubs or grass in which he stood by sabre-toothed tiger or wood wolf or cave bear, and accordingly eaten. Hence he learnt to crouch and peer with head thrown backwards and down. It was a habit for which there was then a sound reason. But this instinct was carried over to civilization, where, instead of being an advantage, it has become a disadvantage in the sedentary environment of modern life, with resulting flaccid muscles, pendulous belly, and accompanying conditions. This is surmise; but let me remind you of the reason given why a horse, when it gets up, rises on its fore feet and then on the hind, whereas the cow gets up first on the hind feet and then on the fore. The reason given is that in the environment of fear—which is the common ancestral environment of all animals, man included—the horse raised his head up before his body because he lived on grassy plains; and he raised his head above the grass to look over it for enemies before he showed himself fully; whereas the cow lived in the forest and kept its head low to the last so as to look for its enemies below the branches where it could see them best.

It is an accepted scientific opinion that at the present stage of the evolutionary process modern civilized man is in imperfect adjustment to his environment. The importance of Alexander's work lies in his emphasizing the reality of this maladjustment of man's neuromuscular system, and in his having devised a technique for teaching pupils a right, or rather a better, use of themselves.

I cannot tell you much of the technique, for in the first place there is to-day no time, in the second I am not competent to do so, and in the third I am sceptical if it can be described in words. Words give such messages only from one brain to another as can be conveyed through the sense of hearing. Even the written word carries messages through the sense of hearing translated from the sense of sight. Words cannot be used to convey any meaning as to a sensory appreciation. You cannot really describe a colour in words so as to convey any meaning to another person unless he already knows the colour. Part of the technique, however, consists in the inhibition of wrong use. This is seldom easy, at least with adults. You all know how difficult it is to "keep the head down" at golf.

Another part is concerned with the method by which ends are attained. "Ends," says Alexander, "should not be arrived at direct." If the end is held in view successful attainment of the end is unlikely. Success is attained only by attention to the "means whereby," that end can be reached. With correct attention to the "means whereby," success in attaining the end is assured.

Let us again take a golf instance. I presume that there are few of you who have not had advice from a professional to "follow through" in driving a golf ball; and I am certain that no one of you ever met a professional who was able to tell you how to do it. In this, obviously, end-gaining gains no end; it only interferes with the attainment of the end desired.

If Alexander is right, then, the sound use of the mechanism and the elimination of instinct as a guide to that use is of first-class importance to all man's activities, and—what is of interest to us as a body of medical men—in the prevention of disease; and if it is as important as he says it is, his work should be incorporated in the education of our young, if only as a matter of preventive medicine.

Alexander is a teacher pure and simple. He does not profess to treat disease at all. If the manifestations of disease disappear in the process of education, well and good; if not, the education of itself will have been worth while. Manifestations of disease, however, do disappear. Including myself, I know many of his pupils, some of them, like myself, medical men. I investigated some of these cases, and I am talking about what I know. For instance, there was a case of flat-foot. Please note that Alexander was not directly interested in this foot. What he did was to teach the pupil how to use his brain and muscular mechanism in sitting down and getting up, how to comport his head in relation to his neck, his neck in relation to his thorax, his thorax in relation to his breathing, how generally to control the carriage of his body; and, in the process, not only the disabilities associ-

bed with dropped arches of the foot disappeared, but the dropped arches rose.

In other cases, under the like process, there seemed to be a distinct betterment in cases of angina pectoris, of asthma, of epilepsy, of tremor, of spinal curvature, and of difficulty of walking from locomotor ataxy, and from infantile paralysis. In short, I have seen, during the application of an educative process not directed to cure of disease, the manifestations of disease disappear, so that I personally am convinced that Alexander is at least largely right when he says that disease is the result of wrong functioning. And further, I am beginning to wonder whether there are manifestations of any form of chronic disease which may not disappear under a process of re-education on these lines, and whether McMahonagh may not be right when he states in his great book that all disease is one; and whether the origin of that one disease does not lie in wrong functioning, and its different manifestations depend on different variations in functioning.

In conclusion, let me remind you again of my object in speaking to you. It is not, primarily, to communicate knowledge to you, but to endeavour to arrest the attention of some members of the medical profession to what I consider to be a most important development in connexion with medicine. I am in hope that I have made out a *prima-facie* case for investigation by competent observers.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### FETAL TUMOUR OBSTRUCTING DELIVERY.

The following instance of what I assume to be a very rare complication of labour seems to be of sufficient interest to be placed on record.

A primipara, aged 27, commenced labour on November 20th at 4 p.m., being attended by a midwife. On the evening of November 21st the head of a full-time male child was delivered (left occipito-anterior), and as after many strong pains the body was not delivered, the midwife, at 8.30 p.m., sent for a doctor, and then the latter sent for an anaesthetist.

Examination showed an enormous tumour in the abdomen of the infant, making delivery impossible. Thinking this might be ascitic fluid the finger was introduced into the abdomen, but only a rubber-like mass was felt amongst the intestines. Finding it impossible to deliver the foetus, the doctor sent the case to the Kettering General Hospital. On examination in the lithotomy position the only possible thing to deliver was the head and arms, which were hanging outside the vulva, were amputated, the stumps disinfected, and the body of the child delivered in the usual way through the uterine wall.

The tumour proved to be a very large horseshoe polycystic kidney with two distended ureters attached; it was twice as big as the foetus, and occupied the whole of the abdomen. There was no other kidney, and both suprarenal bodies were found. There were a very large number of cysts varying in size.

On November 22th the patient was making good progress, with normal temperature. Two days later, however, she had a severe haematemesis followed by copious melaena; the haemorrhage continued in spite of treatment and she died on December 3rd.

At the post-mortem examination four duodenal ulcers were found, one adherent to the liver, and another, a large one, attached to the pancreas. The haemorrhage which caused her death came from a large vessel in the ulcer adherent to the pancreas.

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#### RESUSCITATION BY INTRACARDIAC INJECTION OF ADRENALINE.

Intravenous injection of solution of adrenaline chloride in cases of collapse at operation is known to have given satisfactory results. In the case here reported the intracardiac route was used, in a patient apparently moribund, with most dramatic and satisfactory results.

A man, aged 63, was admitted to Greenbank Hospital with strangulated right inguinal hernia. It had been strangulated three years previously and relieved by operation. The patient was in poor condition with bronchial signs and a bad pulse and albuminuria. It was decided to operate under intraspinal stovaine anaesthesia, preceded by a hypodermic injection of morphine and

atropine. He was placed in the recumbent position, and before the operation was begun seemed more listless and drowsy than customary, and the pulse was feeble. A hypodermic injection of 1 c.cm. of pituitary extract did not improve matters, nor brandy by the mouth. The pulse was absent at the wrist, he had Cheyne-Stokes breathing, and auscultation of the heart revealed no audible cardiac sounds. The patient seemed to have passed rapidly into a moribund condition.

Intracardiac injection of 10 minims of 1 in 1,000 solution of adrenaline chloride was ordered, the injection being given in the fourth interspace. The effect was magical. Before the needle could be withdrawn the heart was already beating vigorously, and the carotids were pulsating visibly. The patient then remarked that he was quite comfortable and felt no pain.

The operation was rapidly completed, attention being paid chiefly to relief of the strangulation, as the pulse began to fall away again after about twenty minutes. On returning to bed brandy and coffee were given by the rectum, and in a short time the pulse had again become normal. Apart from retention of urine the day following, nothing further of note occurred.

What the sudden collapse with Cheyne-Stokes breathing could have been caused by is not certain. Several possible explanations suggest themselves: (a) heart-block with Stokes-Adams syndrome; (b) drop in arterial pressure from spinal injection; (c) action of morphine on impaired kidney, causing uraemic manifestations; (d) gravitation of anaesthetic to medullary centres in spite of the rigid technique observed.

The rapid response to adrenaline suggests some profound vagal inhibition or heart-block with Stokes-Adams syndrome as being the probable explanation.

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Dorlington.

#### TORSION OF THE MESO-APPENDIX ASSOCIATED WITH GANGRENE OF THE APPENDIX.

A complete twist of the meso-appendix is of some rarity; the following case is reported on this account.

A young adult male was admitted to the Royal Victoria Hospital, Belfast, suffering from abdominal pain. He had had no previous attacks of pain nor any previous illness. The attack came on in the night, two days before admission. It began with heavy crampy pains which awakened him from sleep. The pain was referred to the umbilicus. About noon on the following day he vomited and continued to vomit for some time. In the evening the pain eased somewhat and he slept at intervals through the night. On the following morning, however, the pain was worse; it had settled now in the right iliac fossa, and was so severe that he could not get up. It was constant during the day. At night it prevented him from sleeping, and at this stage affected him when he lifted the right leg. On the following day he was admitted to hospital. He was slightly flushed, the tongue was red and coated, and his breath malodorous. The right lower quadrant of the abdomen did not move freely on respiration. In this position a mass was to be felt, roughly the size of a hen's egg, lying beneath an area extending from McBurney's point to the lateral edge of the right rectus. It seemed to be lying directly beneath the anterior abdominal wall. There was no hyperaesthetic area. On rectal examination tenderness was found towards the right iliac fossa. His pulse was 94 and temperature 100.2° F. There was nothing to suggest that the case was of a type other than the usual one of acute appendicitis with a phlegmon.

At operation the appendix, surrounded by omentum, was found lying close up to the anterior abdominal wall. When the omentum was separated the appendix rotated itself in a clockwise direction through 180 degrees. It was then found that the mesentery of the appendix had still got a half-twist. The appendix itself, about 5 inches in length, was a necrotic mass from its tip to within a quarter of an inch of its base. It had not actually perforated, and considering its state there was less surrounding inflammation than is usually found. A drain of corrugated rubber, extending down to the ileo-caecal angle, was left for forty-eight hours. The wound was healed ten days later.

It is owing to the courtesy of Mr. S. T. Irwin, to whose ward the patient was admitted, that I have been able to publish this report.

The appendix in this case had rotated in an anticlockwise direction through a complete circle. This may have been secondary to inflammation with its resulting distension; but the fact that the omentum held the appendix rotated against its inclination shows that the appendix had become fixed to it when fully rotated. This suggests that the acute inflammation did not begin until the appendix was in the fully rotated position and that the torsion of the meso-appendix was the cause and not the result of the inflammation.

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## Reports of Societies.

### THE SENSE OF INFERIORITY.

On November 15th Dr. ALFRED ADLER of Vienna addressed the Royal Medico-Psychological Association on "The feeling of inferiority and its consequences." He said that every human being was continually striving to develop himself in some degree towards a self-satisfying completion, the full achievement of his life purpose. In every situation where the problems of living were being attacked there was to be observed this striving for superiority. A normal man had, in the main, three great problems to solve. First, there was the problem of social relationships, the desire to take some place in the world of men. The neurotic, in whom the degree of failure was usually very marked, must have another goal, and was always trying to escape from this normal aim of social life. The second problem was that of occupation, and the two were not wholly separated. Every occupation was a beginning of trying to be useful. To be useful induced a feeling of confidence and well-being. The third problem of life was sex. To unite with someone of the opposite sex was the normal goal for everybody. If the problem was being evaded there was a lack of self-confidence, a lack of courage, as in the case of neurotic subjects. The lack of courage might arise from an organic burden in childhood. To delicate children the world was a great difficulty, an embarrassing problem; and these burdens were remembered by them. The feeling of personal inferiority, in the case of children burdened with physical defects and deficiencies, was greatly intensified. Even the normal child suffered in a difficult situation, and if he had disturbances of vision or hearing, or some similar disability, he felt that he could not bear it. There were two situations peculiarly inimical to normal development. One of these arose where the child was made to face greater difficulties, in which case there was a greater feeling of inferiority. The other was concerned with the process of "spoiling." Such a child lived in a symbiotic manner, like a parasite, and received everything from others. He could not develop a normal style of life. The goal of children with organic deficiencies or of those who had been spoiled was to overcome the difficulties of life in the most complete fashion. For them there must be no less than the complete command of the situation, and their demands upon others were unlimited. Nervous patients often began as spoiled children. Such children were not capable of independence, of working with others for a common usefulness, and were always torn with conflicts. To a third type, the hated child, who grew up without warmth and love, was often illegitimate, or at any rate unwanted, the world was to a great extent comparable to an enemy country. Children of this type developed what might be termed a defensive attitude; they had no desire to join in with the efforts of others, and they had no wish to be useful in a hostile community. Thus they also were always in a situation of conflict. To accomplish their desire to be first in power and domination they restricted their environment, for they could not hold complete sway in the whole of society. They evaded occupation, and they evaded love; their eccentricities were always signs of evasion. Those signs of the attempt to escape the solution of the three questions of life were not always obvious, and it was rare to meet a man who frankly said, "I do not want to mix with others," or frankly avoided occupation. There were always justifications for evasions. Symptoms could be traced back often to childhood, and the history of the case invariably indicated such antecedent situations as had been considered in the three types of children. The spoiled child clung to the individual who spoiled him. Nervous people always attempted to justify the carrying out of their wishes to command other persons on the grounds of their anxiety. People who had agoraphobia required another person to be with them, and this other person must obey. If the neurotic person had a headache all the family must be silent, must obey, must take care not to irritate. This striving for superiority and for domination by any means developed in childhood. The symptoms could not be treated; they must treat the individual and change his

attitude to life. So long as the patient persisted in his morbid attitude one could not get rid of the symptoms.

Dr. Adler cited the case of a young woman, 26 years of age, in good bodily health, who had suffered for about a year with agoraphobia and depression. She dated the onset of her trouble a year previously, but the symptoms really originated in a change of her life situation when she had become a mother for the first time. She was a spoiled person, and aspired to be the centre of attention; the coming of a child of her own made her difficulty greater, and neurotic symptoms commenced. She often became very angry when her husband differed from her. They frequently quarrelled in spite of the love they had for each other. When the child came she felt that the time had come to reinforce her own position. The husband loved the child very much; she became more irritable and very depressed. She aimed at being the centre of attention, developed anxieties, and forced the husband to be with her always—an indication which explained her actions. She could not go on a train and she could not travel by train, but she could drive in a car, since with a private car the stopping and the route could be controlled. In a sanatorium the patient improved considerably, but when she returned to her home she had a bad relapse. It appeared that in the sanatorium she found a physician whom she regarded as a very charming man; he flattered her and was always attentive to her. When she left she wrote him a letter full of kind thoughts, to which she had no reply, and from that time her symptoms increased. She built up a guilt-complex, concerning which she was very reticent; but it constituted an excellent tool for overcoming the husband. She said, "I could betray my husband, because he has left me, because he does not now flatter me as he used to, and is not so attentive to me." This breaking up of the marriage tie would have been an act of revenge against the partner. Though she was a very beautiful woman, she had lost her self-confidence. Her whole demeanour showed that she feared defeats and rebuffs. There was, in fact, a feeling of great inferiority. She could only dominate her husband through her agoraphobia and by means of her depression. The development of such an attitude to life, said Dr. Adler, could be prevented. The best course was to begin in childhood, to avoid spoiling the child, and not to overlook deficiencies in various organs. The aim should be to make the child independent, to make him free, to give him enough self-confidence and courage to develop his social feelings, to be useful, and not to be terrified by the other sex. If the patient had reached adult age he must be re-educated and given a fresh start. The attitude of the physician must be parental. The patients must be stirred to the depths of their personality; they required honest and frank handling, and no demands should be made upon them; one should simply seek to strengthen their courage, so that later they might feel independent.

[The full text of the lecture will appear in the January issue of the *Journal of Medical Science*.]

### ABNORMAL CANCER METASTASES FOLLOWING LEAD TREATMENT.

At the pathological meeting of the Liverpool Medical Institution, held on November 18th, Professor E. E. GLYNN read a short note on some remarkable histological changes occurring in the metastases of a case of carcinoma of the breast treated with colloidal lead.

Professor Glynn said that the patient had received two doses of lead, in all 0.175 gram, the last dose being given eleven days before death; there were no symptoms or signs of lead poisoning, and nothing exceptional beyond a terminal temperature and empyema. Metastases were present in the liver, lungs, suprarenals, and one enlarged gland. These metastases showed extraordinary stunting and deformity of the cells, which were depressed and flat; the appearance was condensed, and did not stain well, the appearance being that of an autolysed sarcoma. There was also fatty infiltration of the liver. In the one enlarged gland, where the great bulk of it showed the same changes, there were also present perfectly healthy cancer cells, some of which were in mitosis. This was the only case noted in Liverpool that showed metastases in other organs and lymphatic

glands with these particular changes, which could be summarized as follows: Autolysis of cells, possibly due to lead, or an associated sepsis might have assisted. These changes could best be found within the first fortnight, and they were far in excess of what would have been expected from simple regressive malignant changes. Their extent depended upon a good blood supply, which was not present to a large degree in the case of a lymphatic gland.

#### Osteomyelitis.

Mr. R. KENNON read a note on osteomyelitis, and dealt with the acute condition first. Commencing immediately beneath the epiphyseal cartilage, an area sometimes termed the metaphysis, the primary focus was almost without exception within the cancellous bone; it spread in varying degrees to the bone marrow, later to the periosteum, and finally invaded the intramuscular planes, subcutaneous tissues, and joints. The characteristic symptom being one-finger tenderness and pain over a bone end, it was aptly termed one-finger rheumatism of bone. The temperature was high and sleep was impossible. Swelling was a late sign, appearing with the tracking of the central abscess; pain and swelling were not synchronous as in rheumatism. Dr. Kennon then described the maximal points of tenderness in the upper and lower limbs, the posterior aspect of the lower end of the tibia above the epiphyseal line being the commonest site in the whole body. In explanation of these points of tenderness he showed pathological specimens illustrating the corresponding lesions, and also quoted various cases. The methods of spread of the subperiosteal abscesses from the various sites in the different bones were described, and also where they tended to point; the size of an acute subperiosteal abscess had no relation to that of the central abscess. The speaker compared this condition with tuberculous osteitis, and cited various authorities on the primary focus of infection. He said that if it was true that the lesion was primarily a bone lesion in the diaphysis, then it would mean that the distribution of acute infection and tuberculous osteomyelitis was the same. Mr. Kennon said that every practitioner ought to know where he would encounter the greatest pain and tenderness in a suspected case of osteomyelitis. Every radiologist should know on which bone surface the central abscess would burst, and arrange for multiple photographs accordingly. The surgeon should know these surfaces and drill them, so imitating Nature's method of bringing relief to bone tension. With regard to after-treatment, these osteomyelitis cases required as much open-air treatment as possible, just as in tuberculous cases.

#### Arthritis Deformans.

At the meeting of the Liverpool Medical Institution on November 25th Dr. H. S. PEMBERTON read a paper entitled "Arthritis deformans: observations on its etiology and treatment," an extension of a preliminary publication (JOURNAL, July 4th, 1925, p. 13) by Dr. L. S. Asheroft, Dr. L. Cunningham, Mr. T. P. McMurray, and himself.

Dr. Pemberton dealt first with the difficulties of diagnosis from other forms of arthritis, and went on to outline the scope of their investigations into 64 cases. These cases had been studied from four aspects—clinical, bacteriological, metabolic, and therapeutic—the last being based entirely on conclusions drawn from the first three. On the clinical side he had little to say, beyond drawing attention to the relative infrequency of cardio-vascular changes, and commenting on the change of view which appeared to be taking place in regard to focal sepsis. On the metabolic side investigations into intestinal delay, acid-base ratio, renal and hepatic efficiency, basal metabolism, sulphur excretion, gastric secretion, and glucose tolerance were presented in some detail. Little or no change had been found in the rate of intestinal passage; no evidence of renal inefficiency had been found; the liver efficiency was doubtful as, although there had been no excess of urobilinuria, the blood-terulose curves had indicated abnormality; the sulphur excretion was definitely increased; 65 per cent. of the fractional test meals had shown hypochlorhydria (50 per cent. of these being achlorhydria); and the glucose tolerance was impaired in practically every case. The basal metabolic rate had been found to vary very little. Illustrations were given comparing arthritic blood-glucose curves with those

of the normal diabetics, and the subjects of pancreatic disease, the latter being found to resemble most closely the curve in question. Slides were also shown of bone and joint changes in diabetes mellitus. On the therapeutic side the aim had been to make good or counteract the deficiencies which the investigation had shown to exist, such as deficient gastric secretion, diminished glucose tolerance, and increased sulphur loss. This had been done by giving as a routine (1) large quantities of 0.4 per cent. pure hydrochloric acid; (2) at first a carbohydrate-free diet of low caloric value, increased later by the addition of more fats, proteins, and some of the 5 per cent. carbohydrate foods; (3) colossal sulphur; (4) massage first and then exercises. Comment was made upon the difficulties of a "carbohydrate-free" diet taken over a long period. The results were very encouraging in some 60 to 70 per cent. of the cases, and sometimes in as short a period as three weeks; it was felt that this therapy was of distinct value.

#### Recurring Acute Intussusception.

Mr. C. O. DAVIES, in a note on recurring acute intussusception, first described the case of a male infant, aged 5 months, who was operated on twice in the space of twelve weeks. On the first occasion an ileo-caecal intussusception was reduced, and on the second occasion the invagination was of the ileo-colic variety. From a study of 32 cases reported in the literature the following conclusions were reached: (1) That recurrence of acute intussusceptions in childhood is rare, at the most amounting to somewhat less than 4 per cent. of cases. (2) The usual interval between the recurrences varies from two and a half to ten months; a few cases were met with where the interval was as long as two years. (3) There does not appear to be any necessity for trying to prevent recurrence, nor is there any reliable method of doing so. The importance of warning parents that a recurrence was possible, although not likely, was emphasized, and immediate re-operation urged as the treatment.

#### ACTION OF LOBELINE.

At a meeting of the Section of Therapeutics of the Royal Society of Medicine, held on December 14th, with the President, Dr. GEORGE GRAHAM, in the chair, Dr. S. WRIGHT read a communication by himself and Dr. F. R. CURTIS on the action of lobeline.

The authors began by recalling that lobeline was a pure crystalline compound obtained from *Lobelia inflata* (Indian tobacco) with the empirical formula  $C_{12}H_{16}O_2N$ . Since its isolation lobeline had been coming into clinical use, and they had therefore undertaken a reinvestigation of its pharmacology. Experiments had been carried out, in many cases decerebration having been performed to avoid the complicating factor of anaesthesia. Dr. Wright first described the experimental findings in the case of the heart. The initial effect appeared to be a slowing of the heart, the auricle particularly being affected, and this cardiac inhibition usually caused a fall in blood pressure. If the heart was in an enfeebled state this initial depression might arrest it altogether, but usually there was present a secondary effect, in which the heart rate returned to normal, and might accelerate still further. The effects on the heart appeared to be complex in character, consisting of initial stimulation both of the vagus nucleus in the medulla and the ganglion cells of the vagus in the nodes of the heart. These cells were later paralysed, and in addition lobeline had also a direct poisonous action on the heart muscle. The effect of lobeline on the blood pressure was then described. There was an initial fall, due probably to cardiac inhibition, followed by a marked rise, after which the blood pressure went back to normal, or, if larger doses were used, even below this. Lobeline appeared to act by first stimulating and then paralysing the ganglia along the course of the vasomotor nerves. Coming next to the action of lobeline on the respiratory centre, Dr. Wright described how the drug markedly stimulates this centre, causing a considerable increase in the pulmonary ventilation. The doses required to produce such effects, however, also gave rise to the effects on the circulation already described. It appeared that the drug lowered the threshold of the respiratory centre to carbon dioxide, but it was possible

that the result might be due in part to constriction of the blood vessels of the medulla. The influence of lobeline was also studied in narcotized animals. In animals under ether anaesthesia pushed until the breathing had become slow and feeble, recovery was definitely more speedy if lobeline was used than in the control animals, allowed to recover unaided. In animals narcotized by morphine, lobeline increased the rate of respiration and led to adequate ventilation. If the respiratory centre was completely paralysed by morphine lobeline was much less effective, possibly because of the low blood pressure. Dr. Wright then reported the effects of lobeline on the bronchi, when slight constriction appeared to occur in some animals, and on other structures, describing how vomiting, micturition, and defaecation had occurred when large doses were employed. In summarizing, he stated that lobeline had been shown to be a powerful respiratory stimulant, but only in doses which produced other effects, and its use in patients with an enfeebled myocardium should be cautious. He suggested that it might be useful in cases of sudden respiratory failure from any cause, and would probably be more effective if combined with some cardiac stimulant. He suggested that a dose of 10 mg. intravenously would be found effective in the human subject, arguing from the dosage used in animal experiments.

Dr. J. H. BURN said that lobeline appeared to have the expected "nicotino" action, and suggested that adrenaline might be combined with it, the only objection being the necessity of giving the adrenaline intravenously. Pituitary would produce a more lasting effect on the blood pressure, or possibly lobeline might be combined with atropine to cut out the depressant effect on the heart.

Dr. PHILIP HAMILL pointed out that the disadvantage of lobeline was that its effects were not lasting.

Sir WILLIAM WILLCOX stated that he had used the drug several times, with beneficial results in one case of now growth in the chest associated with troublesome dyspnoea, and also in one case of persistent hiccup, where every other drug had failed. He pointed out that it had been used in coal-gas and morphine poisoning.

The PRESIDENT inquired about administration of lobeline to patients, and thought that it was of greatest use in cases of respiratory emergency.

#### Administration of Oxygen.

Dr. R. HILTON then read a paper on a comparison of some methods employed for administering oxygen. He pointed out that the primary aim in giving oxygen was to transfer this gas from the atmosphere to the blood, and accurate measurements of the result of this could only be carried out by arterial puncture. There were, however, two steps in this process—first, the oxygen is transferred from the atmosphere to the alveolar air, and secondly from the alveolar air to the blood. If the first step was successful the latter would probably run a parallel course, and hence his method had been to estimate the percentage of oxygen in the alveolar air in samples taken directly into the Haldane gas analysis apparatus. He dealt first with the traditional glass funnel held 10 cm. away from the face, and showed that in a normal person there was no effect at all on the percentage of oxygen in the alveolar air. If the funnel was held close to the face the results were better, the oxygen in the alveoli being nearly doubled, and with a shaped funnel held very close the results were only slightly better. With a nasal catheter with the end in the nasopharynx the results were even better; but Dr. Hilton remarked that a nasal catheter along which oxygen was passing at the rate of four litres a minute was not pleasant. The best results of all were obtained with breathing pure oxygen from a Douglas bag through a mask fitted with inspiratory and expiratory valves. In this case the oxygen in the alveolar air could be increased to 90 per cent. Dr. Hilton pointed out that many patients would not tolerate a mask and would pull out a nasal catheter, and he had recently been trying a mask which covered the mouth only. This appeared to be better tolerated, and it was possible to get alveolar air containing 50 to 60 per cent. of oxygen in normal persons by this method. He mentioned the great efficiency of a method

devised by Gilchrist and Davies for using a double-forked glass tube, placed in each nostril. He then discussed the ideal apparatus, mentioning the questions of cost, attention required, and the comfort of the patient. Although a mask over the whole face was most uncomfortable, the reasons for this were not quite clear. He stated that he had had no experience of the oxygen chamber. In his opinion the method of choice was a mask over the mouth, and he inquired if the oxygen pressure be raised to 60 per cent., was there any clinical advantage in raising it higher. He thought that arterial puncture and estimation of oxygen in the arterial blood was necessary to settle this.

The PRESIDENT thought Dr. Hilton's figures of great value, since oxygen as usually given in the wards was largely wasted. His own experience had been that a full mask was not well tolerated; he inquired if the mouth-mask was better for comfort than the nasal catheter.

Sir WILLIAM WILLCOX confirmed the uselessness of the glass funnel in his experience unless it was pressed over the mouth and nose. He hoped that a pleasant and efficacious method of giving oxygen would be devised.

Dr. P. HAMILL said that it appeared that a nasal catheter along which oxygen flowed at the rate of 1½ to 2 litres a minute doubled the oxygen in the alveolar air. He thought that better results would be obtained if the other nostril was plugged. Patients seemed particularly intolerant of any apparatus with an expiratory valve, and he asked about the use of a tube in the mouth.

Dr. DONOVAN HARE inquired about the nature of the mask used over the mouth.

Dr. HILTON, in reply, stated that the mouth-mask was a modified small anaesthetic mask inverted with its broad end uppermost, and that personally he greatly preferred this to a nasal catheter. He believed that a better effect could always be obtained with a nasal catheter if the other nostril was plugged.

#### SURGICAL ASPECTS OF DIATHERMY.

A discussion on the surgical aspects of diathermy took place at a combined meeting of the Sections of Electro-Therapeutics and Surgery of the Royal Society of Medicine, on December 17th, when Dr. G. B. BATES was in the chair.

#### Various Techniques.

Dr. E. P. COMBERBATCH, in opening, said that by the expression "surgical diathermy" European surgeons meant the passing through abnormal tissue of an electrical current of high frequency and of sufficient intensity to coagulate the tissue *in situ*. In the most common method a narrow disc electrode was applied to the tissue to be destroyed, and the completion of the circuit made by a broad plate electrode placed on another part of the body. When the current was started coagulation spread from the edges under the disc to the centre, and gradually extended below the surface. When sparks began to pass there was little or no further increase of coagulation. The coagulation in different layers of the tissue depth was in different degrees. Another method was to insert into the tissue a needle electrode. Coagulation began at the point of the needle and spread up the shaft to the surface, but before there was time for it to get to the surface the tissue in contact with the needle was desiccated. This method was much more under the control of the operator than the first. Coagulation would not spread more than 2 or 3 mm. from the point of the needle. A third method was that of circumvallation, a technique introduced by Howard Kelly of Baltimore. A single needle was used, and was directed from the surface obliquely downwards to a point under the abnormal tissue. Another method of using diathermic current for the treatment of malignant disease was a combined method of coagulation and cutting. In this method a narrow blade electrode was passed into the healthy tissue around the growth, the blade was slowly moved forwards, and the tissue cut. This was a difficult method, and it was very easy to move the blade too fast and get bleeding. Another method was fulguration, properly not diathermy at all, but a destruction of tissue by means of diathermy sparks, which bridged the gap between the point

electrode and the tissue to be destroyed. It was effective in the removal of moles and blemishes, and had been applied by American workers to the tonsillar region and in the destruction of haemorrhoids. Another method, that of electro-decavation, was first employed in Philadelphia. Diathermic current of a low heating capacity was used, not sufficient to coagulate the tissue proteins. The reaction after desiccation of the tissue was very slight, and the cosmetic results were good. It could be used to destroy corneal ulcer, also for papillomata of the vocal cord. Finally, there were two methods of using high-frequency currents for cutting, in which the division of the tissues was effected by a minute electric arc. These procedures were called in Germany *lichtbogen Operationen*. A single needle was used, and when it came in contact with the tissues a little arc appeared, the needle was drawn across the tissue, which was divided with ease, and the capillaries and lymphatics were sealed as they were cut, so that the risk of producing metastasis when coagulating in the neighbourhood of malignant tissue was reduced. The tissues would heal by first intention after cutting. One of the methods was known as Wyeth's operation, used in America, in which a special current of enormously high frequency and sustained oscillation was employed. The other method was one which came to this country from Germany, via Sweden, and had been developed here by Mr. John Anderson of Dundee, in which again a special diathermic current in dividing the tissues produced surface cauterization, but over a rather deeper layer than in Wyeth's method. It was used largely in breast carcinoma. An exhibition was given through the epidiascope of both these methods in operation.

#### *Diathermy in Treatment of New Growths.*

Mr. F. J. STEWART said that his own experience of diathermy was confined to the treatment of new growths, either malignant or pre-cancerous, situated on the surface of the body or within the mouth or pharynx. A comparison between diathermy and the cutting operation in the treatment of such cases would, he believed, establish the superiority of diathermy provided certain conditions of technique and choice of cases were observed. If the coagulation was carried well beyond the limits of the growth in all directions the result in respect to removal of tissue, separation of slough, and absorption was practically the same as after excision. Diathermy was practically a bloodless operation. In dealing with the mouth or fauces the danger from the inspiration of blood or septic material was practically eliminated. The general condition of the patient and his powers of resistance were conserved instead of being drawn upon by loss of blood. Post-operative shock was very slight. Freedom from loss of blood and diminution in the time of the operation no doubt explained the absence of shock in part, but it seemed likely that the trauma of coagulation was less severe than that of cutting. Convalescence was usually rapid and devoid of complications. The patient was comparatively free from pain, both immediately after the operation and during the process of healing. This acted as an inducement to use it as a palliative measure in hopeless cases. Finally, the rapidity of the healing and the character of the resulting cicatrix called for notice. In the operation certain requirements had to be observed. The destruction of the growth and of a considerable amount of healthy tissue surrounding it must be thoroughly and systematically carried out, and in order to accomplish this the growth and its surroundings must be fully exposed to view. A proportion of cases did not admit of satisfactory exposure, and on that account were unsuitable for diathermy. In order to avoid the possibility of missing any portion of the growth it was as well to mark out the limits of the area to be treated with a diathermy knife and then proceed to the systematic destruction of the tissue within the limiting line so drawn. He avoided diathermy when the growth involved bone. He had had only one satisfactory case where bone was involved—a case of large rodent ulcer of the frontal region. The possibilities of diathermy, he said in conclusion, would appear to be limited only by the need for satisfactory exposure of the growth and the general condition of the patient.

#### *General Discussion.*

Mr. GWYNNE WILLIAMS confined his remarks to the treatment by diathermy of cases of carcinoma in the mouth, which would be considered fit to be operated upon by the knife, and in which the diathermy knife was used as a substitute for cutting. Had it any advantage over the knife from either the immediate technical aspect or the ultimate condition of the patient? From the operative point of view there was less loss of blood, but vessels had to be tied, and there was a risk of reactionary haemorrhage. After the operation the patient had less local pain, and was generally less upset. If the mouth was kept rigorously cleansed there was no serious risk of secondary haemorrhage, but, on account of the depth of the slough, if sepsis did occur the danger was considerable. His impression was that the scar was softer after excision by diathermy than after the use of the knife. The ultimate result, so far as recurrence was concerned, was not affected, and would only be so theoretically if implantation of the growth on the raw surface at the time of operation was a factor in determining some of the recurrences.

Mr. DOUGLAS HARMER said that the first demonstration of surgical diathermy in this country was given at St. Bartholomew's Hospital by Professor Nagelschmidt, at the invitation of the late Dr. Lewis Jones, in 1910. Treatment of this kind was started at that hospital in the following year. One patient who was treated in 1911 for epithelioma at the corner of the eye remained well for twelve years, and then, on a certain amount of recurrence taking place, was treated with radium needles. She then remained well until a few days ago, when diathermy was again applied. He showed photographs of a number of other cases of fairly long standing, including one of rodent ulcer of the nose, in which the lower part of the nose was removed by the diathermy knife. The wound healed rapidly, a plastic operation was performed, and the patient had remained well and free from recurrence for three years. With regard to growths in the upper jaw, he thought there was no doubt that since diathermy had been employed the number of cures obtained had been almost doubled. The route that he preferred in these cases was through the palate. Such an exposure gave good access to most of the malignant growths in the upper jaw. In that way they were thoroughly burned with diathermy, and afterwards treated with radium, large doses being used for about forty-eight hours, and as a rule good results were obtained.

Mr. H. H. RAYNER spoke of his experience in the diathermic treatment of cancer of the skin and the palliative treatment of cancer of the breast. He believed strongly that the risk of local recurrence was diminished by the use of diathermy. In its use in cancer there were three types of cases in which it was advantageous: (1) in extensive rodent ulcer, in which radium had been used and had failed or in which radium was plainly inapplicable owing to the extent and connexions of the growth; (2) in advanced lupus epithelioma (cases in their early stage could be dealt with by ordinary surgical measures); (3) in that type of epithelioma which was extremely foul and heavily infected, and in which there was a risk of serious sepsis following any ordinary surgical operation. In palliative treatment of cancer of the breast in cases which were beyond question inoperable, he believed that diathermy could be of substantial benefit. Such patients might be enabled to live a fairly active life for one or two years.

Dr. THOMAS MARLIN said that in certain quarters there was a misconception as to the course of the diathermy current. People were accustomed to talk of diathermy as a penetrative current, the heat being generated between the electrodes, and had the idea that there was no diffusion of current. Some even believed that the current could pick out certain tissues and heat them to an unhealthy temperature. The speaker detailed certain experiments in which he had passed the current through meat, eggs, potatoes, and so forth, and showed that the current did spread a little, as distinct from heat diffusion; that at no point between the electrodes was it stronger than just under the small electrode; and that heat was not generated in one kind of tissue more than in another.

Mr. GORDON TAYLOR, from an experience of more than 100 cases of operable carcinoma of the mouth treated by diathermy, was convinced that the ultimate results of the treatment of carcinoma of the tongue by this method were better than those following the old method with the scissors or the knife. The only objection was the increased risk which these patients seemed to run of getting broncho-pneumonia. Of those who got over the operation 50 per cent. seemed to have a chance of freedom from the disease for at least six years. Secondary haemorrhage was said to be a risk incurred in connexion with diathermy. In 84 cases of carcinoma of the tongue he had had only two secondary haemorrhages, one of which was very slight and easily controlled; the other was from the lingual artery, and in that case also the patient got well. In inoperable malignant growths of the mouth there was no question that diathermy was a very useful means of helping these unfortunate individuals. He had also used diathermy in the treatment of inoperable carcinoma of the breast. For the last ten months he had had experience of the light-arc operation practised by Mr. Anderson in Dundee—a method which, he thought, came originally from Sweden. It seemed to him that this operation held out considerable advantages over the ordinary knife method.

Mr. JOHN EVERIDGE said that it was common knowledge that the diathermic cautery presented enormous advantages in papillomata of the bladder. Recurrence seemed to take place with a good deal of frequency after the use of the cautery, and that was not to be wondered at, because only the papillomata which could be seen were destroyed, and the tendency of the bladder to form papillomata was not overcome. Secondary haemorrhage occurred with considerable frequency; in fact, in the majority of cases there was a fair amount of bleeding about the end of the first week, but he had not yet met a case which caused great anxiety. The treatment of carcinoma of the bladder with the diathermic cautery was another story. The results in his hands had not been at all good. Indeed, when the diagnosis was somewhat doubtful, the response to the diathermic cautery would show whether the condition was one of carcinoma or otherwise. The diathermic cautery was useful also in prostatic enlargement, particularly where there was a projection into the prostatic urethra or the neck of the bladder. Reference had been made to the small amount of scar tissue after the use of the diathermic cautery, and in no part of the body was it more important to prevent the formation of scar tissue than at the neck of the bladder.

Mr. PHILIP TURNER said that his attention was first attracted to the value of high frequency in surgical conditions at the Surgical Congress in Paris in 1908, and on his return he and Dr. C. E. Fredell started to treat malignant growths by fulguration, and some excellent results were achieved in cases of rodent ulcer. With regard to the indications for diathermy, rodent ulcer certainly gave the best results, and the most suitable type of rodent ulcer was one that was too far advanced for excision or in which the anatomical situation made the prospect of excision not favourable. Carcinoma and epithelioma, especially of the tongue, fauces, the floor of the mouth, and the pharynx, were also suitable, and another indication was in cases of extensive breaking down of tuberculous glands of the neck. His own results corresponded with those already mentioned—absence of pain and shock, a healthy granulating surface, and a remarkably supple scar. He had been doing diathermy now for eighteen years, and he could recall very few accidents—three burns, one a bad one, four secondary haemorrhages, one from the lingual artery, and, finally, one explosion, due to some ether in the operating theatre. Generally speaking, he had found, as regards local conditions, that the results were satisfactory, but many of the patients, especially those treated for conditions in the mouth, died afterwards with recurrences in the neck. It occurred to him that it might be possible, by previous injection of colloidal copper for many days before the operation, to guide the diathermic needle along the lymphatic tract, the idea being that the colloidal copper would be taken up by the cells of the growth, and the current be guided in that way. What actually happened, he believed, was that the copper impaired the vitality of

the cells and so enabled the diathermy to act more effectively.

Dr. C. G. TEALL spoke of the treatment of growths of the oesophagus. He had applied diathermy in these conditions, feeling that from the patient's point of view anything was better than gastrostomy. By using a specially designed electrode which enabled one to restrict considerably the area to be burned, quite good results had been obtained of a palliative kind. One could burn away through the mouth, and yet be quite certain that the coagulation was being restricted to a very small area immediately around the electrode.

Dr. C. P. LANKESTER said that he had treated a few cases of haemorrhoids by diathermy, and had been greatly struck by the entire absence of pain afterwards. He regarded diathermy as by far the most satisfactory procedure in this condition.

Dr. CUMBERBATCH, in replying to the discussion, said that in the United States the use of the disc electrode—the first of the methods he had described—was now largely discarded, and the circumvallation method employed. He thought that no safe deductions could be made from experiments with potatoes and so forth. The problem of the distribution of the current in the living tissue was really very complicated, and the diffusion of heat, the frequency of the current, the mode of oscillation, and the type of conductor all played a part. The *lichtbögen Operation* was learned by Mr. Anderson in Forsell's clinic in Stockholm in 1923, but originally, he thought, it came from Germany.

Mr. STEWARD, also in reply, said that his pessimism with regard to treating cases by diathermy when bone was involved had been to some extent removed by certain cases shown that evening, and he was prepared to try again. To his mind the discussion demonstrated the great use of diathermy already in the field of surgery, and he believed that as a result of that discussion there would be still further advance.

### DIAGNOSIS OF CORONARY THROMBOSIS.

At a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland on December 3rd, with the President, Dr. G. E. NESBITT, in the chair, Dr. LEONARD ABRAHAMSON read a paper on the diagnosis of coronary thrombosis, in which he discussed the recent literature and the symptoms by which this condition could be recognized during life. He stated that clotting of even a large branch of the coronary system might be followed by recovery. The cause of the condition was apparently syphilis.

The President raised the question of the diagnosis of coronary arterio-sclerosis, which seemed to be a precursor of coronary thrombosis.

Dr. R. V. MURPHY mentioned a case he had recently seen. The patient was an old age pensioner, who when admitted to hospital was very ill and just recovering consciousness. He was cyanosed and very pale. He stated that he had had no previous illness, but had suddenly felt an agonizing pain over the pericardium. While consciousness was returning the pain was very severe; there was auricular fibrillation, and a ventricular rate of about 90. The heart sounds were weak, but there was no enlargement and no murmur. At first Dr. Murphy thought that it was a case of an acute abdomen, but after examination he concluded that the trouble was in the heart—either a thrombus or an embolus of the coronary artery. The patient recovered to a certain extent, but died within about forty hours of the attack. No necropsy was allowed.

Dr. C. J. MURPHY described the case of an elderly woman, who complained of pain coming on suddenly over the pericardium. Her pulse was feeble, and her blood pressure low; she had pyrexia. She suffered from vomiting, and the liver was enlarged, as was also the heart. She died very shortly after the onset of the attack, previous to which her blood pressure had been high. She had been treated by Erlangen rays for sarcoma of the maxilla, which had cleared up absolutely after treatment. The necropsy showed an aneurysm of the aorta ruptured into the pericardium.

Dr. ABRAHAMSON, in reply, said that it was not easy, in his opinion, to diagnose coronary arterio-sclerosis, but in America it was diagnosed by electro-cardiograms. It was



possible for a patient to have a narrow coronary artery for many years, without showing symptoms, and then suddenly to get a thrombosis.

#### Serum Treatment of Scarlet Fever.

Dr. J. H. POLLOCK read a paper entitled "Observations upon scarlatina." He dealt with the question of the frequency of *Streptococcus haemolyticus* infection as shown by blood cultures and metastatic abscess formation. He believed that a streptococcus septicaemia was very frequent.

The PRESIDENT remarked on the large numbers of cases in which Dr. Pollock had found streptococcus. He had used anti-scarlatina toxin to some extent at the Richmond Hospital, but it was expensive, and in his cases he could not say that it had had any remarkable effect, and was by no means comparable with the effect of diphtheria antitoxin. It was generally claimed that patients could be discharged from hospital in three weeks after the administration of antitoxin.

Dr. W. CHARTERIS drew attention to the fact that English investigators had for years persistently maintained that a streptococcus was the cause of scarlet fever, though the Americans got the credit for it.

Dr. W. E. HERBERTSON said that he had been at Cork Street Hospital for a year while cases of scarlet fever were being treated on the ordinary lines; after that time serum had come in, and patients had been treated with it. He had no doubt whatsoever, from a comparison of the treatments, that anti-scarlatina serum was the best treatment for this disease. He mentioned one patient who on admission had been absolutely comatose; 10 c.cm. of serum was given that night, and 10 c.cm. the next morning, and an uninterrupted recovery followed. He could not be sure whether the giving of serum lessened the complications that arose in cases of scarlet fever.

Dr. R. J. ROWLETT asked if all the patients treated were cases of true scarlet fever, or of sepsis simulating this condition. It was important to make a distinction between cases of true scarlet fever and cases of acute sepsis with a rash. He asked if the use of vaccines made from the organisms which were separated from the blood had been tried. He thought that probably an autogenous vaccine would be more helpful than serum, and that vaccine and serum together would be more helpful than either alone.

Dr. POLLOCK, in reply, said that they had found at Cork Street Hospital that the giving of serum did not make any difference regarding the length of time of convalescence. As time went on, he thought it possible that scarlet fever would be regarded as a much less separate entity than it had been considered recently, and he also thought that the nomenclature of many of the fevers would be changed in the future.

#### Haematoporphyrinuria.

Dr. R. H. MICKS and Dr. W. R. FEARON described a case of haematoporphyrinuria. The urine was a deep port-wine colour, and showed no absorption bands. By adding 10 per cent. barium chloride solution drop by drop to boiling urine the pigment was carried down with the precipitate of barium salts, and removed from the precipitate by extraction with glacial acetic acid, or with a 5 per cent. solution of sulphuric acid in 90 per cent. alcohol.

Dr. R. R. LEFER said that the patient from whom the urine was obtained was a man who had been under his care for some years, and suffered from dementia praecox; he was cyanosed in the extremities, as such cases often were. One night he had retention of urine; the urine was drawn off, and haematoporphyrinuria was found. The patient had had no drug treatment.

Dr. ABRAHAMSON thought that this case was of the acquired variety of haematoporphyrinuria, since the cause was not apparent. He referred to four cases of this condition which he had reported in the *Quarterly Journal of Medicine*, two of which were of the acquired type and two congenital.

Dr. A. R. PARSONS referred to a case of haematoporphyrinuria, a specimen of which he had shown at the Academy in 1906. The patient, a woman aged 23, complained of very severe abdominal pain, constipation, and sleeplessness, for which there was no apparent cause. The urine was generally normal when passed, but later changed colour

and became the colour of port wine. The patient had had no drug treatment. She recovered and left hospital, but about a month later she returned, being much worse. She developed symptoms of peripheral neuritis, and died some time later. Alkalis were freely given, but without any benefit.

#### Chronic Gastric Ulcer.

Dr. E. T. FREEMAN read notes on a case of chronic gastric ulcer, and showed radiograms illustrating its healing. The patient, aged 45, had had abdominal pain for seven years; this was worse in the summer and early autumn, when he was in the habit of eating much fruit. He complained of pain at the ensiform cartilage, especially when standing erect, and could not walk, stand, or sit up without discomfort. There was slight tenderness in the mid-line, no enlargement of the liver, and no tender or palpable gall bladder. He looked slightly jaundiced, and had bradycardia; the teeth were excellent, and there was no obvious infection of the tonsils. A fractional test meal showed hyperchlorhydria, and some leucocytes and blood cells. An x-ray examination showed an ulcer on the lesser curvature with a large crater towards the pancreas; there was slight pylorospasm, and duodenal irregularity. The ulcer was of the type for which surgical intervention was usually suggested, and for which gastro-enterostomy would be useless, as the pylorus emptied normally. The patient was put on a rigid Sippy diet—milk and cream every hour, with alkaline powder between, and tincture of belladonna each night. Eggs, ground rice, bread-and-butter, and vegetable purées were gradually added. At the end of three weeks he was allowed fish and was then taking three small meals daily, with milk, cream, and alkalis between. He had now been on an almost normal diet for some months, with alkaline powder and cream mixture. He was not allowed to eat a greater total quantity than twelve ounces at any meal. The patient had been free from symptoms since the second day of treatment; credit was due to him for his complete co-operation. The aphorism had been attributed to Sir J. K. Fowler that no fool was ever cured of pulmonary tuberculosis. Dr. Freeman suggested that the same was true for gastric ulcer.

Dr. R. H. MICKS referred to an article by Einhorn and Cronin of New York, in which were mentioned 101 cases of gastric ulcer treated medically during the last four years. They stated that about 80 per cent. were cured after a year, but that after four years, of the cases that had been treated, only about 50 per cent. had not relapsed. He thought that in the average working-class patient this was the most that could be hoped for.

#### JAMES MACKENZIE INSTITUTE.

On November 23rd Professor ADAM PATRICK read a paper on diabetic coma. He referred first to the known facts regarding the chemistry of ketosis, and showed how imperfect carbohydrate utilization might be the result either of deprivation of sugar or of inability to assimilate it. He emphasized the importance of aceto-acetic acid in the body, and said that there was no point in elaborating tests to distinguish this substance from acetone in the urine. Dealing next with the symptomatology of the condition, he laid stress on the early signs of impending coma, especially abdominal pain. He advised treating every symptom which appeared out of the ordinary as the possible commencement of coma. He contrasted the symptoms of coma with those of hypoglycaemia, and showed how in the latter the prominent symptoms were nervousness, mental excitement, tachycardia, and, it may be, diplopia. In regard to treatment, he pointed out the importance of making every effort to prevent the occurrence of coma by attention to the diet laid down, and especially by avoidance of any change which would cause difficulty in accurately adhering to the ordered regimen. In conclusion, Professor Patrick gave a detailed account of methods of treatment of coma once established, up to 200 units of insulin being given in the twenty-four hours, with control by two-hourly examination of specimens of urine. He mentioned the utility of the duodenal tube in facilitating the introduction of large quantities of fluid, as recommended by Poulton.

## Rebuelus.

### GRAY'S "ANATOMY."

THE appearance triennially of a new edition of Gray's "Anatomy" must now be regarded as an established tradition, and in keeping with it there appears this year the twenty-third edition. The nature of the subject matter and the fact that the book is mainly intended for students preclude much possibility of originality and expansion. The successive editions, however, give ample evidence of careful and exhaustive revision. Compared with that published in 1923 the present edition possesses twenty-two more pages and twenty-nine more illustrations. The increase in size is largely due to these illustrations, but important additions have been made to the text of those sections which deal with general anatomy, angiology, and the endocrine organs. Of the new illustrations those showing intramembranous ossification of bone, blood platelets, the dome of the pleura, the bed of the stomach, and the relations of the extra-hepatic bile passages are particularly valuable. While we are strongly of opinion that in such a textbook only observations of unquestioned accuracy should be included we are inclined to think that the editor's native caution might have been here and there slightly relaxed with advantage; for instance, reference might have been made to the palmar compartments described so well by Kanavel. Perhaps, too, a short note on the action of the palmaris brevis muscle recently described by T. S. Kirk might have been included. We should have liked also to find a less meagre account of the development of the vertebral artery, since it illustrates so admirably the arrangement in the embryo of the cervical segmental arteries. The only criticism we would offer on the illustrations is that in figure 107 the impression may, we fear, be conveyed that both the anterior and posterior tubercles of the transverse processes of cervical vertebrae are derived from the costal elements.

Such criticisms as these, however, are obviously of very small moment and should not in any way obscure the great outstanding merits of a work which is honourably known to many generations of English medical men—a work of which the last edition is indubitably the best.

### NEPHRITIS.

DR. HERMAN ELWYN, assistant visiting physician, Gouverneur Hospital, New York, has dedicated to Professor Franz Volhard a well written work on *Nephritis*,<sup>2</sup> which contains much evidence of his inspiration. The diseases known as Bright's disease or nephritis are treated in successive chapters, and the bibliography is conveniently indicated, but there is a lack of illustrations. The author adopts Volhard's classification into the three groups of glomerulo-nephritis, nephroses or tubular degenerative nephritis, and arterio-sclerotic diseases of the kidney. These main headings are subdivided: thus glomerulo-nephritis is either focal or diffuse, and the focal may be embolic or non-embolic; the diffuse may be acute, subacute, subchronic, or chronic. Under the heading of arterio-sclerotic diseases there are included (1) cases with arterio-sclerosis of the renal artery and its larger branches, which do not present any definite clinical picture; (2) cases of renal arteriolo-sclerosis without any evidence of renal insufficiency but presenting the clinical syndrome of benign hypertension, and (3) renal arteriolo-sclerosis with renal insufficiency, the malignant form of renal arteriolo-sclerosis, or the malignant form of hypertension. Among the early chapters are two dealing with uraemia and hypertension generally; later the benign and malignant forms of hypertension are considered under the heading of renal arteriolo-sclerosis, where the problem whether or not high blood pressure causes or is due to the renal arteriolo-sclerosis is discussed.

Much stress is laid on heredity as determining the characteristics of the arterial walls and of the vasomotor system.

The nephroses are well described in separate chapters dealing with the lipid, the amyloid, and the mercurial forms. Lipoid nephrosis, first investigated clinically by Volhard, does not show any impairment of function by functional tests, and the accompanying albuminuria is, after a full discussion, ascribed to a disturbance in the intracellular respiration of the glomerular and capsular epithelium, and possibly to an acid intoxication of the cells. The treatment of lipoid nephrosis is Epstein's high protein diet, restriction of fats, and administration of thyroid, which was introduced by Eppinger before its justification by the low metabolic rate was known. In the account of amyloid nephrosis it is pointed out that oedema is mainly dependent on the addition of lipoid nephrosis, and that in the absence of this change oedema is either slight or does not occur at all. The special form of nephrosis due to mercury perchloride poisoning is fully discussed, and the necrosis of the renal epithelium is stated to be probably due to two factors—the direct action of the mercury and temporary cessation of the blood supply. The various views held about puerperal eclampsia and the kidney of pregnancy are stated before the author puts forward his suggestion, which would obviate the need for a hypothetical toxin—namely, that a greatly increased neuromuscular irritability causes spastic arterial contraction.

This is a clear presentation of the modern aspect of a subject which has undergone great changes during this century, and as such deserves a cordial welcome.

### PRACTICE OF PHARMACY.

*Remington's Practice of Pharmacy*<sup>3</sup> has been the standard American work on this subject since the appearance of the first edition in 1885. The seventh edition, which has just appeared, is a massive volume of more than 2,000 pages, which deals in an encyclopaedic manner with every subject that is of professional interest to the pharmacist. Professor Remington died in 1918, soon after the appearance of the sixth edition, and the present edition has been prepared by Professors Cook and LAWALL, who assisted Professor Remington for many years in the editing of previous editions of this work.

The *Practice of Pharmacy* covers a remarkably wide range of subjects, and the editors have been assisted by the expert advice of no fewer than thirty-nine collaborators. The volume is divided into seventeen parts. The first six occupy half the book, and describe the technical operations in pharmacy and the substances used in pharmacy. The general form and arrangement have not been altered since the last edition, but its scope has been enlarged by the addition of certain chapters dealing with aspects of the pharmacist's work that are becoming of increasing importance in the United States. Such chapters are those on "The responsibility of the pharmacist under the law," "Scientific business methods and control," "The pharmacist as analyst," and a chapter on toxicology and antidotes.

An interesting feature of the introduction is the quotation *in extenso* of the principles of pharmaceutical ethics adopted by the national pharmaceutical organizations and the colleges of pharmacy. One important clause of this states that the pharmacist should as far as possible encourage the use of official drugs and preparations and discourage the use of objectionable nostrums, and this last term is defined by a statement of the minimum requirements with which a proprietary preparation should comply.

A noteworthy feature of the book is a chapter on biological products, which gives a clear account of the mode of preparation of antitoxins, vaccines, etc., the tests for potency, and the precautions needed for storing and dispensing such preparations.

About half the volume is devoted to the consideration of the drugs used in pharmacy, and a full account is given of the tests for purity, chemical characteristics, mode of preparation, and history of all the standard drugs; this

<sup>2</sup> *Remington's Practice of Pharmacy*. Seventh edition. By E. Fullerton Cook, P.D., Ph.M., and Charles H. Lawall, Ph.M., Pharm.D., Sc.D., F.R.S.A. London: J. B. Lippincott Company. 1926. (64 x 9, pp. xxiv + 2090; illustrated. 45s. net)

<sup>1</sup> *Anatomy, Descriptive and Applied*. By Henry Gray, F.R.S., F.R.C.S. Twenty-third edition, edited by Professor Robert Howden, M.A., M.B., C.M., D.Sc., LL.D. London: Longmans, Green and Co., Ltd. 1926. (Roy. 8vo, pp. xiv + 1400; 1,294 figures. 42s. net.)

<sup>2</sup> *Nephritis*. By Herman Elwyn, M.D. London: H. K. Lewis and Co., Ltd. 1926. (Demy 8vo, pp. 373; 2 plates. 21s. net.)

portion of the book has been carefully revised, and the new edition fully maintains the reputation of the work as a standard encyclopaedia for pharmacy, and the editors have certainly done their utmost to provide full and up-to-date information for the pharmacist concerning every aspect of his multifold activities.

### BOOKS FOR NURSES.

Dr. F. A. ROUGET, who is in charge of the Civil Hospital in Mauritius, has been engaged in teaching nurses for the last twenty years. He has embodied his teaching in his *Précis de Nursing Médical et Chirurgical*,<sup>1</sup> which has reached a second edition. Dr. Rouget is of opinion that in training nurses it is necessary to guard against too low and too high a standard. A nurse should not be a mere machine; she must understand the why and wherefore of measures she is called upon to carry out. Initiative based on knowledge is of great value where the services of a medical practitioner are not easily available. So Dr. Rouget has made his book a theoretical and practical guide for the use of certificated nurses. As such it covers a vast amount of ground, but it is written in the rather unpleasant style of a compendium or synopsis which is so popular nowadays in works of this description. As a book of reference it might be more useful to the nurse if an alphabetical index were added to the table of contents.

A small *Outline of Surgical Nursing*<sup>2</sup> has been prepared by Dr. WOODALL in accordance with the syllabus of the General Nursing Council's examination in surgical nursing. More attention is given to classification of symptoms and treatment than to a description of appliances and tools, of which a nurse gains practical experience in the wards and theatre. The book is understandably written and brief, but stimulating allusions are occasionally made to the history of medical discoveries. After an account of inflammation and repair, there is a section on bacteriology and immunity, followed by a description of the diagnosis and treatment of haemorrhage, fractures and dislocations, burns, and ulcers. The requirements of the modern operating theatre are stated, as is the way in which a private house should be prepared for an operation. Due importance is assigned to post-operative nursing, and particular points about individual operations are mentioned. A chapter is devoted to the treatment and nursing of renal disease, and another to gynaecology. The book will help a nurse who wishes to be proficient in surgical nursing.

*The Theory and Practice of Nursing*,<sup>3</sup> by Miss M. A. GULLAN, sister tutor of St. Thomas's Hospital, has also reached its second edition. The book summarizes the instruction given to nurses training in the Nightingale School of St. Thomas's Hospital. Miss Gullan says that her book is suggestive rather than exhaustive. She does not set out with the idea of teaching a nurse all she ought to know. She confines herself rather to matters which are directly connected with nursing; and, in order that the nurse may record the increase of her knowledge, blank leaves for notes are attached to each chapter. The book is clearly written, very well printed, and should be extremely useful to nurses.

The appearance of the seventh edition of Dr. J. K. WATSON'S *Handbook for Nurses*,<sup>4</sup> of which the first was published in 1899 and the sixth in 1921, is testimony of its appreciation by many generations of nurses. The principal features of the present edition are an expansion of the chapter on digestion, dietetics, and artificial feeding,

and a description of recent work on scarlet fever, diphtheria, anaphylaxis, and the use of insulin in diabetes. The illustrations are for the most part good, but the coloured plates of the commoner skin diseases and the neutro exanthemata are of little value.

The author of *Elementary Hygiene for Nurses*,<sup>5</sup> states that the book has been written in accordance with the syllabus laid down for the final examination of the Australian Trained Nurses' Association. The third edition, which is now before us, is devoted to preventive medicine, and, although entitled "elementary," deals very thoroughly with each subject, and should therefore prove a useful reference book to students and practitioners. English standards have been adopted throughout. The final chapter, on health nursing, is very helpful, as it gives the official requirements a woman must fulfil to qualify as a school nurse, tuberculosis nurse, industrial welfare nurse, child welfare nurse, and health visitor. The appendix is packed with useful information, such as percentage solutions, incubation periods, animal parasites and methods of destroying. An index completes this useful manual.

As might be expected in a book from an American source, Dr. H. C. FALK'S *Operating Room Procedure for Nurses and Internes*<sup>6</sup> errs on the side of overloading the curriculum so far as nurses are concerned. With a view to bringing about more efficient co-operation between the surgeon, his staff of assistants and nurses, Dr. Falk has written nearly 400 pages on operation-room procedure alone. In his foreword Dr. EUGENE POOL says that the nurse gathers her knowledge largely from experience and receives too little organized and systematic teaching. With Dr. Falk's book she might almost think herself competent to undertake the operation. Half the book is devoted to detailed descriptions of various operations, with a large number of illustrations of the different stages. The earlier portion deals with the preparation of the theatre, the table, the dressings, the patient, the operating apparel, and the gloves. There is also a chapter on the manual signal system which has been adopted by Dr. E. H. POOL; it indicates when the nurse has to watch for "wiggling" of the surgeon's little finger.

### NOTES ON BOOKS.

PROFESSOR JULIAN HUXLEY has collected into a volume entitled *Essays in Popular Science*<sup>10</sup> some eighteen articles and reviews. Among them is one on "Thomas Henry Huxley and religion," written at the time of the centenary of his grandfather's birth. The essays on heredity, the determination of sex, the dominant sex, the control of the life-cycle, and the meaning of death convey in clear language the teachings of modern biology. In discussing the inheritance of acquired characters the question whether or not hereditary constitution can be permanently changed by environment is considered, and the verdict of non-proven is returned. The author expresses the opinion that the refusal in 1924 of the Ministry of Health to allow the Battersea and Stepney local health authorities to give practical advice about birth control has merely resulted in making it more difficult for the poor, the timid, and the modest to practise it, while the rich and the less squeamish do so readily. Two-thirds of the volume are occupied by an account of the biological aspects of the frog and the tadpole; here we find a critical discussion of the hypothesis that the endocrine make-up of the various races of mankind is responsible for many of their characteristic morphological differences; the author points out its limitations, and thinks it inconceivable that all or a majority of these differences can thus be explained.

We have received two large volumes on medical radiology<sup>11</sup> prepared by four German writers. The book contains a carefully prepared and well illustrated account of recent work in

<sup>1</sup> *Précis de Nursing Médical et Chirurgical*. Par F. A. Rouget, O.B.E., M.D. (Edin. Deuxième édition. Port Louis, Mauritius: P. G. Bumstead, 1925. (Fcap. 4to, pp. iv + 396; 13 figures.)

<sup>2</sup> *Outline of Surgical Nursing*. By S. J. Woodall, M.A., M.R.C.S., L.R.C.P., D.B.L. London: Law and Local Government Publications, Ltd. 1925. (Demy 8vo, pp. 176; illustrated. 5s. post free.)

<sup>3</sup> *Theory and Practice of Nursing*. By M. A. Gullan. Second edition. London: H. K. Lewis and Co., Ltd. 1925. (Demy 8vo, pp. xvi + 234. 9s. net.)

<sup>4</sup> *A Handbook for Nurses, with Examination Questions Based on the Contents of the Chapters*. By J. K. Watson, M.D. (Edin., Captain, R.A.M.C.). Seventh edition, revised. London: Faber and Gwyer, Ltd. 1925. (Cr. 8vo, pp. xvi + 802; 197 figures, 4 plates. 7s. 6d. net.)

<sup>5</sup> *Elementary Hygiene for Nurses*. By H. C. Rutherford Darling, M.D., F.R.F.P.S. (Glas. Third edition. London: J. and A. Churchill, 1925. (Fcap. 8vo, pp. viii + 261; 50 figures. 5s. net.)

<sup>6</sup> *Operating Room Procedure for Nurses and Internes*. By Henry C. Falk. New York: McGraw-Hill, 1925. (Cr. 8vo, pp. xix + 385; 275 figures. 10s. 6d. net.)

<sup>10</sup> *Essays in Popular Science*. By Julian Huxley. London: Chatto and Windus, 1925. (Demy 8vo, pp. xii + 307; 5 plates, 20 figures. 16s. net.)

<sup>11</sup> *Ergebnisse der medizinischen Strahlenforschung*. Band I and Band II. Edited by H. Holfelder and others. Leipzig: G. Thieme, 1925 and 1926. (Sup. roy. 8vo, Bd. I, pp. vi + 748; 451 figures, 3 plates; R.M. 45. Bd. II, pp. 594; 520 figures, 3 plates; R.M. 52.50.)

connexion with the practical use of  $\alpha$  rays, radium, and ultraviolet rays in treatment. The large amount of detail in the text and the great care that has been devoted to the illustrations will render the book valuable for reference.

The second edition of the elementary work on medicine<sup>12</sup> by Dr. A. von DOMARUS, the first edition of which we noticed little more than two years ago (JOURNAL, June 7th, 1924, p. 1009), has been brought up to date, and most of the omissions to which we drew attention have been made good.

The *Army Manual of Sanitation*<sup>13</sup> marks a considerable development in the measures taken for instructing regimental officers and other ranks of the army in the principles and practice of hygiene and sanitation. Instruction of this kind was first introduced in 1907 by the issue of a *Manual of Sanitation in its Application to Military Life*. The little volume now issued contains eight chapters and ten appendices, and is full of useful illustrations and practical information. A short preface by Sir Herbert Creedy indicates the scope of the book as that of an elementary manual suitable for the non-medical reader. We congratulate the compilers on the production of a volume of exceptional merit. Its sphere of usefulness might well extend beyond military circles, and in many respects act as a guide to those interested in the instruction of the civil population as a whole in the principles of hygiene and sanitation.

Dr. ATWOOD THORNE has written a book entitled *Pink Lustre Pottery*,<sup>14</sup> which will be of special interest to collectors of the antique, since very little attention has been previously given to pink lustre in the few publications which deal with English pottery. The author found many good specimens in the museums at Sunderland, Newcastle, and Etruria (Messrs. Wedgwood), and has succeeded in producing a comprehensive account which is concise and easy to read. The book adds considerably to the available knowledge of this subject, and we suggest that in the next edition figures representing the seasons would be appreciated, since they are rarely published nowadays. Mr. MARTIN A. BUCKMASTER contributes a preface, and the book, which is dedicated to the "many delightful dealers" met by the author, will be found a useful handbook for collectors.

In *The President's Hat*<sup>15</sup> Mr. ROBERT HERRING writes a chatty account of a visit to Andorra, the remote republic in the Pyrenees, which has recently acquired some international celebrity. The book describes the adventures encountered on a walking tour through the country and the surrounding neighbourhood, and conveys a clear and pleasant impression of the customs of the inhabitants. The scenery is illustrated by drawings by Mr. Hubert Williams which add considerably to the value of the book.

<sup>12</sup> *Grundriss der inneren Medizin*. Von Dr. A. von Domarus. Zweite verbesserte Auflage. Berlin: Julius Springer. 1926. (Med. 8vo, pp. xv + 650; 68 figures.)

<sup>13</sup> *Army Manual of Sanitation, 1926*. London: H.M. Stationery Office. 1926. (Cr. 8vo, pp. 134; 66 figures. 6d. net.)

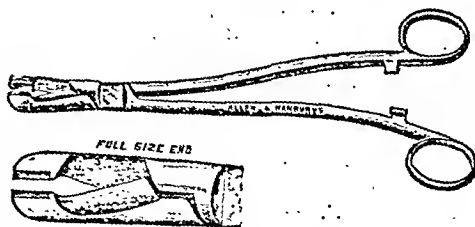
<sup>14</sup> *Pink Lustre Pottery*. By Atwood Thorne, M.B.Lond. With a preface by Martin A. Buckmaster. London: E. T. Batsford, Ltd. 1926. (Cr. 4to, pp. xv + 38; 21 plates. 10s. 6d. net.)

<sup>15</sup> *The President's Hat*. By Robert Herring. London: Longmans, Green and Co., Ltd. 1926. (5½ x 8½, pp. 218; illustrated. 10s. 6d. net.)

## PREPARATIONS AND APPLIANCES.

### Perincorrhaphy Combined Scissors Needle Holder.

Mr. W. McK. H. McCULLAGH (London) writes: Attached is the drawing of an instrument most useful in the repair of perineums. The swabbing of the wound, the retraction of the cut edges of



the vagina, the insertion, tying, and cutting of the numerous sutures, requires many hands. I find the equivalent of one is saved by this instrument. The idea was suggested by seeing Mr. Gillies use his scissors needle holder. The assistant swabs and retracts by holding the short end of the last suture. The operator,

by means of the instrument, inserts his suture, ties the suture with the instrument still in his hand, and then cuts the last short end and the long end of his present suture with the scissors in the needle holder. The instrument has been made by Messrs. Allen and Hanburys Ltd., of Wigmore Street, W.1.

## Nova et Vetera.

### DIRECT ADVERTISING IN 1815.

Dr. JOHN F. WALKER of Southend sends us two samples of bygone medical advertising which suggest that the baser sort of practitioners had considerable latitude in making themselves known to the public 111 years ago. Both extracts are from the advertisement columns of the *Times* of August 23rd, 1815, and the phraseology of each is very like that used by the quacks of modern times who exploit sufferers from venereal disease or frighten masturbators into their clutches. The first runs:

**DEBILITY, etc.**—Messrs. GOSS and Co., Members of the Royal College of Surgeons in London, continue to direct their attention to those diseases by which the power of the constitution becomes enfeebled; and their experience in such cases, during a long and successful practice, enables them to offer to persons so afflicted, a safe and speedy restoration to sound and vigorous health. A certain disorder frequently contracted in a moment of intoxication, as also its concomitants, are by their plan of treatment (without restraint in diet or exercise) speedily and effectually cured; and where an early application is made, on discovery of the infection, the complaint is frequently removed in two days. By professing exclusively the cure of such complaints, and in order that they may not be marked by a mistaken few with the obloquy so justly attached to the ignorant empiric, Messrs. Goss and Co. think it but justice to themselves to state, that they have been regularly educated in every branch of the profession (certificates of which, from different hospitals, and testimonials from the most eminent physicians, they have to convince any enquiry) that the success resulting from their endeavours first induced them to quit the practice of the general practitioner; and they presume that their pretensions constitute a fair ground for the unprecedented confidence with which they have, by the public, been so liberally honoured. To be consulted at their house daily, by either sex, personally or by letter, with secrecy, delicacy, and attention. Letters for advice and medicine to contain a bank note.—Goss and Co., surgeons, 13, Bouverie Street, Fleet Street.

The second advertisement, though its authors are less explicit about the possession of a surgical diploma, is equally florid in style.

**RENOVATED HEALTH.**—It has been too frequently the subject of just and general reprobation, that men destitute of the elements of the medical art, have offered themselves as candidates for public patronage in the profession of physic. For the purpose of doing justice to the result of our studies, and experience, and to prevent us from being classed among those empirics whose impudent pretensions have unfortunately for society, been too favourably received we beg leave to submit, to the liberal and enlightened, a faithful statement of our pursuits and acquirement. After having received a regular medical education, as the pupils of Messrs. Grindal and Bizard, whose lectures and practice we carefully attended, as professors and surgeons of the London Hospital, we entered ourselves as students in that justly celebrated school for medical acquirements, the Royal College of Physicians, where we were instructed in the different branches of the theory and practice of Physic, Chemistry, and those eminent professors, Drs. Munro, Duncan, and Rutherford. We trust we shall not be deemed presumptuous in saying that our proficiency and acquirements are not inconsiderable. Having for a long series of years made certain complaints, and the various diseases of debility, the particular object of our studies and practice, it will, we hope, be allowed that we have acquired superior knowledge of their treatment and cure. In slight and recent cases of infection, a perfect re-establishment is completed in the short period of two days, and in those of the utmost inveteracy, where other practitioners have failed of success, a proper perseverance in our plan of treatment insures to the patient a safe and radical cure. Amidst the melancholy variety of disorders which are the effects of a habit long and most unhappily pursued by the youth of both sexes, there are none more alarming or distressing than those debilities which frequently embitter life. To such persons it must be a consoling reflection to know that that they may now, by a new and infallible mode of treatment, be restored to the greatest of all blessings—a strong, manly, and vigorous constitution. In all cases of debility, from whatever cause arising, as well as in every species of certain infection, we may be consulted by patients of either sex, with the greatest secrecy and honour. Hours of consultation at home, from 10 to 3, and from 6 in the evening, till 10 at night. Patients in the country are requested to state the particulars of their case, age, and general habit of living, etc., inclosing a remittance for advice and medicine, when the same will be given or sent to any part of the kingdom. To insure that secrecy so essential to an undertaking, the postage of letters may be added to the account for medicines.—CURRIE and Co., Surgeons, 107, Hatton Garden.

## British Medical Journal.

SATURDAY, DECEMBER 25TH, 1926.

### CORONERS' LAW AND THE REGISTRATION OF BIRTHS AND DEATHS.

It is now twenty-one years since the British Medical Association first drafted a Coroners Bill, and sixteen years since a departmental committee, before which the Association had given evidence, reported in favour of many of the reforms which had been advocated and attempted. Except for certain temporary war legislation, however, no substantial modification of the law had been accomplished when, last year, the Association reviewed the whole subject of the reform of the coroner's court and of the registration of births and deaths. As a result of this review a slightly modified policy was adopted by the Representative Body at Bath, and pressure was once more brought to bear on Government departments with a view to legislation. This preparation and pressure has now borne fruit more speedily than might have been expected from the previous history of the matter. A Coroners (Amendment) Act, 1926, and a Births and Deaths Registration Act, 1926, now stand upon the statute book, both having received the Royal Assent last week. The former comes into operation on May 1st and the latter on July 1st next.

Neither of these Acts is perfect, nor fully in conformity with the policy of the Association. The Coroners (Amendment) Act was a Government measure, and accomplishes so much in the way of reform, and is, on the whole, accepted as so satisfactory, that it is very unlikely that any further alterations will be made in coroners' law for a considerable time to come. The full effect of the Act will, however, not be evident until certain further action has been taken by the Lord Chancellor and the Home Secretary, for the Act follows the not very laudable practice of modern legislation in relation to the powers of Government departments, and gives to them authority to "make rules for regulating the practice and procedure at or in connexion with inquests and *post-mortem* examinations." It is to be hoped that when such rules are issued the present arbitrary powers of the coroner, which have sometimes been gravely abused, will be found to have been wisely regulated. The Births and Deaths Registration Act, on the other hand, was a private member's bill, and, though benevolently regarded by the Government, is of very restricted scope, this being severely limited by the rule that no such bill may contain any provision which imposes a charge on public funds, whether taxes or rates. Nevertheless, something useful has been accomplished by it. Dr. F. E. Fremantle, one of its chief sponsors, was modest enough to claim only that its great merit is to improve the procedure in connexion with stillbirths; but it remains true, as Sir Richard Luce pointed out during the second reading debate, that the inadequacy of the law with regard to death certification and registration is by no means removed by it, and that further legislation is still urgently needed to carry out the policy of the British Medical Association in this regard, both for the safety of the public and to secure justice for the medical profession.

The provisions of these two measures, as they then stood, were set out with some fullness in our leading articles on December 12th, 1925 (p. 1134), and on March 27th last (p. 582). Their progress has been carefully watched since the latter date, and action has been taken from time to time to bring to the notice of Government departments concerned, or to make clear to Parliament, the importance of those points of the Association's policy which seemed to be inadequately dealt with. Some very important changes were in consequence effected in the Coroners (Amendment) Bill during its last stages in the House of Commons. The proceedings were reported at some length in last week's issue of the JOURNAL (at page 1200). These will repay careful perusal. It is now provided (1) that if a coroner is of opinion that a *post-mortem* examination may prove an inquest to be unnecessary, he may arrange for this to be made, and for the medical practitioner making it to report the result in writing; (2) that the fee for such examination and report shall be two guineas; (3) that for attending to give evidence at any inquest, without having to make a *post-mortem* examination, the fee shall be one and a half guineas for each day; (4) that for making a *post-mortem* examination and for attending to give evidence at the inquest the fee shall be three guineas for the first day and one and a half guineas for each subsequent day; and (5) that where there is any charge of improper or negligent treatment of the deceased person by a medical practitioner or other person, such medical practitioner or other person shall have the right to be represented at the *post-mortem* examination. Though the fee for performing a *post-mortem* examination still remains quite inadequate, these provisions are a great improvement on those previously contained in the bill, and thanks are due to the medical members of the Standing Committee, and to Captain Hacking and others, for the amendments effected. It may be noted that Mr. Rhys Davies, both in Committee and subsequently in the House on the Report stage, asked the Labour members to support amendments denying even these small measures of justice to the medical profession. Two other important points emerged from this discussion. On the question of making travelling allowances to medical men performing necropsies or attending inquests, the Under Secretary for Home Affairs stated that the legality of paying such allowances had never been challenged; and on the question of a coroner having power to call for, and pay for, a report from a duly qualified medical practitioner recently in attendance on the deceased if (even without a necropsy) such report might render an inquest unnecessary, it was stated on the same authority that it was open at present for a local council to undertake any reasonable expenditure in obtaining such a report, that fees of half a guinea had been paid, and that, instead of asking for legislation to impose this, the proper course was to get local authorities to exercise their existing powers to provide in schedules for such a fee. "Later," it was added, "backward authorities could be brought into line by the Home Secretary."

It is obvious that, although there is still need for careful attention to the whole field partially covered by these two Acts of Parliament, they do at any rate go some considerable way towards meeting the suggestions of the medical profession that further precautions should be taken with regard to stillbirths, and that the status and position of coroners, and of medical practitioners in relation to the work of coroners, should be more satisfactorily defined and regulated, in their own and the public interest.



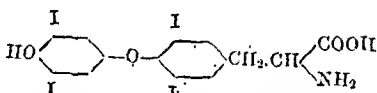
THYROIDINE.

[The Journal of the Chemical Society, London, 1926, p. 1092.]

THYROIDINE.

LAST week the Chemical Society resolved to award the Edward Frank Harrison Prize for 1926 to Dr. C. R. Harington of University College Hospital. The achievement which has earned this tribute from the colleagues of Dr. Harington has been the synthesis in the laboratory of the active principle of the thyroid gland—the substance thyroxine.

It was only in June of the present year that those who follow the literature of chemistry learnt of the progress of his labours, and discovered Dr. Harington on the very threshold of a complete success. Two papers under his name appeared at that time in the *Biochemical Journal*.<sup>1</sup> The first described a greatly improved method for the separation from thyroid tissue of the hormone in a chemically pure state—a method, moreover, which was not found wanting when pursued in an industrial laboratory. The second paper proceeded to the chemical analysis of the pure substance, and here the classical methods of degradation and synthesis joined in the demonstration that thyroxine was to be represented by the chemical structure:



In one particular only was this formula uncertain. The position of the four iodine atoms could not be definitely affirmed. It had been possible to remove these from the molecule of the natural product. It had been possible by two independent methods to synthesize in the laboratory the iodine-free substance by a series of reactions accurately defining its structure. It had not then been found possible to introduce into the synthetic substance those four atoms of iodine which, in their proper orientation, would create the molecule which is thyroxine. The story as it could be related in our issue of June 26th (p. 1092) was almost, but not quite, complete. It seemed that one more step only was necessary, but it now appears that the key to the problem lay far back in the chain of synthesis, and that ultimate success was to be achieved by introducing part of the iodine into the raw materials of the synthesis.

In a joint communication by Dr. Harington and Professor G. Barger to the December meeting of the Biochemical Society,<sup>2</sup> the final solution of the problem was unfolded. Commencing with hydroquinone and tri-iodo-nitro-benzene—materials which inspired a press report to describe, a little optimistically, the synthesis of thyroxine from "coal tar products and iodine"—a series of classical organic reactions were adapted with masterly tidiness to the issue of a product of the above chemical structure. The substance was chemically indistinguishable from that isolated from thyroid glands. The chemical chapter is complete, the biological story opens. Use was made of the now well established quantitative effect of the hormone on the basal metabolic rate. Two myxoedematous patients were chosen. Their basal rates were respectively 32 and 45 per cent. below normal. Intravenous injection of the synthetic substance was spread over six days to a total dose of 14 mg., and the basal metabolic rates rose, in the first case to 6 per cent. short of normal, and in the second to 3 per cent. above normal. There occurred a coincident fall in body weight and increase in the pulse rate. Such activity was quantitatively as great as

that given by natural thyroxine. Physiologically the two substances were indistinguishable. The structure of thyroxine requires the existence of two stereoisomeric forms, and we may suspect that the thyroid gland, by virtue of that elusive asymmetry of vital activities, synthesizes and employs but one of these isomers. That the substance obtained from the gland is the racemic mixture is due to the inevitable racemization which accompanies the process of separation, and it is not improbable that a resolution of thyroxine into its active forms will show that physiological activity is restricted to one only of these. This form should then be twice as active as the materials yet tested. The methods of physiology must now take the field. With thyroxine to hand there is available a means for the quantitative study of the role of the hormone and the function of the gland. Moreover, a study of the comparative effects of thyroxine and of its iodine-free derivative should provide an interesting exercise in the relation of chemical constitution to physiological activity, and, at the same time, offer some explanation for the association, which has yet to be explained, of iodine with the thyroid. The clinician waits upon and will supplement these avenues of investigation. He will be on his guard against the effects of overdosage, and will watch for the reaction of different abnormalities of thyroid function to administration of thyroxine. He will ask also the comparative cost of the synthetic and of the natural product. He will soon be answered. The series of synthetic reactions is complex, but the favourable conditions are defined and the yields are not meagre. The method is essentially practical, and may well prove economic. As with adrenalin, synthetic thyroxine will probably replace the natural product and those crude gland preparations of so uncertain potency.

The committee which resolved to award the Harrison Prize to Dr. Harington comprised the Presidents of the Chemical Society, the Institute of Chemistry, the Society of Chemical Industry, and the Pharmaceutical Society. Thus have the theoretical and applied interests of a science united to acknowledge the common benefit in a great academic adventure.

HEALTH ADMINISTRATION IN AUSTRALIA.

THE report of the Royal Commission on the health of Australia, referred to in the *JOURNAL* of August 7th last (p. 268), has been under consideration by a conference of Ministers of Health of the Commonwealth and constituent States. The conference, which took place at Melbourne, agreed that the Commonwealth should summon a meeting of professional heads of health departments, with Commonwealth and State statisticians and hospital superintendents, with a view to improving the existing system of collecting mortality and morbidity statistics. With regard to the shortage in Australia generally of highly trained experts in public health, the conference recommended that the Commonwealth should consult the various universities and medical schools, with a view to the establishment of a school of preventive medicine and tropical hygiene for experts and the better teaching of preventive medicine to medical students. The conference agreed with the recommendation of the Royal Commission that there should be a Federal State Council, acting in an advisory capacity, for the purpose of securing closer co-operation between Commonwealth and State health authorities. The general scheme of health administration, recommended by the Commission and intended to be carried out by the Federal Health Council, which is in agreement with suggestions originally put forward by the Federal Com-

<sup>1</sup> *Biochem. Journ.*, 1926, 20, 293, and 300.

<sup>2</sup> *Chemistry and Industry*, December 10th, 1926.

mittee of the British Medical Association in Australia, was approved by the conference. The conference also concurred in general with the recommendations of the Commission on venereal disease, maternity hygiene, child welfare, industrial hygiene, and other matters, and referred certain subjects to the Federal Health Council for consideration in detail. The recommendations of the Commission with respect to the encouragement and development of research were unanimously adopted. The conference endorsed the view of the Commission that co-operation between general practitioners and public health authorities was an essential feature in a health policy. The conference adopted the recommendations of the Commission with regard to health publicity, and accepted a reference, not moved as a definite resolution, by Mr. J. Slopford, Home Secretary and Minister of Health of Queensland, to the effect that the Commonwealth should undertake special investigations and campaigns, as in relation to hookworm, compilation of statistics, and publicity, the States to co-operate and extend to Commonwealth officers the powers and authorities of the State laws. It will be recalled that the Royal Commission was concerned with Commonwealth questions only, as affecting either the Commonwealth itself or the Commonwealth in its relation to States, since inter-State legislation and administration were not included in its reference. There is probably no other single question more important to the health of Australia at the present time than the establishment of effective co-ordination to protect the continent as a whole from invasion by disease from without, and to secure united action between the States and the Commonwealth for the general benefit of all. In the issue of the JOURNAL above referred to we expressed the view that the report of the Royal Commission was worthy to receive the attentive consideration of those in whose hands any legislative or other action might lie. It is matter for satisfaction that procedure has been initiated to make its valuable recommendations operative.

#### THE ORIGIN OF SYPHILIS: NEW WORLD OR OLD?

THE problem of the first appearance of syphilis in Europe has been debated from the time of Christopher Columbus to the present day. From that date onwards there has been a widespread opinion that the disease was brought from America by the sailors of Columbus on the return voyage in 1493. There is, however, no direct evidence of this; that is to say, there is no proof of a sailor having contracted syphilis from an American woman, and contrary opinions have been held on the subject from the first. In a learned work on the origin of syphilis<sup>1</sup> Dr. Gaston Vorberg has collected together what appears to be the entire body of available evidence on the question, and has placed the points at issue in a clear light. The supporters of the American theory, of whom Bloch is the most important among modern writers and Oviedo among the contemporaries of Columbus, rest their case upon the following alleged facts: That a pre-Columbian syphilitic bone has never been discovered in the Old World; that an epidemic outbreak of syphilis occurred at the close of the fifteenth century; that the outbreak synchronized with the return of Columbus from America; and that the spread of the disease followed in the footsteps of Columbus's sailors. It should be premised with regard to the older writers that they were somewhat addicted to the *post hoc ergo propter hoc* type of reasoning, and were apt to see a causal connexion between concurrent events without very close examination. For instance, the fact that syphilis and its remedy, guaiacum, occurred in the same locality was sufficient proof for them that syphilis originated in that locality, since where a disease started there the Almighty would provide

a remedy. With regard to pre-Columbian syphilitic bones, it is a remarkable fact that they are practically unknown; but it has been shown by Hrdlička that the same is true of America. That observer examined thousands of skeletons from all parts of America, and failed to find an undoubtedly pre-Columbian syphilitic bone. Dr. Vorberg, however, gives descriptions, illustrated with good figures, of what he holds to be two syphilitic bones—a humerus and an ulna—which were excavated in 1872 by do Bayo from a burial cave in the Petit Morin valley, and are estimated to date from the latter part of the Neolithic period. Judging from the photographs, few pathologists would hesitate to pronounce them to be syphilitic had they been from a present-day patient. On the other hand, no wary pathologist would care to commit himself to the assertion that there was no other disease resembling syphilis in Neolithic times. Taken by themselves it would be unwise to attach great importance to them, although it is possible that the result of further excavations may enhance their value. With regard to the "epidemics" of syphilis referred to above, they were connected with Charles VIII's disastrous invasion of Italy, in which his armies were decimated by disease. It can readily be believed that, if syphilis existed at the time, it would undergo a rapid increase as the result of that invasion; but Dr. Vorberg gives good reasons for thinking that the epidemics were of dysentery and typhoid fever rather than of syphilis, and he also adduces a considerable amount of evidence to show that the occurrence of syphilis in the trail of Columbus's sailors is mythical. The case for the American theory thus appears to be weak, and for a satisfactory alternative it would seem necessary to await the results of more extensive excavations. Dr. Vorberg has scrutinized the terra-cottas, sculptures, and literature of ancient times for evidence of the Old World origin of syphilis, and has summoned two distinguished historical personages as witnesses—namely, Caesar Augustus and Socrates. Although it cannot be said that the venerable histories of famous men form an attractive subject of study, there is some satisfaction in learning that the alleged syphilitic taint in Caesar Augustus is not borne out by an exhaustive scrutiny of his numerous personal blemishes. Unfortunately, the same cannot be said of Socrates. The author has given admirable photogravures of six different busts of Socrates, and the profile view of that in the Louvre, more particularly as regards the nose, almost compels the conviction that a true bill must be returned in this case. Socrates himself was aware of the defect, for it formed the central point of the discussion between him and Kritobulos on the subject of beauty. "Now take noses," said Kritobulos, descending to personalities somewhat; "would you consider yours or mine the finer nose?" "Well," replied Socrates, "if the God of Noses made noses to smell with, there can, I think, be little doubt that mine is the superior of the two. Your nostrils are directed downwards, whereas my nose is tilted up, so that it can receive smells coming from all quarters." "But surely it is a mark of distinction to have a good bridge? Your nose is flat!" "Yes, but with a nose like mine," said Socrates, "one is able to command a much larger segment of the horizon with each eye." In such fashion was the genial sage wont to inculcate philosophic wisdom.

#### GASPARO ASELLI.

THE series of portraits of Italian doctors and naturalists from the fifteenth to the eighteenth century published by the Italian Historical Institute of the Healing Art contains a woodcut of the celebrated anatomist Gasparo Aselli; with an account of his life and work by Professor Pietro Capparone, the eminent medical historian of Rome. Gasparo Aselli was born at Cremona in 1581, and at an early age became a surgeon in the Italian army, and

<sup>1</sup> *Über den Ursprung der Syphilis*. Von Dr. Gaston Vorberg. Stuttgart: J. F. Pustmann; London: Peter Davies, Ltd. (Med. 4to, pp. 111; illustrated. 2s. net.)

acquired considerable skill as an operator. He stayed for a long time at Milan, where he developed a large practice and was created an honorary citizen by the Senate. He subsequently became professor of anatomy and surgery at the University of Pavia. At this period the enthusiasm for dissection of the human body which had prevailed among the earlier sixteenth century anatomists was somewhat on the wane, and was being replaced by a study of comparative anatomy and the experiments on animals which led to important physiological discoveries. The existence of lacteals, which had been described by Herophilus and Erasistratus but subsequently denied, was again demonstrated by Aselli on July 23rd, 1622, at Milan in a dissection of a dog which had been killed during digestion. After verifying this discovery in many other animals he published his observations in a work entitled *De lactibus sive de lacteis venis*. He did not complete his discovery, inasmuch as he traced the lacteals of the mesentery to the liver, where he believed they emptied themselves. It was not until 1651, as we pointed out some time ago (1925, vol. i, p. 711), that Jean Pecquet in his *Experimenta Nova Anatomica*, gave the first description of the receptaculum chyli and the passage of the chyle through the thorax into the innominate vein. The error of the Galenic doctrine that the chyle was conveyed by the mesenteric veins to the liver was thus demonstrated. Aselli died in April, 1626, at the age of 45, and his book was published in the following year. His published work was entirely anatomical. His writings on toxicology and surgical cases have been lost, but the manuscript of his *Observationes Medicæ* is preserved in the Trivulzian Library at Milan.

#### DISABILITY IN READING.

THE first series of the Harvard Monographs in Education are dealing with educational psychology and educational measurement; the subject of special disabilities in learning to read and write has already been dealt with, and Miss Elizabeth M. Hincks has followed this up by an investigation of *Disability in Reading and its Relation to Personality*.<sup>1</sup> Fifteen children, chosen only because of their difficulty in learning to read, and all but one of average general ability, were the subject of investigation, and eleven of them were studied intensively. Psychologically the Stanford revision of the Binet test was employed, and the tests of the mental processes concerned in reading were arranged in visual, auditory, and motor categories. Many non-readers are left-handed—a third of the fifteen children investigated were, thus contrasting with the normal 4 per cent.—and many who are not actually left-handed present traits which might be called "left-minded"; they begin to read a word from the right instead of from the left, "was" and "saw" being often bugbears for all non-readers. Miss Hincks is inclined to support the suggestion that some early transfer of handedness may have caused a disturbance similar to that of stammering, but resulting in difficulty in reading. There is much evidence of the influence of heredity, both from the literature and because in nine out of the eleven children tested there was a family history of difficulty in reading or spelling; either in the children or their families there was evidence of nervous traits, such as nightmares, hesitant speech, wilfulness, rudeness to others, and emotional outbursts of crying. The eye movements, illustrated in a plate, of the children were irregular and uncertain, but improved, as did their behaviour, when, as the result of teaching, their power of reading got better. All the children showed very poor perceptions and memory for words as wholes, many lacked interest to the point of positive aversion for reading, and

readily became fatigued thereby. Upon intensive psychological study they all, with one possible exception, showed difficulties and irregularities in the mental processes which are generally accepted as of primary importance in reading. The evidence brought forward is in favour of the underlying cause being a neurosis, and against the disability being due to congenital word-blindness, and therefore incurable.

#### MEDICAL EDUCATION IN CHINA.

MEDICINE as taught in Europe and America tends to assume certain national characteristics, and it is possible to recognize distinctive features in the different countries and universities. In China, however, medical education on a scientific basis is primarily cosmopolitan; besides the Chinese medical schools there are institutions founded and controlled by other nations, including Great Britain, the United States, Japan, France, and Germany. An attempt to depict the present state of medical education in China has been made in the August issue of the *China Medical Journal*. The only previous educational number of our contemporary was issued in September, 1909, when the editor, Dr. W. H. Jeffreys, defined the ideal of the time as being the laying of the foundations of a truly scientific practice of medicine in China, and the provision of a scientific medical literature. Of the thirteen medical schools described in that issue seven have disappeared, and there seems to be some diminution in the supply of medical graduates trained on the lines of Western science. Nine medical schools are described in the recent issue of the *China Medical Journal* as having educated 650 students, and it is estimated that, including the output of other schools in China, and also those Chinese who have graduated in Europe, America, and Japan, there are only about 1,500 to 2,000 practitioners of modern scientific medicine for a population of 450,000,000. About 500 medical students are at present receiving instruction in the nine schools, which are situated in Peking, Mukden, Changsha, Shanghai (two), Shantung, Chengtu, Hangchow, and Canton. Including students in other schools of lower grade, or attached to foreign medical schools, the number under instruction amounts to 1,000, of whom fewer than 200 graduate each year. Since there are about 600 mission and Chinese hospitals organized on Western lines the shortage of trained medical practitioners is obvious, and the difficulty can scarcely be dismissed as light-heartedly as by one of the leaders in the recent disturbances, who remarked: "We do not want your hospitals; there are so many people in China that the death of a lot doesn't matter." Some such callousness was manifest in the closing of the Canton Hospital, mentioned in our issue of April 24th (p. 753). We understand that regret for this action has been expressed, but the restoration of the activity of the hospital and its medical school is a far more difficult problem than its short-sighted assailants realized. Other hospitals which have been similarly afflicted include the school at Kung-Yee, which was one of the finest of the Chinese institutions, the Stout Memorial Hospital at Wnchow, and the Kerr Hospital for the insane, one of the only two mental hospitals in China. Dr. E. V. Cowdry, in a critical examination of the past divergence between arts and medicine in China, concludes that, while this has seriously hampered the propagation of knowledge about the laws of health, yet the future is by no means dark, since the Chinese more than any other people have always held learning in high respect. He believes, therefore, that when a strong Government is established there will be a great twentieth century renaissance in China, provided only that the spread of knowledge among the masses does not breed the contempt which springs from familiarity. The present editor of the *China Medical Journal*, Dr. J. L.

<sup>1</sup> Harvard Monographs in Education, Series I, vol. ii, No. 2. Cambridge, Mass.: Harvard University Press; London: Milford, Oxford University Press, 1926. (Sup. roy. 8vo, pp. 92; 1 plate. 6s. net.)

Maxwell, reviews in another article the highly controversial subject of preliminary medical training, and contrasts the British view that the medical authorities need only fix a standard to be reached with the American requirement that the medical authorities must themselves prescribe the quality and duration of this instruction. In China a middle course has been steered hitherto, but the tendency is now towards the adoption of the British custom of allowing such preliminary education to be undertaken outside the medical schools, which only reserve the right of testing the degree of proficiency reached by the students. A pre-medical syllabus was approved by the China Missionary Medical Association in 1920, and covers two years' work in biology, chemistry, and physics. Though this syllabus has not been wholly adopted by any one school, it has proved to be a very valuable standard of reference for the medical schools and for the other institutions which cater for intending medical students.

#### THE MALARIA COMMISSION IN SPAIN.

All measures directed to the repression of malaria in Spain were in 1924 placed under the charge of the Central Malaria Commission, which now forms a section of the Third Division of the General Public Health Department at Madrid. It possesses authority to pronounce districts infected, to form district malaria boards, to set up dispensaries, and to issue quinine. The dispensaries control the local work of the Commission in infected districts. They number about twenty in all at the present time. They provide for clinical and blood examinations, the treatment of the sick, the following up of suspects, the issue of quinine, and the suppression of mosquitos. They were supervised at first by medical officers from the central department; they are now in charge of local medical men who have undergone a special course of training. One of the aims of the Commission was to make a general survey of the prevalence of the disease. Malaria is not compulsorily notifiable, but mortality records for 1924 show 1,195 deaths, equal to a general death rate of 5.5 per 100,000. A local death rate may rise to 20 (as in Huelva) or 60 (as in Cáceres) per 100,000. The morbidity figure for the whole country has been computed at 300,000 cases annually. Treatment of the sick to a final cure is another object of the Commission. To it is given the place of honour, and it has played a conspicuous and useful part in the plan of working. The propaganda campaign, on the other hand, has had but limited success. The people in many cases will not set themselves seriously to wage war upon the mosquito, or adopt the use of mosquito netting or wire-gauze proofing for their houses. The opinion is commonly held that malaria is apt to prevail near marshes or in wet country, where mosquitos abound. Spain presents the anomaly of malaria due to water deficiency. Such at least would appear to be the case in its most seriously infected districts. Owing to the dryness, agricultural lands are irrigated by artificial channels containing exposed slow-moving water in which mosquitos can breed. So, too, with water for domestic purposes; the rainfall of the wet seasons is led into artificial ponds or tanks near houses, and stored in the open accessible to mosquitos. So, too, even with natural watercourses; the hill torrents, which run full in winter, dry up in summer to a chain of pools. In all these open pools and channels, whose existence about the haunts of men is due to local shortage of water, anopheline mosquitos develop, and emerge to propagate malaria. The plan of implanting *Chara foetida* and *Chara fragilis* in streams to act as killers of anopheline larvae is not encouraged by the experience of the Commission. Better results have been obtained through the activities of the fish *Gambusia*, introduced as a larvicide from the United States in 1921. It feeds on the larvae

freely, and seems to have become well acclimatized. Rice fields, such as those in Valencia and Tortosa, are not thought to be specially dangerous as centres of infection provided their irrigation systems are carefully attended to. The lower the social and economic condition of the people, the higher is the malaria rate. The better sort are more alive to the need for precautions, and have readier access to medical aid. A good medical service for the treatment of the sick is a powerful factor in the protection of the sound, since a patient from whose blood the plasmodium has disappeared does not infect mosquitos. The seasonal movements of agricultural workers, acquiring infection in one place and carrying it to another, have a notable effect in disseminating the disease through the country districts. The most prevalent form of malaria in Spain is tertian, but the quartan fever is common. The tropical variety is comparatively infrequent. The vector is *Anopheles maculipennis*. The disease in general is not of a severe type, and its incidence has declined in recent years, but it still occasions much sickness. The protean character of the malaria problem, to which we referred in a recent article, is well brought out by the work of the Commission. The local activities have already been productive of benefit, and the plan of campaign, if persevered in and extended, should produce greater benefit still.

#### THE CURE OF ANKYLOSIS OF THE KNEE.

For many years surgeons have been striving to find a means of restoring movement and usefulness to ankylosed knee-joints. Dr. Charles-Henri Chevallier, in an excellent monograph<sup>1</sup> just published, has described their efforts and the steps by which success has been achieved, so that in 1923, after Putti of Bologna had demonstrated his methods and results to the International Congress of Surgery in London in 1923, it could be said that arthroplasty of the knee-joint is no longer a hazardous operation but a well established proceeding, giving far better results than the stiff straight ankylosed knee which used to be aimed at as the best functional result. It is fitting that this plastic operation should have been brought to its present state of technical excellence in the city of Tagliacozzi. After relating the work of Murphy, Hoffa, Payr, Baer, and MacAusland, all of whom obtained good results, Dr. Chevallier describes the modification of Putti's operation which he prefers. The following are the conclusions to which Dr. Chevallier has come; we commend them to our readers. In ununited fractures we find false joints which approach in their anatomy to normal joints, and these are due to the interposition of soft parts between the bone-ends. Experiments on animals support this view. A straight ankylosis of the knee ought no longer to be considered a happy result after injury or disease. In suitable conditions arthroplasty is the operation of choice, but not a routine operation. The best method at the present time is that of Putti, in which, after clearing and shaping the ends of the bones, a free strip of fascia lata is interposed between them. The operation is only the beginning of the treatment. The functional result depends almost entirely on the will-power and perseverance of the patient. Improvement in the new joints thus formed goes on for years; gradually they approach nearer and nearer to the normal, but are fortunately less liable to infections conveyed through the circulation. One of the earliest successes—an officer operated on by Payr—had subsequently a suppurating compound fracture of the lower third of the femur without any effect on his factitious knee-joint. There are recorded more than 440 arthroplastic operations on the knee by various methods. Of the sixty-three cases reported by Putti, more than 83 per cent. were successful.

<sup>1</sup> L'Arthroplastie du Genou. Par Dr. Charles-Henri Chevallier. Paris: Masson et Cie. 1926. (Roy. 8vo, pp. vii + 152; 7 plates. 2s.)

## England and Wales.

### KING EDWARD'S HOSPITAL FUND.

THE PRINCE OF WALES presided over the distribution meeting of the King Edward's Hospital Fund for London on December 14th, and read a letter from the King expressing his sympathy with the objects and activities of the Fund, and his satisfaction that it had been found possible to distribute the same amount of money as last year.

Lord Revelstoke, honorary treasurer, stated that the income for 1926 was less by about £18,000 than that for 1925, mainly owing to a decrease in the amount of legacies; fluctuation in the money received from this source was a contingency that had always to be remembered, and the prudent action of the council, last year in retaining the sum of £9,000 had enabled the amount available for distribution to be maintained at £245,000, although the income had only been £236,000. The British Charities Association had contributed £15,000, as compared with £20,000 last year; donations, however, had increased from £22,829 in 1925 to £27,300, mainly owing to generous gifts of £10,000 from Mr. Albert Searle and of £7,000 from an anonymous donor, who had previously supported the Fund on more than one occasion. A grant of £39,750 from the Wells legacies increased the sum received so far from this source to £192,240, of which £177,750 had been distributed. Sir William Collins, making the annual statement on behalf of the League of Mercy, said there had been a falling off in some districts, attributed variously to the coal dispute, to the competition of contributory schemes, and to the practice of asking for payment from patients. The British Charities Association had provided £5,000 for distribution to voluntary hospitals in almost every county in England and Northern Ireland. The total contributed to the King's Fund by the League of Mercy now amounted to £398,034.

Sir John Rose Bradford, P.R.C.P., vice-chairman of the Distribution Committee, in his report, said that the amount allocated for recovery and convalescent branches, was £243,000, the same amount as last year; a further sum of £2,000 was available for convalescent homes not attached to particular hospitals. The number of hospitals applying for grants was 136, as compared with 133 in 1925. There had been a further reduction in the hospitals showing deficits for the year, the total of available beds had been increased, and many new extensions had been undertaken. Grants towards extensions and improvements amounted to £35,475, as compared with £28,925 in 1925, while £207,525 was distributed for maintenance, as compared with £214,075 in the previous year. These figures were additional to £39,750 in grants to schemes of capital expenditure out of the Wells legacies; the total distribution for the year was thus £282,750. When all the extension schemes which were now being actively promoted by London hospitals had been completed the number of available beds would be 1,632 more than at the end of 1925. The rule had been not to assist in the establishment of new hospitals, or to entertain applications for grants from hospitals which had not been in existence in a properly constituted form for at least three years; the Distribution Committee now suggested that this rule should not apply to new hospitals required for areas where new populations had grown up since the date of the foundation of the Fund.

Lord Somerleyton, honorary secretary, presented a schedule containing a list of awards to hospitals, including recovery and convalescent branches. Among the larger grants were:

London Hospital, £15,625; Guy's Hospital, £11,500; St. Thomas's Hospital, £10,500; Royal Northern Hospital, £8,450; University College Hospital, £8,000; King's College Hospital, £7,500; St. George's Hospital, £7,050; St. Bartholomew's Hospital, £7,000; St. Mary's Hospital, £6,500; West London Hospital, £6,250; Charing Cross Hospital, £6,000; Westminster Hospital, £5,900; Metropolitan Hospital, £5,500; Royal Free Hospital, £5,500; Prince of Wales's General Hospital, £5,350; Royal National Orthopaedic Hospital, £5,000; Queen Mary's Hospital for the East End, £4,650; Miller

General Hospital, £4,575; Queen's Hospital for Children, £4,175; City of London Hospital for Diseases of the Heart and Lungs, £4,100; Hospital for Sick Children, £4,000.

After Sir John Rose Bradford had presented the report of the committee on the distribution to convalescent homes not attached to particular hospitals, and the special distribution to hospitals out of the Wells legacies, the Earl of Donoughmore, chairman of the Management Committee, reported on the scheme of pensions for hospital officers and nurses. Many hospitals had already adopted the scheme; it was felt that the hospitals would be enabled to deal in a businesslike way with the problem of the superannuated hospital officer, and that the removal of uncertainty about the future would attract women into the nursing profession.

The Prince of Wales expressed his satisfaction that the receipts had been well maintained; the settled policy of the Fund was to increase distribution as far as could be done without incurring the risk of subsequent reduction. During 1925 more hospitals had reported a surplus of income over expenditure than in any other year since the war. Voluntary gifts had increased by £98,000; patients' contributions by £74,000; building receipts by £364,000; and the total receipts of all kinds for the year had reached the fine figure of £3,887,000. The hospitals, however, still required as much help from the King's Fund as before, because their work was growing as fast as their income. More beds had been made available, and still more were being provided. It was a mistake to suppose that the voluntary hospital system was incapable of expansion. The Fund was, therefore, asked to assist in maintaining the additional wards that were already open and in building others; more building schemes would be undertaken; and demands on the King's Fund would increase. The Wells legacies had helped to add 1,000 beds to the hospitals of London; to increase substantially the provision for dealing with accidents; and to meet the needs of the newly populated areas in outer London, where in some cases it was necessary to build a hospital, since none had previously existed. The income of the Hospitals Savings Association, which was quite independent of the King's Fund, although the Fund had helped to start it, had already reached £150,000 a year. Another enterprise which the King's Fund had assisted at its origin was the pensions scheme for nurses and hospital officers; this had now been taken over by the hospitals. The revised uniform system of hospital accounts, which had come into force this year, had been generally adopted in London as a condition of grants from the King's Fund, the Sunday Fund, and the Saturday Fund; in the provinces it had the backing of the Voluntary Hospitals Commission and of the Joint Council of the Order of St. John and the British Red Cross Society. The Propaganda Committee was thoroughly established as a valuable auxiliary to the Revenue Committee, and more than 200 applications by exhibitors for the hospitals film had been received. A vote of thanks to the Prince of Wales, moved by Lord Stanmore, was seconded by the Lord Mayor, Sir Rowland Blades, M.P., and carried with acclamation.

### CANCER CAMPAIGN IN YORKSHIRE.

The University of Leeds has adapted and equipped the two houses which, as we mentioned on August 14th (p. 320), have been acquired on a five years' lease for cancer research, pending removal to the new laboratory which is to be built by the University with the £25,000 given by Sir Algernon Firth. The two buildings have been converted into one. The chemical department occupies the ground floor, where there are two laboratories and a balance room for the use of Mr. H. J. Channon, who has previously been associated with Professor Drummond in the work on vitamins. On the first floor is the laboratory for the director, Professor R. D. Passey, and another laboratory for the assistant director, Mr. J. S. Young. The second floor contains a small room for experimental work, and an animal room fitted up for keeping the fowls required. On the same floor there is accommodation for one or two research students. Research work will, it is expected, be commenced in the building on January 1st, 1927.



## ADULTERATION OF FOOD AND DRUGS.

The Ministry of Health publishes as a separate pamphlet the portion of its annual report which deals with its work under the Sale of Food and Drugs Acts. It is interesting to learn of the iniquities to which purveyors of food will descend, oblivious, apparently, of the fact that they must themselves consume food similarly adulterated by members of their class, even if they take care to avoid their own products. From the report for 1925-26 the manufacturer or producer seems to be just as guilty as the vendor. Thus an expensive preparation of cod-liver oil and malt was declared to contain all the virtues of the original preparations without the usual objectionable taste and stickiness. As a matter of fact the oil had been "hardened" and deodorized, so that the preparation was almost entirely devoid of vitamin A. Another manufacturer sold alleged ground almonds which were found to consist of ground apricot kernels. There is no need for surprise, therefore, that a street vendor in Hackney was found selling tea which contained iron filings and pieces of wire and nails. It is conceivable, in fact, that in many cases the vendor has been taken in by the manufacturer; as might have been the case, for instance, with the consignment of 9,000 chocolate Easter eggs, which were condemned as unfit for food because they contained quartz, glass, zinc, copper, and sand! Another ingenious manufacturer was under the impression that he had converted a chemically preserved and flavoured cordial into a "non-alcoholic invalid wine" by introducing a trace of quinine. In many cases it seems as if the manufacturer was experimenting to see how far some comparatively harmless adulterant would be tolerated. Thus in one packet of shredded suet—the form in which suet is now generally sold—one-third of the contents consisted of rice flour; and in a sample of custard powder stated to be made from real eggs the proportion of egg was considerably less than 5 per cent. As usual, cases of adulteration of milk were numerous. Practically one-twelfth of the milk examined was adulterated or below standard. A common defence in milk cases is that the cooling apparatus leaked. Sometimes, it appears, the leak is artificially produced. Six and a half per cent. of the total of all samples of food and drugs were found to be adulterated or not up to standard—a higher percentage than was found in 1923 and 1924.

## MEDITATIONS ON AN M.O.H.

Dr. Cameron Kidd, Medical Officer of Health to the Bromsgrove and North Bromsgrove Urban Districts, does not confine himself in his reports to bald statements about the births, deaths, infectious diseases, and drains of his area. He prefers to regard the annual report as giving him an opportunity of ventilating his criticisms of sundry anachronisms, lay errors, and modern panaceas. Thus of erysipelas he says: "As far as any practical use goes this disease might be omitted from the list of notifiable diseases. . . . The medical attendant can surely be trusted to do what is necessary." He has been struck by the succession of ailments from which children suffer as the result of being sent to school at the age of 4, a tendency which is increased by the fear the mothers feel of the school attendance officer. Dr. Kidd says that his eye has been caught by paragraphs in daily papers proclaiming that "science has made consumption little more harmful than the common cold"; a statement which, he says, at the very least is misleading to the public. He holds strong views on the subject of birth control; he thinks that the really enlightened philosopher would prefer infanticide, for which arguments similar to those heard in the House of Lords debate last April can easily be used. Perhaps Dr. Cameron Kidd's feelings on birth control have been unduly aroused by the receipt of numerous advertisements offering him a commission if he will recommend to his patients various contraptions with euphonious labels. From the rest of the reports it appears that the health of Bromsgrove and North Bromsgrove is very satisfactory, though quite a large proportion of infantile deaths in the former district were due to premature birth and atelectasis. Even here, however, Dr. Cameron Kidd suspects the machinations of birth control.

## Scotland.

## HEREDITY IN MENTAL DEVELOPMENT.

A LECTURE entitled "Heredity, with special reference to feeble-mindedness," was delivered on December 9th by Dr. P. A. E. Crew, director of the animal research department in the University of Edinburgh, under the auspices of the Edinburgh Women Citizens' Association. Evidence derived from the study of the family histories of the mentally defective strongly suggested, he said, that feeble-mindedness was definitely a hereditary character transmitted from generation to generation in an orderly fashion through some existing mechanism. Objection might be raised to this view, because it seemed to disregard the very powerful influence which environment and training exerted during the development of mental qualities. Feeble-mindedness was an oft-quoted instance of a typical recessive character, but until this condition had been defined exactly, and it had been shown what acquired physical aberrations might lead to its development, it could not be finally accepted that a single factor difference existed between feeble-mindedness and normality. Pedigrees in which an unusual number of individuals of subnormal characters were present undoubtedly gave the impression that something was definitely being inherited. The conclusion was at least justified that to a considerable degree mental attributes, particularly those involving general ability and capacity, were based upon inherited factors. What was inherited, however, was only a capacity or predisposition, and what developed from it was in great measure dependent on environment and training. A person of average mental endowment who had developed himself to the full powers of self-expression was often more valuable than one of greater gifts who through indolence or lack of opportunity had failed to develop them. The latter person might, however, be a more desirable parent from the point of view of the race. Before education could advance humanity far, humanity must be capable of profiting by education. The present social fabric was full of weak patches which, under the present sentimental type of legislation, were protected at the expense of the sound parts. It was only when the general level was raised by sound legislation and higher morality that the teacher could find a good field for his activities.

## DAIRY RESEARCH IN SCOTLAND.

A considerable amount of discussion has arisen in regard to the decision of the Secretary of State for Scotland to place the management of the Dairy Research Institute, for the establishment of which an estate at Auchincruive, Ayr, and funds were recently provided by Mr. John M. Hannah of Girvan, outside the control of the governors of the West of Scotland Agricultural College. At a meeting of the governors of the college, held at Glasgow on December 10th, when Sir David Wilson, Bt., was in the chair, a communication from the Board of Agriculture was read, in which it was explained that the Secretary of State realized the importance of dairy research in Scotland, and suggested that the National Dairy School should be removed from Kilmarnock to Auchincruive, and that its management should be vested in a joint committee representative of the Agricultural College and of the University of Glasgow. The governors of the Glasgow College agreed to accept these recommendations, and to give the desired support to the establishment of the Dairy Research Institute at Auchincruive.

## WELFARE OF CHILDREN.

The special aspect of child welfare consisting in the protection of the child against ill-usage or neglect by parents or other natural guardians was discussed at the annual meeting of the Edinburgh District Branch of the Royal Scottish Society for Prevention of Cruelty to Children, held in the City Chambers, Edinburgh, on December 7th. The report showed that during the past year 7,445 cases, involving 21,807 children, were reported to the society. Of these, 280 were submitted to the Procurator-Fiscal for prosecution, and in only 10 were the

persons charged acquitted. Most of the complaints arose in thickly populated districts, although a few occurred in rural areas. More interest was now being taken by the community in matters affecting child life, and legislation had granted powers to public authorities enabling them to devise schemes for strengthening the physical nature of the child, and even the rights of parents had been declared to be of secondary importance to the welfare of their offspring. There was some fear that the duties imposed on public authorities for improving the surroundings of the child might tend to confirm careless parents in laxness and indifference. The Lord Provost, who was in the chair, said that so long as parents were found who were totally regardless of their obligations to their children the need for this society was obvious. Professor Paterson said that, while many people nowadays were expressing faith in eugenics and the segregation of those unfit for parenthood, he personally had a great deal of faith in Nature, which he regarded as more satisfactory than the selection of suitable parents by a medical board. Nevertheless, it was true that in old days many children died of starvation, and that many at the present time were in circumstances in which they would starve if it were not for the public authorities. He also referred to the millions of money spent on educating children and to the activities of various associations connected with the Church. The chief causes of child neglect were intemperance, immorality, and gambling; it was surprising how prevalent gambling had become.

#### PUBLIC HEALTH IN DUMFRIES.

It has been announced that the appointment of medical officer of health for the Burgh of Dumfries has become vacant, owing to the resignation of Dr. Joseph Hunter, who was a part-time officer. The question of a successor has therefore arisen, and a number of local practitioners have signed a round-robin in the following terms:

We, the undersigned medical practitioners of Dumfries and Maxwelltown, are unanimously of opinion that when the appointment of a medical officer of health comes to be made for the Burgh of Dumfries a whole-time medical officer be appointed, and that a deputation of practitioners would be pleased to meet the Public Health Committee of the town council with a view to discussing the matter.

We welcome this evidence of interest in public health administration on the part of the local profession—an interest which has been such a notable feature of the recent work of the Dumfries and Galloway Division. Though the proposal which has been made to the local authority does not appear to be the decision of the Division, we feel sure that it will receive the careful consideration it deserves.

#### SOCIAL SERVICES IN SCOTLAND.

A meeting of the representatives of Scottish organizations interested in welfare work in Scotland was held in Edinburgh on November 12th for the purpose of forming a Scottish Council of Social Service. Sir John Lorne Macleod, who was in the chair, said that the same problems existed in separate areas, and a meeting ground for exchange of views and ideas had frequently been desired. A National Council of Social Service had been formed some years ago in England and had proved its usefulness and value in many directions. It should be clear that there was no intention of conflict with the existing public services. Voluntary effort had a great tradition of social service, and many social provisions now recognized as services for which the community was responsible had been initiated by voluntary enterprise. The council would be primarily a consultative body and should contain representatives of all branches of social effort. It would be able to frame suggestions for the local organization of voluntary work in relation to the work of local authorities. Captain Ellis, D.S.O., M.C., secretary of the English National Council, explained that this body, after its formation in 1919, had helped in the establishment of local councils, and there was now growing up in England a new movement along the line of co-operative community effort which would have a marked effect as time went on. Colonel J. M. Mitchell, secretary of the Carnegie United Kingdom Trust, said that the trustees were satisfied that the theory of a National Council was right. If, however, the council

hoped to have help from the trustees, this could only be for a limited period. A resolution was unanimously adopted to form a provisional committee to consider the proposal in all its aspects and to report.

#### EDINBURGH SAMARITAN SOCIETY.

The report presented to the forty-eighth annual meeting of the Samaritan Society of the Royal Infirmary at Edinburgh on December 7th showed that during the past year 435 cases had been dealt with and 15,078 visits had been paid by the almoners of the society, who had also paid 606 visits in connexion with the social service scheme of the Royal Infirmary. The number of visits paid by the almoners had been more than during the previous year, and 3,800 garments had been distributed, as compared with 3,000 during the previous year. Cash payments to the amount of £1,825 had been distributed, an excess of £285 over the receipts. Mr. Henry Wade, C.M.G., F.R.C.S., in seconding the resolution, expressed on behalf of his colleagues the opinion that the society was an indispensable and integral part of the work in the hospital.

## Ireland.

#### ULSTER MEDICAL SOCIETY.

CLINICS in Canada and America were visited this autumn by Dr. C. G. Lowry, professor of midwifery, Queen's University, Belfast, and Dr. R. M. Beath, assistant radiologist to the Royal Victoria Hospital, Belfast, and at a meeting of the Ulster Medical Society on December 2nd, with the president, Dr. Nolan of Downpatrick, in the chair, an account of this visit was given. Professor Lowry said that he had visited the obstetrical and gynaecological hospitals at Montreal, Toronto, Chicago, Washington, New York, and Boston. The buildings tended to the "sky-scraper" type, with a free use of electric elevators. Special attention was given to ensuring quiet, and the rubber flooring used wore well, was easily cleaned, and did not stain. In some hospitals an electric bell-push was provided for each bed. In maternity hospitals five delivery rooms were supplied for every 100 beds. Green tiles were being increasingly used in operating theatres, as being less tiring to the eyes. The records kept were elaborate, and a great amount of care was taken to make them as perfect and reliable as possible. Many Canadian nurses were trained in Toronto, and the entrance examination to the nursing school was that for matriculation in the university. Their three years' training included maternity work, and the conditions of training, residence, and food were better than those in Great Britain. Maternity wards were often attached to, or formed part of, general hospitals. Great precautions were taken to protect babies in maternity hospitals from all sources of infection, and variation in temperature of the wards was avoided. The chief anaesthetics used were nitrous oxide, oxygen, and ether, followed by ethylene gas, which eliminated much of the post-anaesthetic vomiting; chloroform was very seldom used. Radium had been found to give excellent results in the treatment of cancer of the cervix. The number of students was strictly limited: McGill University admitted only 100 annually for medicine, and there was a long waiting list. The demand for admission to the Johns Hopkins Hospital was also far in excess of the numbers taken. Special study had been made of the 6,000 students in Toronto, who underwent a full medical examination, 2 per cent. being rejected as unfit, and about 5 to 7 per cent. being shown to have some physical disability. Dr. Beath said that the most outstanding feature he had noticed was the unlimited amount of money spent on the provision of apparatus of the newest type selected after careful discrimination.

The annual dinner of the Medical Society was held on December 9th in the Medical Institute, when the President, Dr. M. J. Nolan, Downpatrick, was in the chair, and about 140 Fellows, members, and guests sat down. His Grace the Duke of Abercorn, Governor of Northern Ireland, honoured the proceedings with his presence. The

following toasts were given: "The King," proposed by the President; "His Grace the Governor and Prosperity to Northern Ireland," proposed by the President, and responded to by his Grace the Governor; "The City of Belfast," proposed by Mr. James A. Craig, and responded to by the Lord Mayor of Belfast; "The Guests," proposed by Dr. H. W. Leslie, and responded to by his Honour the Recorder of Belfast, the Vice-Chancellor of Queen's University, and Viscount Bangor; "The Royal College of Surgeons in Ireland," proposed by Mr. P. T. Crymble, F.R.C.S., and responded to by the President of the College (Professor A. Fullerton, C.B., C.M.G.); and "The President of the Ulster Medical Society," proposed by Professor James A. Lindsay. The evening terminated by the singing of the national anthem. It was one of the largest dinners the society has ever held, and much praise is due to the honorary secretary, Dr. Maitland Beath, for his indefatigable labours to make it a success.

#### BRITISH MEDICAL ASSOCIATION AND THE ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND.

It is stated in the report of the Royal Medical Benevolent Fund Society of Ireland for the year 1926 that the society received the "hand-some amount" of £54 4s. from the British Medical Association. The receipt of this sum by the Irish benevolent society was mainly due to those members who effect their life, motor, and other insurances through the Medical Insurance Agency, British Medical Association House, Tavistock Square, London, W.C.1. At a recent meeting of the Irish Committee of the Association a resolution was passed strongly urging Irish members to effect their different insurances through the Agency, as so doing would mean substantial assistance for the funds of the Royal Medical Benevolent Fund Society of Ireland as well as securing for themselves the best unbiased advice with regard to all insurance matters.

## Correspondence.

### FRACTURE OF THE NECK OF THE THIGH BONE IN ADULTS.

SIR,—The discussion at the Royal Society of Medicine on December 6th, and your remarks in the *JOURNAL* of December 11th (p. 1133), will, I hope, be regarded as the funeral dirgo and a well timed obituary notice for a type of teaching and practice which has survived too long.

The successful treatment of fractures of the neck of the femur in old people (your remarks refer for the most part to aged subjects) depends upon the proper reduction of the fragments and immobilization for a sufficient length of time. Accurate reduction in the case of a fractured neck is usually less difficult than accurate reduction in the case of a fractured shaft. Secondary displacements during treatment are not so common. Bony union is the rule, and not the exception, and the serious complications which are to be feared after all gross injuries to old people need no special mention in cases of fracture of the femoral neck.

I venture to think that Whitman, who was a pioneer, and those eminent authorities who took part in the discussion at the Royal Society of Medicine, do not realize how widespread is the same weary teaching and the same dreary pessimism which had their origin in the days of Sir Astley Cooper. We still hear of the danger of hypostatic pneumonia, the difficulty of obtaining union between fragments bathed in synovial fluid, the absence of periosteum from the neck of the femur, and so forth. The want of sufficient blood supply to the proximal fragment is an old and worn-out crutch used to support the results of inefficient treatment.

"Such dupes are men to custom, and so prone  
To reverence what is ancient, and can plead  
A course of long observance for its use."

Astley Cooper's investigations were so imposing in the history of the surgery of bones that to this day posterity can scarcely be persuaded to believe what radiography reveals to its eyes. "The dissections which I have made," says Sir Astley Cooper, "have convinced me that fracture

of the neck of the femur, when it is situated within the capsule, is never united by bone." The writings of Sir Astley Cooper are well worthy of study, but in our literary excavations we must carefully distinguish between the useless debris and the nuggets of pure gold. Dupuytren, on the other hand, pointed to many specimens in the Paris museums of intracapsular fractures united by bone. His methods of treatment were not far removed from the methods recommended by Whitman.

The Royal Society of Medicine discussed in the first place the best routine treatment for practitioners to follow, and afterwards the best course to pursue in hospitals equipped with the necessary skilled staff and appliances. The first is all-important in order "not to embitter the evening of life and compel an otherwise sound person to become an invalid."

To those who have not a skilled staff of assistants and appliances and who have wide responsibilities outside the realm of surgery I think the following hints might be acceptable:

1. The reduction of this fracture is of paramount importance, and is not difficult.
2. Anaesthesia is usually necessary, but need not be prolonged.
3. The limb should be fixed in the abducted position for about three months, and little or no weight-bearing allowed until six months have elapsed. (As in the case of other fractures, the time factor is variable.)
4. Whitman's frame, Jones's frame, Thomas's splint slung over the side of the bed (the sound limb also in abduction), are effective for maintaining reduction.
5. Weight and pulley extension without reduction is useless.—I am, etc.,

Dublin, Dec. 12th.

W. L. DE C. WHEELER.

### THE DEVELOPMENT OF VAGINAL OPERATIONS FOR GENITAL PROLAPSE.

SIR,—All who believe that the uterus is maintained within the pelvis by its connective tissue or other attachments seem to omit from consideration the forces at play within the abdomen, especially those occurring during general activity which constantly are tending to produce extrusion. Thus Professor Chipman, at the Congress of Obstetricians and Gynaecologists held in London in 1925, likened the uterus and its supports to a child seated in a swing suspended by ropes. To convert this into a truer analogy, the child and the swing and the ropes would have to be immersed in a medium of much the same specific gravity—for example, water. Suspended in air, the tension of the ropes must be considerable; suspended in water, the tension of the ropes is much less, or even disappears, for the pressure of the water tends to buoy up the swing laden as it is. In the first case, the tension of the ropes is considerable because "gravity" attracts the swing and its contents downwards with much greater force than it attracts the "medium" (that is, the air) in which the swing is "suspended"; in the other case, gravity attracts the water downwards with a force almost as great or as great as it attracts downwards the swing.

I have insisted for many years that the pressure in the abdomen and pelvis, which form a container for the viscera, is not due simply to the effect of gravity; but that in virtue of the musculatures forming the walls, the viscera are continuously compressed, in a degree, however, which varies with the posture and with the state of rest or activity of the individual. And I have shown that this compression of the viscera is related with general metabolism. On the one hand, it is related with the return of blood in the large abdominal veins to the heart (and thus with the aortic blood pressure); on the other, it is related with the flow of blood through the visceral capillaries, and so with the visceral response. Thus the visceral response is greater (within limits) when the average intra-abdominal pressure (the pressure of rest) is greater; and less when the intra-abdominal pressure is below average (as in enteroptosis and neurasthenies). Nor is it difficult to show that the intra-abdominal positive pressure is correlated with the negative intrathoracic pressure—a pressure which

is not simply concerned with the passage of air into and out of the lungs, but especially with the adequate flow of blood through the pulmonary capillaries, which obviously must vary with the needs of the individual.

A study of the levator ani led me to this conception of man. It was seen that the levator ani is not simply the relic of former tail-moving muscles, but that it presents as the most important part of a muscular parietes closing in the pelvic outlet; that in its function it acts as an obturator to the pelvis inferiorly, and not a passive but an active one, to emphasize which I called it the "sphincter of the pelvis." Visceral canals of necessity pass from the pelvis to the exterior; they traverse the pelvic floor, and though they have their own sphincters, when these are lacerated, occlusion of the canals depends on the pelvic floor. But the pelvic floor does not exist simply to prevent the exit of visceral contents: it exists primarily to prevent the exit of pelvic visceral parts.

Unless the viscera in the pelvis can be maintained within the pelvis during times of stress, the pressure within the abdomen, increased during such times, cannot be sustained. Thus the reason of the weakness complained of by many women with genital prolapse is clear. Each time they try to do anything the parts are extruded, or the extrusion is increased; the necessary pressure with the abdomen cannot be maintained. Instead of blood within the large abdominal veins being forced in greater measure to the heart, viscera in the pelvis are forced out of the body to greater extent. Thus the rise of aortic blood pressure, the concomitant of normal activity, cannot occur; all the body parts suffer, the individual feels weak, and in the worst cases is forced to an invalid life.

Although Dr. Nyulasy (November 13th, p. 907) says he has read my books in which this subject is dealt with, he leaves it out of the account when considering the effect of vaginal operations for prolapse. He believes the cardinal ligaments, in virtue of their non-striped muscle content, are the "main supports of the uterus"; and does not accept my statement that they "are not capable of sustaining the pressure which during life is continuously tending to depress the uterus." But if the cardinal ligaments maintain the uterus in the pelvis, how is it that the pressure beneath the uterus, between its cervical part and the pelvic floor—that is, in the ampulla of the rectum—varies with the position of the individual and the activity in play? This is so even when the gut is empty and its walls are opposed to each other, in which case a pressure can hardly be transmitted to it by way of the lumen from higher reaches of the gut. When the patient coughs, up shoots the mercury of the manometer. How could this occur if the cardinal ligaments sustain the uterus in place and prevent its descent or its tendency to descent, which the rise of pressure above, produced by cough, occasions? And each time the patient coughs the pelvic floor musculature can be felt (by palpation) to contract. Why? There must be some reason. If the paracolpos, the parametrium, and the pararectal tissue maintain the bladder, the uterus and the lower rectum in the pelvis, and are adequate to sustain the intra-abdominal pressure in all the phases of life, why when the intra-abdominal pressure is raised is the response of the pelvic floor increased? Why, indeed, should there be a pelvic floor? It is a question that Dr. Nyulasy should answer—and one that Dr. Bride might with advantage consider.—I am, etc.,

Rugby, Nov. 14th.

R. H. PARAMORE, F.R.C.S.Eng.

#### POST-OPERATIVE RADIATION IN CANCER OF THE BREAST.

SIR,—In a discussion following Mr. H. W. Carson's paper on post-operative treatment of cancer of the breast, reported in the *BRITISH MEDICAL JOURNAL* of December 11th (pp. 1095-1097), very diverse views were expressed with regard to the value of x rays as a prophylactic.

To furnish direct proof of the value of prophylactic radiation is almost impossible. Its object is to maintain the *status quo*; and in any case where it is not maintained failure is manifest. On the other hand, where recurrence does not take place there is no certainty that, in an

individual case, the radiation has prevented it. Finally, if recurrences follow quickly it is easy to blame the radiation, forgetting the cases which recur quickly when no x rays have been used. In discussions such as the one above referred to, only rarely does anyone say anything about the technique employed. The idea that all failures and even injuries which result from x rays are quite independent of dosage, frequency, area exposed, and so forth—in a word, that the directing mind does not count—dies hard. Unfortunately, the most diverse technique is employed by radiologists for prophylactic treatment, and in some cases patients are grossly overdosed. This is evident from the statements of some surgeons that their patients feel very ill after a prophylactic course, and ask not to have it repeated. One cannot but sympathize with Mr. Sampson Handley's plaint in a recent discussion at the Royal Society of Medicine that, although he welcomed the assistance of the radiologist, intensive therapy was not quite the sort of help he wanted!

If prophylactic x-ray treatment meant of necessity making a patient feel ill, it could not be justified. The patient may be all right if nothing is done; therefore no risk is permissible. So far, however, from a patient feeling upset after a properly administered course of radiation, she should have gained in strength. It is entirely a matter of the size and spacing of the doses. The dose should be of the order of 1.5 milliamperes, 40 cm. anticathode-skin distance, 3 mm. aluminium filter, 140 to 160 kilovolts; time ten minutes; tube diaphragm widely open. Twelve to eighteen such doses may be given for a course, at first three times a week, and later twice a week. A course of this kind may be commenced, in hospitals, as soon as the patient can be brought to the x-ray department. If there is any raw surface left in the wound, healing will be expedited and the patient's general health rapidly improves. This system is in vogue both at the French Hospital (London) and at the Croydon General Hospital, and is carried out, of course, with the full approval of the surgical staff. Of late we have combined sunlight treatment with the x rays, producing even better results as regards the general health. That the procedure advocated is constitutionally beneficial can be verified by inquiry from the surgical staffs concerned; to prove that it is an efficient prophylactic is another matter. But surgical testimony can be invoked to show that similar treatment is in some instances capable of rendering an inoperable growth operable, or even of causing the disappearance of cancerous nodules. Thus we have at our disposal a line of treatment which is (a) a general tonic, and (b) capable in some cases of bringing about shrinkage of malignant tumours. Not to use it as a prophylactic would be irrational in the case of anyone accepting the above propositions.

Nothing I have written is to be taken as an argument against the use of large x-ray doses in suitable circumstances. Intensive treatment may cause the disappearance of a cancerous tumour where milder measures have failed. But a "negative phase" obtains for a time, during which general body resistance falls; and at this period, should any distant metastases exist, they are apt to spring into activity. Intensive treatment should be looked upon as an alternative to operation in selected cases so far as the primary growth is concerned, and not as an adjunct to surgery. Attempts to use it as a prophylactic in cases which have already suffered from the shock of a major operation have brought discredit upon the method, and have no doubt in some instances tended to favour metastases.—I am, etc.,

London, W.1, Dec. 11th.

F. HERNIMAN-JOHNSON.

#### ANTIGENS FOR THERAPEUTIC IMMUNIZATION.

SIR,—May I supplement the letter you were so kind in publishing in your issue of August 21st (p. 360) in respect of immunogens, as these products have been placed on the market with practically no published clinical evidence, so far as I know of?

Sir Thomas Horder has reported strongly in favour of them, but his paper contains no actual clinical records, and apart from this paper and that by Drs. Ferry and Fisher in the *Journal of Experimental Pathology*, which is concerned only with immunity tests carried out *in vitro*

CORRESPONDENCE.

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(personally I do not concede that these have any clinical value, but are merely suggestive), clinical records are as yet unpublished. Doubtless they will be published, but it seems to me that to issue the antigen for sale prior to such publication is scientifically indefensible and wholly wrong in that if, as appears to me from reasons given below, the product is of no value, the only result will be unfairly to discredit vaccine therapy. Here we have a classical example of the evils of commercial exploitation. The anxiety to sell while the going is good can have only one result—namely, that when a really good type of vaccine is evolved it will be received with frigidity by those who have been bitten before.

I have had the opportunity, thanks to the courtesy of Messrs. Parko, Davis and Co., of trying immunogens. So far, in fifteen instances, I have been disappointed. Five cases were gonorrhoeal. One was a woman with chronic cystitis and much pus. No amelioration of gonococcus of pus was obtained after several injections of gonococcus immunogen. The infection was a pure one, and the bladder was washed out with weak boric acid and also permanganate. The other four were subacute and chronic cases, having the usual irrigation treatment, massage, sounds, urethroscopy, and so on. My assistant, who sees all the male cases, and myself came to the conclusion that immunogens had no effect for either good or ill on the duration of the complaint.

A case with a renal sinus discharging streptococci and pus was not benefited; a case of staphylococcal skin infection was apparently made worse. Lower dosage with streptococcus combined immunogen, which contains staphylococcal products as well, was a failure. A patient with profound toxæmia from streptococcal cellulitis seemed to improve at first and then remained stationary (Parko, Davis and Co.), put on to anti-streptococcal serum (Parko, Davis and Co.), when he began to improve at once, and made a complete recovery. This latter product is in an altogether different class, and is most excellent in its effects. I have used it and watched its use for years, and have a very high opinion of its value.

A case of boils in a mental patient was treated with an auto-immunogen of *Staphylococcus aureus*. At first she did well, and then relapsed completely, and is now on an auto-vaccine.

A case with fulminating streptococcal meningitis was given streptococcal immunogen without effect and died. Likewise a patient with a mixed influenza and streptococcal pneumonia.

The other four cases were of pneumonia, and appeared to be uninfluenced by pneumococcus immunogen. Three of these were on the original type of immunogen, but, for my part, I still hold that *in vitro* tests are no criterion of what will happen *in vivo*, and that the more mutilated the product the more inert it is, and that the more natural autogenous vaccine is the better agent of immunity.

—I am, etc.,  
GEOFFREY SHERA, M.A., M.D. Cantab.  
Eastbourne, Dec. 6th.

VISUAL STANDARDS FOR MOTOR DRIVERS.

SIR,—The article dealing with visual standards for motor drivers in the JOURNAL of December 18th (p. 1191) draws attention to the American Medical Association's recommendations. These recommendations appear to omit any reference to the field of vision, which is at least as important as the distant vision. My attention was drawn to the necessity for a good field by a case which recently came before me. The patient complained that although he had good sight he had had two minor accidents. In the first, he had collided with a wheelbarrow which had been left at the side of the road, and in the second, in turning, his head ran against a standard lamp-post. On examining his eyes I found that he had chronic glaucoma, with which was associated a considerable contraction of the field of vision. The cause of his trouble was obvious—as is the moral.—I am, etc.,  
W. M. BEAUMONT.  
Bath, Dec. 19th.

TREATMENT OF ACUTE POLIOMYELITIS.

SIR,—As the unfortunate (or otherwise) medical man connected with Uppingham, may I crave for space for a few less or more disjointed remarks on poliomyelitis and the correspondence therewith.

In the JOURNAL for December 11th three letters appear under the heading "Treatment of acute poliomyelitis." Surely what is meant is "sequelae of," etc. One writer mentions "long view"—a matter of years. The acute stage is a matter of days; it is the paralysis which follows to which the writers evidently refer; and yet when we open a mastoid or drain a chest in empyema we do not talk of the adenoids, measles, scarlet fever, etc., which may have caused the ear trouble, or the pleurisy which was the root cause of the empyema. It is not well to mix up cause and effect. To my mind the treatment of acute poliomyelitis would deal with the invading virus before the cord is attacked. This is what ought to be aimed at, and is within the range of possibility provided an early and correct diagnosis is made. It must be early, for once the virus has settled on any part of the grey matter treatment is useless; we attempt to repair the damage.

In most diseases the reply of the organism to the invade is helpful—not so in poliomyelitis. The increased vascularity adds to the trouble, pressure putting out of action for a time adjoining cells. Further, poliomyelitis is a law unto itself in invasion or spreading. Leicester, with its depressed industrial population—depressed by reason of the coal strike—and without the advantages of Harley Street, suffers on a population basis about one-twentieth of Broadstairs. Evidently the ordinary rules do not apply; then for Heaven's sake why not say so, and try some fresh avenues?

I notice in the leading article in the same issue of the JOURNAL (p. 1129) that the Advisory Committee was called in consultation about a month after the disease appeared at Woolwich, and the date on the Lord Dawson and Dr. Collier Broadstairs circular is October 20th, on which date there were about fifty notified cases in Broadstairs; in both instances the epidemic was well under way. There would in the ordinary course of events be many infected people, with corresponding dangers; it is merely a matter of control versus prevention.

Uppingham dealt with the matter at the very outbreak. Our plans were wellnigh fixed in the event of a second case appearing in the school. Surely modern medicine is essentially intelligent anticipation. Following is no good—get in front and keep there!

During the correspondence on methods many times Popo's couplet comes to mind: "For forms of government let fools contest; what's best administered is best."—I am, etc.,  
Wm. Dunn, M.B.  
Uppingham, Dec. 11th.  
P.S.—We had only two cases in Uppingham School and district; this compares well with other centres.—W. D.

A MEDICAL ASPECT OF MINERS' SHORTER HOURS.

SIR,—As the son of a miner, I beg to agree with Dr. G. Arbour Stephens's view that the strain of seven hours' work is greater (and worse for the miner) than eight or nine hours' work.

Statistics are wanting, but may I give three examples of long hours, health, and longevity? Mr. Thomas Burt, M.P., the late father of the House of Commons, was healthy in body and mind till over 80 years of age; yet I believe he worked twelve hours a day in the mine. William Straker, the secretary of the Northumberland miners, is alert in body and mind at 70 years of age; and I believe he also worked twelve hours a day in the mine. My father started work at 8 years of age at 6d. a day in the Weardale lead mines; he worked twelve hours a day, and never saw the sun in winter in his youth; and he never had an aching limb in his life. He rose through all the grades of mining in lead, coal, and ironstone till he became a leading mining engineer, educating himself after his long hours in the mines; he died at 72 years of age from strain (not work) from running to catch a train with a heavy weight on his back.



These cases appear to support Dr. Stephens's view, whilst I think that Dr. F. G. Bushnell's conclusions that "lower wages and longer hours lower the average physical condition" are open to question, as higher wages and shorter hours may lead to poorer food, pernicious amusements, and drinking habits. As regards the reduction of mining accidents following reduction of working hours in 1919, as compared, say, with those in 1908-12, Dr. Bushnell appears to take no account of the maximum time worked, nor of the greatly improved safety of mining (due to one of the best classes of citizens in the country—namely, the colliery managers). If I ride twelve hours in a motor car I am more likely to have an accident than if I ride only seven hours. And I am more likely to have an accident on a dangerous road than upon a safe one. These points Dr. Bushnell seems to have left out of count. And his opinion to account for the increase in accidents in 1923 and 1924 as due to "a worsening of the miners' wages" (the miners being probably the best paid class of workers in the country) will hardly, I think, bear the weight he places upon it.

In my opinion a healthy man or woman who objects to a life of eight hours' work, eight hours' leisure, and eight hours' sleep can hardly be regarded as an ideal or as an average citizen.—I am, etc.,

Newcastle-on-Tyne, Dec. 12th.

T. M. ALLISON, M.D.

#### THE MEDICAL REGISTER: "UNTRACEABLE" PRACTITIONERS.

SIR,—The letter from "Your Adelaide Correspondent" in your issue of December 18th is likely to give an incorrect impression as to the methods adopted by the Council in regard to the correction of the *Medical Register*.

Once in every five years the *Register* is gone through very carefully indeed with a view to eliminating the names of practitioners who have died, or who have ceased to practise. An inquiry in accordance with the provisions of the Act is issued, and if no answer is received a reminder is sent; in those cases in which no answer can be obtained, or in which the inquiry comes back through the Dead Letter Office, efforts are made to obtain further information.

Section 14 of the Medical Act, 1858, states that it shall be lawful for the Registrar to write a letter to a registered person addressed to him according to his address on the *Register* to inquire whether he has ceased to practise or changed his residence, and if no answer is returned within six months it is lawful to erase the name of such person from the *Register*.

The Council, therefore, is under no obligation to do more than to send an inquiry to the registered address, but, within certain limits, it does what it can to trace practitioners by consulting works of reference, Colonial Registers, the Ministry of Health, and the British Medical Association, and, finally, by publishing a list of names of those in regard to whom no information has been obtained. In view of the fact, however, that there are 50,000 names on the *Register* there must be a limit to the search which can be made.

The officials of the British Medical Association at its headquarters are familiar with what is done, and, I think, would be willing to bear witness to the efforts made to trace practitioners, and to the desire of the Council not to erase names if this can be avoided.

No one who was unfamiliar with the work of this office could realize the great difficulties in getting some practitioners to answer inquiries which are sent to them. Medical men are very much occupied, and often have little time to deal with correspondence which they think is not pressing; but I am glad to say that the consistent efforts of the Council in recent years to impress upon practitioners the importance of keeping this office posted with a safe channel of communication is having its result, and practitioners are realizing far more than they did the importance of themselves notifying changes of address, and of answering inquiries which relate to the *Medical Register*, the only book in which the appearance of their names ensures their legal privileges.—I am, etc.,

NORMAN C. KING,

London, W.1, Dec. 18th.

Registrar, General Medical Council.

#### MOTOR CAR INSURANCE.

SIR,—The Medical Insurance Agency, as a result of two unfortunate experiences which have come to its notice in the last few months, desires to draw the particular attention of medical men to the risks they run inadvertently and the liability which they may incur by taking motor car insurance policies with restrictive clauses.

The two most usual clauses are those by which one named driver only is permitted to drive, and by which the assured bears the first £5 or £10 of any claim. Both these restrictions, although saving some small amount in premium, may easily cause loss—perhaps serious loss—and certainly annoyance in the event of a claim arising.

For instance, if a doctor names himself as the only driver of his car, his car will be uninsured while it is being driven by a mechanic on test after overhaul or being returned to the garage by some other person at the doctor's request.

It is almost certain that there will be disagreement between the doctor and the insurance company or underwriters (where the doctor agrees to bear the first proportion of any claim) in cases where the fault would appear to be entirely with the third party. For instance, if a person be knocked down and killed through his own carelessness, the dependants, especially if there be children, are, as experience has shown, almost certain to be awarded something in the shape of compensation, although the owner of the car has been formally discharged free from all blame at the inquest. Such cases then are nearly always settled out of court, the insurance company and underwriters paying whether they have won or lost, rather than be mulcted in heavy law costs.

Regarding damage done by one car to another, the insurance companies sometimes have an arrangement between themselves whereby each side pays its own accidental damage claims, thus avoiding extensive litigation in assessing the blame. However, it should be borne in mind that such an arrangement between the companies does not prejudice the right of the owners of the vehicles to claim against each other for personal injuries at their own risk.—I am, etc.,

L. FERRIS-SCOTT,

Secretary, Medical Insurance Agency.

B.M.A. House, Tavistock Square, W.C.1,  
Dec. 17th, 1926.

#### Obituary.

DR. LAURA WILLIAMS PUGH, medical officer of the Welsh Board of Health (Ministry of Health), died at her home in Brondre, Machynlleth, North Wales, on December 17th. She was the sister of the late Dr. Robert Pugh, medical superintendent of the Joint Counties Asylum, Talgarth, and received her medical education at Birmingham and Edinburgh, graduating M.B., Ch.B. Edin. in 1908. Later she obtained the D.P.H. of the English Conjoint Board. After serving for some years as assistant medical officer at the West Ham Union Infirmary, Leytonstone, she entered the service of the Monmouthshire County Council in 1914 as assistant school medical officer and medical officer in charge of the maternity and child welfare centres of the county. She was also an approved lecturer under the Central Midwives Board, and in that capacity delivered courses of lectures to midwives at the Tredegar Maternity Home. In 1923 Dr. Pugh was appointed by the Minister of Health to be the woman medical officer of the Welsh Board of Health, her duties including the inspection of maternity and child welfare schemes and maternity hospitals throughout Wales. A colleague writes: Dr. Pugh was a very capable officer, and soon became popular with officials of local authorities with whom she came in contact. She was a woman of strong character, and during her short period of office she succeeded in effecting great improvements in maternity and child welfare work in Wales. In February of this year she entered a nursing home in London to undergo an operation, but unfortunately she was found to be suffering from malignant disease for which no relief could be given. After a short period of rest she returned to her duties with characteristic courage until early in November, when she was compelled to retire. Dr. Pugh was devoted to her

work, and, though she well knew that the end was inevitable and could not be long delayed, she resolutely remained at her post until further work was physically impossible. She never thought of herself, but was always anxious to be of service to others. She was one of the most delightful and loyal of colleagues, and will be greatly missed by those with whom she worked at the Welsh Board of Health and by the medical officials of local authorities in Wales.

Colonel HENRY STOKER died on December 1st at the Royal Military College, Duntroon, Federal Territory, Australia. Dr. Stoker came of a very old professional family of three generations; he was the fourth of seven sons of the late Dr. E. A. Stoker of Dublin, all of whom followed their father's lead, with the exception of one, who selected dentistry. His grandfather (1773 to 1845) and father were leaders of professional thought in their time. Dr. Stoker was educated atective College, Trinity College, and the Royal College of Surgeons (Ireland); he obtained the diplomas of L.R.C.S.I. in 1884, L.R.C.P.I. and L.M. in 1885, and the F.R.C.S.I. and D.P.H. in 1895. He early decided to make his home under the Southern Cross; he was appointed sanitary officer to the Port of Melbourne, and his pioneer work in connexion with fly-borne diseases was valuable. His bent, however, was to surgery, and, settling in Wagga Wagga, he developed a large surgical practice, and became one of the leading operators in New South Wales. On the outbreak of war he joined the Australian Army Medical Corps and saw foreign service; he attained the rank of colonel, and after the cessation of hostilities the Federal Government marked its appreciation of his work by appointing him to the Royal Military College, Duntroon. Interested in all forms of outdoor sports, he will be remembered by contemporaries as a prominent member of the Wanderers Rugby Football Club, playing with his brothers, two of whom reached international standing, while he himself just missed this distinction, being selected for the reserves. Colonel Stoker took an active part in the work of the various medical societies of the Antipodes, and made an excellent president, being materially helped on the social side by his wife (a daughter of the late Mr. James Poe of Kilkenny), who was unhappily killed twelve months ago in a carriage accident, in which he also received injuries. He could not be induced to curtail his activities, but continued his work with a fine courage in pain and sorrow. Colonel Stoker leaves two sons.

Dr. WILLIAM ALEXANDER WADSWORTH, who died on November 21st, was educated at Galway, Belfast, and the Royal College of Surgeons in Ireland. He graduated M.D. R.U.I. in 1884, and obtained the diploma L.M.R.C.P.I. in the same year. Four years later he received the B.Ch. He then commenced private practice in Belfast, and later succeeded his two brothers. He was a magistrate of the city, and was keenly interested in the work of the Carlisle Memorial Methodist Church, of which he was a trustee and a member of the quarterly board for over thirty years. He was a member of the British Medical Association.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

As mentioned last week, Parliament was prorogued on December 15th. The following notes refer to medical matters which arose during the last day. A list of Acts of medical interest which were passed and of bills which for various reasons were abandoned is first given.

### New Acts.

Acts which received the Royal Assent on December 15th and came into force immediately included:

**Housing.** (Rural Workers) Act, empowering local authorities to give, with the approval of the Ministry of Health, assistance by grant or loan for reconditioning houses in rural areas provided that for twenty years such houses are occupied by agricultural workers or the like.

**Births and Deaths Registration Act**, requiring stillbirths to be registered; adding safeguards to the law of registration of death and of the disposal of bodies; enabling local authorities to arrange, in certain instances, for the medical inspection of a dead person.

**University of London Act**, setting up a body of commissioners with power to draft certain statutes for the University.

**Wireless Telegraphy (Blind Persons Facilities) Act.**

**Workmen's Compensation (No. 2 Act)**, extending the period during which a review is possible of compensation payments to workers under 21.

**Penal Servitude Act**, increasing the maximum penalties for certain sexual offences.

**Judicial Proceedings (Regulations of Reports) Act**, restricting the reports of divorce proceedings and redefining the law against the publication of indecent details in other cases, including indecent physiological details.

The following statutes, which became Acts on December 15th, come into force later:

**Coroners (Amendment) Act**, regulating the qualifications, appointment and resignation of coroners and deputy coroners, requiring coroners to have either medical or legal qualification, and giving power in certain additional circumstances to hold an inquest without a jury and increasing the fees of medical men for attendance at inquests and *post-mortem* examinations. Comes into force May, 1927, with the exception of Section 4 (abolishing franchise coronerships), which is to be enforced at once.

**Lead Paint (Protection Against Poisoning) Act**, imposing fresh regulations from January 1st on the use of lead paint on internal work, and prohibiting, from November 19th, 1927, with special exceptions, the employment of women and young persons in such work.

**Legitimacy Act**, providing for legitimation by subsequent marriage.

**Public Health (Smoke Abatement) Act**, abolishing the obligation to prove the objectionable smoke is "black," and giving power to take proceedings against the emission of grit, gritty particles, and noxious vapours.

The following Acts of medical importance obtained the Royal Assent earlier in 1926:

**Economy (Miscellaneous Provisions) Act**, reducing by £2,500 annually, from January 1st, the State grant to the Health Insurance Fund, and transferring to the Exchequer a surplus of £1,100,000 from the Navy, Army, and Air Force Insurance Fund.

**Unemployment Insurance Act**, extending the present system of unemployment insurance till December 31st, 1927.

**Boards of Guardians (Default) Act**, authorizing the Ministry of Health to supersede boards of guardians who do not observe the law.

**Adoption of Children Act**, authorizing adoption by sanction of the court.

**Midwives and Maternity Homes Act**, providing for the registration and inspection of maternity homes, amending the Midwives Act, and authorizing a revision of the register of midwives.

**Chartered Associations (Protection of Names and Uniforms) Act**, enabling associations to register uniforms and making the wearing of such uniforms without authority an offence.

Bills abandoned include:

The Factories Bill, Mental Deficiency Bill, Dentists Bill, Offices Regulation Bill, Protection of Animals Bill, Vaccination Bill, and Venereal Disease Act (1917) Amendment Bill. The first was a Government measure.

**Dental Benefit.**—In a reply to Sir Frederick Hall, on December 15th, Sir Kingsley Wood said it was proposed to appoint regional dental officers in connexion with dental benefit treatment as administered by approved societies. Applications for the posts had been invited by advertisements which did not restrict candidature to dentists holding any particular diploma. A Selection Committee had been set up, but appointments had not yet been made.

**Spahlinger Treatment.**—In a reply to Sir Charles Cayzer, on December 15th, Sir Kingsley Wood said local authorities were not encouraged to make use of the Spahlinger treatment for tuberculosis; it was not one of the special benefits to which insurance societies could apply their surplus, and no estimate could be given of the money needed to introduce the system of treatment on an extended scale in this country. The materials for a scientific investigation of the treatment in this country were not forthcoming.

### Notes in Brief.

Out of 11,650,000 persons in Great Britain who are insured against unemployment, 600,000 to 650,000 are estimated to be aged 60 to 69 years.

The use of "brynite" is to be permitted in sausages and sausage meat.

The Home Office will consider whether the introduction to Criminal Statistics should again give particulars of the apparent causes of murders. This return was discontinued in 1905.

Mr. Amery has stated that in Uganda vaccination was compulsory for all natives over 6 months. Exemption was allowed to persons who previously had small-pox, had been successfully vaccinated within five years, were certified to be unfit for successful vaccination, or were found isosusceptible of successful vaccination.

Sir William Bull asked Mr. Chamberlain whether he had been advised on the exact legal position under the Venereal Diseases Act of chemists selling material for prevention together with printed or written directions for its use. Mr. Chamberlain replied, "Yes, Sir."



DEC. 25, 1926]

# MEDICAL NEWS.

THE BRITISH MEDICAL JOURNAL 1247

## The Services.

The attention of medical officers, R.N., is drawn to Admiralty Fleet Orders 575-23 regarding the institution of the North German Memorial Medal. Intending competitors should communicate with the Department of the Medical Director-General before the end of the month.

## DEATHS IN THE SERVICES.

Major Richard James Meredith, R.A.M.C., died suddenly at Wiesbaden on December 6th, aged 45. He was the eldest son of the late Captain Richard Meredith, 6th Foot (Wiltshire Regiment). He was educated at the Catholic University, Dublin, where he graduated M.B., Ch.B., and B.A.O. in 1901; he had taken the L.A.M. in the previous year. After filling the post of resident medical officer of the Government Lock Hospital, Dublin, he entered the army as lieutenant on January 31st, 1905, and became major on October 15th, 1915. He served throughout the recent great war.

## Medical News.

MEMBERS of the British Medical Association are reminded that subscriptions fall due on January 1st in each year, and that if each member who receives an application for his or her subscription from the Head Office will send the amount to the Financial Secretary within the first week of the New Year the work of the office will be very considerably lightened. Members are also reminded of the claims of charity, to which reference is made elsewhere. The amounts at the disposal of those who administer medical benevolence are altogether insufficient to meet the appeals that are received, and the British Medical Association Charities Fund was formed in order to assist. Subscriptions or donations are urgently needed, and every member of the Association is asked to add to his next payment a sum for the credit of the B.M.A. Charities Fund.

Dr. RUSSELL J. RYNSOLDS, physician in charge of the Department of Radiology and Electro-Therapeutics at Charing Cross Hospital, who had been engaged for several years in the production of rapid serial skilograms of the internal organs of the human body in motion on a cinematograph film, submitted a thesis on this subject in September, 1925, for the diploma in March, 1926. He has since continued his experiments, and intends to read a paper on this work before the Röntgen Society on January 11th next. From paragraphs published this week in the newspapers it appears that experiments along similar lines have been in progress in the Anatomical Department at University College, London, and that a demonstration of them will shortly be given in London.

We mentioned a few weeks ago that Dr. Lily Baker had been appointed to the honorary staff of the Bristol Royal Infirmary in charge of the ante-natal department. This is believed to be the first occasion on which a woman has been made a member of the full staff of a teaching hospital in the British Isles, except in connexion with the Royal Free Hospital, London. Other medical women connected with the Royal Infirmary have decided to entertain Dr. Lily Baker at dinner in order to afford her some public recognition of the distinction she has won. The department clinic under the general direction of an ante-natal clinic and the registrar, was responsible for the incidence of difficult results have been most satisfactory, the incidence of difficult and dangerous cases in the obstetric department having fallen by almost 50 per cent. The dinner will take place in Bristol on Friday, February 4th, 1927, under the chairmanship of Miss Frances G. Robinson, M.D., Professor Winifred Collins, D.Sc., Dr. Letitia Fairfield, and Sir Ewen J. Maclean of Cardiff. Tickets (price 10s. 6d. exclusive of wine) can be obtained from Miss F. G. Robinson, "The Towers," Snaydon Park, Bristol. It is hoped that many persons outside the medical profession who are interested in the higher education of, and professional careers for, women will attend.

THE Post-Graduate Hostel opens its new session at the Imperial Hotel, Russell Square, W.C.1, on Tuesday, January 4th, 1927, at 9 p.m., when Dr. Charles E. Goddard will give an address entitled "Lord Lister: by one who knew him." On Thursday, January 6th, at the same hour, Mr. Philip Turner will discuss imperfect descent of the testis. Dinner at 8 p.m. (5s.) and coffee and biscuits can be obtained at 10 p.m. (6d.). All medical practitioners are welcome. Ladies and friends of medical men are also invited to Dr. Goddard's address on January 4th.

THE Fellowship of Medicine announces that the Prince of Wales's General Hospital will hold an intensive course from January 10th to 22nd, 1927, in general medicine, surgery, and the specialties. The daily sessions from 10.30 a.m. to 5.30 p.m. will include demonstrations, operations, general hospital clinics, clinical lectures, and laboratory methods. The formal lectures at 4.30 p.m. are open to members of the Fellowship. Beginning also on January 10th there will be a two weeks' course in diseases of children at the Royal Free Hospital, from January 11th to February 5th, a series of lecture demonstrations on psychological medicine will be given on Tuesdays and Saturdays, at 11 a.m. The National Hospital for Diseases of the Heart will hold a course in cardiology from January 17th to 29th, limited to an entry of 20. For courses in obstetrics at Queen Charlotte's Hospital and the City of London Maternity Hospital personal application must be made to the appointing officer, which can also make arrangements for the appointment of clinical assistants at the Samaritan Hospital for Women. On January 27th the series of lectures arranged by the Fellowship on emergencies in medicine and surgery will be resumed. Clinical demonstrations in surgery and ophthalmology will start in January. Copies of all syllabuses of the special courses, the programme of the general course of work, and the Post-Graduate Medical Journal can be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

Dr. GEORGE JONES, lecturer on forensic medicine and hygiene, London Hospital Medical School, and Dr. G. O. Taylor, M.O.H. Berkshire, have been elected life Fellows, and Dr. R. K. Brown, M.O.H. Bermondsey, Dr. W. A. Daley, M.O.H. Hull, Dr. F. N. Kay Menzies, M.O.H. to the London County Council, and Dr. G. C. Hancock, a medical officer of the Ministry of Health, have been elected Fellows of the Royal Sanitary Institute.

THE National Temperance League has removed to 33, Bedford Place, Russell Square, W.C.1.

THE Minister of Health has issued a circular (No. 751) giving the dates on which the amended regulations, 1925, with reference to preservatives in food will come into operation. Arrangements are being made for the printing of the principal regulations as amended, and copies will be obtainable in Stationery Office.

THE Lead Paint (Protection against Poisoning) Act, 1926, which aims at preventing lead poisoning in the painting of buildings, will come into force on January 1st, 1927. On and after that date every medical practitioner attending on, or called in to visit, a patient whom he believes to be suffering from lead poisoning contracted in or in connexion with the work of painting buildings, is required to send to the Chief Inspector of Factories, at the Home Office, London, S.W.1, a notice stating the name and full postal address of the patient. He is entitled, in respect of every such notice, to a fee of 2s. 6d. Any medical practitioner failing to send such notice is liable to a fine not exceeding 40s.

Dr. FROMENT, the well known neurologist of Lyons and joint author of a work on hysteria with Dr. Babinski, was recently stabbed in the lung by one of his patients during a visit to the hospital and lies in a precarious condition.

THE restrictions imposed on the movements of the cadets and staff of the Royal Military Academy, owing to the occurrence there of cases of poliomyelitis, were withdrawn on December 13th; but all public entertainments in Woolwich were placed out of bounds for the remainder of the term, and the careful medical inspection of the cadets, already described, was maintained. The restrictions on the movements of the cadets and staff of the Royal Military College, Sandhurst, which had been imposed by the War Office owing to the occurrence of cases of poliomyelitis at Camberley, were withdrawn on December 11th, but the village of Camberley remained out of bounds until the end of term. Owing to the occurrence of a case of infantile paralysis in the family of one of the staff the restrictions had to be reimposed. The term has, however, now come to an end at both institutions and the cadets have dispersed to their homes.

UNDER the will of the late Mr. A. B. Bosher of Tunbridge Wells one-half of the residue of his real and personal estate, amounting to between £20,000 and £100,000, is left to the Lord Mayor and Corporation of London for distribution among such hospitals in the administrative County of London as they may select.

THE German Museum of Hygiene at Dresden has recently been made the seat of an Academy of Hygiene under the direction of Professor Weisbach.

PROFESSOR FERDINAND SAUERBRUCH of Munich has succeeded Professor Otto Hildebrand in the chair of surgery at Berlin University, and Professor Stopp has succeeded Professor Minkowski as director of the medical clinic at Breslau.

## Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the **BRITISH MEDICAL JOURNAL** alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

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All communications with reference to ADVERTISEMENTS, as well as orders for copies of the **JOURNAL**, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the **BRITISH MEDICAL JOURNAL** are **MUSEUM-9361, 9362, 9363, and 9364** (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

**EDITOR** of the **BRITISH MEDICAL JOURNAL**, *Aitiology Westcent, London.*

**FINANCIAL SECRETARY AND BUSINESS MANAGER** (Advertisements, etc.), *Articulate Westcent, London.*

**MEDICAL SECRETARY**, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumshough Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

### QUERIES AND ANSWERS.

#### TRANSLUCENT TISSUES.

MR. STANLEY F. ---  
Institute, Sek  
Moore's Inguin

Spaltzholtz consists of injection of the vessels, followed by thorough dehydration, bleaching, and clearing by benzol and oil of winter green, and finally, mounting in this oil, glycerin, or liquid paraffin. It appears, therefore, that the method is scarcely applicable to the cornea of the living human eye.

#### SUNLIGHT CLINICS.

A CORRESPONDENT who is interested in the establishment of a sunlight clinic and children's hospital asks for advice as to the best type of lamp. Opinions, as he has found, differ widely, and we cannot profess to speak with authority, but we are advised that for general artificial sunlight baths the carbon arc type is the more efficient, inasmuch as it gives off a larger amount of rays. It compares unfavourably with the mercury vapour lamp as regards running expense, and also from the point of view of attention, the carbons requiring constant care. Also it is not suitable for local treatment, whilst the mercury vapour lamp is. The firm of W. E. Schall, 75, New Cavendish Street, London, W.1, has issued a bulletin (No. 1002) on ultra-violet therapy which would perhaps prove useful in making a choice; apart from illustrations and particulars as to cost, etc., there a few pages in which the theory and various points as to the different lamps are discussed.

#### INCOME TAX.

##### Assessment of Practice: Cash Basis.

"A. M. M." succeeded to a practice on September 1st, 1924, and for the year to April 5th, 1926, he was assessed on the average of two years and five months of his predecessor's earnings *plus* the earnings of himself for the seven months to March 31st, 1925—both periods being dealt with on the cash basis. The inspector has now objected to accepting the accounts for the following year (to March 31st, 1926) on a cash basis, and apparently intends to claim an adjustment, for the purpose of the assessment for 1926-27, which will cover the original seven months' account. Is this justified?

In our opinion it is justified, at any rate for the purpose of the 1926-27 assessment. It is necessary for "A. M. M." to bear in mind that as his predecessor's collection of cash for his own services is not reflected in the amount of the profits declared for the seven months to March 31st, 1925, that amount is less than the full earnings of the practice to include the value of debts being placed on the books. There was, so far as we are aware, no such factor in the case of "C. W. S.," referred to by our correspondent. The principle involved is fairly plain. A practitioner is liable on the full earnings of the practice, whether received in cash or not; where, taking one year with another, the cash receipts fairly reflect the gross earnings, then there is no reason why troublesome and difficult estimates as to the probable value of outstanding debts should be necessary. But when the fundamental condition fails the cash basis cannot properly be insisted upon—especially as a practitioner ceases to be liable on his receipts as soon as he retires from the practice.

#### Motor Car Transactions.

"L. S. G." bought a 11.9 h.p. X car in December, 1922, for £340 (present-day price £275) and sold it in December, 1926, for £90, buying a 14-h.p. car of similar make for £295. What allowances are due?

\*(1) Depreciation allowance for 1925-26 at 20 per cent. on, say, £200—that is, £40; for 1926-27 on £200-£40=£160—that is, £32; for 1927-28, £295 at 20 per cent.—that is, £59. (2) Obsolescence allowance to be deducted in computing the amount of the profits for 1926-£275, less £90=£185, less depreciation allowances on car displaced—that is, £72—that is, £113.

#### Assessment of Garage.

"H. K." has rented a piece of land on a seven years' agreement for £3 3s. per annum and erected thereon a garage at a cost of £75. The local authorities' permission was granted as for a temporary structure only and must be renewed annually. Is the property assessable to tax on the annual letting value, or merely on the amount of the rent?

In our view on the full letting value, assuming as we do that the structure is built into or rests directly upon the soil. The rental value placed upon it, however—namely, £18—seems high, as compared with the cost and the rent paid, but we have, of course, no means of judging the local demand for garage accommodation.

### LETTERS, NOTES, ETC.

#### MINERS' SHORTER HOURS.

DR. J. M. MACPHAIL (Middlesbrough) writes: Dr. Arthur Stephens's conclusions (November 13th, p. 905) make one think, be his statistics right or wrong. In the industrial North the men feel that with modern speeding-up men of over 50 years are not likely to be much in demand. It has been a pleasing theory for many years amongst those who do not overwork that "work never kills, but worry." Yet a good worry may even keep people alive. I have seen many deaths due to hard work and but few to worry.

#### NOMOGRAPH FOR THE DUBOIS FORMULA.

DR. JAMES KERR (Colinton) writes: Attention has been called by Dr. W. M. Feldman to omission of his name or any reference in connexion with a nomogram used on page 97 of the first issue of my recent book on *The Fundamentals of School Health*. This was a pure accident, due to transfer of the figure from the chapter on "statistics" to that on "nutrition." In a work where there are some thousands of references some errors of omission or commission were almost bound to occur. In this case the omission was dropping of the reference (*Lancet*, 1922, i, 273).

A review of Dr. James Kerr's large and important work was published last week (p. 1184).

#### VERMINOUS HOSPITALS.

MR. A. I. --- the course  
of a ne  
Harmar, in  
his art  
on issue of  
November 27th, refers to verminous hospitals of a bygone age, and states that "to-day we know nothing like them," citing as the last recorded example a "baggy" hospital in South Africa during the war in 1900. For many nights in August and September, 1918, when in No. 11 lazaret in Spandau, near Berlin, as a wounded prisoner of war, my sleep was disturbed and prevented by bed-bugs. I caught, identified, and destroyed many and displayed them to the German authorities, whose invariable reply was a shrug of the shoulders, and by whom no action whatever was taken. Later, at Beeskow-in-der-Mark, Brandenburg, I found the beds infested by fleas.

#### AN ADVERTISEMENT AGENT.

WE are informed by Dr. Kerr, M.O.H. Newcastle-on-Tyne, that a person representing himself to be an agent for "Valdar's Medical Blue Book" (177-8, Fleet Street) has recently called upon the manageress of a nursing home in Newcastle, stating that he had a list of nursing homes divided into "good" and "bad," and inviting an advertisement of the home in the "Blue Book." He appears to have stated that the classified list had been supplied by the medical officer of health, but Dr. Kerr informs us that he did not supply it. There seems some reason to believe that an agent of the book has been canvassing in London, and it is possible that he may have extended his activities to other towns. The Headquarter offices of the British Medical Association know nothing of the project.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments are found at pages 35, 38, 39, and columns; and advertisements as to and locumtenencies at pages 36 and 37. A short summary of vacant posts notified in the advertisement column appears in the *Supplement* at page 260.



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# INDEX TO THE EPITOME FOR VOLUME II, 1926.

READERS in search of a particular subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings—such, for instance, as Brain and Cerebral; Heart and Cardiac; Liver and Hepatic; Renal and Kidney; Cancer and Carcinoma; Epithelioma, Malignant Disease, New Growth, Sarcoma, etc.; Child and Infant; Bronchocele, Goitre, and Thyroid; Diabetes, Glycosurin, and Sugar; Eye, Ophthalmia, and Vision, etc.

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### Medicine.

#### 1. The Etiology of Achondroplasia.

C. GLAUME (*La Pédatrie*, April 1st, 1926, p. 359) reports a case of achondroplasia in a boy, aged 2½ years, who had been under observation since he was 13 months of age; there was no prenatal history in either parent, who both seemed healthy. The mother had had eight full-term pregnancies and two abortions at six months. The patient was born at term after a labour complicated by the size of the head and by hydranios; the achondroplasia was noticed at birth. The child's head increased in size for a few months until he was treated with mercury, when it diminished. The hydrocephalus was still present to a moderate degree at the age of 2½ years. The superficial lymph glands were palpable. The Wassermann reactions in both parents were strongly positive and in the patient weakly positive. The chief interest of the case lies in its syphilitic origin, and Glaume thinks that insufficient attention has been paid to syphilis in the past in considering the origin of achondroplasia, although other toxic infective factors, such as tuberculosis and alcoholism, may also have an effect on the amniotic sac and fluid where during the three to six weeks of development, as shown recently by Muck Jansen, a retardation of development or a sudden increase of fluid compresses or rolls up the embryo. This causes local or general ischaemias the effects of which are most marked on those tissues which are in the process of most active development—namely, the cartilage bones. In Glaume's experience hydranios is nearly always syphilitic, as was also the hydrocephalus in this particular case.

#### 2. B. bronchiseptica Infection simulating Pertussis.

J. HOWARD BROWN (*Bull. Johns Hopkins Hosp.*, February, 1926, p. 147) records the case of a girl, aged 5 years, who had been in the habit of fondling a rabbit which had slight nasal discharge and was sneezing frequently. Ten days after she had been separated from the animal she developed a paroxysmal cough accompanied by a well defined whoop. These symptoms persisted for about a month and then gradually subsided. Examination of throat swabs did not show *B. pertussis* but *B. bronchiseptica*, which was also isolated from the nares of the rabbit. Only one previous example of *B. bronchiseptica* infection in man has been recorded. The case, which was reported by McGowan, was one of very irritating chronic nasal discharge in a man who had been constantly handling rabbits and guinea-pigs in the laboratory. Brown, however, is of opinion that the close association of children with pet animals and the wide prevalence of *B. bronchiseptica* infection among these animals indicate that human infection with this organism may be commoner than is recognized. He suggests that in many supposed cases of pertussis the patient is needlessly quarantined, and that if cases of *B. bronchiseptica* infection were correctly diagnosed there would be fewer cases of pertussis without a history of exposure to other cases.

#### 3. Perforation of the Lung and Mediastinal Hernia in Artificial Pneumothorax.

G. SAYAGE (*La Méd. Ibère*, February 13th, 1926, p. 185), who reports two illustrative cases, states that the mechanism of perforation of the lung in artificial pneumothorax may be either exogenous or endogenous. In the first case an adhesion becomes torn off at the point of its insertion into the lung, and in the second case the lung substance ruptures at the site of a pneumonic patch or a cavity. Clinically a distinction may be made between perforation occurring in cases already complicated by effusion and those occurring in cases with a healthy pleura. The former are the most frequent, and in such cases the perforation is due to ulceration of the lung substance. When the perforation occurs without any pre-existing pulmonary complications the exogenous mechanism is responsible. In these circumstances the rupture is attributable to an effort on the part of the patient, or more commonly to an excess of intrapleural tension caused by insufflation of large quantities of gas. Both the cases recorded by Sayage ended fatally—one with symptoms of shock due to a valvular perforation, and the other as the result of an extensive empyema. In the first case the perforation was attributable to a too early increase of intrapleural pressure, and in the second case to physical effort. Perforation of the lung, according to almost all authorities, is usually fatal, and if it was not so uncommon

would constitute a serious objection to artificial pneumothorax. According to Forlanini it occurs in 5.7 per cent. of all artificial pneumothorax cases. Bernard's estimate is 4.6 per cent., and Dumarest's 5 per cent. Only a few cases, such as three reported by Roventós, have ended in recovery. The treatment should be symptomatic at first and consist in evacuation of the fluid, followed in some cases by pleural lavage. In other cases treatment should be confined to tonics or sedatives, while those in which empyema has developed require pleurotomy. Subsequent treatment consists in thoracoplasty. Mediastinal hernia, which was first described by Stielmann and Rosenblatt in 1919, occurs in 15 per cent. of all cases of artificial pneumothorax. Its frequency is greater in women than in men. Except in a case observed by Sayage all have occurred on the right side without there being any obvious reason to explain this. All the cases which Sayage has seen have been in patients below the age of 25 years. Hernia usually occurs with a low intrapleural pressure and with little or no deviation of the mediastinum, which shows that its occurrence requires anatomical rather than mechanical factors. The symptoms of mediastinal hernia are scanty, and the condition is usually only discoverable by radiological examination. In some cases there is slight dyspnoea on exertion and a sense of oppression in the infraclavicular fossa on the side opposite to the treated lung, and occasionally a troublesome cough. As regards treatment, in most cases it is sufficient to prolong the interval between the refills or to reduce slightly the intrapleural pressure.

#### 4. Enlargement of the Spleen in Measles.

A. BLEYER (*Amer. Journ. Dis. Child.*, January, 1926, p. 26) found that enlargement of the spleen occurred in a majority of two independent groups of cases of measles seen during three successive winters in St. Louis, and numbering altogether almost 400 persons. The enlargement of the spleen coincided with the eruptive stage, being most frequent and marked on the third and fourth days of the rash. Contrary to what might have been expected, the severity of the attack did not make the incidence of splenic enlargement higher than in milder cases.

### Surgery.

#### 5. Treatment of Recurrent Dislocation of the Shoulder.

E. KÖNIG (*Zentralbl. f. Chir.*, May 8th, 1926, p. 1174) claims that Kirschner, in 1911, first introduced the method of attaching the humeral head to the acromion and clavicle by the extra-articular transplantation of strips of fascia. König states that since that date ten operations for this condition have been performed at Kirschner's clinic and that no complication occurred. The wounds healed by primary union, and in all cases there was free mobility of the joint four or five weeks after the operation. Of these 10 cases, 7 were examined from four to fifteen years after the operation. Recently 3 other patients had been operated upon and were free from recurrence, but among the 7 earlier cases recurrence followed in one. Two patients, one of whom was an epileptic, died six months after the operation without there having been recurrence. The other 4 patients remained cured after several years, 3 of them after twelve to fifteen years. Kirschner has modified his technique by cutting the fascial strips as long as possible in order to permit free movement in all directions. After operation he fixes the arm for fourteen days at an angle of 90 degrees' abduction from the chest wall, and with the elbow also flexed at this angle.

#### 6. Trauma as a Cause of Malignant Growth.

J. EWING (*Amer. Journ. Surg.*, February, 1926, p. 30) criticizes the prevailing tendency to attribute the onset of malignancy to some trauma, single or repeated, and refers particularly to the problems associated with compensation claims of this kind in various industries. He mentions several cases in which the suspicion of a traumatic etiology of a malignant growth was removed by critical examination of the history and of the patient; he also gives reasons why modern conditions in industry do not for the development of malignant disease can be accepted as the cause of a tumour special care must be taken to establish the authenticity and sufficient severity

of the injury. It must be shown also that the part wounded was previously free from malignant involvement and was identical with the origin of the tumour. Again, the structure of the new growth may preclude a traumatic origin; such forms as dermoid cysts, mixed tumours of the salivary glands, neurosarcoma, and endothelioma of the dura mater are known to arise from congenital disturbances and cannot well be attributed to injury. There must be a proper time interval between the occurrence of the injury and the appearance of the tumour, depending on its nature, and it must be remembered that a part already affected with undetected malignant disease is more easily and obviously injured than healthy tissue. The author mentions two cases in which a definite injury was shown to give rise gradually to malignant disease. In the first case a healthy man injured his knee-cap; the haemorrhage and swelling never subsided, and in the end a very cellular spindle-celled periosteal sarcoma developed. The second case was that of a boy struck on the inner side of the thigh; an x-ray examination showed slight damage to the periosteum and an erosion of the shaft of the femur. A later x-ray examination justified a diagnosis of osteogenic sarcoma. Ewing states that a period of three years has sometimes been considered the longest interval which may elapse before a trauma can be rejected as the possible cause of malignant growth, but no uniform rule is possible. He adds that experimental efforts to produce cancer by various forms of single trauma have been unsuccessful, and he concludes that more careful investigation is necessary before it can be assumed that malignant disease is not uncommonly referable to injury.

#### 7. Tumours Round the Knee-Joint.

R. GOUVERNEUR and A. LEBLANC (*Bull. et Mém. Soc. Nat. de Chir.*, May 8th, 1926, p. 454) record three cases of tumours arising in the neighbourhood of the knee-joint in young subjects between 20 and 27 years of age. They were found on the outer aspect of the knee-joint near the superior tibio-fibular articulation and were ovoid and hard. They did not appear to communicate with the joint itself as certain cysts arising in the popliteal space are sometimes found to do. At the operation also no pedicle or communication with the joint was found. They appeared to arise from the fibrous tissue in the outer aspect of the knee where this is particularly thick and well developed. The authors state that an interesting feature of these tumours is their tendency to recur after removal, without any evidence of malignancy. In one case after removal a thickening in the same spot was noticed three months later; a second operation removed a similar tumour and the patient appeared to be cured six months later. Histological examination showed that these growths were cystic tumours, at first of a fibrous nature and later undergoing myxomatous degeneration.

#### 8. Prostatic Calculi.

M. MAISONNET (*Journ. d'Urol.*, April, 1926, p. 350) records two cases of calculi found in the prostate; he thinks that such calculi do not arise from the so-called prostatic concretions. In one case the patient gave a history of renal colic twelve years previously, and this may possibly have been the starting-point of a renal calculus becoming lodged in the prostate. The second case appeared to be undoubtedly primary, as the calculus developed in the prostate itself. Neither prostate showed any evidence of inflammatory trouble: one was a typical adenoma, the other showed signs of multiple cystic formation. Both patients came for treatment on account of trouble on micturition, and radiographs revealed the presence of calculi. Removal by the urethra appeared impossible, and Maissonnet thinks that removal by the natural passages will be only exceptionally feasible. In both cases the calculi were removed by suprapubic prostatectomy; the operation was quite easy and the results have been most satisfactory. Radiographical illustrations are given of the prostatic calculi before and after removal.

#### 9. An Anomalous Position of the Appendix.

H. KÖHLER (*Zentralbl. f. Chir.*, May 1st, 1926, p. 1115), who records a case of ectopic appendix, states that in anatomical textbooks four positions only for the appendix are described—the pelvic, superior ileo-caecal, inferior ileo-caecal, and retrocaecal. The author's patient was a girl, aged 15, who had all the usual symptoms of acute appendicitis. An operation was performed, and the appendix, which had a short mesentery, was found to spring from the antero-inferior surface of the ileum, 2 cm. from the ileo-caecal valve. On opening the peritoneum the appendix could not be seen or felt, being deeply situated behind the caecum. It was densely adherent to all the surrounding structures, so that it was only after it had been freed from these that its anomalous origin was discovered.

## Therapeutics.

#### 10. Local Vaccine Therapy in Chronic Urethritis.

O. MICHAELIS (*Brucelles Méd.*, May 2nd, 1926, p. 789) states that the majority of cases of chronic gonorrhoeal urethritis are due to a mixed infection of *B. coli*, staphylococci, and other organisms, with or without gonococci. Urethral filaments are usually due to infection of Littre's glands. When urethroscopic examination reveals a pinhead bulbous appearance of the orifices of these glands the author removes the lamp, leaving the urethroscope *in situ*; through the tube he introduces a wooden probe, 35 cm. long, armed with cotton-wool. The orifices are first rubbed thoroughly with a mixture of equal parts of tincture of iodine and alcohol. After one or more such applications at intervals of two or three days the author gives an intraprostatic injection of Bruschettini's antipyogenic and antigenococcal vaccines, rubbed in with the wooden probe. After five or six applications the cotton-wool ceases to be blood-stained and the urethral filaments become less prominent, but the subsequent mucous secretion persists until twenty or thirty applications have been made. The author agrees with Bruschettini that the activity of the antipyogenic vaccine is not due to the small quantity of ether added as a preservative; that the antigenococcal vaccine has a less definite effect—probably by reason of the mixed infections in chronic cases; and that these vaccines are too irritant in acute and subacute gonorrhoea. The author claims that by this method scarring, infiltration, and stricture are prevented. As there can be little doubt that gleet is contagious, it is necessary to examine the mucous secretion frequently for gonococci. These may be found present in a smear after eight or even ten negative examinations. Local antipyogenic vaccine therapy properly applied may be very efficacious in these chronic cases. It is probable that the gonococci disappear as the catarrhal congestion of the mucosa clears up.

#### 11. Trinitrine in Arterial Hypertension.

C. MATTEI and J. DIAS-CAVARRI (*Bull. Soc. de Thér.*, April 14th, 1926, p. 107) carried out a series of observations with the oscillometric sphygmomanometer to determine the action of trinitrine in arterial hypertension. The results were as follows. Trinitrine lowered the maximal pressure by 2 to 4 cm. in three out of nine patients. A short stage of hypertension generally preceded this fall, which was most pronounced ten to twenty minutes after ingestion of the drug. The minimal pressure remained unchanged. In six out of nine cases the oscillometric index showed a remarkable increase with acceleration of the pulse, exactly as occurs after administration of sodium nitrite. The increase in the oscillometric index reached its height seven to twenty minutes after the trinitrine had been taken. Both the index and the pulse returned to normal in two hours' time. All these changes were very transient and disappeared on the day after the drug had been discontinued. The authors conclude that trinitrine is a drug of which the hypotensive effects are unreliable and transient. Moreover, trinitrine, like sodium nitrite, presents the disadvantage of increasing the oscillometric index without appreciably lowering the arterial tension. These drawbacks prevent trinitrine ranking as a good hypotensive remedy.

#### 12. Non-specific Protein Therapy.

J. JARCHO (*Méd. Journ. and Record*, February 17th, 1926, p. 237) has been using non-specific protein therapy in the treatment of pelvic infections with considerable benefit. He disagrees with the observations by some investigators that the rapid febrile reaction following the injection of milk is the healing factor and that the injections are followed by a marked leucocytosis. He states that these severe reactions are due to the presence of micro-organisms in the milk, and they can be greatly reduced by the use of pasteurized certified milk, or milk in the form of "aolan," a proprietary preparation which he used in his cases. Milk does not cause even a perceptible local reaction when the fat has been removed by centrifugalization. His method of administration was to inject 5 c.cm. of milk, or a smaller quantity in very sick patients, into the gluteal region; this injection was repeated at intervals of three to five days for a number of injections. Jarcho's cases required from three to eight injections, the third and subsequent doses being 10 c.cm. Following the injection there was a slight reaction consisting of malaise to a greater or lesser extent and pain in the abdomen, but only in the very sick was there a marked rise in temperature. The leucocytosis always increased by 2,000 to 5,000 per c.mm. within six hours after the initial injection and gradually disappeared within twenty-four hours; it tended to decrease after each injection. The majority of Jarcho's patients showed a remarkable improvement after the reaction of

the first injection; he therefore strongly recommends the use of this treatment in cases of pelvic infection, in conjunction with dieting, fresh air, and other supplementary measures.

#### 13. Treatment of Varicose Ulcers.

R. H. DAVIS (*Arch. of Derm. and Syph.*, April, 1926, p. 519), during the last two and a half years, has treated 55 cases of varicose ulcers by the following preparation: boric acid 63 grams, potassium hydroxide (attek) 28 grams, water 200 c.c.m. The procedure is as follows: any crusts present are removed from the base of the ulcer, and the solution, diluted one-half with water, is mopped gently on the ulcer. A variable amount of pain ensues, usually not lasting more than fifteen to twenty minutes. Simple Lassar's paste (zinc oxide, starch, and vasoline) is then applied twice daily. If possible the application should be made three times a week at least. In the majority of cases so treated a cure was effected in from a few weeks to four months.

#### 14. Mercurochrome in Acute Infections of the Central Nervous System.

W. H. HENGSTLER (*Minerota Med.*, May, 1926, p. 240) reports three cases of infections meningitis, following middle-ear infection, which were treated by the injection of a 1 per cent. solution of mercurochrome into the spinal canal. Death followed in each case, and the author doubts whether the drug has any value in these diseases. Moreover, using intravenous injections of 5 mg. of mercurochrome for each kilogram of body weight, they have observed no satisfactory results in acute epidemic encephalitis, though they report that J. W. Vischer obtained marked improvement in two cases using a rather smaller dose. Hengstler therefore concludes that, although mercurochrome appears to have been so valuable in septic infections elsewhere, it has no beneficial action on infection of the central nervous system.

## Dermatology.

#### 15. Cutaneous Myomata.

O. ANGELELLI (*Il Pollicino*, February 15th, 1926, p. 69) reports a case of cutaneous myoma occurring on the foot of a child aged 3, and discusses the condition. After referring to various records of similar cases he deals with the etiology; of the various hypotheses suggested he prefers the vascular theory. These tumours, which are usually small but may reach the size of a Tangerine orange, may be solitary or multiple. They are generally tender on pressure and painful at times, but may be quite painless; they are always hard in consistence, never ulcerate, and are attached to the skin, which is usually unaffected. Although more often seen in adults, they may appear at any age; they are slow in developing and persist for many years. They have to be distinguished from tuberculous or syphilitic lesions, from neuromata, mycosis fungoides, fibroma molluscum, and retention cysts; usually there is no difficulty in diagnosis. They are made up of smooth muscle fibres and connective tissue. Drawings of the histological appearance of the tumour in the author's case are given, and a bibliography of the most important literature on the subject.

#### 16. The Cholesterol Content in Skin Disease.

R. BERNHARDT and G. ZALEWSKI (*Ann. de Derm. et de Syph.*, March, 1926, p. 171) think that it is now well established that a high cholesterol blood content exists in those skin diseases which are marked by pruritus, and is absent in such conditions as psoriasis, which are not associated with pruritus. Their own investigations include over 300 cholesterol estimations made in 100 patients suffering from various dermatoses. In skin suppuration of all kinds they found high cholesterolinemia, as also in lupus and suppurating tuberculides; in a group of conditions including lupus erythematosus, the papular forms of Boeck's sarcoid, and mycosis fungoides, usually regarded as having affinities with tuberculosis, the cholesterol content was also increased. In epithelioma it was increased; their highest figures were recorded in furunculosis. Psoriasis seemed to be about the only skin affection in which there was a manifest diminution of cholesterolin. They think that the frequent occurrence of pyogenic skin affections, especially those of staphylococcal origin, may be responsible for the high cholesterolin content found in seborrhoeic eczema and in occupational dermatoses. Cholesterolin cannot, the authors consider, be definitely classed as a protective substance, or as a toxin, but, since it is either formed or deposited in the suprarenal capsule, it is probable that some endocrine factor is concerned.

#### 17. Primary Benign and Malignant Melanoma of the Skin.

L. MCCARTHY and L. K. McCAFFERTY (*Brit. Journ. of Derm. and Syph.*, March, 1926, p. 101) discuss the origin of the cells of pigmented naevi of epithelial and mesenchymal derivation in primary benign and malignant melanoma of the skin, also the origin and nature of the pigment. Benign melanomata (moles or pigmented naevi) are more of the nature of local developmental defects of the skin than of real tumours, but they may develop into malignant tumours, the naevocarcinomata, and all malignant tumours arising from such naevi will be naevocarcinomata and not naevosarcomata or melanocarcinomata. The so-called blue naevus is of mesenchymal origin, and the cells are identical with those of the mongolian spot, and malignant degenerations of this type of naevus result in naevosarcomata. When a naevus takes on malignant changes it rapidly enlarges, becomes red and then more deeply pigmented; with the subsequent ulceration a number of small tumours appear in the immediate neighbourhood. After remaining quiescent for years a blue naevus may suddenly take on active proliferative changes and develop into a naevosarcoma with invasion of the lymph glands and widespread metastases. A melanocarcinoma originates from normal epithelial cells which have not undergone a naevoid metaplasia, and these pigmented spots, after a slow progressive extension in all directions, eventually give rise to a malignant tumour the cells of which are identical with those found in a naevocarcinoma.

#### 18. Larva Migrans.

N. MELCZER (*Dermatol. Woch.*, March 20th, 1926, p. 385) reviews the literature and reports two cases of "creeping eruption," which is caused by the larva of *Gastrophilus equi* (gadfly). Many cases have now been recorded of human patients, especially children, being attacked by these larvae, which produce a long serpentine track by tunnelling between the skin and the subcutaneous areolar tissue. In Melczer's first case, a child, during eighteen days' observation the larva burrowed from the left flank to the loin and the left gluteal region. The serpentine tunnel terminated in a depressed hyperemic area as large as a farthing and was surrounded by an urticarial zone. This area was excised under novocain anaesthesia. In his second case, a man, aged 28, was stung at the side of a metacarpophalangeal joint; two days later the site became inflamed and an advancing red sinusous raised line was seen on the side of the finger, extending up to the terminal phalanx. The small black splinter-like parasite was removed with a needle and identified under the microscope. The treatment recommended by various writers includes excision, electrolysis, and the injection of 0.5 per cent. carbolic acid lotion, alcohol, ether, or chloroform. These are sometimes very painful and may give rise to necrosis and also localized scarring.

19. O. K. SCHOLL (*Dermatol. Woch.*, April 3rd, 1926, p. 467) has seen a number of cases of "creeping eruption" in Rio de Janeiro and recommends the application of chlorethyl. If this fails to destroy the larva he uses carbon dioxide snow, applied freely in order thoroughly to freeze the skin over the larva. When the parasite is in a region in which a scar will not disfigure the patient, a well planned excision is, he thinks, the most certain method.

## Obstetrics and Gynaecology.

#### 20. Serological Diagnosis of Pregnancy.

H. RUNGE (*Zentralbl. f. Gynäk.*, May 15th, 1926, p. 1297) refers to the work of Hirsch and his co-workers, who have applied the interferometer to the diagnosis of pregnancy and other conditions by Abderhalden's reaction. During early pregnancy they were able to detect in this way a lysis by the blood serum of the protein in placental extracts. By similarly using as substrate extracts of myomatous, carcinomatous, and other pathological tissues they claimed to have found in the serum reactions which were of diagnostic significance. Runge has tested the value of the interferometric reaction in 150 cases, chiefly of early pregnancy. Although he found that the average destruction of placenta substrate was greater in the serum of patients from two to nine months pregnant than in that of non-gravid patients, he reports that the variations are so wide as to rob the action of diagnostic value. Thus in 28 per cent. of non-pregnant patients a positive reaction for pregnancy was given, and in 33 per cent. of late pregnancies the test was negative. Successful prophesies as to the sex of the foetus have, it is said, been made by interferometric tests of the maternal serum against substrates of testis and ovary, but Runge has not found that the test possesses any value in this connexion.



## 21. Treatment of Uncomplicated Gonorrhoea in the Female.

H. W. MARTIN (*Med. Journ. and Record*, February 17th, 1926, p. 246) considers that in order to treat successfully acute gonorrhoea in the female there must be as good drainage as possible, and frequent or semicontinuous medication to the vagina with an agent which does not react chemically with the normal and pathological secretions and be thus rendered inactive. In his opinion acriflavine meets this requirement, and although so far he has used it in only a small series of cases the results have been exceptionally good. The procedure he employs is to teach the patient first to douche the vagina, and then when she is lying on the back with the buttocks slightly raised 25 c.cm. of a 1 in 500 to 1 in 1,500 solution of acriflavine are injected into the vagina through a Day syringe, the patient retaining this position for at least half an hour. By this means, owing to the filling of the vagina, the acriflavine has ample opportunity to penetrate the walls and the mucous glands of the cervix and endocervix, but it is not precipitated, as are most silver salts, when injected. This practice, repeated twice daily by the patient and combined with general treatment, will, in most cases, rapidly relieve gonorrhoeal cervicitis and vaginitis. It has no effect on infection of Bartholin's glands and the Fallopian tubes. Protargol may be used with equal efficacy in this way, but vaginal suppositories, sprays, and painting the vagina and cervix have been found very unsatisfactory by the author.

## 22. The Second Stage of Labour.

J. B. DELEE (*Surg., Gynecol. and Obstet.*, May, 1926, p. 701), discussing the principles of the technique of the second stage of labour, considers it imperative that the accoucheur should be in personal attendance to protect against infection, injury, and complications, to relieve pain, and to safeguard the infant. Besides the observance of strict asepsis and antisepsis attention should be paid to keeping up the mother's strength and resistance to bacterial invasion, preventing loss of blood, and the avoidance of mental and physical exhaustion and injury. By allowing the head to descend slowly and without intervention, and by the judicious use of anaesthetics, the possibility of injury to the pelvic connective tissues is prevented; this affords the best guarantee against infection and later trouble. The routine use of pituitrin in this stage is condemned. A timely episiotomy may save perineal damage and relieve the foetal head from injurious pressure. DeLee regards the abolition of pain as a primary duty in the second stage, and prefers ether as the anaesthetic. He considers that too little attention is often paid to the preservation of the life and health of the child, and advocates frequent auscultation of the heart. A decrease in the heart beat to 100 or less indicates that the child is in danger and should be extracted; during its birth the eyes, lungs, navel, and intestinal canal must be protected against infection. The possibility of such complications as abruptio placentae, rupture of the uterus, eclampsia, and cardiac collapse must not be forgotten.

## Pathology.

## 23. Estimation of the Curative Value of Antidiphtherial Toxin.

T. MADSEN and S. SCHMIDT (*Ann. de l'Inst. Pasteur*, April, 1926, p. 300), using Ramon's flocculation test, have studied the problem why there is no absolute parallelism between the antitoxin titre of a serum and its curative power. They find that the time taken for a precipitate to form in a diphtherial toxin-antitoxin mixture varies according to the source of the antitoxin. Thus the serum from one horse may combine *in vitro* with toxin in a small fraction of the time taken by the serum from another horse, even though the antitoxin titres of the two serums are the same. A similar difference in the rate of neutralization can be demonstrated *in vivo*; one serum injected intravenously into a rabbit previously inoculated with toxin will completely neutralize the toxin in a few minutes, whereas another serum may take as long as fifteen hours. The rate of neutralization, like the rate of flocculation, is independent of the antitoxin titre of the serum; it depends on the animal furnishing the serum, and in any one animal it remains practically constant throughout the course of immunization. It can also be shown that there is a close relation between the rate of combination of a serum—or its "avidity," as the authors call it—and its curative power. In one experiment they found that a serum containing 250 antitoxin units and taking seventy-five minutes to flocculate was able to neutralize toxin immediately—tested by the intravenous injection of rabbits; of this serum only 10 units were required to save rabbits that had been injected one hour previously with six lethal doses of toxin. Another serum containing 150 antitoxin units and taking fifteen hours

to flocculate required fourteen hours to neutralize toxin; of this serum 150 units were required to save rabbits injected with toxin. There are thus two important properties of a serum: (1) its antitoxin content, and (2) the avidity it has for toxin. It is possible that the use of serums having a high index of "avidity" may be of special value in the treatment of diphtheria.

## 24. The Function of the Appendix.

F. MOUTIER and R. FOUCHÉ (*Presse Méd.*, April 28th, 1926, p. 532), discussing the function of the appendix, deny that it is a regressive organ, since it appears only in the more advanced animals. They give evidence favouring some of its suggested functions, including the production of an external secretion, the provision of a defence against bacterial invasion, and its being an important abdominal centre of reflex nervous action. The authors suggest that evidence bearing on these possibilities should be looked for carefully in cases where the appendix has been removed, and they refer to five cases where marked obesity followed removal, four cases where menstrual disorders occurred, and four cases where constipation was the sequel. In all those cases the appendix was removed free from infection and none of the patients had suffered previously from the disorders which afterwards appeared. It is thought possible that there is some endocrine relation between the appendix, thyroid, and ovary, and possibly the pancreas also, of which evidence might be obtained by a systematic study of the disorders following appendectomy.

## 25. Haemolytic Streptococci in Milk.

J. H. BROWN, W. D. FROST, and M. SHAW (*Journ. Infect. Dis.*, May, 1926, p. 381) have made comparative studies on streptococci isolated from cases of epidemic sore throat and from certified milk. Five dairy herds were examined, and 83 strains, of which 21 gave the beta type of haemolysis, were isolated. A few strains of *Streptococcus pyogenes*, *anginosus*, and *infrequens* from various sources were included. The throat strains, which they classify under the term *Streptococcus epidemicus*, agreed closely with each other. They were roundish cocci, producing beta-haemolysis in blood agar, haemolysing rabbit blood cells in fluid suspension within two hours, killing guinea pigs inoculated intraperitoneally with 0.5 c.cm. of culture in less than a day, fermenting glucose, lactose, sucrose, and salicin, but not mannite, producing in 1 per cent. glucose broth a final hydrogen-ion concentration not higher than pH 4.8, failing to hydrolyse sodium hippurate, and showing a capsule when observed under suitable conditions. The milk strains were divided into nine different groups. None of them showed a definite capsule, most of them hydrolysed sodium hippurate, and all with one exception produced a final hydrogen-ion concentration in glucose broth of pH 4.8 or over. The authors consider that none of these milk strains are pathogenic for human beings. The differentiation of the haemolytic streptococci is discussed, and, though no single method can be relied on, they regard the final hydrogen-ion concentration in glucose broth and the hydrolysis of sodium hippurate as the most constant and reliable tests for distinguishing between strains of human and bovine origin.

## 26. Pneumococcal Immunization.

S. T. WOO (*Journ. Exper. Med.*, May, 1926, p. 623) states that Robertson and Sia found that the blood of animals which are resistant to invasion with pneumococci possesses special destructive powers for these organisms; this led him to suggest that natural immunity to pneumococcal infection was dependent chiefly, if not entirely, on the pneumococcidal activity of the blood. This work has been amplified by Woo, and a greater number of virulent and avirulent strains has been used. The virulence of each strain of pneumococcus was tested by the intraperitoneal injection of three or four rabbits with varying amounts of culture, and compared with the ability of the strain to grow in a serum-leucocyte mixture prepared from normal rabbits. The results indicated a close parallelism between these two properties. A strain that was able to grow freely in the serum-leucocyte mixture after inoculation in minimal amount proved virulent when injected in minimal amount into rabbits. It was also observed that the extreme susceptibility of the young rabbit to strains of pneumococci of low virulence to adult animals was associated with an absence of pneumococcidal properties in the blood of the young rabbit. Woo concludes that in the blood of resistant animals, such as dogs and cats, there are substances capable of destroying pneumococci which are highly virulent to adult rabbits, and that in susceptible animals, such as rabbits and guinea-pigs, the diminution of susceptibility as the animals grow older is associated with an increase in the pneumococcidal action of the blood. His findings suggest that the type of defence mechanism against pneumococcus infection is the same in resistant as in susceptible animals, but that the degree to which this mechanism is developed shows a marked difference.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 27. The Action of Digitalis on Premature Ventricular Contractions.

H. L. OTTO and H. GOLD (*Arch. Intern. Med.*, April 15th, 1926, p. 552), discussing the action of digitalis in cardiac arrhythmia, state that it is well known that digitalis may produce premature ventricular contractions, a condition often associated with auricular fibrillation. The few clinical observations on the effect of digitalis on premature contractions are contradictory and unsatisfactory. These contractions may occur in hearts otherwise normal. It is known that large doses of digitalis can produce premature contractions in some patients, and the authors report a case which shows the influence of large doses on spontaneous premature contractions. A man, aged 55, had rheumatism at 43, but there was no history of venereal or other diseases in adult life. He had moderate brachial and temporal arterio-sclerosis; the heart and other viscera were normal. There was moderate hyperplexia, the systolic pressure was 190 to 200 mm., and the diastolic 90 to 100 mm. Hg. An electro-cardiogram showed basic sinus rhythm interrupted by frequent pre-systoles, ranging from thirteen to fifteen a minute. On the sixteenth day 19 ccm. of the standardized tincture of digitalis was given in one dose in the morning; five hours later the systoles were regular and no premature beats occurred until the third day afterwards. Eight days after the large dose 3 grains daily of powdered digitalis leaf was given for four days, but failed to abolish the extra-systoles, although they became less frequent. For fifty-nine days digitalis was discontinued, and the premature contractions returned as on admission—four to fourteen a minute. On the ninety-second day another dose of 19 ccm. of the standardized tincture was given; in seven hours the extra-systoles had ceased. During the next thirty-one days daily doses of 3 grains of powdered digitalis leaf were given, and the systoles were regular; on the 124th day the drug was again discontinued. The extra-systoles reappeared on the 194th day—that is, sixty-nine days after withdrawal of the drug. There was no evidence of circulatory failure; the disappearance of the extra-systoles was not accompanied by any subjective or objective evidence of improved circulation. There was no change in blood pressure, but the annoying sensation of "jumping of the heart" disappeared in the absence of extra-systoles.

### 28. A Gastro-Intestinal Type of Cerebro-spinal Meningitis.

E. ABEL and P. BRENAS (*Rev. Med. de l'Est*, February 1st, 1926, p. 95) observe that in children this disease may be of relatively insidious onset, as compared with the fulminating type that usually characterizes cerebro-spinal meningitis in adults. In this respect it may be mistaken for tuberculous meningitis. The authors describe three cases of infantile cerebro-spinal meningitis in which the children, whose ages ranged from 6 to 20 months, exhibited symptoms of acute gastro-intestinal disturbance, accompanied by slight stiffness of the neck and prominence of the fontanelles, and, in two cases, by the presence of Kernig's sign. Repeated lumbar punctures showed that there was a high degree of leucocytosis; the fluid was deep yellow and under increased pressure, and in two cases the meningococcus was isolated. In the third case no bacterial growth was obtained by swabbing the cerebro-spinal fluid or the pharynx. Two of the children made good recoveries after several lumbar punctures and the injection of antimeningococcal serum, while in the third case chronic hydrocephalus supervened.

### 29. Statistics of Laryngeal Diphtheria.

J. V. BOKAY (*Deut. med. Woch.*, February 12th, 1926, p. 267) states that 234 cases of laryngeal diphtheria underwent operation in his clinic at Budapest during the years 1915-24. Of these, 159 recovered and 75 died—a mortality of 32 per cent.; 220 underwent intubation only, with 149 recoveries, and 71 died—a mortality of 32.2 per cent. On 14 patients secondary tracheotomy was performed, with 10 recoveries and 4 deaths—a mortality of 28.5 per cent. During the same period 228 cases of laryngeal diphtheria did not undergo any operation. Of these, 210 recovered and 18 died—a mortality of 7.8 per cent.; 66 were under 2 years of age, and of these 58 recovered and 8 died—a mortality of 12 per cent. Of 162 over 2 years of age, 152 recovered and 10 died—a mortality of

6.1 per cent. Thus out of 462 cases of laryngeal diphtheria 228, or 47 per cent., escaped operation. The 18 deaths occurred in cases of descending croup or septic diphtheria, in which operation would have been of no avail. Of all the patients with laryngeal diphtheria 53 per cent. underwent operation, and 68 per cent. of the intubation cases recovered. Primary tracheotomy was not performed in any case, and secondary tracheotomy only in 6 per cent.

### 30. Tuberculous Laryngitis.

T. RUEBI (*Arch. Internat. de Laryngol., Otol. et Rhinol.*, December, 1925, p. 1174) has come to the conclusion that tuberculous laryngitis is curable. Some patients may recover without local therapeutic or surgical measures by sojourning at high altitudes, with or without artificial pneumothorax or other thoracic intervention. The author has never seen a case in which tuberculous laryngitis was the only manifestation of the disease in the body. It is more often found in the interior of the larynx than at the entry; the bodies of the arytenoids and the epiglottis are rarely affected, but the interarytenoid region and the vocal cords are much more commonly involved. The author considers that these sites are determined by an acquired or hereditary lack of resistance to the infection rather than to any anatomical peculiarity. The percentage of cures is very much higher when only the vocal cords are affected than when the disease has spread to neighbouring parts such as the interarytenoid region. The most unfavourable prognosis is when there is dysphagia and when the disease has involved the whole larynx. In such cases there is danger of suffocation, and either a tracheotomy may be performed or the interior of the larynx may be excised. For the severe pain in such advanced cases injection of alcohol into the superior laryngeal nerve just above the wing of the thyroid cartilage gives great relief. Surgical measures in less advanced cases consist in the galvanocautery, application of iodoform, mentholated oil, anæsthetizing powders, and phototherapy—by direct sunlight where available, or by electric arc light. The author has not used x-ray treatment often. The chief indication for treatment locally is when a case of mild degree is progressing in spite of general treatment and especially where the lung condition is improving at the same time. Other indications are an irritating cough, dysphagia caused by ulceration of the glottis, laryngeal stenosis, fever due entirely to the laryngeal condition, and in some cases mental depression.

## Surgery.

### 31. Dislocation of the Carpal Bones.

F. M. CADENAT (*Bull. et Mem. Soc. Nat. de Chir.*, March 13th, 1926, p. 262) discusses the treatment of subluxation of the carpal bones; he considers that reduction is always difficult and often impossible. In five cases he could reduce the dislocation only once. If reduction cannot be performed it may be necessary to operate and either force the displaced bone into position or remove it altogether. The best approach is, he thinks, from the dorsum. A feature he has noticed in these cases has been the severe pain radiating down the median nerve into the fingers. In one patient this was very marked indeed. The pain, combined with swelling of the wrist, often enables a diagnosis of dislocation to be made. The ultimate results are often not very satisfactory. While no deformity may be left the movements of the wrist and fingers are frequently somewhat limited. Massage and movement must be steadily persisted in after these injuries.

### 32. Autogenous Blood Injections in Facial Carbuncle.

R. HINZE (*Zentralbl. f. Chir.*, April 17th, 1926, p. 987) describes three cases of facial carbuncle treated by Lâwen's method—namely, the injection of the patient's own blood into the healthy tissues outside the inflammatory area. All the patients were seriously ill when admitted to hospital, and did not improve under routine treatment, including incision, application of aluminium acetate fomentations, and vaccine therapy. After the injections of their own blood every patient made a rapid recovery. A woman, aged 30, had a diffuse carbuncle of the lower lip, with pyrexia and rigors. Fomentations and vaccine treatment produced temporary improvement only. There was general cyanosis at the time that 6 ccm.

of the patient's own blood was injected into the healthy tissues on either side of the inflammatory focus; some of the blood escaped through the incision and sinuses. Next day there was definite improvement, the sloughs separated, and on the third day the patient was discharged cured. A man, aged 60, had a carbuncle involving the entire upper lip, and for five days fomentations and vaccines were used without improvement. On the sixth day 6 c.cm. of the patient's blood was injected in the naso-labial folds on each side of the carbuncle. Next day there was a rapid improvement, and the patient's further progress was uninterrupted. A boy had a carbuncle of the upper lip; his whole face below his eyebrows was swollen. After two courses of vaccine treatment and two injections of the patient's blood on the sixth and eighth days after his admission he began to improve; on the latter day he received 14 c.cm. of blood, because at the first injection much of the blood escaped through the sinuses and the preliminary central incision. After the second injection the patient made a rapid recovery. HINZ's remarks that in order to obtain the full benefit of this treatment an attempt must be made to maintain the continuity of the tissues so as to conserve the bactericidal and antitoxic action of the injected blood. In addition to the other benefits of this treatment, the cosmetic result in all these cases was excellent.

### 33. Subphrenic Abscess.

L. R. FIFIELD and R. J. MCNEILL LOVE (*Brit. Journ. of Surgery*, April, 1926, p. 683) give their conclusions based on a series of 78 consecutive cases of subphrenic abscess. Appendicitis was the cause in 30 cases, the most common variety being the right posterior intraperitoneal. Perforation of a gastric or duodenal ulcer was the origin of the abscess in 24 cases. Intraperitoneal subphrenic abscess is an end-result of acute localized peritonitis. Inflammatory exudate is poured out and after ten to fourteen days a localized abscess is present. The abscess often contains gas from a perforated viscus or is formed by *B. coli communis*. As the abscess enlarges the diaphragm is pushed upwards. An empyema may form and the lung collapse. The extraperitoneal variety is an example of cellulitis terminating in suppuration. The abscess may rupture into a neighbouring viscus; a gastric or duodenal fistula is distinctly uncommon. The diagnosis may be very difficult. The history is often suggestive where an infective focus in the abdomen has been dealt with; the patient temporarily improves, after which signs of toxæmia supervene. A local swelling of the ribs may be seen and immobility of the chest. The liver may be displaced downwards. Effusion or other signs in the chest may be found, and gas may be discovered on percussion. Radiographical examination is most valuable and shows elevation or immobility of the diaphragm, while the final resort is the exploring needle. The treatment is prophylactic first and drainage of a septic focus. When pus is found the rib below the needle is excised, the diaphragm incised, and a tube inserted. Posterior drainage should be arranged when possible. The mortality was 50 per cent.

### 34. Surgical Treatment of Cholelithiasis.

H. HABERER (*Deut. Zeit. f. Chir.*, March, 1926, p. 1) has performed 555 operations on the gall bladder and bile ducts, which he classifies as follows: cholecystectomies, with or without drainage of the bile ducts, 510; cholecystostomies, 18; cholecystenterostomies, 17; choledochoduodenostomies, 8; cholecystodynes, 11; and fistula of the bile duct, 1. The total mortality was 6 per cent. His conclusions are as follows: (1) Cholelithiasis should be operated on early and in young persons, as was decided by the German Surgical Congress in 1923. (2) During the acute stage operations should be limited to cases of emergency, as the prognosis is worse than when the operation is performed in an interval between attacks. (3) The operative mortality must be reduced by careful technique and attention to anatomical details on the one hand and by choosing the right time for operation on the other. (4) The operation of choice is cholecystectomy. (5) Cholecystotomy cannot be entirely dispensed with, but is often required when removal of the gall bladder appears to be too dangerous a procedure. (6) Cholecystodynia should not be condemned as an operation, although the indications for it are few; it is only permissible when gall stones are discovered in a visibly and palpably normal gall bladder during an operation for some other cause, such as gastric or duodenal ulcer. (7) Obstruction of the common bile duct should be operated on without delay, so as to avoid such severe complications as liver abscess, cholangitis, pancreatitis, and anaemia. (8) The unsatisfactory results of operation, such as reappearance of pain, are to be attributed least of all to adhesions, but rather to recurrence of gall stones in the bile ducts or to a persistence of slight cholangitis.

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## Therapeutics.

### 35. Administration of Luminal.

H. A. PATTERSON, LE G. A. DAMON, and P. LEVI (*Journ. Nerv. and Mental Dis.*, May, 1926, p. 446), from a comparative study of various methods (oral, subcutaneous, intravenous, and intraspinal) of the administration of luminal in epilepsy, found that no ill effects were produced by any method and that no tolerance for the drug developed. In approximately 300 patients to whom 1½-grain tablets were given by the mouth each evening a reduction of 45 per cent. in the number of seizures was noted, the severe attacks being reduced 60 per cent. while the mild ones were diminished only 22 per cent. This more favorable influence upon the severe than upon the mild attacks is in accord with the generally accepted opinion, pointing to the fact that luminal, by acting chiefly upon the motor centres, is more efficient in those cases in which the motor element predominates. Since untoward symptoms follow sudden cessation of the drug a gradual reduction in dosage should be adopted when its discontinuance is indicated. In the subcutaneous administration luminal sodium in doses of from 5 to 15 grains was used for serial seizures and status epilepticus in which oral administration was difficult and a more rapid result was needed. About 50 per cent. of cases of serial seizures responded favourably, but only a small percentage of benefit occurred in status epilepticus. In the intravenous method the initial dose was 2 grains, increasing by 1 grain at two-day intervals up to a maximum of 5 grains. In seventeen cases treated with over a hundred injections no ill effects arose, and striking results were obtained in three cases of status epilepticus. The intraspinal method seemed to be of use in those refractory cases in which treatment by the other methods has failed. The period required for the appearance of therapeutic effects in each of the four methods was: orally, one to two hours; subcutaneously, fifteen to thirty minutes; intravenously, almost immediately; intraspinally, half an hour or longer. The authors conclude that the oral method, when giving satisfactory results, is preferable on account of its simplicity and the fact that it can be continued over long periods; while the subcutaneous method is preferable in serial seizures, the intravenous in status epilepticus, and the intraspinal for rendering refractory cases more amenable to other forms of treatment.

### 36. Mercury in the Treatment of Syphilis.

L. SPIEGEL (*Med. Journ. and Record*, April 21st, 1926, p. 510) finds that in the treatment of syphilis a combination of salvarsan and mercury gives the best results when both drugs are administered intravenously. He recognizes the value of bismuth, but thinks that since it has not the spirochaetocidal power of mercury or salvarsan further study of its action is necessary before definite conclusions can be drawn. Silver salvarsan and mercurosal also gave excellent results when both were administered intravenously, and when intensive treatment with both was the rule. The mercury content of mercurosal is higher than the usual salts of mercury employed, but its toxicity is lower, so that if proper attention to the power of elimination possessed by the patient is given, and his tolerance carefully watched, higher doses of mercurosal may be given without danger, and severe mercurialism or stomatitis is less common than with other preparations. Spiegel adds that patients who have once received mercurosal intravenously invariably rebel against the use of the insoluble salts of mercury by intramuscular injection. He has not found any injury follow its use alone or in conjunction with silver salvarsan.

### 37. Treatment of Diarrhoea.

R. D. RUDOLF (*Canadian Med. Assoc. Journ.*, May, 1926, p. 501), classifies the various types of diarrhoea and outlines the corresponding treatment. Anatomically they may be classed as high, middle, and lower, depending upon whether the stomach and duodenum, the small and upper large intestine, or the colon and rectum, are the seat of the mischief. Etiologically he classifies them as nervous, purgative, and organic. In nervous diarrhoea due to disturbed innervation the use of the bromides is indicated, combined with belladonna if colic is present; minim doses of liquor arsenicalis before meals help that form in which the contents are hurried on so quickly that undigested food may appear in the stools. Purgative diarrhoea due to some substance swallowed or elaborated in the stomach or bowel is accompanied by colic, with relief until the next stool; achylia, absence of hydrochloric acid, chills, or bacterial decomposition may be the causative factor, the condition subsiding after the elimination of the irritant by natural or medicinal purging. Such cases, however, may pass into the third group of organic diarrhoea from the resulting catarrh. In this third type

some pathological change in the intestinal mucosa exists, causing increased secretion and peristalsis. Rest, warmth, and restriction of diet and purgatives are indicated, and blenheim, chalk, and opium mixtures are useful, and in neutro watery diarrhoea kaolin given freely is valuable. In diarrhoea of the lower bowel a rectal examination should be made to eliminate an impacted faecal mass or growth, and tenebrisms may be relieved by starch and opium enemas. In very chronic cases an appendicectomy, with irrigation of the whole colon from above, may be necessary. Rudolf regards mucous colitis as resulting from a general nervous condition and requiring general rather than local treatment, though benefit may be derived from bland normal saline or sodium bicarbonate douches or from treatment at Harrogate or Plombières.

### 33. Subcutaneous Injections of Nascent Oxygen in Whooping-cough.

G. BOELDIEU (*Paris Méd.*, April 24th, 1926, p. 401) refers to an article published in 1921 by Chatiliera on 40 cases of whooping-cough treated by oxygen, and reports three cases confirming the value of this treatment in children aged from 22 months to 5 years. Subcutaneous injections of nascent oxygen were given by a special apparatus, the doses ranging from 50 to 100 c.cm., and the number of injections from five to seven. After the fifth injection the children had peaceful nights and stopped vomiting, and after seven injections complete recovery took place without any other treatment. When given slowly the injections were painless and were well tolerated by the children.

## Radiology.

### 33. Non-Opaque Foreign Bodies in the Air Passages.

W. F. MANGUS (*Brit. Journ. Radiol.*, April, 1926, p. 119) thinks that the x-ray diagnosis and localization of a non-opaque foreign body lodged in the bronchus may now be made with almost the same degree of certainty as in the case with an opaque foreign body. Repeated examinations will reveal all foreign bodies lodged in the trachea with the exception of a very small percentage; the few remaining cases can be diagnosed by physical signs, because the foreign bodies are of such a shape and size as to be freely movable in the trachea and they do not cause expiratory obstruction. With opaque foreign bodies the lung shadows are of comparatively little importance in diagnosis, but in detecting non-opaque foreign bodies the diagnosis may turn upon the interpretation of the shadows of every part of the lung field as well as of the mediastinal structures, the diaphragm, and the chest wall. In dealing with a non-opaque foreign body exposures must be made during inspiration and expiration, and so rapidly that the motion of respiration may not blur the film. Non-opaque foreign bodies are almost always vegetable, such as nut kernels, seeds, maize, beans, shells, and roots. As a rule they produce more inflammatory reaction than metallic and other inorganic substances, and they may give rise to obstructive emphysema, atelectasis, "drowned lung," or lung abscess, either alone or in combination. When the foreign body is in a bronchus x rays will show increased transparency of the affected lung, depression and limitation of motion of the diaphragm on the affected side, and displacement of the heart and mediastinal structures to the unaffected side at expiration. When the trachea is concerned the signs will be increased transparency of both lungs, depression and limitation of motion of both diaphragms, and rotation of the heart so that its transverse diameter is less at expiration than at inspiration. In atelectasis the obstruction is more complete and the radiographical appearance is the opposite of that seen in obstructive emphysema. In "drowned lung" the exudate appearing distally to the foreign body gradually fills the smaller bronchi and air vesicles and adds density to the lung shadow. Remarkable variations may be seen at different observations in an individual case and localization is based upon the area of the lung involved.

### 30. X-Ray Treatment of Laryngeal Papilloma.

I. SOLOMON and A. BLONDEAU (*Journ. de Radiol. et d'Electrol.*, March, 1926, p. 112) state that laryngeal papillomata, though comparatively rare, may become malignant after the age of 40; the prognosis in childhood is also serious. Being situated on the vocal cords, the ventricular bands, and subglottic region, they produce severe dyspnoea, and tracheotomy is usually required. Surgical treatment is usually followed by relapse. The prognosis has been much improved since the introduction of x-ray treatment. The authors describe the case of a youth, aged 17, who suffered from dyspnoea and

progressive aphonia. Tracheotomy was performed in 1920, and numerous operations for the prevention of asphyxia had been required before and since that date. When x-ray treatment was first employed the vocal cords were almost completely hidden by cauliflower-like papillomas. During a period of four weeks the patient received a total dosage of 7,000 Behnen's units, the treatment being applied alternately to each side of the neck. Deeply penetrating rays from a 40 cm. spark were used, filtered through 0.5 mm. copper and 2 mm. aluminium. A dose of 1,000 units was applied twice weekly. After the third treatment the tracheotomy tube was no longer required and the papillomas were much smaller, and one month later the voice was almost normal. Six months subsequently the patient remained quite cured. The larynx showed some scarring at the site of the papillomas and there was some deformity of the left vocal cord. The tracheal fistula had closed spontaneously. The authors refer to two previous patients, treated in 1920 and 1921, who remain entirely cured. They state that x-ray treatment is preferable to any other in this disease.

### 41. Whooping-cough Treated by X Rays.

A. PINÓS and J. M. PUJADAS (*Rev. med. de Barcelona*, May, 1926, p. 447), who record eight cases in children aged from 4 months to 8 years, state that the good results reported by Leonard and Bowditch in the treatment of whooping-cough by x rays (*Epitome*, November 29th, 1924, para. 424, and December 20th, 1924, para. 491) induced them to employ this method in the Santa Cruz Hospital at Barcelona. They attribute the success obtained to the rapid transformation of lymphoid tissue into scar tissue, the paroxysms diminishing in intensity and disappearing within the first few days of treatment. The tracheo-bronchial glands, which undergo enlargement as the result of toxic inflammation, after vigorous irradiation show hyperplasia of their connective tissue, which on contraction causes diminution of its size and consequent disappearance of the principal source of irritation of the vagus and recurrent laryngeal nerve which is the cause of the infective cough.

## Obstetrics and Gynaecology.

### 42. Treatment of Persistent Occipito-posterior Presentations.

C. S. BACON (*Journ. Amer. Med. Assoc.*, February 13th, 1926, p. 465) estimates the frequency of the various relations of the foetal head to the pelvic inlet at the beginning of labour as follows: Left occipito-anterior presentation, 55 per cent.; right occipito-anterior, 15 per cent.; left occipito-posterior, 10 per cent.; right occipito-posterior, 20 per cent. Of the 30 per cent. primary posterior oblique positions, in about four-fifths of the cases anterior rotation occurs spontaneously, while in the remaining 6 per cent. about half the patients have large pelvis and strong uterine contractions, or the children are small and spontaneous delivery occurs without much difficulty. In the remaining 3 per cent. intervention is required, and Bacon has come to the following conclusions. After descent of the head complete dilatation of the cervix is generally necessary for the long or anterior rotation, and hence antilethal rotation should not be attempted before the cervix is fully dilated. In persistent occipito-posterior presentation, as also in persistent deep transverse arrest of the head, manual rotation should be tried first, it being always remembered that it is of the first importance to change the extension of the head into flexion. If manual rotation fails, Bacon advises the application of Kielland forceps with their pelvic curve towards the occiput, and in the long occipito-mental diameter. The head should then be flexed and rotated, after which it may be delivered in the usual way. If manual rotation fails, and no Kielland forceps are available, he advises the use of Naegele or Simpson forceps in the Scanzoni manoeuvre, the forceps being applied to the occipito-mental diameter and the head being flexed before rotation is commenced.

### 43. The Kielland Forceps in Obstetrics.

L. AVERETT (*Therap. Gaz.*, March 15th, 1926, p. 153) describes the use of the Kielland forceps in obstetrics, defining their special advantages. The forceps can be applied biparietally in any position of the head, the part which can stand pressure best being selected; they fit close to the head, and can be used for rotation without danger of injury to the child or mother. The close fitting of the forceps on the head obviates slipping or change in the position of the head, without increasing the dimensions of the head, or hindering its normal mechanism; less force, therefore, is required for extraction. He cites various statistics in support of his claim that the use of Kielland's forceps diminishes foetal mortality and



maternal morbidity. Rosenfeld, in 1922, reported the results of 135 cases in which the forceps had been used. All the children were born alive, but four died subsequently; no child or mother showed any marked injury. Krull reports satisfactory results in ninety-three cases, in about half of which the pelvis was contracted. Hoffman, mentioning 116 cases, stated that delivery was rendered easy, particularly in flat pelvis where the head was high. Averett has recently used the Kielland forceps in twenty-two cases, with excellent results in all but one case, in which the woman had been in labour for twenty-four hours when he was called in. There being very great disproportion between the foetal head and the pelvis, he advised Caesarean section, but first tried Kielland forceps without success. The Caesarean section showed that no injury to the uterus or to the child's head had been caused, and both mother and child recovered well. He adds that before the application of these forceps the exact position of the head must be determined, as also the direction of the sagittal suture and the position of the large and small fontanelles.

#### 43. Rupture of the Uterus.

J. G. SHERRILL (*Surg., Gynecol. and Obstet.*, May, 1926, p. 657) discusses the possibility of rupture of the uterus following the administration of pituitary extract. A case is recorded in which there was a history of difficult instrumental delivery in a young healthy primipara with uterine inertia, and manual placental extraction followed by profuse haemorrhage and marked collapse. During labour she had received three 0.5 c.cm. doses of pituitrin at two-hourly intervals. No peritonitis developed even in the presence of infection and no organisms were recovered from the blood. She ran a septic temperature with rigors, and after expectant treatment a radical hysterectomy was performed on the thirtieth day, revealing two small tears on the peritoneal surface connected with a wide separation of the muscular and mucous coats. From this case and a study of others reported Sherrill concludes that the use of pituitrin early in labour may cause rupture, and he emphasizes the point that sudden collapse during or at the completion of labour with uncontrollable haemorrhage after delivery of the placenta may indicate the occurrence of uterine rupture, either partial or complete. Treatment consists in suturing the torn uterus if there is no doubt about the absence of infection; if there is doubt, hysterectomy should be performed.

## Pathology.

#### 45. Classification of the Bacilli of Malta Fever and Infectious Abortion.

M. BÉGUET (*C. R. Soc. de Biologie*, May 14th, 1926, p. 1187) has studied forty-two strains of *Brucella*, coming from cases of Malta fever, of *B. melitensis* infection in the goat, and of infectious abortion in cattle. Cultures of the same age on the same medium had the morphological aspect of coccilli, coco-bacilli, or bacilli; it was impossible to classify the strains by this method so that they should correspond with a classification by any other method. Many of the strains were agglutinated by non-specific serums, and many were flocculated by exposure to a temperature of 90°C. in saline suspension. There was a close agreement between the results of these two tests; the strains that flocculated on heating were the ones that agglutinated most strongly with non-specific serums. The agglutinogenic power of the strains varied considerably; as a rule the non-flocculable strains, on injection into rabbits, gave rise to a higher production of agglutinins than did the flocculable strains; but there were exceptions to this rule. Straight agglutination and absorption of agglutinin tests were tried; the results obtained showed that the agglutinability of each strain was different from that of every other strain. It was impossible, therefore, to group the organisms into any clear-cut divisions. From a consideration of the morphological, cultural, and serological reactions of the forty-two strains the author concludes that it is impossible as yet to lay down any definite classification of the organisms of the *Brucella* group.

#### 46. The Sedimentation Rate of the Erythrocytes.

O. BOUET (*Ugeskrift for Læger*, March 11th, 1926, p. 240) has investigated the rate of sedimentation of the erythrocytes in more than a hundred cases, using the technique described by Westergren. When the rate was normal, the test was repeated only two or three times in each case. In other cases it was repeated several times a day, notably in cases in which a close study was being made of the effects of protein shock treatment by injections of milk. In one group of cases of sciatica and muscular and articular rheumatism there were 35 patients, of whom 19 were treated with injections of milk.

The results were very good in 10 of these 19 cases, and in 6 others there was temporary subjective improvement. Ten of these 16 patients had been febrile before the treatment, and were rid of their fever in from four to seven days after its commencement. In nearly all these cases the protein shock treatment was followed by a rise in the sedimentation rate, which was unaffected only in 2 cases, and which became slower in a third case. The increase in the rate reached its maximum, as a rule, four or five days after the last injection. No definite conclusions could be drawn from the sedimentation test in those cases as to the choice of patients for protein shock treatment. The test was employed in 13 cases of definite or suspected tuberculosis, and proved of great value; it was found that when this reaction was persistently normal the presence of tuberculosis could be excluded. The reaction being in no sense specific, an abnormally rapid sedimentation rate could not be regarded as a definite sign of tuberculosis unless all the other causes of an increased rate could be eliminated.

#### 47. Human Intestinal Carriers of Tetanus Spores.

J. H. BAUER and K. F. MEYER (*Journ. Infect. Dis.*, April, 1926, p. 295) have made a survey of the distribution of tetanus spores in the faeces of persons in California. A small portion of faecal material was placed in beef-heart medium, heated to 70° to 75° C. for twenty minutes, cooled rapidly, and incubated for about a week. Smears were examined microscopically, and subcultures made from positive tubes into Tulloch's medium. After five days' incubation the growth was transferred to liver agar and pure colonies isolated; these were studied for toxicity and for serological type. Of 487 specimens from California 24.6 per cent. were found to contain tetanus spores. In addition to these 43 specimens from nineteen other States were examined, and in 9 tetanus spores were found. Data from other countries show a remarkable agreement with these figures; about one person in every four has been found to be an intestinal carrier of tetanus bacilli. The authors bring evidence to suggest that the bacillus lives chiefly in the caecum; that it is not a simple saprophyte living in the intestinal contents, but is rather a parasite of the intestinal wall; and that there is a mutual relationship between the tetanus bacillus and other spore-bearing anaerobes. They have never found the tetanus bacillus in the absence of these other organisms. The most common serological type was Type 1, which accounted for 63.3 per cent. of the Californian strains. The next commonest was Type 3, which accounted for 17.5 per cent. The remaining strains were divided between Types 2, 4, and 5. Type 6 was never found, but three strains were encountered which did not agglutinate with any of the six type serums. Whether these belonged to Type 7 was not determined.

#### 48. Varieties of the Tubercle Bacillus.

THÉRASSE (*Le Scalpel*, March 27th, 1926, p. 281) asserts that recent discoveries will shortly demand an entire revision of the accepted theories concerning the inheritance, infection, prophylaxis, and treatment of tuberculosis. Vaudremer's work on the non-acid-fast forms of the tubercle bacillus and on filterable forms has been confirmed by the researches of Bezançon and Philibert, and Thérasse believes that their results will give a new direction to the antituberculosis campaign. Vaudremer has shown that tubercle bacilli may be grown in a non-glycerinated potato medium, when they almost completely lose their acid-fast quality, but this is restored by subculture on glycerinated broth; moreover, the bacilli no longer produce tuberculin. After several subcultures in ordinary agar the bacilli are only slightly or not at all acid-fast, and may fail to infect guinea-pigs. Bezançon and Philibert conclude that the acid-fast type is a transition form only of the tubercle bacillus. It is possible that toxicity and virulence may be largely functions of acid resistance, which quality may depend on the condition of the lipid element. It has often been reported that in acute cases the bacilli may be short, sharply defined, and deeply stained, while in chronic cases they may be long, granular, irregularly stained, and ill defined. Thérasse is not convinced that the lipid envelope exists; it is more probable that the lipid element impregnates the whole body of the bacillus. Vaudremer has also stated that a growth of non-acid-fast branched elements develops rapidly in the filtrate through a Chamberland L3 filter of cultures of tubercle bacilli; these elements are stained by gentian violet. Injected subcutaneously into guinea-pigs they produce local induration, which disappears in about three weeks, but they do not cause generalized tuberculosis. These discoveries suggest that there is a special form of the tubercle bacillus, apparently connected with its reproduction—a stage in its life cycle. Bezançon and Philibert consider that the organism of tuberculosis is related to that of actinomycosis. Vaudremer's latest researches have led him to the conclusion that there are several types of tubercle bacilli.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 49. Acute Cerebral Degeneration following Measles.

K. MOSSE (*Jahrb. f. Kinderheilk.*, May, 1926, p. 273), who records two illustrative cases, states that degeneration of the brain may occur in the course of measles resembling the clinical picture of encephalitis. Only in rare cases does the degeneration prove fatal; as a rule either complete recovery takes place or more or less severe defects result. The condition is probably due to a toxic change, but whether the toxins are produced by measles or some other factor will only be known when the causal agent of measles is discovered. Mosse's cases were in a girl and boy, both aged 5½ years. The girl had at first an ordinary attack of measles with a temperature of 101° F. on appearance of the eruption. Five days later the temperature became normal, but in the evening of the same day she felt tired, and the temperature rose again next day, when she developed spasms of the extensor muscles of the arms and became unconscious. The cerebro-spinal fluid was clear, under high tension, and showed only a slight increase of albumin and no diminution of sugar. The reflexes were partly lost. Typical signs of basilar meningitis were absent, and the clinical picture was more suggestive of encephalitis. The boy developed measles in the second week of an attack of whooping-cough. The measles ran a normal course, and seven days after appearance of the eruption the temperature fell to normal, but the patient showed psychical symptoms with disturbance of the bladder and rectum in the course of the next few days. Symptoms of affection of the vegetative nervous system were also present in the form of sweating and dermatographism. After the temperature had been normal for four days it rose again, coma set in, and death occurred with a rise of temperature to 105.6° F. In both cases the brain was of tough consistency and preserved its shape after removal from the skull. The gyri were obliterated and there was considerable congestion. The weight of the girl's brain was 1,380 grams and of the boy's brain 1,400 grams, as compared with the weights of 1,220 grams in a normal girl and 1,230 grams in a normal boy. The meninges showed only moderate oedema in one case and only slight haemorrhages in the other. Histological examination showed similar changes in both brains of a purely degenerative character and an entire absence of inflammatory lesions in the form of infiltration of the vessel walls with lymph cells.

### Lead Anaemia.

MAX R. MAYERS (*Journ. Indust. Hygiene*, May, 1926, p. 222) has investigated the blood changes in lead poisoning from the standpoint of diagnosis in 381 cases among lead workers who were all at work; no cases of incapacity or acute poisoning were included. In 62 per cent. lead anaemia was found to be a definite blood disease entity, the diagnostic features being that the red cell count and haemoglobin were only slightly reduced, except in severe cases, thus giving the appearance of a very mild secondary anaemia, and that the colour index averaged only a little less than 1, but became lower as the red cell count and the haemoglobin were reduced. She states that in lead anaemia changes in the morphology of the red cells are out of all proportion to those found in an ordinary case of secondary anaemia; stippling ranked fourth in frequency, being present in 39 per cent. of those cases in which blood changes were present. Though more prevalent in lead anaemia than in other secondary anaemias, stippling is only one among a number of pathological changes, and it should be considered together with the rest of the blood picture, stippling and polychromatophilia occurring in the same percentage of cases though not frequently occurs without the other. The white cell count was almost normal with a slight relative lymphocytosis at the expense of the polymorphonuclear leucocytes; the mononuclear cell count was slightly increased. The pallor of lead poisoning does not appear to have any definite relation to the red cell count, the haemoglobin content, or the severity of the intoxication, but seems to be due to some neuro-vascular capillary disturbance. Diagnosis of lead anaemia depends upon examination of the whole blood picture, and more than one slide should be examined, since many cells, especially if stippled, appear intermittently in the circulation. The recognition of lead anaemia as an entity increases the value of the blood examination, and in different compensation cases these findings, either with or without stippling, may establish an otherwise doubtful diagnosis.

### 51. Attacks of Diphtheria with Active Immunity.

M. HAIDVOGL (*Munch. med. Woch.*, February 26th, 1926, p. 358) has recently observed twelve cases of diphtheria in children with a negative Schick reaction. In five cases the antitoxin content of their serum was determined, and from 0.01 to 0.45 antitoxin unit was found in 1 c.cm. of serum. In most of the cases the disease was nasal diphtheria, in two the tonsils were affected, and in one instance the larynx and the tonsils. A possible explanation of these cases is that a diminution of the antitoxin in the blood was the cause of the attack, and that at the time of examination the disease was on the way to recovery owing to a fresh increase in antitoxin. In any case these observations indicate that, contrary to the generally accepted view, diphtheria patients may have antitoxin in their blood, as shown by the Schick reaction and direct examination of the blood. The practical conclusion drawn from them is that a negative Schick reaction does not contraindicate with certainty the presence of diphtheria.

### 52. The Suprarenals in Addison's Disease.

F. HARBITZ (*Norsk. Mag. f. Lægevid.*, May, 1925, p. 371), during the last twenty-five years, has examined twenty-two definite cases of Addison's disease, and constantly found considerable changes in both suprarenals, of which almost the whole substance was destroyed, remnants of normal structure being found in most cases in the cortex only. In twenty cases the lesions of caseous tuberculosis were present, in two there was a chronic inflammation with atrophy which was neither syphilitic nor tuberculous, and in one of the latter there were signs of a regenerative process. In addition to these twenty-two cases Harbitz has also examined numerous cases of destructive suprarenal processes affecting only one suprarenal or the second partially, but without the development of Addison's disease. In two cases in which the clinical diagnosis of Addison's disease was doubtful the suprarenals were found to be normal at the autopsy.

### 53. Meningococcus Meningitis in an Infant.

J. M. STURTEVANT (*Journ. Amer. Med. Assoc.*, May 8th, 1926, p. 1436), who records an illustrative case, states that meningococcus meningitis is an extremely rare disease in early infancy. Root, in 1921, found only six cases on record in infants under 2 months of age. Two of these died during the acute stage of the disease, three a few months later from sequels, and one could not be traced. Bell and Cook, in 1922, recorded a case in a child, aged 17 days, of fulminating parameningococcus infection and extensive petechial rash. Sturtevant now reports a case in a female infant, aged 7 weeks, which was remarkable for the mild character of the meningeal symptoms. Complete blocking of the spinal canal occurred, necessitating administration of seven injections of serum into the cisterna magna. Although an acute pneumococcus infection supervened within sixty days of the onset of the primary disease, complete and uncomplicated recovery ensued, and the child was in good health when seen nine months after the disease.

### 54. The Curability of Ascites in Alcoholic Cirrhosis.

N. FIESSINGER (*Ann. de méd.*, April, 1926, p. 428) records his observations on fourteen cases of ascites in subjects of alcoholic cirrhosis aged from 35 to 47, of whom six were men and eight women. The duration of the intoxication is important, as the ascites is only curable when the intoxication is recent, in contrast with the long-standing intoxication associated with certain occupations, such as those of wine merchants, carters, and furniture removers. There was nothing peculiar in the character of the ascites in Fiessinger's cases. The fluid never produced tuberculosis in guinea-pigs, but the Wassermann test was positive in the serum of five cases and in the ascitic fluid of three. In three instances the Wassermann test as an indication of syphilis was confirmed by the history or other evidence of the disease. In some cases the ascites showed a rapid progress at first and then became stationary at the end of three or four weeks. Ascites which made little advance at first, but was gradually progressive, was most likely to recur. In six of the fourteen cases paracentesis was required—in one four times, in two twice, and in three once. If possible, paracentesis should be avoided, as it causes an irritation of the peritoneum which is shown by a change in the cytological formula, in which lymphocytosis rapidly predominates. Rest in bed and a milk and vegetarian diet poor in chlorides is an essential condition for producing a cure. In six cases the ascites was cured by

one or two series of twelve intravenous injections of mercury cyanide in doses of 1 cg. every two days; in two cases by one or two injections a week of quinine and bismuth; and, in the remaining six, laxatives and hepatic opotherapy were sufficient to produce a cure. The subsequent history of only six patients was discovered. Five resumed their alcoholic habits and had a recurrence of ascites after a period ranging from two to six weeks, and in only one case did the ascites not reappear in spite of the patient's return to drink. Flessinger excludes tuberculosis from the causation of ascites in his cases, and does not think that the ascites in alcoholic cirrhosis is always syphilitic, in spite of the favourable action of mercury and bismuth; but considers that the good result is due to the action of mercury and bismuth on the hepatic parenchyma, in which they provoke a revival of cellular activity.

##### 55. Diastolic Hypertension in Adult Congenital Syphilis.

C. LEGRAND (*Arch. Mal. du Cœur, des Vaisseaux et du Sang*, June, 1926, p. 384) confirms Gallavardin's observation that diastolic hypertension, accompanied by a normal systolic blood pressure, indicates serious loss of equilibrium in the circulation, and implies myocardial weakness and venous congestion. Diastolic hypertension occurs in serious subacute or chronic nephritis associated with cardiac dilatation, and to a lesser degree in cardiac hypertrophy and dilatation with venous congestion or severe emphysema. Legrand describes several cases. He thinks that hypertension in a young subject suggests acquired syphilis, but he has found diastolic hypertension in several men whose ages varied from 21 to 48 years, and who had positive Wassermann reactions with a definite history of congenital syphilis. He states also that a diastolic hypertension of 100 mm. Hg must always be regarded as a serious symptom requiring careful investigation.

##### 56. Recurrent Swelling of the Parotid Gland.

S. WOLFF (*Jahrb. f. Kinderheilk.*, May, 1926, p. 334) records the case of a male infant aged 2 months, the subject of oesophageal and pyloric spasm, who on several occasions developed swelling of the parotids lasting from two to three hours. No crepitation could be detected, so that emphysema could be excluded, and infection of the parotid could also be eliminated, as the swelling subsided in a few hours. Wolff was inclined to attribute the swelling to a spasm of Stensen's duct, as the result of which the evacuation of the abundant saliva was obstructed, giving rise to a strong hard swelling. This suggestion harmonizes with spasm present in other parts of the alimentary tract.

## Surgery.

##### 57. Torsion of the Spermatic Cord.

V. C. IRK (*Zentralbl. f. Chir.*, June 5th, 1926, p. 1437) reports two cases of torsion of the spermatic cord, of which only seventy-six cases have been described hitherto. In addition to the generally recognized causes of this accident, Bardy has suggested that in patent tunica vaginalis, the cord remaining free throughout its entire length is more easily twisted than when it is fixed in the inguinal canal. The general clinical symptoms resemble those of acute intestinal obstruction—peritoneal irritation, collapse, vomiting, abdominal pain, and reflex intestinal obstruction. There is swelling in the inguinal canal, or in the affected half of the scrotum, closely resembling strangulated hernia. If the testicle is palpable it may be possible to distinguish between the swollen epididymis and the mass of congested spermatic veins. Irk's first case was one of cryptorchism, associated with torsion; his second was a bilateral hernial hydrocele, associated with a hernia and a twisted spermatic cord; such an association of torsion of the cord with congenital hernia does not seem to have been recorded previously. The first patient was a healthy boy, aged 16, who, two days prior to admission, after lifting a heavy weight, was attacked by severe abdominal pain, collapse, and vomiting. Four hours later there was an increasing swelling in the right groin; no relief followed rest in bed. On the third day strangulated hernia was diagnosed; there was no great muscular rigidity, no vomiting, and no passage of faeces or flatus. In the right groin an oval and very tender tumour, as large as a man's fist, was found; it was quite irreducible and a varicocoele-like mass of twisted veins was plainly felt. The testis was rotated clockwise through 90 degrees; as it was quite gangrenous it was removed. The patient made a rapid recovery. The second case was that of a healthy man aged 24, who, since childhood, had observed a constantly increasing swelling in the right side of the scrotum; this, though larger than his fist, was easily reducible. While sitting down on the evening

before admission to hospital the hernia descended and he was unable to reduce it. Typical signs of acute obstruction appeared, but his general condition was good. The right side of the scrotum was tensely swollen to the size of two fists, and was very tender. The swollen testis lay above the hydrocele and was rotated clockwise through 90 degrees. On opening the sac blood-stained serum escaped and a loop of small intestine, also twisted upon itself, was found. This was slightly swollen and congested, but was easily returned through the large hernial orifice. The testis was congested but not gangrenous; it was fixed in the normal position and the very long cord was shortened by making a U-loop; a drainage tube was inserted and a Winkelmann-Bassini operation for radical cure of the hernia was performed. In a month the greatly swollen testis was reduced to its normal size.

##### 58. Treatment of Old Congenital Dislocation of the Hip.

L. O. ABBOTT (*Arch. of Surg.*, May, 1926, p. 983) points out that in old congenital dislocations of the hip it is often difficult to secure reduction by the usual methods of treatment because of the marked pathological changes that have taken place in the joint. After the age of 10 the force used in the so-called "bloodless method" may cause serious injury to the vessels and nerves. This condition, if left till adult life, is productive of severe disability, and palliative measures often fail to give any relief. The cause of failure to produce reduction in these cases is chiefly a shortening of the soft parts of the hip and thigh which fixed the head of the femur well above the acetabulum. Further, the acetabulum is poorly developed and filled with fat and folds of capsule. The first indication in treatment, therefore, is to overcome this shortening so that the head of the femur can be brought down; the second is to clear the acetabulum. Skeletal traction is effective in stretching the contracture of the soft parts and bringing the head down, and this is best applied by the Steinman pin through the shaft of the femur. Reduction is finally obtained by open operation; either arthrodesis may be performed or an attempt made to preserve motion. In five recorded cases there was improvement in the length of the leg and in the gait. Where bony ankylosis was obtained the results were best for weight-bearing, and this procedure gave the most satisfactory functional result. The end-results where movement was preserved were not so satisfactory.

##### 59. Surgical Treatment of Splenomegaly.

A. TROELL (*Lyon Chir.*, March-April, 1926, p. 137) records fifteen cases where surgical measures were undertaken to deal with enlargement of the spleen. Eight patients had Banti's disease, three haemolytic jaundice, two pernicious anaemia, one repeated haemorrhages, and one tuberculous infection of the spleen. In thirteen cases splenectomy was performed, while in two some of the vessels at the hilus of the spleen were ligatured. There was no operative mortality. Troell states that the effect of splenectomy in carefully selected cases is generally very satisfactory; in Banti's disease a complete cure may be expected. Even when there is bile in the urine, and ascites, and changes in the liver, the result may be favourable. From the operative standpoint it is useful to classify the cases of Banti's disease into three stages, depending on the duration and characters of the symptoms. If the onset is fairly recent, but there is a severe degree of anaemia, the prognosis is less favourable than in the more chronic cases, where the abdominal condition is more in evidence than the blood changes. Even where the changes in the blood—leucocytosis, eosinophilia, and the presence of nucleated red cells—persist after the operation of splenectomy the outlook is not unfavourable. It sometimes happens that the patient's resistance to other infections may be altered for a time after operation. Where splenectomy is contraindicated it may be necessary to resort to ligation of some of the splenic vessels; this seems to lessen the activity of the spleen in these conditions with a satisfactory result.

##### 60. Anal Fistula and Tuberculosis.

A. FERRE Y FERRE (*Arch. de med., cir. y esp.*, January 9th, p. 54, and January 16th, 1926, p. 104) remarks that it has been stated that the majority of fistulas are primarily tuberculous, although this is not a well established fact. At St. Mark's Hospital Lockhart-Mummery found tuberculosis in only 15 to 20 per cent. of his cases of fistula, and Gabriel at the same hospital, as the result of histological examination and inoculation of guinea-pigs, found tuberculosis present in only 15 per cent. Although it is certain that anal fistulas are very frequent in tuberculous subjects, this does not imply that most fistulas are tuberculous. According to the statistics of the Brompton Hospital, fistulas were found in only 4 per cent. of the tuberculous patients. Douglas Powell estimated the

frequency of fistulas in tuberculosis at 5 per cent., and Taylor at 1 per cent. Among 1,000 cases of fistula treated by Gault only 10 per cent. showed evidence of tuberculosis. Three groups of anal fistula may be recognized in association with tuberculosis: (1) non-tuberculous fistula in subjects of pulmonary tuberculosis; (2) tuberculous fistula in persons who do not present any obvious pulmonary lesions; (3) tuberculous fistula in subjects of pulmonary tuberculosis. In the first group operation is rapidly followed by recovery; in the second the part of the surgeon; in the third group the post-operative outlook is very gloomy, and extensive tuberculous ulceration of the colon, rectum, and skin of the anus is frequently present. The author comes to the conclusion that the relation supposed to exist between anal fistula and tuberculosis is merely of historical interest, and that anal fistula may coexist with tuberculosis as it may with any other affection.

#### 81. Typhoid Abscess of Breast.

P. O. SNOKE and J. L. GORRUTH (*Amer. Journ. Med. Sci.*, April, 1926, p. 555) report a case of the rare condition typhoid abscess of the breast. The patient was a young negro, aged 18, who, after a normal pregnancy and labour, weaned the child because lactation was deficient. Small lumps subsequently appeared in her breast, but gave no trouble. On admission to hospital she had a temperature of 103°, pulse 113, and respirations 22; there was no evidence as to the onset of the pyrexia. The physical examination showed slight bronchitis; rose spots and splenic enlargement were not noted; there was a slight leucopenia. The Widal reaction was negative, but *B. typhosus* was found in blood cultures. The Wassermann reaction was negative, and three examinations of the stools for typhoid bacilli were unsuccessful. The course of the fever was mild, but about twelve days after her admission to hospital a firm lump, rather more than an inch in diameter, was discovered in the lower inner quadrant of the right breast. On each side of this lump were two smaller ones; they were not fixed to the skin or chest wall; there was no fluctuation, and the swellings were not hot or tender. The possibility of the presence of tuberculosis or new growth was considered, but surgical treatment was at first refused. Two months later the mass in the breast was half its original size, but was at one point fixed to the skin and fluctuation was elicited. The breast was amputated, and in dissecting back from which pure cultures of *B. typhosus* were obtained. The post-operative history was uneventful. The amputated breast showed a large thick-walled abscess, the cavity of which was the size of a golf ball, and the wall varied in thickness from 4 to 23 mm.; it was filled with an orange coloured putty-like material. Small discrete bodies resembling lymph nodes were embedded in the axillary mass of fat. The authors think it probable that the three post-lactation masses were periductal adenofibromata which had become foci for typhoid bacilli. The enlarged axillary masses were adenofibromata. The differential diagnosis between tuberculosis and neoplasms could not be made before the breast was removed.

### Therapeutics.

#### 82. Palliative Treatment of Inoperable Cancer.

J. K. NARAT (*Med. Journ. and Record*, April 21st, 1926, p. 491) considers that in cases of inoperable cancer the most strenuous efforts should be made to obtain comfort and relief from pain and other distressing symptoms. In addition to general hygienic rules, and the avoidance of carbohydrates in the diet, since these have been shown to stimulate the growth of malignant neoplasms, potassium in the diet should be replaced by calcium. The author recommends that cooked vegetables should form the bulk of the dietary, with abundant and condiments should be forbidden. Cachexia may be combated by giving a large amount of distilled water, either plain or with fruit juices. Constipation should be treated by a liberal use of hot water, fruits, or paraffin, but the water they withdraw from the body. The pain may yield to bromide preparations if a neurotic element is present, and should be saved for the later stage of the disease, and luminal and its allies used first. In extremely severe pain a combination of morphine with magnesium sulphate gives the best results. In oral cancer mouth-washes containing boric acid or tannic acid will be found soothing. In cancer of the stomach gastric haemorrhages may be stopped by lavage with very hot water, containing a few drops of a 1 in 1,000 solution of adrenaline, together with the application of heavy

sandbags over the epigastrium. For the local treatment of external cancers, Narat recommends the avoidance of any irritant or stimulant preparations, and advises the use of pastes containing arsenic and mercury, liquid caustics, such as chromic acid, and a 2 per cent. aqueous solution of formalin. Martenstein's salt paste, first recommended for the treatment of lupus vulgaris, is also useful. The unpleasant smell of ulcerating growths may be controlled by local applications of granulated sugar, but, in view of the possibility that non-nutrient may thus be provided for the cancer cells, this treatment should be confined to very advanced stages of the disease. Powdered animal charcoal is also very effective, as also is a dusting powder of potassium permanganate and resorcin.

#### 83. Therapeutic Value of Red Rays.

G. M. LEVICK (*British Journ. Radiol.*, May, 1926, p. 185) has studied the therapeutic possibilities of the red rays in view of the beneficial results of sunlight on the muscles of persons suffering from tuberculous arthritis. Owing to the absorption of other rays by the water content of the tissues and the blood, red rays alone produce direct effects on the deeper tissues. The red rays were found to be absorbed by muscles and by inflammatory exudates. Cases of acute anterior poliomyelitis were investigated, in some of which the muscles showed complete degeneration reactions and no contraction could be obtained by the interrupted galvanic current. While the red rays were being administered special measures were also taken to preserve the nutrition and to prevent stretching of the paralysed muscles. Carbon filament vacuum lamps were used because they yielded light richer in red rays and infra-red frequencies than metal filament lamps in gas-filled globes. Red-stained soda glass screens were interposed in order that the maximum intensity of red rays might be used without overheating the skin; a reflector was used to direct the rays, the lamp was placed at a distance of two feet from the part affected, and daily exposures were given. In four children who had had anterior poliomyelitis, and in two patients with tuberculosis of the leg and knee, encouraging results were obtained, and chronic ulcers healed rapidly; the treatment is also recommended for lupus and acute inflammation. The author believes that irradiation with red rays produces in the deep tissues an increased power of resistance and repair and an improved nutrition.

#### 84. Argyrol in the Treatment of Aphthous Stomatitis.

M. PERRIS (*Rev. Méd. de l'Est*, February 1st, 1926, p. 94) states that aphthous stomatitis occurs very frequently among tuberculous patients. The ordinary alkaline treatment fails in the case of cachectic patients, among whom the disease frequently assumes a severe type. The author has discarded ordinary antiseptic applications and gargles or mouth-washes, in favour of a fairly strong solution of argyrol, applied freely to the lips, tongue, gums, and even to the tonsils. A sufficient quantity of argyrol (10 per cent.) solution should be applied in order that it should not be too greatly diluted by the saliva. The author occasionally adds 30 to 50 per cent. glycerin to the water before mixing with the argyrol solution, particularly when the buccal mucosa is dry and thickened. The solution should be applied freely every two or three hours to the mucous membrane of the mouth, fauces, and pharynx. After the first applications the progress of the disease is arrested, and, except in patients who are moribund, it may disappear from the mouth in three or four days. In the nasopharynx and oesophagus the infection is more obstinate, but nevertheless it improves under treatment. The author insists on the importance of frequent inspection of the mouth and pharynx in cases of phthisis, as the disease spreads so rapidly. He adds that argyrol has a definitely prophylactic action and is far more potent than protargol, the latter containing only 8 per cent. while the former contains 30 per cent. of silver. Argyrol is freely soluble in cold water, which should always be employed. Cotton-wool tampons may be replaced by camel-hair brushes if the former cause pain. Argyrol solutions usually cause little or no pain, especially when used prophylactically or in early cases of stomatitis, when they relieve dysphagia, enabling the patients to take food more freely.

#### 85. Thyroidin in the Treatment of Obesity.

A. J. CORO (*Rev. de med. y cir. de la Habana*, March 10th, 1926, p. 151), who records an illustrative case, while maintaining that thyroidin is of great value in the treatment of obesity, urges that before administering the drug the patient should be carefully examined and an opinion formed as to the general condition in view of the fact that sensitiveness to thyroidin is of supreme importance though subject to extreme variations. In the first place it should be noted that in rare instances obesity may occur in association with hyperthyroidism, so that minimal doses of thyroidin are excessive. On

the other hand, these subjects with symptoms of hypothyroidism are frequently met with. In such cases large doses are indicated which cause serious disturbance in normal persons. There is no doubt that cases of essential thyroid obesity occur which are almost always due to post-infective changes or tumours in the thyroid gland, goitre, and the like. But the most frequent examples of obesity are those cases of thyroid insufficiency which are due to the obesity itself. Super-alimentation gives rise to changes in all the glands, including the thyroid, testis, and ovary. Moreover, sensitivity to thyroïdin appears to be associated with a special condition of the vagus and sympathetic. Persons who show definite evidence of sympathicotonus react violently to the drug, whereas vagotonic subjects can tolerate a fair-sized dose. The administration of suitable doses for the treatment of obesity—namely, 15 to 20 cg. of thyroid extract daily—is followed by cheerfulness, alacrity, muscular activity, slight acceleration of the pulse, rise of blood pressure, increase in the peripheral warmth and colour of the skin. This healthy state only disappears when administration of the drug is prolonged and the doses are very large, when it is replaced by a sense of fatigue in the lower limbs, neuralgia, headache, general asthenia, tachycardia, and irritability. One always begins with a dose of 15 to 20 cg. and never gives it for more than ten days in succession. It is important that administration of the drug should be associated with the observance of a strict regimen.

#### 66. Coley's Fluid in Inoperable Malignant Tumours.

W. B. COLEY (*Therap. Gaz.*, March 15th, 1926, p. 157) gives a brief account of the origin, technique, and results of the treatment of inoperable malignant tumours by his mixture of toxins prepared from the *Streptococcus erysipelas* and *B. prodigiosus*. He found that in many cases of inoperable malignant disease of all kinds, but especially sarcoma, the tumours disappeared during attacks of accidental erysipelas, and that no recurrence followed. He gives details of several cases treated by his method, and adds that, though he has never advocated the use of the mixed toxins in operable cases, yet in cases of sarcoma of the long bones, where an operation would involve the sacrifice of a limb, a preliminary brief trial of the fluid for three or four weeks is worth while, after which, if no marked improvement is noted, amputation is advised, followed by prolonged toxin treatment. In periosteal osteogenic sarcomas characterized by a considerable amount of new bone formation, no such preliminary treatment is advised. For an adult the initial dose of his mixed cultures is 0.03 c.c.m., and for children correspondingly smaller amounts are used. The dose is increased daily by 0.03 c.c.m., and if no marked rise in temperature has occurred after three or four injections the degree of increase is doubled. After the appearance of a pyrexial reaction three injections a week are sufficient. The treatment is continued with occasional intervals until the tumour has entirely disappeared, and thereafter for several months. Coley finds that the individual susceptibility varies and has to be taken into consideration. He originally tried intravenous injections, but quickly abandoned them; more recently he has returned to this method, but is still not prepared to recommend it as safe. He considers that the intramuscular injection is practically free from danger if the foregoing principles are observed; in more than 1,000 cases he has had only three deaths, due to embolism in two cases, when the general condition of the patients was extremely bad. He gives a statistical account of the results obtained by this method in lymphosarcoma, Hodgkin's disease, and sarcomas of the testis and long bones.

#### 67. Auto-transfusion.

V. C. M. LEESBERG (*Nederl. Tijdschr. v. Geneesk.*, April 17th, 1926, p. 1617), who records four successful cases, states that transfusion of the patient's own blood is not a new invention, as it was employed by Scribonius in 45 A.D. Auto-transfusion can be performed in two ways. The first method consists in intramuscular injection of the blood so as to cause a general reaction and possibly an increased formation of immunizing bodies. The second method, which is indicated in the treatment of boils, consists in injection of the blood between the infected and non-infected tissue, the object being not to cause a general reaction but to produce compression of the blood vessels and lymphatics by an increased tension of the tissues. Boils in the region of the nose and upper lip are particularly suited for this treatment. Incision of the boils is inadvisable, as this causes a diminution of the tissue tension, and enables the abnormal products of disintegration and the micro-organisms to become generalized through the blood vessels and lymphatics and causes death from septicæmia. But if the case is treated according to Læwen's technique the morbid focus can be dealt with without the risk of dissemination, as the injected blood shuts off the focus from the rest of the body for about a week, which is

a sufficient period to bring the infective process to a standstill. It is also supposed that the blood has a bactericidal action. According to Vorschütz the first method has both a specific and a non-specific action. On penetration of the bacteria and toxins the organism reacts by formation of antibodies. The patient's blood is thus an ideal specific serum. The non-specific action is an example of protein therapy. In the first method 50 c.c.m. of blood is used, and in the second 25 c.c.m.

## Disease in Childhood.

### 68. Spastic Paralysis in Infants.

JULES COMBY (*Rev. Méd. de la Suisse Romande*, March 10th, 1926, p. 130) groups these cases in three categories: (1) Little's disease, characterized by a spastic paraplegia; the condition is congenital, being due to intrauterine ophthalmitis, often of syphilitic origin. (2) Various spastic paralyzes—monoplegias, hemiplegias, paraplegias, etc.; they follow on epidemic ocephalitis or some acute infection, and are due to a descending sclerosis of the pyramidal tracts. (3) Spastic obstetrical paralyzes due to accidental injury, instrumental or otherwise, at time of birth. All these forms commence with an inflammatory process of the cerebral motor area, which goes on to a descending degeneration of the pyramidal tracts. The prognosis depends on the degree and extent of the lesions. When there is much cerebral damage and signs of mental defect follow on the motor paralyzes the prognosis is almost hopeless. When the amount of paralysis is slight and intelligence is maintained considerable improvement can be expected, if not complete cure. Treatment in syphilitic cases should be specific. In all cases the author employs hot baths, followed by dry friction, passive movements, massage, and, later, education in active movements. He has had encouraging results from such treatment, which may, however, have to be continued for ten to fifteen years.

### 69. The Nervous Manifestations of Acetonaemia in Children.

F. FORNARA (*Rev. di Clin. Ped.*, May, 1926, p. 296) reviews the literature and records five personal cases of acetonaemia in children aged from 2 to 7 years, characterized by nervous symptoms such as somnolence alone or somnolence alternating with restlessness and convulsions. Examination of the urine in all the cases during the occurrence of these nervous symptoms showed the presence of acetone or diacetic acid in considerable quantities. Examination of the cerebro-spinal fluid was made in only two cases, in both of which it was negative. Treatment by alkalis administered both by mouth and rectum caused a rapid disappearance of the symptoms, thus confirming the existence of a direct relation between the nervous symptoms and the acidosis. Fornara emphasizes the importance of distinguishing the nervous symptoms associated with acetonaemia from tuberculous meningitis and the various forms of encephalitis.

### 70. Acute Appendicitis in Children.

F. CHRISTOPHER (*Amer. Journ. Dis. Child.*, April, 1926, p. 525), from a study of the literature, concludes that the most important points in the diagnosis of acute appendicitis in children under 5 years of age are tenderness and rigidity in the right lower quadrant, leucocytosis, and abdominal pain. It is more common to mistake appendicitis for other diseases than vice versa. Acute appendicitis in these children is characterized by its insidious onset and rapid progress to perforation and gangrene. The mortality is high. The treatment is early operation, and the younger the child the greater the urgency of the operation. The gridiron incision of McBurney is the best. The appendix should always be removed, except in cases of large localized abscesses; when its removal would entail extensive soiling of the peritoneum. In such cases the abscesses should be adequately drained, and, if necessary, the appendix may be removed at a later operation. When operating in the presence of a spreading peritonitis the appendix should be removed with the least possible disturbance of the abdominal viscera. In the post-operative treatment the body temperature should be maintained and the patient kept as quiet as possible; the Fowler position is generally best. Food and nourishment must be given promptly. Repeated hypodermoclysis of a 3 per cent. glucose solution is recommended. Lavage with weak soda solution is useful in vomiting and gastric dilatation. Distension is treated by stipes, the electric pad, and administration of pituitary extract. Enemas are withheld entirely in the bad cases, or are given only with the greatest caution and with low pressure. In desperate cases of ileus the sewing of a catheter into the small bowel for intestinal drainage is advised.



71. **Diagnosis of Congenital Syphilis in Infants.**

L. NÄRBERGER (*Zentralbl. f. Gynäk.*, March 20th, 1926, p. 785) describes the methods used in the diagnosis of maternal and infantile syphilis at the Universitäts-Frauenklinik at Hamburg, together with some results of treatment. Serological examination is made of retroplacental blood and of blood taken from the umbilical cord at birth. If either gives a positive Wassermann reaction the maternal blood is again examined before the patient's discharge from the clinic about the tenth day; non-specific reactions, which are not uncommon in non-syphilitic subjects at term, are thus detected. A second examination of the child's blood at this time is held to be unnecessary; a second negative test does not mean negative syphilis, for frequently a positive serological finding is not shown until the later appearance of clinical symptoms. Similarly a second positive Wassermann reaction is not necessarily a proof of syphilis and may be replaced in the course of a few weeks by a negative reaction. Great reliance, on the other hand, is placed on x-ray examination of the infant's extremities, which is made in the ninth week in every case in which there is a suspicion, on serological or clinical grounds, of congenital syphilis. Radiographic detection of bony syphilis is considered conclusive, and renders further blood examinations unnecessary. If x-ray signs are absent, however, the mother's and child's blood are again tested, and a positive result is taken to justify anti-syphilitic medication. The radiographic signs of congenital syphilis are those of (1) osteochondritis, with irregular increase of the calcification in the epiphyseal cartilage—most common in the femur, tibia and fibula, radius and ulna, or humerus, in the order named; or (2) ossifying periostitis of the long bones. In about one-fifth of the author's cases it has been possible to trace for periods of from two to five years infants suspected of syphilis at discharge from the hospital home. Of these more than one-half showed signs of syphilis, either clinically, or indicated by late development of a positive blood reaction, or by radiographic examination of the long bones. With regard to the effective treatment, Nämberger, collating his own cases with those reported in the literature, finds that 85 per cent. of syphilitic mothers treated during pregnancy give birth to healthy children, as compared with 41 per cent. of untreated.

## Obstetrics and Gynaecology.

72. **Diagnostic Value of Pituitary Extract in Obstetrics.**

W. ZORN (*Zentralbl. f. Gynäk.*, May 15th, 1926, p. 1315) mentions a number of conditions in which aid in diagnosis has been derived from the contraction of the pregnant uterus which follows the intravenous injection of pituitary extract. In the latter half of normal pregnancy this contraction is palpable within one minute, lasts from one to five minutes or even longer, and is followed by other shorter contractions; in the first half of pregnancy the uterine contraction following the injection within one minute may be somewhat shorter. The doses used were 0.25 and 1 c.cm. In the second and first halves of pregnancy respectively; the German preparation employed, which was found to be without danger for foetus and mother, is thought to be less concentrated than English preparations. In cases of rupture of the body of the uterus with escape of a large portion of the foetus into the abdominal cavity no uterine contraction after intravenous injection of pituitary extract is felt on palpation in the region of the fundus. In cases of suspected placenta praevia injections of pituitary extract may be of diagnostic assistance. The ensuing contraction of the uterus may lead to extrusion through the cervix of portions of placenta which previously had been palpable, and one patient who had been admitted to hospital for placenta praevia and did not have further vaginal bleeding after repeated pituitary extract injections was later found to have a small bleeding mucous polypus. The contraction of the uterus in response to intravenous injections of pituitary extract was found to be of considerable help in the diagnosis of early pregnancy, including cases as early as the sixth week. In distinguishing between early uterine pregnancy and softened myoma the absence of a change in consistency of the uterus after the intravenous injection of pituitary extract is definitely against pregnancy, although its presence is not conclusively in favour of that condition. Therapeutically Zorn recommends intravenous injection of pituitary extract, not only in the third and sometimes the second stage of labour and in Caesarean sections, but also in cases of complete rupture of the uterus. Given as a preliminary to the digital or instrumental clearing out of the uterus in cases of abortion, it acts by diminishing the capacity of the organ and increasing the resistance of its walls.

73.

**The Glycosuria of Pregnancy.**

M. LABBÉ and M. CHEVRI (*Paris Méd.*, May 1st, 1926, p. 416) remark that the occurrence of glycosuria and lactosuria during pregnancy has been recognized since 1856, when Blot first found glycosuria in all his patients during delivery and lactation, and in about 50 per cent. of pregnant women. Later statistics have ranged between 4 and 100 per cent., but probably in many cases the method of examination was unreliable. The authors find that lactosuria may appear alone or in conjunction with glucosuria at any stage of pregnancy, but more frequently during the last three months; of 53 pregnant women, fasting glycosuria was present in only three cases. They conclude, therefore, that spontaneous glycosuria is far less common during pregnancy than was thought previously. They agree that a renal hyperpermeability to glucose is often present during pregnancy, although this condition is not constant enough to be reckoned as one of the signs of pregnancy. Renal hyperpermeability alone does not, however, offer an adequate explanation of the presence of glycosuria; other organs, and the sympathetic nervous system in particular, have been held responsible. The authors' personal observations have convinced them that severe glycosuria during pregnancy is connected with, and forms part of, the syndrome of hepatic insufficiency associated with destructive changes in the liver cells, urobilinuria, presence of amino-acids, and of acidosis. It is probable that other organs, especially the pancreas, are affected by the hepatic derangement. The glycolytic disturbance is usually transitory, but it recurs with increasing severity in each subsequent pregnancy, and it is probable that ultimately, in some cases, it terminates in true diabetes.

74.

**Rupture of the Uterus.**

NORENS (*Bruxelles Médical*, June 6th, 1926, p. 955) records a case of rupture of the gravid uterus successfully treated without operation. The patient, a primipara aged 37, with rachitic flat pelvis, had been given an injection of pituitary extract on the third day of a prolonged labour. After delivery by forceps of a living child, no part of which had entered the abdominal cavity, a longitudinal tear three inches long was found during manual removal of the adherent placenta in the anterior wall of the body of the uterus. Hysterectomy was considered too risky in view of the exhausted condition of the patient, who had a considerable degree of albuminuria as well as ophthalmic goitre and an acute superimposed on a chronic bronchitis. She was placed in Fowler's position with ice on the hypogastrium, and treated expectantly. Sixteen days later she was discharged from hospital in good condition.

75.

GUENTHNER and SUZOR (*La Gynécologie*, March, 1926, p. 164) describe a case of spontaneous rupture of the uterus which occurred nineteen hours after commencement of labour in a 2-para aged 22; a tear in the left part of the lower uterine segment was discovered during manual exploration (on account of bleeding) after forceps delivery of a dead foetus presenting by the face and weighing 7 lb. 11 oz. At laparotomy a large subserous haematoma over the tear prevented recognition of the left uterine artery; hysterectomy was nevertheless performed, the uterine remnant being sutured with catgut and a Mikulicz drain inserted. The patient recovered after a febrile puerperium.

76.

**Internal Haemorrhage from Haematosalpinx.**

F. PATTI (*Rev. d'Obstet. e Ginecol. Prat.*, May, 1926, p. 246) records a case of extensive intraperitoneal haemorrhage from haematosalpinx, simulating an ectopic pregnancy. The patient, a 6-para aged 32, had contracted gonorrhoea two years previously during her last pregnancy and, after a febrile puerperium, had suffered from pelvic pain with painful and copious menses. A period of forty days' freedom from bleeding succeeded a menstrual interval of twenty days and was followed by severe pain and syncopal attacks. At the operation for acute anaemia ascribed to rupture of an ectopic pregnancy, the intraperitoneal effusion of blood was found to have come from a pervious distended Fallopian tube which contained a large blood clot; the smaller tube of the other side contained fluid blood. Microscopically no signs of ectopic gestation were detected, but well marked signs of subacute inflammation were present in the tubes of both sides; endometritis and sclero-cystic ovarian disease were also present.

77.

**Relative Pelvic Contraction.**

J. TORRE BLANCO (*Arch. de med., cir. y esp.*, May 22nd, 1926, p. 337) regards a relatively contracted pelvis as one of which the true conjugate diameter is over 7 cm. with a full-term foetus of normal size. During gestation in cases of relative pelvic contraction expectant treatment only is required, and the patient should be removed to hospital during the last days of pregnancy. Blanco maintains that therapeutic



abortion is a scientific heresy, and that artificial premature labour has more drawbacks than advantages; it should be permitted only in exceptional circumstances. It is also only in exceptional conditions that the classical Caesarean operation should be performed in the later days of pregnancy; otherwise it should be delayed until the onset of labour. When labour begins, if the head is still movable, one should wait if possible until the lower uterine segment is fully formed. If the head becomes incarcerated and does not advance operation should be performed before there is any considerable compression of the soft parts, periotomy or Costa's symphysiotomy being most indicated in these cases. If the foetal head sinks into the cavity of the pelvis spontaneous delivery should be awaited or forceps applied if they are indicated. Basiotripsy should be confined to cases when the foetus is dead, and should only be allowed with a living foetus in some exceptional cases in private practice.

## Pathology.

### 78. The Antirachitic Effect of Irradiated Cholesterol after Crystallization.

I. I. NITZESCU and G. POPOVICIU (*C. R. Soc. de Biologie*, May 28th, 1926, p. 1301) have investigated the action of crystallization on cholesterol that has been irradiated by ultra-violet light. Merck and Kahlbaum's cholesterol was purified by three or four successive crystallizations, and was then submitted for one to two hours to the rays of a quartz lamp. Part of the irradiated cholesterol was kept as a control, and part was subjected to repeated recrystallization in 96 per cent. alcohol. After each crystallization the fraction remaining in the supernatant fluid was recovered by decantation. Using rats that had been fed for four to twelve days on Sherman and Pappenheimer's rachitic dietary No. 84, they tested the effect of the irradiated and the non-irradiated cholesterol, and of the crystalline and the soluble fractions of the irradiated cholesterol. The results showed that the irradiated cholesterol lost its antirachitic properties after four recrystallizations and more completely still after six. The soluble fraction, however, remaining in the supernatant fluid was highly antirachitic, curing rats when administered in the proportion of 0.1 to 0.15 per cent. of the total dietary. A further series of experiments was made with digitonin. It was found that the fraction of irradiated cholesterol that was precipitated by digitonin was devoid of antirachitic power when added in the proportion of 0.1 per cent. to the dietary, whereas the non-precipitable fraction arrested the appearance of rickets even in the proportion of 0.002 per cent. The antirachitic power of irradiated cholesterol, therefore, appears to reside in the alcohol-soluble and digitonin-soluble fractions.

### 79. The Defensive Mechanism of the Parametrium.

T. HOFBAUER (*Bull. Johns Hopkins Hosp.*, April, 1926, p. 255), as the result of examining forty-three specimens of parametrium obtained from full-term pregnant uteri, reports that during pregnancy monocytes and plasmatocytes appear in the base of the broad ligament and form a protective tissue with phagocytic powers, and that this mechanism is increased in prolonged labours, but more especially in cases where infection is present. The protective barrier is developed from "resting wandering cells" and from adventitial cells. This phagocytic tissue has to be seriously considered as affording a barrier to infection, its method of acting being biological, by phagocytosis; it thus provides a measure of local immunity in a site frequently exposed to invasion from infective agents and will absorb the debris of attacking microorganisms. The exact mode of its production is not quite clear. The development of lymphoid tissue in the walls of the lymphatics supplying the parametrium may possibly be looked upon as an addition to the defensive forces opposed to infection.

### 80. The Heat-stable Peroxidase of Bacteria.

ANNE B. CALLOW (*Biochem. Journ.*, 1926, xx, No. 2, p. 247) has endeavoured to ascertain the nature of bacterial peroxidase. The term "peroxidase" was originally applied to an enzyme of the higher plants that was capable of imparting a blue colour to guaiacum in the presence of hydrogen peroxide. This enzyme was destroyed by boiling. Later it was found that certain iron-containing substances, such as haemoglobin, also gave the peroxidase reaction; since this enzyme, however, resisted boiling, it was called pseudo-peroxidase. The author finds that bacterial peroxidase resembles this latter enzyme in being thermostable. Suspensions of bacteria which had been washed several times were placed on a white dish; 2 drops of a freshly prepared solution of benzidine or of guaiacum and 2 drops of 20-volume hydrogen

peroxide were added. The presence of peroxidase was indicated by the appearance of a blue colour. The reaction occurred even after the organisms had been boiled for five minutes. It was noticed that the reaction after boiling was generally stronger than that given by the fresh bacteria and was permanent, whereas that given by the fresh bacteria faded away in about half an hour. This suggested that there might be a thermolabile reducing system in bacteria which was responsible for the fading. To test this the author examined the capacity of different organisms to reduce methylene blue, and found that as a rule those organisms which contained a methylene blue reductase all gave a fading blue colour with the peroxidase reagents. Moreover, sodium formate, which accelerates the reduction of methylene blue, increased the rapidity of the fading reaction, whereas propyl alcohol and cyclohexanol, which retard the reduction of methylene blue, decreased the rapidity of the fading reaction. The one anaerobe tested, *B. sporogenes*, gave only a slight peroxidase reaction.

### 81. The Number of Lymphoid Follicles of the Human Large Intestine.

C. DUKES and H. J. R. BUSSEY (*Journ. Path. and Bact.*, January, 1926, p. 111) have made a study of the lymphoid follicles of the large intestine and have worked out a technique which has enabled them to ascertain their numbers. The follicles are situated chiefly in the submucous coat, but a few are found between the two layers of the muscularis mucosae. From the submucosa the cells pass through the muscularis mucosae and appear to be discharged eventually into the lumen of the bowel. To calculate their frequency the intestine was fixed in 10 per cent. formal, washed in water, and the longitudinal muscle bands and the mucosa removed; the remaining portion was stained in 1 to 2 per cent. methylene blue and differentiated in dilute acetic acid. By this means the follicles showed up as bright blue spots, 1 to 2 mm. in diameter, against a faintly blue background. They were then counted by naked eye between two glass plates, the upper of which was etched in square centimetres. At least four pieces of intestine from different parts of the colon were examined. The results show that the average number of follicles per square centimetre increases from above downwards; in the ascending colon the mean was 3.24, in the sigmoid 4.18. Since the coefficient of variation is high the actual numbers in any given specimen may range from less than one to about seven. Altogether the intestines of 117 persons dying from various causes were examined. Children were found to have more follicles than adults, and patients dying from peritonitis had a higher average than normal. With this exception no association with any disease was noticed.

### 82. Histology of Aural Polypus.

P. RUSSI (*Arch. Ital. di Otol., Rinol. e Laringol.*, March, 1926, p. 126) has investigated the structure of polyp occurring in the ear, and has come to the conclusion that the great majority are inflammatory in origin; they present all the characteristics of innocence, but there is always some doubt where a blastoma has taken on the appearance of a polypus. The polyp of the tympanum may be divided into the following classes: (1) the hyperplastic type, including the mucoid polypus of Steudner and Dnplay, the plasmoma, and the polypus associated with cholesteatoma; (2) the neoplastic type, which may include epithelial or connective tissue, or may be an endothelioma; and (3) the granulomatous type, which may be syphilitic or tuberculous. The diversity of the structure of the granulomatous type may depend on the outside factors affecting the infection and on the conditions under which the organism grows. The plasmoma is very vascular and is found to have plasma cells grouped around the vessels. In some cases a cholesteatoma may be found in the centre of a mass of polypoid tissue. The hyperplastic and neoplastic types behave according to the general laws of their particular type of tissue and may at the same time very closely simulate the inflammatory type.

### 83. Intestinal Absorption of Fat after Gastric Resection.

A. CIMINATA (*Arch. Ital. di Chir.*, February, 1926, p. 117) refers to his previous paper on the effects of gastric resection on the function and structure of the pancreas and alimentary absorption (*Epitome*, May 1st, 1926, para. 470), and records his further observations on dogs ten months after the Billroth II gastric resection, which prove that the capacity for absorption of fats, which is slightly diminished after the operation, subsequently returns to the normal. The conclusion is therefore justified that deviation of the acid duodenal chyme, as generally happens in exclusion of the pylorus in gastro-jejunostomy, does not involve a permanent diminution in the absorption of fats.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### Renal Rickets.

44. According to G. V. ASHCROFT (*Journ. of Bone and Joint Surgery*, April, 1926, p. 279), the clinical picture of renal rickets shows stunting with or without demonstrable late onset, and occurring with the urine is pale, of low specific gravity, and usually contains albumin. The deformity appears about puberty, and in the twenty-four cases collected there was a great preponderance among females. There was marked muscular asthenia, but no muscle wasting. The patients adopt an atonic posture when standing; the gait is waddling and they are scarcely able to lift the feet from the floor. Radiograms showed a general rarefaction and physis predominates, with a hazy woolly porosis. The kidneys showed chronic interstitial nephritis, while the suprarenals had thickened capsules and the thyroid gland appears inactive from an ascending infection of the urinary tract which has spread to the suprarenals. The best treatment is cod-liver oil, calcium salts, and perhaps thyroid extract. Masango and Ashcroft think that the evidence warrants the suggestion that the disease is due to fibrosis of the suprarenal gland.

### Gerlier's Syndrome in Epidemic Encephalitis.

45. Gerlier's Syndrome in Epidemic Encephalitis. H. VERGER (*Gaz. hebdomadaire de Médecine de Bordeaux*, March 14th, 1926, p. 164) records three cases of epidemic encephalitis in patients aged 17, 61, and 31 respectively, who presented the syndrome described by Gerlier in 1887 under the name of "paralytic vertigo," and later called "kubisagari" by the Japanese. The syndrome is characterized by attacks of ataxic paralysis chiefly affecting the extrinsic muscles of the eyes, the bulbar muscles, the muscles of the front and back of the neck, and in some instances those of the hands. The vertigo is only a secondary phenomenon or of the ordinary consequence of the visual disturbance. Neuralgias of the lower limbs. Verger comes to the conclusion, first, that epidemic encephalitis may appear in a form resembling Gerlier's syndrome, and secondly, that the epidemic disease of Gerlier and the kubisagari of the Japanese were probably only episodes in epidemic encephalitis of which the existence was unknown prior to the work of Crochet, Moutier, and Calmette.

### Technique in Artificial Pneumothorax.

46. Technique in Artificial Pneumothorax. W. NEEMAN (*Med. Klin.*, March 26th, 1926, p. 491) points out that while the success of artificial pneumothorax depends largely on the dexterity of the operator, the simplification of the apparatus used is, nevertheless, an important factor. He describes the outfit which he uses. This consists of two bottles, graduated and connected at their bases, and contained in a portable wooden box. The bottles need not be raised or lowered. The bottles need not be moved, therefore, except in special cases when a very high pressure is required. Another feature is that the taps connecting the bottles with the handle of the needle itself, with the needle are placed on the handle of the needle, thus obviating the need for an assistant. The author employs ordinary air and considers it to be perfectly safe. He uses blunt needles for induction and sharp ones for refills, and thinks that in most cases the axilla is the most suitable point of entry.

### Prophylaxis of Measles.

47. R. KOCHMANN (*Deut. med. Woch.*, April 2nd, 1926, p. 565) states that in November, 1925, a prophylactic measles serum, obtained from animals and prepared under Degkwitz's direction, was placed on the market. Kochmann has recently employed this serum in a dose of 10 c.c.m. in nineteen children, aged from 9 to 21 months, who had been exposed to measles. All at the time of inoculation were healthy and afebrile, and some had been given quartz lamp treatment for rickets. Thirteen children, six of whom had

more or less severe serum sickness, contracted measles and only six escaped. The latter, however, afforded no proof of the value of the serum, since one had already had measles, one was of an insusceptible age (4 months), the third could not be followed up, the fourth died of nephritis in the incubation period, and in the remaining two the history of measles was uncertain. Two of the unsuccessfully inoculated children and six had bronchopneumonia, otitis, or both, as complications. The serum sickness which occurred in more than a third of the cases was almost as severe as an attack of measles untreated by serum. Kochmann concludes that the new method should not take the place of convalescents' serum in the prophylaxis of measles.

### Hereditary Diabetes Insipidus.

48. G. MARAÑÓN and E. BONILLA (*La med. Ibera*, March 20th, 1926, p. 337), who record an illustrative case. Of fifty cases seen by Marañón about 75 per cent. developed the disease before 10 years of age. The onset of polyuria generally occurs in the years immediately preceding puberty. The disease is uncommon in the first two years of life: the earliest case is that recorded by De Luca (1915), whose patient was aged 3 months. Variet one at 17 months, and Pincherlo and Magli two cases at 12 months and 17 months. The present authors' case occurred in a male infant aged 1 year, whose parents noticed that he was passing urine frequently and in large quantities, and was constantly asking for water. When seen by the authors at the age of 20 months he was passing 8 litres of urine in the twenty-four hours and drinking approximately the same amount of water. The specific gravity of the urine was 1004. Injection of 1½ c.c.m. of pituitrin caused the polyuria to fall temporarily to 4½ litres in the twenty-four hours. There were no nervous symptoms or any evidence of pituitary lesions. X-ray examination showed a completely normal sella turcica. In view of the fact that all writers have emphasized the importance of the hereditary factor in diabetes insipidus, it is noteworthy that the child's mother suffered from polyuria.

### The Pigmentary Syphilide.

49. J. BEJARANO and J. A. GAY (*Arch. de med., cir. y esp.*, March 13th, 1926, p. 481), as the result of their personal experience and a study of the literature, come to the following conclusions: (1) Various causes distinct from syphilis may produce a clinical picture resembling properly pigmentary syphilide. (2) The pigmentary syphilide, as so called always follows a macular or papular syphilitic type and is shown by the fact that vascular lesions of the suprarenal capsule may be regarded as certain. The hypothesis of Brandwagner and Alquist, who regard the origin of the pigmentary syphilide as a purely local one, is very doubtful. (3) The term "achromia" is not suitable, as the authors have never found a single point of the lesion in which pigment was completely absent. The term "syphilitic leucoderma" is therefore inapplicable. (4) A pigmentary syphilide in regions other than the neck does not appear to be influenced by the action of light.

### Alcoholic Amblyopia.

50. L. BUSSY (*Journ. de méd.*, March 20th, 1926, p. 161) states that there has recently been an increased incidence of ocular disease referable to alcoholism, and particularly of retinobulbar neuritis. This condition, which was formerly chiefly seen in the out-patient department, is now equally common or even more frequent in private practice. It is difficult to say whether this is due to the spread of alcoholism to the upper classes or to a redistribution of wealth as the result of the war. The production of the ocular lesions is said to be due to alcohol alone. Tobacco does not appear to play any part, so that the term "nicotine and alcoholic amblyopia" should be abandoned. Bussy has never seen a pure case of nicotine fibres or connective tissue of the optic nerve, but the disease is primarily retinal. The toxin is believed to act on the ganglion cells of the retina, either by destroying them directly, or rather by rendering them specially sensitive to the action of light. In the treatment, therefore, of alcoholic amblyopia, especially in all its forms he forbids, not only should alcohol in all its forms be forbidden, but the eyes should be protected constantly against the light, and particularly against the ultra-violet rays.

91. **An Epidemic of Mild Jaundice.**

P. J. J. HONIG (*Nederl. Tijdschr. v. Geneesk.*, June 5th, 1926, p. 2347) alludes to the mild epidemic of Weil's disease reported by Körner (*Epitome*, August 22nd, 1925, para. 120) and describes an outbreak of 25 cases which occurred in the Dutch village of Zuanderdorf, which has a population of 400, between November, 1925, and March, 1926. Of the patients 14 were males and 11 females. Examination of the blood was made in 6 cases with negative results. Inoculation of guinea-pigs had no effect, and the blood serum did not agglutinate *Leptospira icterohaemorrhagiae*. The disease ran a very mild course, the jaundice as a rule disappearing within a fortnight. The occurrence of 25 cases within a few months suggested a local source of infection, but none could be found. In particular no spirochaetes could be detected in the ditch water near a school where most of the cases occurred.

92. **Urinary Complications of Pertussis.**

S. CANNATA (*La Pediatria*, June 15th, 1926, p. 663) draws attention to certain urinary complications which he has noted in a collection of some 600 cases of pertussis. Albuminuria of slight degree was frequent, especially in the early stages; it was usually transitory. Haematuria was rare; in 6 cases when the coughing attacks were very violent blood appeared in the urine. Slight and transient haemoglobinuria was seen in four cases. Acute glomerular nephritis was noted in 22 cases, and haemorrhagic nephritis in 4. Cystitis and pyelocystitis were found in 47 cases but disappeared eventually.

## Surgery.

93. **Treatment of Cerebral Tumours.**

R. LOZANO (*Rev. med. de Barcelona*, April, 1926, p. 352) reviews the literature and records his own experience of thirty-two patients with the diagnosis of cerebral tumour on whom he operated. In thirteen no tumour was found at the operation, and in one of those cases the necropsy confirmed the absence of a tumour, but showed a hydrocephalus of unusually large size. Two deaths occurred in Lozano's series—the first seventeen days and the second two months after the operation. In the last cases the necropsy showed an enormous hydrocephalus and a small tumour on the wall of the fourth ventricle. The subsequent history of the other patients was not known, with three exceptions. The first, which was a case of posterior craniectomy for cerebellar tumour, survived for a few years with the symptoms attenuated but without recovery of vision. The second patient, who had a calcified tumour the size of a mandarin orange removed from the left frontal lobe, was completely cured, as the intense headache, epileptiform attacks, and mental disturbance had disappeared for two years. The third patient, who had been operated on for a cyst in the left parietal lobe, had been alive for six months after the operation with paralysis of the limbs on the opposite side and difficulty in articulation, both of which were improving gradually.

94. **Adenoma of the Tongue.**

G. BOLOGNESI (*Studium*, March 20th, 1926, p. 119), who records an illustrative case, comes to the following conclusions: (1) Adenoma of the tongue is a very rare occurrence. (2) In the present state of our knowledge it is impossible to explain the rarity of this tumour, which originates from definite groups of mucous glands in the tongue, in contrast with the relative frequency of carcinoma of the tongue, which is constituted by embryonic elements. (3) Most of the cases described have occurred in the male sex. (4) The tumour may be found at the base of the tongue, the sides, the lower surface, or towards the tip. (5) The condition is most frequent in young persons, but Péau's and Bolognesi's cases were in patients over 50 years of age. (6) Adenoma of the tongue is a benign affection of slow growth, and in only exceptional cases does it grow to a size sufficient to cause mechanical disturbance of respiration, mastication, and deglutition. (7) Malignant degeneration is uncommon, being rarer than in adenomata situated elsewhere. (8) In structure the tumour is a tubular, follicular, or acinous adenoma. (9) Clinically adenoma of the tongue is a round or ovoid tumour, of moderate size, definite outline, of soft and elastic consistence, nodular surface, and freely movable beneath the mucous membrane of the tongue and on the sublingual muscular plane. (10) The differential diagnosis is comparatively easy: adenoma is distinguished from fibroma and lipoma chiefly by its consistence, surface, colour, and evolution, and from lingual goitre, which is situated at the base of the tongue and gives rise to serious symptoms.

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95. **Treatment of Dislocations of the Patella.**

P. MALLET-GUY and J. ROLLET (*Rev. de Chir.*, No. 2, 1926, p. 105) state that dislocations of the patella may assert their presence at or shortly after birth, while in many cases they are not discovered for a considerable number of years afterwards. Most of them are recognized, however, when the child begins to walk, and the patella becomes dislocated outwards over the external condyle when the knee is flexed. Sometimes the condition is produced as the result of an injury where the knee is suddenly and violently flexed. If treatment is not undertaken the dislocation becomes a more or less permanent condition with alteration in the surrounding structures and muscles. Numerous operations have been devised from time to time to deal with this deformity with various degrees of benefit. The authors have adopted the following method in the so-called old dislocations of the patella with success. A U-shaped incision is employed extending to below the anterior tuberosity of the tibia. After reflecting the skin the joint is opened on the outer side of the patella by incising the lateral expansion of the vasti and the capsule of the joint; if the synovial membrane is hypertrophied it is excised. The dislocation is then reduced and the patella can be easily placed in its normal position, the outer incision being enlarged if necessary. The tibial insertion of the quadriceps extensor is then transplanted to the inner side of the tibia in the usual way. To avoid the possibility of recurrence this is rather overdone than otherwise, and the capsule on the inner side of the patella is plicated. The opening in the joint to the outer side is closed by reflecting the fibrous periosteum from off the anterior surface of the patella, which is easily accomplished. Finally the skin is sutured in position. The patient walks two months later.

96. **Axillary Thrombosis treated by Phlebotomy.**

L. BAZY (*Bull. et Mém. Soc. Nat. de Chir.*, May 22nd, 1926, p. 529) records a case of thrombosis of the axillary vein treated by surgical operation with a most satisfactory result. The condition occurred in a man, aged 27, who was admitted to hospital with oedema, pain, and swelling in the arm following some violent muscular work ten days previously. There was no history of injury or disease to account for the symptoms, and the condition was diagnosed as a thrombosis of the vein. The vein was therefore exposed and opened and numerous clots evacuated, after which it was carefully sutured. After the operation there was a rapid return to the normal. Operative treatment appeared the only course possible in this case in view of the increasing intensity of the swelling and pain in the arm, and was justified by the result. The etiology of the condition is uncertain; there was no evidence of tubercle or syphilis, while cultures taken from the wound proved negative. The only possible explanation was that the condition was due to the excessive muscular action of the limb shortly before the onset of the symptoms.

97. **Cautery Circumcision.**

I. G. DUNCAN (*Urol. and Cut. Rev.*, April, 1926, p. 195), in cases of chancre, chancroid, and neglected gonorrhoea complicated by balanoposthitis, has recently been employing circumcision by cautery. The principal points of difference from the ordinary method are as follows: (1) A catheter is tied round the penis as close to the abdominal wall as possible, and novocain is injected just anterior to the catheter instead of at the site of incision. (2) The incision is made through healthy tissue, all the infected area being excised, so as to prevent the leaving of any folds or pockets which might harbour infection. (3) The entire area of raw surface is lightly touched with a cautery, special attention being paid to the margins of skin and mucous membrane, and to any bleeding vessels, or any ulcer on the glans penis. (4) No ligatures or sutures are used. (5) After the denuded surface has been sponged with alcohol it is dressed with an alcoholic solution of picric acid, and afterwards with Ochsner's solution. The cases usually heal in three or four weeks.

98. **Intussusception Statistics.**

W. F. SUERMONDT (*Nederl. Tijdschr. v. Geneesk.*, April 10th, 1926, p. 1524) reports that 40 cases of intussusception were treated at the surgical clinic at Leyden from 1908 to February 15th, 1926, with 15 deaths, and a mortality of 37.5 per cent.; 27 were boys and 23 girls. One infant was aged 2 months, two 3 months, four 4 months, four 5 months, four 6 months, three 7 months, two 8 months, three 9 months, two 10 months, two 11 months, four 12 months, one 15 months, one 16 months, two 18 months, and five 2 years or over. In 3 there was a colic-colic intussusception, in 2 an enteric intussusception, and 35 were examples of the ileo-caecal form. In 2 there was a polypus of the small intestine, and 2 patients had purpura. In 29 the intussusception could be felt before the operation. In 5 cases, which were all fatal, the intussusception could

be felt per rectum. In another 4 cases which did not survive a fistula was made in the everted appendix, owing to paralytic ileus. In 25 cases, of which 5 were fatal, the lntussusception was reduced and appendicectomy performed. Reduction of the lntussusception alone was performed in 4 cases with 3 deaths. Resection was carried out in 10 cases with 4 deaths. The average duration of stay in hospital after operation was sixteen days. Closure of the appendix fistula has naturally not taken place by the end of this time, but occurred some months later. The causes of death in Auer's series were as follows: peritonitis, 6 cases; lntoxication due to the long duration of the intestinal obstruction 7 cases; pneumonia two days after the operation, 1 case. The mortality of cases operated on after twenty-four hours (30 per cent.) was more than three times as high as in those operated on within twenty-four hours (6.3 per cent.). Sacramento maintains that valuable time should not be lost in attempting to reduce the lntussusception by bloodless means. In the ileo-caecal form reduction of the lntussusception should be followed by appendicectomy. In the ileo-ileal and colic-colic forms reduction of the lntussusception only should be performed. When the condition of the gut is bad, it is better to perform resection than run the risk of late perforation of the intestine due to gangrene.

### 99. Treatment of Carpal Ganglia.

J. J. GINSBURG (*Zentralbl. f. Chir.*, May 8th, 1926, p. 1176) recommends the modern practice of radical extirpation of carpal ganglia. Recurrences are found, according to different authorities, in from 3 to 30 per cent. of the cases. The author states that these cysts may be classed according as they arise from the joints, the tendons, or the periosteum. Some writers hold that ganglia originate in a colloidal neoplasm of the connective tissue and are unicellular or multicellular, according to their position and anatomical relations. Others hold that these cysts are of traumatic origin, with subsequent blood effusion. Endarteritis in the vicinity of the cyst has been described. Some ganglia appear to originate in colloidal degeneration of the capsular ligament or of the tendon sheaths, with secondary atrophy and cyst formation; these are primarily unicellular and subsequently become multicellular. Ginsburg recommends transverse incision of the skin and cyst wall, followed by careful removal of the lining membrane. Mature ganglia are dissected out more readily than those that are immature.

### 100. The Complications of Gastro-enterostomy.

HARTMANN (*Bull. et Mém. Soc. Nat. de Chir.*, April 3rd, 1926, p. 372), discussing the after-results of gastro-enterostomy, finds that most of the post-operative complications are the result of infection of the stomach wall. The presence of organisms in the ulcers themselves has been established by Rosenow. Hartmann found organisms present in the stomach wall some distance from the ulcer, and has confirmed this by the removal of fragments of mucosa at operation. He has encountered five cases of violent ileitis, three following anterior and two posterior gastro-enterostomy. Two of those patients were relieved by an anastomosis between the ascending and descending ilia. He thinks that reflex bilious vomiting is not a true vicious circle; it may arise as the result of a localized peritonitis below the mesocolon. It usually subsides after a few days, when the peritoneal irritation settles down. Acute gastric dilatation following operation is probably due to paresis of the stomach and not to infection. It can generally be relieved by gastric lavage. Necropsies have not revealed peritonitis in these cases. The cause of gastro-jejunal ulceration still remains obscure, although it has been shown to be the result of the prolonged effect of the acid gastric juice on the jejunal mucosa.

## Therapeutics.

### 101. The Employment of Vaso-dilators in Hyperplestia.

C. MATTEI and J. DIAS-CAYARONI (*Rev. Méd. de l'Est*, March 1st, 1926, p. 149) record their researches on the effects of extract of mistletoe, sodium nitrite, and trinitrin in seven cases of hyperplestia. All the patients had a moderate degree of arterial hypertension without signs of secondary renal or cardiac disease. Prior to any medicinal treatment every patient was kept in bed on a diet of milk and vegetables, and their blood pressures were recorded at regular intervals during the twenty-four hours for several days. The majority of the patients, after two days' rest, showed a spontaneous and definite fall of blood pressure, more marked in the maximal than in the minimal pressures. The extract of mistletoe was given by intramuscular injection (5 cg. night and morning) and in pills (15 cg. night and morning) for four days. The latter acted more slowly and in a lesser degree, but

otherwise their effect was similar to that of the intramuscular injections, which produced a regular fall of maximal temperature, beginning ten minutes after the injection and exhibiting its greatest effect one hour later. When treatment was discontinued the blood pressure began to rise on the next day, and six days later the blood pressure had returned to its former height. Sodium nitrite (0.25 cg.) in solution given at 10 a.m. and 6 p.m. for four days produced a rise of maximal pressure during the first forty-eight hours; in one case this amounted to 30 mm. above the maximum pressure observed prior to any treatment. On the third and fourth days there was no rise, but a lowering of the maximal pressure (averaging 20 mm.) began in ten minutes and reached its lowest point thirty to sixty minutes after the dose had been taken. There was no variation of minimal pressure, and on the first day after the cessation of treatment the blood pressure rose to its original figure. Every dose produced tachycardia. Trinitrin was administered to patients who had failed to respond to rest and dietetic treatment. It produced an initial rise followed by a more marked fall (20 to 40 mm. Hg) in ten to twenty minutes after ingestion. Two hours later the maximal pressure was frequently higher than before commencement of treatment. The authors conclude that sodium nitrite is useless and dangerous, and trinitrin is uncertain and transient in action. Both produce tachycardia without definite reduction of blood pressure. Mistletoe is the most reliable agent in reducing the maximum pressure during and for a few days after cessation of treatment. It is less reliable in regard to minimal pressure, but it appears to reduce the force of the ventricular systole as the systolic pressure falls. This partial result is not accompanied by a similar reduction of minimal pressure, which might induce sleep. In every case the maximal and minimal pressures returned to the original scale within a few days of the cessation of treatment.

### 102. Treatment of Anaemia.

N. B. EDDY and A. W. DOWNS (*Canadian Med. Assoc. Journ.*, April, 1926, p. 391) urge the importance of diet in treating anaemia in view of its value in blood regeneration. The dietary factors favouring the production of erythrocytes and haemoglobin, arranged in order of their beneficial influence, have been found to be (1) cooked beef liver, (2) lean beef, (3) beef heart, (4) spinach and beet tops, (5) fruits and other green vegetables. Arsenic and the American remedy germanium dioxide were found to be inert, but iron was beneficial when the supply of it in the body had been exhausted. In many cases of secondary anaemia the oral administration of a combination of dried powdered spleen and red bone marrow gave good results, and the subcutaneous injection of small doses of secretin was also found to increase the numbers of both red and white corpuscles. The authors add that, although liquid preparations of secretin do not keep good for more than a few days, a satisfactory dried powder can be readily obtained which keeps well, is very soluble, and its aqueous solution can be easily sterilized.

### 103. Ergotamine Tartrate in Obstetrics.

C. J. GREMMÉE (*Nederl. Tijdschr. v. Geneesk.*, April 3rd, 1926, p. 1387) states that ergotamine tartrate is a reliable drug which has a stronger action than other preparations of ergot and does not give rise to any infiltration after injection. It has chiefly been used in Swiss clinics, where it has been found that the dose of 1 c.cm. originally recommended is too high and has been reduced to 1/2 c.cm. In labour it should be used only during the third stage, when it is said to be extremely valuable for haemorrhage due to uterine atony, and it is also useful for subinvolution. In the puerperium it is indicated when it is not certain whether the membranes have been completely expelled and involution is not complete. In such cases 1/2 c.cm. is injected daily intramuscularly.

### 104. Acetflavine in Gonorrhoea.

R. DUHOT (*Le Scalpel*, March 20th, 1926, p. 253) observes that the various local methods of treating gonorrhoea during the last thirty-five years have proved to be of uncertain value. Many investigators have therefore tried the intravenous route, and Duhot reported in 1912 that some syphilitic patients, suffering also from gonorrhoea, were cured of the latter after injections of neosalvarsan. Systematic injections of neosalvarsan, however, failed to cure acute gonorrhoea. Of other chemical substances similarly used the most efficacious is said to be acriflavine (see *Epitome*, June 12th, 1926, para. 593), which is a powerful yellow dye, fluorescent in solution, which has been used for urethral injections for several years, but has only recently been injected intravenously. The author quotes Jausion's statistics, which he has been able to confirm in his own practice. Jausion's method is as follows: A 2 per cent. solution of acriflavine is injected on alternate days until cure is effected. The dose is 5 c.cm., which may be



given daily during the first two or three days if abortive treatment be desired. Jausion discards all local treatment, but Duhot reinforces those injections with prolonged irrigation of weak potassium permanganate. Acriflavine stains the skin and then a deep yellow colour, but this discoloration can be removed by slightly acid methyl alcohol. Some patients suffer from slight shock, accompanied by a sensation of heat and a bitter taste in the throat; and occasionally there is a sensation of weight in the injected arm a few hours after the injection. The solution is caustic, and therefore it may produce endophlebitis, or inflammatory nodules at the site of the injections. Duhot uses a 10 c.cm. syringe half-full of the acriflavine solution, which is neutralized by completely filling the syringe with venous blood. This is slowly injected into the vein, fresh blood being drawn into the syringe and reinjected repeatedly. Jausion has treated 165 patients, and of these 153 appear to have been cured. It is claimed that this treatment, by carrying the disinfectant in the blood stream, is much more efficacious than any local injections or applications. Duhot states that he has treated 56 patients. Of these, 44 had simple acute or subacute gonorrhoea, while 12 were chronic cases with orchitis, prostatitis, etc. The total number of injections given was 664 and the treatment failed in 2 cases. In some cases six injections sufficed, while in others twenty or twenty-five injections were required.

#### 105. Expectant Treatment of Diphtherial Laryngitis.

E. BURGHARD (*Monatsschr. f. Kinderheilk.*, March, 1926, p. 626), from his experience of 70 cases of diphtherial laryngeal stenosis in Schlossmann's clinic at Düsseldorf, maintains that operation should be avoided as much as possible in laryngeal diphtheria, though not absolutely abandoned, as he claims that this is the best means of reducing the number of fatal cases. Expectant treatment should consist in the administration of antitoxin, large doses of narcotics until the membrane has become loosened, free supply of fresh air, the bed being kept close to the open window, and the avoidance of local treatment, steam tents, and inhalations, which serve only to frighten the child. Tracheotomy should only be performed when there is a sudden mechanical obstruction to the larynx and in those cases where there is any doubt as to whether there is a descending process. The operation should not be performed in mild and moderately severe cases, in cases of descending croup, and those accompanied by pneumonia, in infants owing to the bad prognosis at this age, and in influenza stenosis.

#### 106. Treatment of Strophulus.

P. VALLERY-RADOT and P. BLAMOUTIER (*Paris méd.*, April 24th, 1926, p. 398) during the last eighteen months have treated children suffering from strophulus, otherwise known as acute simple prurigo (Brocq), by oral administration of peptone one hour before meals. As the number of meals has to be reduced to four daily this method is inapplicable under the age of 1 year. From this period up to the age of 30 months four meals should be given daily—namely, at 8 a.m., noon, 4 p.m., and 8 p.m. No food should be taken between meals. After the age of 30 months only three meals should be given daily—namely, at 8 a.m., 1 p.m., and 7 p.m. The treatment should not be continued for too long a period. The best plan is to give the peptone for ten consecutive days, omit it for five days, and then give it for another ten days. A diminution in the number of the papules and vesicles occurs after a few days' treatment, but a relapse is liable to follow if the treatment is discontinued. The peptone therefore should be given until a month after complete disappearance of the eruption. The authors, who have successfully employed meat peptone, bivalent peptone (meat and fish peptone), and a preparation containing in addition to meat and fish peptone extracts of egg and milk, find that the best, most rapid, and permanent results are obtained by the last preparation. The peptone is best given in the form of granules, a teaspoonful being administered one hour before each meal. Out of twenty cases so treated sixteen showed good results, while in four the results were not so good owing to the occurrence of relapses.

## Neurology and Psychology.

#### 107. The Transmission of Nervous Impulses.

F. BREMER (*Le Scalpel*, June 12th, 1926, p. 520) states that the investigations of numerous observers during the last twenty-five years have shown that a nervous impulse is only one form of very rapid protoplasmic transmission. The laws which govern its transmission in the peripheral nerves are those general biological laws which apply to all waves of stimulation (muscular, ciliary, etc.). Although the physico-chemical source of nervous impulses is still unknown, yet

these impulses belong to the group of stimuli which depend for their transmission only on the energy furnished locally by the medium which they traverse, as is the case of a wave of flame in a train of gunpowder. Nervous impulses resemble explosions, and this explains the fact that there is no relation between their energy and that of the stimulus. The energy of the impulse, which depends thus on that of the nerve fibre, is probably of the electro-chemical order; the part played by electrical energy in the stimulation, transmission, modification, and arrest of the wave of nervous impulse is well known. The nerve impulse, like all waves of stimulation, is manifested by a wave of negative electricity, with which it is probably identical. The most satisfactory hypothesis explaining all the features of nerve transmission is that the wave of functional negativity, apparently identical with the wave of stimulation, arises from a local and transitory depolarization of the nerve fibre at the point where the stimulus is applied; the resultant electric current acts in its turn as a stimulus throughout the length of the fibre, giving rise to a new negative wave which is transmitted from stage to stage. Conduction in reflex arcs and, generally speaking, in the grey matter, is regulated by more complex laws, possibly due to the structural complexity of the central nervous system, and not to the intervention of other processes.

#### 108. The Pseudo-bulbar Syndrome.

L. NEUBERGER (*La Vie Méd.*, June 4th, 1926, p. 1061) describes the distinctions between the pseudo-bulbar syndrome and glosso-labio-laryngeal paralysis; the latter marks the terminal stage in the majority of medullary lesions, and is due to bulbar lesions, involving the cranial nerve nuclei, while the pseudo-bulbar or glosso-labio-cerebral paralysis is due to lesions in the mesencephalon, chiefly in the basal nuclei. Consequently it is classed among the encephalopathies due to multiple and especially subcortical lesions. The facial changes due to pseudo-bulbar paralysis are of importance in its diagnosis. The characteristic emotional disturbances can be interpreted only by reference to the cerebral physiology. Apart from the subcortical psychomotor path, which is chiefly concerned in the synthesis and distribution of intellectual functions, there is another entirely distinct path for the development and expression of emotions. The upper stage, in the neighbourhood of the Rolandic area, is the centre for psychic elaboration; it is linked with the middle stage by the cortico-thalamic fibres. The middle stage is in the thalamic area, and here emotive organization occurs; it is probably also the controlling centre of the sympathetic system. The inferior stage includes the whole of the bulbar nuclei which control articulation and expression of emotive states through the laryngeal and facial muscles. Pseudo-bulbar paralysis involves in a number of circumscribed encephalopathies due in part to cellular lesions and in part to vascular degenerations which often result from cerebral arterio-sclerosis or thrombosis. These lesions may produce a secondary ascending degeneration extending to the cortex and resulting in progressive motor or psychic enfeeblement; when the lesions occupy the opto-striate region changes in the facial expression are more obvious than emotional instability. This alteration in the facial expression constitutes the "pseudo-bulbar mask." The features are immobile and expressive of surprise and anxiety, the face is haggard, the eyes fixed, speech monotonous, lips parietic, so that saliva escapes involuntarily; the head is bowed, movements slow, and a nasal dysarthria and dysphagia supervene. The diagnosis of pseudo-bulbar paralysis may be confirmed by observing the gait, the patient walking with short steps.

#### 109. Post-encephalitic Perversions.

G. HEUYER (*Arch. de méd. des enf.*, May, 1926, p. 249) remarks that post-encephalitic perversions are much commoner in the child than in the adult. In the latter epidemic encephalitis assumes, as a rule, a neurological form, and when psychical disturbances are present they are of the nature of confusion or dementia, are more psychomotor than psychical, and very rarely take on the form of perversions. The perversions observed in the child are of two types. As a rule they are characterized by suddenness, impulsiveness, lack of restraint, turbulence, fugues, thefts, and violence. These reactions resemble those of epilepsy in their content and form, but are distinguished therefrom by being conscious and not accompanied by loss of memory. Sometimes, however, the perversions bear the mark of reflection and premeditation like constitutional instinctive perverseness. In all cases the characteristic feature of post-encephalitic perversions is the failure of intimidation to act upon them and the impossibility of affecting them by blame or punishment. Heuyer maintains that the perversions are not a sequel but a clinical form of the disease, as is shown, not only by examination of the cerebro-spinal fluid, which presents a distinct excess of



engar, but also by clinical considerations. Three of Henyer's patients were subjects of Parkinsonism, which is a clinical form of the disease rather than a sequel. As regards treatment Henyer recommends the interment of such cases in an asylum without allowing them to mix with other patients, as the disease is still active, and it is probable, if not certain, that whether they show symptoms of Parkinsonism or not they are still contagious.

#### 110. Non-progressive Syphilitic Dementia.

L. MARCHAND, N. ANELAY, and J. HAUER (*Presse Méd.*, March 16th, 1926, p. 308) state that since the discovery in 1857 by Esnareh and Jensen of the role of syphilis in the etiology of general paralysis several writers have maintained that the same cause might be responsible for non-progressive conditions of dementia to which they give the name of "syphilitic dementia." Some of these cases are merely examples of general paralysis of a sluggish or even stationary character, as is proved by post-mortem examination. In others the clinical picture is that of a hebephreno-katatonic syndrome, of which two varieties may be described, according as the dementia is associated or not with signs of nerve syphilis. Transitional forms may also be observed.

### Obstetrics and Gynaecology.

#### 111. Morphine and Ether Injections during Childbirth.

A. ECKE and R. TAUBERT (*Zentralbl. f. Gynäk.*, April 24th, 1926, p. 1111) have had favourable results from using Grathney's method of inducing anaesthesia during labour. They find that the subcutaneous injection of morphine and magnesium sulphate must be given when the external os will admit two fingers and the uterine contractions are regular and strong; in primiparae the head should have engaged in the pelvic brim. Later, when the os is of "five-filling" dimensions, the rectal injection of ether and alcohol mixed with oil is given. There is no danger to the mother, but the continuous presence of the physician is required. In more than 125 cases the authors had no foetal deaths, but some degree of asphyxia neonatorum was almost constantly encountered, responding to the usual treatments. The course of labour is somewhat slowed and bladder trouble is apt to occur as a sequel; further analgesic procedures are required for relief of the perineum. The method is contraindicated in high degrees of pelvic contraction, pyrexia during labour, and abnormal positions of the foetus. It was unsuccessful in 15 per cent. of the authors' cases and usually in obese patients; only 5 per cent. required the application of forceps. The anaesthesia lasts no longer than four to six hours; anaesthesia is usually complete.

#### 112. Pelvic Sympathectomy.

A. HAMANT (*Bull. Soc. d'Obst. et de Gynéc. de Paris*, March, 1926, p. 189) describes his experience of resection of the pelvic sympathetic nerves. His remarks that excision of the internal iliac sheath on both sides is an operation which may present considerable difficulty in fat subjects with a thick mesosigmoid; resection of the presacral nerve which joins the lumbar and hypogastric ganglia and lies in front of the fifth lumbar vertebra on the left iliac vein is simpler and more speedy and is the operation of choice. These operations have been done by the author in three and fifteen cases respectively; the patients had with one exception sclerotic ovaries, and had complained of severe intractable pelvic pain, especially in association with the menses. In the majority of the operations sympathectomy was combined with cruciform excision of a portion of one or both ovaries. Rupture of the cysts, appendectomy or ligamentopexy, but the author attributes the post-operative disappearance of the pain very largely to the operation on the nerves; eighteen months is the longest period which has elapsed since operation. As regards the sequels of the sympathetic nerve division it was noted that the next menstruation, whatever the interval since the last, always followed within two to three days, and that succeeding menstruations were regular and became established without pain. Micturition was often unmodified, but transitory incontinence followed in one and frequency in several cases. Rectal functions during convalescence appeared to have been favourably affected by the operation.

#### 113. Induction of Premature Labour in Pyelonephritis.

SCHOCKAERT (*Druzelles Méd.*, May 2nd, 1926, p. 798) describes two cases of severe pyelonephritis in pregnant women necessitating the induction of premature labour. The first patient, aged 50, had had one child six years earlier and a miscarriage one year before her third pregnancy; the second patient was a primipara, aged 20. Both patients had a severe *B. coli* infection of the right renal pelvis; vaccines and

medicinal treatment gave only temporary relief, and as the patients had pyrexia accompanied by rapid emaciation, and complete anorexia, Krause's method of induction of labour, under strict antiseptic precautions, was employed in both cases. Both children were born alive, at seven and a half months, but the second died eight hours after birth. A hypodermic injection of pituitrin and small doses of quinine half-hourly accelerated labour in the second case. Rapid improvement with disappearance of *B. coli* from the urine followed delivery in the first case, but in the second, bacilluria, though diminishing under vaccine treatment and urinary antiseptics, still persisted.

#### 114. Subcutaneous Symphysiotomy.

S. G. MARRUZ (*Rev. de méd. y cir. de la Habana*, March 25th, 1926, p. 175) records a case of breech presentation in a primipara, aged 42, unsuccessfully treated by subcutaneous symphysiotomy followed by episiotomy, which is the first example on record of periotomy being employed for a disproportionate size of the pelvic extremity. He states that owing to the adoption of the subcutaneous method, symphysiotomy, which had lost much prestige, has recently recovered a good deal of its former reputation, so that, if necessary, it has become an operation which can be performed in the patient's home without having to remove her to a clinic. During the last two years Marruz has employed the method recommended by Ortiz Pérez, who uses a special curved bistoury. The subcutaneous method of symphysiotomy was originally introduced by Cammial of Utrera in Spain, and dates from the year 1777. The vicissitudes which symphysiotomy has undergone since then are due, not to the operation itself, which is a rational and physiological one, but to defects of technique, and especially to the lack of a clear idea as to the cases in which it is indicated.

#### 115. The Sedimentation Test in Gynaecology.

1). D. TROUBITSINE (*Rev. Franco-Russe de méd. et de biol.*, March, 1926, p. 3), as the result of the study of the sedimentation rate of the red corpuscles in 1,158 women, of whom 70 were in normal health, 92 were pregnant, and the rest suffering from various gynaecological conditions, came to the following conclusions: (1) The sedimentation rate is not a specific reaction for a definite affection. (2) The causes of rapid sedimentation being found in various gynaecological affections, the sedimentation rate has no diagnostic importance. (3) The sedimentation rate may be regarded as a criterion of health and disease and as an indication as to the time for surgical intervention; a slow sedimentation rate is a guarantee of a healthy condition of the organism, while rapid sedimentation is a sign of a morbid state without indicating its nature. (4) There is no definite relation between the duration of sedimentation on the one hand and the number of leucocytes, red cells, quantity of haemoglobin, duration of coagulation, and amount of chlorides in the blood on the other.

#### 116. Diathermy Treatment of Gonorrhoea in Women.

MME SOUZAN (*La Gynéc.*, February, 1926, p. 65) speaks favourably of diathermy in the treatment of chronic gonorrhoea in the female, and records illustrative cases, including one of bilateral salpingitis. She recommends dorsal and ventral application of indifferent electrodes and the special vaginal or uterine electrode of Roucayrol; at each sitting, which should last at least twenty minutes, a temperature of 45°C. or rarely 46° to 48° is reached. The treatment is usually daily, but in acute cases has sometimes been given at twelve-hourly intervals. Twelve to twenty sittings are required, and the patients should be warned to expect after the first few an increase of the discharge. Treatment is followed by a polymorphonuclear leucocytosis including many young forms, and it is to this rather than heat engendered locally that Roucayrol ascribes the beneficial effects.

#### 117. Treatment of Severe Uterine Haemorrhage.

G. BAKSCHT (*Zentralbl. f. Gynäk.*, May 22nd, 1926, p. 1390) recommends injection of the patient's haemolysed blood in severe uterine haemorrhage occurring in the absence of gross uterine disease. Into a syringe containing 6 c.cm. of distilled water, 14 c.cm. of blood are introduced from a vein of the arm, and, after shaking, the haemolysed mixture is injected into the gluteal muscles. Two to five injections at one to two days' intervals are usually found to be effective in stopping the bleeding, but another course may be necessary some months later. Five cases of profuse haemorrhage endangering life are recorded in which this treatment appeared very successful; they include one of menorrhagia of puberty, one in which an ovary was cystic, and one in which the adnexa were fixed. The treatment is thought to be effective by reason of the stimulating effect exercised by the products of haemolysis on the vegetative nervous system and the vasomotor centre.

## Pathology.

### 118. The Pathogenicity of *B. rhusioopathiae suis* for Man.

C. POSTMA (*Nederl. Tijdschr. v. Geneesk.*, February 20th, 1926, p. 754) states that the *Bacillus rhusioopathiae suis*, the organism of swine erysipelas, was regarded as quite harmless for man until Casper, Hildebrand, and Meyer, in 1899, almost simultaneously described a dermatitis occurring in veterinary surgeons due to infection with cultures of this organism during protective inoculation of pigs against swine erysipelas. The disease was subsequently shown to be caused in man by injuries during inspection of meat, in slaughterers, and in those carrying infected animals. After an incubation period of one to four days the wound, which is usually on the hands, begins to itch and burn, and a bluish-red swelling soon appears. The joints of the affected part are swollen, active movements are impossible, and passive movements difficult. Suppuration does not occur, but vesicles frequently form. Local recurrence after recovery often takes place. Lymphangitis, occasionally accompanied by lymphadenitis, is sometimes noted. The disease usually runs a chronic or subchronic course. The history of infection, prolonged course, the failure of surgical measures or external applications, and the prompt reaction to specific serum usually enable a diagnosis to be made without bacteriological examination. *B. rhusioopathiae suis*, however, has frequently been found, especially at the margin of the lesions. While in untreated cases the disease lasts from three to six weeks, according to the severity of the attack, injection of the specific serum (2 c.cm. per 10 kilos of body weight) usually causes relief in twenty-four hours and a cure in forty-eight hours. Repetition of the injection is rarely necessary. The local dermatitis described by Rosenbach in 1844 under the name of erysipeloid as occurring in cooks, poultryers, slaughterers, and farmers, appears to be bacteriologically and clinically closely allied with swine erysipelas, the differences being explained by variations in virulence of the organism.

### 119. The Active Principle in Tuberculin.

E. R. LONG and FLORENCE B. SEIBERT (*Amer. Rev. of Tuberculosis*, May, 1926, p. 393) report a series of experiments which appear to indicate that the principle in tuberculin which causes a skin reaction in tuberculous subjects is of protein nature, since it is completely precipitated by ammonium sulphate, while nearly all other protein precipitants throw it out of solution to some extent. It does not dialyse and is not found when all protein has been removed. It loses its activity when treated with pepsin in acid solution or alkaline trypsin, while acids or alkalis of similar strength, and erepsin or trypsin in neutral solutions, do not materially reduce its activity. It has been prepared in a crystalline form, which takes the methylene blue stain, gives the biuret, Millon, and Molisch reactions, and produces a marked skin response in tuberculous guinea-pigs, normal animals being unaffected by it.

### 120. The Ferment Content of the Serum In and apart from Pregnancy.

E. HERRMANN and F. KORNFIELD (*Wien. Arch. f. inn. Med.*, April, 1926, p. 469) examined the lipase and diastase content of the serum in eight non-pregnant women, eight in the early months of pregnancy, nineteen in the last months, and eight at the menopause, with the following results. As regards lipase, non-pregnant women showed the highest values in the intermenstrual period, the lowest just before or just after menstruation. In pregnant women there was a pronounced fall at the beginning of pregnancy, followed by a slow rise as pregnancy advanced, without, however, reaching the normal level. During the menopause the lipase values were low, though not so low as in the early stage of pregnancy. As regards diastase, non-pregnant women showed the lowest values in the intermenstrual period, and the highest just before or just after menstruation. Pregnant women showed a marked rise at the beginning of pregnancy, followed by a slow fall, but the values remained higher than in the non-pregnant state. At the menopause the figures were approximately the same as at an advanced stage of pregnancy.

### 121. The Mechanism of Cancer Metastasis.

As the result of experimental work M. T. BURROWS (*Arch. Intern. Med.*, April 15th, 1926, p. 453) believes that cancer may result from primary crowding of cells and a relative reduction of the blood supply. The cancer cell is not different from the normal cell, but is merely a normal cell reacting to limitation of movement and cell crowding. The reactions which these cells undergo are said to be the result of a gradual accumulation of a substance or substances termed the "archusia," which is formed only in the presence of nutrient substances and oxygen. The process of growth is not merely the result of the action of the "archusia," but depends on the presence

of other food substances in the medium. In low concentrations the "archusia" has no effect; in medium concentrations it causes cell migration into a solid protein medium and towards larger droplets of fat; in all higher concentrations the cells themselves are digested. Cancer metastases are not, he thinks, the result of simple migration of cancer cells to distant organs; they are the result of the spread of a liquid substance from the main tumours which is liberated by the digestion of the central cells of the cancer. This digestion is not an autolysis resulting from absence of oxygen, but the result of excess of growth-stimulating substance, a product of cell oxidation. This fluid stimulates the growth of both cancer cells and of normal cells. The former, already adapted to it, respond more quickly; they rob normal cells of their nutrition and so destroy them. Normal tissue may undergo malignant transformation as the result of prolonged action of this fluid. Burrows considers that while these observations throw light on the mechanism of cancer metastasis they indicate the cause of cancer. Cancer may be induced by a number of substances or conditions, such as coal tar and other lipid solvents, bacteria, animal parasites, x rays, radium, and arsenic. It is a senile disease, and may result from the action of any of the above, but it also occurs in congenital tumours and defects, in chronic inflammatory areas, in tissues suffering from scallo atrophy, and in tissues atrophied by various external factors, such as exposure to sun or weather. Cancer, he concludes, is not the result of any specific substance, but of a primary change, either in the cell or the tissue, induced by any one of the above. The process can, he adds, be reproduced experimentally by reducing the blood supply and causing the cells to revert from the differentiated to the growing state.

### 122. The Fate of Red Blood Corpuscles.

C. A. DOAN and FLORENCE R. SABIN (*Journ. Exper. Med.*, June, 1926, p. 839) have confirmed the discovery by Rous and Robertson that there is a constant fragmentation of red cells in the circulation of normal animals, and find that the debris thus produced, and even whole red cells, are taken up and destroyed by wandering endothelial phagocytes or elasmato-cytes. In pathological conditions involving increased fragmentation a corresponding increase in the desquamated endothelial cells of the blood stream and of the elasmato-cytes from the tissues was found to occur. The present authors claim to have been able to identify those cells and to distinguish between them and ordinary eosinophil leucocytes by the nature of their granules, their negative reaction to the peroxidase test, and by the type of their motility. They add that these cells only show a positive peroxidase reaction when they have ingested from the circulating blood substances which respond positively to the test. It is concluded that the desquamated endothelial cells in circulating blood include degenerating forms and also actively phagocytic cells. The authors have watched the process of breaking up of the red cells and the absorption of the fragments by the elasmato-cytes.

### 123. Transmission of Typhoid Fever by Bed-bugs.

LYNN-GO (*Nat. Med. Journ. of China*, February, 1926, p. 62) has studied the possibility of the transmission of typhoid fever by bed-bugs. A special wooden cage was used framed with glass and covered with iron gauze for ventilation. The cage was divided into two parts by iron nets. In the first experiment a normal rat and a rat injected intraperitoneally with 0.5 or 1 c.cm. of an eighteen to twenty-four hours' broth culture of typhoid bacilli were kept separately and bed-bugs put in the infected part. The injected rat usually died on the eighth or ninth day, and the normal rat died in the second or third week after infection. After death cultures were made and a necropsy performed. Of thirty rats exposed, fourteen (46.5 per cent.) became infected. Lynn-Go thinks that two conditions are essential for the infection of the bed-bugs. First, the blood sucked by the bugs must contain a large number of typhoid bacilli. Secondly, numerous bugs must bite the healthy animal. In the second experiment four albino rats previously injected with T.A.B. vaccine, and three other rats injected with typhoid bacilli were put in the cage with the bugs. No rat died after two weeks. Fourteen rats recovered from typhoid fever were put into the cage with six other rats which had been injected with typhoid bacilli and observations were made for fifteen days, but no infected rat was found, probably owing to immunity from typhoid. In the third experiment the bugs were removed from the cage which contained the ten sick rats to a cage containing ten healthy animals. Only four of the latter became infected. In the fourth experiment cultures from the blood and intestines of bed-bugs which had been put on a sick rat for seven to eight days always showed typhoid bacilli. Lynn-Go comes to the following conclusions: (1) Typhoid fever can be transmitted by bed-bugs. (2) Typhoid bacilli can be isolated from various parts of the bed-bugs.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 124. Lupus Vulgaris and Facial Erysipelas.

GOSFROT and MILLANT (*Bull. Soc. Française de Derm. et de Syph.*, May, 1926, p. 333) relate the case of a woman, aged 25, who had suffered for twenty years from non-ulcerating lupus vulgaris of the face, and of the nasal and buccal mucosa, which was slowly progressive and was invading the whole face. After a severe attack of facial erysipelas which subsided towards the eighth day and was followed by alopecia, there was a rapid extension of the lupus invasion, especially in the right submaxillary and the suboccipital regions, where the lupus patches were doubled in area. So far from erysipelas ameliorating the other disease it had actually produced exacerbation of the lupus. The patient improved under treatment with Vaudeure's vaccine. Though erysipelas occasionally produces some improvement in cases of lupus, in others this does not occur or is only transient. In a case mentioned by Bazin ulcerative lupus of the nose healed, leaving an excellent scar, after an attack of facial erysipelas.

### 125. Cerebro-spinal Pressure in Cranial Trauma.

J. DEAYO Y DIAS CASTILLO (*Arch. de med. cir. y exp.*, May 29th, 1926, p. 333) records his observations on twenty cases of cranial trauma in which he measured the pressure of the cerebro-spinal fluid. His conclusions are as follows: In continuation of the first and second degrees the pressure of the cerebro-spinal fluid is increased, the lesions of the nerve elements proper being accompanied by rupture of the small vessels in the meningeal tissue and pia mater. The irritation produced by the small haemorrhages in the choroid plexus are sufficient to cause a rise of pressure owing to their increasing the secretion of the cerebro-spinal fluid. The prognosis of continuation of the first and second degrees is favourable as regards life. A decompressive operation is indicated, and the patients generally recover their normal condition in a short time. On the other hand, continuation of the third degree involves a gloomy prognosis, since there is also a considerable fall in the cerebro-spinal pressure. The question whether the fall in the cerebro-spinal pressure is accompanied by a fall in the peripheral venous and arterial pressures is now being investigated by the author.

### 126. Intradermal Reactions in Scarlet Fever and Measles.

E. DE VILFA (*La Pédatrie*, May 1st, 1926, p. 467) has made a series of experiments, using the antigens of scarlet fever and measles. He found that neither cutaneous nor ocular reactions were of any use, and that intradermal reactions were nearly always negative in patients actually suffering from scarlet fever or measles. About 1,700 children were examined, and the results were 100 per cent. negative in children suffering from scarlet fever, 99 per cent. in convalescents, 100 per cent. in those vaccinated with antiscarlatinal vaccine, 92 per cent. in the newborn, 82 per cent. in nurslings up to 6 months, 64 per cent. from 6 to 12 months, 58 per cent. in 1 to 2 years, and 43 per cent. in those 2 to 12 years of age. A series of 50 nursing mothers and their children were tested at intervals of six months, and bore out the conclusions as to the relative immunity of mother and child. All the children vaccinated against scarlet fever gave negative reactions after intra-dermal injection. Similar observations were made in 102 cases of measles, with parallel results. The author adds that the reaction is not a diagnostic test of scarlet fever or measles, but a specific reaction as regards susceptibility to these diseases.

### 127. Relapsing Form of Pure Meningeal Spirochaetosis.

M. DERRAY and JONESCO (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, May 27th, 1926, p. 831) record a case of meningitis in a woman, aged 23, who lived on the ground floor of a factory swarming with rats. The disease ran a favourable course and the patient recovered after nearly two months' illness. There were no clinical signs such as icterus or haemorrhages to suggest the spirochaetal origin of the symptoms, and it was only the remarkable relapsing character of the temperature that suggested the correct diagnosis. Inoculation of a guinea-pig with a centrifugized clot of urine obtained at three different stages of the disease caused death of the animal in eleven days with slight jaundice of the conjunctivae. On puncture of its heart directly after death large quantities of *Leptospira icterohaemorrhagiae* were found in the blood. Petitt's serum test was also definitely positive.

### 128.

### Differentiation of Herpes.

L. PATON (*Brit. Journ. of Ophthalmol.*, June, 1926, p. 305) distinguishes between herpes febrilis and herpes zoster. In the former the lesion follows the distribution of the nerve or nerves affected. There is always a preceding neuralgia, and the condition arises independently of any preceding disease. True skin is attacked, and permanent scarring is produced. One attack seems to confer immunity. The attack lasts three to four weeks and there follows a long period of diminished sensibility in the affected area. In herpes febrilis the distribution of the lesions may be irregular. There is no preceding neuralgia, and the condition may follow any infection producing a lowering of tissue resistance. The superficial dermis only is affected, and there are no permanent scars. There is a tendency to frequent relapses. The duration is variable and no impairment of sensibility is left.

### 129. Estimation of the Peripheral Venous Blood Pressure.

M. VILLABET, M. MARTINY, and L. JUSTIN-BESANCON (*Arch. des Mal. du Cœur, des Vaisseaux et du Sang*, June, 1926, p. 351) believe that the estimation of the peripheral venous blood pressure is of increasing importance. They discuss the various inaccrurate methods employed hitherto and advise the use of the phlebo-plethometer. This is a manometer consisting of the ordinary V tube, fixed to a graduated scale; the shorter horizontal limb has an arrangement of valves regulating the flow of an anticoagulating solution from a reservoir fixed to the vertical support of the manometer. To the end of the horizontal limb is attached a rubber tube armed with a hollow needle, which is introduced into the median basilic vein just above the flexure of the elbow. The only disadvantage is that it is difficult to obtain serial readings; the authors have found, however, that when necessary the needle may be plugged and left in position and a second or third reading taken at intervals of fifteen or thirty minutes after the first by removing the plug and attaching the needle again to the instrument. The authors claim that their technique is less painful to the patient than an ordinary intravenous injection, and that any medical practitioner accustomed to perform intravenous injections can perform the necessary manipulations. The anticoagulant solution employed is prepared by dissolving 0.06 gram of sulpharsenol in 500 c.cm. of distilled water; this solution is practically isotonic, and coagulation never occurs in the needle or tubes.

## Surgery.

### 130. Faecal Fistula following Acute Appendicitis.

AS J. B. DEEVER (*Annals of Surgery*, June, 1926, p. 782) remarks, faecal fistula is one of the most unpleasant complications following acute appendicitis. A fistula from the large bowel will not impair health, but one high up in the small intestine will cause death from inanition. As a complication of appendicitis this condition is associated with the use of drainage and occurs especially where the appendix perforates near the caecum. Where the lower ileum is plastered down by adhesions Deever advises an ileo-colo-stomy, which prevents obstruction and a faecal fistula. Faecal fistula occurred in 5 per cent. of cases of acute appendicitis, and of these 50 per cent. required operative repair. As a rule a test period for possible closure should be tried before operation is undertaken. In some cases simple inversion of the fistulous opening is sufficient. In others an ileo-colo-stomy is performed at the same time to short circuit the faecal stream. In extensive fistulae resection of the bowel may be necessary, including the lower ileum and caecum. Of 108 cases operated on 89 were discharged perfectly healed. In 10 there was a recurrence of the fistula, and some of these patients required further resection of the affected bowel before healing occurred.

### 131.

### Free Omental Grafts.

P. DUVAL (*Bull. et Mém. Soc. Nat. de Chir.*, May 15th, 1926, p. 492) discusses fourteen cases reported by M. J. Hertz in which free grafts taken from the great omentum had been used; in one case the result was inspected after a long interval of time had elapsed. In this case, operated on in 1923 for a fibroid and pelvic inflammation, a considerable portion of the sigmoid colon was found to be uncovered by peritonium. This was covered by a free omental graft.

measuring 6 by 4 cm. More than a year later the abdomen had to be reopened, and it was then noted that the sigmoid appeared quite normal; it was completely covered by peritoneum, and there was no sign of adhesions. This result corresponds with what is found after similar experiments on animals. The grafts have been used in a variety of abdominal conditions, including appendicitis, pyosalpinx, and tuberculous peritonitis. In most of the cases the infection did not appear to be very virulent. The graft, however, will survive even in the presence of infection, though a satisfactory result cannot always be expected under such conditions. The operative results in the fourteen recorded cases were good.

### 132. The Increase in the Incidence of Cancer.

L. IMBERT (*Bull. de l'Assoc. Française pour l'Étude du Cancer*, April, 1926, p. 141) has tried to ascertain whether there is a real or only an apparent increase in cancer. He has reviewed statistically the cases of malignant disease found in a large hospital at Marseilles from 1870 to 1925: in the period 1871-75 there were 11 cases of cancer for each 1,000 admissions, and in 1920-24 40 cases per 1,000. He groups the location of the disease into old cases, such as tongue, uterus, vagina, and liver, which were recognized in the earlier period, and new cases, such as stomach and rectum, which are of more recent recognition. He finds the old cases show a decrease in the later years, while the new cases showed a steady increase. This is really due to the fact that these cases are more readily diagnosed at the present time. Cancer is comparatively rare before 30 years of age, and frequent after 50 years; it occurs most frequently from 50 to 60 years of age. The increase of cancer cases is, then, partly due to the increased age to which people now live and the larger number of older people in the world. The better diagnosis at the present time has also to be considered. The author concludes that while there is a real increase in the number of cancer cases this is actually due to the increased length of life.

### 133. "Snapping Shoulder."

H. A. GRUETER (*Zentralbl. f. Chir.*, May 22nd, 1926, p. 1303) describes the case of a railwayman, aged 44, who had noticed for three months a definite weakness in the right arm with pain and snapping sounds in the shoulder-joint when the limb was abducted beyond the horizontal; there was considerable wasting of the upper arm muscles. A skiagram showed a broad sessile collar-like bony projection on the outer surface of the humerus. At the operation this proved to be an exostosis springing from the humerus between the anterior border of the deltoid and the long head of the biceps. The exostosis was resected, the patient made a good recovery, and the pain and snapping in the joint disappeared.

## Therapeutics.

### 134. Therapeutic Value of the Double Salts of Caffeine.

M. GROSSMANN and K. LUSICKY (*Wien. klin. Woch.*, April 15th, 1926, p. 442) investigated the action of the double salts of caffeine (caffeine-sodium-benzoate and caffeine-sodium-salicylate) in ordinary doses on the pulse, blood pressure, respiration, and central nervous system in healthy persons and in those suffering from various diseases of the circulatory system. In many cases electro-cardiographic curves were taken at short intervals during the investigation, which lasted some hours. Subsequently larger doses were given by mouth, subcutaneously, intramuscularly, and intravenously. In intravenous injections the doses were as high as 0.8 gram, and in oral and subcutaneous administration 1.5 grams—in other words, considerably in excess of the normal. The result was that neither in healthy persons nor in those suffering from various circulatory diseases did the caffeine salts produce the slightest appreciable effect on the central nervous system or cardio-vascular apparatus. The authors conclude, therefore, that these salts should be abandoned in cases of collapse in favour of pure caffeine or black coffee.

### 135. A Synthetic Purgative.

M. EINHORN and H. A. RAFSKY (*Journ. Amer. Med. Assoc.*, June 5th, 1926, p. 1754) report successful results from the use of Isacen, or diacetylbisoxypheylisatin, a compound obtained by the acetylation of bisoxypheylisatin. This remedy was introduced by Gnggenheim, who, after experimental work on the linos of Lenz, came to the conclusion that the action of such purgatives as senna and phenolphthalein depended on their degree of acidity and solubility. All similar combinations of which the acidity was less than that of phenolphthalein had a weaker stimulating effect on intestinal peristalsis, while those with greater acidity, up to a certain point, acted more strongly. He therefore produced synthetically

bisoxypheylisatin, which had a slightly higher acidity and a more pronounced laxative action; it caused, however, nausea and vomiting by inducing gastric peristalsis. He therefore improved it by the introduction of acetyl, which rendered it insoluble in the stomach. Isacen is insoluble in acids and water, and has no action until it comes into contact with the alkaline secretions of the duodenum, which set free the bisoxypheylisatin. The present authors have used this remedy in forty-seven cases of chronic constipation, occurring in patients aged from 60 upwards. Tablets containing 0.005 gram were given two to four times a day for a month, and in all but one case regularity of the bowels was obtained. All the patients were chronic invalids, suffering from such conditions as diabetes, chronic nephritis, paralysis agitans, general arterio-sclerosis, pulmonary tuberculosis, chronic myocarditis, and chronic gastritis. The authors conclude that this laxative will be of even greater value in healthy persons, and they suggest its trial for the routine treatment of constipation.

### 136. Paravertebral Alcohol Block in Cardiac Pain.

G. L. SWETLOW (*Amer. Heart Journ.*, April, 1926, p. 393) gives notes of eight patients with heart disease who suffered from attacks of severe precordial pain and in whom paravertebral alcohol injections of the dorsal root ganglia produced prompt relief. A dose of 5 to 8 c.c.m. of an 85 per cent. solution of alcohol was injected as near as possible to each dorsal root ganglion chosen. With the patient completely flexed and lying on the side opposite to the one on which the injection was made the intercostal spaces to be injected are palpated and wheals of novocain are raised over the ribs above the spaces at a point 4 cm. from the mid-line. A needle 8 cm. long is introduced perpendicularly to the rib above the space and is directed downward, inward, and forward at an angle of 45 degrees, and advanced 2 cm. further from the lower border of the rib so that its point is between the internal and external intercostal muscles. By connecting the needle with a water manometer it is ascertained that it has not entered the pleural cavity as shown by the absence of extensive oscillations synchronous with respiration. Half of the 5 c.c.m. of alcohol solution is then injected and the remainder is distributed by to-and-fro movement while the point is being withdrawn. By this means axonal degeneration of the thoracic nerve near the cell body is produced and some of the alcohol may reach the intervertebral foramen and act upon the ganglion. Freedom from pain after a single injection usually lasted several months and no complications or serious after-effects resulted. Swetlow claims that the procedure is simple and that it is based upon sound anatomical and neuro-physiological considerations.

### 137. Calcium Treatment as a Preliminary to Arsenobenzol Injections.

J. SCHUMACHER and W. LIESE (*Med. Klin.*, June 18th, 1926, p. 957) confirm previous observations that intravenous injections of calcium salts, either prior to or in conjunction with salvarsan administration, will prevent the toxic effects which are due to an excessive combination of salvarsan or neosalvarsan with the cellular protoplasm in the absence of an adequate quantity of calcium salts in the circulation. The authors have shown experimentally that calcium chloride, dissolved in distilled water or Ringer's solution, is as efficacious in the prevention of intoxication as are solutions of sodium arsenobenzol in the patient's serum. The favourable action of the serum solutions is due to the formation of colloid solutions, of sodium nucleinate and gelatin, from the contained proteins of the serum. The authors find that when neosalvarsan is to be administered the calcium chloride solution may be given by the mouth, but if salvarsan is employed it is necessary to inject the calcium chloride solution intravenously. There is evidence that strontium salts are even better than those of calcium.

### 138. Psoriasis treated with Bismuth.

A. VERSARI (*Rif. Med.*, May 3rd, 1926, p. 409) gives details of 21 cases of psoriasis treated by intramuscular injections of sodium potassium bismuthyl tartrate, which were given at intervals of five or six days, 2 to 3 c.c.m. being given each time. In some cases a total quantity of 5 grams was given and was well tolerated. No local treatment was used. In 12 cases complete disappearance of the rash resulted, and in 4 cases of mixed psoriasis and syphilis much improvement occurred. In the remaining 9 cases the rash, desquamation, and hyperaemia were all lessened, but the rash did not entirely disappear. Relapses followed in all the cases except one, but the succeeding attacks were decidedly milder. The best results were observed in cases of generalized psoriasis. In one case the relapse did not occur until sixteen months after the injection treatment had been stopped.



## Anaesthetics.

### Late Chloroform Deaths.

130. *Brich (Med. Klin., June 4th, 1926, p. 839)* reports seven cases of late deaths from chloroform which occurred in his clinic in the course of nine days in May, 1925. Two were cases of moderately severe appendicitis, one was cholecystitis at the point of perforation, and one a mediastinal tumour in a boy aged 9. In all seven cases acute yellow atrophy of the liver was found at the necropsy. The clinical picture was characteristic. After a so-called incubation period of twenty-four to thirty-six hours restlessness, frequent pulse, cyanosis, subicteric discoloration of the sclerotics and the conjunctivae, and a rise of temperature often as high as 101°, developed. The patients rapidly grew weaker, and death ensued in two and a half to three days in children and in four to five days in adults. The principal post-mortem finding was severe degeneration of the liver, shown by fatty degeneration of the liver cells with necrosis of the centre of the nuclei. About 160 to 180 cases of late deaths from chloroform are now on record presenting the clinical picture described. The majority occurred after abdominal operations.

### Sacral Anaesthesia in Gynaecology.

131. *Delmas (Gynecol. Medical, May 23rd, 1926, p. 835)* states that he now uses spinal anaesthesia in the great majority of gynaecological cases. The patient is placed face downwards with the thighs hanging over the end of the table and the spine anched by a cushion placed under the abdomen. The lumbosacral area is painted with tincture of iodine and a yellow hollow needle with a detachable handle is thrust through the lumbosacral space. The handle is removed and the appearance of the first few drops of cerebro-spinal fluid syringe is attached to the needle and 10 or 15 c.c.m. of fluid withdrawn. The syringe is detached and a plug inserted in the cap of the needle to prevent leakage of cerebro-spinal fluid. An assistant opens an ampoule containing 10 c.c. of sterile powdered eucocaine; this is dissolved in the contents of the syringe and the whole is injected intrathecally. Delmas recommends that the syringe be slowly charged and discharged several times in order to mix thoroughly the dissolved anaesthetic; he claims that this method prevents the meningeal reaction—vomiting and persistent headache—which occurs so frequently when aqueous solutions are employed. The anaesthesia is immediate and lasts for thirty minutes or longer. Voluntary muscular movements and the sphincter control are unaffected; intestinal peristalsis is checked, while the contractility of the uterus is unaffected. The cervix becomes dilated so fully that intra-uterine manipulations can be performed with ease and safety; secondary uterine inertia never occurs. Delmas does not recommend spinal anaesthesia in normal confinements in view of the difficulty of predicting when a given case will terminate.

### Nitrous Oxide Anaesthesia.

132. *Mies (Deut. Zeit. f. Chir., April, 1926, p. 157)* recommends pure nitrous oxide gas or a mixture of it with oxygen and carbon dioxide, or ether as the safest anaesthetic for general, abdominal, and intrathoracic operations. It has been shown that nitrous oxide has no haemolytic action *per se*; when anaemolysis has occurred it has been due to asphyxia, and not to nitrous oxide poisoning. The blood picture remains unchanged; no immature types of erythrocytes are seen. The gas has no deleterious action on the kidneys, and usually there is no change in the blood pressure except that it may be raised by accumulation of carbon dioxide through too rapid breathing into the bag. It should not be administered when early signs of asphyxia appear. The author uses Zastler's apparatus, which is a modification of that of Hewitt. A cylinder charged with nitrous oxide delivers the gas into a wash-flask containing warm water; if the delivery tube freezes the valve of a second cylinder attached to another delivery tube is opened, the gas passing into the same wash-bottle and thence into a large rubber bag, or it may be conducted through a flask containing ether. The author has used this apparatus in about 300 cases, his procedure being as follows. One hour before the operation he gives a hypodermic injection of 10 mg. of morphine and 0.5 mg. of atropine. Anaesthesia is induced in 50 to 100 seconds after the administration of nitrous oxide is commenced. If in an abdominal operation the surgeon requires deeper anaesthesia the anaesthetist stops the direct delivery of the gas and passes it through the ether flask, carefully watching its effect, since a too highly concentrated mixture makes the patient cough; the appearance of frost on the ether flask indicates that it is being evaporated too quickly. The corneal reflex is not abolished, and the only guide is the rosy flush of the patient's face, which should be maintained. There is no

indication of the quantity of carbon dioxide required by any patient in prolonged operations—it depends entirely on the individual. American anaesthetists give from 5 to 10 per cent. of carbon dioxide in the mixture. The apparatus provides for the administration of pure  $N_2O$ , of a mixture of  $N_2O$  and  $CO_2$ , or  $N_2O$  and ether, with or without  $CO_2$ . The author claims that this is the safest method of inducing anaesthesia, but it requires skill and experience; its only disadvantage is said to be that operation wounds bleed more freely than when ether and chloroform are employed.

### Administration of Ether in Operations on the Lungs.

142. *M. Lidwell (Anaesthesia and Analgesia, June, 1926, p. 142)* combats the view that it is unsafe to give ether to patients suffering from lung diseases, as he has never seen any lung trouble that has been made worse by its administration. He believes that a great number of so-called pneumonias after operation are really not pneumonias at all, but are either examples of infarcts due to emboli or thrombosis or collapse of the lung, due to paralysis of the diaphragm with subsequent congestion. The method of administration of ether in lung surgery, as recommended by Lidwell, is as follows: Ethyl chloride is first sprayed on the mask until the patient is unable to answer questions. Ether is then quickly substituted, a thin stream being poured more or less continuously on the mask, so as to get the patient under the influence of ether before the effect of the ethyl chloride has worn off. When the jaws are completely relaxed a Belfast catheter should be passed into the trachea and connected with the machine as in intratracheal anaesthesia. Great care should be taken that the vapour is not pumped into the lungs at too great pressure. As a general rule, 25 mm. Hg, equal to about three-quarters of a pound to the square inch, is sufficient, but, if necessary, as much as 40 mm. Hg pressure may be used. The lungs should always be completely inflated when a hydatid cyst is about to be opened, as this will prevent any fluid from running back into the bronchus and drowning the patient.

## Obstetrics and Gynaecology.

143. *Diabetes Insipidus following Post-partum Eclampsia.* *LAURENTIE and B. J. BASILIOU (Gynecol. et Obstet., xii, 5, 1926, p. 322)* record the case of a woman, aged 37, who after a third spontaneous childbirth complained from the second day of intense thirst, with abdominal distension and frequent abundant micturition. On the twenty-second day she suffered from severe headache, and on the twenty-fourth tonic and from severe headache followed by coma; during twenty-four hours 15 litres of urine were removed by catheter from the bladder and the patient drank 15 litres of water. The blood pressure was greatly increased and temporary amblyopia was noted. The tension of the cerebro-spinal fluid was considerably increased. The polydipsia and polyuria, although slightly diminished, were still present when the patient left the hospital on the sixtieth day. The authors attribute the occurrence of diabetes insipidus in this case to vascular hyperextension and increased pressure of the cerebro-spinal fluid, with injury to the hypophysis and tuber cinereum; this mechanical damage, if an insufficient cause in itself, may have led to selective fixation of eclamptic toxins in this neighbourhood.

### Functional Pelvic Symptoms in Women.

144. *P. PETIT-DUTAILLIS (La Gynecologie, March, 1926, p. 129)* emphasizes the importance of submitting to a complete clinical examination patients complaining of pelvic symptoms which appear entirely or chiefly functional. A systematic survey of the endocrine glands, a careful examination of the reproductive organs, and a search for a history of previous disease, save the patient for successful lines of treatment. A woman with from unsuccessful surgical interventions. A woman with adnexal inflammation was found to present multiple neuro-pathic symptoms, dyspareunia, and prolapse of the hypophysis. The dyspareunia was cured by shortening the round ligaments, but the patient had subsequently to be confined in an asylum on account of severe psychopathic manifestations. Prolonged trial of the usual treatments was unsuccessful, but a cure was finally brought about by antisyphilitic medication, to which the clue was given by the previous occurrence of miscarriages and the fact that the patient's father had suffered from syphilis. Another logical reaction in this case did not point to syphilis. Another woman, aged 32, and suffering from long-standing metrorrhagia, showed extremely poor development of the breasts,



dermatographia, urticarial crises, and stasis of the colon. Cure followed the administration of haemoglobin and suprapubic and mammary extracts, with lubrication and lavage of the intestine. A girl, aged 19, suffered from enormous mammary hypertrophy and periods of amenorrhoea; absence of the outer portions of the eyebrows, coldness, and a bluish appearance of the feet pointed to thyroid deficiency. Menstruation speedily reappeared after medication by thyroid and pituitary extracts. The patient became pregnant soon after marriage, but the enlargement of the breasts persisted. Another patient complained of violent pain in the pelvis and was found to have spasmodic retention of urine, with rapid pulse and hypermotility; a year previously she had been treated by x rays for dermatitis attributed to hyperthyroidism, and nine months' amenorrhoea had followed. The urgent symptoms yielded to treatment by potassium bromide and valerian, but eight days later a severe attack of double glaucoma occurred.

#### 145. Suprapubic Caesarean Section.

M. BROUHA (*Bruxelles Médical*, May 30th, 1926, p. 924) considers suprapubic Caesarean section less dangerous than the classical operation which it is destined to supersede. Before 1914 he performed the suprapubic operation occasionally; during the war he used it in 25 among 60 cases, and in the last year he has employed the suprapubic operation in every case. The advantages are: (1) a smaller incision; (2) there is no exteriorization of the uterus, and shock is lessened; (3) during the first few hours after operation the wound is less prone to disturbance, consequently the peritoneum heals well, with less risk of secondary infection; (4) if sepsis should occur the pelvic site of operation offers a better prospect of localization; (5) post-operative iliac adhesions, or later, utero-parietal fistula, do not follow it; (6) a stronger scar than that after the classical operation is obtained. Brouha states that it has been proved that the risk of uterine rupture during later pregnancies or confinements is approximately one-tenth of that following the ordinary operation. While the latter may be very dangerous if performed when the patient has been subjected to previous manipulations the suprapubic operation is quite safe, thus allowing the treatment of contracted pelvis to be more obstetrical. The author believes that this test of labour in suitable cases may spare the mother a needless Caesarean section without greatly increasing the danger to the child. On the other hand, Caesarean section comes to aid the child in certain accidental complications of labour, such as an abnormally large foetus, prolapse of the cord, placenta praevia, and eclampsia. There will be, he thinks, in the future less hesitation to perform a relatively safe operation in order to save the child without lessening the mother's prospect of normal labours in future. Suprapubic Caesarean section is equally applicable in labour complicated by pelvic tumour preventing natural delivery.

## Pathology.

#### 146. Preparation of a Leprosy Vaccine.

J. HASSON (*Trans. Roy. Soc. Trop. Med. and Hygiene*, January, 1926, p. 349) describes a new method of diagnosing leprosy and of treating it by a vaccine. He states that the many specific remedies have yielded varying results in the hands of different observers, and suggests that these variations may be due to individual differences in the toxic and tegumentary evolution of leprosy as well as to personal idiosyncrasies in estimating the action of any medicament. Hasson therefore investigated the field of vaccine therapy and has prepared a specific vaccine, an autolysate, containing 15,000 million of *B. pyocyaneus* and 5,000 million of *B. leprae* in 2 c.cm. of normal saline solution. The latter bacilli were obtained from different patients by the following method. Blisters were induced by carbon dioxide snow and the serum was removed from them after a period of twenty-four to thirty-six hours. This serum was mixed with that taken from other patients suffering from different forms of leprosy—nodular, anæsthetic, or mixed—and kept in the incubator at 36° C. for from fifty days to three months. A mixed culture of *B. pyocyaneus* was then added to the serum, which had previously been rendered innocuous by the addition of a sterile 2½ per cent. solution of sodium citrate. The whole was centrifuged for twenty minutes, the requisite quantity of distilled water added, the bacilli counted, and the vaccine put up in 2 c.cm. ampoules. The author states that the solution must be at least fifty days old. The serum obtained from the blisters contained *B. leprae* even in cases in which the bacillus was not recovered from the usual situations; it therefore acts as a means of early diagnosis in leprosy. Hasson explains the action of the vaccine as being due to

the formation of antibodies by the bacilli themselves. The addition of an autolysate of *B. pyocyaneus* is made in order to induce in the patient an increase of temperature capable of dislodging the *B. leprae*.

#### 147. The Blood in Small-pox.

K. IKEDA (*Arch. Intern. Med.*, May 15th, 1926, p. 660) describes his observations on the blood in small-pox during a recent epidemic at Minneapolis. As the result of examination of about 200 cases he came to the following conclusions: (1) The earlier the rise of the platelets the sooner the approach of the desiccation period, indicating a shorter course of the disease. (2) Definite leucopenia during the maculo-papular stage indicates as a rule a mild discrete form. Progressive leucocytosis with an early high polynucleosis is the sign of a severe form. The higher the values the more probable the fatal outcome. (3) The early appearance of monoblasts, basophilic stippling, and polychromatophilia without obvious anaemia is an unfavourable sign, as it invariably means the purpuric form of small-pox. (4) Condensation and fragmentation of mature leucocytes are found only in the purpuric form, in which they appear comparatively early, and are usually associated with pathological normoblasts and basophilic stippling and polychromatophilia without visible anaemia. (5) A rapidly progressive absolute lymphocytosis is a constant characteristic of purpuric small-pox. (6) Scarlatinal and other exanthems, infectious purpura and toxic rashes with petechiae can be definitely differentiated from the purpuric form of small-pox during its erythematous stage by these blood findings.

#### 148. The Protective Power of the B.C.G. Strain of Tubercle Bacillus.

J.-F. HEYMANS (*C. R. Soc. de Biologie*, June 25th, 1926, p. 242) has tried to determine the value of the B.C.G. strain of tubercle bacillus in vaccinating against tuberculosis. Guinea-pigs and rabbits received intramuscular injections in the left thigh of a suspension of the vaccinating strain, and at intervals varying from ten days to six months afterwards a fully virulent bovine strain was injected intramuscularly into the right thigh, the dose of vaccine ranging from 1 to 50 mg. The infecting strain was cultured continuously *in vivo*, being transferred from one animal to another without intermediate culture on artificial media. A dose of 0.2 c.cm. of a 1 per cent. suspension of the lumbar gland of an animal dying from it killed guinea-pigs regularly in thirty to forty days; doses over a thousand times smaller proved fatal, but only after a longer time. Examination of animals that received the living B.C.G. organisms without subsequent injection of virulent bacilli showed that, apart from a local lesion with some enlargement and necrosis of the focal glands after the larger doses, there was no evidence of tuberculosis; in other words, the living vaccine was borne without injury. The vaccinated animals that were tested with a virulent strain without exception developed tuberculosis; their survival time was, however, about twice that of the unvaccinated controls. Vaccinated animals kept with guinea-pigs suffering from open lesions also developed fatal tuberculosis. Heymans concludes that these experiments show that vaccination with the B.C.G. strain does not protect guinea-pigs or rabbits against infection with fully virulent tubercle bacilli of the bovine type, though it does lengthen the course of the disease. The discrepancy between his results and those of Calmette and Guérin is thought to be due to the difference in virulence of the infecting strain.

#### 149. The Bacteriology of Middle-ear Disease.

E. WIRTH (*Centralbl. f. Bakt.*, June 7th, 1926, p. 501) has examined eighty-four specimens of pus from acute middle-ear disease. The secretion was taken by paracentesis and then examined bacteriologically, particular attention being paid to the *Streptococcus mucosus*. For this purpose the pus, after microscopical examination, was enriched in liver broth and then plated on blood agar. It was noticed that there was often a failure in correspondence between the morphological and the cultural characteristics of *S. mucosus*. The author discusses the meaning of this and comes to the conclusion that the final criterion to employ in the diagnosis of this organism is the formation of the typical slimy colonies on blood agar. Great difficulty occurred in distinguishing it from the pneumococcus; five of the specimens remained sterile on culture, or contained only saprophytic organisms. On account of the difficulty he experienced in the cultivation of *S. mucosus* he is inclined to regard these cases as having been caused by this organism. His final results showed that the *S. haemolyticus* was present in 53.8 per cent. and the *S. mucosus* in 23.8 per cent. of the specimens. These findings agree fairly closely with those of other authors; the discrepancies he regards as being due to the different techniques he employed, and to the variations in seasonal incidence manifested by the *S. mucosus*.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### The Incidence of Diabetes.

138. FRANKLIN ADAMS (*Arch. Intern. Med.*, June 15th, 1926, 56), indicates two main forms of the onset of diabetes—acute and the insidious. In cases where the date of onset can be fixed there appears to be a certain seasonal factor. The author examined 1,000 case records from the San Francisco of the Mayo Clinic, and found that in 317 cases the onset was acute, and that such cases were most frequent during spring, autumn, and winter. He notes the close association of the acute respiratory diseases and the onset of diabetes; some patients reported that the disease commenced immediately after a cold in the head, acute tonsillitis, or influenza. This sequence of events may be explained by the patients having been relatively inactive during the winter months, the existence of some latent pre-diabetic condition, and a respiratory infection predisposed to the onset of diabetes. With reference to the possible inactivity factor it was found that considerably more than half the patients at the Mayo Clinic came from rural districts. The death rate figures for 1922 showed 20 per cent. deaths from diabetes in the Northern States, greatly in excess of those from the Southern; if a horizontal line was drawn at 37 degrees latitude, the death rate above it was higher (20.000), and below it 8.5. The Northern States have much longer winter seasons. It was found also that there was a gradual increase of incidence up to 50 years of age, and thereafter a sharp decline. Sex incidence was fairly equal—42 per cent. being males and 42 per cent. females. The chief geographical area was the Middle West of the United States, and he adds that to obtain a reliable estimate of diabetes factors other sections of country should be similarly studied.

### 39. Routine Examination of Cerebro-spinal Fluid.

L. L. CRAWFORD and A. CYRANOW (*Amer. Journ. Med. Sci.*, Dec. 1925, p. 853), as the result of the study of 210 cases, reach the following conclusions: (1) The colloidal bromol solution adds nothing to the knowledge obtained in the routine examination of the cerebro-spinal fluid. (2) Normal findings of spinal fluid sugar are associated with variations of blood sugar from moderate hypoglycaemia to moderate hyperglycaemia. For this reason the time of day and hypoglycaemia must be considered in examination of the fluid, and simultaneous blood sugar determinations are advised. (3) The essential cause of hyperglycorrhachia is increased permeability of the protective barrier of choroid plexus and cerebro-spinal capillary endothelium. Conditions causing hyperglycorrhachia are those that have an essentially vascular pathology, especially encephalitis and various forms of syphilis of the central nervous system. (4) Great increase in globulin and high sugar content are characteristic of increased intracranial pressure in general and particularly of brain tumour. High sugar values are associated in various functional mental disorders. (5) The essential cause of hypoglycorrhachia is glycolysis, which occurs to a large extent in acute suppurative meningitis and to a slight degree in tuberculous meningitis. (6) Sugar determinations are of great value in the differential diagnosis of tuberculous meningitis, especially from epidemic encephalitis.

### 132. Active Immunization against Diphtheria by Anatoxin.

J. BOBINOVITCH, G. LOISEL, and A. LAFFAILLE (*Lull. et Rev. Soc. Méd. des Hôp. de Paris*, May 20th, 1926, p. 737) record their observations on the duration of active immunity conferred by immunization with anatoxin of children exposed to diphtheria. Out of twenty-three children with a positive Schick reaction the immunity conferred by a single injection of 0.5 c.c.m. of anatoxin still persisted in seventeen after fifteen to twenty-five months, and in six the immunity was lost during the same period, so that a single injection of 0.5 c.c.m., which is sufficient in some cases, is inadequate in others. In another seventeen cases with a positive Schick reaction the immunity obtained by two injections of anatoxin (0.5 and 1 c.c.m.) was still present in all the cases examined after twelve, thirteen, twenty-three, and twenty-four months. Symptomatic immunization in children whose Schick reaction remained positive after two injections of anatoxin played only a very unimportant part, and in most cases a third injection of anatoxin was necessary to produce immunization.

J. MARTIN, G. LOISEL, and A. LAFFAILLE (*ibid.*, p. 745), as the result of immunization by anatoxin of a total of 4,550 persons in schools, sanatoriums, and preventorium in which there had been an outbreak of diphtheria, came to the following conclusions: (1) In order to produce a high percentage of immune subjects three injections of anatoxin should be given, the first dose consisting of 0.5 c.c.m., the second of 1 c.c.m., and the third of 1 or 1.5 c.c.m., with an interval of a fortnight or three weeks between the injections. (2) Cases of diphtheria which developed in the course of immunization always occurred in subjects who had had only one or two injections or whose third injection had been given too soon after the second. (3) Attacks of diphtheria occurring after two injections of anatoxin were very mild and might even clear up spontaneously without antitoxin. (4) The reactions were not appreciably more pronounced in actually tuberculous subjects or in those suspected to have tuberculosis.

### 153. Marris's Test in the Diagnosis of Typhoid Fever.

P. FORNICA (*Il Morgagni*, July 18th, 1926, p. 897) has performed Marris's test on a number of patients suffering from febrile conditions. Atropine was injected, and the number of pulse beats counted in the usual way. In a series of 10 typhoid and 15 paratyphoid patients the reaction was positive ten times. Two positive reactions were obtained in Malta fever patients, three in patients with a dysenteric type of enterocolitis, five in patients with febrile diarrhoea, and four in patients with pulmonary tuberculosis. Altogether twenty-four positive reactions were obtained in an examination of 115 patients. The author concludes that the test is useful as an indicator of increased excitability of the vagus, but as a diagnostic test of typhoid fever it is not sufficiently specific.

## Surgery.

### Torsion of the Gall Bladder.

151. P. MATHEU (*Bull. et M. M. Soc. Nat. de Cher.*, June 26th, 1926, p. 701) reports a case of torsion of the gall bladder in a woman, aged 55 years, and remarks that this is a somewhat rare condition, the present case being the eighteenth that has been recorded. All these cases showed a special predisposition to this condition in that a long and well marked mesentery was present. The gall bladder often lies free or floating within the abdomen, and in only two of the eighteen cases were gall stones present in it. The condition occurs usually in elderly females with general ptosis. The diagnosis is seldom made before operation, the condition being usually regarded as some variety of acute abdominal disease, such as cholecystitis, appendicitis, perforated gastric ulcer, or intestinal obstruction. There does not appear to be any pathognomonic sign of such torsion; the signs, however, are usually sufficiently acute to call for urgent operation. Cholecystectomy is the operation of choice and has a relatively good prognosis; it was followed by recovery in 67 per cent. of cases. Untwisting of the gall bladder and cholecystectomy has been performed in some of the cases where the gall bladder appeared healthy. In the case recorded the patient made a satisfactory recovery.

### Ureteral Stricture.

155. A. H. PEACOCK and R. F. HAIN (*Surg., Gynecol. and Obstet.*, July, 1926, p. 54) record their observations on 76 cases of ureteral stricture, which they maintain is not an uncommon condition. As regards the etiology, the foremost among the causal factors are infection and trauma, the former playing the far greater part. A history of acute or chronic infection was present in 63 cases—the acute infections in order of frequency being influenza, scarlet fever, diphtheria, pneumonia, puerperal fever, and otitis media; and the chronic, tonsillitis, dental infection, enteritis, prostatitis, cholecystitis, oscititis, urothitis, sinusitis, and salpingitis. Of the 76 cases of ureteral stricture 45 occurred in males and 31 in females. The youngest patient was aged 2 years and the oldest 62. The strictures were about equally divided between the two sides, 42 being on the right and 34 on the left. The symptoms were frequently those of ureteral or renal colic, so that the patient was thought to be suffering from renal calculus. The authors maintain that many cases of obscure abdominal pain have been due to ureteral stricture and have been relieved by dilatation, and that a number of abdominal operations have been needlessly performed owing to ureteral stricture which

was the cause of the symptoms not having been diagnosed. Of the authors' series 46 patients were cured after three or four dilatations; in 39 per cent. the results were not known; 8 per cent. were relieved, 4 per cent. were not improved, and two patients died of uraemia.

#### 156. Primary Tuberculosis of Striped Muscles.

C. F. BIANCHETTI (*Il Policlinico*, May 15th, 1926, p. 221) reports two cases of primary tuberculosis in the trapezius and adductor longus muscles respectively. These cases are not common and are called primary because there are no detectable signs of tuberculosis elsewhere, although probably other foci do exist; they are haematogenous and start in the perivascular or connective tissue and not in the muscle fibre itself. In the first case, a girl aged 14, some pus was aspirated from the tumour in the trapezius and on injection into a guinea-pig induced tuberculosis; the mass was subsequently excised. The adductor mass occurred in a man aged 27 and was similarly excised. It seems doubtful whether traumatism plays any part in the formation of these tumours. The diagnosis is usually made by exclusion and the various general methods for detecting tubercle. Pain is not marked, but there is usually some functional disability in the muscle concerned. A few cases have been successfully treated by aspiration and injection of iodine, but the author thinks that as a rule it is better to excise the whole mass, and if necessary an area of muscle as well. About forty similar cases, with confirmatory diagnosis, have been reported by various writers. They may occur as nodules, but more generally as abscesses, and have to be distinguished from gummata, cysts, angiomas, sarcomata, or infective abscess. The prognosis, so long as the condition is purely local and there is no secondary infection, is relatively good.

#### 157. Perforation of Meckel's Diverticulum by a Foreign Body.

S. LINDQVIST (*Zentralbl. f. Chir.*, July 10th, 1926, p. 1756) remarks that the presence of Meckel's diverticulum is seldom recognized until some untoward symptoms occur; he records the following case on account of the difficulty in diagnosis. A man, aged 21, had had numerous attacks of pain in the right iliac fossa and groin during the past year; it was considered that the patient was suffering from recurrent appendicitis. After the last and most severe attack he was admitted to hospital and an immediate appendectomy was performed. On opening the peritoneum the appendix was seen to be slightly congested and it was removed. There was also engorgement of the vessels of the lower part of the ileum. On exploration of the pelvis a Meckel's diverticulum was found, hidden by a coil of small intestine, while between the coils of intestine there was a considerable collection of sero-purulent fluid. The diverticulum was 10 cm. in length and as thick as a man's index finger. At the free end there was a bladder-like accessory diverticulum as large as a hazelnut. The diverticulum and the adjacent bowel were distinctly congested, discoloured, and covered with fibrinous flakes. The diverticulum had perforated and its lumen contained a splinter of wood 3 cm. in length and 1.5 cm. in breadth. The diverticulum and the adjacent discoloured ileum were resected and an entero-anastomosis was performed. A small rubber drainage tube was inserted in the abdominal incision. Pathological examination showed that this was a genuine diverticulum. The history and clinical symptoms supported the diagnosis of acute appendicitis. Lindqvist adds that if a careful examination had not been made after removal of the appendix the actual pathological condition would have been overlooked and a more serious operation would have been necessary subsequently.

#### 158. Femoral Thrombosis complicating Appendicitis.

G. BOLOGNESI (*Lyon Chir.*, May-June, 1926, p. 290) discusses the association of left femoral thrombosis and acute appendicitis, and records four cases. The principal feature of this condition is that it occurs in young people, usually females. It may follow acute appendicitis even when there is no operation. The history shows in many cases that there is a tuberculous lesion elsewhere in the body. This condition occurs in about 1 per cent. of cases of acute appendicitis, and is met with in many other diseases, including articular rheumatism, gall stones, and after operation for hernia and renal disease. It is suggested that the thrombosis originates in some special predisposition of the patient and is not really the result of the disease. In view of the presence of some tuberculous lesion in these cases this may be the predisposing element, while the infective process in acute conditions may be of importance in the etiology. The occurrence of femoral thrombosis on the left side probably depends on the greater length and obliquity of the left external iliac vein producing a slowing of the circulation on this side.

## Therapeutics.

#### 159. The Treatment of Epidemic Encephalitis.

R.-A. LEY (*Bruxelles Méd.*, May 9th, 1926, p. 833) observes that three drugs seem to be valuable in the treatment of epidemic encephalitis—hexamethylene-tetramine, sodium salicylate, and sodium iodide—though a specific remedy has not yet been found. A daily dose of 10 to 12 grams hexamethylene-tetramine is given intravenously or intramuscularly, combined with oral administration pushed to the limits of gastric tolerance; intraspinal injections of 1 to 2 grams a day are also given. Venoclenomol new press sodium iodide given intravenously in a 50 per cent. solution in doses slowly increasing from 5 to 20 c.c.m. a day. Carn and Bismontier have had brilliant results with sodium salicylate, which must be given intravenously, but in very dilute solution (4 per cent.) to avoid sclerosis of the vein. The dose varies from 1 to 6 or even 8 grams a day according to the severity of the case. The intravenous administration of hexamethylene-tetramine may be combined with it. Intraspinal scrotherapy, by means of anto-serum or convalescent serum, has been tried with favourable results in certain cases. Ley asks whether the so-called sequelae should properly be regarded as such, or rather as evidence of prolonged encephalitic infection; the latter event justifying a continuance of therapeutic measures specially directed against such infection. Levaditi and Pelnichev introduced the intraspinal injection of a vaccine of the specific virus, and Lefevre de Arris has obtained with it improvement in certain cases of hypertension. Claude reports marked improvement in severe Parkinsonism in young patients following an inoculation with recurrent fever. Roch has tried non-specific protein therapy by the intraspinal injection of casein. Bruynoghe has demonstrated the bactericidal action of radium on the virus of encephalitis *in vitro*. At present much treatment remains symptomatic. Conditions of hypertension are improved after the administration of atropine, tremors after scopalamine or morphine, and myoclonus and choreic symptoms after antipyrine, arsenic, and magnesium sulphate.

#### 160. The Intravenous Administration of Mercurochrome.

H. H. TRONT (*Surg., Gynecol. and Obstet.*, May, 1925, p. 633) after summarizing the research work upon mercurochrome-220, considers its intravenous administration justifiable in cases with a positive blood stream infection in which a possible foci of infection have been dealt with. He states that the justification or otherwise for the continuation of intravenous medication rests upon the answer to the question whether a blood stream infection spreads in the same way as an infection in a solid cellular tissue and whether it is possible to kill micro-organisms with a dye or other substance without at the same time harming living cells. From previously recorded cases of severe blood stream infection treated intravenously with mercurochrome-220 the percentage of recoveries appears to be higher than can be attributed to mere coincidence. Tront reports fourteen cases with recoveries in which the drug seemed to be of definite benefit. He mentions the dangers of overlooking some focus of infection which could be surgically treated, of the reaction following administration, and of its indiscriminate use when blood cultures have not been made. He concludes that all intravenous medication has great potential dangers and should only be administered in well equipped hospitals.

#### 161. Antirachitic Value of Irradiated Orange Juice.

H. L. MASLOW, D. H. SHELLING, and B. KRAMER (*Bull. Johns Hopkins Hosp.*, July, 1926, p. 56) report the result of preliminary experiments which indicate that antirachitic properties can be imparted to orange juice by exposure to the rays of a mercury vapour quartz lamp. Rachitic rats fed on orange juice thus irradiated commenced to show healing as soon as five days after commencing the treatment; the process was practically complete at the end of about a fortnight. The inorganic phosphorus in the blood serum was found to be raised. The authors are investigating the antirachitic value of irradiated orange juice in the treatment of children suffering from rickets, and the effect of irradiation on the antiscorbutic properties of various specimens of orange juice which differed in their degree of acidity. They are also studying the length of time during which such irradiated orange juice is able to retain its value in the treatment of rachitic animals. Comparing their results with the work of Howland and Kramer and de Bosanyi, they suggest that there may be two types of healing in rickets. In the first healing spreads from the ends of the epiphyseal cartilage into the metaphysis and is associated usually with a raised serum phosphorus content; in the second the healing begins in the middle of the metaphysis and the serum phosphorus is relatively low.



The aorta was clamped on account of post-partum bleeding, and after expression of the placenta a toad 10 cm. long and still covered with serosa was found in the anterior wall of the cervix. Hysterectomy was done successfully. The second patient was a woman, aged 36, who had had two children and numerous artificial abortions. Labour at term was protracted owing to uterine inertia and was accompanied by pyrexia; it was terminated by application of Kielland's forceps to the high-lying transversely placed head. The child, born alive, weighed 3.3 kilograms; the mother died thirty minutes later, apparently from heart failure, of which physical signs had previously been noted. At autopsy an incomplete tear of the cervix and a complete transverse rupture 8 cm. long at the cervico-corporal junction were found. Microscopically the first case showed chronic endometritis, chiefly of the cervix, and infiltration of the degenerated myometrium in the neighbourhood of lymphocytes and leucocytes. In the second case an acute membranous endometritis and an acute sero-parient myometritis with arteritis and thrombo-phlebitis were present. In neither case was there any evidence of scar formation.

#### 169. Physiology of the Vernix Caseosa.

ACCORDING to H. KIEFFER (*Bull. Soc. d'Obstét. et de Gynéc. de Paris*, May, 1926, p. 273), the vernix caseosa is derived chiefly from cholesterolides and glycerides secreted by the amniotic epithelium; the foetus contributes epidermal cells and (from the sebaceous glands) a small proportion of the fatty substances. The amniotic secretion is deposited, by reason of the foetal movements, on the back and outer surfaces of the limbs; vernix caseosa is always absent from the chest. This substance is not to be regarded as an excretion but rather as a pabulum for nutrition of the embryo; it contains lipoids and glycerides which are anti-haemolytic and antibacterial. It is not advisable to remove the vernix caseosa after birth, as is the common custom; if left it is absorbed in from eight to twelve hours. By leaving the vernix caseosa on the newborn body and by accelerating the attentions to and toilet of the baby before it is dressed Keiffer has found that the incidence of icterus neonatorum may be reduced to a negligible minimum, as compared with the much larger figures usually given—according to Porak, 50 to 63 per cent.

#### 170. Puerperal Inversion of the Uterus.

R. DE PORENTA (*Riv. d'Obstet. e Ginecol. Prat.*, July, 1926, p. 321) does not favour application of tampons or colpenteryls as means of treatment of irreducible post-partum inversion of the uterus; he believes that, manual replacement having proved impossible, recourse should be had, as a preliminary to operative correction, to anterior or posterior colpotomy. The latter is technically easier and has the advantage of avoiding approach to the bladder; it should be performed as soon as the state of shock accompanying the inversion has sufficiently subsided. In certain cases hysterectomy may be indicated by signs of sepsis or incipient gangrene of the uterus. De Porenta records a case of acute post-partum inversion of the uterus in a woman aged 21, who came first under medical observation forty-three hours after a delivery in which traction had been exercised on the cord during the first stage. Pyrexia was present and the inversion was complete and irreducible by manual manipulation under general anaesthesia. A rise of temperature and pulse rate followed on two occasions the introduction into the vagina of a Braun's colpenteryl, and also a further attempt at manual reduction. The fever disappeared, the general condition improved with rest and doses of alcohol, and finally Küstner's operation was performed on the twelfth day. A year later bimanual examination gave normal findings save for retroversion of the uterus.

### Pathology.

#### 171. The Production of Immune Bodies.

E. BENASSI (*Arch. di Patolog. e Clin. Med.*, May, 1926, p. 145) has investigated the effect of poisoning the haematopoietic and blocking the reticulo-endothelial systems of rabbits on the production of agglutinins to *B. typhosus*. Pure benzol was injected into a series of animals, the doses being so graded that after about ten days the circulating leucocytes had fallen to 2,000 per c.mm.; further injections were given to maintain them at this level. Injections of carmine or of lithocarmine were then made with the object of blocking the cells of the reticulo-endothelial system and, shortly after, heat-killed typhoid bacilli were given intravenously, the dose being in strict proportion to the weight of the animal. At fixed times subsequently the agglutinin titre of the blood was determined as accurately as possible. The injections of

carmine and of typhoid bacilli were repeated on one or two occasions, and the titres reached by the different animals again compared. In another series a preliminary splenectomy was performed, and the blocking of the cells carried out by trypan blue or saccharated ferric oxide. The results obtained from these experiments were as follows. Blocking of the reticulo-endothelial system by itself tended to favour the appearance of agglutinins; benzol poisoning by itself had the reverse effect. When the two were combined the agglutinin production was much the same as in control animals receiving typhoid bacilli only. Neither splenectomy plus blocking nor splenectomy combined with blocking and benzol intoxication had any noticeable influence on the production of agglutinins. The differences observed after the various procedures were always most noticeable a few days subsequent to the start of the experiment; later on they tended to disappear, so that the titres of all the rabbits approached each other closely. From this the author concludes that in all probability the production of antibodies is a function not of one particular kind of cell but of several different kinds scattered throughout the whole body. When one set is put out of action the others are therefore able to compensate for their loss.

#### 172. The Blood in Eclampsia.

H. T. STANDER and A. H. RADELET (*Bull. Johns Hopkins Hosp.*, June, 1926, p. 423) have examined the blood of patients suffering from eclampsia, and find that there is a high lactic acid value; that lactic acid is increased markedly, which is only partially due to muscular activity; and that there is a decrease in the power of combining with carbon dioxide. They claim to have shown also that there is a definite tendency towards a hyperglycaemia which is often associated with a high figure for inorganic phosphorus. As a rule there was little or no increase in non-protein nitrogen (blood), and when such an increase was found it was due to nephritis or was associated with advanced stages of the disease. The authors do not feel able to express an opinion about the extent to which these alterations in the blood chemistry may be due to the hepatic lesions which are usually recognizable in eclampsia.

#### 173. The Blood Serum in Pernicious Anaemia.

ACCORDING to A. M. FISHBERG (*Impr. Journ. Med. Sci.*, July, 1926, p. 81), the characteristic skin colour of pernicious anaemia is chiefly due to the yellowish discoloration of the blood serum. The increase in the serum pigmentation is a very constant feature, Naegeli having observed it in every one of twenty cases, and Fishberg finding it in his seventeen cases. The colour of the serum is golden or golden brown, and not the usual straw tint. During the active periods of the disease the serum is more highly coloured than normally. The deeper pigmentation has been shown by van den Bergh to be due to an increase in the bilirubin content, and the presence of haematin has been demonstrated by Schümm in the serums of patients with pernicious anaemia. Fishberg believes that in any case of anaemia the presence of a pale blood serum definitely contraindicates the diagnosis of pernicious anaemia, and is therefore of special value in the differential diagnosis between the secondary anaemias of malignant disease and a primary anaemia of the pernicious type.

#### 174. The Sedimentation Test in Infantile Syphilis.

SINCE the Wassermann test in sucklings is unreliable C. GIAMMO (*La Pediatria*, June 1st, 1925, p. 532) has tried to discover whether a marked increase in the speed of sedimentation of the red blood cells (Georgi's reaction) has any real diagnostic value, and whether various antisyphilitic treatments have any influence in controlling this speed. Thirty-nine cases of hereditary syphilis were divided into three groups, which were treated respectively with mercury (inunctions or vapour bath), arsenobenzol, and bismuth preparations; there was a fourth group of healthy controls. Giammo found that in healthy sucklings the sedimentation rate showed wide variations according to the individual, but it was more rapid in the congenital syphilitic babies as a rule. This was not diagnostic, since the rate was also accelerated in other morbid conditions. However, during the first two weeks of life, in the absence of tubercle or common infections, a marked and constant acceleration was strongly suggestive of syphilis. The author concludes that the reaction is positive in about 65 per cent. of cases, but a normal reaction does not contraindicate syphilis. In many cases the sedimentation rate corresponded with the severity of the symptoms. Treatment in 80 per cent. of the cases caused a slowing down of the rate parallel with the disappearance of clinical signs; this slowing was greatest after treatment with arsenobenzol. Giammo concludes that a marked and constant acceleration has in practice a relative diagnostic value, but only in infants.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 175. Arterial Embolism following Intramuscular Injection of Bismuth Carbonate.

R. BARTHÉLEMY (*Bull. Soc. Française de Derm. et de Syph.*, May, 1926, p. 372) describes a case of arterial embolism after the intramuscular injection of bismuth carbonate, which, recognized recently as superior to the oxide on account of its more rapid absorption, is nevertheless an insoluble salt and may give rise to embolism. The early symptoms of embolism are often mistaken for interstitial haemorrhage or nerve injury. Barthélemy's patient had palmar syphilides resembling psoriasis and a positive Wassermann reaction. Weekly injections of bismuth carbonate 0.2 gram in 2 c.cm. vegetable oil were employed. The tenth injection was given in the left buttock; no bleeding followed the withdrawal of the platinum needle, but the patient remarked that he felt the injection a little more than the previous one. He had no sleep on account of pain, and next morning the whole buttock was swollen, tense, and painful. The skin around the puncture was of a livid violet colour, hard, and very painful on pressure; it was surrounded by an itching urticarial ring. Small bullae formed on the central area but no actual sloughing occurred. The condition gradually improved, and ultimately cleared up in three weeks, with the exception of a small indurated area.

### 176. The Brain in General Paralysis after Malarial Therapy.

G. P. FRETZ (*Nederl. Tijdschr. v. Geneesk.*, May 15th, 1926, p. 1933), who records his own observations, states that thirty-six brains of patients who had died of general paralysis after treatment by malaria were examined by Sträussler and Koskinas at Vienna, which is the centre for the malarial treatment of general paralysis. In three cases of death occurring during a remission they found hardly any anatomical changes. In nine cases the changes were slight although no clinical remission had occurred. These investigators are of opinion that half the cases which have had more than five febrile attacks were favourably affected in an anatomical respect, and that the anatomical remission after the malarial attacks. In two cases died during treatment Sträussler and marked infiltration which they regarded as an expression of a recrudescence of the infective process preceding recovery. Fretz, from examination of the brains of ten paralytics who had been treated by malaria, found that the microscopical appearances as a general rule confirmed the clinical and serological findings. Improvement did not occur in every case, and a case showing clinical improvement did not always show a corresponding serological improvement. Microscopical examination showed that inflammatory phenomena such as the occurrence of lymphocytes and plasma cells are less in the brains of treated than of untreated cases, though this rule is not invariable. Cases may occur in which there is a diminution of inflammatory phenomena in the absence of any clinical improvement. Whether the reverse occurs—that is, clinical improvement without any diminution of inflammatory phenomena—is unknown.

### 177. Complications of Artificial Pneumothorax.

C. LAMARON (*Journ. de méd. de Bordeaux et du Sud-Ouest*, May 25th, 1926, p. 413) records two unusual complications of artificial pneumothorax in males aged 42 and 17 respectively. The first patient, who had received numerous previous insufflations, suddenly developed transient hemiplegia due to gas embolism after 2 or 3 c.cm. of gas had been injected. In the second case sudden death occurred at the fifth insufflation after injection of about 20 c.cm. of gas. Accidents of this kind are most likely to occur when the exploration of the thorax has been difficult and must be repeated owing to partially adherent pleura. The author states that nothing need be feared when no adhesions are present, but when it is impossible to be sure of finding a completely free pleura it is best not to employ artificial pneumothorax.

### 178. The Inheritance of Epilepsy.

W. R. BRAIN (*Quart. Journ. Med.*, April, 1926, p. 299) investigated the subject of the inheritance of idiopathic epilepsy by reviewing the literature and making an inquiry into the family history of over 200 epileptics. Of these, 56 (28 per cent.) had a family history of epilepsy—a percentage in substantial agreement with the findings of other observers. A family

history was obtained more frequently in the case of females than of males, and it was found that the onset occurred in the first decade of life in a larger proportion of those with a family history of epilepsy than of those without such a history. Early convulsions (28 per cent. of 176 epileptics) occurred almost twice as frequently in those giving a family history of the disease as in those giving none. It was found that epileptics transmitted the disease to about one in twenty of their offspring, but this proportion cannot be accepted finally in view of the small numbers under investigation. Nearly half of the epileptic patients had been the first- or second-born members in their families. It is suggested that the greater liability of first-born children to head injury during birth may be the cause of this greater incidence of epilepsy. The incidence of insanity among the relatives of epileptics was found to be no higher than in the general population. Brain considers that the investigation points to there being a predisposition, which in at least 28 per cent. of the cases is inherited, as an etiological factor, but that our present knowledge is in violation of Mendelian principles to the extent that it is not practicable.

### 179. A Fever in Queensland resembling Mild Typhus.

P. T. WHEATLAND (*Med. Journ. of Australia*, March 6th, 1926, p. 261) states that although cases of typhus have occurred on ships arriving in Australia, and occasionally in the earlier years among the resident population, no epidemic of the disease has been recorded in Australia since 1860. In 1922 and 1923 Hono reported a series of cases in Adelaide resembling Brill's disease or the mild form of typhus occurring in New York, but with no evidence of infestation by lice. Between June and September, 1925, Wheatland observed thirty-eight cases at Toowoomba, Queensland, of a disease probably identical with that observed by Hono, characterized by a fever of about twelve or fourteen days' duration with severe headache and a macular rash on the body and limbs. The Widal reaction was negative, and the Weil-Felix reaction was positive in dilutions ranging from 1 in 80 to 1 in 10,240. There was a slight leucocytosis of 10,000 to 13,000. Blood cultures during the febrile stage were always sterile. The points against the disease being true typhus were the absence of lice, a negative diazo-reaction, and the insusceptibility of guinea-pigs.

## Surgery.

### 180. Enlargement of the Prostate.

M. ARESU (*Arch. Ital. di Chir.*, March, 1926, p. 301) records his pathological observations on 80 cases of enlarged prostate, consisting of 26 due to concretions, 37 of nodular hyperplasia of the principal prostatic system, 16 of nodular hyperplasia of the principal prostatic system and of the accessory as well, and 1 case of perineurthral fibro-adenomatosis. His conclusions are as follows: (1) Normal senile involution of the prostate in the form of diminution in size and number of the tubules and a variable degree of atrophy of the smooth muscle fibres is not often observed. (2) All the prostates of elderly persons found to be enlarged without being adenomatous should be regarded as pathological. Histological examination in all these cases shows an increased deposit of concretions in the excretory and secretory ducts, and the anatomical basis of the enlargement is as follows: a varying degree of dilatation of the glandular cavity, a high degree of hypertrophy and hyperplasia of the smooth muscular tissue, a growth of interstitial connective tissue, and considerable thickening of the fibromuscular capsule of the gland. This is the type of prostate most frequently seen in old men. (3) Cases in which the principal prostatic system is affected are the most numerous, the areas of predilection for the hyperplasia being in the first place the lateral lobes and then the prespermatic commissure. Involvement of the anterior lobe and retrospermatic commissure is rare. The new growth corresponds to the type described as adenomyofibroma, in which the adenomatous element predominates. (4) The next most frequent cases are those in which both the principal and accessory systems are affected together. In these the proliferation due to the principal system is characterized by a preponderance of adenoma over fibroma and myoma, while that due to the accessory system is distinguished by an excess of fibroma over adenoma. (5) Nodular hypertrophy of the accessory or periurethral system, which is not present

in all individuals, and in some is scanty or entirely absent, is the form least frequently encountered, and in the author's cases was chiefly characterized by predominance of fibroma over adenoma.

#### 181. Periarterial Sympathectomy.

P. STRADIN (*Deut. Zeit. f. Chir.*, Heft 5 u. 6, January, 1926, p. 338) records his experience of 30 cases at the surgical clinic at Riga University and comes to the following conclusions: (1) The method of periarterial sympathectomy of Jaboulay and Leriche is one of great value, and deserves to be more extensively employed. (2) The most favourable results are obtained in trophic and vasomotor disturbances following nerve wounds (causalgia), in various vaso-neuroses, trophic ulcers of unexplained nature, arterio-sclerotic and post-typoid intermittent claudication, and in a few cases of spontaneous gangrene in the initial stage. (3) The mechanism of the favourable action of periarterial sympathectomy is still mysterious, existing theories contradicting one another. (4) The method should take a prominent place among the palliative operations for spontaneous gangrene. (5) If the proper technique is employed the operation is without risk. In none of Stradin's cases did secondary thrombosis occur. (6) In spontaneous gangrene and intermittent claudication the best results are obtained if sympathectomy is combined with ligature of the vasa, and physical treatment is employed before and after the operation. (7) In a normal individual the vasomotor disturbances following periarterial sympathectomy lasted about a fortnight, and differences in the capillaroscopic appearances could be seen after a month. (8) Periarterial injection of spirit can take the place of stripping the artery. In some cases it can be performed more easily and quickly, and does less harm to the arterial wall. Further clinical trials of this method, however, are needed.

#### 182. Nephrectomy for Renal Tuberculosis.

C. A. PERRET (*Journ. d'Urol.*, May, 1926, p. 397) records his opinions, based on a hundred consecutive cases of nephrectomy without a single operative death; 87 of these operations were for renal tuberculosis. The kidney was always reached by the lumbar route and by the retroperitoneal method. The tuberculous cases were frequently associated with pulmonary or joint lesions. When there was a tuberculous focus in the lungs the anaesthetic used was a mixture of ether and chloroform: all the other patients had pure other. He finds the oblique lumbar incision has definite disadvantages when the kidney is fixed by adhesions. He therefore advises a transverse incision commencing at the border of the lumbar muscles and passing forwards, below the twelfth rib as far as may be found necessary. This incision is rapidly made and gives the best access in difficult cases. After opening the renal fossa the kidney is carefully forced by the fingers. Perret states that the more common complications following this operation are tuberculous meningitis, reflex anuria, or embolus and infection from rupture of the kidney. These accidents owe their origin to this stage when the kidney is freed, and can largely be avoided by careful handling. The bladder is irrigated immediately after the operation, since during the handling of the kidney pus may be expressed into the bladder. This is continued daily when there is any vesical infection. The lumbar wound is closed in layers and a glass drain is placed in the depths of the wound for a few days. The operative results have been uniformly satisfactory.

#### 183. Tuberculosis of Mesenteric Glands.

J. R. HEAD (*Annals of Surgery*, May, 1926, p. 622) points out that infection of the mesenteric glands is usually by ingestion and the route is through the intestinal mucous membrane to the glands which drain it. The bacilli are usually of the bovine type. Many of the symptoms and complications are due to periaadenitis and adhesions, while rupture of a purulent or caseous gland may lead to generalized tuberculous peritonitis. The symptoms are often misleading and the picture may be one of chronic abdominal pain with or without acute exacerbations. Pain is usually intermittent and is as a rule referred to the right iliac fossa; rarely it is on the left side. There is frequently an abdominal tumour and the stools may be copious and foul. The chief serious complications are abscess formation, perforation, and military tuberculosis. The diagnosis is difficult and is often not made prior to operation; the condition often simulates appendicitis. The treatment is medical and surgical. The operative procedure is determined by the stage of the process. Extirpation of the glands is advised where possible, and resection of the bowel where injury to the vessels is unavoidable; the opening and curetting of caseo-calcareous masses and the drainage of abscesses are necessary. In 78 collected cases there were 8 post-operative deaths. Simple laparotomy, as in tuberculous peritonitis, appears of no benefit in these cases.

## Therapeutics.

#### 184. Protein Therapy in Peptic Ulcer.

A. DE ZULUETA (*Rev. Clin. de Bilbao*, June, 1926, p. 293), who records his observations on eight cases, states that protein therapy for peptic ulcer was first introduced by Pribam, who out of 77 cases so treated reported that 42 became completely free of symptoms after having suffered intense pain for years. The substances employed were vegetable novoprotein, vacuemin, caseosan, and hoiled milk. In Zulueta's cases casein only was used. Intravenous injections were given twice a week or every other day in doses of 1/2 eg. for the first two occasions, and 1 eg. for the rest. Twelve injections in all were given. Unlike Pribam, who kept his patients on ordinary diet, Zulueta confined them to a strict regimen consisting of milk, eggs, and white fish. The most striking result of the treatment was the rapid disappearance of pain. In two cases there was a marked diminution of the gastric acidity without any other obvious change.

185. V. GRÖNER (*Med. Klin.*, June 25th, 1926, p. 991) quotes the literature dealing with the treatment of gastric ulcer by protein injections, and describes 51 cases of his own. He compares the reaction on the ulcer with that which occurs when protein is given in joint affections—a chronic inflammation is converted into an acute one, with a correspondingly greater tendency to natural cure. He claims that the patient is freed from pain in a relatively short time, and that the x-rays show a diminution or disappearance of the ulcer. The results are, however, not always permanent. His method is to inject novoprotein in doses rising to 2 c.cm. Intramuscular injection has more rapid results than subcutaneous, but he considers intravenous to be the best of all. Ambulant treatment is quite possible. Out of his 51 cases the pain disappeared in 29, was lessened in 18, and in 4 there was no improvement. X-ray examination of 37 patients showed disappearance of the lesion in 18 cases, reduction of the lesion in 11, and no change in 8.

#### 186. Treatment of Pernicious Anæmia.

H. J. BING (*Ugeskrift f. Læger*, May 20th, 1926, p. 475) investigated in the summer of 1925 the fate of the fourteen patients who had been treated in his hospital during the two preceding years for pernicious anæmia. A great variety of treatments had been attempted, and while such standard drugs as iron and arsenic had proved disappointing, protein shock (intramuscular injections of milk) and large doses of hydrochloric acid, given through a stomach tube, had yielded fairly satisfactory results, but in only four out of the fourteen cases could recovery be claimed. The results of injections of milk were apt to be as temporary as they were immediately striking, and they would seem to depend on a passing stimulation of the bone marrow. In the case of a woman aged 40 the percentage of haemoglobin was 37, and the erythrocytes numbered only 1,480,000 per c.mm. She was given an injection of 5 grams of milk every other day, the total number of injections being ten, and recovered rapidly, the haemoglobin rising to 80 per cent. and the erythrocytes to 3 million per c.mm. She was discharged from hospital after a month, feeling quite well. In a man aged 70 the disease had advanced so far, and he had suffered so much from debility, that protein shock treatment was attempted only after some hesitation. But he tolerated the reaction well, and made a remarkable, though temporary, recovery, dying six months later. More permanent would seem to be the beneficial effects of giving once or twice a day (usually in the morning on an empty stomach) from 5 to 8 c.cm. of dilute hydrochloric acid in 200 c.cm. of water, introduced through a stomach tube. Bing records in detail several cases to illustrate the good effects of this treatment.

#### 187. Autogenous Blood Injection in Acute Articular Rheumatism.

A. SORTER (*Med. Klin.*, May 7th, 1926, p. 725) discusses the modern theories of rheumatic infections and observes that the ordinary treatment with salicylates does not always prevent the occurrence of endocarditis. He states that there are three methods of giving autogenous blood injections in this disease: intramuscular injection of 20 to 40 c.cm. of the patient's blood drawn from the cephalic vein; intravenous injection of fresh defibrinated blood, the blood being withdrawn and defibrinated with the strictest asepsis since otherwise there is danger of the occurrence of severe symptoms of shock, palpitation, vertigo, headache, and tinnitus; and intravenous injection of old defibrinated blood. The author finds the intramuscular injection of fresh untreated blood preferable to the other methods. He suggests that the

therapeutic action of autogenous blood injection may depend on a combination of specific immunization processes with a non-specific stimulation therapy. He describes three cases treated during the last year with very satisfactory results. In some cases as much as 40 c.cm. of blood was injected every third day, in others this initial dose was followed by subsequent doses of 20 to 30 c.cm. The author believes that this treatment has had good results when endocarditis or pericarditis was present; it was less efficacious in chronic articular rheumatism.

#### 188. Specific Pollens in Hay Fever.

D. NICHOLSON (*Canadian Med. Assoc. Journ.*, June, 1926, p. 683) considers that the number of varieties of pollen used in testing the susceptibility of patients to hay fever should be as great as possible; he has observed also that the pollen reactions may vary when different varieties of the same plant family are used. It is therefore necessary to have some knowledge of the botany of these plants and of the time of their pollination. When a person is sensitive to a certain plant its blossom rubbed into a scratch will produce a reaction—a valuable point in the diagnosis of those patients who do not come for treatment until the flowering season has begun. Desensitizing treatment should begin before the flowering season of the plant concerned and small doses of the pollen gradually increased and given for a considerable period of time are the best; Nicholson thinks that the treatment should be continued through the whole season during which the particular pollen is prevalent. No definite opinion can be given as to the number of pre-seasonal courses of treatment necessary before permanent immunity is conferred upon the patient; it is rare for one course to be the only one required, and frequently the treatment must be repeated annually, for though it prevents an attack of hay fever in that particular year it lessens the cutaneous reaction of the patients to only a very small extent.

## Ophthalmology.

#### 189. Familial Melanosis Bulbi.

L. M. SELTER (*Monatsschr. f. Kinderheilk.*, March, 1926, p. 587) describes four cases of melanosis bulbi in one family—the father aged 39, his daughter aged 9, and twins, a boy and a girl aged 3 years, being affected. In each case the pigmentation involved both eyes and was situated round the cornea in the form of bluish-grey spots. Examination of the pigmentation by the slit-lamp showed that it was localized on the surface of the sclerotics. The fundus in each case resembled that of a negro, but there was no question of an admixture with any extra-European race, and the visual capacity was good. Apart from a mongolian spot in the lumbar region of the male twin no other anomalies were present.

#### 190. Aniridia in Four Generations.

J. B. LEWIS (*Med. Journ. of Australia*, May 1st, 1926, p. 489) reports a case of double aniridia in a boy, aged 6, accompanied by horizontal nystagmus. His mother had also double aniridia and vertical nystagmus in both eyes. The mother's sister, brother, father, and grandfather were also affected. The mother had diffuse lens opacities, and the sister had had each lens removed for cataract. This is in accordance with what is usually found in aniridia, in which the lens undergoes a change at an early date. Of the boy's two brothers one had normal eyes and the other coloboma of the iris. According to Parsons the influence of heredity is more marked in aniridia than in any other ocular malformation. Guthrie found 10 cases in four generations, Galeczowski 31 cases in three generations, de Beek 7 cases of aniridia and 2 of coloboma in three generations, and Mohr found a mother with complete aniridia and two sons with partial aniridia.

#### 191. A Family of Squinters.

F. H. RODIN (*Journ. Amer. Med. Assoc.*, May 22nd, 1926, p. 1613) gives an account of four cases of strabismus in one family. The mother, who had always had right divergent strabismus, had had fourteen children, nine of whom were living. Her husband and eldest six living children had straight eyes, while the youngest three squinted. There was no history of squinting on either the maternal or paternal side of the family. The eldest boy, aged 12 years, and the second child, a girl aged 9 years, had had right internal strabismus since 2 years of age, and the youngest child, a girl aged 6 years, had had left internal strabismus since 1 year of age. The fundi were normal in each case. Lenses did not improve the vision or straighten out the eyes in any one of the squinters.

#### 192. Iridectomy with Winged Incision in Glaucoma.

J. GREEN (*Amer. Journ. Ophthalmol.*, May, 1926, p. 342) describes the variety of iridectomy which he has found most successful; it is a modification of Lueddke's operation. A conjunctival flap is dissected down after the manner of Elliot. One suture is passed through the temporal portion of the flap and another through the nasal portion, and the flap is turned down over the corner. A small keratome incision is made and a few drops of aqueous humor allowed to escape. With scissors a 3 mm. snip is made in the sclera at either end of the wound, pointing slightly upwards. A fair-sized iridectomy is now performed with two snips. The sutures are then tied.

## Obstetrics and Gynaecology.

#### 193. The Frequency of Genital Tuberculosis in Women.

C. SCHMITT (*Bull. Soc. de Thér.*, May 12th, 1926, p. 131) states that until recently little attention has been paid to the frequency of genital tuberculosis in women, doubtless owing to the difficulty of early diagnosis and lack of appropriate treatment. Spencer Wells in 1863 performed the first laparotomy for tuberculous peritonitis, which he had mistaken for an ovarian cyst, and in 1890 Osler attributed most cases of peritonitis in young women to an overlooked salpingo-oophoritis of tuberculous origin. The same opinion was expressed by Bonilly three years later. In 1910 Poncet and Leriche drew attention to inflammatory tuberculosis of the uterus and adnexa, and more recently J. L. Faure has maintained that tuberculosis of the adnexa is not rare. Textbooks, however, state that the localization of primary tuberculosis in this region occurs in only 1 to 1.5 per cent. Schmitt thinks that this is undoubtedly an underestimate, the error being due to the statistics being based only on cases which came to operation or necropsy. Tuberculosis when it originates in the genital region is not obtrusive and only rarely gives rise to an appreciable swelling. Consequently tuberculosis of the female genitals is rarely met with by the surgeon, and mainly as the result of an error in diagnosis, as there is no pathognomonic sign attached to it. In cases which come to autopsy the lesions of the uterus and adnexa are insignificant compared with the importance and extent of the lesions of the organs which have caused death. Of sixty-five gynaecological cases sent to Schmitt for radiotherapy, seven, or 10.76 per cent., showed genital tuberculosis which was primary in four and in three was accompanied by other lesions. Good results were obtained by employment of ultra-violet rays.

#### 194. Ovarian Insufficiency.

SIREDEY and Mlle G. LABEAUME (*Journ. de Méd. et de Chir. Prat.*, May 10th, 1926, p. 286) remark that interstitial cells analogous to those of the testis are absent from the ovaries of the human female and cannot be held to be the source of the ovarian internal secretion; the present-day tendency is to regard the liquor folliculi, the corpus luteum, or both, as containing the hormone, and therefore preparations from a part of the organ are not suitable for opotherapy. Cases of ovarian insufficiency are very frequently associated with similar conditions of the thyroid and pituitary glands, and also with alterations in activity of the former, so that combined gland therapy must be controlled by careful clinical observation. At the menopause symptoms pointing to ovarian insufficiency are a tendency to obesity, flushes, and variability of the pulse frequency; many other nervous and toxicemic morbid conditions common to both sexes between the ages of 40 and 50 are apt to be ascribed incorrectly to ovarian dysfunction. Many cases of ovarian deficiency at the menopause respond to treatment directed to the intestinal and the renal functions, hydrotherapy, fresh air, and regulated exercise. In others 20 mg. of thyroid extract, 2 cg. of pituitary extract, and 5 to 10 cg. of ovarian substance may be given in cachets or tablets three or four times a week for two to three weeks, separated by weekly or fortnightly intervals. Opotherapy is contraindicated in the artificial menopause following x-ray or radium treatment; Bécélère and others, as well as the present authors, have seen congestive crises, metrorrhagia, and undesirable nervous phenomena occur when this precept has been ignored. Primary ovarian insufficiency is most usually detected in a girl of 13½ to 15 years of age who has not menstruated, is of robust appearance, with fine skin and well developed breasts; the pubic and axillary hair is deficient, the hands are red in warm and violet in cold weather, and the feet are cold. Such patients are readily fatigued and lethargic, and suffer from headaches. A similar condition sometimes arises a few years after establishment of menstruation; the menses become scantier and irregular, and the

weight increases owing to the deposit of fat almost exclusively on the abdomen and the upper part of the thighs. A combined ovarian-suprarenal syndrome is present, with frequently in addition a thyroid hypoactivity as indicated by dryness of the skin, ichthyosis, urticaria, asthma, headaches, or poor development of the external portion of the eyebrows—or some combination of these conditions. Tuberculosis and syphilis play an important etiological part in some of these cases. The proportions of the extracts of the ductless glands which are given should be regulated carefully according to the clinical picture; the dosage, especially of thyroid extract, needs careful watching. A beginning may be made with moderate doses such as 1 cg. of thyroid extract, 1 to 2 cg. of pituitary extract, 10 cg. of suprarenal, and 10 to 20 cg. of ovarian substance, four times weekly with the midday meal, for three weeks in the month; general treatment must always be associated. Ovarian insufficiency in combination with that of other endocrine glands is sometimes manifested in previously healthy subjects between the ages of 25 and 35 years by periods of several months' amenorrhoea; such cases are usually consecutive to abnormally prolonged lactation.

#### 195. Signs of Congenital Syphilis in the Newborn.

COMMANDEUR and RHENTER (*Bull. Soc. d'Obstét. et de Gynéc. de Paris*, May, 1926, p. 317) state that of 406 infants recognized as congenitally syphilitic among 49,000 born at two obstetrical clinics, only 127, or 31.2 per cent., showed clear clinical signs of syphilis. Palmo-plantar pomphigus, excessive size of the abdomen with or without hepatic enlargement or ascites, and splenic enlargement were the most frequent signs, while ano-genital circinate ulcers, icterus, and buccal mucous plaques were among the most uncommon. In about three-fourths of the cases of congenitally syphilitic infants the placenta weighed more than one-fifth of the foetus, and in about one-half it weighed at least one-quarter as much. Disproportionate weight of the placenta was regarded as a sign of congenital syphilis if the mother was manifestly syphilitic or if the foetus was macerated. In about one-fourth of the cases a diagnosis of congenital syphilis was based solely on findings at necropsy in macerated or other stillborn foetuses or in those dying shortly after birth; hepatic enlargement, splenic enlargement, and lesions of the diaphyseal epiphyseal cartilage (Weguer's sign) were present in 78, 81, and 66 per cent. respectively.

## Pathology.

#### 196. The Relation between Social Status and Cancer Mortality.

M. YOUNG (*Journ. of Hygiene*, July, 1926, p. 203) has analysed the recorded deaths at different ages from cancer in different parts of the body in groups of men following different occupations in England and Wales during the three-year period 1910-12. The social classes considered were the first five in the Registrar-General's classification, ranging from the upper and middle classes to the unskilled workmen. It was found that the mortality from cancer in the lower classes was higher than that in the upper. Thus the standardized death rate from cancer in the several parts of the body investigated (these comprised 92 per cent. of the total mortality) for males of 25 years of age and upwards was 1,982 per million among the unskilled workmen and 1,525 per million among the upper and middle classes. In most parts of the body, including the tongue, oesophagus, and stomach, the mortality rates from cancer were higher in men of the lowest social status. Mortality from cancer in other parts of the body—namely, the bowel, prostate, and probably the pancreas—was higher in men of the best social status. The author discusses the possible explanations of these results, and points out that whatever hypothesis is suggested—auto-intoxication, high living, overfeeding—it must take into account the varying distribution of cancer in the alimentary tract; it must explain also why cancer of the stomach is commoner in men of the lower classes, and cancer of the bowel is commoner in men of the higher classes.

#### 197. Regulation of the Number of Blood Platelets.

H. KOSTER (*Journ. Exper. Med.*, July, 1926, p. 75) has carried out some experiments on the factors influencing the number of blood platelets. Bedson showed that removal of the spleen in an animal was followed by a rise in the circulating platelets; after about a month, however, the number had returned to normal. This suggested that the spleen was concerned in the normal destruction of platelets; its removal was therefore followed by a rise in these bodies. The gradual return to normal indicated that a hyperactivity of physiologically related tissue compensated for the loss occasioned by splenec-

temy. The author has studied this problem, not by excising the spleen, but by blocking the whole of the reticulo-endothelial system. Guinea-pigs were chosen, and daily counts were made of their blood platelets. The variation was not great over the period studied; the average count for all the animals was 304,416 per c.mm. The animals were then injected subcutaneously with 5 c.cm. of a 0.5 per cent. solution of trypan blue in freshly distilled water, and the injections were repeated four days later. Daily counts of the platelets revealed an extraordinary rise, commencing on the fifth day after the first injection, and continuing rapidly till the maximum on the ninth day; the average for all the animals was then 1,280,000 per c.mm. A sharp fall occurred during the next three days, followed by a less steep decline. About three weeks after the commencement the count had nearly reached normal. From these experiments it appears that blockade of the reticulo-endothelial system results in a marked increase in the number of circulating blood platelets. The increase, however, is transitory and is soon followed by a return to normal; this occurs even though the blockade is maintained by repeated injections. The author concludes that the mechanism of platelet destruction is complicated, and that phagocytosis by cells of the reticulo-endothelial system is only one method by which this is accomplished.

#### 198. Tubercle Bacilli in the Faeces of Children.

G.-J. GONÇALVES COSTA (*C. R. Soc. de Biologie*, July 2nd, 1926, p. 330) has examined the faeces of 22 children, varying from 1½ to 12 years of age, for the presence of the tubercle bacillus. About 20 grams of faeces were suspended in a 25 per cent. solution of sodium chloride, and the mixture was filtered through sterile gauze. The filtrate was transferred to two centrifuge tubes, and mixed with an equal quantity of antiformin. After thorough shaking half the amount of an ether-ligroli mixture was added; the tubes were again shaken till the ether was evenly distributed throughout, and were then centrifuged at 3,000 to 4,000 revolutions a minute for twenty minutes. The bacilli collected beneath the layer of ether were removed and stained by Ziehl's solution, using acid alcohol for decolorization. The 22 children examined were clinically and radiologically suffering from pulmonary tuberculosis; they all gave a positive tuberculin reaction. Sputum was obtained from 14 of them, and in 8 instances was found to contain the tubercle bacillus. From an examination of the faeces acid-fast bacilli were found in 14 cases; the remaining 8 were negative. Thus by the faecal method 6 more positives were registered than by the sputum method, and in no case was the tubercle bacillus found in the sputum alone. To ascertain whether the bacilli in the faeces were really tubercle bacilli the author injected four positive specimens into guinea-pigs; the animals developed tuberculosis in each case. He concludes that the bacteriological diagnosis of pulmonary tuberculosis in children should always include an examination of the faeces.

#### 199. Glucose and the Production of Agglutinins.

N. PARISE (*R. Morgagni*, May 23rd, 1926, p. 641) recalls the work of Iacoco in 1923, who found that the serum of perfectly normal persons would agglutinate such organisms as *B. typhosus*, *B. paratyphosus* A and B, *B. melitensis*, *B. dysenteriae*, and *B. tuberculosis*, provided that those were suspended in a 4.7 per cent. solution of glucose. This agglutination, which is undoubtedly non-specific, is probably due either to an alteration in the hydrogen-ion concentration or to a change in the surface tension. To ascertain whether glucose is able to influence the agglutinating power of the serum in a living animal the author made a number of experiments on rabbits. A small quantity of serum was collected from four animals and tested against *B. typhosus*, *B. paratyphosus* A and B, and two other members of the paratyphoid group. In no instance were agglutinins present within the range of dilutions employed. Each of the four rabbits was then injected intraperitoneally with 10 c.cm. of a 4.7 per cent. solution of glucose. The injections were repeated three times at intervals of four days, and at a similar interval after the last injection the animals were bled and their serum tested against the same organisms as before. All four rabbits agglutinated *B. typhosus* to between 1 in 300 and 1 in 500; *B. paratyphosus* A to between 1 in 80 and 1 in 200; and *B. paratyphosus* B to between 1 in 80 and 1 in 150. Three further animals were selected as controls; two of them received similar quantities of saline in place of glucose, and one was not injected at all. None of these animals reacted in any way with the organisms mentioned. It would appear, then, that not only does the suspension of organisms in a 4.7 per cent. solution of glucose render them agglutinable by normal serum, but that the injection of a glucose solution intraperitoneally calls forth the production of non-specific agglutinins for the same organisms.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 200. Active Immunization against Scarlet Fever.

C. C. YOUNG and P. F. ORR (*Journ. Amer. Med. Assoc.*, May 1st, 1925, p. 1340), from a study of 97 persons shown to be susceptible to scarlet fever by the Dick test, in whom the dosage as well as the time interval between the injections was varied, found that just as great or greater immunity was produced with three injections as with the five injections of scarlet fever toxin recommended by the Scarlet Fever Committee. The dosage suggested by the findings was 500, 5,000, and 30,000 skin test doses, with an interval of two weeks between the injections. The time interval of two weeks was important, as there was less systemic reaction and greater immunity produced than with the usual one week interval. No injurious effect followed the relatively large dose of toxin used in the third injection.

201. H. SPAINROW (*C. R. Soc. de Biologie*, July 9th, 1926, p. 395) has performed the Dick test on 12,496 children from sixty-four primary schools in Warsaw. All those reacting positively were submitted to active immunization. The reading of the test gave rise to trouble. It was found that the number of pseudo-reactions varied with each batch of toxin, and that frequently a pseudo-negative reaction with one batch became a positive with another. For this reason it was decided to regard all children giving a positive, a pseudo-positive, or a pseudo-negative reaction as susceptible to scarlet fever, and to vaccinate them accordingly. Three injections of vaccine, prepared according to Dick's original method, were given at about a week's interval. Two months afterwards the Dick test was again performed on all who had been vaccinated to ascertain what proportion had become immune. The results were as follows: Altogether 9,708 children were tested by the Dick method; of these 55.1 per cent. reacted positively. The number of susceptibles who were vaccinated and examined later for susceptibility was 3,353; of these 29.6 per cent. were Dick-negative two months later, 34.8 per cent. were weakly positive, and 35.6 per cent. were still definitely positive. That is to say, about one-third were no longer susceptible, one-third were still slightly susceptible, and one-third remained susceptible, though not necessarily as much as before. Of this last group a certain number appeared to be absolutely unresponsive to vaccination; their Dick reactions remained strongly positive. These patients the author regards as non-immunizable; they constitute about 8.5 per cent. of the whole and correspond to the proportion of similarly unresponsive children observed by Zingher.

### 202. Sequels of Cerebro-spinal Fever after Serum Treatment.

S. McLEAN and J. P. CAFFEY (*Med. Journ. and Record*, May 15th, 1926, p. 702) report their observations on 97 cases of meningococcus meningitis treated with serum at the Babies' Hospital, New York, from 1916 to 1926; 59, or 61 per cent., of the infants recovered. These cases were all of the sporadic type, as the disease had not appeared in epidemic form in New York City during this period. Before the introduction of antimeningococcal serum the mortality of meningococcal meningitis in the first year of life approached 100 per cent., whereas approximately 50 per cent. of the children of this age treated by the authors recovered. In children between 1 and 5 years of age 85 per cent. recovered and 44 patients were followed up for a period ranging from one to ten years. In 9 cases the following serious sequels were obtained: deaf-mutism in 4, hydrocephalus in 2, visual impairment in 2, and mental deficiency in 1 case. Five patients died during the period of observation; 30 were alive and normal in every respect at the time of writing. Of 11 cases in which serum was injected into the ventricles or external magna on account of obstruction of the subarachnoid space 8 made a complete and permanent recovery.

### 203. Obesity of Syphilitic Origin.

BONILLA (*La med. Ibera*, May 29th, 1926, p. 636) states that some writers, especially followers of Castaigne, assert that endocrine obesity is of syphilitic origin. The endocrine character is most pronounced in obesity of pituitary origin, of which acquired or congenital syphilis may be the cause. Clinically endocrine changes of syphilitic origin are most frequently found in the form of insulinitis, diabetes insipidus, and obesity. The pituitary nature of obesity has been pointed

out since 1914 by von Noorden, who also drew attention to the frequency of syphilitic pituitary obesity, which may sometimes be favourably affected by arsenical treatment. Bonilla has recently observed two cases of pituitary obesity: One patient, who weighed 133 kg., showed an obesity of pituitary distribution, a basal metabolism of -3 per cent., and an abnormal sella turcica on x-ray examination. The second patient was a girl of 18, weighing 120 kg., with -5 per cent. basal metabolism, and an abnormal sella turcica. Under antisyphilitic treatment she lost 30 kg. in three months, and the basal metabolism rose to +6 per cent. In both cases the genital functions were normal, so that the obesity was purely pituitary.

### 204. Acute Coronary Occlusion.

LOUIS WOLFF and P. D. WHITE (*Boston Med. and Surg. Journ.*, July 1st, 1926, p. 13) report twenty-three necropsies on patients with acute coronary occlusion, and review the literature on this subject. They include all cases of sudden occlusion, in which, as a rule, cardiac infarction occurs, and exclude gradual occlusion. They agree that the disease is common and is now being recognized with increasing frequency, but many practitioners are not aware that the diagnosis can be made during life. As a rule the clinical picture is distinctive, but the triad of pain and pulmonary and gastro-intestinal symptoms does not always occur or may be insufficiently marked for diagnostic purposes unless great care is taken in the examination. For instance, pain may be absent and dyspnoea may be the only symptom; sometimes the pain is intermittent and collapse may be the sole symptom present. Congestive failure following shortly after anginal pain and post-anginal impairment of reserve are strong indications of occlusion. The attack may follow an infection or be post-operative; it may appear during convalescence from illness and while the patient is resting or sleeping in bed. Apparently rapid recovery is a very important feature. Peripheral embolism occurred in 10 per cent. of the cases reported, cardiac infarction in 74 per cent., pericarditis in 48 per cent., and cardiac aneurysm in 13 per cent. As a rule the diagnosis from angina pectoris presents little difficulty, but there is an intermediate group in which prolonged pain is associated with some mechanism other than organic coronary obstruction, or where the adequacy of the collateral circulation precludes infarction except on a small scale, so that the usual clinical features of extensive coronary occlusion are lacking.

## Surgery.

### 205. Adenocarcinoma of the Thyroid Gland.

H. KLOSE (*Zentralbl. f. Chir.*, July 3rd, 1926, p. 1691) remarks that when the question of thyroidectomy has to be considered the possibility of malignant degeneration of a goitre in a middle-aged or elderly patient must not be forgotten. He relates the case of a man, aged 50, for whom thyroidectomy had been recommended for the relief of pressure symptoms. The right lobe of the thyroid gland appeared to be normal, but the left was nodular. Skiagrams showed a distinct deviation of the trachea to the right. The gland, though mobile, was very hard, but no enlarged lymph glands could be felt. A pleural effusion was present on the right side, and a skiagram of the right lung showed a large circular shadow of a metastasis, while on the liver margin a nodular tumour as large as a fist could be felt. In spite of the absence of enlarged lymph glands, the mobility of the thyroid, and the patient's good general health, it was evident that there was a primary malignant growth of the thyroid with metastases in the lung and liver. The thyroid was removed on account of the danger of asphyxia and proved to be an adenocarcinoma.

### 206. Indications for Cholecystectomy.

A. O. WHIPPLE (*Amer. Journ. Surg.*, June, 1926, p. 129) discusses the question whether a diseased gall bladder should be drained or removed, and states that the indications for cholecystectomy can only be determined by a careful comparison of pre-operative with post-operative data. He has traced the after-history of 170 patients who were found to have gall stones at operation; 90 per cent. were entirely relieved of pain by cholecystectomy. In 47 non-calculous cases 76 per cent. were relieved of their symptoms by this operation. The calculous cases gave, therefore, far better results. Whipple



thinks that this is due to the more striking symptoms caused by gall stones, and to the fact that they set up inflammation in most cases. Calculous cholecystitis treated by cholecystectomy gives good results, and a low risk if the operation is performed before the disease has passed the cystic duct, but dire consequences follow when involvement of the common duct makes surgical treatment urgent. Non-calculous cases offer a different problem, and it is essential to make sure there are no stones at operation. The author advises that if the gall bladder does not empty on pressure the bile should be aspirated; if the gall bladder empties easily but is thickened and has enlarged glands it is better to remove it. The gall bladder should be drained in acute severe inflammation, if there is oedema of the pancreas and the possibility of cancer of the common duct. Whipple adds that it is poor surgery to remove a gall bladder merely because it is in the field of operation.

#### 207. The Closure of Faecal Fistulas.

X. DELORE, P. MALLET-GUY, and A. VACHEY (*Rev. de Chir.*, No. 4, 1926, p. 259) recommend the intraperitoneal method of closing faecal fistulas as the result of employing it in a considerable number of cases. Where an abscess cavity was also present this was opened up and thoroughly drained at a preliminary operation. A sufficient period should be allowed to determine whether the fistula will close spontaneously; when after several months this appears unlikely, operation is indicated. The skin is incised around the fistula and the aponeurotic and muscular planes carefully defined. The peritoneum is exposed and opened at one extremity of the incision. The index finger of the left hand is inserted at this spot and the peritoneum freed all around the fistula. The gut is thus freed, brought up into the wound, and carefully examined. When there is much loss of substance and a large opening in the intestine enterectomy may be necessary. In less severe cases enterorrhaphy may be carried out. The latter procedure can be employed in the great majority of cases, and the opening is sutured with three layers of catgut sutures. Where enterectomy is performed the gut is brought together by an end-to-end anastomosis. The abdominal wall is closed in layers as far as possible, and a drain is usually placed in the centre of the wound. The flaps and the scissors play the great part in the operation, and their use renders the procedure free from risk of further injury. The authors think that this method gives better results with less risk than any other operation.

#### 203. Cancer Statistics in Norway.

F. G. GADE (*Norsk Mag. f. Laegevid.*, July, 1926, p. 559) states that during the quinquennium 1919 to 1923 there were 14,164 deaths from cancer in Norway, giving an average cancer mortality of 10.75 per 100,000 population, as compared with a cancer mortality of 9.53 during the period 1902 to 1911. This increase in the mortality, Gade thinks, may be due partly to the increase in the number of medical practitioners during this period—namely, from 1,084 to 1,548—and a consequently better detection of the disease, and partly to the increase in the average age of the population, which has risen from 48.73 for men and 51.27 for women in 1881 to 1890 to 55.62 for men and 58.71 for women in 1911 to 1920. The influence of age upon the development of cancer was certain, 67.8 per cent. of all deaths from cancer occurring after the sixtieth year among only 11 per cent. of the entire population. In persons above the age of 40 there was sixty-three times as much cancer as in the population below that age. As regards sex, females showed a slight preponderance (52.4 per cent.) over males (47.6 per cent.) when the whole population was taken into account. The organs most frequently affected were the stomach with 51.66 per cent. of all cancer deaths, the female generative organs with 12.07 per cent. (uterus 6.19, ovaries 0.94, breast 4.94 per cent.), prostate 1.48, and skin 1.43 per cent. Sarcomata formed 5.49 per cent. of all malignant tumours.

#### 209. Diagnosis of Intestinal Perforation.

J. SABRAZES (*Gaz. hebdom. Sci. Méd. de Bordeaux*, June 27th, 1926, p. 402) maintains that the presence of intestinal spiral micro-organisms (spirochaetae and treponemata) in the peritoneal fluid is a sign of intestinal perforation. In typhoid and paratyphoid fevers the organisms are present in Peyer's patches, and when perforation occurs they escape into the peritoneal cavity, where conditions are favourable for their rapid multiplication. On laparotomy for a supposed perforation the peritoneal fluid should at once be examined for the presence of spirochaetes; their absence indicates that perforation has not occurred. Apart from typhoid and paratyphoid fevers examination of the peritoneal fluid for spirochaetes should also be made in other cases of intestinal or appendicular perforation and affections of the pylorus, pancreas, and gall bladder, as well as in abdominal wounds when perforation is suspected.

## Therapeutics.

#### 210. Stovarsol in General Paralysis.

A. SZÉZARY and A. BARBE (*Presse Méd.*, July 7th, 1926, p. 849) publish their experience in the treatment of general paralysis by stovarsol; they chose this pentavalent preparation of arsenic since it only acts after reduction. The patients, 50 in number, were all well marked cases and were nearly all much improved in their general health; in 12 cases the total results, including the mental state, were excellent, and the patients were able to return to their work. In 14 of the 50 cases the results are described as very good, in 4 as passable, in 6 as moderate, and in 26 there was no change. Details are given of 10 of the cases. The authors found that the degree of clinical improvement was not correlated with the extent of change in the spinal fluid. The abnormal characters of this fluid never completely disappeared, although they often diminished. Stovarsol appears to act rather as a general stimulant of the haemopoietic organs than as a spirillicide, and can be compared with the treatment by malaria. On the whole the drug was well borne, but optic neuritis followed in four cases.

#### 211. The Therapeutic Value of Ichthylol.

A. KISSMEYER (*Ann. de Derm. et de Syph.*, May, 1926, p. 297) thinks that the action of ichthylol on the skin is not quite clear; while it is a feeble reducing agent, thus increasing keratinization, it is also a vaso-constrictor and has bactericidal properties, but whether these properties are due to its sulphur content or to other chemical agents contained in the bituminous oily base is not known. These effects are produced by rather feeble doses, such as dilutions of 2 to 10 per cent. In stronger doses, or when applied undiluted, it has a definite action on the deeper layers of the skin; it is very definitely resolvent and antiphlogistic in both cutaneous and subcutaneous inflammation, such as bubo, epididymitis, and inflammation of the axillary sweat glands. A 10 per cent. glycerol solution is much used in gynaecological cases. Ichthylol ointment is useful in chilblains, prurigo, oryssiels, and acute eczema. The author considers that the deletion of ichthylol from the United States Pharmacopoeia was due to failure to appreciate its specific effects in dermatology. He has found it particularly useful in furunculosis, when used as suggested by Unna, either in ointments or in aqueous solutions; its viscosity makes it particularly useful in the treatment of ambulant cases. The boil and the surrounding skin should be washed with alcohol or with tincture of iodine. Pure ichthylol is then applied with a pledget of cotton-wool, or painted on the surrounding skin over an area of 2 cm. with a camel's hair brush. The boil and the surrounding skin are then covered with a thin layer of cotton-wool saturated with ichthylol; this dressing adapts itself and adheres closely to the skin. After a few minutes the patient can dress without displacing the ichthylol pad. Next day the dry pad is removed by bathing with tepid water, and if the boil has not discharged the treatment is repeated. In freely discharging boils the dressing should be renewed twice a day. In large boils and carbuncles incisions should be avoided when evacuation of pus is indicated; it is better to use Paquelin's thermocautery or the galvanocautery. In many cases the early application of ichthylol causes resolution of the boil without suppuration.

#### 212. Treatment of Pyelitis in Infants.

M. LAVERGNE (*Le Nourrisson*, May, 1926, p. 137) remarks that untreated pyelitis in infants may clear up in four to six weeks, but energetic treatment is indicated to prevent a chronic condition developing. Milk forms the ideal diet, and in older children eggs should be avoided. Urinary antiseptics, though indicated theoretically and generally given, do not seem to do much good. In Holland large doses of potassium citrate, 10 to 20 grams a day for nurslings, are administered to alkalize the urine. This treatment is interrupted for periods of acid medication. Vaseline therapy, especially with autogenous vascines, gives good results, though not invariably; the dose should be small and the local and general reactions should be slight. Injections are given every two or three days in doses ranging from 10 to 50 million per c.c.m. and should be continued for some time after the disappearance of pyuria. The colli-soda vaccine of Mauté can be given by the mouth. Lavergne adds that unfortunately therapeutic immunization with the bacteriophage presents great practical difficulties. It is necessary to isolate a bacteriophage that lyses the colon bacillus pathogenic to the particular patient. A bacteriophage which does not lyse *in vitro* will not enure in the living. But if a suitable bacteriophage is found cure is obtained in a few days in 80 per cent. of the cases. The bacteriophage is administered simultaneously by the mouth and by hypodermic injection; when possible it is also introduced into the bladder. Only two or three injections are

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given, for fear of sensitizing instead of immunizing the patient. In cases of obstinate pyelitis the possibility of a local lesion should be kept in mind, congenital usually; treatment should be directed to the cause. Reinfection may occur from the blood stream, so that a pyelonephritis may reappear after apparent cure. It is not the kidney that is at fault but the intestine. Purgation should be sought for. Older infants' intestation with worms should be sought for. Collargol, 2 drachms of a 1 in 50 solution daily, has proved of value as an intestinal anti-epileptic. Some preparation of lactic ferments should also be given, or lactic bacilli mixed with paraffined starch. The author advocates spa treatment to complete the cure in older infants.

## The Use of Vitamins in Therapeutics.

213. F. CASCELLA (*La Pediatra: Archivio di Pat. e clin. ped.*, Vol. 2, Fasc. 1, p. 49) considers that vitamins act as catalysing agents which display activity and are subsequently eliminated. He discusses their mode of action pharmacologically, in the diseases of proteins, carbon dioxide and the pathological conditions, together with their therapeutic value, and in the metabolism of both sexes, aged from blood sugar level, fats, salts, and recalcification within the body. In his investigation 25 babies of both sexes, and each 1 month to 3 years, were placed in three groups, and each was treated with two drachms of isolated vitamins by mouth and one intramuscular injection daily, continued over a period of three months without other treatment. In all the Wassermann test was performed, and in most a red cell count and haemoglobin estimation. The first group consisted of cases of remote disturbances or latent deficiency—pallor, hypotonia, mild digestive disturbances, under-weight, malnutrition, and retarded development. Two patients reacted slowly to treatment and subsequently developed mild rickets; Cascella attributes this to constitutional cases of incipient vitamins. The remaining children showed marked improvement. The second group contained cases of typical deficiency disease, and the third cases of typical deficiency disease. The children in both of these groups showed immediate arrest of disease, rapid improvement going on to certain cure if the treatment was sufficiently prolonged. A fourth group with nutritional disturbances, syphilis, enteritis, pneumonia, and tuberculosis, similarly treated, showed promising results that Cascella considers that the method opens up a new line of treating tuberculosis. The isolated vitamin has an advantage that it can be administered where a food is not tolerated. In Cascella's experience the action of vitamins is controlled and modified by the endocrine glands. He considers that vitamins display their activity by means of hormones.

## Radiology.

214. X-ray Treatment of Cerebral Tumours. H. SAETHRE and R. R. JORGENSEN (*Norsk Mag. f. Lægevid.*, June, 1926, p. 425) treated by x rays eleven cases of cerebral tumour, all but one of which had been previously trephined. In six cases the diagnosis of the brain, in two by microscopic examination of the brain, in five in which the diagnosis was not established on operation, and in one by x rays. Of the five in which the diagnosis was not established on operation, atrophy of cortical epilepsy, and the other four showed on operation a considerably increased intracranial pressure, atrophy of the cranial bones being shown on x-ray examination. The results of treatment were as follows: Among the six cases in which the diagnosis of cerebral tumour was confirmed two died, both from a glioma in the motor area. The other four were still alive from nine to twenty-four months after discharge from hospital. Of these one was a case of myxo-fibrosarcoma of the right upper temporal convolution, in which recovery had apparently taken place with only slight defect of vision in one eye. The second case was one of tumour of the frontal lobe. X rays on admission showed an orange-shaped shadow and a defect of the frontal lobe. Recovery in this case had also apparently occurred apart from blindness in the right eye which was present on admission. The third case was an infiltrating tumour of the parieto-temporal region (sarcoma or glioma). The patient was healthy and free from symptoms two years later. The fourth case was a haemangioma of the precentral convolution, in which improvement was not verified two months after discharge from hospital. Of the five cases in which the diagnosis of cerebral tumour was not verified that made considerable improvement as the result of x-ray treatment. The authors maintain that this treatment should only be employed when radical operation is not practicable—that is to say, in those tumours which cannot be localized or removed except partially. Even when the histological structure of the tumour is known it is impossible to foretell

whether the x-ray treatment will be of use or not, especially as the same tumour may show a different sensibility towards x rays at different periods. The authors emphasize the necessity for trephining before x-ray treatment in all cases where signs of increased pressure are present, otherwise the rise of brain pressure caused by x-ray treatment may be fatal.

## Cholecystography.

215. F. S. EVELLTH (*Boston Med. and Surg. Journ.*, July 22nd, 1926, p. 165) emphasizes the diagnostic importance of recent developments in cholecystography following the introduction of the sodium salt of tetradolophthalein. This dye, which renders possible a direct view of the gall bladder, reveals opaque stones and non-opaque ones when surrounded by bile; it enables the position, shape, size, and emptying power of the gall bladder to be ascertained, and gives some information about the liver function. Of the three methods of administration of the salt, intravenous, jejunal, and oral, the latter is the more generally used. The preparation of the patient is important, a laxative being given two days before-hand, and not on the day when the dye is administered; a radiogram should also be taken for purposes of comparison. About three hours after a light supper containing fats the salt is given in 5-grain capsules every fifteen to thirty minutes with plenty of water up to an average dose of 40 grains for 150 lb. body weight; no more food is taken until after a cholecystogram twelve to eighteen hours later, by which time the dye will have reached the gall bladder. A meal rich in fats is then given and the gall bladder will be seen to diminish perceptibly in one and a half to two hours. Evelth uses kersol capsules, which are treated to resist the acid of the stomach and to dissolve readily in the intestinal tract, so that the dye is taken up by the portal veins. Essentials for success are accuracy of technique, cystic, and common ducts, and patency of the hepatic, cystic, and common ducts, concentration of the gall bladder to empty and fill itself, shadow. Contradict, extensive hepatic damage, marked diabetes, hyperthyroidism, arterio-sclerosis, cardiac disease, hypoparathyroidism, arterio-sclerosis, and pregnancy. Usually no advanced hepatic cirrhosis, but about 12 per cent. of the patients complain of temporary nausea, vomiting, or diarrhoea.

## Radio-Diagnosis of Late Cranial Syphilis.

216. A. LÉRI and P. COTTENOT (*Presse Méd.*, June 26th, 1926, p. 801) publish a series of radiograms of the vault of the skull showing various syphilitic lesions of the internal table. These lesions take three forms—gumma, ulceration, and hyperostosis, singly or in combination—and the authors describe the different radiographic appearances of each type of lesion. Nine radiograms with diagrammatic outline are given to illustrate the various types, and details are supplied of several cases much improved by specific treatment and where with a negative Wassermann reaction and doubtful syphilitic history the radiogram revealed a definite lesion of the internal table. In many cases opiate fits, hemiplegia, and persistent headaches were recognized as due to osseous lesions of the internal table, and in some cases were quickly relieved by specific treatment. The radiographical procedure for displaying lesions of the vault differs from that required for the base of the skull, photographs being taken in various positions of flexion and extension of the head. The authors believe that a valuable aid to diagnosis is provided by their method.

## Obstetrics and Gynaecology.

217. Ante-partum Accidental Haemorrhage. G. FITZGIBBON (*Journ. Obstet. and Gynaecol. of Brit. Empire*, Summer No., 1926, p. 194) discusses the nature and treatment of ante-partum accidental haemorrhage, and distinguishes two types; in the first the bleeding is due to simple and truly accidental ablation of part of the placenta, and in the second to a toxæmic condition due to haematoma or apoplexy of the uterine wall and following chronic nephritis. When there is external bleeding the fluid is dark and does not clot, being the haemorrhagic serum expressed from coagulated blood which is retained in the uterus or in the uterine wall. The muscle fibres are healthy and there is no rapid bleeding at any time. FitzGibbon considers that treatment should be directed towards restoring the ante-natal recovery from the labour being occur spontaneously after recovery from the most cases occur spontaneously after recovery from the collapse. This haematoma is in the placental site. With a live foetus the patient is treated on palliative and expectant

lines and allowed to complete labour without intervention, but if the uterus is tense and painful the membranes are punctured. Intravenous saline injections may be needed if collapse is severe with the induction of labour after recovery. If the foetus is dead labour must be induced; the uterus is controlled and ergotin and pituitrin are given, though FitzGibbon has never seen any indication of post-partum haemorrhage. Plugging the vagina is not indicated, since the bleeding is believed to be due to a slow percolation, and the author considers Caesarean section totally wrong for a rapid and persistent bleeding, its results being worse than those afforded by any other form of treatment. In support of these views FitzGibbon gives the results of his treatment in sixty-four consecutive cases with three deaths, one of which followed hysterectomy; he considers that a patient who cannot recover from collapse is also incapable of surviving hysterectomy.

#### 218. A Manoeuvre in High Forceps Delivery.

LANTUÉJOL (*Gynæcol. et Obstét.*, 1926, xiii, 5, p. 343), while agreeing that application of forceps to the foetal head at the brim of the pelvis is very rarely justifiable, remarks that occasionally the surgeon is impelled to try it. He describes a device which he has found useful in difficult cases of this operation and which consists in rotating the pubic symphysis around the foetal head, which is drawn downwards and fixed by traction on the forceps. The blades are applied with the patient in the Crouzat-Walcher position, with the thighs hyperextended and hanging over the edge of the couch; while traction is maintained the thighs are very gently and slowly flexed on the abdomen by assistants, the manoeuvre being repeated if necessary. The distance from the sacral promontory to the subpubic region is about 7 mm. greater with the thighs hyperextended than flexed. Observing the mechanism in the cadaver, Lantuéjoul in conducting delivery by the device described has seen the symphysis turn around the anterior parietal bone, the posterior parietal bone being still above the promontory. Engagement is made by anterior asynclitism. Immobilization of the head during movements of the pelvis demands less force, it is said, than mobilization of the head in a free pelvis, but gentleness in flexing the thighs is very necessary. Four cases of successful use of the device in normal pelvis are recorded; version appeared to be contraindicated after prolonged labour by reason of early rupture of the membranes and escape of the major portion of the liquor amnii.

#### 219. Resistance of the Ovary to Abortifacient Operations.

S. WEISSENBERG (*Zentralbl. f. Gynäk.*, May 8th, 1926, p. 1263) reports that four patients in Russia, after instrumental attempts on the part of physicians to induce abortion from the sixth to eighth week, were found, two or three months later, still to possess a living foetus, which was born alive at term. A fifth woman was found to have a living foetus nineteen weeks after an attempt to induce abortion six weeks after the last menstruation; in the interval there had been several returns of haemorrhage, and eventually the patient was confined prematurely in the sixth month. Weissenberg thinks that the probable explanation lies in the resistance offered by the early ovum, and especially by the amniotic sac. In another case, during an operation ten days after a previous attempt to induce abortion at the sixth week, it was demonstrated that the uterus had then been perforated behind and above the internal os; the pregnancy was allowed to continue until the fourth month. An instance is mentioned in which an ovum, possibly embedded in a tubal isthmus, evaded thorough curetting five days after a missed menstruation; nineteen days later uterine pregnancy was clinically demonstrable, and confirmation was obtained at a second curetting shortly afterwards.

## Pathology.

#### 220. Importance of Symbiosis in Certain Diseases.

A. CASTELLANI (*Journ. Amer. Med. Assoc.*, July 3rd, 1926, p. 15) defines the term "symbiosis" broadly as the living together of two organisms in close association without detriment to either, and with mutual benefit. An important part is played by symbiosis both in the nutrition of plants and in the germination of certain seeds. As an example of symbiosis between two vegetable plants the author cites the lichens, and of symbiosis between plant and animal he instances the marine worm *convoluta* and its contained alga. Certain nodules found in the roots of plants are now known to be formed by bacteria which derive carbohydrate nourishment from the host plant, and in turn supply the plant with nitrogen. The germination of seeds of some plants, such

as orchids, can only occur in the presence of appropriate fungi. Castellani also points out the importance of symbiosis in fermentation phenomena, and describes his experiments with the various yeasts to show that the production of gas is due to allied bacterial action. More recently he has experimented with pathogenic bacteria and a pathogenic yeast *Cryptococcus graciloides* and with non-gas producing organisms such as *B. dysenteriae* Flexner, combined with the Morgan bacillus on maltose; acidity and gas resulted from the combination, although the latter bacillus produces neither alone. In a similar way, he thinks, the association of organisms has a determining influence in the etiology of certain diseases and the causation of certain symptoms. As an example of the former he quotes the association of a fungus (*Nocardia*) and a coccus (*Micrococcus nigrescens*) in the production of the disease of the hair termed trichomycosis nigra; and he similarly assigns trichomycosis rubra and a variety of stomatitis known as stomatitis cryptococce-bacillaris to other combined agencies. He adds that the mosky smell of furus is not caused directly by the fungus but by associated organisms, and in enteric fever the abdominal distension, although in part due to defective tone in the intestinal walls, is certainly not set up by the typhoid bacillus of itself, but in association with certain bacilli such as *B. mergani*.

#### 221. The Characters of the Enterococcus.

S. V. BAGGER (*Journ. Path. and Bact.*, July, 1926, p. 225), at Copenhagen, has examined 150 strains of enterococci; of these, 58 were isolated from the normal intestine and 92 from cases of acute appendicitis. Morphologically the individual cocci were oblong or rhomboid; they were arranged in pairs, either in direct line or, more frequently, at an angle to each other, so that a single pair resembled the French circumflex accent. The optimum hydrogen-ion concentration for growth in broth was about pH 7.5; the range within which growth occurred varied between pH 5 and pH 10. The change in reaction produced by growth in broth was remarkably small, being generally less than pH 0.2. Gelatin was liquefied by 10 per cent. of the strains. Growth occurred from about 8° C. to about 48° C., and was apparently as luxuriant under strictly anaerobic conditions as in the presence of air. The organisms were able to grow satisfactorily in pure ox bile containing 1 per cent. peptone; in this medium other streptococci failed to multiply. A very thorough study was made of their resistance to heat. The cultures—twenty-four hours old and pH 7.5—were placed in 1 c.cm. ampoules, which were then sealed and immersed in a water bath. After one hour a loopful of the culture was transferred to an agar plate, which was incubated at 37° C. for two days. It was found that all the strains withstood a temperature of 58° C. for one hour; 95 per cent. survived a temperature of 60° C., 67 per cent. a temperature of 62° C., and 3 per cent. a temperature of 65° C. for the same period. Their resistance to antiseptics was likewise high; all withstood the action of 0.5 per cent. phenol for twenty-four hours at 37° C., but were uniformly killed by 1.5 per cent. phenol. All resisted 0.1 per cent. formalin for twenty-four hours at 37° C., but were killed by 0.3 per cent. formalin. No strains formed indol. The common sugars fermented were glucose, maltose, mannite, lactose, sucrose, and salicin. A study was made of the action on the rarer sugars and a tentative classification based on the results. Agglutination was of no help in classifying them, since they were characterized by strain specificity. Intravenous injections of 1 c.cm. of a broth culture sometimes killed rabbits. Intraperitoneal injections of the same amount generally killed mice, but never guinea-pigs.

#### 222. A Possible Cause of Appendicitis.

M. WEINBERG and A.-R. PRÉVOT (*C. R. Soc. de Biologie*, July 23rd, 1926, p. 519) describe an organism, isolated from six cases of appendicitis, which they claim plays an important role in this disease, and which they name *Enterobacterium blautum*. It is a rod-shaped, Gram-negative bacillus with tapering ends, measuring 1.4 to 1.8  $\mu$  in length and 0.4 to 0.5  $\mu$  in breadth, and arranged in diplo- and streptobacillary forms. It grows well in sugar bouillon and peptone water, and in deep agar cultures forms gas. This bacillus is not proteolytic, does not liquefy gelatin, nor act on milk-clot or coagulated white of egg. Litmus milk is coagulated with the formation of a soft clot. Glucose, levulose, lactose, maltose, and galactose are fermented by it. *F. blautum* grows well in bile with added bouillon, but not in bile alone; it does not produce indol. In liquid media small quantities of sulphuretted hydrogen are formed, and deep agar cultures, with the addition of subacetate of lead, are turned black. These bacilli possess no haemolytic power *in vitro*, but produce haemorrhagic lesions in inoculated animals, and they are pathogenic for guinea-pigs. Serums from inoculated dogs agglutinate not only the homologous strain used, but also the five other heterologous ones.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

223. **Immunization against Diphtheria.**  
G. RAMON (*Archiv. de l'Inst. Past. d'Algérie*, 1926, 4, p. 61) gives a review of the method of immunizing children against diphtheria by means of formalized toxin. If 4 c.c.m. of commercial formalin are added to a litre of diphtheria toxin, and the mixture is incubated for a month at 37° C., it will be found that though the flocculating power of the toxin is unaltered its toxicity has disappeared. One or more c.c.m. of this formalized toxin may be injected into guinea-pigs without producing any sign of intoxication: an untreated serum, on the other hand, will cause death in a dose of 1/1000th c.c.m. The author has used this formalized toxin for immunizing children who give a Schick positive reaction. He gives three injections of 0.5 c.c.m., 1 c.c.m., and 1.5 c.c.m., separating the first two by an interval of three weeks, the second and third by an interval of a fortnight; by this means he was able to render 98 per cent. of his subjects Schick negative in six weeks. He thinks that the best age for inoculation is 2 to 5 years, the age of greatest susceptibility to diphtheria, but it may be performed at any time of life. The duration of the immunity that follows is not yet known, but there is reason to think that it is permanent.

224. P. HARVIER and T. REQUIN (*Paris Méd.*, May 8th, 1926, p. 456) report their observations on 88 children under 11 years old inoculated with anatoxin against diphtheria. Children with a positive Schick reaction were given a first injection of 0.5 c.c.m. of anatoxin, and three weeks later a second injection of 1 c.c.m. After two injections 84 out of the 88, or 95.4 per cent., became immune. The reactions were of two kinds: a slight local inflammatory redness, heat, and tenderness of the skin over an area of 1 to 3 c.c.m., or the production of a red patch with swelling and a rise of temperature to 102°. These severe reactions were observed almost exclusively in children above 7 years of age. The authors suggest that leave should be obtained from the parents to inoculate all children between 2 and 7 years of age. Diphtheria chiefly affects children before the age of 8, and severe anatoxin reactions are quite exceptional before the age of 7. Two injections of anatoxin (0.5 and 1 c.c.m.) may be given with three weeks' interval between each; a third injection of 1 c.c.m. is only required in exceptional cases (5 per cent.) in which the Schick reaction remains positive after the second injection. Alternatively each child may be given three injections of anatoxin (0.5, 1, and 1 c.c.m.) with three weeks' interval between each; immunity is said to be obtained by this method in 98 per cent.

225. H. NOTHMANN (*Arch. f. Kinderheilk.*, June 4th, 1926, p. 112), after inoculating 260 children, aged from 10 months to 8 years, with toxin-antitoxin, concludes that the method is free from danger if a reliable preparation is used, but that in about 10 per cent. local and general reactions follow, even among carefully selected children aged from 1 to 6 years, the frequency of the reactions increasing with advance in age. The occurrence of the reactions appeared to be due to a constitutional anomaly, such as an obvious or latent exudative diathesis, tuberculous infection, neuropathy, or severe rickets. Nothmann mentions the following contraindications to the employment of toxin-antitoxin: tuberculosis, the exudative diathesis, neuropathy, disease of the sympathetic nervous system, kidneys, and heart, psychical abnormalities, convalescence from acute infections, and all states which suggest an increased susceptibility to the diphtheria toxin or other substances contained in the toxin-antitoxin. A positive tuberculin reaction, without clinical evidence of tuberculosis, is not regarded as a contraindication.

226. H. ALDERSHOFF (*Nederl. Tijdschr. v. Geneesk.*, June 19th, 1926, p. 2638), in a previous paper, reported that Ramon's anatoxin, when diluted so as to produce no troublesome non-specific reaction, conferred only an incomplete immunity (*Epitome*, September 19th, 1925, para. 216). He now states that he has made a refined undenaturalized mixture of antitoxin and anatoxin, to which he has given the name "ananti". He claims that this new preparation is an almost proteolysis-free vaccine against diphtheria, which causes no non-specific reaction, and is therefore free from that property which gives so much trouble to adults. The time required to produce immunity by inoculation with "ananti" is said to be

equal to that taken by toxin-antitoxin, but by injecting the large doses rendered possible by the absence of toxicity and of non-specific reactions this time can be shortened.

227. **Sudden Onset of Typhoid Fever in Children.**  
P. NOBÉCOURT (*Journ. de Méd. de Paris*, May 24th, 1926, p. 441) records two illustrative cases, in children aged 3 and 6 years respectively, in whom the onset of typhoid fever simulated pneumonia in one case and bronchopneumonia in the other; it was only on the ninth or tenth day that the correct diagnosis was established by the appearance of rose spots. While a sudden or rapid onset of typhoid fever is rare in the adult, it is fairly frequent in children, being met with in 11.9 per cent., according to Hutinel and Darré, though Nobécourt thinks that the real frequency is greater still. It is probable that the disease has been in existence for some days before obvious symptoms arouse attention. These symptoms may involve the digestive system, and the disease may then simulate tonsillitis, appendicitis, or peritonitis; or the respiratory system may be affected so that the diagnosis made is bronchitis or bronchopneumonia; or the first symptoms may be those concerned with the nervous system, so that the child is thought to be suffering from cerebro-spinal fever or convulsions. According to Nobécourt, a sudden onset does not necessarily indicate a severe attack, but it is fairly often a sign that the disease may be long and severe.

228. **Argyll Robertson Pupil in Epidemic Encephalitis.**  
P. MÉRIEL (*Gaz. d'Hép.*, July 7th, 1926, p. 870), who records an illustrative case, states that numerous writers have drawn attention to changes in the pupils occurring in epidemic encephalitis, either in the form of paralysis of accommodation or complete immobility of the pupils. Achard regards the Argyll Robertson pupil as very rare in this disease, but the reverse process—namely, loss of accommodation and preservation of the light reflex—as comparatively frequent. Mlle G. Lévy holds the same opinion. Wimmer, who has seen a very large number of cases of epidemic neuritis, has never observed an example of Argyll Robertson pupil in this condition, though he has often met with complete immobility of the pupils. Krabbe, however, in 1925 recorded a case of epidemic encephalitis in which he observed Argyll Robertson pupils. Mériel's case was in a man, aged 25, in whom the Wassermann reaction in the blood and cerebro-spinal fluid was negative, and examination of the cerebro-spinal fluid did not show any trace of syphilis of the nervous system. According to the work of Davanger and Redslob, the Argyll Robertson pupil appears to be merely an incomplete paralysis of the iris in which the light reflex disappears first, while the accommodation reflex persists. This theory explains why this sign appears in iritis, glaucoma, traumatic and syphilitic lesions involving the ophthalmic ganglion, in central lesions of the cerebral peduncles, tuberculous of the corpora quadrigemina, and cerebral tumours.

229. **Functional Disorders of the Heart.**  
P. D. WHITE (*American Heart Journal*, June, 1926, p. 527) states that functional disorders of the heart are very common; they are more frequently found without than with organic heart disease. Usually the disturbance is so slight—being due to an effort syndrome or to extra-systoles—that advice is not sought, and their great frequency is not recognized. Important functional disorders such as auricular fibrillation, heart-block, or congestive failure are much more common in cases of organic disease. The author summarizes the records of 1,500 consecutive private patients. Effort syndrome was most common and occurred five times more frequently in the functional cases: extra-systoles sufficient to attract attention came next, and finally, paroxysmal tachycardia was found twice as often without as with clinical signs of organic disease. Functional systolic murmurs alone, cardiac "phobias," marked sinus arrhythmia, sino-auricular tachycardia, and sino-auricular bradycardia were less frequent, but together formed an appreciable percentage of the whole series. White finds that of those functional disturbances which occur more frequently with than without clinical signs of heart disease, auricular fibrillation (paroxysmal as well as constant) and angina pectoris are the most common and important. Both conditions occur occasionally without any obvious cardiac disturbance. Auricular flutter is rare, and heart-block, complete or partial, and pulsus alternans seldom, if ever, occur without evidence of serious heart disease. Effort syndrome depends upon two factors—innherited neurosis, and



nervous or physical strain. If neither factor is appreciable there will be no effort syndrome; if both are pronounced effort syndrome will be more or less severe; if one or other is negligible the remaining factor must be extreme to produce symptoms. White has obtained no evidence that it leads to organic disease in later life. It is possible that effort syndrome, by forcing the patient to lessen the strain of work and play in youth, may retard the development of serious heart disease and arterio-sclerosis in later life.

#### 230. Prophylaxis in Measles.

J. H. TOWNSEND (*Boston Med. and Surg. Journ.*, May 13th, 1926, p. 869) describes the use of prophylactic measures in an epidemic of 63 cases of measles in a boarding school of 400 boys. A dose of 20 c.cm. of blood from an adult who had had measles twenty years previously seemed to have no effect either in preventing or modifying the disease. Blood from convalescents in a dosage of 9 c.cm. of whole blood (5 to 5.5 c.cm. of serum) had little or no effect in preventing infection, but influenced markedly the course of the disease when it was given before the end of the first week of the incubation period, while 32 boys who received convalescent blood at least eight days before the development of the rash showed an average duration of the febrile period of 3.66 days, 21 boys who had no inoculation showed an average duration of the febrile period of 6.45 days. The average maximum temperature of the 32 who received convalescent blood at least eight days before the development of the rash was 102.5°, whereas the average maximum temperature of the 21 who were not inoculated was 103.5°. The average stay in the infirmary of the 32 inoculated boys was 9.7 days, whereas the average stay of the control group was 13 days. No complications occurred in the inoculated group, whereas in the control group there was one case of bronchopneumonia, one of otitis media, one of frontal sinusitis, and one of otitis externa. The mild character of the disease in many of the inoculated was very striking. The inoculations had no after effects whatever. Good results were obtained whether the blood was administered as late as six days after exposure or as early as twelve days before the probable date of infection.

### Surgery.

#### 231. Cancer of the Rectum.

J. P. LOCKHART-MUMMERY (*Brit. Journ. of Surg.*, July, 1926, p. 110) records the results of perineal excision of the rectum in a sequence of 200 cases; 123 patients were males, 77 females, and the condition occurred most often between the ages of 50 and 60. He finds that adenomata of the bowel are an important predisposing cause and appear to be a definite precancerous condition. The perineal operation is performed in two stages, a permanent colostomy being followed by a later resection. The patient lies in the prone position, the anus is closed, and the coccyx is then excised. The levatores ani are divided close to the pelvic wall, and as much bowel as possible is removed after opening the peritoneum. The total mortality was just over 8 per cent. The author states that nearly 80 per cent. of patients coming for hospital treatment are quite inoperable when first seen. He adds that out of 95 cases operated on over five years ago 45 are known to be cured. Patients live in comfort after the operation, and the only disability is referable to the colostomy. Many were able to return to their former occupation. He concludes that the results compare favourably with cancer of any other organ, and that earlier diagnosis will give material improvement in the proportion of cures following operation.

#### 232. Malignant Epithelial Neoplasms in Youth.

L. H. FOWLER (*Surg., Gynecol., and Obstet.*, July, 1926, p. 73), in support of his contention that malignant epithelial neoplasms are much commoner in youth than is generally recognized, states that 112 patients less than 26 years of age with pathologically demonstrated malignant disease were operated on at the Mayo Clinic between January, 1914, and January, 1924. Of these 89 were cases of carcinoma and 23 of epithelioma. The youngest patient was 1 year old. The total known mortality was more than 50 per cent., but 18.7 per cent. could not be traced. Only 14.2 per cent. were alive more than three years after operation. Nearly every organ has been the seat of carcinoma in the young. The rectum and ovary were most frequently involved (14 cases each, or 12.5 per cent.). Carcinoma of the rectum had the highest mortality (85.7 per cent.), with no patient known to be living longer than one year. The other organs were involved as follows: stomach in 9 cases (8 per cent.); thyroid, breast, kidney, in 7 cases each (6.25 per cent.); testis, lip, cervix, in 5 cases each (4.4 per cent.); miscellaneous, in 39 cases (34.8 per cent.). Anaemia

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is a marked feature of carcinoma of the right half of the colon in youth as in adult life. Involvement of the neighbouring lymph glands in carcinoma of the breast and large intestine in youth is a cause of increased mortality. In youth carcinoma of the thyroid is usually found by the pathologist and not by the surgeon; it is intracapsular and its mortality is low. Of the 23 cases of epithelioma 11 were in males and 12 in females; the youngest was 19 years of age. In nearly half the cases the growth was situated in the cervix or lip (5 cases in each). There were 17 squamous-celled and 5 melanotic epitheliomata and 1 non-melanotic epithelioma. Eight patients were dead, 5 were alive from one to three years after operation, 2 were living more than three years, and 8 had not been traced.

#### 233. Wounds of the Heart.

C. S. BECK (*Arch. of Surg.*, August, 1926, p. 205) remarks that the successful suture of a wound of the heart is not an uncommon surgical feat. Compression of the organ by the collection of blood in the pericardial cavity is the cardinal sign in the diagnosis of wounds of the heart. Numerous methods for exposure of the heart have been described; the most satisfactory, according to Beck, are the median sternotomy and the left intercosto-chondral thoracotomy. The former provides the best exposure of the heart; the latter of both the heart and the left lung. In median sternotomy the heart is protected by a spatula under the sternum, which is split with a saw. The pleura are separated and the peritoneum opened. After clamping the pericardium excellent exposure of the heart is obtained. Bleeding from the heart may be controlled by compression of the base of the heart or by plugging the wound with the fingers. When the pericardium is opened a suture is passed through the apex of the heart to steady it; control sutures are then passed near the margins of the wound, and traction of these will control the haemorrhage. This method does not occlude the flow through the coronary and cerebral vessels; it is well tolerated, and a neat approximation of the wound edges can be obtained.

#### 234. Pulmonary Complications in Gastric Surgery.

ACCORDING to P. RAZEMON (*Rev. de Chir.*, No. 3, 1926, p. 156), pulmonary complications follow operations on the stomach and duodenum with a gravity and frequency not seen after other surgical procedures. The chief predisposing causes appear to be related to the anaesthetic, the condition of the patient, and the presence of naso-pharyngeal infections. The deficient respiratory movement after operations on the upper abdomen causes pulmonary stasis, and injury to the branches of the vagus nerve is probably of considerable importance. Razemon holds that in cases of ulcer and cancer of the stomach there is always an infective factor present, and during the course of operations the setting free of these bacteria is bound to occur, and they find in the lungs all the conditions favourable for their growth. The bacteria present in the alimentary canal, in cases of resection, may soil the adjacent peritoneum, reach the diaphragm, and then pass to the lungs. To overcome these complications the preoperative disinfection of the site of operation is of great importance, and the careful protection of the peritoneum during the operation. Where the patient has a special susceptibility to these organisms, previously ascertained by their intradermic reaction, preventive inoculation is of great value. In a series of 300 cases where this was performed there was no single case of pulmonary infection. The author adds that the clinical results prove beyond doubt the value of this method.

#### 235. Atrophy of Kidney following Chronic Paranephritis.

J. BITSCHAI (*Zentralbl. f. Chir.*, July 10th, 1926, p. 1748) reports the case of a man who had a fall in 1903, followed by lumbar pains, high temperature, and retention of urine. A paravascular abscess formed and was incised. In 1910 he had pain in the right renal region and vomited a considerable quantity of pus, probably due to a perforation of the duodenal wall. In 1911 an abscess burst in the right groin; this healed and broke down again in 1912. Nephrectomy was attempted, but the kidney could neither be felt nor seen in the dense mass of inflammatory tissue occupying the right loin. From 1917 until 1919 there were recurrences of fever and suppuration in the operation scar. The patient was then free from symptoms for four years. In 1924 a paranephritic abscess was incised and the patient was kept under observation in hospital. He had numerous scars below the right twelfth rib, and a large deep discharging sinus in the centre of the recent operation wound. The surrounding skin was deep red and very tender on pressure. The urine was quite normal, and a cystoscopic examination showed no evidence of vesical disease. Chromocystoscopy showed that the flow from the left ureter was normal, but on passing a catheter for a distance of 1.5 cm.



into the right ureter no urine escaped. It was evident that the right kidney was functionless, and for this reason it was useless to attempt pyelography. The wound was enlarged and a very large dense mass of inflammatory tissue was found occupying the right renal region; when opened it was seen that this mass contained an abscess as large as a hen's egg, no trace of kidney tissue being found.

### 236. Treatment of Hypertrophy of the Prostate.

G. DE LARÉ (Arch. des Mal. des Reins, June, 1926, p. 385) discusses the surgical treatment of enlargement of the prostate based on 542 cases submitted to operation. He finds from necropsy specimens that there are in all cases certain perurethral glands which vary in size but which are separated from the prostate itself by the sphincter. When the prostate is hypertrophied this group also becomes enlarged, and post-operative recurrence is probably due to the presence of these glands left behind at the original operation. With regard to the etiology of this disease he believes there is a definite hereditary tendency. In one case the father and son both came to operation at the same time. Operative treatment should be early, and thus destruction of the renal function is prevented. An operation is indicated in the presence of definite symptoms where the patient is unable to micturate spontaneously, and where there is residual urine. At this stage the condition is local and confined to the prostate. As a routine the operation is performed under local anaesthesia and in one stage, a two-stage operation being rarely required. Where there is much residual urine and the renal function is impaired the patient's condition may be considerably improved by the catheter being left in position. In the 542 cases there were 45 deaths, two patients aged 66 being both cured. Hyès adds that if the general condition is good advanced age is no contraindication to operation. The bladder function is not always completely restored after operation where there has been considerable distension and damage to the muscle beforehand.

### 237. Torsion of the Hydatid of Morgagni.

A. MOUCHET (Bull. et Mém. Soc. Nat. de Chir., June 5th, 1926, p. 555) records two cases of subacute orchitis occurring in boys due to torsion of the sessile hydatid of Morgagni. Twenty-one cases of this condition have been recorded. The patients were about 14 years of age and complained of severe pain in the scrotum. Examination of the scrotum showed none of the signs of inflammation, but palpation revealed a hard mass at the upper pole of the epididymis, which was acutely painful. The spermatic cord and inguinal canal were free from pain on pressure. Transillumination revealed a dark shadow corresponding to the painful swelling. The condition was diagnosed correctly, and at operation the hydatid was found discoloured and swollen and twisted twice on its axis. The pedicle was ligatured and the tumour removed. Convalescence in both cases was uneventful. Mouchet adds that the diagnosis in these cases is simple if the condition is borne in mind. The investigation of translucency shows the position of the tumour and the subacute onset with absence of temperature, and the local signs should enable a correct diagnosis to be made prior to operation.

## Therapeutics.

### 238. Medicinal Treatment of Heart Failure.

E. E. CORNWALL (Med. Journ. and Record, June 16th, 1926, p. 816) observes that the treatment of cardiac failure consists in reducing the work of the heart and improving its nutrition by inducing rest, removing sources of toxæmia, and regulating diet and exercise. Drugs which improve cardiac action may be divided into those which act directly on heart muscle, increasing its contractility and tonicity, and those which improve cardiac action by stimulation of other organs; the former are heart stimulants, the latter heart regulators. Some cases of heart failure require increase of contractility, while others demand the removal of an arrhythmia or stimulation of the regulating nervous mechanism. Digitalis appears to act in two ways—directly on the myocardium, and indirectly by stimulation of the pneumogastric. It increases the excitability and depresses the myocardial conductivity, while indirectly the vagal stimulation depresses myocardial functions generally. It is disputed whether it exercises direct action in increasing contractility and tonicity. Digitalis appears to be a heart regulator rather than a stimulant. By producing partial heart-block or notably delayed conduction, it frees the ventricles by removing auricular fibrillation and flutter. When the rhythm is regular it slows the heart-beat and allows more complete filling of the ventricles and improvement of the coronary circulation. When there is intrinsic disease the ventricles cannot respond, and digitalis

increases the cardiac dilatation (Vagnoz). Its specific use appears to be limited to cases of auricular fibrillation and flutter. The action of digitalis seems to be dominated by its vagus effects. Strophanthus appears to be a direct stimulant of the heart muscle, and thus differing from digitalis in this cases excitability and depresses conductivity, like digitalis; it does not stimulate the vagus. Cornwall adds that in uncompensated valvular disease, and in dilatation, strophanthus is usually better than digitalis. Quinidine is a heart regulator which is often useful in auricular fibrillation, but there are serious drawbacks to its general use. Atropine blocks the vagus, but its usefulness is limited. Strychnine appears to be a heart regulator through the nerve centres, and increases the secretion or effectiveness of adrenaline. It is particularly useful in cases of low blood pressure. Caffeine is diuretic, but there is no proof that it increases myocardial contractions. It stimulates respiration and the higher cerebral centres, as well as the pneumogastric and sympathetic system. In large doses it may cause mental confusion, so it should be used with caution. Adrenaline is a vaso-constrictor, but its utility in heart failure is less than might be anticipated. Trinitrin and amyl nitrite are vaso-dilators, relieving dangerous or distressing symptoms due to local arterio-sclerosis, and lowering blood pressure in sudden emergencies; they are contra-indicated when blood pressure is low. Calcium is a heart stimulant in cases of calcium deficiency. Morphine is a heart regulator through its sedative action on the nervous system; it is very useful in pulmonary oedema. With digitalis or strophanthus it may relieve dyspnoea; when arterio-dilators fail in angina pectoris morphine must be used, as also in the prolonged distress of progressive heart failure.

### 239. The Therapeutic Action of Ephedrine.

L. POLLAK and W. ROBITSCHKE (Wien. Klin. Woch., June 24th, 1926, p. 753) have used ephedrine, an alkaloid obtained from the root and stem of *Ephedra vulgaris Helvetica*, in a large number of cases. Although this plant has been a popular remedy in China and Russia for many centuries, the alkaloid was not isolated until 1887, and its use in scientific medicine is still more recent. The chemical composition of ephedrine resembles that of adrenaline, except that the former has no hydroxyl group and the side chain contains a second methyl radicle. Its physiological action resembles that of adrenaline: it raises the blood pressure, and is a mydriatic. Ephedrine reduces the blood sugar content. Applied to the skin its action differs from that of adrenaline, as it has a stimulant effect. It would appear that, in addition to its adrenaline-like action on the end-organs of the sympathetic system, it has a more direct effect on unstriated muscle fibres. A further important distinction is that the effects of ephedrine are more persistent than those of adrenaline, especially in regard to rise of blood pressure. Solutions of ephedrine may be sterilized without destruction of the alkaloid, which is much more stable than adrenaline on exposure to light or heat. Ephedrine is said to be much less toxic than adrenaline, and may be given by the mouth without any diminution of its activity. It has a definite effect on the blood pressure when given in ordinary doses. Hitherto ephedrine has been seldom employed in internal medicine, but the authors have found it of value in circulatory failure after operation and also as an efficient substitute for adrenaline in bronchial asthma. Sialograms of the stomach taken after a barium meal showed that 20 drops of a 10 per cent. solution produced a powerful peristaltic wave in thirty seconds. In some cases palpitation, tremors, and profuse sweating have occurred after internal administration of 0.1 gram of ephedrine in apparently healthy patients.

From the administration of ephedrine than after adrenaline. It is indicated in neurotic patients who have unstable vaso-motor systems; in such cases 20 drops of the 10 per cent. solution will terminate an hysterical attack; many of these patients react well to comparatively small doses of ephedrine.

### 240. Serum Treatment of Anthrax.

S. S. SABOLOTYNYI (Centralbl. f. Bakt., July 6th, 1926, p. 53) has collected a small number of cases of anthrax treated with specific serum. He divides them into two groups. The first group contains 27 patients suffering from local anthrax; of these, 3, on account of their mildness, were not given serum, the remainder were all treated with serum and all recovered. The second group contains 7 patients suffering from generalized anthrax with positive blood cultures. Three were not given serum; these all died. Of the remaining 4, which were treated with serum, only one died. The author adds that the serum should be given as early as possible in the disease. It is best given intravenously in large quantities—100 c.cm. at a time—and should be repeatedly injected till the patient recovers.

## Laryngology and Otology.

### 241. Mastoid Abscess.

P. CARCO (*Arch. Ital. di Otol., Rinol. e Laringol.*, April, 1926, p. 187) defines Bezold's abscess as being an abscess in the uppermost part of the neck, lying deep to the sterno-mastoid and splenius, and associated with osteomyelitis of the mastoid process and pus in the cells of its apex. Citelli's abscess occurs in the same position in the neck and is also associated with osteomyelitis of the mastoid, but does not include pus in the cells of the tip. It is associated, however, with an extradural abscess of the posterior fossa, which may or may not be a perisinus abscess. This abscess lies in close relation to the cerebellum and might be complicated by a meningitis. The extradural abscess is formed first and finds its way into the neck by one of three lines. It may pass along the temporo-occipital suture, it may travel along the canal of an emissary vein causing a thrombus, or it may reach the neck by a track of necrosis of the bone. Two cases are described in which pain behind the mastoid process and a brawny swelling in the neck were the first signs of mastoiditis. In both cases the swelling was found to contain pus and there was an osteomyelitis of the mastoid process. The tip of the mastoid was not affected, but there was an extradural abscess round the lower part of the sigmoid sinus in both cases. In one patient the path of the disease could be followed through the temporo-occipital suture, while in the other there was a thrombosed emissary vein running through a necrosed track with a wedge-shaped sequestrum at its outer end. Both patients recovered after operation.

### 242. Mixed Tumour of the Palate.

I. A. SOUCHET (*Rev. de Laryngol., d'Otol. et de Rhinol.*, July 15th, 1926, p. 462) describes the case of a man, aged 62, who had a large tumour of the palate which presented in both the nasal and buccal cavities and caused very considerable embarrassment to breathing and deglutition. It resembled a peritonsillar abscess in appearance, but there was no acute inflammation and it was quite soft and painless. The diagnosis of mixed tumour of the palate was made and an operation was performed to remove it. This was found to be very difficult as there was no capsule and no definite line of cleavage. Microscopically the portions removed were innocent in character and presented the typical appearance of a mixed tumour. Six months later the patient returned with another large mass in the palate, but this time with induration and infiltration of malignancy. This new growth appeared to be growing very rapidly, was causing marked nasal obstruction and discharge, and giving rise to headaches. A circle of six needles of radium of a total mass of 28 mg. was buried round the tumour for nine hours and the procedure repeated two days later. There was a considerable amount of reactionary inflammation followed by necrosis and discharge of pus from the needle holes. The final result was a complete disappearance of the neoplasm. The author considers that these tumours are absolutely benign so long as they remain encapsulated, but when the capsule degenerates and the growth becomes extracapsular the tumour takes on the characters of extreme malignancy.

### 243. The Labyrinthine Reflexes of Position.

V. TANTURRI (*Il Morgagni*, February 7th, 1926, p. 161) reports that reflex tone persists after destruction of the canalicular system, but is lost when the otolith apparatus is also destroyed. The otoliths consist of two on each side—the lapillae in the maculae of the utricle, and the sagittae in the maculae of the saccules. The excitation of the macula is greatest when the otolith is hanging from the macula and is lying horizontally. Hence the reflex of tone is maximal and minimal in two positions of the head which are 180 degrees apart, and in plantigrades is greatest when the head is hanging down. It is thought that the red nucleus presides over these reflexes entirely in the case of the neck muscles, but only partly in the case of the muscles of the trunk and extremities. When the body and head are in a position of repose the stimulus of the sagitta of one side is compensated by the contrary stimulus of the lapilla of the other side and the tonic mechanism is placed at rest. Animals with laterally placed eyes have a particular position of the eyes for every position of the head, and this phenomenon is governed by the reflexes of which the otoliths are the exciting agent. Thus it has been shown that each utricle controls the tonic innervation of the homolateral rectus superior and the heterolateral rectus inferior, and each saccule controls that of the homolateral superior and the heterolateral inferior oblique. The tone of the external and internal recti appears to be controlled by the semicircular canal system, and more especially by the external canals.

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### 244. Phenomena of the Sympathetic System in Rhinology.

E. HALPHEN (*Arch. Internat. de Laryngol., Otol.-Rhinol. et Br.-Oesoph.*, March and April, 1926, pp. 265 and 407) describes certain disturbances in equilibrium of the trigemino-sympathetic systems occurring in the nose. The patient exhibits spasmodic rhinorrhoea, colds, headaches, and retrobulbar neuritis, and the condition is usually originated by some nasal abnormality such as pressure between the septum and the turbinates, spurs on the septum, rarefaction of air in the sinuses, or by infection which may be in the nasal or accessory cavities. The sphenopalatine ganglion is easily affected by inflammation of the deeper and more posterior part of the nose, owing to its close proximity. The secretory symptoms are those of acute colds and spasmodic rhinorrhoea, where a healthy person is suddenly overwhelmed by nasal obstruction and very profuse watery discharge. The equilibrium of such a nose may be upset by the passage from a cold to a warm room. The symptoms end as rapidly as they begin. Treatment is applied to the turbinates, septal spur, or sinuses, and the canter may be enough to give a lasting cure, but sometimes when the nasal condition is cured asthmatic symptoms begin. In some cases pain is experienced to such an extent that acute sinusitis is very closely simulated. Female subjects of the condition are prone to dysmenorrhoea, and it has been observed that ozaena begins as a rule in girls just after puberty. The author treats such cases by injection of the sphenopalatine ganglion. The ganglion may be dissected out. The opening of a closed sinus often causes marked improvement.

## Obstetrics and Gynaecology.

### 245. Magnesium Sulphate in Eclampsia.

E. M. LAZARD, J. C. IRWIN, and J. VUWINK (*Amer. Journ. Obstet. and Gynecol.*, July, 1926, p. 104), from a collective report of 142 cases of eclampsia treated by intravenous injections of magnesium sulphate, conclude that the development of convulsions can be prevented or controlled after their onset. All toxæmias of pregnancy resulting in convulsions, or in which treatment was directed towards their prevention (pre-eclamptic toxæmias), were included in the series, which showed a mortality of 9 per cent. under this form of treatment, the true nephritic type having the greatest mortality. Pre-eclamptic cases with a blood pressure over 150 were given 20 c.cm. of a 10 per cent. solution of magnesium sulphate intravenously, and this was repeated if no reduction in the blood pressure occurred. In eclamptic cases a similar procedure was adopted as soon as possible after the occurrence of the first convulsion, being repeated every hour until the convulsions were controlled or if the blood pressure continued to rise. In comatose, or semicomatose conditions with delirium, and a falling blood pressure, 20 grains of chloral hydrate and 40 grains of sodium bromide were given per rectum, and preparations were made for delivery as soon as the patient became sufficiently quiet. Such accompanying eliminative measures as phlebotomy, gastric lavage, colonic flushings, and the administration of glucose and soda were found to be of doubtful benefit, and in one or two cases apparently harmful. The authors therefore depend entirely on the intravenous magnesium sulphate treatment, and conclude that intervention should be limited merely to assisting labour, while Caesarean section is contraindicated except in the presence of definite obstetrical indications.

### 246. Simultaneous Intra- and Extrauterine Pregnancy.

E. NOVAK (*Surg., Gynecol. and Obstet.*, July, 1926, p. 26) has collected from the literature thirty-two cases of combined simultaneous intrauterine and extrauterine pregnancy from 1913 to the present day, including two personal cases. These, added to the 244 collected by Neugebauer from 1708 to 1913, brings the total up to 276. Clinically two chief groups are encountered. In the early cases, representing the great majority, the clinical picture is commonly that of ruptured tubal pregnancy, while the uterine gestation is not recognized until operation or later. Occasionally, however, it is the uterine gestation which is recognized in the early months, the extrauterine pregnancy not causing severe symptoms until later. Cases which are first seen in a late stage of pregnancy have commonly been regarded as cases of normal pregnancy until the occurrence of extrauterine symptoms. Finally, in some cases both pregnancies have advanced to term, and in nine of these both children have been delivered alive. The treatment varies with each case. In early cases laparotomy is required. In the later cases the same plan

# EPITOME OF CURRENT MEDICAL LITERATURE.

may be advisable, although at times towards the end of pregnancy expectant treatment is justifiable until the onset of labour, when operative removal of both foetuses is indicated.

247. H. STIGLHAUER (Wien. Klin. Woch., June 3rd, 1926, p. 656) records the case of a woman, aged 35, in whom laparotomy was performed for tubal gestation, when the right tube was removed and the uterus was found to be of the size and shape corresponding to that of pregnancy at the beginning of the third month. The patient made a good recovery from the operation, and in the ninth month of pregnancy gave birth to a normal child after fourteen hours' labour. In most of the cases of simultaneous intra- and extra-uterine pregnancy, comparatively few of which have been recorded, intrauterine pregnancy has ended in abortion after death of the extrauterine ovum. In the cases reported by Kellerscheldt and Wittaner the intrauterine pregnancy lasted longer than the extrauterine, which was not recorded. In Strauss's case death from septicaemia occurred a few weeks after operation. In Weibel's case, on the other hand, abortion came first, and was followed a few days later by laparotomy for extrauterine pregnancy. Interruption of intrauterine pregnancy is the rule in these cases of double pregnancy, which, according to Weibel, occurs in one out of 149 cases of extrauterine gestation. The frequency of abortion, for which infection of the haematocoele is responsible, gives rise to a mortality of 35 per cent. The continuation of intrauterine pregnancy and the spontaneous birth of a normal child, as in the present case, is, the author adds, a remarkable event.

## 213. Drainage Treatment of Infected Abortions.

G. SCHWARTZ (Zentr. f. Gynäk., May 8th, 1926, p. 1251) discusses the treatment of uncomplicated cases of fever following abortion and adopts Winter's distinction between (1) active treatment, whereby the uterus is emptied as soon as infection is diagnosed; (2) conservative treatment, which leaves the emptying of the uterus to nature while aiding by administration of stimulants to the uterine muscle; and (3) expectant treatment, which begins as in the conservative method but empties the uterus operatively when the pyrexia has disappeared. Statistical comparisons of the relative efficacy of these therapeutic methods are difficult in that infection passes the bounds of the uterus and renders the case "complicated," while the degree of resistance to be considerably the patient's power of resistance is less likely to be diminished when active treatment is strongly in favour of abortion, when active treatment is found to be dangerous. At the author's clinic opinion is based on duration of treatment as compared with that of active therapy—is one of its disadvantages—the longer average duration of treatment as compared with the adoption of gauze drainage through the cervix. After disinfection of the vagina a narrow strip of gauze is introduced within the internal os—after the mechanical cervical dilatation if necessary. This strip is changed each day until the emptying of the uterus becomes complete as shown by the disappearance of blood in the discharge, the uterus gradually becoming smaller, the pro-gressive closure of the cervix, and the cleanliness of the uterine secretion. Details are given of twenty-four uncomplicated febrile cases of abortion and of eighteen cases of febrile abortion, which were treated by gauze drainage alone. There were no deaths, and the average duration of treatment was twenty days and fifteen days respectively; about one-third of the patients in the vagina or cervix. The gauze was usually changed on five or six successive days and the placental remnants were spontaneously expelled after the second or third change as a rule. Severe haemorrhage was rarely encountered and yielded to introduction of a wider piece of gauze, whereby firmer uterine contraction was induced.

## 248. Pregnancy and Cancer of the Large Intestine.

H. KATZ and F. KASPAR (Arch. f. Gynäk., March 25th, 1926, p. 250) find that the association of cancer of the colon or rectum with pregnancy is somewhat less frequent than that of cancer of the uterus. They report eighteen cases from Vienna clinics, of which fourteen were of rectal carcinoma, all of which were operated on by the sacral route only. Although in certain cases the growth increases more rapidly during pregnancy the outlook after operation does not seem to be more grave when the tumour has occurred together with pregnancy. One patient with a non-metastatic cancer of the large intestine had several pregnancies separated by many years of good health. The authors add that in inoperable cases colostomy does not seem to increase the

risk of infection during labour and may bring about a very striking improvement in the patient's general condition. Prognosis would be better if examination of the rectum and colon were made in all pregnant patients reporting intestinal pain or chronic obstruction.

250.

H. JACOBS (Med. Journ. of Australia, May 29th, 1926, p. 533, and June 5th, 1926, p. 627) discusses the question whether pregnancy and parturition can be considered physiologically normal. He concludes that they are so in most cases, but that many are not. The term "maternal morbidity" may be applied in either a general or in a restricted sense. The former covers abnormalities occurring immediately or at some remote period after labour, while the latter is applicable only to abnormal conditions immediately following labour. The etiology of this morbidity may be classified broadly as—infection, traumatism, toxæmia. Discussing the incidence of maternal morbidity amongst civilized nations the author estimates that for every two hundred children born one mother dies. Puerperal infection is held to be responsible to the extent of 30 per cent., and he gives a lengthy list of the organisms and increases the virulence of the primary infection. He especially deprecates frequent vaginal examinations, and recommends the safe alternative of abdominal palpation. He condemns the hasty and often unnecessary application of forceps and emphasizes the value of pre-natal care in the treatment of abnormalities, thereby avoiding the dangers attending craniotomy or craniectomy. The control of bleeding is the best method; in placenta praecia, and podalic version the chief importance of the elimination of toxins is of chief importance. Eclampsia is opposed to the performance of Caesarean section in either of these conditions, or in cases of pelvic contraction without due caution and safe in competent hands in selected cases of obstruction. Discussing the treatment of puerperal infections, he advises against local treatment.

## 251. Sterility associated with Habitual Amenorrhoea.

I. C. RUBIN (Amer. Journ. Obstet. and Gynecol., July, 1926, p. 76) has found amenorrhoea associated with sterility 74 times in 1,450 consecutive cases. There is some evidence that mild x-ray doses are useful therapeutically, and Rubin has treated twelve patients thus with nine subsequent pregnancies (75 per cent.), whereas in untreated cases pregnancy occurs in only about 5.5 per cent. Of these nine patients only one aborted, the remaining eight continuing to full term and giving birth to normal children. Irradiation of the ovaries resulted in the restoration of the menses in eleven out of the twelve cases, and it was found that irradiation of the hypophysis area and of the thyroid appeared to be helpful, while tubal insufflation and endocrine therapy were additional aids to the x-ray treatment. In eight of the nine successful cases the ovaries were found to be definitely enlarged before treatment, and Rubin considers that careful examination should assist in selecting cases suitable for ovarian radiation. In the absence of ovarian enlargement, irradiation of the hypophysis area or of the thyroid may be the better course and should certainly precede ovarian irradiation. The x-ray dose recommended for amenorrhoea is 5 to 10 per cent. of the skin erythema dose, but much depends upon the age of the patient, the apparatus used, and the dose needed to produce a skin erythema.

## Pathology.

### The Rationale of the Bile Solubility of the Pneumococcus.

252.

E. E. ATKIN (Brit. Journ. Exper. Path., August, 1926, p. 167) has tried to discover why some strains of pneumococci dissolve readily and completely in ox bile, while others only so slowly and incompletely; some even fail to dissolve at all. He believes he has detected an absolute correlation between the autolysin content of the solvent action of bile and its susceptibility to the solvent action of bile. Cultures were grown on horse-serum agar slopes of a reaction of pH 7.5 and 7.8, and the amount of autolysin observed. In many instances the growth almost disappeared within this time. Autolysis occurred best at a reaction of pH 7.8 in the case of Types 1 and 2, and at pH 7.5 in the case of Type 3. The bile solubility of the same strains was tested by suspending an overnight growth in the same strains in saline and mixing with a 1 in 1,000 and a 1 in 2,000 solution of sodium desoxycholate. It was found that Types 1 and 2 were more readily soluble when taken from a growth on medium of pH 7.8 than on medium of pH 7.5; with Type 3

the converse held good. From these experiments it would appear that the cocci which contain the most autolysin are the most readily soluble in bile salts. It was also noticed that after four or five days on a serum agar plate secondary psyllac sometimes formed from the already autolysing colonies. The organisms in these papillae did not undergo autolysis; even after incubation for a fortnight or so they kept their form and remained Gram-positive; moreover, they were insoluble in bile salts. If they were transplanted on to a fresh serum agar slope they again formed autolysin and again became susceptible to bile salts. The author therefore concludes that the bile solubility of the pneumococcus is due to an acceleration of the normal autolytic process, and that no solution of the organisms occurs except in the presence of autolysin. The function of the bile is to assist the autolytic enzymes secreted by the bacteria in much the same way as in the human body it assists the digestive enzymes of the alimentary canal.

#### 253. The Preparation of Antimeningococcus Serums.

In order to produce a polyvalent serum it has been customary to inject horses with large numbers of representative strains. A. WADSWORTH and M. B. KIRKBRIDE (*Amer. Journ. Hygiene*, July, 1926, p. 507) state, however, that this method defeats its own ends; instead of obtaining a high-titre polyvalent serum the serum is found to be deficient in both these properties. In their experiments they prepared serums by injecting horses with 4, 6, 20, and 60 strains of meningococci, and tested their potency by the agglutination test; they give reasons for considering this the most valuable test. Both as regards titre and polyvalency the 6-strain serum was superior to the others; it was followed closely by the 4-strain serum. The average titre—tested against 26 strains of meningococci—of the 20-strain serum was little more than a third of that given by the 6-strain serum, while that of the 60-strain was less than a quarter. They conclude, therefore, that the best method of producing a potent anti-bacterial serum for the meningococcus is to employ about six representative strains. In 13 cases of cerebro-spinal meningitis in patients over 1 year old and treated by the 60-strain serum the mortality was 15.3 per cent., and in 68 cases treated by the 6-strain serum it was 11.7 per cent. In infants under 1 year the mortality in 32 cases treated by polyvalent serum was 43.7 per cent. It was noticed that some cases entirely failed to react to the serum; on the other hand, a number which reacted favourably developed fatal secondary complications or infections. The authors add that the mortality in the group over 1 year of age is remarkably low, and compares favourably with Flexner and Jobling's figures.

#### 254. Calcification and Ossification of Goitre.

E. CAPORALI (*Arch. Ital. di Chir.*, June, 1926, p. 673), who records a case in a woman aged 39, states that, according to some authorities, calcification is fairly frequent in goitre. In 194 goitres at the Basle surgical clinic Hunziker and Pfister found calcification in 67, or 34.5 per cent., and in 16 of these there was more or less extensive ossification, while Sehart found calcification in 14 out of 28 goitres. In Caporali's experience, however, the frequency of calcification in goitre is much less, as in 84 cases of goitre operated on at the Pisa surgical clinic only two showed any calcification. According to Nivet about 50 per cent. of the calcification is caused by calcium phosphate, 9 per cent. by calcium carbonate, and 40 per cent. by organic matter. In Caporali's cases, on the other hand, the figures were very different, the calcium phosphate being 18.54 per cent., calcium carbonate 80.95 per cent., and non-identified organic matter 0.5 per cent. The ossification must be regarded as a metaplasia of the connective tissue of the goitre. In Caporali's cases the diagnosis of calcification was made by x-ray examination, and zones of ossification were found on section after successful removal of the goitre.

#### 255. Incidence of Pneumococcus Types in Pneumonias of Children.

RUTH E. WESTLUND (*Journ. Infec. Dis.*, June, 1926, p. 514) has compared the types of pneumococci in the pneumonias of childhood with those found in children suffering from other respiratory diseases. Since sputum was difficult to obtain, she used throat swabs. Her figures relate to the types of pneumococci found in the throats of children suffering from pneumonia and other diseases; in several instances, therefore, more than one type of organism was recovered from the same patient. One series of 69 cases of lobar pneumonia and another of 34 cases of bronchopneumonia were examined; the children ranged from three weeks to eleven years in age. In the first series pneumococci were recovered from the nasopharynx in 60.8 per cent., in the latter series in 52.6 per cent. of cases. These organisms were typed by the usual methods. The distribution amongst the types was similar in both series: Type IV formed about

three-quarters; Type II came next, being 19.7 per cent. in the lobar pneumonia and 12.5 per cent. in the bronchopneumonia series; Types I and III were present in only small numbers. The author notes that the difference between the distribution of types in children and in adults is very striking; in adults the fixed types are present in large numbers in lobar pneumonia, while in children the fixed types constitute only a quarter of the total number of strains. The great predominance of Type IV strains in this series and the close similarity in the proportions found in the two types of pneumonia suggest that the throat swab method yields results that are not comparable with those given by sputum examination. This is further borne out by the finding that the distribution of pneumococci in the throats of children suffering from other respiratory diseases and from non-respiratory diseases is very much the same as that in children suffering from pneumonia.

#### 256. The Rous Sarcoma.

P. C. FLU of Leyden (*Centralbl. f. Bakt.*, August 5th, 1926, p. 332) has repeated a number of Gye's experiments on the factors influencing the infectivity of the Rous sarcoma for chickens, and differs from Gye's conclusion with regard to the disinfecting power of chloroform. Using suspensions of staphylococci, *B. coli*, and *V. cholerae*, Flu found that in order to sterilize them 0.3 c.c.m. of chloroform acting at 37°C. for three hours was required for every 10 c.c.m.; less than this proved unreliable. The same amount of chloroform also sufficed to destroy the infectivity of a Rous sarcoma filtrate. Smaller quantities, such as 0.1 c.c.m., sometimes proved ineffective, for though the injection of 1 c.c.m. of chloroform-treated filtrate did not produce a tumour, the injection of 2, 4, or 8 c.c.m. frequently did. When Flu repeated Gye's experiments on the activation of the virus by a chloroform-treated sand filtrate of a Rous sarcoma he succeeded only in those instances in which insufficient chloroform had been added to destroy the virus completely. He failed uniformly to obtain activation by chloroform-treated filtrates which by themselves were non-infective in a dose of 4 or 8 c.c.m. In other words, the "specific factor" which sterilized completely was no longer active. Flu finds that cultures from tumours can be replaced by extracts of normal organs. Thus a sand filtrate of a Rous sarcoma that had been treated with chloroform to render it non-infective gave rise to a tumour when it was mixed not only with cultures from other tumours but with an extract of normal fowl liver or kidney. That is to say, if Gye's hypothesis is correct, these normal tissues must have contained the virus. Flu failed to infect mice with a cell-free filtrate of cultures of mouse sarcoma, and he brings forward evidence to show that the Rous sarcoma is not a malignant tumour at all but a proliferative inflammatory condition. His experiments failed to substantiate the conception of a virus present in all tumours and of a secondary factor specific to each; in his opinion Gye's results can be more simply explained by Bail's aggressin theory.

#### 257. Serological Diagnosis of Neuro-Syphilis.

H. F. WATSON (*Quart. Journ. Med.*, July, 1926, p. 431) records the results of a critical analysis of certain laboratory methods applied to the cerebro-spinal fluid in the serological diagnosis of neuro-syphilis with a view to establishing their correct diagnostic value. The procedures investigated included the Wassermann test of the serum and the cerebro-spinal fluid, the colloidal gold test, the foam test, various globulin estimations, and the enumeration of cells, including in most cases the differential count. The personal history and clinical condition of each patient were also investigated. Of the 350 cases examined 119 were syphilitic and the remainder were classed as non-syphilitic as they gave no history or clinical evidence and the Wassermann tests were negative. In the clinically syphilitic cases the Wassermann test was positive with cerebro-spinal fluid in 95.65 per cent. and with serum in 94.78 per cent.; 85.84 per cent. were positive to the colloidal gold test. Of the globulin tests the Pandy, mercuric chloride, and sulphosalicylic acid gave approximately 95 per cent. positive results, the Noguchi 86 per cent., and the Ross-Jones, Nonne-Apelt, and Kaplan 71 per cent. The colloidal gold, globulin, and foam tests frequently gave positive results in such non-syphilitic conditions as encephalitis lethargica, disseminated sclerosis, acute rheumatism, mumps, and late influenza, thus rendering them unreliable in diagnosis. From this investigation Watson concludes that the Wassermann test is of most diagnostic value, and affords the highest percentage of positive results in known syphilitic cases, while the colloidal gold test gives a much lower percentage. In syphilitic conditions the Pandy, sulphosalicylic acid, and mercuric chloride globulin tests approximate the Wassermann test in percentage of positive results. In the syphilitic conditions of the central nervous system the cell enumeration was never lower than 10 per c.mm.



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## Medicine.

### 258. Accidents Due to Lumbar Puncture.

J. C. MELINDRO (*Arch. de med., cir. y exp.*, June 5th, 1926, p. 435), who records an illustrative case in a young woman aged 18, states that the frequency of meningism following lumbar puncture varies considerably with different observers. In the natives of the Congo this sequel was never observed (Blanchard and Lalret). In Nonne's series of 3,000 cases of lumbar puncture it was noted in 6 per cent. Perkel's estimate was 37.8 per cent., whereas Melindro himself observed meningism in only 5 out of 224 cases of lumbar puncture, or in 2.2 per cent. The differences in these statistics depend on the amount of fluid removed, the position of the patient, the size of the trocar employed, and the duration of rest enforced after lumbar puncture. Melindro uses a trocar with a diameter of 1.5 mm., with the patient in the lateral decubitus. After 6 to 8 c.cm. of cerebro-spinal fluid have been withdrawn the patient is made to lie down with his head low for twenty-four hours. Perkel, on the other hand, performs lumbar puncture when the patients are sitting up, and allows them to get up two or three hours after removal of the fluid. The treatment employed by Melindro for the meningism following lumbar puncture consists in epidural injection of normal saline solution in doses of 20 to 30 c.cm. Good results were obtained in all cases, though the following day the patients who had hitherto been apyrexial had a "salt fever" of 101.2° F. In addition to meningism there are cases on record of lumbar puncture being followed by death (which is a very rare occurrence and not always attributable to the puncture), paralysis of the cranial nerves, psychical disturbance (Kaiser), fatal meningitis (Sonnenschein), and aggravation of the primary disease, as in a case of epilepsy observed by Melindro in which eight attacks occurred after lumbar puncture, whereas previously there had only been one a week.

### 259. The Dick Test in Scarlet Fever.

R. DEBRÉ, M. LAMY, and H. BONNET (*Ann. de méd.*, May, 1926, p. 457) have performed the Dick test on 1,154 children, aged from a few days to 15 years; 736, or 63.8 per cent., were negative; 391, or 33.8 per cent., were positive; and 29, or 2.5 per cent., gave a pseudo-reaction. As a general rule positive results were least frequent in the first year (25 per cent.), but became more frequent from 1 to 3 (47 per cent.), and then became rarer with increase in age until they fell to 17 per cent. at the age of 15 years. One of the authors made 800 tests in a reformatory in the United States and obtained positive reactions in only 15 per cent., whereas the usual percentage of positive reactions in such communities in the United States is 70. An explanation for this was found in the fact that scarlet fever was endemic in the institution (40 cases a year on the average), so that many children became immunized. Moreover, 50 per cent. of the children had *Streptococcus haemolyticus* in their nasopharynx. Of 233 adults tested in France 205 were negative, and only 26, or about 11 per cent., positive; while of 1,700 aged from 15 to 20 attending secondary schools in America examined by one of the authors 490, or about 28 per cent., were positive. Of 38 patients examined at the onset of scarlet fever only 11 gave a positive reaction, which was usually ill marked, 26 a negative, and 1 a pseudo-reaction. Zingher, on the other hand, found that the reaction was almost always (99 per cent.) positive in the first three days of the disease. The present authors' experience agrees with that of the Dicks, who found the reaction positive in only 50 per cent. of the cases at the onset of scarlet fever. In convalescence only one of Debré's cases was positive. Like American observers, the present authors found that the serum of Dick-negative subjects blanched the scarlet fever rash in the 21 cases studied; 13 patients whose Dick test was positive were used as controls, and with none of them was blanching of the rash obtained. The authors also found that there was an absolute parallelism between neutralization of the toxin by the serum *in vitro* and blanching of the rash.

259. N. P. SHERWOOD and L. BAUMGARTNER (*Journ. Immunol.*, 1926, ii, p. 323) have performed a series of Dick tests on university students, and have compared them with the agglutination reactions to the streptococcus of scarlatina. Contrary to the early findings, they obtained 25 per cent. of positive Dick tests in 44 persons giving a history of scarlet fever nine or more years previously, while of 132 persons

with no history of scarlet fever only 33.3 per cent. were positive. It is noteworthy that over half of the former group of persons gave weak positive reactions. As regards the agglutination test 14.5 per cent. of Dick-positives contained agglutinins in their serum, compared with 25.5 per cent. of Dick-negatives. Among those giving no history of scarlet fever 11.3 per cent. of Dick-positives contained agglutinins, as against 26.1 per cent. of Dick-negatives. These results would appear to show that in adult life the interpretation of the Dick reaction is very difficult, especially in the absence of a definite history of scarlet fever. Previous results have given a high percentage of negative Dick reactors among those who have suffered from the disease; these results are not confirmed by the present authors. So far as the agglutination reaction is concerned the present work shows that this is more likely to be positive in Dick-negative persons and in persons giving a history of scarlet fever.

### 261. Influenzal Endocarditis.

E. H. OPPENHEIMER (*Bull. Johns Hopkins Hosp.*, May, 1926, p. 372) records a fatal case of endocarditis in a man, aged 28. The protracted course, cardiac disease, splenomegaly, haemorrhagic nephritis, petechial eruption, fever, and clubbing of the digits, with an onset suggestive of a cerebral accident, was characteristic of *Streptococcus viridans* infection, while anatomically the type of vegetation on the chronically diseased and thickened valves, the widespread petechiae, infarcts, and embolic nephritis fitted in detail into the same picture. *B. influenzae*, however, was obtained from blood cultures on the day before death and *post mortem* in smears from vegetation on the heart valves. A review of the literature shows that *S. viridans* is responsible for 95 per cent. of the cases of subacute bacterial endocarditis, while Pfeiffer's bacillus is the etiological factor in most of the remaining 5 per cent. Cases of *B. influenzae* endocarditis have been reported by Libman and Horder (*JOURNAL*, 1920, ii, p. 301).

## Surgery.

### 262. Urological Causes of Abdominal Pain.

J. D. BARNEY (*Boston Med. and Surg. Journ.*, July 15th, 1926, p. 111) remarks that abdominal symptoms originating in the kidney or ureter may resemble those originating in almost any abdominal organ, and that a correct diagnosis may only be reached after a complete urological examination with uroterograms and pyelograms. The difficulty in differential diagnosis is increased by the fact that the pain may simulate that associated with the appendix, gall bladder, gastrointestinal tract, or female pelvic organs, even in the presence of a normal urine and negative x-ray examination, since such data in themselves do not necessarily exclude the kidney and ureter from consideration. The uroterogram may be quite as important as the pyelogram in detecting stricture of the ureter—a condition which, especially in women, may be a cause of abdominal pain. Kinks of the ureter usually occur in the upper half, causing faulty drainage of the renal pelvis, followed by infection, dilatation, and adhesions, and proceeding possibly to complete destruction of the kidney. Aberrant renal vessels may interfere with drainage and cause hydronephrosis, and malpositions of the kidney which show little or nothing on physical examination may yet produce severe abdominal symptoms. Horseshoe kidney may give rise to abdominal pain resembling that of appendicitis, and bifurcations of the pelvis or ureter are among other congenital abnormalities complicating diagnosis.

### 263. Chronic Duodenal Ileus.

AS C. C. HIGGINS (*Arch. of Surg.*, July, 1926, p. 1) points out, the relation between acute dilatation of the stomach and duodenal obstruction by compression of the duodenum by the root of the mesentery has caused considerable discussion in late years. Chronic duodenal ileus is not a rare condition, and there are many cases which are not diagnosed. Various conditions may predispose to this condition, and four chief groups may be considered: congenital abnormalities, the formation of adhesions, factors favouring compression of the duodenum, and factors favouring a pelvic position of the intestines. This condition is found more frequently in females, and usually in middle age. On account of the severe headache associated with the condition a diagnosis of migraine is usually made. In all cases of severe headache associated with vomiting a careful examination of the



duodenum should be made. Where the dilatation is insufficient to produce duodenal stasis relief should be brought about by non-operative measures. If the dilatation is marked and stasis with atonics should be performed, and excellent results should not be performed, as the stasis in the duodenum is not relieved and a vicious circle is established. A careful x-ray examination must be made before operation, and the correct diagnosis be thus established. Higgins maintains that dilatation of the duodenum is a clinical entity, and that a characteristic picture is present in most of the cases.

#### 251. Treatment of Recurrent Laryngeal Nerve Paralysis.

C. H. FRAZIER (*Surg., Gynecol., and Obstet.*, August, 1926, p. 134) describes an operation for restoring the function of the recurrent laryngeal nerve after injury, especially after thyroidectomy. Injury of this nerve implies paralysis of the intrinsic muscles of the larynx; the cord hangs in a flaccid state and narrows the lumen of the larynx by approaching and finally reaching the mid-line. In this state dyspnoea becomes acute. Gradually the cord loses its tone, the glottic chink is again widened, and "total" or "complete" paralysis supervenes. Anastomosis of the proximal portion of one nerve to the peripheral portion of another is an accepted procedure, and has been adopted by Frazier in traumatic recurrent laryngeal palsy. For this purpose the descending hypoglossi is selected for anatomical and physiological reasons. Lying close to the recurrent laryngeal, it is easily accessible and of sufficient length to afford transportation without tension; physiologically, it is motor in function and supplies muscles the action of which is correlated with those of the larynx. Anastomosis with the phrenic nerve has also been successfully accomplished. In operating, the first step consists in isolating and identifying the stump of the recurrent laryngeal, the dissection beginning at the point of entrance of the nerve into the larynx—that is, at the inferior cornu of the thyroid cartilage. When found the nerve is traced downwards until the point of severance or constriction appears. Occasionally the injuring agent may be only scar tissue, the nerve itself being undamaged. The descending hypoglossi as it courses along the anterior carotid sheath is next isolated, cut above the ansa hypoglossi, and an anastomosis made with the previously isolated recurrent laryngeal. The operation is performed for the relief of dyspnoea, the discarding of the tracheal cannula, and the restoration of normal phonation. Conditions adverse to success are complete atrophy and fibrosis of the muscle of the cord, immobilization of the cricoarytenoid joint, tracheal stenosis, and absence of a segment of the nerve. Frazier considers this anastomosis with the descending noni branch of the hypoglossal nerve or with the phrenic a safe procedure, and thinks that improvement can be expected in 60 per cent. of cases.

#### 265. Fibro-epithelial Tumours of the Renal Pelvis.

S. PERLMAN (*Dent. Zeit. f. Chir.*, July, 1926, p. 378) states that fibro-epitheliomatous tumours of the renal pelvis are among the rarer forms of renal tumour. Their frequency varies, according to different observers, from 2 in 68 (Israel) to 10 in 283 (Mayo Clinic); Mock collected 95 cases in 1913, 102 were reported by Spiess in 1915, and 68 by Hryntschach in 1920, since when Perlman has collected 43 from the literature, including four which came under his own observation. A study of all these cases shows that fibro-epitheliomata of the renal pelvis are more frequent in men (62 per cent.) than in women (38 per cent.). They occur most often between the ages of 50 and 60, but Thomas has reported a case at 3½ years. Most writers state that both sides are affected with equal frequency, but in Perlman's experience the tumour is most frequent on the left. Bilateral localization is rare. Three groups of fibro-epithelioma of the renal pelvis may be distinguished—namely, typical fibro-epithelioma, atypical fibro-epithelioma, and papillary carcinoma, of which 29 of Perlman's 43 cases were examples. The most prominent clinical symptom is haematuria, which was present in from 74 to 84 per cent. of the cases, as the first and very frequently the only symptom of the disease. Pain, which sometimes accompanies the haematuria, may be colicky, or of a dull persistent character. Pain as an isolated symptom without haematuria is rare, being noted in only three of Perlman's cases. Occasionally the presence of a tumour is the first thing which makes the patient seek medical advice. The urine contains red corpuscles, numerous epithelial cells, and sometimes fragments of tumour. Besides the ordinary methods of investigation pyelography should always be performed, as it often enables a correct diagnosis to be made before operation. As regards operative treatment, nephrectomy is said to be the method of choice. Secondary tumours arising in the bladder must be subjected to endovesical coagulation.

## Therapeutics.

#### 266. The Bactericidal Action of Silver Chloride.

B. PFAB (*Med. Klin.*, June 18th, 1926, p. 962) refers to the long-continued use by Saxl of silver chloride in cases of gastric ulcer with very good results. The salt was obtained in colloid form by precipitation from silver nitrate in the presence of organic colloids which prevent the precipitation of inorganic colloids, and remains in permanent suspension. Saxl believes that the beneficial action of silver chloride is enhanced by the addition of atropin, which relieves pain. Pfab has confirmed Saxl's clinical observations by experiments and finds that silver chloride is powerfully bactericidal and has also analgesic properties, due, perhaps, to its power of stimulating the growth of granulation tissue. There was rapid improvement in varicose ulcers when dressed with the colloid solution in dilutions of 1 to 10 per cent. or with ointments containing 2 to 15 per cent. of the colloid substance. A 4 per cent. solution of colloid silver chloride was usually employed; this had no irritating effect on mucous membranes, skin, or wounds. Saxl administered silver chloride internally to more than 100 patients, without causing argyria, except in one case in which large doses of sodium bicarbonate were given after food. Cultures of *B. coli* and *B. typhosus* on agar plates treated with solutions of colloid silver chloride varying from 1 to 10 per cent. were sterile at the end of twenty-four hours, while the control culture showed a free growth. Experimental staphylococcal abscesses in guinea-pigs healed rapidly when treated with the colloid silver chloride ointment. It was found that a dilution of 1 in 800 destroyed bacteria, while in a dilution of 1 in 3,000,000 all bacterial growth was inhibited.

#### 267. Intensive Iodine Medication in the Treatment of Chronic Rheumatism.

M. J. THIROLOUX, Mino BRACH-GILLOT, and M. LELOUP. (*Bull. et Mem. Soc. Méd. des Hôp. de Paris*, June 24th, 1926, p. 1033) describe the treatment of 193 cases of chronic arthritis by administration of methyl or benzyl iodide combined with hexamethylenetetramine, usually by intravenous injection, and in large doses, two or three times a day. They found that this treatment caused all varieties of articular lesions due to chronic rheumatism to disappear. They included as rheumatism a non-infective arthritis associated with endocrine deficiency, mainly of the thyroid and ovary, and a second type which was of infective origin. In all affected cases the basal metabolic rate was constantly lowered; it was rare to find a chronic rheumatic woman with a morphologically normal thyroid, and the iodine was believed to act by raising this rate to normal and stimulating the endocrine glands primarily affected. Conditions benefited or cured included rheumatic gout, acute gout, chronic arthritis following serum sickness, "glandular rheumatism" in a patient the subject of ovarian trouble, severe arthritis with wasting, tuberculous and syphilitic arthritis, and chronic rheumatism following congenital deformities, such as dislocation of hip, and sacralization of the fifth lumbar vertebra. Treatment of pregnant women with arthritis was continued to the eighth month without detriment.

#### 268. Vaccine Treatment of Asthma.

A. PONDMAN (*Nederl. Tijdschr. v. Geneesk.*, May 29th, 1926, p. 2237), from observations on 400 cases of asthma, comes to the following conclusions. No definite micro-organism can be regarded as the cause of asthma; tubercle bacilli, even when special search was made for them, could seldom be found. The fact that almost the same result was obtained whatever the vaccine employed indicates that the method is an example of bacterial protein-therapy rather than a specific vaccine treatment, and that successful results must be ascribed to a desensitizing process. In complicated cases the result of the treatment is usually slight, and at most only some improvement can be obtained. In young patients vaccine treatment is followed by a remarkable improvement in the general condition, accompanied by an amelioration of the asthmatic process. The number of patients who completely recovered was small, but many of them were living under unfavourable circumstances as regards hygiene and nourishment.

#### 269. Specific Treatment of Plague.

C. BIFULCO (*Stadium*, May 20th, 1926, p. 169) quotes Montefusco's statement that the favourable results obtained by various observers with antiplague serum were undoubtedly due to the mildness of the prevailing epidemic rather than to the efficacy of the serum, its method of preparation, or the route by which it was injected. In two epidemics of plague in 1904 and 1921 the mortality among the patients at the Contugno Hospital, Naples, not treated with serum was only 11.5 per cent., a figure which is much lower than that

obtained in India with antiplagno serum, either by the German mission (50 per cent.) or by the Russian mission (40 per cent.). Wigura and Jassenik had a mortality of 25 per cent. among their cases of plagno treated by serum at Pithoragarh. The failure of antiplagno serum has been attributed by them to deficiency of bacteriolytic action and almost complete absence of plagno antitoxin. According to Biffaleo, Montefusco is to be credited with having introduced an anti-plagno vaccine which he has employed in very severe cases with successful results. A daily dose of 5 c.cm. of the vaccine is given subcutaneously as long as there is no improvement or fall of temperature. In many cases a considerable fall of temperature and improvement in the general condition occur after the first injection. Treatment of plagno by intrabubonic injection of d'Herelle's bacteriophage has only been given to patients who would probably have recovered without this treatment.

## Disease in Childhood.

### 270. Typhoid Fever in Infants.

W. WESTON, jun., and S. X. RADNITT. (*Arch. of Ped.*, March, 1926, p. 160) review the literature and state that during the period 1915 to 1925 there were a hundred cases of typhoid fever in the Children's Hospital at Philadelphia. Five of the children were less than 1 year old, and two of the five had meningitis due to *E. typhosus*, one apparently a primary infection. The rarity of typhoid fever at this age is probably due to the smaller chance of exposure and not to any lesser degree of susceptibility. Eight deaths occurred in the whole series, four being in patients in the first year of life. The younger the child the more frequent were the complications of typhoid fever, and death was due to these in most instances. Otitis and furunculosis were the complications most frequently observed by the authors. Haemorrhage and perforation are, they state, uncommon in infants, none having occurred in their series, but relapses are more frequent in early life than later. Four of the authors' patients had relapses, one having two relapses eight days apart.

### 271. Flat-foot in Infants and Children.

P. LEWIN. (*Amer. Journ. Dis. Child.*, May, 1926, p. 704) holds that the various periods at which feet should be inspected are: at birth, 6 months, 1 year, 2 years, 3 years, 4 years, and at adolescence. Any condition causing weakened musculature may cause flat-foot. There is a definite type of weak, pronated, or flat foot that appears with adolescence—in long slender rapidly growing feet, especially in girls. Obesity causes flat-foot in two ways: by the strain of an excessive load and by glandular disharmony in such conditions as

a or infantile paralysis.

The author explains that the deformity consists of an eversion of the foot with abduction of the forepart of the foot at the tarso-metatarsal articulations. There is a downward and inward rotation of the medial bones of the mid-tarsal region—namely, the scaphoid, internal and middle cuneiform bones. The upper border of the astragalus is tilted medially, carrying the lunar border lower than the outer. There is gaping of the bones on the inner border of the foot—the scaphoid, os calcis, astragalus, and internal cuneiform. There is compression of the bones on the outer border of the foot—the cuboid, os calcis, and astragalus. The structures on the outer side of the joint are shortened and generally strengthened, while those on the inner side are stretched and weakened. The indications for treatment are to teach proper walking, to increase the power of the supporting structures, to increase the local circulation, to support the weakened structures, to produce supination, and to correct associated pathological conditions, such as knock-knee, bow-legs, etc. The methods of meeting these indications are prescribing proper foot-gear, exercises, massage, contrast foot-baths, felt pads, plaster-of-Paris casts, and operation. The child should be taught to walk with the feet parallel or toeing in slightly. It should come down on its heels, tilt its weight to the outer borders of the feet, and come up on the toes with a spring. Well fitted laced boots should be worn. The most important movement is from the back of the heel to the middle of the big toe joint, which should be opposite the point at which the shank joins the ball of the sole. Next, the foot must grasp the heel. The author advocates the Thomas heel, for which four measurements are necessary: (1) from the tip of the os calcis to the anterior border of the scaphoid tubercle; (2) from the tip of the os calcis to a perpendicular line dropped from the anterior border of the external malleolus; (3) the inner border height of heel, which should be  $\frac{1}{8}$  to  $\frac{1}{4}$  of an inch higher than (4) the outer border or normal height of heel. He describes the eleven exercises he has found most

valuable. Support for the longitudinal arch is obtained by means of felt pads. These afford a resilient support and thereby increase the spring of the gait. They are inserted directly into the shoes and held by means of a special glue and tacks. Plaster-of-Paris is necessary in some cases, preliminary forcible manipulation under anaesthesia being indicated for rigid flat-foot. Resection of the peroneal tendons, lengthening of the Achilles tendon, tendon transplantation, osteotomy of the os calcis or other bones is occasionally indicated. The single outside calliper and T-strap of Jones and the lever sole of Calot are sometimes of value.

### 272. The Fate of Infants Born before Term.

L. SALOMONSEN. (*Tidsskrift f. d. Norske Lægeforening*, May 1st, 1926, p. 429) has traced the infants who were born before term at the 8th Department of the Ullevaal Hospital in Oslo. There were 64 such infants, whose weight at birth was under 5½ lb. Of these 64, as many as 11 died within a month of birth. Within three years of birth 25, or 39 per cent., had died. Of the surviving 39, who were observed for a period of more than a year, 8, or 21 per cent., showed evidence of meconal deficiency. Of the 15 who were observed for a period of more than three years as many as 5 were mentally abnormal. The calculation that 39 per cent. of the total had died within three years of birth was an underestimate, as several of the infants under observation were not yet 3 years old. But it is rather the mental inferiority than the proportion of actual survivals among the infants born before term that Salomonsen considers significant, and he gives details of cases showing how mentally inferior much of this material is. He considers that Ylppö, dealing with more than 650 infants weighing less than 5½ lb., had proved in 1919 that more than 7 per cent. of the surviving infants were mentally abnormal, and that this observation has gone far to upset the orthodox teaching that it does not matter much if a child is born before term provided it survives the first few critical months.

### 273. Acrodynia.

A. E. VIPOND. (*Brit. Journ. Child. Dis.*, April-June, 1926, p. 127) describes the cardinal symptoms of this disease, which occurs chiefly in infants between the ages of 8 to 18 months, as follows: The onset is associated with nasal catarrh, and the child becomes restless and cross. A definite rash appears on the body, often of the nature of an erythema; there is occasionally a papular or even a pustular eruption. The hands and feet are cold, and the skin presents a bluish red appearance, the same condition affecting the tips of the nose, ears, and eyelids; in some cases bullae and superficial gangrene develop. The locomotor system is involved, the hands and feet being thrown about, but not for any useful purpose. The sensory system is much disturbed. There is intense pain in the arms and legs; cutaneous sensibility is lost or much lessened. All the superficial lymphatic glands are enlarged, especially in the axillae and inguinal regions. There is a rapid loss of weight, the reflexes are difficult to obtain, and the child suffers from mental irritability. The usual duration of the disease is from four to six months, but Vipond has considerably shortened it by injection of an autogenous vaccine prepared from a diplococcus which he has constantly found in the enlarged lymphatic glands.

## Obstetrics and Gynaecology.

### 274. Puerperal Mortality.

R. L. DE NORMANDIE. (*Boston Med. and Surg. Journ.*, May 27th, 1926, p. 963) discusses the question of maternal deaths from haemorrhage, septicæmia, and puerperal albuminuria with convulsions. Vaginal haemorrhage during pregnancy is abnormal and should be investigated; its importance is not, however, generally recognized. Admission to hospital is advisable, as severe haemorrhage may follow examination. The question of Caesarean section must be decided quickly; if abdominal palpation and rectal examination indicate abdominal delivery, vaginal examination is inadmissible and very dangerous. The more nearly the patient has approached term the greater the probability that Caesarean section will be required. Abdominal rigidity and tenderness usually indicate laparotomy. If a preliminary vaginal examination is decided upon the most rigorous aseptic technique must be employed; too frequently the preparation of the patient is insufficient. Haemorrhage from a ruptured varix can only be discovered by the preliminary introduction of a vaginal speculum; the vaginal fornices should then be palpated, avoiding the cervix. If the presenting part is felt immediately, placenta prævia is not the cause of the haemorrhage, but if there is the characteristic boggy feel the uterus must be emptied. The cervix should not be dilated manually but by a large bag, or a careful external version

should be performed. Caesarean section is not always required; the patient must be uninfected and in good condition, and the child alive and apparently healthy. When the bleeding is due to a separated placenta the author recommends Caesarean section, even if the child be dead, unless the os is fully dilated. Post-partum haemorrhage can be largely obviated by correct technique and the use of pituitrin after delivery. If called to a case of severe haemorrhage, in the absence of sufficient assistance the obstetrician should pack the vagina lightly with sterile gauze. In puerperal septicaemia the majority of cases are infected from outside; very few patients are properly prepared according to modern surgical standards. The bowel must be emptied and the vulva and surrounding area shaved and sterilized. The author recommends preparation with ether and iodine or picro acid or mercuricbromo; unless the soap and water scrubbing is very carefully done there is danger of soiled water flowing into the vagina. Vaginal examinations should be made as seldom as possible, and a strict surgical technique observed. In cases of puerperal albuminuria and convulsions a careful medical supervision will practically eliminate eclampsia. All patients should be watched for symptoms of toxæmia. The blood pressure should be frequently estimated, as a slight rise, with or without albuminuria, must be regarded as the first sign of toxæmia; the patient should be seen at least once a week. Continued hypopnoeic requires rest in bed and eliminative treatment. Nausea, headache, and vertigo may indicate induction of labour. The author adds that the only way to lessen puerperal mortality from this cause is for every patient to have complete medical supervision during pregnancy.

#### 275. Pituitrin in Obstetrics.

M. L. MÜLLER (*Nederl. Tijdschr. v. Geneesk.*, March 6th, p. 945) since 1916 has employed pituitrin in 97 out of 732 labours, of which 70 occurred in primiparae and 27 in multiparae. Of the primiparae who were given injections of pituitrin for uterine inertia only three were under 23 years of age, twenty-six were between 23 and 29, and the remaining forty-one were above 29, eleven being over 35. In 24 cases labour lasted more than thirty-six hours, the longest period being five days. In 42 cases a single injection of half a cubic centimetre was given, in 24 cases two injections, and in 4 cases three injections. Not a single child was born within a quarter of an hour of the first injection, and only 3 within half an hour; 43 were born between half an hour and two hours later, and 24 between two and four hours, 10 of the last being forceps cases. None of the 70 children died and all the mothers survived. In multiparae secondary inertia was the chief indication for injection of pituitrin, and in only a few cases was the drug required for primary inertia. In 25 cases a single injection was sufficient, and only two patients required two injections. After the first injection twelve women were delivered within a quarter of an hour, sometimes after a single pain, and seven within half an hour. Five were delivered within one hour, and in only three did labour last longer than an hour after the injection. None of the children showed asphyxia, and labour was spontaneous in every case. Haemorrhage occurred in 28 of the 97 cases, but only in cases of primary or secondary inertia in which it would have occurred without pituitrin.

#### 276. Dystocia from Double-headed Fetus.

G. V. ZUR-MÜHLEN (*Zentralbl. f. Gynäk.*, June 5th, 1926, p. 1514) relates the case of a 2-para, aged 28, who, from the large size of her abdomen during the seventh month and at the commencement of labour, and from the signs present at the latter occasion, was thought to have twin gestation. A head was to be felt through an os admitting one finger, and a larger round hard body was palpable above the pubis abdominally. Twenty-four hours after commencement of labour the os was almost fully dilated, the waters had not broken, and the head was fixed with the sagittal suture transverse. After several attempts had failed the head was drawn down by forceps and the chin brought over the perineum, the foetus being at this stage alive; the impossibility of completely delivering after bringing down an arm led to suspicion of foetal malformation, but on account of the large size of the head complete pelvic exploration was impossible. At a Caesarean section the second head was removed, the foetus having died in the meantime, and the remaining parts, together with the placenta, were removed through the vagina. The uterus was removed and the patient recovered after a febrile puerperium. Decapitation of the first head and removal of the first-coming arm appeared to be contraindicated by the risk of rupturing the uterus; also the foetus at that stage was alive. Preservation of the uterus seemed to be forbidden by the danger of infection; at the termination of the vaginal portion of delivery the episiotomy wound had become a complete rupture of the perineum.

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## Pathology.

### 277. Intrapericardial Pressure as a Cause of Death.

C. S. WILLIAMSON and H. N. ETS (*Arch. Intern. Med.*, August 15th, 1925, p. 205) record results of an experimental study of the mode of action of therapeutic puncture in pericardial effusions. Notes of four cases of sudden death in uncomplicated pericardial effusion are given, and of fifty-four previously reported fatal cases of pericarditis with effusion in which puncture was not performed it is suggested that thirteen might have been benefited by the procedure. It is generally believed that circulation ceases when the intrapericardial pressure equals that in the cavity, but at present we have no ethical means of measuring these pressures. The authors' experiments on dogs to determine the relations between arterial, venous, and intrapericardial pressures in the presence of artificial pericardial effusions showed that a gradual rise in the intrapericardial pressure invariably resulted in raising the venous and lowering the arterial pressure, and that as the intrapericardial pressure approximated that which obtained in the vena cava, that is, the point at which the circulation stops, the rise in the venous and the drop in the arterial pressures became more noticeable. Clinically a steady fall in blood pressure, and especially a sudden increase in the rate of fall, indicate an increasing intrapericardial pressure and a near approach to the critical point calling for therapeutic puncture for its relief. In most instances the tracings showed that an increase in pressure sufficient to stop the heart was associated with recovery, even if only temporary. The authors conclude from these experiments that it is the intrapericardial pressure which is the real criterion of danger, and that this is proportionate to the rapidity with which the effusion develops and not to its extent.

### 278. Functional Pathology of Nephritis.

E. B. MAYNS (*Quart. Journ. Med.*, April, 1926, p. 273) endeavours to correlate the symptoms of nephritis and to find an explanation of their causes consistent with our present knowledge of the physiology of the kidney. The chief symptoms of hydraemic or chronic parenchymatous nephritis appear to be due to the lowering of the colloid osmotic pressure of the plasma, probably from loss of protein through damaged glomeruli, such pressure being unable to resist sufficiently the capillary blood pressure, thus allowing excess of fluid to be forced through the capillary endothelium into the tissues, with resulting oedema and tendency to blood concentration, as shown by an absolute increase in the globulin content of the plasma, and also by an increased corpuscle-plasma ratio. In azotaemic or chronic interstitial nephritis the tubule function of concentration is impaired, and in severe cases the total molecular concentration of the urine may never exceed that of the plasma, with the resulting failure of the tubule cells to overcome osmotic resistance. While many of the glomeruli retain their permeability it is impossible to determine whether a sufficient number remain in action to produce the normal amount of filtrate. Although the urea is always concentrated, the urine of advanced azotaemic nephritis never contains as much chlorides as the plasma, and the suggested explanation is based on the idea of an equilibrium at an osmotic resistance which the tubule cells cannot overcome, and at which normal reabsorption can no longer proceed and undesired substances commence to diffuse back through the tubule cells.

### 279. Determination of the Specific Gravity of a Small Quantity of Urine.

J. KIRKPATRICK and D. H. KLING (*Journ. Amer. Med. Assoc.*, August 14th, 1926, p. 487) describe a method of determining the specific gravity of urine when only a few drops are obtainable, as for example after ureteral catheterization. In arometer jar carbon tetrachloride and xylene are placed in the proportion of 1 to 3.5 and mixed thoroughly by stirring, a useful stirring rod being an ordinary applicator stick. The resulting specific gravity will be 1.020 at a temperature of 77° F. For each degree fall in temperature there is added to the urometer reading 0.0005 degree and vice versa; that is, for each 2 degrees rise in temperature, the standard urometer scale is to be read 0.001 degree lower than it appears. A drop of urine is let fall into this mixture. If the drop sinks to the bottom its specific gravity must be higher than the mixture and lower if it floats. The specific gravity of the mixture is increased in the former case by adding carbon tetrachloride, and decreased in the latter by adding xylene, slowly and with adequate stirring, until the drop of urine neither rises nor falls. The reading on the urometer scale will then be equivalent to the specific gravity of the urine after the necessary corrections for temperature differences have been made. Correct results are said to depend entirely on adequate stirring of the mixture and on temperature corrections.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

250.

### Diabetic Xanthomata.

A. CHAUFFARD and P. BRODIN (*Bull. et Mém. Soc. Méd. des Hép. de Paris*, June 24th, 1926, p. 1003) report the case of a fat man, with a large appetite normally, who in 1920 developed increased hunger and thirst, further obesity, and loss of strength. In 1921 xanthomata appeared on the limbs; they were few and discrete at first, but later increased in number and became confluent. In 1923 a diagnosis of diabetes of syphilitic origin was made, the Wassermann reaction being positive, and two courses of novarsenobillon cured the xanthomata. When the authors saw him shortly afterwards the xanthomata had recurred on the limbs, the blood sugar figure was 1.75 grams, cholesterolin 9.72 grams, and the total fat 82 grams. After six weeks' insulin treatment the xanthomata had vanished and the blood showed glucose 1.25 grams, cholesterolin 2.88, and total fat 13.20. In July, 1925, the xanthomata reappeared and the lipaemia was 56 grams, reappearance of the skin lesions being associated with increase in the lipaemia, and cholesterolin; treatment with insulin caused the disappearance of the nodules and lowering of the two latter. Throughout this period there was no glycosuria and only very slight raising of the blood sugar level, whereas there was considerable variation in the lipaemia level. A certain amount of dieting was associated with some but not all courses of insulin. The authors deduce that treatment by insulin should be associated with a diet low in fats and carbohydrates but fairly rich in albuminous foods. When the blood fat was between 40 to 50 grams and the cholesterolin between 5 to 6 grams the xanthomata appeared; below 30 grams and 5 grams respectively the nodules disappeared, suggesting the presence of a threshold for lipid deposition in the tissues. They consider that insulin has a beneficial action on the fat in circulation and also on that deposited in the tissues, when given in large doses (30 to 50 units); also that the internal secretion of the pancreas, like the external, has both amyolytic and lipolytic actions.

231.

### Subacute Endocarditis.

A. KROPVELD, JUN. (*Nederl. Tijdschr. v. Geneesk.*, July 3rd, 1926, p. 25), who records an illustrative case, states that subacute endocarditis (endocarditis lenta), of which the clinical picture was first described by Osler, was shown by Schottmüller to be due to *Streptococcus viridans*. The majority of cases run a fatal course. Kropveld's patient was a woman, aged 42, who for the previous two years had been treated by four ecologists for relapsing otitis. There was no history of articular rheumatism. Finally, a diagnosis of mastoiditis was made, but nothing abnormal was found on operation. The temperature was irregular and there was marked anaemia. Although examination of the heart revealed nothing beyond an occasional extrasystole, *Streptococcus viridans* was cultivated from the blood, and rapid recovery followed the injection of an autogenous vaccine. When seen five months after discharge from hospital the patient had resumed her work as a teacher and showed no symptoms, except a slight impairment of hearing.

282. W. L. BIERING (*Journ. Amer. Med. Assoc.*, August 14th, 1926, p. 464) states that this condition is a distinct disease entity, and must be distinguished from endocarditis accompanying acute or subacute rheumatism, acute ulcerative or acute malignant endocarditis, and endocarditis occurring as a terminal event in chronic disease; the term subacute should be applied to cases lasting three months or longer. A pre-existing valve lesion is essential for the production of this form of endocarditis, the chronically injured valve affording a predisposing site for the new infection; since this is almost exclusively a disease affecting adults, the valves on the left side of the heart are chiefly involved. The commonest cause of the valvular lesion is acute rheumatism; syphilis and scarlet fever are less frequent, while arterio-sclerosis is rare. Since the war trench fever, gonorrhoea, and influenza have assumed a causative importance. The infection is caused mainly by two micro-organisms—the *Streptococcus viridans* and *D. influenzae*. The causal microbe always has the common characteristic of low virulence, with no tendency to pyogenic effects, and the blood is often free from bacteria for long periods. The course often extends over one or two years, and presents a distinctive clinical picture. The onset is insidious, and is characterized by lassitude, vague pains, headache, vertigo, and cough; a diagnosis of tuberculosis,

mild sopsis, subacute rheumatism, malaria, or typhoid is often considered. The main clinical symptoms may be divided into an early period, expressive of a low grade infection, and characterized by fever, anaemia, exhaustion, and enlarged spleen, and a later period, when symptoms due to endocardial changes arise, such as petechiae, tender cutaneous nodes, clubbing of the fingers, vascular embolism, purpura, and renal phenomena; cardiac symptoms are singularly rare. The patient usually succumbs to the progressive anaemia and exhaustion; pulmonary and visceral congestion with uraemia and coma are the terminal complications. The prognosis is grave, very few cases of recovery having been reported. A successful or specific form of treatment has yet to be discovered; vaccine therapy has been tried, but with little success. Blood transfusion, immuno-transfusion, and treatment with a large number of drugs, principally the colloidal metals, have proved of small value. As arsenic is retained for a long period in the serum, and as it inhibits the growth of low-virulent streptococci, intravenous injections of large doses of sodium cacodylate have been administered with some good effect. Biering joins Horder in advocating preventive measures, and emphasizes the need of keeping the vitality at its highest, of promoting immunization in every possible way, and of preventing acute infections.

### 283. Prophylaxis of Varicella with Yestice Fluid.

R. M. GREENTHAL (*Amer. Journ. Dis. Child.*, June, 1926, p. 851) inoculated 36 persons against varicella with the contents of a fresh vesicle which were expressed from a capillary tube on to the forearm, and forty to fifty incisions were made through the fluid into the epidermis without drawing blood. Successful inoculation was shown by the appearance of a papule between the eighth and thirteenth day at the site of inoculation. The papule rapidly changed into a vesicle and the vesicle into a crust which later dropped off, leaving a scar resembling that left by small-pox vaccination. Of the 36 inoculations 19 were successful, 16 were failures, and one patient left hospital before the eighth day. No cases of varicella developed among those who had been inoculated either successfully or unsuccessfully. It was impossible to be sure that these patients had never had varicella before, because the history is often unreliable. Greenthal considers, however, that the results are sufficiently encouraging to justify further trial of the method.

### 284. Diagnosis of Thyroid Syndromes.

M. LABBÉ (*Presse Méd.*, August 14th, 1926, p. 1025) remarks that besides typical cases of myxoedema and Basedow's disease there are many atypical cases in which diagnosis is very difficult. At the beginning of a tuberculous exacerbation the palpitation, tachycardia, emaciation, slight enlargement of the thyroid, and slight temperature so simulate the commencement of an exophthalmic goitre that diagnosis is often very uncertain, and must depend on physiological tests and biological reactions. In myxoedema the reaction to treatment with either fresh or dried thyroid gland is often decisive. Quinine and adrenaline have also been used, and Labbé favours the use of the latter, the symptoms produced by it in Basedow's disease being acceleration of the pulse, inversion of the oculo-cardiac reflex, and an increase in the hyperglycaemic reaction; these are fairly constant. In all physiological tests the chief characteristic is the measure of basal metabolism, there always being an increase of organic oxidation in cases of Basedow's disease, and a diminution in myxoedema, mental conditions, and in lesions of the alimentary tract. In cases of obesity and emaciation Labbé asserts that it is always advisable to test the activity of the thyroid as this gland governs nutrition; he insists that physiological tests, and chiefly that of basal metabolism, afford the only means of diagnosis in diseases of the thyroid.

285.

### Exophthalmic Goitre.

B. J. SANGER (*Arch. Intern. Med.*, May 15th, 1926, p. 627) gives an account of 50 cases of exophthalmic goitre treated with x-rays and kept under observation for several years, clinical examinations and estimations of the basal metabolism rate being made at frequent intervals. The average number of x-ray treatments required was ten, with a maximum of twenty-seven and a minimum of three. Improvement in symptoms was usually rapid, the patients feeling distinctly better and less toxic. A tendency to gain in weight, often before there had been any fall in the basal metabolism, and disappearance of nervousness and sleeplessness, were among the early signs of improvement; in early cases palpitation



and tachycardia quickly disappeared, though they were more persistent in cases of longer standing. Of his 50 patients 41 became and remained cured, and of the remainder 3 were improved, 4 were operated upon, and 2 were lost sight of. The treatment rarely caused any discomfort, and the majority were treated as ambulatory patients with advice to rest as much as possible and to take a high caloric diet, only those with severe myocardial symptoms being ordered complete rest. Sanger concludes that the treatment is safe and satisfactory, and offers a high percentage of cures.

#### 288. Antityphoid Inoculation by Mouth.

A. LUMIÈRE (*Paris Méd.*, June 12th, 1926, p. 552) states that the causes of the occasional failure of antityphoid inoculation by mouth may be divided into two groups—namely, (1) causes common to all methods of treatment, and (2) those peculiar to the special technique employed. Whatever method is used, the specificity, doses, virulence, and individual reaction all help to modify the degree of efficacy of the immunization, which must not always be regarded as certain and absolute. For this reason antityphoid vaccination, whatever route is followed, should not be regarded as rendering unnecessary all the hygienic precautions used by non-immunized persons. In the case of inoculation by the gastro-intestinal tract it is not possible to be certain always of the entrance of the typhoid and paratyphoid bacilli into the system. In exceptional cases it may happen that the capsules containing the vaccine pass through the intestine without being broken up. This does not occur in persons whose digestive functions are normal, but is only met with in those whose digestion is upset by insufficiency of glandular secretions, exaggerated peristalsis, gastro-intestinal fistula, or any other cause. Apart from other benefits the oral method has the advantage of always being harmless, whereas infectious sometimes entail more or less severe complications, being followed by pains, fever, and polymorphous eruptions. Lumière adds that the addition of bile to vaccine taken by the mouth is useless, in view of the fact that the few centigrams of dried bile are extremely slowly diffused through an intestine which normally receives 800 to 1,000 c.c. of bile. Such diluted bile has been shown, moreover, to have no action on the intestinal mucous membrane.

#### 287. Epidemic Encephalitis and Infantile Convulsions.

F. GLASER (*Monatsschr. f. Kinderheilk.*, June, 1926, p. 289) records five cases of epidemic encephalitis associated with convulsions in children between the first and third years of life which he had observed during the outbreak of encephalitis and influenza at Breslau from 1921 to 1923. All showed typical drowsiness and signs of meningeal irritation, and in one case myoclonic movements. Three patients made a complete recovery, and two had more or less severe permanent nervous impairment. Glaser suggests the name of "encephalitis epidemica meningitica seu convulsiva" for these cases, as they represent a group of convulsions of unknown origin. Epidemic encephalitis should therefore be regarded as another cause of infantile convulsions. The cases which Glaser has described form a transition between serous meningitis and epidemic encephalitis, especially in one case where the clinical symptoms suggested tuberculous meningitis or serous meningitis, and the diagnosis of epidemic encephalitis was first established by the examination of the cerebro-spinal fluid.

## Surgery.

#### 288. Bier's Treatment of Sinuses.

H. ECKSTEIN (*Zentralbl. f. Chir.*, July 17th, 1926, p. 1834) has employed Bier's congestion treatment in a number of cases and reports four in which it was successful. The first was in a patient who had a sinus in the abdominal wall after an operation for removal of fat for plastic purposes. A Bier's cup was applied for a quarter of an hour for three or four days, when some gauze appeared in the sinus. A plug of gauze about the size of a walnut was then readily extracted with forceps, and the sinus closed on the following day. The second case was that of a patient who had a sinus in the abdominal wall following an operation for appendicitis one year previously. After several days' treatment with a Bier's cup the end of a very thick ligature appeared. On gentle traction the whole ligature, measuring from 10 to 20 cm., was drawn out, and the sinus immediately closed. In the third case the sinus following an abdominal operation closed after two applications of the cup, although no foreign body was found. In the fourth case also a sinus over the left external malleolus due to a gunshot wound healed after two applications, although no foreign body was discovered. No bad effects followed the treatment, which only occasionally required a little patience.

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#### 289. Scarlet Fever after Surgical Operations.

ACCORDING to B. R. LOWETT (*Journ. Amer. Med. Assoc.*, July 10th, 1925, p. 96), scarlet fever is not an infrequent sequel of operations on the nose and throat. The patient may harbour the organisms in the nose or throat previously, but be able to escape infection until an open wound allows them to invade the tissues in large numbers. The operation may facilitate infection from outside, either from a person suffering from scarlet fever or a carrier of scarlatinal streptococci. Of 43 cases classified as surgical scarlet fever between 1902 and 1925 at the Durand Hospital, Chicago, 20 followed operations, 13 of which were on the nose and throat. Of these 7 were operations for cleft palate, 2 resections of nasal septum, and 4 tonsillectomies. The interval between the operation and the first symptom of scarlet fever was two to four days. All the patients had typical scarlet fever, mostly of the septic type. Complications were unusually numerous. In most of the cleft palate cases there was sloughing of the tissues and imperfect closure of the defect; one patient operated on for cleft palate and hare-lip died. There are numerous examples on record of scarlet fever following tracheotomy, and one case each after removal of a tumour of the jaws and of papilloma of the tongue.

#### 290. Gastro-Jejunal Ulcer.

D. C. BALFOUR (*Annals of Surgery*, August, 1926, p. 271) asserts that recurrence of ulceration may follow any operation for peptic ulcer, including partial gastrectomy, and that the hypertonc type of individual is prone to recurrence of ulceration. The condition is only rarely seen in women, and usually follows operation for duodenal ulcer. In more than half the cases recurrence of symptoms occurred within a year of the primary operation. The treatment, according to Balfour, depends on the conditions found at operation. If the duodenal ulcer is healed the simplest and most rational procedure is to disconnect the anastomosis and excise the gastro-jejunal ulcer. If this is impossible, owing to scarring or other reasons, the simplest procedure is to disconnect the anastomosis, excise the ulcer, and perform partial gastrectomy. The symptomatic results following partial gastrectomy for gastro-jejunal ulcer are said to justify the operation fully. Complete relief of symptoms follows in 85 per cent. of cases, whilst the mortality is only 3 per cent. Balfour maintains that the incidence of this condition, after a properly performed gastro-enterostomy, in well selected cases, is about 2 per cent. When it occurs an immediate secondary operation is necessary.

#### 291. Statistics of Goitre Operations.

G. FIEDLER (*Deut. Zeit. f. Chir.*, August, 1926, p. 82) states that from April, 1896, to April, 1925, operations were performed on 266 patients with goitre in the Magdeburg-Alsadt hospital; 24 were males and 242 females. The right side was principally affected in 72 cases, the left in 63, the middle lobe in 15, and both sides in 115. In 3.3 per cent. there was a well marked retrosternal goitre. In 30 cases in females there were typical symptoms of Graves's disease. The pathological findings were as follows: typical colloid goitre, 192 cases (72.1 per cent.); cystic goitre, 30 cases (12 per cent.); parenchymatous goitre, 34 cases (12.7 per cent.); malignant goitre, 6 cases (2.2 per cent.); vascular goitre, 3 cases (1 per cent.); thyroiditis, 1 case. The ages of the patients ranged from 1 to 80. Most of the male cases occurred between the ages of 15 and 20, and most of the female cases between the second and the fourth decennium, 11.3 per cent. developing during pregnancy or the puerperium. There was an hereditary history of goitre in 7.1 per cent. of the female cases, but there was no history of this kind in the male cases. The total mortality was 14 cases (5.2 per cent.), but of the patients with simple goitre only 3 (1.3 per cent.) died, death being due to air embolism in two cases and to cardiac failure in one case.

#### 292. Wound Complications.

L. K. FERGUSON (*Therapeutic Gazette*, August 15th, 1926, p. 541) has collected a series of 757 clean operation cases which were not primarily infected and required no drainage. Wound complications occurred in 7.9 per cent. and were responsible for a loss of one hospital bed for three-fourths of each year. They arose more frequently after inhalation than after local anaesthesia and in operations lasting more than half an hour, in which latter they were more serious. Wound complications occurred in 11.8 per cent. herniorrhaphies, with infection in 8 per cent.; in 6.2 per cent. gridiron incisions, with infection in 2.2 per cent.; in 47.5 per cent. right rectus incisions, with infection in 27.5 per cent. Serum collections and fat necrosis were noted in 2 per cent. of clean wounds, starting on the fifth to the tenth day, and delaying the patient's recovery by a day or two. Haematomas occurred in 1.3 per cent. and appeared from the second to the fifth day, retarding the patient less than five days. Wound infections occurred



In 4.6 per cent., commencing on the second to the fifth day, with an average consequent delay of 10.8 days. Ferguson concludes that such complications most frequently follow prolonged operation exposure and trauma of the tissues, and in upper right rectus incisions in which it is difficult to humiliate effectively the wound edges owing to respiratory movements and changes in posture. Incomplete haemostasis, and the occurrence of dead spaces when incisions are closed under tension, are other factors in the causation of complications. Among preventive measures suggested are: (1) the use of a fresh scalpel after the skin incision, in order to prevent carrying infection to the deeper layers; (2) care in obtaining complete haemostasis, in order to prevent oozing after the wound is closed; (3) making sufficiently large incisions to reduce the damage due to retraction; (4) the application of wound gauze covers as soon as the incision is completed, in order to decrease trauma and exposure; (5) the prevention of dead space by inserting silk worm gut tension sutures; (6) closing the wound with clips to insure good approximation and to avoid puncturing subcutaneous vessels; and (7) the application of light adhesive dressings to immobilize the wound as much as possible.

### 233. Accessory Spleen in Congenital Inguinal Hernia.

H. FINLAY (Nederl. Tijdschr. v. Geneesk., July 24th, 1926, p. 337) reports an example of this condition in an infant. The left testis appeared to be almost twice as large as the right, and of an entirely different shape. The processus vaginalis was found to be open and the testis was present in the hernial sac. The upper part of the epididymis showed a round swelling the size of a bean, of a brownish-blue colour, and covered with peritoneum; this swelling was found to consist of typical spleen tissue. The author has traced only one similar case, that reported by Suenli, in which an accessory spleen simulating a third testis was connected with the primary spleen by fine cords. Finlay suggests as one explanation of his case that the rudiment of the spleen was situated in the epididymis, before the descent of the testis occurred. A second explanation which appears to him to be more likely is that the rudiment of the spleen became implanted in a fold of peritoneum, which later became the processus vaginalis.

### 234. Traumatic Perforation of the Appendix.

R. GUTZERT (Zentralbl. f. Chir., July 31st, 1926, p. 1945) has collected a number of reports of this unusual injury and describes the case of a boy, aged 14, who was kicked in the right iliac fossa, was ruptured by flatus or faecal matter forced into the appendix by the kick, the thinner wall of the appendix being the point of least resistance. Faecal extravasation occurred, followed by symptoms of severe peritonitis. The author states that perforation of the appendix may occur in the course of gangrenous appendicitis; by the entry of a pointed or angular foreign body which has passed into the lumen of the appendix; by ulceration of the serous coat of the appendix by a peripendicular abscess; and by traumatic laceration of the appendix in the course of an abdominal injury. In traumatic perforation of the appendix there may be perforation from the serous to the mucous coat, bursting of the appendix wall as the result of compression by the caecum, bursting of the appendix through torsion or kicking, especially when adhesions are present, or laceration of the appendix by fragments of a fractured os innominatum. Gutzert considers that traumatic perforation of the appendix should be clearly distinguished from traumatic appendicitis following a lesion of the mucosa of the appendix, which permits bacterial invasion of the submucous tissues; traumatic perforation is usually due to an injury of the peritoneal coat.

## Therapeutics.

### 235. Treatment of Pneumococcal and Streptococcal Meningitis.

J. A. KOLMER (Arch. Otolaryngol., June, 1926, p. 481) has studied the treatment of artificially induced meningitis in rabbits, rats, and dogs. Ethylhydrocuprein hydrochloride and mercurochrome were injected intraspinally, intracisternally, subdurally, and intravenously without effect, the treated animals dying as quickly as the untreated controls. Gentian violet, acriflavine, and rivanol were next tried and were injected in the same ways, but with the same disappointing results. In the cases of ventricular injection of gentian violet, however, the injected ventricles were found at necropsy to be deeply stained and free from pns, indicating a local bactericidal effect. The same negative results followed the injection of antistreptococcal serum by the above mentioned routes, but slightly better results were obtained by

injection of antibody solution. When, however, this was combined with lavage of the subarachnoid space the results were very good. Lavage alone, with warm saline solutions, from the ventricles to the cisterna magna saved a number of dogs infected with a haemolytic streptococcus and Type I pneumococcus. In some instances lavage of one ventricle was sufficient, but recoveries followed lavage of either one or both, although the latter is a more severe treatment necessitating the trophing of both sides of the head. Kolmer thinks that lavage from the cisterna magna to the lumbar region of the spinal subarachnoid space will probably prove helpful, but it was not found necessary in the treatment of dogs. He believes that continuous drainage from the cisterna magna or lumbar subarachnoid space will still further improve results and furnish a method of value in the treatment of septic meningitis in human beings.

### 236.

### Treatment of Neuro-syphilis.

H. A. BUNKER, jun. (Amer. Med. Journ., June, 1926, p. 1815), observes that it is often difficult, and occasionally impossible, to make a differential diagnosis between syphilitic and parenchymatous types of symptoms are present clinical examinations of the spinal fluid may not be of value. From the standpoint of treatment he holds, however, that this distinction is of much less importance than the necessity of controlling therapeutic measures with repeated examinations of the spinal fluid. While the findings in the cerebro-spinal fluid remain positive in spite of the disappearance of clinical symptoms, it cannot be concluded that a satisfactory therapeutic conclusion has been reached, and the particular line of treatment employed should therefore be changed or intensified. He suggests that malarial treatment is especially valuable in such intractable cases because, unlike specific methods, it does not involve a long period of time and may prevent the onset of paresis.

### 237. Combined Oral Administration of Insulin and Saponin.

F. LASCH and S. BRÜGEL (Wien. klin. Woch., July 8th, 1926, p. 817) have been investigating the action of saponin on the alimentary tract; it has previously been shown that these increase the absorptive capacity of the gut for certain drugs, such as algitoxin and strophanthin, when given in combination with them. The authors have now tested their effect when given with other drugs, such as calcium and grape sugar, and in both cases there was increased absorption; they report also their results with insulin. With insulin doses of 10-20 units only they combined pure white saponin (Merck) 0.5 gram in saline solution; the two substances were swallowed with a little water. Neither of these preparations when given alone had had any appreciable effect on the blood sugar, but in combination the result was as follows. Half an hour to one hour later the blood sugar began to fall; it reached its lowest point in about three hours and returned to the normal in about seven hours. In one acute case of diabetes the blood sugar fell from 0.2 gram per cent. to 0.13 per cent. in four hours. There were no toxic symptoms in any cases. The authors think that this method will make possible the ideal dosage in insulin treatment—namely, the giving of small quantities at frequent intervals.

### 238. Causes of Failure in Cardiac Medication.

R. GIROUX (Paris Méd., July 3rd, 1926, p. 28) remarks that although the remarkable action of digitalis and of ouabain in various forms of cardiac failure is well known, there are certain cases in which these drugs have only a transient, or even a negative, effect on the progress of the disease. The failure may be due to some cardiac defect, the improper prescription of digitalis and ouabain, derangements of the alimentary tract, pleural or peritoneal effusions, or to anasarca which blocks the action of cardiac tonics. Other causes of failure are acute cardiac rheumatism, myocarditis, secondary endocarditis in chronic heart disease, adhesive pericarditis, cardiac failure in scoliosis and other thoracic deformities, pulmonary arterio-sclerosis, chronic pulmonary lesions, and cardiac failure with regular pulse. In addition to these causes there may be sudden irrecoverable heart failure, a special form well described by Vaquez. These considerations must be remembered in making a prognosis. Treatment may be ineffective or badly tolerated; complications occur and the patient dies, usually within a year of the onset of symptoms of heart failure, without any evidence of modification or temporary arrest of the progress of the disease: the heart's action remains rapid but regular, especially in cases of mitral or aortic valvular disease. In the former arrhythmia usually occurs sooner or later, and digitalis administered every month gives relief. It is quite otherwise when the rhythm is regular. In certain cases of aortic valvular disease the extreme hypertrophy of the left

ventricle interferes with the normal action of the right ventricle. The result is a dilatation with hypertrophy of the right auricle; usually the rhythm remains regular, in spite of the progress of the disease. In these cases the most desirable event would be the occurrence of complete arrhythmia, which might then be relieved by treatment. The action of digitalis on the sinus is so feeble that it cannot reduce the pulse rate, but Giroux finds that its powerful effect on conductivity is most evident in complete arrhythmia. This is also true of enabain, which acts so powerfully and quickly in sudden cardiac dilatation, especially of the left ventricle. Surgical treatment of pericardial and pleural adhesions offer some prospect of relief which therapeutic measures cannot give. The author adds that surgery in future may aid in the treatment of the "hunchback's heart," and of the hypertrophied rheumatic heart, in young patients.

### 299. Purified Diphtheria Antitoxin.

G. RAMON (*Presse Méd.*, March 13th, 1926, p. 323) has prepared a diphtheria antitoxin and a tetanus antitoxin which have been purified by isolation of the pseudoglobulin from the protein. Their employment on a large scale in various Paris hospitals has shown that even in the treatment of diphtheria, in which large doses of serum are required, the incidence of serum sickness has been reduced, and its manifestations have been less grave than after the use of ordinary antitoxin. When purified serum was employed prophylactically the serum manifestations either did not occur at all or were very slight and transient, even if the individual had been sensitized by a previous injection. Thus among 150 children who received prophylactic injections of purified diphtheria antitoxin Lissé did not observe a single instance of serum sickness, and the same was found true in the case of tetanus antitoxin. Ramon has prepared a purified serum in which there is only a tenth part of the protein matter contained in ordinary tetanus antitoxin, though its antitoxic value is the same or higher. Moreover, the use of an antitetanic serum of high antitoxic value gives better results when tetanus has actually developed, and the size and number of the doses can be diminished.

330. L. JANVIER (*Thèse de Paris*, 1926), who records nine illustrative cases, states that Ramon's serum has the advantage of being half the bulk of ordinary serum though its therapeutic value is the same. Prophylactic injections in doses ranging from 1,000 to 4,000 units gave rise to mild and transient rashes in only 0.96 to 1.3 per cent. of the cases, whereas ordinary serum produces much more severe rashes in from 15 to 20 per cent. When used in the treatment of moderate and severe cases the purified serum caused only slight symptoms, such as erythema and urticaria, in 35 per cent., whereas the ordinary diphtheria antitoxin gave rise to symptoms which were often severe in from 35 to 70 per cent. Janvier adds that although serum sickness is still fairly frequent after the use of purified diphtheria antitoxin the milder character of the symptoms constitutes a considerable therapeutic progress.

### 301. Serum Treatment of Anthrax.

SCHUERMANS and VAN DER BEKEN (*Le Scalpel*, May 15th, 1926, p. 429) allude to the statistics of anthrax published in 1914 by Perrin and Modat relating to the hospital at Saint-Denis, which is an important centre for tanning and leather dressing. Whereas from 1875 to 1890 the mortality among seventy-two cases was 14 per cent., and among forty-seven cases from 1897 to 1904 10 per cent., the mortality among eighty-three cases treated by serum between 1905 and 1908 fell to 3.6 per cent., and there was not a single death in thirty-nine cases so treated between 1909 and 1911. They record the case of a man, aged 25, who was employed in a factory for carrying sacks. Serum treatment was instituted on the day after the appearance of a wound on the back of the neck, which was diagnosed as a malignant pustule from its clinical and bacteriological appearances. In the course of eight days he received 260 c.cm. of serum, of which 75 c.cm. was given intravenously and 185 c.cm. intramuscularly, followed by local applications of serum which seemed to hasten the separation of the slough. A sharp serum reaction followed, and complete recovery resulted.

### 332. Treatment of Uraemia in Children.

ACUTE nephritis in children, according to K. D. BLACKFAN (*Bull. Johns Hopkins Hosp.*, August, 1926, p. 69), differs from that of adults in that acute forms are far more common than chronic. In a series of forty-six cases only five were chronic, the forms most frequently encountered being the acute glomerular and the acute tubular. Increased arterial tension and the development of uraemic symptoms are characteristic of the former, whereas generalized oedema without rise in blood pressure is the outstanding feature of the latter. In

acute glomerular nephritis red blood cells are the conspicuous finding in the urine, the plasma protein is normal, and the non-protein nitrogen tends to increase in the blood; in the acute tubular form large amounts of albumin and lipid substances are found in the urine, the plasma protein is low, and the non-protein nitrogen in the blood is normal. Patients in the uraemic stage of acute glomerular nephritis were treated with intravenous injections of a 1 per cent. solution of magnesium sulphate and administrations of large amounts of magnesium sulphate by the mouth and rectum. Blackfan finds that the intravenous injections should be given slowly at the rate of 2 c.cm. per minute, the fall in blood pressure during the procedure being the best index as to the total amount to use. The good effect of this lasts from five to twelve hours, after which a rise in blood pressure with a return of the alarming symptoms can be expected; these are best combated by the administration of 1 to 1½ oz. of a 50 per cent. solution of magnesium sulphate by mouth every four or six hours, and 2 to 3 oz. of the same solution by the rectum every six hours. Excessive dehydration should be avoided. The author asserts that intracranial tension resulting from oedema of the brain is probably the causative factor of the symptoms in this form of uraemia and that arterial hypertension is probably the result of increased intracranial pressure.

## Ophthalmology.

### 303. Metastatic Carcinoma of the Choroid.

C. A. CLAPP (*Amer. Journ. Ophthalmol.*, July, 1926, p. 513) describes two cases of this condition, and reviews the literature in which 116 cases have been previously recorded. Metastatic carcinoma in this site occurs most frequently after breast cancer, but it has also followed primary carcinoma of the lung and less frequently of the stomach, thyroid, liver, and rectum. It may therefore be medullary, sclerous, or adenomatous in type. It appears usually in the left eye, possibly in consequence of there being a more direct blood supply on this side. In one-third of the cases it was bilateral. The average duration of life after discovery of the disease in the eye was eight months.

### 331. Air Bubbles in the Vitreous.

R. FOSTER MOORE (*Brit. Journ. Ophthalmol.*, August, 1926, p. 418) describes a case of air bubbles in the vitreous; the globe had been punctured one-third of an inch behind the limbus by a stool fragment. On examination with the ophthalmoscope two air bubbles were seen floating about in the vitreous. The foreign body was removed with a giant magnet and next day the air bubbles had disappeared. Foster Moore states that to cause this condition the foreign body must enter the vitreous directly and not pass through the anterior chamber. The bubbles must be looked for within a few hours of the injury; in many cases they are multiple, appearing like a string of toy balloons of various sizes in contact with each other. They are quickly absorbed.

### 335. Ocular Findings in Addison's Disease.

A. L. BROWN (*Amer. Journ. Ophthalmol.*, June, 1926, p. 409) describes a case of Addison's disease in which a complete ophthalmological examination was made. The sclera were clear except for two dark spots near the limbus in each eye. The pupils were dilated and reacted readily to light, but only producing a miosis of 3½ mm. There was a marked difference between the calibre of the veins and arteries of the fundus, the veins being large and the arteries small. Around each macula and the disc there was a zone of pigment. These zones were joined by a thin pigmented strip running between the disc and macula. Both eyes were definitely hypotonic; with the Schiötz tonometer the tensions were found to be 14 in the right and 12 in the left.

### 305. Subconjunctival Echinococcus Infection.

G. R. HARE (*Arch. Ophthalmol.*, July, 1926, p. 367) describes a case of subconjunctival echinococcus infection. The patient, a woman aged 20, had complained of a gradually enlarging growth on the left eye during the previous two months. Examination showed a greyish cystic tumour, about the size of a pen, situated over the insertion of the internal rectus muscle. The cyst was excised through a conjunctival incision, and pathological examination confirmed its nature. Echinococcus infection of the ocular area has been fairly frequently observed, but chiefly in the orbit; a few cases of subretinal echinococci have been reported. In this case, on account of the superficial position, direct infection was considered, but would have required removal of the shell or its digestion by the tears. It was thought that most probably the embryo passed to its site through an exceptionally large muscular arterial branch.

Obstetrics and Gynaecology.

Pregnancy and Myomata.  
J. J. Cole, May, 1926, continued

338. LANTIEROUL (Bull. Soc. d'Obstet. et de Gynécol. de Paris, June, 1926, p. 349) describes a case of intraperitoneal pregnancy during the puerperium caused by uterine inversion, the tumour, which was of the size of the fist, being situated in the neighbourhood of the left cornu, with a large effusion of blood and a living child of medium size in the neighbourhood of the fundus, and vomiting and abdominal pain and diarrhoea.

203. A. ECKE (Zentralbl. f. Gynäk., June 26th, 1926, p. 1688) records the case of a woman aged 35 who had suffered for several years from menorrhagia, and whose pregnancy terminated twelve hours after the onset of pain. The placenta was very difficult to remove, and the woman who delivered the child twelve hours after the onset of pain.

Abnormal Labour.  
Journ. of Aug.

310. **Abnormal Labour.** *Abnormal Labour, July 3rd, 1909.*  
 MARY C. DEGARIS (Med. Journ. of Australia, July 3rd, 1909).  
 After a normal labour as usual in which the uterine con-  
 tractions were efficiently, leading in a short time  
 to the birth of a healthy baby and mother. She cites  
 the case of a healthy mother. The interpretation and  
 conclusion are concluded.

**MEDICAL LITERATURE.**

**Pernicious Vomiting in Pregnancy.**  
and A. GALT, GASPARRON (Paris)  
work that in cases of and treatment

[illegible]

**Premature Detachment of the Placenta.** 7  
 Amer. Journ. Obstet. and Gynecol., 7  
 cases of premature detachment  
 He states that pure  
 which the  
 and

W. E. WELZ (Austria) reports eight cases of placental abruption in which the placenta was normally situated posteriorly. He says that such cases, as distinguished from those in which the placenta is of toxicemic origin, are rare and haemorrhage is of toxicemic cases with albuminuria. He is of the opinion that such cases are susceptible of effective treatment by vaginal delivery. He recognizes two types of toxicemic cases with albuminuria. The first is the dangerous one, as shown clinically by tenderness of the uterus with almost universal myometrial haemorrhages and severely toxic cases. The second variety is the less dangerous one in which the uterine contents are not tender and the bleeding is controllable by treatment. In this type Porro section appears to be the only successful mode of treatment. The second variety is the less dangerous case in which the uterine contents are not tender and the bleeding is controllable by treatment. In this type Porro section appears to be the only successful mode of treatment. The second variety is the less dangerous case in which the uterine contents are not tender and the bleeding is controllable by treatment. In this type Porro section appears to be the only successful mode of treatment.

## Pathology.

### 313. The Epidemiology of Pneumonia.

J. P. POWELL, R. M. ATWATER, and L. D. FELTON (*Amer. Journ. Hygiene*, July, 1926, p. 570) have made a study of the distribution of pneumococci in the throats of a sample population in Boston. The volunteers, ninety-three in number, consisted of schoolboys, medical students, laboratory workers, and hospital nurses, of whom none had apparently come into contact with cases of pneumonia more frequently than the general population. The examination continued from September, 1923, to March, 1924. After preliminary cleansing of the mouth the patient was instructed to gargle with 30 c.cm. of saline; the washings were then centrifuged for one hour, and the sediment injected into the peritoneal cavity of a mouse. Six hours later fluid was withdrawn and used for preparing cultures and studying the morphology of the organisms. The standard taken for a pneumococcus was a Gram-positive, capsulated diplococcus, bile-soluble, fermenting inulin, and in the case of the fixed types agglutinating with specific serum. The virulence was tested by injecting 0.5 c.cm. of a 1 in 100, a 1 in 10,000, and a 1 in 100,000 dilution of an 18-hour broth culture into mice. Strains that failed to kill in the lowest dilution were regarded as avirulent. Of the ninety-three persons who were examined monthly all but four carried pneumococci at one time or another; 44 per cent. had a fixed type, while 56 per cent. had either no pneumococci or Type 4 cocci. In three instances three different types were recovered from the same patient. There appeared to be a definite seasonal fluctuation in the presence of pneumococci in the throats; this held good for all types. The maximum percentage of positive findings was in September and in January; in November the fixed types practically disappeared. Figures show that the maximum mortality from pneumonia in the population of Boston was in December and March; that is to say, the maximum incidence of pneumococci in the throat—judging by the sample population—was reached about two months previous to the maximum mortality from pneumonia. Experiments indicated that the fixed types did not remain in the throat as a rule for more than a month. Types 1 and 3 appeared to be more virulent than 2 and 4. The authors' results support the conclusion that the incidence of pneumonia depends on the coincidence of infection by a pathogenic pneumococcus with a lack of resistance in the individual.

### 314. The Blood in Different Kinds of Anaemia.

F. G. FINLEY (*Canadian Med. Assoc. Journ.*, July, 1926, p. 765) agrees with Volcker (1854) that the blood constitutes approximately one-thirteenth of the body weight; the blood plasma may be taken as 5 per cent. and the corpuscles as 4 per cent. of the body weight, the average volume of blood being 85 to 90 c.cm. per kilo of weight. The blood plasma varies little, so that deficiency in corpuscles is mainly responsible for changes in blood volume, which, according to Keith, is reduced by a quarter in obesity and increased in pregnancy. Concentration of plasma may occur in carcinoma of the oesophagus, in gas poisoning, and in shock. Variations of this kind in normal and morbid conditions are slight, and the colour index and blood count give a fair indication of the degree of anaemia. The red cell count of blood in the veins may be as much as 10 per cent. higher than that of the capillaries, except in pernicious anaemia, where the reverse occurs. Finley attributes the high colour index of pernicious anaemia to the larger average size of the cells, whereas in secondary anaemia from haemorrhage the cells are slightly smaller than normal. The three principal causes of blood poverty are haemorrhage, haemolysis, and defective function. The presence of haemolytic agents can be diagnosed by the delayed van den Bergh reaction in the blood, by increase of urobilinogen in the urine, and by the faint yellow tinge of the skin. Defective formation may be due to syphilis, senile changes, wasting diseases, or the exhaustion following overactivity in sepsis; lead, arsenic, and mercury, after prolonged administration, cause exhaustion. The rapidly fatal aplastic anaemia seems to be almost exclusively due to the destruction of the blood-forming elements in the marrow. In anaemia from moderate haemorrhage recovery is rapid, but the colour index and blood count are lower at first owing to dilution. Recovery is mainly dependent on the rate of fluid absorption, and there appears to be a relation between the haemoglobin content and the rate of absorption, the latter falling when the haemoglobin is at 20 per cent. and incomplete until 40 to 50 per cent. In pernicious anaemia, haemolysis and marrow regeneration proceed coincidentally, the latter predominating at times. Finley mentions the cord affections in pernicious anaemia, and the characteristic remissions in the disease: an apparently healthy interval of seventeen years was recorded in one case which ended fatally.

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He emphasizes the importance of searching for the ova of intestinal parasites in doubtful cases of anaemia, especially where eosinophilia is present, and of a thorough examination of the rectum or pelvis for evidence of malignant growth in middle-aged patients with secondary anaemia. Careful examination of the blood is required in cases of achlorhydria or when there is a complaint of painful tongue or tingling extremities. In aplastic anaemia there is no regeneration, the marrow being yellow and fatty; as a rule there is no haemolysis and no remission; the patient rarely lives more than three months. Finley believes that cirrhosis of the liver is probably not constant in Banti's disease and that affections of the splenic-portal vascular system are too inconstant to be regarded as primary.

### 315. Inhibition of the Growth of *B. coli* by Acid.

A. H. JOHANSEN and E. J. WARBURG (*Acta Med. Scand.*, August 6th, 1926, p. 91), prior to the treatment of infections of the urinary tract in human beings, tested the effect of acid and of urotropine on the growth of the colon bacillus *in vitro*. Broth tubes were adjusted to varying degrees of acidity, inoculated with *B. coli*, and incubated at 37°C. for seventy-two hours; after two, four, six, and eight hours subcultures were transferred to ordinary broth to see whether the organisms were still viable. The results showed that in broth of pH 5.15 growth was delayed for forty-eight hours; in broth of pH 4.64 no growth occurred at all in the original tube, and subcultures taken after eight hours as a rule failed to grow. It would therefore appear that when exposed in a nutrient medium to an acidity of pH 4.64 *B. coli* is killed in about eight hours. In another series of experiments tubes of broth adjusted to varying degrees of acidity were inoculated with *B. coli*, and subcultures made in succession every four hours. The growth in each tube was read after twenty-four hours' incubation. It was found that in broth having an acidity of pH 5.0 no growth occurred after the fifth or sixth subculture. That is to say, frequent transfers of *B. coli* in a medium unfavourable to growth resulted in the disappearance of the organism. The authors considered that if the urine of patients suffering from coli infections of the urinary tract could be rendered highly acid, and if the patient were to micturate at frequent intervals, the organism should be placed in such unfavourable conditions as to render its survival improbable. This idea was carried into practice. The patients were given calcium chloride or ammonium chloride in amounts sufficient to render their urine acid to methyl red—namely, pH 5.5 or under. Urotropine was given to some of the patients. Of 35 cases in which the acid treatment was tried a perfect cure with sterile urine was obtained in 20, generally in two to three weeks. Of the remaining cases many were complicated with other conditions and did not react so well. By laboratory experiments it was demonstrated that urotropine had little effect on *B. coli* except in an acid medium; and that even in an acid medium it did not exert its maximum effect for about twenty-four hours; this latent period is consumed in the liberation of formaldehyde. Since acid alone is able to sterilize the urinary tract in a fairly high proportion of uncomplicated cases, the authors add that it is difficult to form a judgement on the effect of urotropine *in vivo*.

### 316. Urinary Infection in Vitamin A Deficiency.

G. FRONTALI (*Riv. di Clin. Pediatria*, August, 1926, p. 505) in a controlled experiment with young white rats found that seven on a diet deficient in vitamin A but given soya oil and pericarp extract died with xerophthalmia, small multiple cutaneous abscesses (2), and a constant infection of the urinary tract, whereas the remaining nineteen animals were unaffected. In four cases small multiple abscesses were found in the kidney, visible macroscopically, and in two others abscesses were found on mice. One of these cases had perivascular cortex and medulla. In six out of the seven there was pus in the renal pelvis on one or both sides; the pelvic wall was infiltrated with leucocytes and had leucoplastic zones in it. Four had a nephritis, and in all seven there was more or less severe cystitis with submucous infiltration, epididymal metaplasia, and the formation of epithelial pearls; *B. coli* was isolated from the pias, and in two cases *Staphylococcus aureus* as well. Frontali considers this constant infection of the urinary tract of great significance in view of the difficulty of producing *B. coli* infection in laboratory animals by either the ascending route or by blood infection. He thinks that in these rats the infection was due to lowered resistance brought about by their lack of vitamin A. Conditions pathologically analogous are found in the pyelocystitis of children who, being bottle-fed or on a deficient diet, suffer from malnutrition and underdevelopment. Frontali considers his results should indicate an alimentary and vitaminic treatment for infantile pyelocystitis.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 317. Stenosis of the Aortic Isthmus.

J. T. KING, jun. (*Arch. Intern. Med.*, July, 1926, p. 69) remarks that although congenital cardio-vascular lesions are as a rule multiple and present confusing signs leading to a diversity of diagnoses, yet in the case of congenital stenosis of the aortic isthmus the condition can be recognized clinically with very considerable ease. Four cases are described, in which the condition was detected during life; of these two were slight stenosis of the aorta and the other two more or less complete obliteration of the vessel at the level of the entrance of the ductus arteriosus. Necropsy records show that the diagnosis is usually only made after the patient's death. It occurs more often in men than in women, and at any age after birth; it is not incompatible with prolonged periods of hard physical work. The symptoms that may be present are shortness of breath, palpitations, myocardial weakness, nocturia, cramps in the legs, and intermittent claudication. Pulsation may be detected in both inter-scapular regions, passing from above downwards; this sign is considered by King to be the cardinal manifestation of the condition. Pulsation is usually more marked in the upper limbs than in the lower. Pulsating superficial collateral vessels take an oblique course over the back of the thorax downward towards the spine; the intercostal arteries are dilated. The blood pressure is relatively higher in the arms than in the legs, and in the right arm rather than the left. The right radial pulse may feel larger than the left, and in the latter the apex is relatively delayed and rounded. Systolic murmurs are heard over the areas of inter-scapular pulsation, the enlarged collateral vessels; sometimes also over the aortic arch anteriorly or the whole aorta posteriorly. A bibliography is appended.

### 318. Spontaneous Pneumothorax.

A. J. A. KORTLAND (*Nederl. Tijdschr. v. Geneesk.*, June 12th, 1925, p. 2139), who records three illustrative cases, states that spontaneous pneumothorax is a rare occurrence and that it is usually not due to tuberculosis. It occurs suddenly in persons who have hitherto been apparently healthy, or have suffered from pain in the chest and shortness of breath. In more than half the cases some kind of physical exertion has preceded the attack. On examination the characteristic signs of dry pneumothorax are found; only exceptionally is a little serous fluid or effused blood detected in the pleural cavity. Complete recovery as a rule follows sooner or later without any sequelae, and an unfavourable course is very rare. On post-mortem examination in such cases a ruptured subpleural emphysematous vesicle is found to be the cause of the pneumothorax. The emphysema may be local or general, and is sometimes interstitial, especially in children. The emphysematous vesicles are frequently present at the apices of the lungs in the neighbourhood of old tuberculous scar tissue, where they may reach the size of a cherry. Active tuberculosis is seldom if ever found, even after recovery from spontaneous pneumothorax.

### 319. Cerebro-spinal Syphilis.

G. NAGASAKA (*Arbeit. a. d. Neur. Inst. a. d. Wien. Univ.*, May, 1926, p. 239) asserts that it is a well established fact that the meninges form the chief point of attack in the central nervous system for the syphilitic virus, the spirochaetes gaining entrance to the cerebro-spinal fluid and so to the meninges by the lymph spaces in the adventitia. The meningeal changes may exist for many years without giving rise to any clinical symptoms, as is illustrated by the case of Cestan and Riser, who found diffuse chronic meningitis in a patient whose only symptom was immobility of the pupils, and Osterlag's three cases of chronic syphilitic meningitis in which hardly any symptoms were present. On the other hand, Pette has reported cases in which symptoms developed relatively early—namely, a few months after appearance of the primary lesion, death following shortly afterwards. At the autopsy severe meningitis was found, with inflammatory lesions in the adjacent parenchyma. Nagasaka has recently had the opportunity of examining six cases in which chronic meningitis had obviously lasted several years before it gave rise to clinical symptoms which rapidly proved fatal. The patients were all about 60, an age at which vascular changes are the rule even apart from syphilis. The meningeal process, indeed, was not the cause of the sudden appearance of the clinical symptoms, which were the outcome of a vascular process produced partly by syphilis and partly by

purely senile changes. A characteristic feature of all the cases was the presence of severe meningeal lesions, of which the most typical was mesarteritis, and the intact condition of the adjacent parenchyma. The adventitia was enlarged, and in some places was invaded by the meningeal inflammation. The lumen might be relatively little affected or show considerable changes leading to vascular occlusion. In all the cases the cerebral changes were accompanied by severe arthritis and cardiac diseases, as frequently occurs. A combination of aortic syphilis with cerebral disease is very frequent, aortic changes being noted in 34.8 per cent. of Frisch's cases of cerebral syphilis, and in 38 per cent. of those of J. H. Musser and A. E. Beunett.

### 320. The Sedimentation Rate in Certain Industrial Conditions.

V. M. PALMIERI (*Stadium*, February, 1926, p. 50) has investigated the sedimentation rate of the red corpuscles in individuals subjected to various forms of hard work, or employed in an overheated atmosphere, such as glass workers and stokers, with the following results. The sedimentation time was found to be constantly shortened in individuals engaged in hard work, and as constantly prolonged in those employed in an overheated atmosphere. These changes in the sedimentation rate could be detected, though in a diminished degree, even forty-eight hours after the factors in question had ceased to operate. The degree of acceleration or of prolongation of the rate did not appear to be related to the quantity of work performed, the duration of the fatigue, the stay in the overheated atmosphere, or its height of temperature, but might be regarded as an expression of a varying individual biological reaction to definite stimuli. Palmieri adds that these changes from the normal sedimentation rate show that certain industrial conditions are associated with physiological changes which should be carefully recorded, since they may supply valuable data for a rational prophylaxis, and for the medico-legal estimation of definite pathological conditions or causes inherent in certain industrial conditions.

## Surgery.

### 321. An Unusual Cause of Inguinal Hernia.

ACCORDING TO E. FELDMANN (*Zentralbl. f. Chir.*, July 24th, 1926, p. 1832) inguinal hernia may follow stretching of the skin and subcutaneous tissue by an increase of intraperitoneal pressure. He describes the case of a workman, aged 63, who had observed for three or four months swellings in both groins; at the time of admission to hospital these swellings were each as large as a walnut. A double radical cure was performed without difficulty, but on the following day the patient had early symptoms of ileus, and slight rectal haemorrhage occurred after an enema. When the operation wounds had healed a digital exploration revealed the presence of an early carcinoma of the rectum. The hernias were not of the ordinary type, but the radical operation had been performed before any symptom of rectal carcinoma had appeared. Feldmann concludes that no operation on an inguinal hernia in an elderly man should be performed until a complete and general examination has been made. Hernial protrusions have been known to be produced by an increase of intra-abdominal pressure, which occurs frequently in elderly patients, and which may be due to partial intestinal obstruction by carcinoma, to the increased pressure resulting from prostatic hypertrophy and urethral stricture, or to the persistent cough of chronic bronchitis. In children inguinal hernia may be caused by dysuria resulting from phimosis or it may occur during an attack of whooping-cough.

### 322. Carcinoma of the Prostate.

H. C. BUMPUS (*Surg., Gynecol. and Obstet.*, August, 1926, p. 150) reviews 1,000 cases of prostatic carcinoma treated at the Mayo Clinic up to January, 1925. The average age of these patients was 65 years. In approximately one-half the disease appeared between the 60th and 70th year, in no case was it seen before the 42nd, and in only four prior to the 45th year. Prostatic neoplasms occurring before 40 should be sarcoma. The initial symptoms, mainly those associated with benign hypertrophy of the gland, were frequency, difficulty of urination, and pain. Retention was rare, and gross haematuria was never noted. The later symptoms also simulated those of benign hypertrophy, but in malignant



disease there was less evidence of obstruction. The amount of residual urine was comparatively small, the phenol-sulphonaphthalein readings were high, and, except late in the disease, microscopic examination was of little value. In 243 of the cases metastases were demonstrable, the lymphatic system being the earliest and most frequently involved; next in frequency came the osseous system, especially the sacrum and adjoining portions of the spine and pelvis. Metastases were also found in the lungs, spinal cord, skin, liver, and kidneys. Treatment was surgical, with radium, or a combination of the two. The results from surgical treatment alone were poor, and Bumpus does not think this form is advisable when the disease has advanced sufficiently to be diagnosed positively. In order that radium treatment might be successful the gland was thoroughly irradiated, the radium being applied through the urethra; emanation-bearing seeds were inserted directly into the gland as well as through the perineum and over the rectal surface. The doses given averaged a little over 2,000 milligram hours, and the subsequent average life of the patients was 22 months. Results were also poor in those cases in which prostatectomy was performed after irradiation of the gland. Thorough irradiation of the prostatic capsule and seminal vesicles following prostatectomy gave encouraging results, and Bumpus believes that this method offers the greatest possibility of cure. When there was but little residual urine the daily use of a catheter was sufficient; if the obstruction was more severe, suprapubic cystostomy was performed with beneficial results.

### 323. Cholecystoduodenostomy.

G. P. MULLER (*Annals of Surgery*, July, 1926, p. 95) enumerates the indications for "internal drainage" of the gall bladder as irreparable obstruction of the common duct, injuries and diverticulum of the common duct, and calculous cholecystitis in later life complicated by pancreatitis. All recent writers give the site of the anastomosis as the stomach or duodenum. Muller used a rubber tube in making the anastomosis with good results. After saturating the gall bladder to the duodenum a mushroom catheter is passed through a stab hole into the gall bladder and fastened by a circular purse-string. The other end is inserted into the duodenum and inverted by a similar suture. The first suture is then continued anteriorly. This method is simple and the tube prevents closure of the opening. No omentum is wrapped round the joint and no leakage has occurred. In three cases recorded the results were excellent and the jaundice was relieved. If the condition is due to chronic pancreatitis the anastomosis appears to be of great value and to relieve the symptoms satisfactorily.

### 324. Artificial Pneumothorax in Hydatid Diseases of the Lung.

F. DÉVÉ (*Arch. Méd.-Chir. de l'App. Resp.*, April, 1926, p. 125) reports that spontaneous recovery occurs in 90 per cent. of the cases of hydatid cysts situated in the centre of the lung which open spontaneously into the bronchi, and artificial pneumothorax is rarely required. Sometimes, however, the natural process of recovery is tedious, so that Forlanini's operation appears applicable in the following series of cases: (1) when the natural process of recovery, observed by pericardial radiological examination, is delayed, especially if prolonged expectoration of hydatids is complicated by recurrent haemoptysis; (2) when the cyst situated in the centre of the lung gives rise to a persistent cavity containing air and pus, indicating a loss of plasticity in the tissue of the lung surrounding the cyst, due to absence of pleural adhesions; (3) when in the presence of vomicae, accompanied by deterioration of the general condition, radiological examination does not show the exact site of the cavity which requires evacuation.

## Therapeutics.

### 325. Adrenaline Injections in Cardiac Failure.

IN view of the increasing use of intracardial injections of adrenaline for heart failure, M. PETZETAKIS (*Arch. des Mal. du Cœur des Vaisseaux et du Sang*, August, 1926, p. 513) has given experimental intravenous injections of freshly prepared and standardized adrenaline solutions to a number of normal individuals between the ages of 20 and 35 years. Intravenous injections of 1 c.cm. of 1 in 300,000 to 1 in 100,000 strength caused no objective disturbance, but with solutions of 1 in 60,000 to 1 in 20,000 the majority of subjects, after an interval of a few seconds, exhibited pallor and palpitation. With solutions of 1 in 10,000 these symptoms were increased: with an intravenous dose of 1 c.cm. of 1 in 4,000 every subject complained of dyspnoea and violent palpitation, while the face became pale and syncope appeared to be imminent.

When the dose was increased to 1 in 1,000 syncope, necessitating the injection of a cardiac tonic, occurred; this dose, the author concludes, should never be exceeded. The injection of 1 c.cm. of solutions of from 1 in 200,000 to 1 in 60,000 produced a very brief fall in systolic pressure, followed quite frequently by a variable degree of hypertension. When these doses were increased to 1 in 8,000 there was an initial rise of blood pressure, becoming shorter as the dose was increased and followed by a very definite fall. Petzetakis adds that large doses of adrenaline produce definite slurs or nodal arrhythmia, due to stimulation of the sympathetic or of the intracardiac centres. The vagotropic action of adrenaline is inhibited by preliminary injection of atropine. Adrenaline gives rise to syncope only when excessive doses are injected. In patients anaesthetized by chloroform it is particularly necessary to exercise great caution in the injection of adrenaline, since chloroform produces vagal irritability. The author does not condemn the endocardial injection of adrenaline in syncope, but he calls attention to the danger of large doses; in no case should a dose of 0.25 mg. be exceeded. He advises great caution in the use of adrenaline in the Stokes-Adams syndrome; adrenaline is not cumulative, and therefore a moderate dose can be repeated at intervals when necessary.

### 326. Serum Treatment of Erysipelas.

K. E. BIRKHAUG (*Journ. Amer. Med. Assoc.*, May 8th, 1926, p. 1411) has treated sixty cases of moderately severe erysipelas by intramuscular injection of erysipelas antistreptococcus serum in doses of 100 c.cm. of the unconcentrated and from 15 to 20 c.cm. of the concentrated serum. He found that when it was administered during the first three days of the disease it caused a prompt amelioration of toxic depression, a critical fall in temperature and pulse rate, prompt fading of the erysipelatous lesions, and rapid absorption of the edema and oedema within the affected areas. In late cases the serum had a very favourable action on the general toxic depression, although repeated injections might be necessary completely to neutralize the circulating toxin in the patient's blood. After each injection of the serum there was a critical fall of temperature and pulse to normal within twelve to eighteen hours. In some cases the symptoms quickly returned, and a second dose was necessary to bring about complete recovery.

### 327. Treatment of Syphilis by Bismuth.

J. L. GRUND (*Urol. and Cut. Rev.*, May, 1926, p. 284) emphasizes the value of bismuth in cases resisting treatment by salvarsan or mercury or both, as evidenced by the persistence of syphilitic manifestations. His method of administration was as follows. The contents of one ampoule containing 0.2 gram of potassium bismuth tartrate, together with a small amount of a local anaesthetic, were injected intramuscularly once every five to seven days. Each patient received a minimum of 2.4 grams or a maximum of 3 grams potassium bismuth tartrate. Unoward reactions were very rare. When a local reaction in the form of swelling or persistent pain occurred the dose was reduced to one-half, and then again increased until the entire amount was received without discomfort. Grund ignores the appearance of the blue line unless stomatitis is present. No cases of albuminuria or cachexia were observed; in most of the patients the bismuth seemed to act as a tonic. Grund concludes that bismuth should replace mercury as an adjunct to salvarsan in the treatment of syphilis.

### 328. Insulin-Glucose Treatment of Shock.

D. FISHER (*Surg., Gynecol. and Obstet.*, August, 1926, p. 224) states that shock may be considered to be the result of an intense stimulation of the kinetic nervous system by such agents as physical exertion, emotion, and trauma, which lead to physical changes in the kinetic system, and, if carried far enough, exhaust it. The usual methods of treatment have been directed towards maintenance of the fluid volume, elevation of blood pressure, and retention of body heat; the fundamental cell pathology, the internal asphyxia and acidosis, and the initiating factors have been disregarded. Fisher believes that in shock an internal asphyxia and acidosis with checking of the oxidative processes result in a state of exhaustion, and that this state is primarily caused by a sudden derangement of the central nervous system. To combat the shock he judges that some method should be employed whereby the body can be furnished with a substance giving rise to an immediate supply of energy, maintaining that supply so long as is necessary, and furnishing fluids to keep up the circulating fluid volume. In insulin-glucose treatment of shock 500 to 2,000 c.cm. of a sterile 10 to 15 per cent. solution of glucose are injected intravenously. The total duration of administration should be at least one hour, and preferably two to four hours. This precaution is,

he adds, extremely important when any large amount of fluid is introduced into the veins, for dilatation of the right heart is a real danger. The amount of insulin used depends upon the amount of glucose injected: for every 3 grams of glucose one unit of U 20 insulin may be used. The total amount should be divided into two equal doses, one part being given about fifteen minutes after the administration of glucose has started, and the remainder at the end of the administration. It is advisable to have ready a hypodermic of adrenalline, so that any reaction may be easily and quickly dealt with. So long as glucose appears in the urine there is no danger of an insulin reaction. In support of this treatment Fisher maintains that the heat energy supplied to the cells by the rapid oxidation of the glucose at a time when the normal oxidative processes are checked is a most vital factor in starting the process of recovery of the cells. By this method he has successfully treated 31 cases of shock; he has also used it with gratifying results in the pre-operative preparation of surgical cases as a prophylaxis when the subject was not a good risk, and to check the incessant vomiting of acute peritonitis. Ochsner has also employed it in all cases of periculous anaemia when blood transfusions have had no effect.

## Anaesthetics.

### 332. Spinal Anaesthesia.

A. CERREZZI (*Arch. Ital. di Chir.*, August, 1925, p. 237), as the result of using spinal anaesthesia in more than 3,000 cases during the last twenty years, has come to the following conclusions. (1) Spinal anaesthesia is contraindicated in patients who present any considerable degree of arterial depression. (2) As a general rule it is advisable to prevent excessive hypotension by a subcutaneous injection of 30 to 40 cgm. of caffeine one hour before spinal anaesthesia. (3) It is best to use a needle of small calibre for the injection, so that there is no danger of not making the injection with the necessary swiftness and the least force. (4) It is not rational or prudent to withdraw more than a few drops of spinal fluid before the injection. (5) Change of the patient's position, which is of the utmost importance as regards the course of the anaesthesia, should be performed slowly and without jerky movements. (6) The patient should always keep his head flexed on the trunk during and a few hours after the operation. (7) Trendelenburg's position should not be adopted until ten minutes after the injection. (8) Spontaneous evacuation of liquid faeces during spinal anaesthesia indicates anaesthesia of a considerable part of the spinal nerves (fourth to eighth dorsal) which give issue to the rami communicantes for the sympathetic nerves.

333. B. BROGLIO (*Arch. Ital. di Chir.*, June, 1926, p. 639), records his observations on 1,146 cases of spinal anaesthesia performed from March, 1923, to March, 1926, in the surgical department of the Civil Hospital at Belluno. The cases were divided into two groups. The first, which formed the great majority, included operations on the hypogastric, inguinal and scrotal regions, the external genitalia, perineum, anal, sacral and gluteal regions, and lower limbs. The second group comprised operations on the abdominal viscera, abdominal wall, and lower half of the thorax. The anaesthetic solution consisted of equal parts of stovalin and sodium chloride (0.10 gram). The ages of the patients ranged from 11 to 82. Of 1,063 in which the sexes were recorded 656 were males and 334 females. In almost all cases the puncture was carried out in the sitting position. In spite of slight and transient drawbacks such as headache, rise of temperature, vomiting, backache, and retention of urine, the patient derives the following advantages from spinal anaesthesia: (1) almost entire elimination of the grave risk of post-operative complications, especially those affecting the respiratory system; (2) avoidance of the unpleasant feeling of suffocation which is inseparably associated with anaesthesia; (3) absence of the long and painful stage of "coming round"; (4) less likelihood of vomiting, which is almost constant in other forms of anaesthesia; (5) diminution, if not entire exclusion, of the danger of death from syncope; (6) no interference with the renal function; (7) elimination of bad after-effects on the stomach, such as gastritis due to ether intoxication. The surgeon, on the other hand, reaps the following benefits from spinal anaesthesia. He saves time, because complete anaesthesia is induced while the patient is being got ready for operation; he is not forced to keep an eye on the patient, and there is no likelihood of having to suspend the operation in order to perform artificial respiration. There are no severe post-operative complications, and the anaesthesia is regular throughout the operation. In another paper (*Arch. Ital. di Urol.*, May, 1926, p. 621) Broglio reports on 80 genito-urinary operations under spinal anaesthesia. In 77, or nearly 100 per

cent., complete anaesthesia was effected; 17 had no symptoms whatever, 7 had vomiting or retching, and only 2 had retention of urine, one for twenty-four hours and the other for nine days. The remainder showed only slight rises of temperature. Collapse occurred in only one case, and did not last longer than five minutes.

### 334. Post-operative Acidosis in Children.

P. K. DIXON (*Irish Journ. Med. Sci.*, June, 1926, p. 267) reviews the literature, including the recent paper by Jeaus and Tullerman (*Epitome*, February 28th, 1925, para. 214), and reports his observations on 210 children, of whom only five, or 2.4 per cent., showed clinical signs of acidosis, while post-operative acetonaemia was present in 77 per cent. out of 165 examined. Anaesthesia was induced in the first case by pure ether, in the second by a mixture of chloroform and ether in the proportion of 1 to 20, and in the third by a mixture containing two parts of chloroform to three of ether. These three cases were examples of recurrent abscess following the removal of a gangrenous appendix. In the fourth case, one of cleft palate, ether was administered for one hour. In the fifth case chloroform was given for only five minutes for the curettage of cervical glands. The symptom common to all five cases was urgent and continuous vomiting; two patients were drowsy, and two very restless. The fifth case was much less severe and the child was fairly bright all the time. In the four severe cases the operation lasted half an hour or more. None of the cases was absolutely clean, and three were markedly and continuously septic. Dixon's conclusions are as follows. The incidence of post-operative acidosis diminishes slightly with increase of age, and the incidence of acetonaemia is slightly greater after the administration of chloroform than of ether. Prolonged anaesthesia increases the probability of post-operative acetonaemia. It is not possible by examination of the urine before the operation to estimate the probability of clinical acidosis. Acetonaemia is not a contraindication to operation. The administration of glucose causes a considerable diminution of the incidence and duration of post-operative acetonaemia, but sodium bicarbonate does not affect its duration.

### 335. Sacral Anaesthesia in Urology.

O. GRANT (*Urol. and Cat. Rev.*, June, 1926, p. 336) has performed the following operations under sacral anaesthesia alone: cystoscopy, ureteral catheterization in tuberculous bladders, lateral urethrotomy, resection of vesical tumours, perineal section of urethral stricture, insertion of perineal radium needles, fulguration of bladder tumours, litholapaxy, litholapaxy, suprapubic cystostomy, suprapubic cystostomy for calculi, and suprapubic prostatectomy. The anaesthetic used was novocain prepared not more than ten days previously in capsules with sodium chloride and sodium bicarbonate. Each capsule contained 0.6 gram of novocain, 0.1 gram sodium chloride, and 0.15 gram sodium bicarbonate. The contents of one of these capsules were emptied into 30 c.c. of boiling water and the solution allowed to boil for twenty seconds. After the solution was cooled 5 minims of adrenaline were added. For caudal anaesthesia about 20 c.c. of this solution was sufficient, while for transsacral anaesthesia 30 c.c. was needed. The injection required twenty to thirty minutes to induce complete anaesthesia. Sacral anaesthesia was found to be of special value in irritability of the bladder due to calculi, tuberculous, necrotic, or tumour, and enabled the bladder to be distended painlessly to two or three times its normal capacity. In open operations on the bladder the relaxation was as complete as under ether anaesthesia. No untoward effects were noted in any case. Grant's conclusions are on follows: (1) sacral anaesthesia is a safe and simple method; (2) it may be used in consulting-room practice for difficult bladder cases, as well as for minor surgical procedures on the bladder and rectum; (3) there is no interference with any vital function of the body—the heart, lungs, and kidneys not being in the least affected; (4) it enables the patient to be placed in any posture and permits the continual ingestion of fluids, which is so essential in renal disease.

## Obstetrics and Gynaecology.

### 336. Prevention of Puerperal Infection.

D. H. BESSESEN (*Med. Journ. and Record*, July 7th, 1926, p. 27) believes that one important source of puerperal infection has not received sufficient attention hitherto. A chronic bac'erial vaginal infection exists in the majority of apparently healthy women; a large number of these infections are streptococcal, and of these a considerable percentage are of the haemolytic type. The author practises the following routine disinfection of the vagina immediately before the commencement of labour. After shaving, washing, and giving an enema, the

parts are painted with a 10 per cent. solution of mercurio-chrome. A large sterile speculum is lubricated with sterile glycerin, containing 2 per cent. mercuriochrome and 0.6 per cent. of tincture of iodine diluted to  $\frac{3}{4}$  per cent.; it is then inserted into the vagina and 5 c.cm. of the same solution is injected into the vaginal vault. A plug of sterile gauze is inserted in the introitus in order to retain the solution. The mercuriochrome-iodine-glycerin solution is deposited on the vaginal mucosa as the blades of the speculum are withdrawn. The author adds that the proportions of the antiseptics have been worked out by prolonged experiments, in order to combine the maximum effectiveness with the minimum degree of irritation. The viscid solution adheres to the vaginal mucosa for a considerable time, and Bessesen claims that it prevents the mechanical infection of the uterus by the alternating descent and retraction of the head during the second stage of labour. He maintains that this solution is relatively non-toxic and that the head coming down into such a vagina will carry back a coating of this antiseptic and paint the interior of the uterus with this substance rather than with infectious material. The author also condemns the Cr  d   method of expressing the placenta, since by pressing the hand on the large relaxed uterus the cord is forced downwards into the vagina: when pressure is removed the contaminated cord is withdrawn into the uterus. Early rupture of the membranes prolongs the second stage and thus increases the risk of infection by the alternating descent and ascent of the foetus. Manual removal of a returned placenta also increases the danger, as the hand carries a large number of bacteria from the vagina to the fundus uteri.

### 334. Intrauterine Asphyxia.

ACCORDING to N. LOUROS and H. M  LLER (*Zentralbl. f. Gyn  k.*, July 17th, 1926, p. 1897) Seitz was the first, in 1903, to report that administration of chloroform to the mother improves the condition of the labouring foetal heart, probably by diminishing the degree of pressure exercised on the foetus by the uterus between the pains. Frey suggested thoracic application of this finding and in 22 of 35 cases noted restoration of failing foetal heart action during chloroform inhalation. The present authors report the results of administering 5 to 8 drops of chloroform a minute in 39 cases in which the foetal heart-beat had become slowed to a hundred or less a minute during labour; cases in which the slowing followed rupture of the membranes and those of slight asphyxia during expulsion of the head are excluded. They conclude that this treatment is successful and the only one necessary in cases in which the sole cause of foetal distress is deficient relaxation of the uterus between its contractions. In 16 of their cases the inhalation of chloroform was without restorative action on the foetal heart, and artificial acceleration of delivery was necessary; invariably in these cases there was obstruction of the circulation through the umbilical cord, which was looped firmly once or twice round the neck, and knotted or prolapsed. It is suggested that administration of chloroform is a test which should be tried in all cases of intrauterine asphyxia with slowed foetal heart; an absence of improvement as shown on auscultation during two successive intervals between pains indicates obstruction of the cord and points to the necessity for hastening delivery.

### 335. Treatment of Menstrual Disorders.

E. NOVAK (*Therapeutic Gazette*, May 15th, 1926, p. 315) discusses the treatment of menstrual disorders in the light of recent physiological research. He thinks that since the amenorrhoea associated with increasing obesity is undoubtedly of endocrine causation organotherapy appears to be the most logical and least harmful form of treatment, and though at present frequently unsatisfactory in its results, Novak considers that the further development of biochemical methods will eventually lead to improvement in this direction. In the treatment of dysmenorrhoea atropine, given to the point of saturation and commencing several days before the period is expected, often relieves when analgesic drugs fail; in some cases where this is not effective the presence of a definite causative anatomic lesion, such as a small interstitial or submucous myoma, must be suspected. Pituitary, ovarian, or thyroid extracts are disappointing. Dilatation of the cervix often gives good results and stem pessaries are to be condemned. The functional uterine haemorrhage of puberty, when mild, tends to spontaneous cure, but when severe, diagnostic curettage is indicated and in most cases results in permanent cure. Novak himself has had good results following the daily use of pituitary extract. In persistent functional bleeding near the menopause complete cessation follows radiotherapy, and though this treatment, if cautiously used, may be advocated in younger patients, the danger of producing permanent amenorrhoea and sterility must be explained to the patient; many gynaecologists prefer to rely upon a repetition of the curettage rather than have recourse to radium in young women.

## Pathology.

### 336. Production of Vitamins in Cow's Milk.

H. CHICK and M. H. ROSCOE (*Biochem. Journ.*, 1926, vol. 20, No. 3, p. 632) have studied the effect of diet and of sunlight on the vitamin A and D content of the milk of a cow kept under different conditions for varying lengths of time. The vitamin A content was estimated by the power of the milk to induce growth in rats on a dietary free from this vitamin, and the vitamin D content by its power to prevent rickets in rats fed on a low phosphorus rickets-producing diet. It was found that the vitamin A (growth-promoting, anti-xerophthalmic) content was dependent on the diet of the cow, being at a maximum when the cow was fed on fresh green food and least when the cow received a winter feed of cereals and roots. Exposure to sunlight had no influence on the vitamin A content of the milk. The vitamin D (growth-promoting, antirachitic) content depended chiefly upon the degree of insolation of the cow; but there was a certain amount of evidence suggesting that a dietary of fresh green food contributed to its appearance. The maximum content of vitamin A and D was present in the milk when the cow was out at pasture in the summer. Butter made from milk possessing antirachitic power was still potent after storage for more than two years in a freezing-chamber. The authors draw attention to the bad effect on the fat-soluble vitamin content of the milk of keeping milk cows in stalls. They state that such milk probably contains very little vitamin D, and is therefore unsuitable for the nutrition of infants and young children.

### 337. Gas Gangrene Bacilli in Melaena Neonatorum.

W. HERGT (*Monatsschr. f. Kinderheilk.*, July, 1926, p. 515) records two cases of melaena neonatorum characterized by the occurrence of Fraenkel's gas gangrene bacillus, as shown by the results of culture and inoculation of animals. The clinical course of the two cases was quite different: one infant rapidly succumbed, while the other survived. At the necropsy of the first case gas gangrene bacilli were cultivated from the upper, middle, and lower parts of the small intestine, the caecum, spleen, and liver. Subsequent examination of the meconium of six infants, all but one of whom were breast-fed, showed the presence of the gas gangrene bacilli in two, while the rest were negative. The conclusion that the gas gangrene bacilli possessed a pathological significance in these two cases seems justified by the large number of bacilli in the meconium at a very early stage, and the presence of the bacilli in the small intestine and internal organs. The infection was probably derived from the maternal birth passages.

### 338. The Mode of Action of Saline Purgatives.

H. COHEN (*Quart. Journ. Med.*, April, 1926, p. 249) by direct determinations of the magnesium content of the blood after magnesium sulphate has been administered by the mouth and by intramuscular injection, and from similar experiments with magnesium chloride, concludes that the purgative action of these salts is not due to the absorption of magnesium into the blood. Since an examination of the literature showed that the evidence was too conflicting and the methods previously employed were too indirect to justify definite conclusions, it was not until the introduction of an accurate method for the estimation of magnesium in small quantities of serum that the problem could be approached upon the above lines. Cohen shows that the oral administration of these salts in purgative doses is unaccompanied by any alteration in the magnesium content of the blood serum, and that though intramuscular injection increases the serum content 50 to 100 per cent., in no case was it accompanied by purgative effects.

### 339. Lactic Acid Retention in Pregnancy Toxaemia.

H. J. STANDER and A. H. RADELET (*Bull. Johns Hopkins Hosp.*, August, 1926, p. 91), using the method of Clausen, have found that in pregnancies complicated by low kidney reserve or by nephritis there is an increase in the lactic acid in the blood which disappears as the patient improves. This lactic acid increase may be due to renal impairment sufficient to produce retention of non-protein nitrogen, to the decomposition of protein, or to fat. Clausen stated that whenever the circulation or the process of oxidation becomes insufficient the rate of removal of lactic acid will be less than the rate of its production, so that the lactic acid concentration will rise and the alkali reserve of the tissues will fall. Stander and Radelet hold that the factors which may possibly play a role in the accumulation of lactic acid in the two types of pregnancy toxaemias (low kidney reserve and nephritis) are decreased elimination of lactic acid, decreased oxidation and interference with the resynthesis of lactic acid into glycogen, and a possible disturbance of the hydrogen-ion concentration of the blood.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 310. Familial Pernicious Anaemia.

S. E. DORST (*Amer. Journ. Med. Sci.*, August, 1926, p. 173), from his own observations in eleven cases of familial pernicious anaemia, as well as from the literature of the subject, concludes that in this disease there may be an important hereditary factor. He asserts that the old conception that pernicious anaemia is strictly a blood disease has changed; it is now thought that the blood changes bear a similar relation to the disease as such changes do to the entire syndrome of lead poisoning. In both diseases a persistent low-grade toxæmia is now considered to be the essential causative factor. According to Dorst, Hurst has stated that the fundamental predisposing cause of this anaemia is achlorhydria, which may be the result of constitutional and congenital absence of the gastric juice, or may be acquired. This condition removes the normal bactericidal function of the gastric secretions, permitting the development in the upper portion of the small intestines of a bacterial flora which gives rise to neurotoxins and hæmolytic poisons. Dorst believes that achlorhydria gastrica is a sign of grave clinical importance; that every patient presenting this condition should be considered as a potential case of pernicious anaemia; that the administration of hydrochloric acid should be started immediately, even though there are no gastric symptoms; and that all members of a family in which pernicious anaemia has been found should be thoroughly examined and have gastric analyses made so that administration of the acid may be started at once if necessary. In both fully developed and potential cases of pernicious anaemia large doses of hydrochloric acid should be given, as small doses fail to bring the acid contents of the stomach to the minimum normal acidity, though it is advisable to start with smaller doses and gradually increase them, since otherwise diarrhoea may be produced. The dose recommended is a half to one drachm of dilute acid well diluted with water or with well-sweetened lemonade or elder four times daily. The dilution of the acid should be in the proportion of not less than one drachm of the dilute (10 per cent.) acid to eighteen ounces of water or other medium. This is divided into smaller amounts, part being taken before, part with, and part after the meal. Dorst adds that since treatment continues throughout life, the co-operation of the patient is important.

### 311. Disappearance of the Tuberculin Cutaneous Reaction during Measles.

R. DEBRÉ and KAROLA PAPP (*Ann. de méd.*, June, 1926, p. 576) record their observations on 223 children suffering from measles on whom more than 1,000 cutaneous Pirquet tests were made. In 37 children at one time or another there was a positive reaction, while in the remaining 192 the reaction was never positive during their stay in hospital. In 35 cases the reaction became positive again after having been negative during the eruption. Like Pirquet, the authors found that the reaction never became positive before the fourth day of the rash. In 50 per cent. it reappeared on the fifth, sixth, or seventh days—that is, before the end of the first week. The return of the power to react to tuberculin is always progressive, the first anti-reaction being negative, the second doubtful, the third macular, the fourth papular, and the fifth vesicular. In three cases the reaction remained positive throughout the disease. In 15 cases with a positive reaction during the decline of measles active tuberculosis was present. The authors did not find that the reappearance of the reaction was more rapid in subjects with active disease than in those with latent tuberculosis.

### 312. Fatal Tréparsol Poisoning.

E. MAY (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, July 8th, 1926, p. 1176) describes a case of tréparsol poisoning in a woman, aged 43. She had become pregnant a fourth time after two miscarriages, preceded by the birth of a healthy child. Although neither the patient nor the husband presented any clinical or serological signs of syphilis, four days' treatment by increasing doses of tréparsol was prescribed as a precaution. The total quantity taken was approximately 2.5 grams of the drug, and the patient's health appeared to be excellent. During the first two days she had no symptoms, but on the third day, when she took three compressed tablets of tréparsol, she noticed a sensation of weight in her stomach and some colic, but did not report these symptoms. On the

fourth day she took four tablets, and next day the slight digestive disturbance was more marked. On the fifth day she awoke feeling unwell; she vomited a blood-stained fluid. She later became suddenly aphasic and very quickly lost consciousness. When seen by May she was deeply comatose, with a very congested face and marked stertor. There was left hemiplegia and frequent violent convulsive spasms of all four limbs. Severe attacks of haematemesis followed, and death occurred about twelve hours after the onset of symptoms. The author has been unable to find any record of a similar case, but states that these arsenical preparations, even when given by the mouth, may be dangerous. He thinks that the original doses should be small and their effects be carefully watched; progressively increasing doses should not be employed. The patient should be constantly under observation when taking tréparsol by the mouth, as when arsenobenzoate is being given intravenously. FLANDIN (*ibid.*, p. 1177) states that so rapid an increase of the dose does not correspond to any usual scheme of treatment: the increase should be only week by week and not from day to day.

### 313. Weil's Disease without Jaundice.

H. A. LAMPE (*Nederl. Tijdschr. v. Geneesk.*, June 26th, 1926, p. 2870) reports a case of Weil's disease in a child aged 2 years, who, four days after falling into a ditch which was full of rats, developed a febrile condition which lasted several weeks, without any jaundice, enlargement of the spleen, or hæmorrhages. The Widal test for typhoid and paratyphoid fever was negative, and no typhoid or paratyphoid bacilli were found in the stools. The blood contained staphylococci only. The serum, however, agglutinated *Spirochaeta icterohaemorrhagiae* in a dilution of 1 in 10,000, and later of 1 in 100,000. Intraperitoneal injection of the urine into a guinea-pig had no result. Recovery followed an illness of four months.

## Surgery.

### 314. Subperiosteal Irreducible Fracture of Radius.

A. SCHLESINGER (*Zentralbl. f. Chir.*, August 14th, 1926, p. 2073) refers to E. Müller's article on this subject (see *Epitome*, March 20th, 1926, para. 319), and describes the case of a boy, aged 15, who had a fracture of the radius 2 inches above the styloid process, with considerable displacement of the distal fragment, definitely abnormal mobility, and slight swelling. No crepitus was felt, and there was very little pain. The reduction of the displacement was apparently quite successful, and a dorsal plaster splint was applied. When this was removed ten days later a skilogram showed very pronounced displacement of the fragments, though pain was entirely absent. A diagnosis of subperiosteal fracture with irreducible displacement was made. At the operation the periosteum was found to be intact; the callus formation had filled entirely the periosteal sheath three weeks after the accident. There was considerable irregularity of the distal fragment below the line of the fracture, and it was clear that the only way of obtaining a good anatomical result was to separate the fragments, the periosteum being divided and sutured over the site of the fracture. The operation wound was closed, scarcely any irregularity remained, and the appearance of the limb became normal. In this case all the symptoms described by Müller were present—increased mobility, no crepitus, slight swelling, very little pain, and persistence of the displacement after attempts at reposition. Schlesinger adds that when these symptoms are present it is evident that ordinary treatment has failed and that an operation is indicated.

### Osteomyelitis Variolosa.

315. E. J. HUENEKENS and L. G. RIGLER (*Journ. Amer. Med. Assoc.*, July 31st, 1926, p. 295) report a case, in a boy aged 4, which is the first recorded example of osteomyelitis variolosa occurring during the acute stage of small-pox. Eight days after the appearance of the eruption swollen and tender joints were noted in both arms and legs; one week later the patient complained of pain in the neck, which was stiff and tender. X-ray examination revealed a symmetrical widespread destructive process at the epiphyseal line of the long bones, and in the first cervical vertebra, which became dislocated, without, however, causing any serious symptoms. The acute condition of the bones continued for about two



months after the eruption of small-pox had disappeared, being accompanied by a rise of temperature and by leucocytosis. Repair followed finally with almost complete recovery, except for the dislocation of the first cervical vertebra. The rarity of osteomyelitis variolosa is shown by the fact that although the authors examined by x rays a large number of small-pox patients, many of whom complained of pains in the limbs and joints, no similar case was discovered.

### 346. Aneurysm of the Splenic Artery.

H. NÄHER (*Deut. Zeit. f. Chir.*, August, 1926, p. 118) records a case of aneurysm of the splenic artery in a woman, aged 54, who had noticed a slowly increasing swelling in the left hypochondrium for over a year. Recovery followed operation. Näher has also collected fifteen other cases from the literature of aneurysm of the splenic artery in patients aged from 25 to 60. In all cases there was a history of pain in the region of the spleen, or at least in the upper part of the abdomen. The character of the pain ranged from a dull ache to attacks of violent colic, and the symptoms lasted from a few hours to several years before death or the performance of an operation. In three cases fainting attacks and loss of consciousness occurred, being caused, not by internal haemorrhage, but by hysteria or pressure on the solar plexus. Five patients suffered from gastro-intestinal disturbance and vomiting. In all but two cases there was dullness and resistance in the splenic region or upper part of the abdomen, which was more or less tender. Several patients when first seeking advice had profound anaemia, and were in a state bordering on collapse. In only three instances was the possibility of an aneurysm suspected, but its localization was never defined. Operations were performed on ten patients, four of whom recovered, while all those who did not undergo operation died. In most of the cases the main trunk of the artery was affected close to the hilus. The size of the aneurysm varied from that of a hazel nut to that of a man's head. In about half the cases two aneurysmal sacs were present, and in some cases there were as many as three aneurysmal dilatations of the artery. Two of the cases were due to trauma. There was no mention of syphilis being responsible in any case, though it is doubtful whether a special examination to detect it was always made. Arterio-sclerosis was mentioned in only one case, and in most of the cases the etiology was obscure.

### 347. Acute Cholecystitis in Children.

M. ZELIGS (*Arch. of Pediat.*, July, 1926, p. 485), who records an illustrative case, states that disease of the gall bladder in children is apparently rare. According to Snyder, only about eighty cases were reported between 1722 and 1922, acute suppurative cholecystitis being very uncommon. Reid and Montgomery in 1920 were able to find only about twenty cases on record, most of which were complications of typhoid fever. Zelig's case was in a girl, aged 12 years, who, about two months after the onset of typhoid fever, developed all the symptoms of acute cholecystitis. The pain, tenderness, and rigidity over the gall bladder were relieved by non-surgical duodenal drainage, a 40 per cent. solution of magnesium sulphate being used. A pure culture of typhoid bacilli was obtained from the bile, but after a single intravenous injection of 15 c.cm. of a 1 per cent. solution of mercuriochrome 220 the typhoid bacilli disappeared from the bile.

## Therapeutics.

### 348. Injection Treatment of Varicose Veins.

J. A. SICARD and L. GAUGIER (*Presse Méd.*, June 2nd, 1926, p. 683) review the literature, including the paper by J. Dunbar (*JOURNAL*, January 3rd, 1925, p. 14) on the treatment of varicose veins of the leg by injections, and record the results of nearly ten years' experience of the method. During the war Sicard had observed that the intravenous injection of luargol, an arsenical preparation rich in sodium, caused rapid sclerosis of the veins in the area injected without producing any pain or motor or trophic disturbance. He therefore determined to apply the method to the treatment of varicose veins, and being convinced that the arsenical element was not responsible for the result decided to employ sodium carbonate, for which he afterwards substituted sodium salicylate, as the former was liable to cause sloughing of the subcutaneous tissue. Bismuthide of mercury (Montpellier and Lacrolx), quinine (Génévrier), and sodium citrate (Troisier) have also been employed for the same purpose. The authors use solutions of sodium salicylate ranging from 20 to 40 per cent., commencing with a dose of 2 c.cm. of the 20 per cent. solution, and followed two or three days later by 2 or 3 c.cm. of the 30 to 40 per cent. solution. In successful cases 6 to 8 cm. of the vein becomes obliterated after the first

injection, and after four or five injections complete sclerosis of moderate sized varicosities is effected. The authors think that bismuthide of mercury in 1 per cent. solution should be reserved for cases in which syphilis is suspected, and for those which are refractory to treatment by sodium salicylate. Injections of quinine hydrochloride (0.40 gram), combined with urethane, are likely to cause severe pain and oedema, although the end-results are excellent. The treatment of varicose veins by injection into them of substances causing sclerosis is contraindicated in plethoric subjects with hypertension, as well as in cases of heart and renal diseases. They add that the method should never be employed in cases of long-standing deep phlebitis.

### 349. The Therapeutic Value of the Antirachitic Vitamin of Cod-liver Oil.

M. FLAMINI (*La Pediatria*, June 15th, 1926, p. 625) finds that the non-saponifiable fraction ("ostelin") extracted from cod-liver oil by Zucker's method in a daily dose of 5 to 15 m for a normal infant renders the faeces constantly acid, the normal reaction in the healthy breast-fed child, or increases their acidity. As a rule 3 to 4 m twice a day was sufficient to keep the faeces acid. On a daily dose of 2 to 3 grams of calcium lactate an acid stool would become alkaline, but with the addition of 3 m of ostelin twice or three times a day the faeces regained their acidity. In marasmic babies with poor digestion the change came about more slowly and required larger doses (5 to 8 m). This is of importance, since regular bowel action is normally associated with an acid stool. Flamini appends a curve showing the effect of the vitamin on the stools of a bottle-fed baby aged 3 months and suffering from hard, grey, infrequent, alkaline, offensive motions; these were converted into creamy, acid, yellowish, regular, inoffensive (diminished putrefaction) stools. Large doses may cause hyperacidity, resulting in green stools and diarrhoea, and this is counteracted by giving calcium lactate. The vitamin increases the absorption of calcium through the intestinal wall, and simultaneously it stimulates the production of steapsin and increases fat metabolism, with greater formation of soaps (absorbed), a corresponding increase of fatty acids, and a diminution of neutral fats in the stools. The effect of the vitamin in increasing the body weight is shown in curves of 32 infants given doses of 3 to 5 m two to five times a day. This increase is attributed by Flamini to the improved intestinal absorption and the improved nutrition of the tissues due to more active assimilation. The acidity of the blood is diminished, and Flamini therefore used the vitamin in the treatment of symptoms due to acidosis, such as cyclical vomiting (one case cured in one month), infantile eczema (9 cases cured in three weeks by calcium lactate and ostelin), and predisposition to tuberculosis. Three cases of spasmodic asthma were cured, he thinks, by the vitamin increasing the penetration of calcium into the cells of the sympathetic. This vitamin also raises the blood pressure and benefits cutaneous vasomotor disturbances such as urticaria, which are duo, he thinks, to vagotonia or hyposympatricotonia, its action being similar to that of adrenaline.

### 350. The Therapeutic Action of Manganese Citrate.

L. NORMET (*Paris méd.*, July 31st, 1926, p. 102) finds that the metallic citrates, especially manganese citrate, have a special therapeutic action in infections and recommends the following formula: Sodium citrate 52 grams, magnesium citrate 10 grams, ferro-potassium tartrate 3 grams, and manganese citrate 1 gram, water to one litre. Normet states that an hour after an intravenous injection of 0.25 c.cm. per kilo of body weight the patient's temperature rises, and there is shivering and profuse sweating; the degree of fever produced varies, but is greater in very emaciated patients. This febrile reaction occurs after the injection of any dose of manganese citrate larger than 0.04 gram. When the dose is reduced the reaction is less, and it disappears completely when the dose is less than 0.02 gram. The author suggests that these symptoms are due to the energetic oxidation produced by ferro-potassium tartrate and manganese citrate. There is no danger or general disturbance, but the injections are ill borne by very anaemic patients. In these cases Normet employs minute doses of manganese citrate (about 0.001 gram), which appear to increase the haemoglobin content. He believes that manganese citrate is a very valuable remedy in the treatment of infections, especially in neurotoxic cases, such as influenza, cerebro-spinal meningitis, rubeola, and haemoglobinuric jaundice. It is said to be less valuable in enteric fever, although it produces a brief fall in temperature. The author suggests that manganese citrate modifies the toxins by the abstraction or addition of oxygen. The systemic disturbance described above may be avoided by adding to the solution 5 per cent. of neutral glycerin, which retards ionization and oxidation of the salts without interference with the therapeutic action. The author proposes to





membranes played no etiological part: among fifty cases, however, there were only sixteen in which albuminuria was not present, and of the series of a hundred, no fewer than twelve suffered from eclampsia during the current or a previous pregnancy. Non-albuminuric patients as a rule showed the least extensive detachments, but one patient with complete separation of the placenta and 3.3 kilograms of blood clot had a urine free from albumin. Among fifty cases spontaneous birth occurred in thirty-four instances and maternal mortality was 8 per cent. At Caesarean operations or autopsies subserous and intramuscular bleedings in the uterus were almost constant findings, and free blood-stained fluid was frequently present in the abdomen. Foetal mortality was about 60 per cent., and as a rule foetal survival was found to be incompatible with detachment of more than one-half of the placenta.

### 357. Axial Torsion of the Uterus.

L. DIEULAFÉ (*Bull. Soc. d'Obstét. et de Gynécol. de Paris*, June, 1926, p. 392) records two cases in which torsion of the uterus caused acute symptoms. In the first a nullipara, aged 32, who had not had specially copious menses, was seized suddenly with violent abdominal pain and vomiting, followed by painful and frequent micturition. Two days later meteorism and a swelling of the right kidney were noted, and thirteen days afterwards, the abdomen having become less swollen and less tender, a large myoma of the uterus was recognized. At operation the uterus was found to be rotated almost completely around the isthmus, and the position of the myoma was consistent with compression of the right ureter during the acute stage. In the second case a married woman, aged 24, who had had four months' amenorrhoea, suffered suddenly from severe abdominal pain and shock. A cystic tumour, regarded as an adnexal inflammatory lesion or an extrauterine gestation sac, was apparently present in the right fornix and the uterus was enlarged. At operation the right angular region was found to be the site of uterine pregnancy and to have become axially rotated. Pregnancy continued after the rotation had been corrected without uterine fixation other than by abdominal pads and bandages.

### 358. Puncture of the Cisterna Magna in Intracranial Birth Injuries.

B. S. DUNHAM (*Amer. Journ. Obstét. and Gynecol.*, June, 1926, p. 833) thinks that many new-born babies with intracranial haemorrhage fail to receive benefit from lumbar punctures because the spinal canal is not entered or is blocked by blood clot, or only blood is withdrawn in small quantity from punctured vessels of the spinal plexus. In such cases, he states, puncture of the cisterna magna is equally effective therapeutically, and in experienced hands is no more dangerous; at this site the blood vessels are chiefly extradural, so that operative contamination by blood is unlikely. After anterior flexion of the head the position of the posterior rim of the foramen magnum is located by deep palpation and a lumbar puncture needle inserted, a few millimetres above, until the occiput is touched. The needle is then displaced downwards so as to glide under the posterior edge of the occipital bone, and is next pushed forward and upward in line with the mid-point between the glabella and anterior fontanelle until the "give" of the needle indicates that the occipito-atlantal ligament has been pierced. Dunham has made twenty-seven cisterna punctures in ten new-born infants, nine of whom had intracranial haemorrhage as indicated by ocular disturbances, cyanosis, localized twitchings or generalized convulsions, and respiratory, cardiac, or temperature disturbances. The punctures varied in number from one to five in each patient, and the beneficial effect was often prompt and decided. Six babies recovered and five still appear to be without mental or physical defects at ages from nine to twenty-four months.

### 359. Births following Caesarean Section.

WILLE (*Zentralbl. f. Gynäk.*, July 10th, 1926, p. 1857) states that during the last fifteen years abdominal Caesarean section has been performed in 357 out of 28,917 deliveries, or in 1.2 per cent., at the Women's Clinic of the Charité Hospital, Berlin. In 43 cases Caesarean section was performed twice, in 19 three times, and in one case four times. In cases where there was no indication for a fresh Caesarean section, expectant treatment was adopted, and in 19 spontaneous delivery occurred. In another 16 delivery through the vagina required the aid of forceps. In contrast with these favorable cases there were four examples of rupture of the uterus. The second pregnancy was not responsible for this rupture, which was really due to lack of asepsis and faulty technique in the primary Caesarean section. Wille adds that when rupture occurs complete extirpation of the uterus is essential. The prognosis is grave, as the mortality is 25 per cent.

## Pathology.

### 360. Closure of the Appendix.

R. FINALY (*Nederl. Tijdschr. v. Geneesk.*, August 14th, 1926, p. 765) states that the appendix was ligatured in 1904 by Ssobolew, who among other histological changes found atrophy of the muscularis mucosae and lymph follicles. Finally now reports his own observations on ligaturing the appendix in rabbits, his conclusions being as follows. Experimental closure of the vermiform appendix in the rabbit, as in pathological closure in man, causes first a dilatation and then a cystic state of the organ. The contents are usually sterile and may consist of pure mucus, mucus mixed with intestinal contents, or a creamy or brittle mass formed mainly of polymorphonuclear leucocytes or lymphocytes. The wall of the cyst is usually thin, but may be thick; the inner surface is pale and glistening. Diverticula may arise in connexion with the cysts in the rabbit, just as in man. The contents of the cyst may pass out into the abdominal cavity, giving rise as in man to a condition resembling pseudomyxoma peritonei, which consists not only of a gelatinous and mucinous degeneration of the peritoneum, but also leads to the formation of nodules or cysts containing mucus by implantation on the peritoneum of the escaped contents of the appendix. The caseous mass which has passed out into the peritoneal cavity in most cases gives rise to a chronic adhesive peritonitis. After multiple ligation of the appendix acute gangrene of the wall develops, although the artery is not involved, as the result of sudden increase of internal pressure.

### 361. Estimation of the Total Protein Content in Cerebro-spinal Fluid.

G. A. YOUNG and A. E. BENNETT (*Amer. Journ. Med. Sci.*, August, 1926, p. 249) describe a short method of estimating the protein content of cerebro-spinal fluid. To 2 c.cm. of the fluid measured into an ordinary centrifuge tube, ethyl alcohol (95 per cent.) is added up to 8 c.cm.; 1 c.cm. of fluid up to 4 c.cm. with alcohol may be used where the protein content is greatly increased. The contents are then acidified with a drop of 10 per cent. acetic acid or a trace of glacial acetic acid, and heated carefully to boiling-point over a Bunsen burner. The protein immediately flocculates, and the contents of the tube are transferred to a vacuette tube with the capillary tip graduated to register 0.01, 0.02, 0.03, 0.04, and 0.05, and centrifuged until the precipitate is completely thrown down; if any collects on the side of the tube the supernatant fluid is stirred with a glass rod and the contents centrifuged again. Normal fluids contain 25 to 75 mg. per 100 c.cm. (0.005 to 0.015 c.cm. in 2 c.cm.), and border line fluids 75 to 100 mg. per 100 c.cm. (0.015 to 0.02 c.cm. in 2 c.cm.). This slight increase in total protein content is of value in distinguishing between organic and functional conditions, a positive increase favouring an organic diagnosis. The authors state that total protein determinations give one of the earliest findings of cerebro-spinal involvement in syphilis, and in neurosyphilis are valuable in estimating serological improvement under treatment. The highest readings are seen in involvement of the meninges, central neuritis, and general paresis.

### 362. Tension of the Cerebro-spinal Fluid.

P. E. NÚÑEZ (*L'Encéphale*, July-August, 1926, p. 508) states that the normal tension of the cerebro-spinal fluid, according to Claude, is below 20 in the recumbent and 30 in the sitting posture. Three degrees of hypertension may be described: the first between 20 and 40 recumbent and between 30 and 50 sitting; the second between 40 and 60 recumbent and between 50 and 70 sitting; and the third above 60 in the recumbent and above 70 in the sitting posture. Núñez records his observations on 75 cases, his conclusions being as follows. Estimation of the spinal tension without the aid of the manometer lacks any scientific and practical value. The spinal tension and the quantity of the spinal fluid are not always associated. Spinal hypertension of the second and third degree may coexist with a normal quantity of spinal fluid, and on the other hand an excess of spinal fluid may be associated with only slight spinal hypertension. A primary spinal hypertension may occur independently of any clinical manifestations in the nervous system and with a normal spinal fluid. Spinal hypertension and arterial hypertension correspond in only two-thirds of the cases. A considerable difference between the two tensions is frequent, and there is nothing to prove that spinal tension is the effect of arterial tension. In cerebral processes suggesting the presence of a tumour a differential tension between 10 and 20 is in favour of the diagnosis of cerebral tumour.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 363. Meningococcal Septicaemia.

J. C. KENNEDY (*Journ. Roy. Army Med. Corps*, July, 1926, p. 6) records four cases of meningococcal septicaemia in soldiers, aged from 19 to 25, who presented the following remarkable conditions: (1) long duration of septicaemia, in one case two years and four months; (2) the similarity of the clinical picture in all cases; (3) the presence of a rash having the characters of erythema nodosum, and suggesting that there may be a specific relation between this condition and meningococcal infection. Two of the cases terminated with meningitis, one fatally, and in both of these the blood contained a Gram-negative diplococcus, which in one case was identified as a meningococcus. The two patients who recovered had exactly similar symptoms, and from one a meningococcus Type 4 (the parainfluenza of the French) was recovered, this being the organism usually associated with the septicaemic disease in which skin, joint, and eye manifestations are frequent. The fact that the four cases all occurred in a military population, and three of them in the space of six months, is evidence that this septicaemia is more prevalent than is generally thought. As diagnosis is impossible without a blood examination Kennedy suggests that cases of meningococcal septicaemia are being mistaken for the following diseases: malaria, septicaemia, subacute bacterial endocarditis, rheumatic fever, tuberculosis, and erythema nodosum.

### 361. Haematuria following Insulin Treatment.

J. GÖRMAN (*Wien. klin. Woch.*, August 13th, 1926, p. 963) describes a case of haematuria following insulin treatment. The patient was a man, aged 59, who had suffered from diabetes since 1919; in six years his weight fell from 15 to 10 st. In 1923 he commenced insulin injections with definite improvement. In 1924 he had a further course of four daily insulin injections; the urine was then free from sugar and acetone. In January, 1925, the patient had severe haematuria lasting two days. No evidence of any organic disease except a quiescent apical tuberculous focus could be found. The blood pressure was 120 mm. and the urine contained erythrocytes, blood casts, and traces of sugar and acetone, though there was no evidence of any disease of the genito-urinary system. Under a strict dietetic regimen for three weeks all blood and albumin disappeared. The progress of the diabetes necessitated further insulin treatment, which was not followed by haematuria. In November, 1925, the patient showed symptoms of impending coma, and a fourth series of insulin injections was prescribed; severe haematuria followed. Although the urine was free from sugar and acetone the patient became comatose and died. At the necropsy no renal abnormality was found except a number of small punctiform submucous haemorrhages in the renal pelvis and glomerular hyperaemia. Gildemann refers to two other cases—the first in a man, aged 60, who had a severe haemorrhage from the bowel after each insulin injection; the second, a patient aged 40, with diabetes and tuberculosis, had, two months before his death, severe haematuria lasting for one week. Gildemann observes that all his own cases of haemorrhage after insulin treatment occurred in a period of four and a half years; he thinks it probable that haemorrhages after insulin treatment occur more frequently than has been believed hitherto.

### 365. Varieties of Epidemic Encephalitis.

L. BÉRIEL and A. DEVIC (*Lyon méd.*, June 6th, p. 671, June 13th, p. 705, June 20th, p. 734, and June 27th, 1926, p. 764) refer to their previous paper on the peripheral forms of epidemic encephalitis (*Epitome*, March 28th, 1925, para. 313) and suggest the following classification of the forms of epidemic encephalitis which they have recently encountered. (1) Peripheral forms, with or without evidence of encephalitis as well. In the absence of such evidence the encephalitic nature of the peripheral neuritis, though probable, cannot be established. The authors record the case of a man affected with bilateral musculo-spiral paralysis whose wife had contracted a fatal attack of acute encephalitis two months previously. (2) Pseudo-myopathic forms, which generally, but not invariably, occur in young subjects. The affection develops progressively without any obvious infective period, being manifested by exclusively motor symptoms, and in a few months leads to a pronounced loss of muscular power. There is no obvious atrophy or anaesthesia. The condition

differs from typical myopathy by the condition being sub-acute and generally subsiding in a few weeks or months. (3) Meningeal forms. The existence of these forms has been known since the great epidemic of encephalitis of 1920, and it is probable that the cases formerly described as tuberculous meningitis with choreo-athetotic movements belonged to this group. As a general rule they end in recovery. (4) Primarily dystonic forms, with or without the usual symptoms of encephalitis. The patients in this group present acute motor disturbances which are not paralytic or ataxic, but involuntary movements consisting in a combination of muscular contractions and hypotonus which give rise to dynamic deformities, contortions, or torsion spasms. There is no atrophy, anaesthesia, or disturbance of the reflexes.

### 366. Scarletina Infection due to *Streptococcus Viridans*.

E. STENFELD (*Journ. Amer. Med. Assoc.*, July 24th, 1926, p. 241) states that during the winter 1925-26 there was an outbreak in Philadelphia of an acute infection, presumably due to *Streptococcus viridans*, which was uniformly recovered from the throat and inflammatory exudations. The onset was sudden, with headache, nausea, and vomiting. The throat was much injected, the pulse rapid out of proportion to the temperature, and moderate leucocytosis was the rule. In twenty-four to forty-eight hours an eruption appeared over the trunk and to a lesser degree on the extremities, slightly resembling that of scarlet fever. Desquamation was of a fine or furfuraceous character. Haemorrhagic nephritis frequently occurred at the time of the exanthem, or several days later. The duration of the febrile period was from one to two weeks, but longer if any complications occurred, such as peritonsillar abscess, retropharyngeal abscess, otitis media, sinusitis, or suppurative adenitis. The infection was distinguished from scarlet fever by its infectivity at all ages, which is exceptional in scarlet fever, by the atypical character of the rash, and most conclusively by the development of true scarlet fever in two cases. The prognosis was good. Scarletinal antitoxin had a favourable action, probably owing to the close biological relation of the two strains of streptococci, and possibly in part due to a non specific reaction.

## Surgery.

### 367. Non-specific Urethritis.

L. M. BEILIN (*J.rol. and Cut. Rev.*, August, 1926, p. 463), who records an illustrative case of non-specific urethritis in a man due to *Micrococcus catarrhalis*, states that this condition is undoubtedly one of the most neglected subjects of the genito-urinary branch of medicine. The influence of microbes other than the gonococcus upon the genesis of urethritis was not recognized until 1883, when Boeckhart and Wolfe described pseudo-gonorrhoeal urethritis characterized by the presence of streptococci. In 100 cases of acute urethritis in his private practice Frank Kidd found gonococci in 82, staphylococci in 13, and streptococci in 5. Beilin, in 100 consecutive cases in his practice, found gonococci in 86, staphylococci in 8, streptococci in 2, *Micrococcus catarrhalis* in 1, and various unidentified bacteria in 3. Beilin's conclusions are as follows: (1) Non-specific urethritis is a definite clinical entity, which occurs more often than is generally supposed. (2) Many cases of non-specific urethritis are non-venereal in origin. (3) The exact diagnosis, especially in forensic cases, can only be made by cultural methods. (4) A patient with simple urethritis may be allowed to marry, for though he may transmit the infection to his wife, it will do her no harm. (5) Cases of simple catarrhal urethritis, while tending to spontaneous recovery, may prove exceedingly obstinate and resistant to all treatment. (6) The best plan to adopt in cases of aseptic and non-gonococcal urethritis is the avoidance of all treatment.

### 368. Treatment by Fixation Abscess.

J. CARLES (*Journ. de Méd. de Bordeaux et de Sud-Ouest*, July 10th, 1926, p. 559) relates that the method of treatment by fixation abscess, introduced by Fochier of Lyons in 1891, was at first regarded with suspicion, but subsequently was adopted with enthusiasm, especially by Bordeaux clinicians, though the Parisian school for a long time remained opposed to its use, in spite of isolated trials by Dienlaffoy, Chantemesse, Rendu, and Siredey. It was not until 1920, when Nectér became its advocate, that the method became widely popular

in France, in spite of the opposition of Comby, who regards it as a brutal, ineffective, and painful method, which should be consigned to oblivion. As the result of twenty-five years' experience of the method Carles comes to the following conclusions. Fixation abscesses should be employed only in exceptional cases. In mild affections they are not required, as a simpler method will effect a cure without inflicting on the patient the pain caused by their use. In severe affections the production of a fixation abscess sometimes acts like a charm, but only when an inflammatory or purulent process has to be localized, or a septic and pyaemic process needs to be cut short. Even in such cases the method must not be employed too soon or, on the other hand, too late, since it is of no use if the patient is moribund. The following technique should be employed. Oil of turpentine in a dose not exceeding 1 c.cm. is injected into the cellular tissue of the middle of the outer aspect of the thigh; another dose of 2 c.cm. should be given if there is no reaction from the first injection. A free incision should be made as late as possible (towards the sixth or eighth day), and the collection of pus freely drained. Rigorous asepsis should be maintained until cicatrization is complete.

### 333. Operative Treatment of Meningococcal Meningitis.

M. M. PIET (*Journ. Amer. Med. Assoc.*, June 12th, 1926, p. 1818), who records a case in a girl, aged 8 years, in which advanced meningococcus meningitis complicated by ventricular and spinal subarachnoid blockage was successfully treated by combined ventricular, cisternal, and lumbar puncture, remarks that the treatment of meningococcus meningitis by the lumbar route alone has given satisfactory results only in the presence of most favourable conditions—such as early diagnosis, the use of a specific serum, and low or moderate virulence of the organisms. Many patients discharged as cured are subsequently found to have a cisternal, ventricular, or cortical subarachnoid block, which had not been recognized, and therefore not treated. Puncture of the cisterna magna, the technique of which should be mastered on the cadaver, is indicated in all cases not showing satisfactory progress. Ventricular puncture, either through the anterior fontanelle or, in older children, through a trephine opening, is demanded in cases with a ventricular block. Cisternal or ventricular puncture, or both, combined with the introduction of serum into the basilar cisterna or ventricles will do much towards preventing subsequent hydrocephalus, and in advanced or fulminating cases may be the means of saving life.

### 370. Hypersensitivity to Chloramine.

P. KUHR (*Zentralbl. f. Chir.*, August 7th, 1926, p. 2004) describes that solutions of chloramine (Heyden) have been so generally employed recently as disinfecting agents that it is advisable to record two cases in which it caused severe irritation. The author and his assistants adopted chloramine as the routine disinfectant for their hands, their practice being to wash the hands and forearms for five minutes; after this gauze compresses were applied, and finally the hands and forearms were washed for ten minutes with soap and water. The theatre sister acquired persistent bronchitis, which withstood all treatment; the cause of this was obscure for a long time until it was observed that when the sister was off duty the cough was relieved. When alcohol was substituted for chloramine as the routine disinfectant the cough quickly disappeared. She suffered also from severe intractable eczema of both forearms, which subsided after the discontinuance of chloramine. Kuhr also suffered from a less intractable vesicular eczema of the thumbs, index and middle fingers of both hands, which healed rapidly when the use of chloramine was discontinued.

### 371. Surgery of the Mitral Valve.

D. S. ALLEN and P. S. BARKER (*American Heart Journ.*, August, 1926, p. 693), in view of the development of a new surgical procedure for the relief of mitral stenosis, have performed a series of investigations upon etherized dogs. There are two possible avenues of approach to the mitral valve through the heart wall: (1) through the wall of the left auricle, or, more specifically, through the left auricular appendage; and (2) through the wall of the left ventricle. Since it is proposed to employ one of these approaches in surgery of the human heart, the question arises as to which of the two is the safer. The authors found that in each animal of the transvenicular series the disturbance of rhythm approached too closely to ventricular fibrillation to be safe, the ventricles being thrown into fibrillar contraction by any form of irritation, mechanical or electrical. On the other hand, approach to the mitral valve through the left auricular appendage gave rise to no dangerous or even serious disturbance of rhythm. The conclusion is therefore drawn that the latter route is the safer one to use.

## Therapeutics.

### 372. Vaccine and Serum Treatment of Cerebro-spinal Fever.

COURTOIS-SUFFIT and G. GARNIER (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, July 8th, 1926, p. 1185) remark that cerebro-spinal fever, which formerly responded so rapidly to serum treatment, has lately been becoming increasingly refractory to this method, so that cases are often seen where injections of antimeningococcal serum have no effect on the course of the disease, even when the serum has been given in adequate and repeated doses. The authors record two cases of cerebro-spinal fever in which serum therapy proved absolutely useless and was replaced by an autogenous vaccine. In the first case rapid improvement followed and the temperature fell to normal, while the second case, in which meningococcal septicaemia was present, ended fatally in spite of the vaccine treatment. Commenting on these cases, L. MARTIN (*ibid.*, p. 1192) combats the pessimistic view held by Courtois-Suffit and Garnier as to the value of antimeningococcal serum. He remarks that cerebro-spinal fever is always a severe disease in adults, and that vaccine treatment, though it may be a useful adjunct, cannot take the place of serum therapy in this disease. Early employment of serum is, he considers, the most important factor in the success of the treatment, and explains why Orliconi had thirty-three recoveries out of thirty-five cases of cerebro-spinal fever treated by serum.

### 373. Quinine Injections in Lobar Pneumonia.

W. BERGER (*Wien. Klin. Woch.*, August 19th, 1926, p. 969) reports very favourably on the treatment of pneumonia by intravenous injections of quinine hydrochloride in doses of about 7 to 10 grams; in one group of cases the disease being aborted, and in another group there was definite shortening of the course of the disease; in the majority of cases the patients made a good recovery in spite of senility and chronic alcoholism, or the occurrence of serious complications, such as nephritis, pericarditis, and diabetes. Furthermore, the favourable effects of quinine were shown by a transient or prolonged improvement of the general condition, of the circulation, by a reduction of the degree of leucocytosis, and a relief of subjective symptoms. Two patients recovered after the initial injection, given on the first and fourth days of the disease respectively. One patient, a woman aged 22, was admitted on the third day of the disease; the first injection of quinine was given immediately. The patient's general condition was very grave and there was dyspnoea and a cyanotic pallor. The characteristic rusty sputum contained numerous streptococci, pneumococci, and staphylococci, but no type predominated. On the third day a larger injection of quinine was given, and two days later a crisis occurred with fall of temperature. On the following evening the temperature rose again for twenty-four hours, but then became subnormal. The mixed injection may have diminished the effect of the quinine. In a second case, a man aged 47, the prognosis became very grave when jaundice, nephritis, and pericarditis occurred. After the second injection of 10 grams quinine hydrochloride a crisis took place. The patient recovered in spite of the serious complications. Berger records many other successes; he believes that quinine is less useful in streptococcal than in pneumococcal infections, and that the success of treatment depends largely on its early commencement.

### 374. Treatment of Constipation.

E. L. KELLOGG (*Med. Journ. and Record*, August 18th, 1926, p. 199) classifies constipation as dietetic, habit, spastic, or atonic and mechanical. Treatment may include diet, exercise, massage, electricity, abdominal support and drugs, and many cases can be best treated by a combination of several methods. In mechanical obstruction radiology should be accepted only as providing information, and should not discourage medical treatment; the advisability of surgical operation should be considered only after all other efforts have failed. Dietetic constipation is recognized by the history and the curative effect of a properly regulated diet, treatment consisting in prescribing laxative foods (fruit, green vegetables, whole-wheat bread, butter, cream, and oil) and a sufficiency of fluids. Habit constipation results from a failure to heed natural impulses, and the patient should be taught to yield promptly to the desire for a movement and to pass a morning stool regularly. Spastic constipation is due to a tonic spasm, usually of the descending colon or rectum, and is often associated with atony of the caecum and ascending colon; it is best treated by mild medication (laxatives, bland enemata, and suppositories), local sources of irritation, such as haemorrhoids and fissures, being dealt with as so. Atonic constipation may result from general asthenia or



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with those of Peyser; two patients showed no departure from the normal reactions of the non-pregnant state, five showed vagotonia, and eight gave evidence equally of vagotonia and sympathicotonia. Of the twenty-three patients whose labour had been characterized by primary uterine inertia, only one gave vagotonic reactions, and three only showed the mixed vagotonic and sympathicotonic reaction, while 78 per cent. gave uterine reactions resembling those found apart from pregnancy. Four patients in this series showed clear signs of sympathicotonia, which was never noted in the puerperium of normal subjects. These results are taken to indicate that pregnancy is normally associated with variations in the vegetative nervous system, which are predominantly vagotonic. Where there is uterine inertia the sympathetic nervous system is more than usually labile, with a tendency to sympathicotonia.

### 381. The Ovarian Hormone.

B. ZONDEK (*Zentralbl. f. Gynäk.*, July 31st, 1926, p. 2050) has estimated by Allen and Doisy's method the hormone content of various portions of the human ovary; these were implanted in castrated white mice and the oestral phenomena produced were measured by examination of swabs of the vaginal secretion. He found that an oestrogenous hormone was absent from the germinal epithelium, the stroma, and the primordial follicle, almost absent from the small follicles, but abundantly present in the ripe follicles and liquor folliculi. He gives the following account of the physiology of the ovarian internal secretion. The hormone reaches the circulation by lymphogenous absorption from the peritoneal fluid which receives the discharge from the ruptured follicles, and by direct absorption from the wall of the corpus luteum. It is found there until menstruation, diminishes during menstruation, and is absent from the post-menstrual corpus luteum. Hormone production continues during pregnancy, when it is found in the corpus luteum of pregnancy, the regressing follicles, and the placenta. Zondek denies the endocrine function of special interstitial cells or glands; he maintains that the ovarian hormone, which is unique and produced in the follicular apparatus, is responsible for sexuality and the secondary anatomical sexual characters. The lipoids are not identical with the hormone. The ovarian hormone cannot be replaced by other internal secretions, but ovarian hormone production can be stimulated by other endocrines, especially that of the anterior lobe of the pituitary. S. LOEWE (*Ibid.*, p. 2051), as a result of similar quantitative experiments, concludes that the small degree of success which has hitherto attended ovarian therapy is due to the very small amount of hormone which is present in the preparations usually employed. POLL and BLOTEVOGEL (*Ibid.*, p. 2053) have enumerated the adrenalogenous (chromaffin) cells in the ganglia of Frankenhäuser, which lie in the broad ligaments at each side of the cervix. They find these cells to be five times as numerous in the pregnant as in the non-pregnant mouse, and nine times as numerous at term, after which they rapidly diminish in number. Both in the castrated and the normal animal these cells become more numerous after injection of ovarian hormone.

## Pathology.

### 382. The Pathology of Sickie-Cell Anaemia.

M. DREYFOOS (*Arch. of Pediat.*, July, 1926, p. 437), who reports an illustrative case in a negro boy, aged 3½ years, defines sickle-cell anaemia, first described by J. B. Herrick in 1910, as an hereditary and familial disease peculiar to individuals with negro blood, characterized by peculiar changes in the red corpuscles, and manifested clinically in various degrees of severity by anaemia, muscular and arthritic pains, palpitation, weakness and dyspnoea, abdominal crises, leg ulcers, and a tendency to remissions and exacerbations. The red cells vary in number from 500,000 per c.mm. in active cases to 5,000,000 in latent cases, and the haemoglobin from 15 to 65 per cent. in active, to 90 per cent. in latent cases. The colour index is usually normal and often above normal. The white cells are increased in active cases, in which they generally range between 10,000 and 20,000 per c.mm.; in latent cases there is no leucocytosis. The platelets are moderately increased in both latent and active phases, varying between 300,000 and 500,000 per c.mm. The differential count presents no abnormal characteristics. In active cases the red cells show marked poikilocytosis; a number, varying from 5 to 40 per cent., assume sickle-shaped and oat-shaped forms, which are darker and more highly refractile than the other cells. Otherwise the red cells show a marked polychromatophilia, and may present basophilic degeneration and stippling. Numerous nucleated cells of all sizes, especially normoblasts, are encountered. The blood picture changes

rapidly with fluctuations in the disease. During a relapse sickle cells may constitute 40 per cent. of the red corpuscles, but as a remission sets in they may almost entirely disappear. Anisocytosis and polychromasia persist, and some nucleated cells are always found. *Post mortem* the most important changes are encountered in the blood, spleen, and bone marrow. The red corpuscles in all the tissues show the same changes as those which have been seen during life. The spleen exhibits invasion of the reticular spaces by red cells, with evidence of active blood destruction, as shown by the large deposit of pigment; haemorrhages and infarcts are generally present. The bone marrow shows marked increase in the number of red cells, which are much deformed and in active cases nucleated. The marrow elements proper are also increased numerically. Dreyfoos thinks that sickle-cell anaemia is probably due to a primary affection of the spleen and haemopoietic organs, and must be distinguished from syphilis, tuberculosis, haemolytic jaundice, pernicious anaemia, and secondary anaemias. The prognosis is said to be good in adults, but should be guarded in children owing to susceptibility to pneumonia, tonsillitis, and other secondary infections. Treatment is symptomatic.

### 383. Bacteriology of Bronchopneumonia after Measles.

N. HENNING (*Jahrb. f. Kinderheilk.*, July, 1926, p. 217) records his bacteriological investigations in a very severe epidemic of measles in a children's home in Berlin in 1922, when 130 children were attacked, with a 30 per cent. mortality generally and a 50 per cent. death rate for children under 2 years of age. Almost all the deaths were due to bronchopneumonia, though in some cases there was associated adenitis and ulceration of the mouth and vulva. The bacteriological examinations were mostly made after death; haemolytic streptococci were cultivated from all the organs of those who had died from bronchopneumonia, the deaths being due to streptococcal septicaemia, of which the lung disease was one of the manifestations. Subsequent examination during life of 85 other cases of uncomplicated measles showed that haemolytic streptococci could never be recovered from the sputum. On the other hand, out of 25 cases of measles bronchopneumonia, 12 showed haemolytic streptococci and 4 pneumococci in all the organs, while in the rest no definite pathogenic organisms could be detected. Owing to the rapidity with which measles bronchopneumonia spreads through a ward, which explains the high mortality of the disease in hospitals, prison camps, and such institutions, Henning concludes that cases of bronchopneumonia should be isolated at once; since taking this precaution he has seen no such severe epidemic as the one reported.

### 384. Purified Diphtheria Toxoid.

A. F. WATSON and ELSIE LANGSTAFF (*Biochem. Journ.*, Vol. XX, No. 4, 1926, p. 763), stressing the desirability of purifying toxins and antigens in general, state that one of the chief difficulties in the use of the Schick test is the pseudo-reaction, due to the presence in the toxic filtrates of some substance which is more heat-stable than the specific one, and which causes rise of temperature and other non-specific reactions. A similar reacting substance appears to exist in the filtrates of the streptococcus which have been recently used in the Dick test. From their experiments, the technique of which is described, the authors come to the following conclusions: (1) The active principle of toxic filtrates of *C. diphtheriae* is confined to a very small fraction of the filtrates. (2) By formalizing the filtrates and treating them with acetic acid a highly active fraction is precipitated. (3) This active fraction can be further purified by reprecipitation methods or by dialysis, and solutions as much as a hundred times purer than the original toxoid can be obtained. Purified toxoid, like diphtheria toxoid, is a very stable substance. The purified solutions are protein in nature; they contain sulphur and occasionally phosphorus.

### 385. Origin of the Symptoms in Gastric Ulcer.

J. A. WOLFER (*Jour. Amer. Med. Assoc.*, September 4th, 1926, p. 725), as the result of the experimental production of gastric ulcers in dogs, has found that, though the ulcers resemble macroscopically and microscopically chronic peptic ulcers in man, yet there is no increase of the gastric secretion in dogs. When the ulcer was situated close to the pylorus there was a delay in the emptying time of the stomach, but when it was placed two inches away the stomach contents were evacuated in the normal time. So far as could be determined no symptoms seemed to be caused by the presence of the ulcer. Wolfer, therefore, believes that in man other factors than the ulcer itself play a part in the production of the disturbance of the gastric function and of the characteristic symptoms. He is inclined to attribute the pain and hyperacidity to mental factors, and suggests that treatment should be directed accordingly.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

356.

### Diet in Pernicious Anaemia.

W. P. MURPHY and G. R. MINOT (*Boston Med. and Surg. Journ.*, August 25th, 1926, p. 410) report a distinct improvement in patients suffering from pernicious anaemia who have been given a special diet, rich in proteins, such as liver, and containing much lean meat, fruits, and vegetables, with a low percentage of fat. They recommend the following quantities: (1) Liver (calves', ox, or chicken) or lamb's kidneys freshly cooked, 4 to 6 ounces a day (cooked weight and without fat, either broiled, baked, boiled, minced, or in soup). (2) Fruit, at least 12 ounces a day—peaches and other stone fruit, pineapple, strawberries, oranges, or grape fruit; raisins to be eaten freely. (3) Lean meat, freshly cooked, at least 3½ ounces a day. (4) Not less than 9 ounces of cooked or raw vegetables—lettuce, spinach, asparagus, tomato, or cabbage. (5) Fats to be restricted to 2 ounces daily. No cheese, bacon, or fried food is allowed; very little cream or butter, and only one egg. (6) U-o mineral oil for salad dressing. Sugar must be taken sparingly and all very sweet dishes avoided. (7) Starchy food and cereals to be taken sparingly; wholemeal bread, toast, or dextrinized bread, or starch. Milk should be restricted to half a pint or less, and a minimum quantity of table salt should be used. Tea and coffee may be taken as desired. All food, especially liver, should be weighed at first, after cooking, until the patient can estimate the approximate quantities of the various foods. The foods should be well cooked and made as attractive and palatable as possible. Several small meals are preferable to only three meals in the day. The above dietary may be modified to suit individual requirements—for example, in persistent diarrhoea the quantity of fruit should be reduced or omitted. Experience shows that the patient should continue to take this diet even if the red blood corpuscle count is high. The full diet should contain approximately 2,500 calories.

357.

### Mumps Meningitis without Mumps.

A. WALLGREN (*Acta Paediatrica*, August 10th, 1926, p. 53) states that, contrary to most of the other forms of meningitis, the meningitis of mumps is usually lacking in striking symptoms, and subsides rapidly and spontaneously. It is therefore easily overlooked, usually entails no unpleasant consequences, and the error is not revealed by an autopsy. In Sweden mumps meningitis is not rare, and Wallgren reports six illustrative cases from his practice. In a man, aged 27, the disease commenced with meningitis, and it was not until the third day of disease that the parotid swelling appeared. In a boy, aged 14, whose brother had parotitis complicated by meningitis, the symptoms of meningitis were unassociated with any parotitis or inflammation of the other salivary glands. The meningitis was of the clinical type usually found in mumps, in which the meningeal symptoms are slight or absent, whereas the cerebro-spinal fluid shows a marked mononucleosis. Similar cases of meningitis as the only symptoms of mumps have been reported by Morquio and Schoerder.

358.

### Cardiac Asthma.

J. H. PRATT (*Journ. Amer. Med. Assoc.*, September 11th, 1925, p. 809) defines cardiac asthma as a paroxysmal dyspnoea, developing suddenly while the patient is at rest, accompanied by a sense of suffocation, and occurring in organic heart disease. Some attacks resemble bronchial asthma closely, even the expiratory type of dyspnoea being often mistaken for it. As the result of an analysis of 366 cases, the author defines four groups of the disease. (1) Pure cardiac asthma, which may be subdivided into mild and severe. The latter consists of agonizing attacks of suffocation, often associated with a sense of impending death, while the mild attacks are often mistaken for bronchial asthma. (2) A mixed anginous form—cardiac asthma with angina pectoris. In pure angina pectoris there is no embarrassment in breathing, and in pure cardiac asthma no pain. (3) A mixed oedematous form—cardiac asthma with pulmonary oedema. Some attacks of cardiac asthma end in pulmonary oedema, and there is evidently a close relation between the two conditions. (4) The combined form—cardiac asthma with both angina pectoris and pulmonary oedema. The attacks are characterized by urgent dyspnoea with a feeling of intense suffocation, cyanosis of the face, profuse sweating, cold skin, and a marked elevation of the blood pressure; they have an average duration of one hour. Cardiac asthma occurred

most often between the ages of 60 and 70, and this strongly suggests a causal relation of arterio-sclerosis to the symptom-complex. It is more common in men than in women, and its relation to angina pectoris seems undoubted, though many patients had no pain in the attacks of paroxysmal dyspnoea. The blood pressure is always increased, but in no case was there any disturbance of renal function, and nocturnal paroxysmal dyspnoea is not a uraemic manifestation. In most cases the heart was dilated to the left and there were signs of cardiac weakness. Little is known regarding the pathology, but it is evident that cardiac asthma is closely related to arterio-sclerosis, syphilitic aortitis, angina pectoris, and aortic insufficiency. Krehl and many others attribute the attacks to a sudden temporary failure of the contractile power of the left ventricle. Pratt does not consider this the sole cause, and believes that nervous influences and vasomotor disturbances in the peripheral circulation also are concerned. The prognosis is extremely grave, most patients dying in two, and some even in one, years after the first attack. Benefit in attacks has been obtained from glyceryl trinitrate, amyl nitrite, caffeine sodobenzoate, and ephedrine, though the use of the last drug is attended with some danger. Morphine (1/3 grain) injected subcutaneously is by far the best remedy for a severe attack. This should be followed, if the patient has not had digitalis for four or five days, by strophanthin (1/20 grain) intravenously. Baudaging the limbs shortens the paroxysm, and bleeding (15 to 25 oz.) is recommended if life is threatened. The patient should be kept strictly in bed for six to eight weeks or longer, and continued digitalization is of possible value in the prevention of recurrence.

359.

### Typhoid Fever in the Inoculated.

ACCORDING TO F. W. SCHEMBRA (*Münch. med. Woch.*, August 20th, 1926, p. 1397), during an epidemic of typhoid fever at Anklam in the summer of 1925, 15,000 persons voluntarily submitted to inoculation. Typhoid fever subsequently developed in 70 cases, 24 of which had been inoculated once, 18 twice, and 28 three times. In most cases, however, the disease ran a mild and short course, only 3 of the cases being fatal—a mortality of 13.6 per cent. compared with a mortality of 13.6 per cent. in non-inoculated cases. Only in exceptional cases was not recognized at first was the course of the illness slow. A more or less typical tongue was present in all but 5 of the 70 cases. Rose spots were also evident in the majority of cases. The spleen was distinctly palpable in 77 per cent. In 17 cases (24.3 per cent.) bronchitis was present. The diazo reaction was usually negative. Relapses occurred in only 4.18 per cent. Most of the patients were women or youths, whereas only 6 of the men who had been inoculated during the war contracted the disease.

## Surgery.

359.

### Treatment of Chronic Mastitis.

A. J. GRANT (*Canadian Med. Assoc. Journ.*, September, 1926, p. 1054) observes that many cases of chronic mastitis will respond to simple medical measures, and that operative treatment is only justified when one or more tumour masses are palpable. It has been shown that the condition is manifested by dilatation of the ducts and aetia with accumulation in them of the products of epithelial activity, the mouths of the ducts being blocked by the keratinized epithelial plugs normally present in the non-lactating breast. Though often associated with carcinoma, there is no proof, he adds, that this condition is pre-cancerous. Surgical operation is advocated in advanced cases, but in the earlier stages an endeavour should be made to free the ducts of the epithelial plugs. Localized excision is advised if a definite, permanent, benign tumour is palpable, the radical operation being reserved for carcinomatous tumours and cases in which the diagnosis is uncertain. Grant believes that there has been too great a tendency to perform mastectomy for chronic mastitis, whereas it should be reserved for cases presenting multiple definite masses, and then only when the condition is progressive. When no definite tumour mass is present the patient's pain and fears are often much relieved by the assurance that cancer is not present. In the author's experience treatment with massage and olive oil, followed by the application of wet borie dressings to the nipple, has given good results.

**391. The Surgical Treatment of Gastric Spasm.**

E. CRONE-MÜNZEBOCK (*Zentralbl. f. Chir.*, September 18th, 1926, p. 2333) recommends digital dilatation as being safer than any form of instrumental treatment of spasm of the cardiac orifice of the stomach. His first patient, aged 53, had been ill for twenty-three years, and during the last ten years had become extremely emaciated. On opening the abdomen the author found a hard hypertrophied muscular ring, of two fingerbreadths, at the lower end of the oesophagus. He opened the stomach and introduced three fingers into this ring, dilating it until the circumference was increased to 13 to 14 cm. The result was good. Four years after the operation the patient was free from pain and had gained 34 lb. in weight. A barium test meal containing breadcrumbs was seen to pass easily through the cardiac orifice when the patient was examined through the fluorescent screen. The second patient, a man aged 42, had suffered for ten years from severe dysphagia. The condition found at operation led the author to decide that internal dilatation in this case would be safer and simpler than a plastic operation. The result was very satisfactory. Six weeks after the operation the patient had gained 24 lb. The author remarks that when digital dilatation is performed, the fingers must not be withdrawn for ten or fifteen minutes and the circumference of the dilated cardia should be not less than 13 or 14 cm.

**392. Investigation of the Interior of Joints.**

As an alternative to the practice of arthroscopy for the purpose of examining the interior of a joint, E. S. GEIST (*Journal-Lancet*, July 1st, 1926) suggests the use of an apparatus comparable with the otoscope or urethroscope, which permits examination of the interior of a joint cavity, and also the removal of tissue for pathological examination. He has conducted experiments successfully on the dead body, using a simple otoscope modified by lengthening the tube. With the aid of a stylinus this instrument was inserted like a trocar into the joint. Geist found that it was possible to study the greater part of the articular surfaces, portions of the semilunar cartilages, a considerable extent of the synovial surface of the joint proper, and of the suprapatellar bursa. He suggests that with the use of local anaesthesia arthroscopy can be performed with little more distress to the patient than would be caused by a simple aspiration, and that the operation of arthrotomy could thus be obviated in many cases.

**393. Unsuccessful Appendicectomies.**

KELLING (*Münch. med. Woch.*, September 24th, 1926, p. 1610) states that it is a well known fact that very many appendicectomies are failures, the patients continuing to complain of the same symptoms as before the operation. It is obvious that in such cases the pain has not been caused by appendicitis, but by other conditions, such as catarrh of the large intestine, adhesions, oxyuriasis, salpingitis, ureteral calculus, neuralgia, floating kidney, typhlophobia, or gall stones. Persistence of symptoms after appendicectomy is chiefly found in weakly asthenic girls or males with a long narrow thorax, usually between the age of 15 and 30, as well as in thin persons who have to keep much upon their feet. The symptoms disappear after prolonged rest in the recumbent position, and may be cured by wearing a suitable bandage or by a generous diet which causes a deposit of fat in the abdominal wall.

**394. Blind Ureter with Partial Hydronephrosis.**

C. COLUCCI (*Il Policlinico*, Sez. Chir., September 15th, 1926, p. 447) reports a case of partial hydronephrosis with double ureter in a woman aged 30. For the previous six years she had suffered from attacks of renal colic, with lumbar pain and vomiting, but there was no fever, no diuresis after the pain, and no haematuria. Later on a swelling was noticed in the right loin, which almost disappeared after the colic ceased. Pyelography showed deformation of the renal pelvis and curvature of the ureter, but no evidence of double ureter. The kidney was mobile. At operation the kidney was found partially hydronephrotic and was removed. It was then seen that the ureter was bifid, and after the junction of its upper divisions the single tube passed below the iliac vessels. The author suggests that if the ureteral catheter had been inserted further some evidence of bifurcation might have been obtained. By passing the catheter a short or a long distance up the ureter different types of urine might have been noted which would help in the diagnosis. Uretero-pyelography, with the catheter only passed a short distance, might have revealed the bifid condition. The partial hydronephrosis may have been due to a rather sharp-angled position of the ureteric opening in the bladder associated with mobility of the kidney. The author discusses the question of partial or total nephrectomy in these cases, and gives a photograph of the excised kidney and ureter which demonstrates the condition found. A short bibliography is appended.

S14 B

**Therapeutics.****395. Phenylhydrazine in Erythraemia.**

G. E. BROWN and H. Z. GIFFIN (*Arch. Intern. Med.*, September 15th, 1926, p. 321) discuss the treatment of polycythaemia vera (erythraemia) with phenylhydrazine. Experiments on animals have shown that the drug has a specific effect in the destruction of erythrocytes. Details are given of seven patients so treated; the effect of the drug on the destruction of blood and the reduction of erythrocytes was found to be definite, constant, specific, and symptomatic of a haemolytic crisis. Small doses caused an increase in leucocytes, but the platelet count was unaffected. The effect of the drug continued for seven to ten days after its discontinuance. There was a marked reduction in the volume of the blood directly proportional to the destruction of the erythrocytes, and when anaemia had been produced a relative increase in the plasma volume was noted. Jaundice, accompanied by an increase in the serum bilirubin, appeared early; there was a marked rise in the blood urica and a slight increase of the creatinine. All but one patient improved clinically, the vertigo, fullness of the head, neuralgia, mental irritability, and pains in the legs disappearing. When this last symptom is apparently due to calcification of the arteries it is suggested that the drug might prove beneficial in endarteritis obliterans without polycythaemia. Doses of 0.10 gram were given three times a day, it being estimated that each gram of phenylhydrazine destroyed an average of 6 grams of haemoglobin; the drug should be discontinued when the erythrocyte count drops to 4,500,000 per c.mm., since destruction continues for about a week afterwards. The authors consider that phenylhydrazine causes more consistent improvement in symptoms and more constant reduction in blood volume than either radiotherapy or venesection, and that the problems of the possibility of thrombosis, and the ultimate toxicity of the drug, especially for the liver, require further investigation.

**395. Serum Therapy in Scarlet Fever.**

S. S. WOODY (*Therapeutic Gazette*, July 15th, 1926, p. 477) reports the successful employment of passive temporary immunization in 97 Dick-positive cases after varying degrees of exposure to infection. Serum was obtained from five different manufacturers, and in each instance one injection was given forty-eight hours after exposure to infection. Up to the age of 3 enough antitoxin to neutralize 50,000 skin test doses was given; from 4 to 6 the dose was equivalent to 75,000 skin test doses, and over 6 to 100,000. All the patients gave a Dick-negative reaction seventy-two hours after injection, and not one of them developed scarlet fever during a stay in hospital ranging from four to sixteen days. No control tests were made in this series for duration of immunity. In another series 75 patients admitted to hospital owing to erroneous diagnosis and exposed to infection from scarlet fever in the ambulance or the wards for periods up to sixteen days were given the serum equivalent of 100,000 skin test doses and all escaped the disease. The author considers that this experience justifies the use of the antitoxin in cases of family and hospital exposure. In the treatment of the actual disease by antitoxin, on the same lines as in diphtheria, Woody quotes 160 severe cases so treated with very good results as compared with untreated cases. He claims that the treatment results in a quicker subsidence of toxæmia, more rapid fading of rash, swifter recovery of the mucous membranes, and a reduction in the number of carrier and return cases. The dose of antitoxin varied from 250,000 to 700,000 skin test units according to the patient's age and the severity of the disease. He emphasizes the importance of the throat symptoms as indicating the severity of the disease. Serum reactions were a little more severe than with diphtheria antitoxin, but did not appear in more than 11 per cent. of those injected.

**397. Digitalis Therapy in Children.**

A. W. JACOBSEN and W. C. DAVISON (*Amer. Journ. Dis. Child.*, September, 1926, p. 373) consider that the common ineffectiveness of digitalis in the treatment of cardiac disease in children is due to the fact that the doses used have been too small. In their experience the administration of comparatively large doses of digitalis to oedematous children suffering from rheumatic heart disease usually causes a loss of oedema, an increase in the patient's comfort, and prolongation of life. The dosage they recommend for children suffering from failure of cardiac compensation is 3 grains of the dried leaves of digitalis, given by the mouth in capsules every six hours until nausea develops—usually after four to eight doses. The dose should then be decreased to  $1\frac{1}{2}$  grains of the dried leaves twice a day, to replace the amount which the patient excretes daily. This treatment may, they add, usually be continued indefinitely. Should such symptoms of intoxication as nausea

or marked slowing of the pulse develop on this reduced dosage, digitalis should be discontinued and not readministered until one or two days after all symptoms of intoxication have disappeared. For patients who have been vomiting before digitalis therapy is begun, 30 minims of the tincture of digitalis diluted with 1 ounce of normal saline may be given by the rectum every six hours until the pulse rate is reduced—usually after four to eight doses. The amount should then be reduced to 15 minims, diluted with 1 ounce of normal saline, and be given twice a day.

### 338. Vaccine Treatment of Whooping-cough.

A. H. KRAJAN (Nederl. Tijdschr. v. Geneesk., September 11th, 1926, p. 1176) has treated 52 cases of whooping-cough with pertussis vaccine at the Utrecht Children's Polyclinic. The doses used were 2,000, 3,000, 5,000, and 5,000 organisms with two days' interval between each injection. This dosage was used for children of all ages, including infants, in whom the treatment was most successful. In some cases a final injection of 5,000, or even of 7,500, organisms was given after a week. The cases were divided into three groups according to the results: (1) 22 cases in which the results were very good; (2) 11 cases in which the results were not so striking but were still satisfactory; and (3) 19 cases in which the vaccine had no effect. Local reaction in the form of a painful red infiltration at the site of injection associated with a general reaction manifested by malaise and rise of temperature was noted in 14 cases; it was remarkable that 12 of the cases belonged to the first two groups. The results were not any better when the vaccine was used early, and even when it was injected at a late stage it was frequently effective.

## Radiology.

### 339. Radiological Examination of the Uterus.

G. U. NEWELL (Amer. Journ. of Obstet. and Gynecol., August, 1925, p. 183) records his experience of the injection, for diagnostic purposes, of 40 per cent. iodine solution in vegetable oil (iodipin) into the uterus, with subsequent x-ray examination. In 33 cases he has seen no untoward results follow. The amount injected, slowly and gently, was 7 c.c.m.; screening was performed at once, and the patient returned home. The oil disappears from the abdomen more quickly than from the spinal canal, and has been found to be absent fourteen days after uterine injection, although in one patient it was still present in small amounts in the pelvis sixty days later. Newell finds this procedure particularly valuable (1) in sterility cases with tubal obstruction, to localize the obstruction and determine whether an operation is likely to be useful; (2) when several masses are palpable within the pelvis, so that the uterus can be distinguished from the others; (3) when the pelvis is blocked by one large mass, and it is doubtful whether this originates from ovary or uterus; (4) when intruterine or extrauterine foreign bodies are suspected; (5) as an indication of the size of the uterus and a possible encroachment on its cavity by tumour. The iodine injections may also help in the differential diagnosis of chronic appendicitis from right-sided salpingitis, and of tuberculous from infective salpingitis. Of Newell's patients thirty came later to laparotomy.

400. G. COTTE and P. BERTRAND (La Gynecol., June, 1926, p. 353) prefer radiographic examination after injection of an oily iodine solution to examination by Rubin's insufflation method. They have not noted subsequent secondary infection or salpingitis, as has been reported after that procedure. They state that before and after the iodine injections the patient should be observed in hospital. If there is obstruction as the uterine ostia of the Fallopian tubes the oil does not leave the uterus; if at the abdominal ostium, the ampulla still contains oil at the end of twenty-four hours. If the tube is permeable little oil remains there, the bulk being found in the pelvic cavity. Radiographic examination after oily injections of iodine is a valuable preliminary to operations for dysmenorrhea or sterility, and in patients in whom salpingectomy or salpingostomy has previously been performed.

### 401. Radiological Diagnosis of Chronic Sinusitis.

F. B. MACCREADY (Boston Med. and Surg. Journ., September 2nd, 1926, p. 464) advocates the use of iodized oil as an opaque medium in the radiological diagnosis of chronic sinusitis and maxillary cysts. A thorough irrigation of the antrum or frontal and sphenoidal sinuses with sterile saline solution is first performed to wash out any mucus; the solution is carefully removed and 5 c.c.m. of 10 per cent. iodipin is injected, a stereoscopic x-ray view being taken as soon as possible afterwards. MacCreedy states that, though the ethmoid sinuses cannot be injected, much can be learned

from the course of the iodized oil as it passes into the nasopharynx, since normally the cilia carry it back in definite currents. In chronic sinusitis thickening of the mucous membrane, with the frequent formation of small abscesses or a polypoid degeneration, results, and this thickening of the lining membrane of the sinuses is readily demonstrated by x-rays after injecting iodized oil. In obscure cases where changes have been produced long after all sinus symptoms have subsided, this method, by demonstrating a thickening only amenable to operation, may save the patient the discomfort of those useless repeated irrigations which in the absence of x-ray diagnosis are usually employed before surgical intervention. The author adds that the treatment of chronic frontal sinusitis differs from that for chronic antrum infection because many frontal sinus cases clear up with the establishment of drainage; iodized oil should be reserved for those which do not so respond. The oil is removed from the sinuses too rapidly to be of much use therapeutically, and while the removal from the antrum may take twenty-four hours it is much quicker from the frontal sinuses. Little discomfort follows the injection, though there may be a feeling of congestion in the cervical glands owing to a small amount of the oil being absorbed by the lymphatics.

### 402. Radiotherapy in Cancer of the Cervix.

W. FÜST (Zentralbl. f. Gynäk., July 24th, 1926, p. 1938) states that at the Zürich University clinic x-ray treatment is given in every case of carcinoma of the cervix uteri as soon as the clinical diagnosis has been confirmed by biopsy. From three to six weeks later the abdomen is opened and the operability of the case is estimated with the pelvic tissues exposed to view and to internal palpation. Whenever it is possible Wertheim's operation is done; in inoperable cases after-treatment is given first by radium and then by x-rays. Subsequent treatment in cases in which it has been possible to do extended (Wertheim) hysterectomy is guided by histological criteria. The margins of the excised tissue are microscopically examined; if it is found that excision has been made through malignant tissue, x-ray treatment is begun at once, a small series of applications separate by considerable intervals being preferred. If, on the other hand, the ablation appears to have been made through healthy tissue, x-ray treatment is only given if a recurrence of the growth becomes manifest later. Füst believes that x-ray and radium treatments, although indispensable accessories, do not possess so great a value in treatment of cancer of the cervix as was formerly hoped. He has found by inquiry that of thirty-six Swiss and German university clinics only six adopt radiotherapy exclusively. Among the advantages claimed for preliminary treatment of all cases of carcinoma of the cervix by x-rays are that in cases afterwards operated on, suppuration and inflammation around the tumour are diminished, and that in inoperable cases the shrinkage of the tumour after x-ray application enhances the effect of radium therapy. P. HEIMANN (ibid., p. 1945), on the other hand, while conceding that the disappearance of suppuration and the epithelialization of the portio cervicis which follow x-ray treatment of cervical carcinoma may be of great benefit, asserts that streptococci, if locally present before this treatment, are invariably to be found afterwards. An equally efficient diminution of local sepsis may be secured, he finds, by cautery excision and application of 5 per cent. alcoholic solutions of thymol. In this way can be avoided the delay of several weeks before operation, during which the neoplastic permeation may extend.

## Obstetrics and Gynaecology.

### 403. Malignant Melanoma of the Vulva.

J. L. GOFORTH (Surg., Gynecol. and Obstet., September, 1926, p. 322), who records three illustrative cases of malignant melanoma of the vulva in women aged 36, 66, and 56 respectively, all arising primarily from the labium majus, states that his studies, like those of others, indicate that the melanoma are of epithelial origin. He urges that vulva pigmented naevi should be regarded as being potentially malignant, and should be treated by excision with a wide margin of apparently healthy tissue in all directions. Pigmented spots or moles about the vulva are particularly subject to the influence of climate, irritation, inflammation, and trauma—factors which are instrumental in inducing a malignant change. The proper treatment for cases in which malignancy is well established or in which recurrence exists consists in a radical removal of the growth, together with the regional lymphatic area. The patient should subsequently be kept under observation, so that she may have the advantage of the earliest treatment of a local recurrence.



**402. Obstetrical Tears of the Perineum and Vagina.**

G. SERDUKOFF (*Gynecol. et Obstet.*, 1926, xiv, 1, p. 29) finds that rupture of the perineum during labour occurs, according to older reports, in from 6 to 10 per cent. of cases, and according to more recent investigations in 11 to 30 per cent. at least; it is said to be more common in blondes. Systematic median episiotomy in the author's clinic appears to have diminished foetal mortality by 1.5 per cent. and to be followed by a high percentage of healing by first intention. He prefers, however, to inject oil of white vaseline, in imitation of the lubrication naturally afforded by the vernix caseosa. The oil, which has been sterilized by at least three successive boilings, is injected to the amount of 50 to 60 grams, between the head and posterior vaginal wall, at a time when the presenting part is visible at the vulva during the pains but disappears between them. Comparing a series of 2,000 labours in which oil was injected with one of 350 in which it was not used, Serdukoff found vulvo-vaginal fissures in 6 per cent. of the former as compared with 14 per cent. of the latter, and ruptures of the perineum in 10 per cent. and 15 per cent. respectively.

**405. The Toxaemias of Pregnancy.**

J. HOFBAUER (*Amer. Journ. Obstet. and Gynecol.*, August, 1926, p. 159) records successful attempts to reproduce experimentally in animals the characteristic clinical symptoms and the microscopical and chemical features of the toxæmias of pregnancy—premature separation of the placenta, pernicious vomiting, and eclampsia. The agent employed was histamine, and from the results obtained it is suggested tentatively that this or allied bodies may be the toxic substances concerned in the toxæmias of pregnancy. In a first series of experiments pregnant guinea-pigs received intracardiac injection of 0.25 to 1 c.c.m. of histamine in 1 in 1,000 solution per kilo of body weight. A considerable degree of placental detachment was invariably produced as a result of haemorrhages at its base, and the capillaries and veins of the entire genital tract were found to become strikingly dilated. In cats and dogs intravenous histamine injections led to tetanic contraction of the uterus with enormous engorgement of the blood vessels of the uterus and in its neighbourhood, and production of purplish petechiae in the uterus, spleen, and pancreas. Oedema of the uterine wall, and peripheral liver necroses of the anaemic and haemorrhagic types, were noted, associated with thrombi in the vessels and degenerative changes in the convoluted tubules of the kidney. The hepatic changes are described as being identical with those characteristic of eclampsia; it is noted also that, as in eclampsia, the histamine injections were followed by intracellular precipitation of bile, and that, as in hyperemesis gravidarum, there was a great diminution in hepatic glycogen after histamine injections. In a preliminary report the statement is made by Hofbauer and Gelling that when insulin is repeatedly injected together with histamine the normal conditions of the liver and kidney are maintained. Hofbauer admits that it is impossible to draw the conclusion that histamine or similar substances are the actual toxic substances of pregnancy toxæmias, until they have been demonstrated in the blood; here, however, detection of small amounts is exceedingly difficult. One difficulty in the way of accepting histamine as the pregnancy toxin is that its effects include a drop in the blood pressure, while eclampsia is associated with hyperplasia; there is some evidence, however, that histamine stimulates adrenaline production. Experimental findings are reported which show that both in eclampsia and histamine poisoning there is hyperglycaemia, together with increases in the uric acid, inorganic phosphates, and lactic acid in the blood. With regard to treatment, Hofbauer advises strongly against chloroform or ether as an anaesthetic in operations for premature placental detachment or eclampsia, and advocates administration of nitrous oxide with abundant quantities of oxygen. In placental detachment transfusion of blood and administration of glucose are important forms of treatment.

**Pathology.****406. Bactericidal Powers of the Digestive Secretions.**

K. MYLAUS and F. SARTORIUS (*Zentralbl. f. Bakt.*, September 20th, 1926, p. 565) have made some experiments to determine the effect of the gastric and pancreatic juices on a number of common bacteria. Previous work showed that the gastric juice caused a granular degeneration of tubercle bacilli, but that duodenal secretions had no effect. In their present experiments they used the intestinal secretions of the dog, recovering them from the stomach or duodenum by a fistula. In some instances the fluid was used in the unfiltered condi-

tion; in others it was passed through a Berkefeld candle just before use. To 1 c.c.m. of intestinal juice were added 5 drops of a bacterial suspension made by washing off an eighteen-hour agar slope culture in 3 c.c.m. of salt solution. Immediately afterwards, and at intervals of two, four, and twenty-four hours, subcultures were taken to ascertain the viability of the organisms. The bacteria used were staphylococci, hay bacilli, and three members of the typhoid-dysentery group. On *B. subtilis* neither the gastric nor the duodenal fluids had any effect; on the other organisms the effect of the gastric juice was to sterilize the suspension in under two hours. The duodenal secretion had little or no action; good growths were obtained in each instance after twenty-four hours. The effect of adding duodenal fluid half an hour after a mixture of gastric juice and bacterial suspension had been prepared was to diminish the activity of the mixture; instead of a complete sterilization in two hours, as was accomplished by gastric juice alone, the organisms were not killed for about four hours or even longer. These experiments, therefore, show that in the case of the dog the gastric juice has a strong bactericidal effect on non-sporing bacteria, whereas the duodenal juice has little or no such effect. They attribute the bactericidal power of the gastric juice entirely to its acid content and believe that pepsin has no such action.

**407. Ligneous Thyroiditis.**

L. W. SMITH and H. M. CLUTE (*Amer. Journ. Med. Sci.*, September, 1926, p. 403) report five cases of chronic ligneous thyroiditis (Riedel's struma) occurring in women aged between 49 and 67. In three the clinical picture suggested malignancy, while the other two patients were non-toxic; all recovered after surgical removal of the growth. In two cases there was extracapsular extension of the growth, but in the other three it was well encapsulated. The salient points in the pathology are an extensive and diffuse infiltration, and replacement of the normal thyroid tissue by lymphocytes, atrophy of the acini, and abortive attempts at glandular hyperplasia in early cases. The acinar epithelium later undergoes metaplasia, with the formation of large cuboidal cells containing a greatly increased amount of eosinophilic cytoplasm. Fusion of the cells occurs, their nuclei remaining apparently viable and so suggesting giant-cell formation. Later, connective tissues replace the glandular structures, and, finally, an almost solid mass of connective tissue is left, with foci of lymphocytes and occasional acini. Although the etiology is believed to be bacterial, no evidence of infection was obtained in any of the five cases, cultures on various media being always negative and animal inoculation causing no symptoms.

**408. The Mechanism of Recovery from Insulin Convulsions.**

L. B. WINTER (*Biochem. Journ.*, vol. xx, No. 4, 1926, p. 668) cites the discovery by Winter and Smith that glycogen is present in apparently adequate amounts in the liver and muscles of an animal which has had the blood sugar reduced to the convulsion level as a result of insulin injection. Cori found that, while the sugar in the liver was decreased, that in the muscles and brain was not appreciably affected; according to Barbara E. and E. G. Holmes (*Epitome*, August 15th, 1925, para. 115) examination of the reducing substances in the brain showed that there was little or no glucose present. These two workers suggested that the brain might suffer from glucose starvation during insulin convulsions, for since the reducing substance of the brain was not glucose, the brain must depend for its sugar on the glucose level of the blood which flowed through it. Winter found that a rabbit at the moment of insulin convulsions, or even one hour afterwards, had as much reducing sugar in the liver and muscles as had a normal rabbit, and that recovery was brought about by the injection of some agent antagonistic to insulin, such as adrenalin, glucose, mannose, glucosan, or glucal (an unsaturated reduction product of glucose). He thinks that the recovery due to adrenalin can be explained on the lines of antagonism between one internal secretion and another, but that this does not explain the action of glucose. He suggests that only a small part of the glucose injected is available for the immediate needs of the body, and that the rest is seized upon for conversion into glycogen. Winter found that the minimum amount of sugar necessary to restore a rabbit weighing approximately one kilogram was half a gram. He adds that the amount of sugar necessary for recovery, taking into account the reducing sugar already in the tissues, makes it probable that much of it is rapidly converted into glycogen until the excess of insulin is countered, and that after this the metabolism of carbohydrate can proceed normally. The recovery from convulsions by means of glucal is not surprising in view of its reactivity and the ease with which it can be converted into mannose and possibly glucose.



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409. **Immunization against Scarlet Fever.**  
H. S. DIEHL (*Minnesota Med.*, September, 1926, p. 518) states that during the last three years Schick tests were performed on 8,069 students aged from 15 to 25 and over an entry to the University of Minnesota; 5,183 were females and 2,905 males. Of the total 52 per cent. were positive. There was very little difference in the percentage of susceptibles in these age-groups, but a tendency to slight increase from 16 to 21 years was noted. The percentage of positive reactions was slightly higher among the girls (53) than among the boys (51). There was a somewhat greater amount of susceptibility among students from the smaller communities than from the larger. Owing to the large number of susceptible persons discovered, Diehl suggests that in dealing with children of school age or under it would be better to give all of them toxin-antitoxin inoculations than to inoculate only those shown to be susceptible by a previous Schick test.

410. J. V. BERRY (*Deut. med. Woch.*, July 13th, 1926, p. 1250) records observations on 4,344 Dick tests performed in Budapest, of which 1,774, or 40 per cent., were positive and 2,538, or 60 per cent., were negative. Of 66 newborn children the reaction was negative in 62 and positive in 4. Prophylactic injections with scarlet fever toxin were made intramuscularly in the deltoid and the gluteal regions, four being given weekly or every five days, the total dosage ranging from 2,500 to 7,500 skin test doses. Berry agrees that there is a close connexion between the result of the reaction and susceptibility for scarlet fever. The skin reaction is free from danger, but reliable toxin solution must be used and the technique be exact. He finds that active immunization by methodical injections of toxin causes the skin reaction to become negative in most cases. A further careful collection and study of cases is needed to explain certain questions of detail, such as duration of immunity. The procedure is free from risk in the hands of a trained practitioner who employs a reliable solution of toxin and suitable dosage. He adds that the toxic erythemas which occasionally appear have no special significance and run a mild course.

411. S. S. WOODY (*Therap. Gaz.*, July 15th, 1926, p. 477) states that passive immunization against scarlet fever has proved satisfactory in 97 cases after varying degrees of exposure. Preparations from five different manufacturers were used and the serum was given in one injection forty-eight hours after exposure. In children up to 3 years of age antitoxin to neutralize 50,000 skin test doses of toxin was used; from the fourth to the sixth years 75,000 skin test doses, and to all over 6 years 100,000 skin test doses. All the patients gave a negative Dick test when retested seventy-two hours after the administration of antitoxin, and not one developed scarlet fever during an average of from four to sixteen days' subsequent stay in hospital. In more than 75 additional cases exposed to scarlet fever, but with negative scarlet fever histories, antitoxin to neutralize 100,000 or more skin test doses was given, and not one developed the disease in spite of direct and intimate association with active scarlet fever cases in the acute wards. Woody concludes that antitoxin may be recommended as an emergency prophylactic measure in families, and more particularly in hospitals and other institutions where scarlet fever may develop.

412. For the immunization test in scarlet fever H. S. SNYDERMAN (*Med. Journ. and Record*, September 15th, 1926, p. 332) has been using intracutaneous injections of the soluble toxic filtrate diluted from 1 in 500 and 1 in 2,000 in physiological sodium chloride solution. He finds that a local effect begins to appear from four to six hours after inoculation as a small circular area of erythema, increasing in size and reaching a maximum between eighteen and thirty-six hours. Of 1,467 children tested in institutions 31 per cent. gave a positive reaction, while of 156 tested in private practice the reaction was positive in 66 per cent. All those children with a positive reaction were given four injections of scarlet fever toxin at weekly intervals for immunization. The local reaction consisted of redness and swelling at the site of the injection about thirty-six hours later, the first injection producing the severest reaction. Snyderman considers the test to be a reliable index of determining the susceptibility or immunity to scarlet fever and the efficiency of active immunization. Immunity is produced within a fortnight

after the last injection, but is not permanent; he finds that a single injection of a large dose will produce an early and more lasting immunity. He regards it as a valuable preventive agent during an epidemic, as an immunity continuing for at least six months is produced.

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413. **Post-encephalitic Obesity.**  
T. G. WALSH (*Journ. Amer. Med. Assoc.*, July 31st, 1926, p. 305), who records four illustrative cases, three of which were in females, aged 15, 16, and 22, and one in a boy aged 16, states that a rapid increase of weight is not uncommon among the sequels or chronic manifestations of epidemic encephalitis. Out of 89 cases of this disease reported by Grossman 15, or about 17 per cent., showed an increase of weight ranging from 15 to 95 lb. In 8 per cent. of Duncan's cases this increase was so marked that the patients complained of it. Usually the obesity is of general distribution, although it may be of the pituitary type, involving chiefly the gland region and the proximal parts of the extremities. Among other symptoms which in the absence of pituitary tumour are suggestive of post-encephalitic obesity are somnolence, narcolepsy, psychic changes, a labile temperature with occasional febrile periods, rapid fluctuations in weight with normal or raised basal metabolism, and the association of neurological symptoms. The etiological relation between rapid increase of weight and acute encephalitic disturbance has been confirmed by experiments on dogs, which have shown that obesity develops after a localized traumatic encephalitis of the mid-brain, which is the site of election of the typical pathological changes of epidemic encephalitis. Walsh recommends that in cases of rapidly developing obesity the history should be carefully studied to determine a possible encephalitic basis before the obesity is attributed to a simple functional endocrinopathy.

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414. **Permanent Non-Paroxysmal Acro-Cyanosis.**  
L. GALLAVARDIN and P. P. RAVAUULT (*Lyon Méd.*, July 4th, 1926, p. 3) describe a syndrome which is distinct from Raynaud's disease, although it resembles that condition in the occurrence of gangrene of the extremities; it can also be distinguished from erythromelalgia, the latter being characterized by the deep red colour of the skin and increased pulsation of the arteries during the painful paroxysms. The authors describe the case of a man, aged 52, who had suffered from circulatory disturbances of the extremities since childhood. His hands were cyanosed, his nose was blue, and he was subject to chilblains. There had never been any paroxysmal phase, nor evidence of paleness of the skin. Eight years before there had been slight gangrene of the terminal joint of the right index finger; the necrotic tissue separated and the wound cicatrized, but later gangrene of the same finger recurred and the finger was amputated. The patient had complete cardiac arrhythmia with hypertrophy. The systolic blood pressure was 160 mm.; the Wassermann reaction was negative, and there was no sign of syphilis. Histological examination showed apparently normal arterial walls, but the lumen of every artery was blocked by conjunctive-hyaline tissue perforated centrally by a minute artery. One section showed an arteriole in process of development in the hyaline thrombotic mass. These lesions were limited to the arteries; the veins were everywhere normal. The patient was not of Jewish descent; the primary lesion was not an ordinary obliterating endarteritis and there was no evidence of Raynaud's disease. The authors are uncertain whether the arterial lesions were the result of the gangrene or the exciting cause of it and of the preceding vasomotor disturbances.

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415. **Erythema Nodosum and Tuberculosis.**  
T. BYDAL (*Norsk Mag. for Lægevid.*, August, 1926, p. 675) records observations on 39 cases of erythema nodosum (33 in females and 6 in males), in 16 (41 per cent.) of which, after an interval ranging from a few days to several years, symptoms of tuberculosis developed, especially pleurisy and pulmonary disease. Another 6 cases (15.4 per cent.) showed symptoms suggestive of tuberculosis, so that there was a total of 22 patients (56.4 per cent.) in whom erythema nodosum was followed by evidence of tuberculosis. Bydal therefore concludes that erythema nodosum in a considerable number of cases may herald the onset of tuberculosis, and recommends that patients with erythema nodosum should be kept under observation as long as possible after their attack, especially in general practice in country districts where modern diagnostic methods are not easily accessible.

## 416. The Etiology of Bronchial Asthma.

F. M. RACKEMANN and D. S. KING (*Boston Med. and Surg. Journ.*, August 19th, 1926, p. 347), investigating the causes of bronchial asthma, have made numerous experiments with suspensions of house dust, and have obtained immediate positive local reactions after hypodermic injections of house dust suspensions in 36 per cent. of all asthmatics. Although in many instances different dusts were used in the treatment of the same patient, no single suspension gave better results than any other. The importance of dusts is also diminished by the fact that general urticarial and possibly asthmatic reactions, so easily produced with extracts of specific pollens, animal hair, or skin debris, did not occur after large doses of dust extracts in patients who showed a skin reaction to them. Another possible cause of asthma is hypersensitivity to bacteria; the authors have used stock cultures of three types of bacteria commonly found in the sputum of asthmatics—namely, *Staphylococcus aureus*, *Streptococcus haemolyticus*, and *S. viridans*. They conclude that asthma of extrinsic origin seems to be independent of any bacterial factor in its early stage. Attacks following contact with horses or cats are sharp and brief, unless complicated by a secondary respiratory infection. In many cases there was evidence that respiratory infection, rather than exposure to dust, was the cause of an attack. Treatment of 95 asthmatic patients with dust extracts produced good results in 15 cases only; some of these patients had other treatment simultaneously.

## 417. Pulmonary Arterio-sclerosis.

H. VAQUEZ (*Paris Méd.*, July 3rd, 1926, p. 15) reviews two various theories which have been advanced in explanation of the occurrence of this disease. In 1910 Giroux showed that pulmonary arterio-sclerosis was almost always secondary and consecutive to diseases of other organs, such as tuberculosis and emphysema, or to heart disease, especially mitral stenosis; in other cases it is apparently idiopathic. The disease is usually accompanied by extreme cyanosis, dyspnoea, blood-stained sputum, or even attacks of haemoptysis. In advanced cases of pulmonary arterio-sclerosis the aorta and its branches are often quite healthy. Skiagrams may show considerable enlargement of the right ventricle and auricle, with thickening of the branches of the pulmonary artery and of the roots of the lungs. Vaquez adds that pulmonary arterio-sclerosis occurs in two widely different forms—(1) as a terminal stage of certain diseases of the heart and lungs, and (2) as an unusual idiopathic disease producing a clinical syndrome, of which the etiology and mechanism have as yet received insufficient attention.

## 418. Well's Disease in Holland.

A. H. VAN GELDER (*Nederl. Tijdschr. v. Geneesk.*, July 31st, 1926, p. 524) refers to the previous cases of Well's disease reported in Holland by Goudsmit, Hammer, and Wolff in Zaandam, Schüller and Ruys in Rotterdam, and Krommenie (*Epitome*, October 10th, 1925, para. 288) and Enneking in Amsterdam (*Epitome*, July 19th, 1926, para. 612). He remarks that most of the cases of this somewhat uncommon disease reported in foreign literature have occurred in small epidemics connected with mines and swimming baths, whereas the Dutch cases were all isolated. He now reports an outbreak of eight cases in Delft. Only four presented the typical symptoms of Well's disease, though the serological tests were positive in all, and three had no jaundice. In six cases at least the disease could be traced to a pool in Delft swarming with rats infected with *Leptospira icterohaemorrhagiae*. Apart from the serological findings the most constant change was loss of hair, but as this did not occur till convalescence it did not possess much diagnostic value. All the patients recovered, so that the mortality of Well's disease in Holland has now been reduced from 75 to 25 per cent.

## 419. Blood Examination in Childhood.

E. STRANSKY (*Wien. klin. Woch.*, July 22nd, 1926, p. 865) gives instances of the value of a blood examination as a help to diagnosis in childhood. One child with only vague head symptoms showed a white blood count of 12,400 per c.mm., of which 89 per cent. were polymorphonuclears, thus suggesting meningitis, which was later confirmed clinically. He mentions its value similarly in poliomyelitis and pyaemia. Blood examination is also an aid to prognosis in such cases as acute infections. A child with multiple pyaemic abscesses had a count of red cells 4,000,000, haemoglobin 75 per cent., and white cells 20,000. The child then appeared to get worse in every way, but a second count showed red cells 4,320,000, haemoglobin 67 per cent., and white cells 55,000; a good prognosis was therefore given and proved to be correct. In infectious diseases such as pertussis the blood count is also of use; a leucocytosis with a high percentage of lymphocytes, in conjunction with a suspicious cough, is held to justify a diagnosis being made.

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## Surgery.

## 420. Sarcoma of the Prostate.

R. R. SMITH and W. R. TORGERSON (*Surg., Gynecol. and Obstet.*, September, 1926, p. 328), who have collected 84 cases of sarcoma of the prostate, including one in a man aged 31, which came under their own observation, state that 30.5 per cent. of the reported cases occurred during the first ten years of life, and that it was more common during that decade than in any subsequent one. In about 60 per cent., however, it occurred in adult life (over 20 years). The onset is insidious at all ages, the first symptoms being almost always referred to the rectum or bladder. Pain, which sooner or later is almost always present, is severe and may radiate in almost any direction, but usually passes through to the sacrum or down the limbs. Haematuria is sometimes present, especially in the adult. Secondary anaemia, oedema of the extremities, and cachexia are late symptoms. Complications such as cystitis, pyelitis, or pyelo-nephritis are not uncommon. Prostatitis or bronchopneumonia may supervene as a terminal complication. In children the disease must be diagnosed from tuberculosis or abscess, and in the adult from hypertrophy of the prostate; carcinoma and oedema of the prostate must also be excluded. The round-cell type of sarcoma is the most frequent and the splenic-cell next. Metastases occur in about 40 per cent. of the cases and are very apt to be in the osseous system, especially the ribs and vertebrae; they are equally frequent in the lungs. The prognosis is wholly bad; all the patients in the authors' series succumbed. The round-cell type is the most malignant. Treatment is mainly palliative, and consists in relieving urinary obstruction and keeping the patient comfortable.

## 421. Pruritus as a Prodrome of Mammary Cancer.

J. H. VERHAVE (*Nederl. Tijdschr. v. Geneesk.*, September 4th, 1926, p. 1082), who records an illustrative case, states that pruritus as a prodromal symptom of malignant growths, though uncommon, is a prominent symptom, being better known as an initial manifestation of lymphogranuloma and leukaemia. Several authorities, such as Fordyce, Wickham, Jadassohn, Sack, Besnier, and Doyon, have noted its occurrence in cancer of the liver and stomach when the patient's nutrition was good, so that cachexia, icterus, and diabetes could be excluded. The symptom also occurs in cancer of the buccal mucous membrane and tongue. The pruritus may be local or general. According to Jadassohn the pruritus is due to the autotoxic action of the tumour itself or to the change in the chemistry of the alimentary canal caused by the growth, while Friedrich Müller regards the toxins produced by the tumours as responsible. In 5 out of 125 cases of mammary cancer in Noordenbos's clinic Sanders, in his Amsterdam thesis (1925), states that pruritus occurred, whereas pain in all these cases was insignificant. Verhave's patient, who was a woman aged 37, had complained of itching in her right breast for months, but had never had any pain in the breast or arm and had not lost flesh. On examination a tumour, measuring 5 cm., was felt in the left lower quadrant of the breast. The diagnosis of cancer of the breast was confirmed at the operation, when small metastases were found in the axilla.

## 422. Accessory Pancreas in the Stomach Wall.

K. GRIEP (*Zentralbl. f. Chir.*, August 21st, 1926, p. 2147), who has previously reported a case of an accessory pancreas in the anterior wall of the stomach in the region of the fundus, now records two examples of an accessory pancreas situated in the pyloric area in a man aged 68 and a woman aged 49 respectively. In spite of its origin in embryonic life, the symptoms due to the presence of an accessory pancreas did not develop until middle-age. Although several cases of an accessory pancreas in the stomach wall have been published in recent years it is still hardly possible to make a correct diagnosis during life, even in the course of an operation, as the symptoms suggest gastric ulcer, carcinoma, or gall stone. In Griep's cases a diagnosis of cancer of the stomach was made, and the Billroth I operation was successfully performed. Griep regards resection in cases of accessory pancreas as the method of choice when the condition cannot be distinguished from carcinoma.

## 423. Complete Transposition of the Viscera.

Situs inversus viscerum, as M. CLEVELAND (*Archives of Surgery*, September, 1926, p. 343) recalls, is that condition in which the normal arrangement of the viscera is reversed so that a kind of mirror picture of the usual position is obtained. Such transposition is usually total, but may in rare instances involve either the thoracic or the abdominal viscera alone. The frequency of the condition is doubtful; at the Mayo

Clinic out of 347,000 cases ten of visceral transposition were recorded. Most patients so affected seem to differ in no way from the normal human being; they are not left-handed and heredity plays no part. Various theories have been advanced to explain the condition—such as a right spiral winding of the umbilical cord, the turning of the embryo to the right side of the umbilical vessels instead of the left as normally occurs, and the effect of anomalies of the abdominal veins. All, however, fail to explain the basic cause of the condition. A case is recorded in full detail which had been recognized during lifetime and was fully examined after death. There was complete transposition of the viscera with a fused kidney. The report is illustrated with numerous photographs to show the relations of the different organs.

#### 424. Adenomyoma of the Pylorus.

E. POZZI and R. PALAZZO (*Rev. Sud-Amér. de Endocrin.*, August 15th, 1926, p. 682), who report the first case of the kind to be published in the Argentine, state that the clinical history of adenomyoma of the pylorus is generally that of gastric disturbance, the duration of which varies from a few to twenty years. The symptoms consist of dyspepsia, flatulence, pyrosis, local pain, and loss of weight. Their patient was a man, aged 25, who had suffered from gastric symptoms in the form of dyspepsia, flatulence, and dull epigastric pain for the previous nine months. Some months later vomiting of food developed, but was never accompanied by haematemesis. In the course of nine months the patient lost 11 lb. Examination of the gastric juice showed 0.54 gram of free hydrochloric acid with a total acidity of 1.34 grams per cent. The blood count showed 4,020,000 red cells and 6,000 leucocytes, a haemoglobin value of 100 and a normal differential count. The Wassermann reaction was positive; x-ray examination revealed gastric dilatation and ptosis with slow evacuation of the contents. The stomach showed a large air chamber and a slightly lobulated appearance. As no improvement followed injections of mercury and sulfarsenol the patient was sent to a surgical ward with the diagnosis of pyloric ulcer. At the operation a nodule the size of a large hazel-nut was found on the posterior surface of the pylorus; resection of the pylorus and Polya's anastomosis were performed. Histological examination of the tumour showed that it consisted of smooth muscle and glandular tissue, some of which resembled Brunner's glands, and some papillary tissue.

#### 425. The Value of Jejunostomy.

T. G. ORR and R. L. HADEN (*Journ. Amer. Med. Assoc.*, August 22th, 1926, p. 632), as the result of experimental work upon dogs, are doubtful whether the operation of jejunostomy in cases of acute intestinal obstruction and paralytic ileus is so valuable as has been considered. They found that the chemical changes of the blood characteristic of acute obstruction of the jejunum were not prevented by jejunostomy, and that this operation tended to shorten, rather than lengthen, life. Animals with a simple jejunostomy were found to die more quickly than those in which obstruction of the jejunum was present. The administration of sodium chloride solution tended to prolong life whether jejunostomy was performed or not. In view of the danger of duodenal fistula and the rapid death of animals following experimental jejunostomy, the authors believe that the clinical value of jejunal drainage for obstruction of the small intestine has yet to be established.

#### 426. Tonsillectomy as a Preventive of Subacute Bacterial Endocarditis.

Owing to the apparent rarity of a history of tonsillectomy together with the presence of tonsillar tissue in patients with subacute bacterial endocarditis K. B. TURNER (*American Heart Journ.*, August, 1926, p. 747) thought that removal of the tonsils might prevent this disease. He classified the records of 300 hospital cases into three groups, the first being 100 non-rheumatic ordinary patients; the second, 100 cases admitted with a diagnosis of acute rheumatic fever; and the third, 100 cases of subacute bacterial endocarditis. In the first group there was a history of complete tonsillectomy in 16 per cent., and of partial in 3 per cent.; in the second the figures were, total 31 per cent., partial 7 per cent.; and in the third the figures were, total 4 per cent. and partial nil. The low incidence of earlier tonsillectomies in the subacute bacterial endocarditis group is striking, and is more noticeable when compared with the relatively high incidence in the group of rheumatic fever cases, a group which may be considered as a potential "feeder" for the subacute bacterial endocarditis group. Turner concludes that there seems a possibility that tonsillectomy in cases of rheumatic fever or rheumatic heart disease may tend to prevent subsequent subacute bacterial endocarditis.

## Therapeutics.

#### 427. Yatren in Amoebic Dysentery.

J. FUNKE (*Therapeutic Gaz.*, September 15th, 1926, p. 621) describes the use of yatren, which is an iodo-oxyquinoline sulphonic acid compound, in amoebic dysentery; he believes that it will replace ippecacuanha to a large extent, and is also superior to stovarsol. His procedure is as follows: About two hours after the evacuation of a cleansing enema of 2 litres of warm water containing 2 drachms each of sodium bicarbonate and sodium chloride, the dose of yatren dissolved in 200 c.cm. of warm water is introduced by the rectum, as high as possible, and retained all night. On the first and second nights the dose is 5 grams; it is increased to 6 grams on the third and fourth nights, to 7 on the fifth, to 8 on the sixth and seventh, to 9 on the ninth, and to 10 on the five following nights. An interval of seven days follows, and then seven daily doses are given of the last concentration used. In some cases colonic irritation follows, even to the extent of blood appearing in the stools; in such patients the increase of the dose is necessarily more gradual. The amoebae rapidly disappear from the stools, but in chronic cases of dysentery, where the parasites are buried in the submucosa or the liver, the treatment must be repeated at intervals for some months. Yatren can also be given intravenously, and Funke states that, apart from the irritation of the intestinal wall already mentioned, he has seen no untoward effects from intravenous doses as high as 500 mg.

#### 428. Sublingual Administration of Strophanthin.

J. L. TRACY (*Med. Journ. and Record*, September 15th, 1926, p. 340) reports a case of post-influenzal cardiac failure with general oedema in which great benefit was derived from the use of strophanthin administered in small doses sublingually. A solution in water of strophanthin was prepared, containing one-hundredth of a grain to the minim, and at intervals of two hours 1 minia was placed beneath the tongue; after six such doses the interval was increased to four hours. Before the administration the patient was orthopnoeic, with a severe cough and respirations about 60 a minute; the superficial tissues of the body and limbs were almost boardlike, and no radial pulse could be felt or heart sounds heard. Within five minutes of the first administration there was pronounced diminution of the cardiac distress, and twenty-four hours later the swelling had so subsided that the radial pulse could be detected; to this latter effect the use of magnesium sulphate and strychnine had contributed. With the cessation of the insinuous condition examination of the heart became possible, and long-standing mitral and aortic disease was detected. The administration of strophanthin was continued in a dose of a sixtieth of a grain, three or four times a day for four months, and steady improvement followed. Tracy considers that, owing to the serious cardiac condition, it will be necessary to continue its use for the remainder of the patient's life, but he adds that it can easily be given in the form of uncoated tablets, dissolved in a drop of water and placed in the mouth. He suggests that its administration in this way brings it into direct contact with nerve endings and enables it to have an effect on the sympathetic system of the heart.

#### 429. The Value of Mercurochrome-220 Soluble in Therapeutics.

H. H. DAVIS (*Amer. Journ. Med. Sci.*, September, 1926, p. 340), after reviewing the literature and carrying on some experimental work on the value of mercurochrome-220 in various conditions, concludes that, while intravenous injections of this agent are useful in the treatment of septicaemia and other infectious, yet its employment should not be considered to have passed out of the experimental stage. Its use is not without risk, and it should, therefore, not be given indiscriminately, but be reserved for desperate cases. Intraperitoneal injection is dangerous because of the local irritant action, which is often followed by very severe general reaction. The author cites the findings of J. E. Walker, who showed experimentally that staphylococci and streptococci grew better in blood containing mercurochrome in a dilution of 1 to 25,000, than in normal blood. With increased concentration bacterial growth became more profuse, reaching a maximum at 1 in 400 for the staphylococcus and 1 in 800 for the streptococcus. When used in wounds, sinuses, or serous cavities Davis considers that the dose of mercurochrome should be limited to 5 mg. per kilogram of body weight, since it is easily absorbed and may lead to severe reaction or stomatitis. Its solution in a mixture of alcohol, acetone, and water is recommended as a satisfactory antiseptic before operation.

**433. Digitalis in the Treatment of Auricular Premature Contractions.**

IN the opinion of H. J. STEWART (*American Heart Journ.*, August, 1926, p. 637) the indication for the treatment of heart irregularities depends on two considerations: first, whether there are signs of heart failure as the result of the presence of the irregularity; and, secondly, whether there are subjective symptoms of discomfort from the irregularity itself. The therapeutic use of digitalis has been extensively studied in auricular fibrillation and in auricular flutter, but accurate information concerning its effect on the irregularities due to the various types of premature contractions is wanting. The effect of digitalis (digitan—Merck) on auricular premature contractions has been studied by the author in a lad aged 18, and he found that full therapeutic doses of the drug never failed to bring about complete disappearance of the premature beats. Recurrence could be prevented by maintenance doses of the digitalis, but the symptoms reappeared if the drug was discontinued and the digitalis effect allowed to wear off. From his observations Stewart concludes that digitalis is effective in cases of auricular contractions which occur spontaneously, but that the drug must be used in the full therapeutic amount. Repeated electrocardiogram tracings were taken. While the patient was under the influence of the digitalis the injection of atropine was not followed by a return of the premature contractions. When digitalis was not being given and the premature contractions were present they were stopped for twenty-four hours by an injection of atropine.

**434. Scarlet Fever Antitoxin.**

H. B. CUSHING (*Canadian Med. Assoc. Journ.*, August, 1926, p. 937) records his observations at the Alexandra Hospital, Montreal, on 500 cases of scarlet fever treated with serum, some prepared by the Dick method, some by the Dochez method, and some by a combination of both methods. The usual dose was 10 c.cm. given intramuscularly as early in the disease as possible. The dose was only occasionally repeated, and in a few toxic and septic cases was given intravenously. The serum was given to all cases, except the extremely mild ones with a temperature below 100° F. At the Alexandra Hospital the mortality for scarlet fever always used to be over 5 per cent., but has been falling in recent years. In 1925 it was 3.25 per cent., and in 1924, when convalescent serum was used in serious cases, 2 per cent. Since the general use of antitoxin there have been 800 cases and 10 deaths, or 1.2 per cent. None of the deaths, however, was due to scarlet fever alone, among the cases treated with serum, but the cause of death was some intercurrent disease; 13 per cent. had a serum rash. Cushing concludes that scarlet fever antitoxin is a specific remedy which cuts short the fever and relieves all its early manifestations; it lessens the number and severity of the complications, and definitely lowers the mortality of the disease. The serum, therefore, should be given to every case of scarlet fever at the earliest possible moment, the amount being regulated according to the severity of the attack, and the dose promptly repeated if the first proves inadequate.

**435. Serum Therapy in Acute Myelitis.**

G. ETIENNE (*Presse Méd.*, September 18th, 1926, p. 1185) reports 26 cases of acute myelitis, 17 of which were treated by injection of an antipoliomyelitic serum prepared by the Pasteur Institute. Of these patients 9 were completely cured and restored to their previous healthy condition, one was almost cured with very slight persistent sequelae, and one died. Of 3 patients treated with insufficient doses progress of the disease was arrested in 2 and death occurred in one after a second outbreak. Three cases already in extremis died very soon after injection. Etienne considers that the effective dose of serum is 100 c.cm. daily. In one case where a milk injection caused some slight improvement, serum injection brought about a rapid and complete cure, which suggests that the serum has a specific effect and does not act merely as a serum.

**436. Rectal Administration of Adrenaline.**

W. C. MENNINGER and H. S. HEIM (*Amer. Journ. Med. Sci.*, September, 1926, p. 425), as the result of experimental study of the rectal administration of adrenaline in man, conclude that it might prove to be of value in asthma or Addison's disease, where a prolonged effect and repeated doses are required. They found that the maximum effect was reached in about forty minutes after administration, and that the duration of the rise in blood pressure was forty-five minutes or more. When relatively large doses were tried they found that the rectal absorption of adrenaline was unreliable, little or no effect being produced in about 50 per cent. of the cases. Of thirty-one patients examined, seventeen showed a blood pressure rise of over 10 mm. of mercury, and in fifteen it reached 20 mm.

**Laryngology and Otology.****437. Displacement Irrigation of the Posterior Nasal Sinuses.**

A. W. PROETZ (*Arch. of Oto-Laryngol.*, July, 1926, p. 1) describes his lavage treatment of the posterior sinuses of the nose, and explains how it is adapted for examination by radiography. He evolved this method on account of the great difficulty in reaching and investigating the sphenoidal sinus and posterior ethmoidal cells without operative measures. The patient is placed in the supine position and the head is extended at the atlanto-occipital joint until the chin and the external auditory meatus are in the same vertical plane. By this means the sphenoidal sinus becomes the most dependent part of the nasal cavity. Normal saline solution is now allowed to flow into the nose until the ostia of the sinuses are submerged; it does not yet enter the sinuses, as the air cannot escape through the narrow ostium. A suction nozzle is applied to one nostril, the other one is closed and the tongue and palate are kept in the "K" position to close the nasopharynx. Gentle suction of not more than 3 lb. is employed and intermittently released. Each suction draws a bubble of air from the sinuses, and each release allows a drop of fluid to enter the cavity. About a dozen alternations are usually sufficient to fill the posterior group of sinuses. The patient is then returned to the erect position. The fluid remains in the sinuses for from eight hours to several days. Proetz obtained very satisfactory therapeutic results with saline solution, and has never tried more complicated solutions. The treatment is repeated at intervals of from three to eight days. The sinuses are rapidly cleared of mucus and muco-purulent discharge, and the inflammation subsides. He states that the method is not applicable where there is advanced disease with polypoid degeneration of the mucosa or bone necrosis. The method was found particularly useful for diagnosis in conjunction with radiography, and in this case the fluid used was an iodized oil or some similar radio-opaque fluid. The author does not think that there is any danger of infection of the Eustachian tubes, since sufficient fluid can be instilled into the nose without reaching the level of the Eustachian orifices, and the suction employed is not enough to draw any air out of the middle ear.

**438. Cancer of the Larynx.**

STCLAIR THOMSON (*Arch. Internat. de Laryngol.*, May, 1926, p. 513) states that in treating a cancerous laryngeal growth there must be no preconceived idea that the whole organ must be removed. In intrinsic carcinoma of the larynx the invariable sign of roughening of the voice should lead the patient at an early date to the laryngologist while the tumour is still limited. An early diagnosis enables laryngofissure to be performed; this operation should be almost devoid of risk to the life of the patient, leaves a useful voice, and is followed by a definite cure. If the case is seen too late, or there is recurrence, good results can be obtained by a partial laryngectomy. Extrinsic carcinoma is rarely operable, and then only by lateral pharyngotomy. Complete laryngectomy is rarely of any value in the extrinsic growth, but is of value in the late cases of intrinsic growth. The occurrence of late growths is becoming rarer owing to the education of the public, and in consequence the operation of complete laryngectomy is becoming increasingly rare, while laryngofissure is the operation which will be performed in the majority of cases and with the best results in the future.

**439. Cerebro-spinal Rhinorrhoea.**

J. BARRETT (*Med. Journ. of Australia*, August 7th, 1926, p. 182) reports a case of cerebro-spinal rhinorrhoea in a man, aged 38, who had suffered from slowly increasing deafness until a year previously, since when there had been no increase, but he had constant pain in the head. He had had a septal resection of the nose two years before. The nose, throat, and accessory sinuses were fairly normal. The optic discs, especially on the left side, were slightly blurred and the vessels were waxy; the elevation of the left disc was about two diopters and of the right about one diopter, the latter being five diopters three weeks later. On stooping cerebro-spinal fluid ran from the right nostril. He became rapidly worse, with symptoms of a gross intracranial lesion, and intense pressure was present when a temporal decompression was performed. At the necropsy large Cushing's bilateral tumours of the acoustic nerve were found. The patient had cerebro-spinal rhinorrhoea, which is usually associated with optic neuritis and raised intracranial pressure, the fluid apparently escaping through the ethmoid plate. The type of deafness resembled ordinary middle-ear deafness and was unlike that usually associated with cochlear or nervous disease; although he was not totally deaf and both auditory nerves were profoundly involved neither vertigo nor nystagmus could be



produced by any caloric test. The involvement of the auditory nerve proved to be largely extracranial, although the condition led to the provisional diagnosis of an intracranial lesion after the division of the auditory and vestibular fibres in the brain. The removal of the tumours by operation would have been practically impossible.

## Obstetrics and Gynaecology.

### 437. Treatment of Dysmenorrhoea.

B. SCHWOLLEN and R. WICHMANN (*Zentralbl. f. Gynäk.*, August 7th, 1926, p. 2075) have treated 158 cases of primary dysmenorrhoea, in which no genital abnormality other than a small uterus could be found, by the following method of operative dilatation. The cervix and the uterine cavity were dilated by introduction of each of Hegar's dilators up to No. 10 for one minute, and then the region of the internal os was incised by Lymmer's metrotome. Hegar's dilators were then introduced up to No. 16, which was left in place for two minutes. Finally, a drain of sterilized gauze impregnated with oil was passed through the cervix to the fundus. The gauze was withdrawn from seven to ten days later. Of the 91 patients from whom details of the subsequent history could be obtained, about 15 per cent. were no better, 22 per cent. had found some relief, 13 per cent. had been free from menstrual pain for at least twelve months, and 50 per cent. appeared to be cured permanently. The results were distinctly better in those women whose menstrual period lasted from three to six days than in those who menstruated longer.

### 438. Diagnosis of Foetal Cardiac Abnormalities.

J. J. SAMPTON, R. L. MCGALLA, and W. J. KERN (*American Heart Journ.*, August 1, 1926, p. 717) report a series of phonocardiographical studies to determine the duration and pitch of the foetal heart sounds and the duration of systole and diastole; they tried also to establish criteria for the pre-natal recognition of congenital heart lesions or abnormalities. An electrical amplifying and altering methoscope and a string galvanometer were used to record the heart sounds. Foetal phonocardiograms were obtained in 33 cases, and in these the character of the first sound was symmetrical, with a crescendo and a decrescendo phase on either side of a peak, the second sound being slightly eccentric in form and showing a longer period of vibration following the peak than preceding it. Lewis's chief criterion of a recorded murmur was a high frequency, but the authors found an alteration in the symmetry of the sound picture to be a more valuable method of identification. The average duration of the first sound in all pre-natal cases was 0.058 second, with a minimum of 0.03 and a maximum of 0.07 second; in the case of the second sound it was 0.042 second, with a maximal 0.06 and a minimal 0.03 second. In post-natal cases the first sound averaged 0.064 second, with a maximum of 0.08 and a minimum of 0.04 second; and the second sound 0.043 second, with a maximal 0.07 and a minimal 0.02 second. The authors also found a variability of normal heart sounds before and after birth, and state that an early systolic murmur is almost universal in early infancy. Of the 33 cases, 12 presented no murmurs, 17 showed an early systolic murmur only, while 4 showed other systolic and diastolic murmurs which were possibly caused by currents through the patent foramen ovale and ductus arteriosus. In one case before birth a high-pitched murmur was present throughout the whole of systole, which was indicative of a congenital heart lesion—namely, pulmonary stenosis. In the normal foetus with a patent foramen ovale and ductus arteriosus murmurs were not consistently found; presumably it requires either abnormal pressure relations, developmental defects occurring early in intrauterine life, or both, to produce the auditory signs of a congenital lesion.

### 439. Peruterine Insufflation for Sterility.

I. C. KERN (*Amer. Journ. Surg.*, July, 1926, p. 1) discusses the diagnostic value and therapeutic application of peruterine insufflation of the Fallopian tubes with carbon dioxide in cases of sterility. The apparatus and technique are described, the most important factor for scientific and safe application being the maintenance of a uniform pressure, rate of flow, and volumetric control. With a uniform rate of flow of fifteen seconds to 100 millimetres of mercury two pulsations of the volumeter generally sufficed to establish a subphrenic pneumoperitoneum with its associated clinical sensations of epigastric distension and pain in the shoulders and diaphragmatic region. Each pulsation represented from 30 to 40 c.cm. of gas, and though it was found that obese patients might require from three to five pulsations the quantity rarely exceeded 200 c.cm. The patient was examined radiologically on rising from the table; if the

tubes were patent the presence of a single or double-sided subphrenic pneumoperitoneum was demonstrable. The author states that with one tube closed the patient will complain of pain on the side of the obstruction, and if both tubes are closed the pain will be bilateral. Such pain is complained of when the obstruction is at any point beyond the isthmus, but when the closure is at the intramural portion of the tubes or very near the isthmus the pain is in the mid-line and referable to the suprasymphysal area. Rubin found these symptoms so pathognomonic of the site of obstruction as to obviate the necessity for the injection of opaque solutions except where operative intervention was indicated. It is claimed that the method has a definite prognostic and diagnostic value in primary sterility when other contributory causes have been eliminated, in cases where there has been previous pelvic infection but which are at the time free from symptoms, and in other conditions in which the tubes have been operated upon. Especially is it of service as a therapeutic measure to eliminate the tubal factor in sterility, and in obseuro cases it avoids the necessity for surgical exploration, since it usually affords a means of determining the patency of the tubes.

### 440. Abnormal Passage of the Foetus in Spontaneous Labour.

M. COPPOLA (*Rev. d'Obst. e Ginecol. Prat.*, September, 1926, p. 374) reports the case of a primipara, aged 23, who delivered herself at term spontaneously, without medical supervision, of a living child presenting by the vertex. There was no excessive haemorrhage or shock, but a large extraperitoneal rupture of the lower uterine segment, involving muscle and mucous membrane, was found to have produced an extensive communication between the uterus and vagina. The external os was intact and virginal. There was no disproportion in size between the pelvis and foetus. In a second case a primipara, aged 25, gave birth spontaneously at term to a living child; the head had passed through a large central perineal rupture, but this did not reach as far as either the rectum or fourchette. The posterior vaginal wall was extensively torn, but there was no undue amount of haemorrhage. In this case also the pelvis was of normal size, and Coppola ascribes the abnormal transit of the head in both cases to congenital abnormalities of the lower uterine musculature and the perineum respectively.

### 441. Tuberculosis in Late Pregnancy.

A. COUVILLAIN (*Gynecol. et Obstet.*, 1926, xiii, 6, p. 428) states that since 1922 there has been close association between the Maternité Baudelocque and tuberculosis dispensaries in Paris, a separate pavilion in the former having been set apart for tuberculous women in labour. When separation from the mother is considered necessary, the infants are placed in approved families or institutions till the age of 4. In five years 315 confinements of women with active pulmonary tuberculosis were conducted in the Maternité; treatment of the tuberculosis was maintained up to labour, artificial pneumothorax being induced in 57 of the patients. The pregnancy was invariably allowed to take its natural course; Couvillain doubts whether hysterectomy or induction of labour has any useful function in treatment. Four Caesarean sections were performed on patients in *extrimis*, and two after death; no foetus survived in any of these cases. About 40 per cent. of the first hundred patients who were treated died before or during labour or within a year afterwards. Of those with almost quiescent fibrous disease, the great majority seemed little affected by pregnancy, but in those with active disease acceleration was usually noted during or after pregnancy, so that nearly half were dead within twelve months of labour. Of the 315 labours, 288 led to live birth of apparently viable infants, of whom 17 per cent. weighed more than 7½ lb. and 51 per cent. less than 6½ lb., as compared with 24 and 41 per cent. respectively in a series of non-tuberculous cases. Of 280 infants, 44 died within the first month and 8 between the first and the fourth months, in spite of absolute separation from the mother from the time of birth. With more thorough medical and nursing supervision and treatment the mortality of the first month has been reduced recently from 33 to 12 per cent. Generally the cause of death could be traced to bronchopneumonia, intestinal infections, or digestive troubles, but a certain number of infants showed during life few digestive or pulmonary symptoms, a negative cutaneous reaction for tuberculosis, and no pyrexia, while after death no morbid conditions of the viscera were detected. The syndrome of progressive denutrition in these cases of unexplained disease is compared by the author to the extinction of a lamp which is short of oil. Similar findings have been reported at the Laënnec clinic and in experimentally inoculated animals; they are met with also in the infants of syphilitic parents, including those who have responded well to treatment. Only one of the



infant deaths was due to tuberculosis (tuberculous bronchopneumonia), and in this case the separation of the mother and child had not been complete. The majority of the first series of 65 infants are still living.

## Pathology.

### 442. The Titration of Tetanus Toxin and Antitoxin by Flocculation.

G. ABT and M. L. B. ERBER (*Ann. de l'Inst. Pasteur*, August, 1926, p. 659) have examined the applicability of the flocculation method to the titration of tetanus toxin and antitoxin. The quantity of toxin found most satisfactory was 4 c.cm.; to this is added the serum, which is used either undiluted or diluted one-half or two-thirds; the tubes are incubated in a water-bath at 45° C., and examined frequently for the first sign of flocculation. Ten batches of toxin were employed, all of about the same potency, killing a mouse in a dose of 1/20,000 c.cm. The standard serum had been kept in powdered form for two years and contained 200 American units. Flocculation occurred in two or three hours in a mixture of 4 c.cm. of toxin and 0.16 c.cm. of standard antitoxin. Since this quantity of serum contains 32 units of antitoxin, it follows that 1 c.cm. of toxin was able to neutralize 8 c.cm. of antitoxin. Having titrated the toxin, they used this for standardizing their test serums. Mixtures were put up each containing 4 c.cm. of toxin and varying quantities of serum; that mixture was considered to be neutral which first showed flocculation. The rapidity with which flocculation occurred varied with the particular batch of serum; in a group of 51 serums 18 flocculated in two to four hours, 23 in seven to eight hours, and 6 after twenty hours; 4 serums showed no flocculation at all. Generally speaking, the stronger the serum the more rapid was the flocculation; but this rule was not invariable. A certain number of comparisons were made between the titre of the serum obtained by flocculation and that obtained by animal inoculation. Of 38 serums 24 gave perfectly concordant results by the two methods; in the remainder there was a discrepancy—in one instance of 30 per cent. The number of animals available for titration was, however, too small; to this is attributed the discrepancies observed. They found that the weight of the precipitate in neutral mixtures of toxin and antitoxin was almost identical, independently of the strength of the toxin or antitoxin. They conclude that the flocculation method is suitable for the titration of the majority of antitetanic serums, since the results can be read in twenty hours; this is a great saving of time. The few serums that do not flocculate can be titrated by the animal method.

### 443. Regulation of Capillary Flow.

T. LEWIS (*Heart*, August 9th, 1926, p. 1) records observations upon the regulation of blood flow through the capillaries of the human skin. From the investigation of his own skin and of others under natural conditions he concludes that the majority of the capillaries are open, that their tone is relatively stable and unfluctuating, and that the belief that they are constantly opening and closing is incorrect. It is shown that skin mottling is a normal phenomenon in children and adults; the areas involved are relatively constant in form and position, representing anatomical skin areas which depend upon some vascular or nerve structure in the skin. Such areas are more or less constant in their contour and location when the subject is at rest, and there is a tendency when any change has occurred for the previous pattern to be resumed. No material alteration results from external changes in temperature nor from venous congestion; the mottling returns after arrest and release of the circulation, the capillaries remaining open and not continually opening and closing. Lewis considers that the tone in the arterioles is a coarse adjustment under nervous control, while that in the endothelial vessels is a finer adjustment controlled locally by the tissue needs; he adds that skin mottling (cutis marmorata) is due to local differences in the tone of the minute vessels.

### 444. Pathology of Pancreatic Inflammation.

B. F. DAVIS (*Minnesota Med.*, September, 1926, p. 507) reports three cases of pancreatitis and discusses the pathology of this condition. Secondary inflammation of the pancreas occurs in the course of infectious diseases, particularly small-pox and typhoid fever; the gland cells show cloudy swelling, and the hyperaemic interstitial tissue is infiltrated by a cellular exudate. The cloudy swelling may pass into fatty degeneration, or, more rarely, definite cavities are formed containing cellular debris, and leading to peritonitis. This type is occasionally associated with haemorrhage into the pancreatic

substance. In the gland and its neighbourhood begins a mass, with numerous areas of fat necrosis which much resembles that produced by activated trypsin in experimental animals, and is hollowed to result from the passage of bile or intestinal juice into the pancreas. In suppurative pancreatitis due to such causes as pyaemia, or to extension of inflammation from a perforated gastric or duodenal ulcer, the gland alveoli become distended with pus, and necrosis follows the isolation of areas by interference with their blood supply. In chronic fibrous pancreatitis the gland tissue disappears and there is an overgrowth of the inter- and intra-acinous connective tissue. Such a condition is occasionally found in diabetic patients, or may follow congenital syphilis, the impaction of gall stones, and carcinoma of the head of the pancreas or of the duodenum. Infection may reach the pancreas by the lymph stream from the gall bladder, or by the blood vessels. The author gives details of two cases in which infection appeared to have reached the pancreas from the mouth and antrum.

### 445. Mycotic Aneurysms Involving the Intraventricular Septum.

C. P. WILSON (*American Heart Journ.*, August, 1926, p. 703) reports three cases of a rather unusual complication of a fairly common clinical picture—namely, mycotic aneurysms of the intraventricular septum complicating subacute bacterial endocarditis. The first patient had the typical symptoms of fulminating endocarditis, except that no positive blood culture was obtained during life, and the necropsy findings were those of a mycotic aneurysm involving the intraventricular septum, but not the bundle of His. The lesion was probably engrafted on healthy valves. In the second case a very typical picture of Adams-Stokes' disease was caused by the mycotic aneurysm. The patient died suddenly of heart-block, one positive blood culture (short-chained Gram-positive diplococci) having been obtained during life; the acute endocarditis affected previously damaged valves. The third patient died very suddenly, apparently of acute heart-block associated with pulmonary oedema, the lesions probably being on healthy or only recently damaged valves. In the last two cases the bundle of His was involved in the destructive process with the development of heart-block. No positive blood culture was obtained during life in two of the cases, although post-mortem cultures of both hearts' blood and of the growths on the valves produced *Streptococcus viridans*. In the third case, in which one positive blood culture was obtained during life, the finding was confirmed after death by smears from the vegetations but not by culture.

### 446. Intracutaneous Tests with Streptococcus Strains.

G. JACOBSON (*Acta Paediatrica*, August 10th, 1926, p. 67) performed intracutaneous tests with filtrates in the dilution 1 in 100 from 34 streptococcus strains isolated from cases of various infectious diseases. The filtrates were tested on groups averaging 30 individuals each, of whom the majority were Dick-positive. The tests in 27 of the 34 strains gave consistently negative reactions, 6 gave a few positive reactions, but did not, however, follow the lines of the Dick reaction; only one filtrate entirely followed the Dick reaction. No pronounced difference was evident between the haemolytic and non-haemolytic strains in regard to the frequency of the positive reactions. Haemolytic streptococci were isolated in 23 of 50 apparently healthy throats in children. Haemolytic streptococci appeared to be present as often in Dick-positive as in Dick-negative children. With filtrates in the dilution 1 in 100 from streptococcus strains intracutaneous tests gave only negative reactions.

### 447. Blood Changes after Mercurochrome Injections.

S. O. BLACK (*Therapeutic Gazette*, September 15th, 1926, p. 613) records the results of observations upon the blood changes after intravenous mercurochrome injections. Notes of nine cases are given in which mercurochrome-220 was administered for various septic conditions, including cystitis, erysipelas, arthritis, perinephritic abscess, and cellulitis. It was found that within four hours of administration a marked increase in the leucocyte count occurred, reaching its maximum about the twelfth hour and then slowly falling to normal. Coincidentally with this there was a definite increase in the number of erythrocytes and a rise in the haemoglobin content reaching their maximum about the same time that the leucocyte count was highest. Examination of the urine four, eight, and twelve hours after the injection showed the presence of a heavy cloud of albumin and many casts where previously there had been none; this indicates that the dye acts as an irritant to the kidney. The injections were followed by a very marked reaction, which Black considers necessary if good results are to follow.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 448. Expectant Treatment of Laryngeal Diphtheria.

F. HAMBURGER (*Monatsschr. f. Kinderheilk.*, August, 1926, p. 244) contests Burghard's statement that descending croup is always fatal, and that no information can be obtained from auscultation as to whether the diphtherial process has invaded the small bronchi or not. This invasion, which very often is limited to one part of the lungs, can frequently be detected by auscultation of the chest, definite impairment of the breath sounds being heard over the whole of the left or right side or over a single lobe. Hamburger also disagrees with Burghard's view that if no improvement has occurred twenty-four hours after injection of serum, the serum treatment has been started too late. It often happens that, after an aggravation of the condition in the first twenty-four hours, the process is arrested in the following twenty-four hours, and this arrest must be regarded as an effect of the serum. Loosening of the membrane does not always begin in sixteen to twenty-four hours, but often not until after thirty-six hours. Each case, he adds, is a problem in itself, and there is no definite sign that can be regarded as an indication for intubation.

### 449. Subacute Yellow Atrophy in Epidemic Jaundice.

C. W. HERLITZ and S. NORDIN (*Acta Paediatrica*, August 10th, 1926, p. 87) report that during an epidemic of catarrhal jaundice one of the cases ended fatally after an illness of eight days. During the last few days marked clinical symptoms developed corresponding to the picture of acute yellow atrophy. A prominent feature of the case was the capacity of the liver to excrete colouring matter. The pathological changes consisted in severe damage to the liver with considerable degenerative atrophy and unusual macroscopic and microscopic appearances. A particularly remarkable feature was that the greater part of the central portion of the lobules was preserved. The microscopic appearances agreed with the results of clinical examination of the hepatic function. On the other hand, the destroyed peripheral parts of the acini showed abundant regenerative changes and well marked round-celled infiltration. These changes are especially striking in view of the short clinical course. In contrast with these relatively mild changes in the liver were the other findings—namely, pronounced haemorrhagic diathesis with severe anaemia and jaundice, and changes in the other organs, especially the kidneys, which indicated a peculiar disturbance of calcium metabolism.

### 450. Still's Disease in Adults.

W. GOLDSTEIN (*Med. Klin.*, October 1st, 1926, p. 1527) states that the syndrome described by Still has been found in adults, not only by himself but by others. He describes fully a case of a woman, aged 38, who had enlarged glands and swollen joints. The hilar glands were enlarged, as was shown by x-rays, and the von Pirquet test was positive. The spleen was palpable, and a blood examination showed 3½ million red corpuscles and 1,600 white with a large preponderance of lymphocytes. The patient was treated by heliotherapy and arsenic. The joint and gland condition remained unaltered, but the blood picture became more satisfactory. Goldstein asserts that the chief characteristic of Still's disease is the site of the joint lesion—namely, in the periarticular tissues and not in the bone. A bacterial origin must be borne in mind and the possible connexion with the tubercle bacillus. But it is to be noted that the so-called tuberculous rheumatism is a separate entity in which there is shrinking of the capsule and actual destruction of the bone. Two cases are quoted where the *Streptococcus viridans* was obtained from the blood stream.

### 451. Sea-sickness and Its Treatment.

In a review of the literature on this subject, G. ICHOK (*Presse Méd.*, October 6th, 1926, p. 1255) states that a rational treatment of sea-sickness is based on a clear knowledge of the physiological mechanism of the symptoms. Pitching, much more than the rolling, of the vessel causes the malady, and prevention will only arrive when it is possible to make ships more stable. The difference in boats implies more than one kind of sea-sickness, and it would be quite true to speak of sea-sicknesses. Nolf has stated that sea-sickness is a vertigo of labyrinthine origin due to the abnormal excitation of the vestibular nerve by the unusual changes in the position of the body (see *Epitome*, 1926, vol. I, paras. 254 and 443). These reactions are easily explained by the fact that the vestibular

nerve is in immediate juxtaposition with the nuclei of origin of the salivary nerves, and, more important, of the vagus. All irritation of the vestibular nerve diffuses to these nuclei and creates a state of hyperexcitability: salivation is produced, and symptoms in the alimentary tract and in the heart. Nolf concludes that the final result is an exaggerated activity of the vagus following a vagotonic state, and that the victims of sea-sickness are to be found among the vagotonics, sympathicotones being immune. Cazamian agrees with this explanation, and adds that the multiple peripheral excitations, reflected in the bulb, act on the two great nerves, the vagus and the sympathetic. He draws a parallel between the conditions in sea-sickness and those in shock and anaphylaxis. Sea-sickness being of vago-sympathetic pathology, atropine must be regarded as the main treatment. As a preventive, Cazamian injects 1/60 grain of neutral atropine sulphate, and as a curative 1/30 grain in males and 1/45 grain in females. If signs of intoxication appear, the drug is discontinued and stimulants administered. In predisposed subjects Nolf recommends the taking by the mouth of 1/60 grain of atropine sulphate, followed by two 1/120 grain doses at half-hourly intervals; in long voyages the patient is kept under the continued influence of the drug by taking 1/60 grain at the commencement and the two 1/120 grain doses afterwards. In cases that do not respond to atropine, an intramuscular injection of adrenaline may be tried. As adjuncts he mentions suggestion treatment, the wearing of a tight abdominal belt, and the recumbent position, to which Ichok adds hiccurement by repeated sea voyages and an exercise of will power.

## Surgery.

### 452. Early Diagnosis of Rectal Carcinoma.

AS G. E. BINKLEY (*Amer. Journ. Surg.*, August, 1926, p. 87) points out, an early diagnosis of carcinoma in the terminal intestinal tract is of vital importance. Carcinoma of the rectum appears in all types and classes, and over 50 per cent. of cases occur in those between 40 and 60 years of age, men being affected twice as often as women. The onset of the disease is insidious, with some derangement of function of the alimentary canal such as flatulency and increased constipation; sometimes the onset is manifested by an attack of diarrhoea. Pelvic colon carcinomas are of slow growth, with a tendency to encircle the bowel and produce obstructive symptoms. The mid-rectum is the commonest site for carcinoma of the terminal intestinal tract. In these cases preliminary symptoms are few and are often overlooked till late. Constipation and the passage of blood are the cardinal signs. Abdominal examination in these cases reveals but little, and it is imperative to examine the rectum. Palpation frequently reveals a tumour mass, whilst the sigmoidoscope enables one to see higher up the bowel. X-rays are useful in high tumours, and it is often necessary to employ the barium enema. The diagnosis has to be considered between rectal cancer and diverticulitis, which is often preceded by the history of an inflammatory process. Benign tumours are usually attached by a pedicle. Blind fistulas and ulcerative strictures must also be considered. In doubtful cases a small section of tissue should be examined.

### 453. Treatment of Generalized Suppurative Peritonitis.

KIRSCHNER (*La Gynéc.*, July, 1926, p. 435) reports 10,000 cases of peritonitis and concludes that all cases of acute generalized peritonitis, except when of gonococcal or pneumococcal origin, should be operated on immediately. The result depends entirely on how soon after the onset operation is performed; a mortality of 24 per cent. after twelve hours rises to 66 per cent. after forty-eight hours. Death often results from shock on the day of the operation. The incision should, he thinks, be medial, and sufficiently long to permit search for and removal of the source of infection. He employs irrigation with physiological serum in diffuse peritonitis, and drying with compresses when the infection is limited. Medicated irrigations are said to be harmful and useless, but mechanical evacuation of the intestines should be practised. Drainage of the peritoneal cavity is inefficient; if all infective foci can be removed the wound should be closed without drainage, but if a limited haemorrhagic and necrotic area is left it is necessary to tampon and drain it with sump drains. Post-operative treatment should be directed to raising the tone of the capillaries, blood vessels.

and heart, and also the general resistance. The patient may assume the horizontal decubitus, or any other position preferred. Diuresis should be brought about by the rectal or intravenous administration of 1 to 1½ litres of serum containing salt or sugar; this should not exceed 400 calories a day. Vomiting can be controlled by lavage of the stomach. Finally, it is necessary to arouse intestinal action by every means; in cases of persistent paresis, enterostomy, and eventually multiple puncture of the intestine through the skin, will give surprisingly good results.

#### 454. Complications of Cholecystitis.

ACCORDING to J. B. DEAYER and V. G. BURDEN (*Annals of Surgery*, September, 1926, p. 379), cholecystitis usually begins as a chronic insidious process. Recognition of the early symptoms secures the best results with a minimum of risk. The acutely inflamed gall bladder should be removed, if possible, to get rid of the disease. Gangrenous cholecystitis is rare, as the gall bladder has a rich blood supply; perforation is therefore unusual. The symptoms resemble perforated peptic ulcer, and immediate operation is imperative. Calculi are usually the result of cholecystitis, and, when possible at the operation, the gall bladder should be removed. Pancreatitis is most often the sequel of cholecystitis, and the usual pathway of infection is through the lymphatics. In acute cases the pancreas is exposed through the gastro-colic omentum, and drainage is provided. In chronic pancreatitis removal of the gall bladder is better than draining it, since the focus of infection is abolished. The discovery of a stone in the common duct after cholecystectomy should be very rare, unless it has been overlooked at the original operation. Recurrence of symptoms following operations on the gall bladder may be due to (1) incomplete primary operation with failure to remove the diseased gall bladder or stone in the duct; (2) hepatitis and pancreatitis may persist for many months and then subside; (3) accidents at operation which injure the ducts and cause stricture and jaundice; (4) incorrect diagnosis before and during operation.

#### 455. The Growing Incidence of Cancer in Norway.

F. G. GADE (*Tidsskrift. f. d. Norske Lægeforening*, September 15th, 1926, p. 364) gives a summary of the findings of the Norwegian Committee for Cancer Research for the period July 1st, 1924, to June 30th, 1926. In the five-year period 1919 to 1923 there was a rise from 9.63 deaths per 10,000 in 1919 to 10.72 in 1923. There was a total of 14,128 cancer deaths in this five-year period—a cancer death rate of 10.74 per 10,000; it was as high as 11.38 per 10,000 in 1922. The cancer death rate in the period 1902 to 1912 was 9.33 per 10,000, and it will thus be seen that there has, apparently, been a considerable rise in the cancer death rate. Gade thinks that this apparent rise should be discounted to a certain extent on account of (1) the recent increase in the number of doctors in Norway, which assures a greater proportion of cancer diagnoses, and (2) the increased average expectation of life, resulting in an increased proportion of elderly persons in the community. Thus, in the interval between the decade 1881-90 and the decade 1911-20 the expectation of life for men increased by 6.89 years to 55.62, and for women by 7.51 to 58.71 years. In the five-year period 1919 to 1923 as great a proportion as 66.59 per cent. of all the malignant growths were situated in the digestive tract, and 51.66 per cent. in the stomach. The female reproductive organs were the seat of malignant disease in 12.07 per cent., and the prostate in 1.48 per cent. In 5.49 per cent. of all the cases of malignant disease the growths were sarcomas.

## Therapeutics.

#### 456. The Action and Clinical Use of Ephedrine.

As an alternative to adrenaline in certain conditions K. K. CHEN and C. F. SCHMIDT (*Journ. Amer. Med. Assoc.*, September 11th, 1926, p. 836) recommend ephedrine, which is an alkaloidal principle of the *helvetica* variety of *Ephedra vulgaris*, which the Chinese have used for many centuries as a diaphoretic, circulatory stimulant, antipyretic, and sedative in cough. The authors state that ephedrine has a definite depressant action on the heart in large doses, or when the heart is under unfavourable conditions; and that its advantages over adrenaline are its more prolonged action, its low toxicity, its effective absorption from the intestinal tract, its easy isolation, the absence of habit formation, and its stability in solutions, even after boiling, or exposure to light and air for as long as nine months. Its stimulant action on the sympathetic central nervous system and its depressing effect on the heart may produce outward results; stimulation of the sympathetic fibres in the kidney may cause albuminuria, stimulation of the central nervous system may

give rise to insomnia, nausea, and tremors, and a depression of the heart may set up arrhythmia or possibly heart failure, though so far this has not been reported. Clinical trials of ephedrine indicate that it will be found most useful as a local application to the nose in cases of chronic congestion, as in hypertrophic rhinitis and hay fever. Almost equally promising are its effects in asthma, and it has been used successfully as a mydriatic. As a circulatory stimulant ephedrine has proved disappointing, its lack of effect being due to its inability to cause appreciable stimulation of the vasomotor system and its tendency to depress the heart. It should not be injected intravenously in cases of profound shock, as it may do harm. The authors add that ephedrine may be advantageously administered with adrenaline to prolong the effect of the stronger stimulant; it may prove valuable in the treatment of anaphylaxis and urticaria, and as a respiratory stimulant in poisoning by narcotic drugs. It seems to be more regularly effective and less dangerous than any other single drug in experimental morphine poisoning.

#### 457. Emetine Periodide in Schistosomiasis.

R. M. GORDON (*Ann. Trop. Med. and Parasitol.*, August 13th, 1926, p. 229) reports on the oral administration of emetine periodide in dealing with infections by *Schistosoma haematobium* among West African children. The usual method of treatment hitherto has consisted of hypodermic injections of emetine hydrochloride subcutaneously, intramuscularly, or intravenously, until all the symptoms have disappeared and live eggs are no longer passed in the urine. The injections are continued for a variable period after this in order to prevent relapse. This method of treatment has certain objections in that the native strongly dislikes injections, and since the course is, of necessity, a long one, few patients can be persuaded to complete the series. Moreover, in several of the control cases in which injections were used by Gordon "emetine nodules" developed, together with sore arms, as a result of fifteen days of consecutive injections; one child showed alarming signs of heart failure. The oral administration of emetine periodide is stated to be free from these objections. The West African native is fond of taking medicine, and amongst a total of 630 doses given by the mouth vomiting occurred only once. Gordon selected 28 children, aged between 6 and 13; 14 of these were given daily injections of emetine hydrochloride for fifteen days, and all had ceased to pass live ova in the urine at the end of twenty-one days of observation. Of the other 14 treated by emetine periodide given orally for fifteen days, 12 of these had ceased to pass live ova at the end of the same period, while the remaining two were passing a mixture of dead and live ova. Gordon suggests that since the urinary findings continued to improve after the administration of the drug had ceased, it is probable that if the period of observation had been longer these two cases might also have become negative. He concludes that the oral administration of emetine periodide clears up the urine of children intensely infected with *Schistosoma haematobium* as quickly and with almost as great certainty as subcutaneous injections of emetine hydrochloride, but without the risk of ill effects. Further, the absence of unpleasant symptoms suggests that a larger dose of emetine periodide might be used if required.

#### 458. Iodine in Scarlet Fever.

H. J. NOVACK (*Med. Journ. and Record*, September 1st, 1926, p. 267) reports the results of a comparative study of 200 cases of scarlet fever treated with colodine—a 10 per cent. colloidal form of iodine. Full dosage consisted of 1 drachm every fifteen minutes to an hour up to eight doses on the first day, every hour to two hours up to eight doses on the second day, every two or three hours up to eight doses on the third day, four times on the fourth day, three times on the fifth day, and twice a day on the sixth day and to the end of treatment. No toxic pneumonia or kidney complications resulted, and signs of kidney irritation prior to administration cleared up rapidly and completely; patients so treated appeared to tolerate the infection better and to be much less toxic. Complications were few and slight in cases treated early, the drug appearing to increase resistance to infection. When the treatment was commenced early a mild reaction followed, as evidenced by slight accentuation of the rash and fever and enlargement of the tonsils and glands. All these symptoms subsided in a few days, and a continuation of the treatment in moderate doses cleared up the case. When started later with complications already present a more marked reaction resulted in which every symptom was accentuated; this was followed by gradual subsidence on reduced doses after a few days of intensive medication. The average duration of stay in hospital was found to be greatly reduced, and Novack considers that colodine is of considerable value in the specific treatment of scarlet fever with or without combined serum treatment in severe cases.





authors attribute this to the absence in old age of depressant substances elaborated by the ovaries and passed into the blood stream. These circulatory disturbances are often not very pronounced, but slight oedema, albuminuria, varicose veins, and arterial hypertension are all indications of cardiovascular derangement, appropriate treatment of which will stop the uterine haemorrhage. Sometimes metrorrhagia is associated with syphilitic changes in the blood vessels and can be cured by specific treatment. The author strongly recommends a complete clinical examination of both the central and peripheral circulation in all cases of metrorrhagia occurring after the menopause.

#### 464. Post-puerperal Morbidity.

H. A. MILLER (*Journ. Amer. Med. Assoc.*, September 11th, 1926, p. 830) presents a statistical study of 1,000 cases of post-puerperal women, the examinations having been made as soon as possible after the child was six weeks old. He finds that post-puerperal morbidity occurs much more frequently than is generally supposed. Operative intervention in labour of any character seems to increase post-puerperal morbidity, and, even ignoring the immediate danger of infection, is to be condemned, except where absolutely necessary to preserve the life of mother or child. Pyrexia during the puerperal period, even though slight, leaves in its wake some definite evidence of injury having been done. The present post-puerperal morbidity would seem to justify a return to rational non-intervention in the normal woman and the avoidance of all measures to hasten delivery, except in the presence of foetal distress, uterine inertia, or disproportion. Attention to cervical injuries will markedly lessen the discomfort of the patient, and in cases of erosion may have an influence on decreasing the incidence of malignancy. Post-puerperal examinations should invariably be made.

#### 465. Induction of Labour per Rectum.

P. KLEIN (*Zentralbl. f. Gynäk.*, September 25th, 1926, p. 2493) has observed over 800 cases of induction by this method in five years. The procedure consists of the insertion into the rectum of a balloon filled with water; it acts by stimulating Frankenhauser's ganglia by pressure, and more effectively than if placed in the vagina. The chief advantage is the lessened risk of sepsis. The balloon in the rectum assists the flow of secretion from the vagina by flattening the posterior fornix and emptying out the accumulated secretions, thus lessening the risk of their infection. Further, the balloon stretches the vaginal outlet by pressure and dilates the cervix in cases where other means had been tried unsuccessfully. It causes no discomfort or unduly severe labour pains, but surprisingly quick dilatation, followed shortly by strong pains; it is therefore useful in elderly primiparae, in premature rupture of the membranes with weak pains, protracted labour with rising temperature, purulent discharge, and inflammatory conditions of the vagina or external genitalia. Klein uses Barnes's balloon, which is passed up to the utero-sacral ligament and filled with about five ounces of water at 113° F., the warmth giving additional stimulus to the paracervical ganglia. It is retained not longer than six to eight hours, three to four hours often being enough. It can be reinserted if unsuccessful or the pains weak. Its use is inadvisable in uterine hypoplasia, or where the contractility of the muscle has been impaired by hydramnios, old-standing metritis, or sepsis. With obstinately weak pains it does well if associated with one of the chemical methods, such as quinine.

## Pathology.

#### 466. Histology of Amyotrophic Lateral Sclerosis.

F. J. WARNER (*Journ. of Nerv. and Ment. Dis.*, September, 1926, p. 229) quotes Hassin as finding in amyotrophic lateral sclerosis marked cell destruction, neuronophagic phenomena, chromatolysis, and disappearance of the Betz cells; the changes, more or less marked in the motor ganglion cells, were absent in the sensory ganglion. Alzheimer found, in a case of progressive muscular atrophy, cell changes, not only in the anterior horns, but also in the medulla and motor cortex, while in bulbar paralysis marked degeneration of the motor nuclei of the medulla was associated with those of the motor cortex and the anterior horn cells. Warner believes, therefore, that the changes in amyotrophic lateral sclerosis, bulbar paralysis, and progressive muscular atrophy are essentially of the same character, differing in the intensity of the involvement of certain areas. The author describes his findings in a case of amyotrophic lateral sclerosis, showing spastic gait, marked atrophy of the extremities, and fibrillary twitchings in the muscles of the chest, upper extremities, and tongue. The cranial nerves were normal, and the uvula, soft palate, and pharynx showed no abnormality. Tendon

reflexes of the upper and lower extremities were exaggerated and the signs of Babinski and Romberg were absent, but ankle clonus was present, as also was knee clonus; the abdominal and cremasteric reflexes were present but diminished; the thoracic, abdominal, and genito-urinary organs were healthy and cutaneous sensation was normal. Warner summarizes his histopathological findings as follows: (1) reactive pia-arachnoid changes; (2) marked degenerative changes in the cells of the anterior horns of the spinal cord, motor nuclei of the bulbus, and to a lesser extent in the motor area of the cortex, with practically none in the occipital, temporal, and frontal lobes, or in the posterior horns of the spinal cord; (3) marked degenerative phenomena of some pyramidal tract fibres; (4) accumulation of lipoids in the adventitious spaces of the blood vessels of the entire central nervous system, and especially in the areas of the pyramidal tract fibres; and (5) absence of inflammatory phenomena. The author draws attention to the pronounced spastic phenomena with rather mild pyramidal destruction, and the absence of the Betz cells; he concludes that the process was much more marked in the spinal cord, began as a progressive muscular atrophy, and, successively involving other motor elements, resulted in amyotrophic lateral sclerosis. He believes that, if the involvement of certain motor elements is especially marked in the anterior horns of the spinal cord, progressive muscular atrophy follows; if in the medulla, bulbar paralysis is produced; and if the motor area of the cortex is also involved, the picture of amyotrophic lateral sclerosis results.

#### 467. Etiology of Scarlet Fever.

C. NICOLLE, E. CONSEIL, and P. DURAND (*Arch. de l'Inst. Pasteur de Tunis*, September, 1926, p. 229), after investigations extending over twelve years, report that the inoculation of a virus produced in the tonsil of a patient with scarlet fever into the tonsil of a healthy individual not previously proved to be susceptible, caused a scarlet fever angina and glossitis with typical fever, but without rash or subsequent desquamation. When the fourth subculture of the streptococcus isolated from the tonsil of the same patient was planted on that of a healthy individual of known susceptibility, typical scarlet fever, with fever, angina, glossitis, rash, and desquamation, was produced. The subcutaneous injection of non-filtered urine from the same patient into a susceptible subject gave rise to two attacks of a toxic scarlatinal erythema, separated by a day and lasting for some hours, the first being only febrile. The same urine, filtered, gave a clear Dick reaction in two individuals later shown to be susceptible. The streptococcus which produced the symptoms of scarlet fever possessed haemolytic and toxic properties, and did not ferment mannite. The authors agree that their experiments confirm the work of the Dicks, and prove that the causative agent of scarlet fever is a streptococcus.

#### 468. Anaphylaxis in Bronchial Asthma and Pulmonary Tuberculosis.

H. GROSSFELD (*Wien. Arch. f. Innere Med.*, September 1st, 1926, p. 117), as the result of clinical observation of 215 cases of bronchial asthma, has come to the conclusion that the of bronchial asthma are of tuberculous origin. Tuberculous attack is an anaphylactic response in the blood of a bacterial derived from the proteins of the tubercle bacilli. It has been shown by experiments that when animals have been infected with human tuberculosis a typical attack of asthma may be induced by an injection of tuberculin. In every case there was a definite anaphylactic reaction. In cases of genuine bronchial asthma a venous hyperaemia and stasis of the circulation in the bronchial veins occurs. Grossfeld thinks that this may be regarded as a protective or "defence" reaction against the tuberculous invasion, and that it affords an explanation of the apparent discrepancy in the records of various observers, some of whom believe there is an antagonism between asthma and tuberculosis, while others have noted a frequent coincidence of the two diseases. The heterogeneous factors that determine the onset of the attacks of asthma are considered by Grossfeld to be chiefly non-specific external or internal irritants, but in tuberculous patients an endogenous antigen may be produced by a transient disintegration of tubercle bacilli, thus evoking an anaphylactic reaction. Changes in the endocrine secretions may occur in cases of chronic tuberculosis, due to the interaction of katabolic products derived from the breaking up of tubercle bacilli. It was found that these disturbances of endocrine equilibrium produced a definite hypo-adrenalinæmia, and it appeared also that in tuberculous patients a definite albumin-antialbumin reaction might occur. The author thinks it probable that in two of his cases inhalation of dust from the same source caused, in one case, pulmonary tuberculosis, and in the other bronchial asthma.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 400. Hypoglycaemic Reactions during Insulin Treatment.

J. V. GRAVES (*Med. Journ. and Record*, August 18th, 1926, p. 205) describes a hypoglycaemic attack in a patient who, after being taught to select, calculate the value of, and weigh his diet, test his urine, and attend to his treatment, became careless after passing from medical control. The symptoms exhibited were breathing of the Kussmaul type, breath heavy with acetone, marked drowsiness verging on coma, beefy red tongue, dry cracked lips, oedema of the face, pitting over both tibiae, pulse of 110, but a normal temperature. Graves believes that the initial coma was due to the superintention of an infection (an acute cold or influenza) in addition to careless dieting, with a consequent marked loss of carbohydrate tolerance, the later state of hypoglycaemia being due to the sudden development of immunity to the infection, with equally sudden regaining of a high level tolerance. He finds that in marked diabetes with high blood sugar levels the elevation of temperature usual in infections is absent, and so the infection escapes detection; the pulse rate, however, increases commensurately with the infection. The deduction is that in grave diabetic crises the frequency of the pulse rate rather than the degree of pyrexia should be taken as indicating infection; increased carbohydrate tolerance may follow closely on the subsidence of infection. Close attention should be paid therefore to such patients, if on high insulin dosage, in view of the possible occurrence of sudden hypoglycaemia consequent on the subsidence of an infective process.

### 470. Diagnosis of Diabetes.

E. S. DU BRAY (*Journ. Lab. and Clin. Med.*, August, 1926, p. 1915) emphasizes the practical importance of diagnosing early cases of diabetes by routine blood examinations and determination of the blood sugar in the fasting state. In latent cases, which he thinks are very common, the glucose tolerance test gives valuable information not otherwise obtainable. The estimation of the blood sugar alone in a fasting patient is found to be sometimes insufficient for diagnostic purposes, since a patient with severe diabetes may give a normal fasting blood sugar reaction if tested immediately before the test. Bray adds that glycosuria in itself can no longer be regarded as a sign of a single disease; it appears more rational to think of it as a symptom like jaundice and headache. The diagnosis of renal glycosuria should not be too easily made, since unquestionable instances of this condition are uncommon, and few cases have been followed for a sufficient period for the final outcome to be seen. An elevation of the renal threshold occurs from time to time in diabetic patients who have been treated with insulin, so that hyperglycaemia exists without glycosuria, and a constant elevation of the threshold appears to be a disadvantage because of the excessive work continuously thrown upon the internal secretion of the pancreas. Non-diabetic glycosurias associated with elevated blood sugar content include the alimentary, neurogenic, toxic, and endocrine groups. The last group comprises a large and poorly understood number of cases in which there is an associated disturbance of function of the glands of internal secretion. The outstanding example is the diminished carbohydrate tolerance of hyperthyroidism. The glycosurias in pituitary and adrenal disturbances need further experimental study. True pancreatic diabetes presents a primary diagnostic difficulty in cases of asymptomatic glycosuria in patients complaining of the complications of diabetes only, and in patients first seen in coma.

### 471. The Aorta in Malaria.

E. BENHAMOU (*Ann. de Méd.*, August, 1926, p. 145) reviews the literature and records his observations on the heart in malaria as the result of serial radioscopy. His conclusions are as follows. (1) There is a characteristic malarial condition of the aorta which develops earlier when the malarial paroxysms are repeated and violent. It is essentially a dilatation, with a regular outline, and, normally, a grey colour; the dilatation, which is usually moderate, remains localized to the first part of the aorta. Though very common, it is generally latent, and systematic examination with the screen is required for its detection. It constitutes a true stigma of relapsing chronic malaria which has received little or no treatment. (2) When the febrile attacks are allowed to run their course an increase of dilatation may be seen on the

screen, though the regular contour and normal colour of the aorta are preserved. As soon as energetic treatment is instituted the aorta becomes progressively smaller. (3) The aorta in malarial patients undergoes movements of dilatation or contraction at the same time as the heart. (4) The principal symptoms are pain and dyspnoea. The pain, which is rather a feeling of retrosternal discomfort, does not radiate into the left arm, but is accompanied by anxiety and not by the sensation of imminent death. Dyspnoea, which is often wrongly attributed to anaemia, is a more frequent symptom. (5) Physical examination reveals suprasternal pulsation, increase of the aortic dullness, and a soft systolic murmur, very different from the harsh systolic murmur of chronic aortitis. The characteristic feature of the murmur is its variability; it disappears after intensive quinine treatment, reappears during a relapse, and finally is no longer heard. (6) This dilatation of the aorta does not indicate aortitis, at least at the outset and in the great majority of cases; pathological studies show either no change or else the lesions of concurrent syphilis. Moreover, in experimental malaria in long-standing carriers no changes are found in the aorta. According to Benhamou the dilatation is functional and is the result of hypotonicity. (7) Treatment consists in intramuscular injection of quinine as long as the dilatation persists, associated with digitalin or adrenaline.

### Etiology of Nasal Catarrh.

472. D. F. SMILEY (*Amer. Journ. of Hygiene*, September, 1926, p. 621) has collected the records of respiratory infections amongst 4,000 male university students for twelve years. These he has compared with the daily temperature, rainfall, and hours of sunshine. The highest incidence of respiratory diseases occurred in December, January, February, or March—most frequently in January. No definite relation was apparent between the incidence of respiratory disease and the rainfall, but there was a reciprocal relation between disease and the temperature and sunshine curves. Thus the lower the temperature and the less the sunshine, the greater was the incidence of colds and other diseases of the respiratory tract; the higher the temperature and the greater the amount of sunshine, the less was the incidence of colds. The author thinks that these facts suggest that colds are due to an interference with the vitamin metabolism of the body which leads to a diminution of resistance against bacterial infection.

## Surgery.

### Treatment of Cutaneous Cancer.

473.

A. P. MISSORICI (*Arch. Ital. di Otol.*, August, 1926, p. 418) reviews the methods of treatment of carcinoma of the skin, and especially as it occurs in the face. He states that by radium therapy a number of cases of skin cancer have been definitely cured. The rodent ulcer or basal-celled carcinoma responds very readily to treatment by radium, but a very considerable number of cutaneous epitheliomas are not cured by this treatment. Electro-coagulation or diathermy is not very suitable on the skin, especially of the face, on account of the very considerable loss of tissue involved. A number of the very considerable loss of tissue involved. A number of chemical agents have been tried, including chromic acid, methylene blue, and methyl violet, but the author found that arsenious acid gave the best results. He has tried various strengths and solvents, and reports that a suspension of anhydrous arsenious acid in a mixture of equal parts of alcohol and ether gave the best results. He considered that it was better to use a somewhat stronger suspension than some other writers had advised. All crusts and discharge are removed from the surface of the cancer and the suspension is applied and left for three to four days. At the end of that time the dressing is removed, all sloughs cut away, and a new dressing applied; this is repeated every four days. It is found advisable to increase gradually the strength of the arsenious acid in suspension from 1 to 10 per cent., which arsenious strength is applied in the form of a paste. Missorici found that by using a mixture of alcohol and ether a better penetration into the deeper layers of the skin was obtained than when alcohol alone was used. The treatment is continued until induration has disappeared and the skin has healed over. A soft, hardly noticeable scar remains, and this result is usually obtained in from fifty to a hundred days, except in very advanced cases. The author records seven cases of cure in which there has been no recurrence for periods up to two and a half years.

## 474.

## Facial Boils.

R. DEMEL and A. HEINDL (*Deut. Zeit. f. Chir.*, October, 1926, p. 379) state that every case of facial boils should be regarded as serious and treated from the first with proper care. The cases must be distinguished not only by the situation of the lesions but also, and chiefly, by the accompanying symptoms. In mild forms, which constitute the majority of cases, good results may be obtained by strictly conservative treatment, such as the application of gauze smeared with an ointment of lanoline and 10 per cent. zinc oxide, or by compresses of 96 per cent. alcohol. Incision or cauterization is not indicated until an abscess has formed. In malignant cases which are characterized by progressive inflammation, induration of the surrounding tissue, and the formation of hard cords indicating thrombophlebitis accompanied by symptoms of septicaemia, active and radical treatment is required. The statistics of Professor Eisselberg's surgical clinic at Vienna during the last seven years show that there has been a steady increase in the number of cases treated by conservative measures. Thus, during the period 1919-20, 136 cases, including 15 boils of the upper lip, which is the most serious localization, were treated by operation, and 117 cases, including 10 boils of the upper lip, were treated by conservative measures. During the years 1924-25 only 49 cases, in none of which the upper lip was affected, were operated on, while 295, including 21 boils of the upper lip, received conservative treatment only. In 31 of the 49 cases the operation was limited to simple application of the platinum canter or removal of the suppurative focus.

## 475.

## Recurrent Cancer of the Penis.

FROM six cases of cancer of the penis seen in three years, G. JEANNENEY (*Journ. Méd. de Bordeaux*, September 10th to 25th, 1926, p. 693) reports one case with recurrence. The patient, aged 62, had an attack of gonorrhoea when 18, since when there had been a "morning drop" and slight difficulty of micturition. A pimple the size of a pin's head appeared on the glans twenty-two years later and was cauterized. This cauterization was followed by a rapid recurrence, and amputation of the glans was performed, a part of the prepuce being left, and the glands being untreated. Ten years after this the patient noticed an infiltration at the end of the penis and an induration of the prepuce, with pain on micturition and erection. In February of this year—that is, thirty-two years after the amputation—the conditions were that the prepuce was indurated, infiltrated, deeply adherent, and covered with ulcerated discharging red vegetations. The inguinal glands on both sides were affected. The penis was now amputated at the root, and the glands on each side were curetted with the thermo-cautery; those at the base of Scarpia's triangles and some vertical to the thighs were dissected out. The final results were good. Microscopically, sections showed only a marked hyperplasia with no evidence of malignancy. Jeanneney draws attention to the slow development of the recurrence, and the folly of speaking of cure in cancer. Despite this slow evolution and the rarity of gland involvement, he maintains that cancer of the penis follows the general law of cancer, and that complete excision of the organ and neighbouring glands should be performed as in cancer of the tongue. The gland excision is best done rapidly with the thermo-cautery, there being with this method less danger of sepsis.

## 476.

## Gastric Ulcer and Carcinoma.

J. S. LAWRENCE and A. V. BOCK (*Boston Med. and Surg. Journ.*, September 30th, 1926, p. 651) discuss the relation between gastric ulcer and carcinoma, based on a study of 98 cases of carcinoma and 48 cases of ulcer, the majority of which were confirmed by operation and an appreciable number further confirmed by pathological examination. A comparison of the clinical findings of the two conditions showed that most of the ulcer cases had their initial symptoms about twenty years earlier than the majority of those with carcinoma, and on the basis of duration of symptoms 10 per cent. is stated to be a high value to give to cases of ulcer which later became malignant. A good appetite was noted about twice as frequently in the subjects of ulcer as with those with cancer, and loss of weight was found to be much more rapid in malignancy than in ulcer. In cancer the absence of free hydrochloric acid in the gastric contents was much more common than in ulcer, and occult blood was found about three times as often in the stools of cancer cases as in patients with ulcer. Over half the cancer cases presented a palpable abdominal mass; this was present in only one of the ulcer cases. Epigastric pain was the most common initial symptom in both classes of cases. The authors conclude that these definite differences in the clinical findings show that there is no very close relation between the two conditions. They hold that patients of cancer ago with unexplained gas in the stomach, heartburn, or constipation should be x-rayed at once.

## Therapeutics.

## 477. Serum Treatment of Cerebro-spinal Fever.

J. SIEGL and K. SOLLGRUBER (*Arch. f. Kinderheilk.*, August 7th, 1926, p. 1) record four cases of cerebro-spinal fever in children aged from 7 months to 5½ years in whom Hamburger's method was employed, whereby not only larger quantities of serum were administered, but the serum was brought from the spinal canal into the inside of the skull. The method, which is very simple and requires no apparatus, consists essentially in gradual replacement of the cerebro-spinal fluid by air and substitution of antimeningococcal serum in its place. The technique is as follows: Lumbar puncture is performed in the ordinary way, and the spinal fluid is allowed to escape until an ordinary pressure is reached. Air is next insufflated with a 10 c.cm. syringe; after waiting for a few seconds until the air has had time to rise in the spinal canal an equivalent amount of fluid is withdrawn. This process is continued as long as any fluid can be removed. The patient is then put in a position with the head lower than the site of puncture, and repeated syringefuls of warmed serum are injected, the excess of air being removed with the syringe in proportion to the amount of serum injected. This process is continued as long as any air can be aspirated. The replacement of the cerebro-spinal fluid by air was always well borne by the children and no alarming symptoms were ever observed.

## 478. Therapeutical Scope of Ultra-violet Radiation.

M. BAVELAËR (*Journ. de Méd. et de Chir.*, September 10th, 1926, p. 609) cites the following ways in which ultra-violet rays have proved efficacious. (1) Acting on the skin it causes hyperaemia, pigmentation, exaltation of defensive and reparative processes (valuable in the treatment of sores and cutaneous affections), and regulation of the glandular secretions. (2) Its action on the blood is very marked in cases in which certain of the blood elements are deficient. The amount of haemoglobin and the number of erythrocytes is increased in anaemia; there is an increase in the calcium and phosphorus content of the blood, where this is decreased, as in rickets. The number of leucocytes is also increased, and arterial tension is lowered in cases of hypertension. (3) Its action on the tissues is particularly marked in the bones, where there is an improvement in growth, and in the defensive and reparative processes, especially in tuberculous osteitis. Exposure to the rays improves the tenuity of the muscles. (4) Acting on the internal secretory glands the rays stimulate the activity, chiefly of the ovaries, thyroid, parathyroids, and thymus. (5) The action on the nervous system is variable, depending on the dose, and chiefly on the sensitiveness of the patient. In general the action is stimulating, and may cause excitement and insomnia, which may be avoided by commencing treatment with weak doses. The best results of treatment are, Bavelaër adds, obtained in children, especially in cases of dystrophy, spasmophilia, and rickets. Bavelaër maintains that contraindications are practically negligible if the rays are administered in therapeutic doses, and that treatment is remarkably safe. He advocates sufficiently long exposures given discontinuously, and states that continuous and very prolonged treatment is inadvisable. The choice of apparatus, dosage and its progression, the length of the exposures, their timing, and the interval between each, and the total duration of the treatment are essential parts of the skilful administration of the rays.

479. E. I. WYMAN (*Boston Med. and Surg. Journ.*, August 26th, 1926, p. 396) finds that the climate of New England is unsuitable for natural heliotherapy, except during the summer, and uses lamps in his hospital practice. He states that patients whose skins are unusually susceptible should receive short spells of treatment several times a day, and that many dark-skinned patients can bear double the length of exposure which is the maximum for blonds. Ultra-violet rays are of great value in cases of rickets, spasmophilia (tetany), tuberculosis, and of various skin diseases. The endowment with antirachitic power of various animal and vegetable oils by exposure to radiation from a mercury vapour quartz lamp is stated to be due to activation of cholesterol in animal foods and of phytosterol in vegetables. In rickets Wyman gives cod-liver oil in addition to ultra-violet light treatment; treatment is continued until all rachitic symptoms have disappeared. In spasmophilia with its low calcium content in the blood plasma, ultra-violet therapy not only relieved the symptoms, but the calcium content rose to normal. The author gives 10 to 20 grains of calcium chloride thrice daily in addition to the ultra-violet irradiation. After cessation of heliotherapy in rickets the administration of cod-liver oil is continued to prevent recurrence of rickets; and calcium chloride is given for prophylaxis against tetany.

The time required to cure the average case varied from ten to fifteen days. Wyman found that ultra-violet rays were of decided value in the treatment of peritoneal, glandular, and osseous tuberculosis. Of the glandular forms, the mesenteric was the most rapidly improved, then the mediastinal, and lastly the peripheral forms. Cases ofiliary pulmonary tuberculosis did not improve, although treated in an early stage. Ultra-violet radiation appeared to improve the general condition in mediastinal and mesenteric adenitis and to relieve such symptoms as cough in the former and abdominal pain in the latter condition; early calcification of infected glands was observed. In tuberculous peritonitis the results were variable, but ultra-violet therapy seemed to be useful in afebrile cases. The author adds that all cases of proctitis showed definite improvement while under treatment. Favourable results were observed in some cases of chronic farunculosis, which had not cleared up with vaccines and local therapy; it has also been beneficial in some cases of bronchial asthma.

#### 440. Nicotie's Vaccine in the Treatment of Soft Chancre.

KRIEGERMAN (Paris Mtd., October 24th, 1926, p. 285) recommends for the treatment of soft chancre the use of Nicotie's vaccine prepared from the bacillus of Dancery and injected intravenously in doses of 200 to 700 millions. With subcutaneous injections there is said to be risk of causing soft-chancere-like lesions at the point of inoculation. Kriegerman states that good effects are quickly produced on the chancre and also on its complications; failures are often due to an incomplete treatment in cases of exceptional virulence of the organism. The only drawback to this method of vaccine therapy is the violent general reaction, which comes on about two hours after the injection and is characterized by rigors, slight pyrexia, and sometimes vomiting. This reaction appears after each injection; it is very violent after the first one, lasts from twelve hours to three days, and the patient is unable to work for twenty-four hours. After the subsequent injections the reactions are less marked and last only five or six hours. No other untoward symptoms have so far been reported, and Kriegerman holds that this severe reaction is of secondary importance in view of the excellent results obtained.

### Anaesthetics.

#### 441. The Surgical Value of Carbon Dioxide and Oxygen Anaesthesia.

C. N. CHIPMAN (*Anaesthesia and Analgesia*, August, 1926, p. 200) reports his experience of using one part of carbon dioxide to three of oxygen in place of nitrous oxide and oxygen as a preliminary anaesthetic in tonsil cases in adults. After six to ten inhalations the patient became unconscious, and the anaesthesia was continued by admitting ether to the mixing chamber; it was noticed that the induction of anaesthesia was more rapid than by other methods, and that there was an absence of resistance or struggling. An apparent decrease in the amount of haemorrhage was observed, the blood clotting more quickly and firmly, and thus necessitating the use of fewer sponges and sutures than in the case of other anaesthetics. In a series of twenty cases it was found that the average coagulation time, taken before and during operation, was reduced by about one-half, and similar results were noted in ten cases where the coagulation time was fifteen or twenty minutes after the tonsils had been removed. Two hours after operation the coagulation times were found to be about the same as those before operation. The longer the coagulation time before operation the greater was the reduction produced by this method. Of 213 patients with an average coagulation time of 4.3 minutes the average reduction was 2.32 minutes after using one part of carbon dioxide to three of oxygen—giving an average time of 1.98 minutes. Chipman considers that the excessive amount of oxygen is responsible for this reduction in coagulation time; his view is supported by the fact that less bleeding followed tonsillectomies under nitrous oxide and oxygen than under ether anaesthesia.

#### 442. Posture with Reference to General Anaesthesia.

W. MEYER (*Amer. Journ. Surg.*, August, 1926, p. 63) discusses the importance of posture during and immediately after operations under general anaesthesia, with special reference to the prevention of aspiration of the gastric contents, which, as he remarks, may give rise to acute infectious bronchitis, the necrosis of the lung and more pulmonary abscesses, and even sizes the importance of the commencement of a spell of vomiting being immediately treated by the adoption of the

Trendelenburg position, with the head turned well to one side, so that the fluid can escape at the lower angle of the mouth and be prevented from entering the lungs. He mentions the anaesthetic procedure of T. L. Bennett, who performs gastric lavage through a stomach tube towards the end of an operation, the stomach being completely emptied subsequently. Meyer recommends that on the stretcher after the operation, and in bed, Sims's position should be adopted in order to prevent aspiration. The author adds that the adoption of a modified Trendelenburg position during after-treatment in bed may prevent femoral thrombosis and subsequent pulmonary embolism. Blocks are placed beneath the lower end of the bed to raise the lower limbs, and the upper part of the body is elevated so as to avoid inconvenience to the patient. Since adopting this posture he has not encountered thrombosis of the femoral vein.

#### 443. Ethylene Anaesthesia in Obstetrics.

J. KUEBELMAN and H. F. KANE (*Surg., Gynecol. and Obstet.*, September, 1926, p. 389) record their observations on 85 obstetrical cases in which they employed ethylene as an anaesthetic. Of these, 33 were delivered spontaneously, 23 by low forceps, 9 by mid forceps, 6 by podalic version, and 14 by Caesarean section; 53 patients were primiparae, 25 were 2-parae, and 7 were 3-parae. The results were as follows: complete analgesia was obtained in 84 per cent., appreciable relief in 13 per cent., and there was failure in only 3 per cent. Progress during the second stage of labour seemed to be more rapid. No harmful effects on the child were noted. Podalic version was easily performed under ethylene anaesthesia. Ethylene appeared to be the ideal anaesthetic for Caesarean section. Its efficacy seemed to be increased by the use of morphine in the first stage. The authors add that ethylene is of value in the second stage of labour because it rapidly induces analgesia and anaesthesia; its action is fleeting, and there are no latent ill effects on the mother or child.

#### 444. Prolongation of Local Anaesthesia.

G. DE TAKATS (*Surg., Gynecol. and Obstet.*, July, 1926, p. 100) states that a combination of tuteocain—a synthetic derivative of an amino alcohol—with 0.1 per cent. solution of eucupin (1-camphylhydrocuprein) and the usual dose of adrenaline causes a post-operative analgesia of about twenty-four hours. This combination of tuteocain and eucupin is soluble in water, can be sterilized, does not counteract adrenaline, and is not toxic in the quantities stated. It does not cause any tissue reaction, or any disturbance in wound healing, as shown by intracutaneous tests, microscopical sections, and a hundred operations performed with this solution. Tuteocain was used in a 0.2 per cent. dilution to replace 0.5 per cent. novocain, and 0.5 per cent. tuteocain instead of 1 per cent. novocain, because the dermal wheals, especially with the addition of adrenaline, were found to produce longer anaesthesia. An anaesthesia lasting longer than twenty-four hours was not considered desirable owing to the possibility of trophic disturbance.

### Obstetrics and Gynaecology.

#### 445. Uterine Myoma and Pregnancy.

P. FINKET (*La Gynecol.*, June, 1926, p. 359) records two cases illustrating the tolerance of intervention which is sometimes shown by the pregnant myomatous uterus. In the first, a primipara, aged 33, three months pregnant, complained of pain in the left groin, and was found to have a hard rounded tumour, apparently separated by a groove from the uterus, in the left fornix. The tumour, regarded as an incarcerated ovarian cyst, was found at operation to be an intramural myoma of the left coranal region; after its removal by enucleation pregnancy continued to term. The second case was that of a primipara, aged 30, who suffered from severe vomiting at the fourth month. A fluctuating rounded tumour was palpable in the pouch of Douglas and was regarded as was palpable in the pouch of Douglas. This was replaced anaesthetic. Later the vomiting reappeared, and at the sixth month a large tender swelling was noted to one side of the body of the uterus. At operation this swelling, which was twice the size of the first, was suspected to be a sarcoma, and hysterectomy was performed; it proved, however, to be a necrobiotic myoma containing 150 c.cm. of fluid.

#### 446. Gonococcal Abscess in the Wall of the Uterus.

H. A. COLE (*Kenya Med. Journ.*, September, 1926, p. 171) reports a case of gonococcal uterine abscess in an intelligent native woman, married, with two children. The patient gave no history of an attack of gonorrhoea or discharge, not was there any interference with the menstrual function with

the exception of three months' menorrhagia or dysmenorrhoea. Five months before being treated she began to feel unwell and noticed a gradual increase in the size of her abdomen, simulating pregnancy. Laparotomy was performed, and on incising the peritoneum a mass, containing the ovaries and tubes, was found; contiguous with it anteriorly was a small swelling which proved to be the uterus, and it was apparent that the condition was one of pelvic infection with an abscess of the posterior uterine wall. About a pint of pus was evacuated, a drainage tube inserted, and the wound closed; the patient made an uneventful recovery. Slides of the pus showed gonococci, mostly extracellular. Cole presumes that one of two things must have happened: there must either have been an infection of the uterine muscular wall which gave rise to an abscess of low virulence, or an obstruction of the lumen of one or more compound racemose glands of the endometrium. He favours the first explanation because the mass of adhesions in the pelvis supports it, otherwise the abscess would have been expected to burst into the uterine cavity.

#### 487. Endometrioma of the Ovary.

D. DOUGAL (*Journ. Obstet. and Gynaecol. of the British Empire*, Autumn Number, 1926, p. 439) reports a case of endometrioma of one ovary in a patient, aged 32, from whom the other ovary and both Fallopian tubes had been removed eleven and a half years previously for bilateral salpingo-oophoritis. At the second operation the remaining ovary was found adherent to the uterus, near the cornu; it contained a large tarry cyst with endometrial tissue in part of its wall, a small dermoid containing hair, several follicular cysts, and one intsin cyst filled with blood. Endometrial tissue extended deeply into the wall of the cornu and into the ovary. Dougal rejects the possible explanation that endometrial tissue had already entered the ovary before the tubes were removed, or that one or other stump of the tubes had been left patent, so allowing endometrial fragments to escape into the peritoneum during menstruation. He concludes that the endometrioma must have extended directly from the uterine cavity to the ovary by infiltration of the intervening structures. Adenomyomas were present in both uterine cornua, strongly suggesting that the uterus was primarily responsible for the ovarian growth, and islands of endometrium were found in the tissues between the uterine cavity and the tarry cyst, indicating the process of infiltration. Dougal suggests, finally, that the commencement of endometrial proliferation may be attributable to preceding pelvic inflammation, which in this case was gonococcal.

#### 488. Prophylactic Use of Pituitary Extract in the Third Stage of Labour.

F. JESS (*Zentralbl. f. Gynäk.*, September 18th, 1926, p. 2440) strongly recommends the routine intravenous injection of pituitary extract in the third stage of labour, within five minutes of delivery of the child and before placental detachment has occurred. The preparation he employs is a German one, which has been stated to be less concentrated than those used in England. Comparing two series of 503 cases, in one of which pituitary extract had been injected in this way, he found that the interval between the birth of the foetus and the passage of the placenta was reduced by one-half, and the loss of blood was diminished by almost one-half in those patients injected. Replying to those who have criticized the method by citing cases of uterine atony with severe bleeding following the contraction brought about by the pituitary extract, Jess states that such untoward symptoms (which do occur in rare cases) can be controlled with ease by repeating the intravenous injection of pituitary extract, and at the same time administering a reliable ergot preparation intramuscularly. He recommends the joint use of pituitary extract and ergot in all cases in which it has been necessary to anaesthetize the patient with ethyl chloride, ether, or chloroform.

## Pathology.

#### 489. Viability of *B. acidophilus* and *B. bulgaricus* in the Human Intestine.

FURTHER evidence is submitted by W. L. KULP (*Journ. Amer. Med. Assoc.*, September 11th, 1926, p. 835) that *B. acidophilus* can be recovered in large numbers from the faeces of persons ingesting the organism in the form of milk culture or milk suspensions, and that *B. bulgaricus*, when similarly administered, fails to appear in the faeces; he emphasizes certain clinical results of using *acidophilus* milk or milk suspensions. The chief criterion of *acidophilus* milk therapy is the clinical improvement of the patient. This has been explained as being due to the appearance of large numbers of *B. acidophilus* in the intestinal tract with

a corresponding decrease in toxin-forming bacteria; therefore, any marked clinical improvement should be associated with the appearance of large numbers of viable *B. acidophilus* in the faeces. Kulp's investigations lasted for two years and led him to the conclusion that all strains of *B. acidophilus* are not equally viable, and that therefore the strains used in treatment should be carefully investigated, first, with especial reference to fermentation reactions and their persistence in normal human subjects.

#### 490. Basal Metabolism in Diseases of the Endocrine Glands.

A. TARISANO (*Il Morgagni*, September 12th, 1926, p. 1153) has made estimations of the basal metabolism in patients suffering from diseases of the endocrine glands. In six cases of hypothyroidism the increase in the basal metabolism varied between 21 and 95 per cent., the degree being in proportion to the clinical severity of the disease. In one case of infantilism associated with insufficiency of the pituitary the basal metabolism at different examinations was from 20 to 30 per cent. below normal, and in a case of dystrophia adiposo-genitalis it was 16 per cent. below normal. In the latter case the author estimated the effect of food on the rate of metabolism. He gave the patient a meal consisting of 200 grams of roast veal, 100 grams of bread, 40 grams of sugar, a cup of coffee, half a lemon, and a glass of water. Estimations were made five times during the next three and a half hours. The basal metabolism rose to a maximum after one hour, when it was 20 per cent. higher than in the fasting state; subsequently it fell, till after three and a half hours it was only 4 per cent. above that of the fasting state. In a normal person the increase in metabolic rate caused by the ingestion of such a meal is between 20 and 40 per cent.; hence the figures recorded in this patient were definitely below normal. Three cases of ovarian insufficiency were studied; the decrease in basal metabolism was between 21 and 31 per cent. The author concludes that the estimation of the basal metabolism is of real value in the study of endocrine conditions; rendering it possible to follow the evolution of the disease, to assess the value of therapeutic measures, and in the case of hyperthyroidism to judge the gravity of the condition and the prospects of the patient.

#### 491. Changes in the Blood after Ultra-violet Radiation.

G. TOSI (*Raggi Ultravioletti*, July, 1926, p. 194) describes the effects of ultra-violet rays on the blood in a series of 23 cases. In the first group of 6 a Bach mercury vapour and a Sollux lamp were employed; in another group of 16 cases ultra-violet rays alone were used; and in a third group of 12 patients treated with ultra-violet rays alone the changes in the blood were noted at short intervals during a period of twenty-four to thirty hours. The third group showed leucocytosis immediately after irradiation, leucopenia half an hour to an hour later, and a second phase of leucocytosis six to twenty-four hours afterwards. Marked eosinophilia appeared immediately after irradiation, the number of eosinophiles being sometimes nearly doubled; lymphocytes, monocytes, and granular neutrophils were variously affected. Those changes in the blood picture within a short period of time explain, according to Tosi, the conflicting results of different writers. After discussing various theories as to how the rays cause these changes, Tosi expresses his view that they are due to a specific reaction of the sympathetic following stimulation by the rays of the nerve terminations in the skin.

#### 492. Oatmeal Proteins.

GLADYS A. HARTWELL (*Biochem. Journ.*, vol. xx, No. 4, 1926, p. 751) agrees that proteins of vegetable origin are of lower biological value than those from animal sources, and that the small amount usually present contributes little to the protein ration of man. She finds that the amount of protein in oatmeal varies, according to different authors, from 11.9 to 16.1 per cent., and, taking over the lowest figure, this cereal appears to be a richer source of protein than vegetables and fruits; the earlier adverse opinions of American workers about the poor quality of oat protein has been modified of late years. By simple qualitative analysis she has obtained three proteins from oatmeal; two are soluble in cold water and the third is insoluble in water but soluble in strong alkali. Each protein gave positive sulphur and Millon's reactions, and the coagulable and insoluble protein in addition contained tryptophan. From this analysis it would be expected that oatmeal would provide a good source of protein in the diet. She describes experiments on rats, and concludes that the proteins of oatmeal are of good value as regards growth in rats. In gestation and lactation a diet of oatmeal, butter, and salt mixture was not found adequate, probably owing to deficiency in the quantity rather than the quality of the protein. The addition of food casein, gluten, gelatin, and egg albumen to the oatmeal diet produced better growth in the suckling young.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 493. Sympathetic Disturbance of the Heart.

A. DUMAS (*Journ. de Méd. de Lyon*, October 5th, 1926, p. 483) remarks that sympathetic disturbances may react on the heart either directly or through alterations of the pulmonary or general circulation. The clinical signs of such disturbances are arrhythmia, pseudo-angina, cardiac dilatation, and myocardial failure of the left ventricle, with such sequels as acute pulmonary oedema. Whether or no there has been in these cases an old cardiac lesion (as Vaquez believes), it would appear that these reflex disturbances do not occur under ordinary conditions. In the normal heart the effect of sympathetic disturbance is temporary, sudden, and prone to recur. The exciting cause of these cardiac manifestations may be pain in the liver or stomach or even in the peripheral nerves. Dumas believes that such sudden sympathetic disturbances may also cause anaphylactic shock, notably digestive anaphylaxis in predisposed patients who are sensitized and perhaps suffer also from cardiac or aortic disease. Cardiac crises may be produced analogous to the "solar crises" of dyspepsia. Cardiac lesions, such as simple hypertrophy, coronary defects, and, still more, definite myocardial lesions, undoubtedly predispose to these attacks. Diffuse arterial lesions and interference with the mechanism regulating the blood pressure may assist in the production of these disturbances. The clinical difficulty consists in distinguishing between the nervous and organic factors. Purely sympathetic disturbances with sudden derangements in this part of the nervous system may produce cardiac inhibition and circulatory failure from pain or shock, but before admitting the functional reflex character of cardiac derangements the clinician must consider the predisposing cause, which may be a latent infection requiring prompt and judicious treatment.

### 491. Prophylaxis of Serum Disease.

H. HECKSCHER (*Acta Med. Scand.*, October 13th, 1926, pp. 497 and 505) maintains that a further study should be made before, during, and after the presence of serum disease, with special reference to the condition of the capillary system. He has observed 1,113 diphtheria patients treated by serum injections at the Hlegdams Hospital. The serum was employed in two different concentrations, containing 400 and 800 units per c.c.m., respectively, the latter dose being used chiefly for intravenous injections; no artificial concentration was employed nor any kind of separation of the proteins, and chinolol was added as an antiseptic. The author agrees with earlier investigators that the volume of serum is an important factor in the occurrence of serum sickness, but, in contrast with earlier reports, finds that intravenous injections produce sickness in fewer cases than do intramuscular injections. Predisposition to serum disease increased considerably with age, was more marked in adults than in children, and was also more severe in children between 6 and 15 years of age than in younger children. With a view to giving prophylactic treatment during the period between the injection of serum and the development of the disease, which usually appears on the eighth day after the injection, Heckscher experimented with the injection of proteolus. No peptone was used, but he employed a suspension of a polyvalent staphylococcus culture in physiological salt solution containing 1,000 million killed bacteria in 1 c.c.m. Increasing quantities were injected intramuscularly on five successive days, the fourth to the ninth day after the injection. The dose of vaccine for all patients under 15 years of age was 0.2, 0.5, 1, 2, and 3 c.c.m., and for all patients over that age 0.5, 1, 2, 3, and 5 c.c.m. Staphylococcus vaccine was employed as it was known to be an innocuous and effective form of non-specific protein therapy. According to the author this treatment has resulted in a reduction of the frequency of the serum disease, the percentage of cases having fallen by about one-third.

### 495. Epidemic Jaundice and Housing.

A. THISTED (*Ugeskrift for Læger*, September 9th, 1926, p. 823) notes that hitherto most of the publications dealing with the growing incidence of epidemic jaundice have come from countries involved in the late war. It might therefore be assumed that this growing incidence depended on circumstances connected with the war, such as underfeeding, which lowers resistance to infectious diseases, and chemical poisoning connected with the manufacture of explosives. But,

as he shows, though the Danes did not suffer from malnutrition during the war, the incidence of epidemic jaundice has greatly increased. According to statistics dealing with hospital returns in Copenhagen, there were in the period 1908-9 only 17 cases of catarrhal jaundice among a total of 5,358 hospital cases—an incidence of 0.32 per cent. In the period 1924-25 there were as many as 92 such cases among a total of 10,148 hospital cases—an incidence of 0.9 per cent. Again, between 1908 and 1916 there was not a single case of acute yellow atrophy of the liver treated in the hospitals of Copenhagen, whereas in the period 1922-23 there were as many as 6 such cases. The years in which the cases of catarrhal jaundice were most frequent were those in which there were several cases of acute yellow atrophy of the liver. Discussing the dependence of epidemic jaundice on infection and overcrowding, the author publishes a table showing the numbers of families unable to obtain housing accommodation from year to year in Copenhagen. According to this table there were only 14 such families in April, 1916. By April, 1919, this figure had risen to 1,274, and by April, 1925, to 2,113 families which could not find quarters because of the overcrowding and lack of housing accommodation in Copenhagen.

### 492. Glandular Fever.

C. W. BALDRIDGE, F. J. ROHNER, and G. H. HANSMANN (*Arch. Int. Med.*, October 15th, 1926, p. 413) record observations based upon a study of fifty cases of glandular fever (infectious mononucleosis), an acute infectious disease of unknown etiology, of short duration, and characterized by fever, enlarged glands, and the presence of abnormal mononuclear cells in the blood. The onset may be sudden, with high temperature and constitutional symptoms, but without localizing signs of infection, or the commencing signs may be sore throat and membranous angina, but with less fever and constitutional symptoms than in the previous type. In a third type the illness starts with some fever and tender glands, while in a fourth type the initial symptoms may be entirely abdominal, with pain, fever, and leucocytosis, the glandular signs appearing later. In some cases the onset and symptoms are so insidious as frequently to escape notice. Neither the organism causing the disease nor the portal of entry has been found, but the disease has occurred in well defined epidemic form, and the symptomatology is similar to that of other acute infectious diseases, with the addition of the enlarged tender glands. The great variability in modes of onset constitutes the chief difficulty in diagnosis. The total leucocyte counts are usually above normal at the onset but below normal during convalescence. A marked increase in abnormal mononuclear cells occurs during the course of the disease, the monocytes occasionally outnumbering the lymphoid cells. The occurrence of a relative or absolute lymphocytosis with abnormal lymphoid cells in the blood is significant only of acute lymphoid hyperplasia and is not specific for glandular fever, nor does the percentage of these abnormal cells bear any direct relation to the amount of glandular enlargement.

### 497. Protein Hypersensitivity.

FROM observation of a series of cases H. C. STUART and MARTINA FARNHAM (*Amer. Journ. Dis. Child.*, September, 1926, p. 341) advance the opinion that hypersensitivity to food proteins tends to be present at birth and to be gradually lost during childhood, whereas hypersensitivity to inhalant proteins tends to be acquired and is more resistant to change. The so-called natural loss of hypersensitivity to food proteins may, they consider, be the result of frequent though unrecognized small doses of the offending substance in the diet, and may therefore correspond to desensitization treatment. The authors advocate active treatment by oral desensitization in these cases as preferable to awaiting the natural loss of such hypersensitivity. No child should be considered for long as sensitive to one or two particular proteins only, but as a complex of changing and multiple sensitizations. It is therefore imperative to retest at frequent intervals, preferably every six months, those who are not free from symptoms. There is evidence also that close contact with an inhalant protein in childhood increases the probability that the patient will become hypersensitive to that protein. It would therefore seem to be advisable to prohibit horseback riding and pets of all kinds, and forbid the use of feather pillows, hair mattresses, and fur coats by asthmatic children regardless of their response to tests for sensitivity to specific proteins.



## Surgery.

### Arthroplasty of the Hip.

498. W. S. BAER (*Journ. Bone and Joint Surg.*, October, 1926, p. 769) records the results obtained in 100 cases of arthroplasty of the hip, in the performance of which he interposed an animal membrane taken from the pig's bladder and chronicized to last fifty days. A good result was obtained in 82 per cent. of the patients; there was free movement, and the joint was painless and stable in weight-bearing. The author finds that in gonorrhoeal arthritis the operation gives good results and assures the patient free mobility in the hip. In traumatic ankylosis also the results are, on the whole, very gratifying. In cases of septile infection of the hip the operation is said to be only applicable to certain cases after careful scrutiny. All signs of activity should have ceased for several years, and the patients should not be fat. The three deaths in the series occurred in this group. Baer states that in tuberculous infection the operation must be approached with caution. No child should be so treated, and only in cases where the general health is excellent should operation be undertaken. In well chosen cases good movable joints will follow. In arthritis deformans the operation should never be undertaken, since this is a chronic progressive disease which is still active and so negatives any operative procedure. It is generally agreed that little can be expected from an operation under these conditions.

### 499. Tetanus following Aseptic Operations.

A. KÖNIGSWIESER (*Münch. med. Woch.*, October 8th, 1926, p. 1703) records three fatal cases of tetanus which occurred after aseptic operations on the foot in the course of five years at Professor Spitz's Orthopaedic Hospital at Vienna in patients aged from 10 to 17. All the patients had been in the habit of going about barefoot in the neighbourhood of stables. The author suggests that after incision of the skin of the sole tetanus bacilli were carried into the deeper part of the wound. The method hitherto in use had been to give the patient a bath on the evening before the operation, and on the following morning to clean the operation area thoroughly with soap, disinfect it with tincture of iodine, and then apply a sterile dressing. Immediately before the operation the dressing was removed and the operation area disinfected again with alcohol and tincture of iodine. As the measures are not sufficient to disinfect the deeper layers of the skin it has become the practice in the Vienna Orthopaedic Hospital to give a prophylactic injection of tetanus antitoxin before every operation on the feet of the patients who have been in the habit of walking about barefoot.

### 500. Surgery of the Eustachian Tube.

T. H. HALSTEAD (*Arch. of Otolaryngol.*, September, 1926, p. 189) recalls the structure of the Eustachian tube. The pharyngeal portion has ciliated epithelium, a cartilaginous wall, and muscular tissue, all of which assist in protecting the deeper parts. The tympanic portion is rigid and devoid of muscular tissue; it is really part of the tympanic cavity. The position of the pharyngeal ostium makes the tube very liable to involvement in infectious of the naso-pharyngeal region, with partial or complete closure. In this portion of the tube the disease is restricted to the mucosa and submucosa, but when it reaches the tympanic portion it is found that the mucosa is actually the muco-periosteum, and at an early stage granulation tissue and caries appear. Following a conservative mastoid operation the tube should be left as wide open as possible and granulations be gently curetted away. When there is a continued suppurative of the middle ear without mastoid involvement, in spite of all intratympanic treatment and attention to the nose and pharynx, then the tube should be closed. The radical mastoid operation should be completed by curetting the tympanic portion of the tube with curette and rasp. The closure is likely to be effected at the isthmus between the tympanic and pharyngeal portions of the tube. If any method of skin grafting be employed a portion of the graft should be applied to the wide open orifice of the tube. It may also be necessary to close the pharyngeal end of the tube by incising and drawing out the mucosal lining of the tube.

### 501. Spontaneous Gangrene of the External Genitals.

E. TEITSCHER (*Wien. klin. Woch.*, September 30th, 1926, p. 1177), who records a fatal case in a man aged 60, states that Fournier in 1883 described a special gangrenous affection of the male genitals, which appeared spontaneously, extended rapidly over the skin of the penis and scrotum, and frequently

destroyed the external genitals in twenty-four to forty-eight hours. Coenen and Przedhorsky in 1911 collected 203 cases of gangrene of the external genitals in the male, 145 of which they regarded as spontaneous. According to Randall, the three principal symptoms of the disease are the sudden onset, the rapid progress and development, and the complete absence of the ordinary causes of gangrene. The disease usually attacks young healthy persons, the onset being accompanied by high fever, rigors, rapid pulse, vomiting, and often delirium. A slight redness and oedema appear and rapidly extend over the genitals, which become swollen to three or four times their normal size, and moist gangrene rapidly develops. Two groups of organisms have been found—namely, gas-forming bacteria and other pyogenic germs; especially streptococci. The disease is most frequent in war time, when many organisms acquire an increased virulence. Teitscher mentions that the first cases of the kind were described by Thucydides in the plague of Athens at the time of the Peloponnesian war. The mortality ranged from 20 to 23 per cent. Treatment consists in early and free incision and drainage. The use of Dakin's solution is also indicated, and a plastic operation may be required subsequently.

### 502.

#### Post-operative Parotitis.

I. SILBERMANN and M. KAGAN (*Zentralbl. f. Chir.*, October 9th, 1926, p. 2589) have seen twelve cases of post-operative parotitis among 3,665 surgical cases. Three cases occurred after operations on the uterus, one patient had had an operation on the vagina, five had had gastric or intestinal operations, and the other three patients had had herniotomy performed. Some authors suggest that post-operative parotitis is due to endocrine disturbance, others have found that 75 per cent. of the cases followed gynaecological operations, but the present authors have encountered this complication in only 25 per cent. of their operations of this nature. They observe that the post-operative period especially favours thrombosis and embolism, and they believe that the peculiar racemose structure of the parotid gland and its intimate relations with the external carotid and its branches make it particularly liable to the occurrence of embolism; the firm fibrous capsule and trabeculae of the gland, together with its close relation to the masseter muscle, aggravate the thrombosis that follows the lodging of emboli in the branches of the parotid arteries. The authors have examined sixteen parotid glands after death and have satisfied themselves that this explanation is correct. They conclude that the endocrine and stomatogenous theories of causation fail to explain the occurrence of post-operative parotitis, and that the majority of these cases are unconnected with the endocrine system and with operations on the genitalia.

## Ophthalmology.

### 503.

#### Carbon Monoxide Amblyopia.

W. R. MURRAY (*Minnesota Med.*, October, 1926, p. 561) thinks that chronic carbon monoxide poisoning may cause such common ailments as headache, dizziness, languor, palpitation, muscular weakness, psychic and even ocular disturbances, and is not to be overlooked in view of the extensive use of gas for heating, cooking, and illuminating purposes, the general use of coal stoves and furnaces, and the constant presence of carbon monoxide in the exhaust gases of motor cars. Where ventilation is efficient few ill effects are likely to result, but when this is not so, as, for instance, when people are working in almost hermetically sealed rooms, closed garages, or even in the vicinity of motor cars with the engine running, these symptoms are likely to be felt. He reports a case of amblyopia resulting from inhalation of carbon monoxide. A farmer, aged 24, complained of blurred vision one day after exposure for two hours to the exhaust fumes of a petrol motor; he had been similarly exposed on several previous occasions. A yellow spot appeared in the right eye and later changed to a dark blurred area in the field of vision. Two days afterwards the left eye was similarly affected. In both eyes the blurred spot appeared to have a revolving yellow halo around its periphery. The patient complained also of diplopia, nausea, vomiting, and headache. Two weeks later he had tenderness of the eyeballs on palpation, normal tension, injection of the bulbar conjunctivae, inequality of the pupils, reaction to light and convergence clear, intraocular media clear, blurred disc margins, slightly contracted retinal arteries, and relatively engorged veins. Visual fields showed contraction, with sector defects for red and blue; no scotoma was present and no enlargement of the blind spot. He was unable at this examination, or at any subsequent ones, to distinguish green

colour. Vision in the right eye was 20/200, and in the left eye 10/200. A general examination showed nothing abnormal, but the carbon monoxide haemoglobin test by caustic soda was positive. Two days later the spectroscopic test for carboxyhaemoglobin was negative, as also was the test by caustic soda. The bulbar and palpebral conjunctivae were slightly injected, the external ocular muscles were normal; there was no ptosis and no nystagmus. The right pupil was larger than the left, with sluggish reaction to light, and the intraocular media were clear; there was bilateral papilloedema, contraction of the retinal arteries, and dilated veins. A diffuse, grey-white opacity extended uniformly throughout retinal fundus and was but slightly elevated; there was a retinal oedema present. The vision was falling rapidly; he was able to distinguish moving objects, but was unable to recognize individuals. One week later his vision was reduced to the perception of hand movements before the eyes. Several weeks later there was retinal oedema, and large vitreous exudates were present; vision was reduced to perception of light. Fifteen months after the onset of the amblyopia ophthalmoscopic examination showed extensive choreo-retinal lesion, without pigment, scattered throughout the fundus, and opacities in the vitreous. The vision in the right eye equalled 10/200 and left eye 2/200. Murray explains the ocular nerve lesions as being due to involvement of the nuclei of origin of these nerves. The fibres of the optic nerve apparently are not especially susceptible to the poison, neither are the papillomacular fibres.

#### 504. The Action of Atropine in Ocular Inflammations.

T. H. ADLER (*Arch. of Ophthalmol.*, September, 1926, p. 484) suggests that the benefit of atropine in inflammations of the eye may be due to something more than the anatomical and physiological rest produced by the paralysis of the ciliary and iris sphincter muscles. He states that atropine has a direct action on the blood vessels of the eye, decreasing their permeability to protein. It was found experimentally that when the eye was inflamed by the instillation of ethylmorphine hydrochloride the protein content of the aqueous was increased, but if the eye had first been treated with atropine this increase of protein in the aqueous did not occur. Adler suggests that this action of atropine may account in part for its beneficial effects in ocular inflammations.

#### 505. The Trapezoidal Flap in Cataract Operations.

J. GREEN (*Journ. Amer. Med. Assoc.*, August 7th, 1926, p. 392) describes his method of safeguarding cataract expression. He advocates a preliminary iridectomy under a trapezoidal conjunctival flap; this heals rapidly without reaction, the chances of infection are reduced to a minimum, and provision is made for artificial maturation in cases of cataracts found to be immature. With this technique any unwillingness of the patient does not imperil the success of the iridectomy, and the operator will have been warned in time to take special precautions during the expression four to six weeks later. The trapezoidal flap has similar advantages to the small triangular flap, and, moreover, the flap is thicker and sturdier; it covers the entire section, and is held in good position by the central Verhoef stitch and the lateral conjunctival sutures. With the Verhoef suture loosely tied the flap is drawn into good position and irrigation of the chamber can be performed with great security; should the vitreous present or prolapse the immediate tightening of the suture will deal with it. There is little tendency for prolapse of the iris, and any iritis is easily controllable by atropine, heat, and salicylates. Anterior synechiae are rare, and there are a large number of "keyhole" pupils. The secondary membrane is usually very thin and can be sufficiently slit by a single vertical incision. Thick membranes are dealt with by Ziegler's inverted Y-shaped dissection.

#### 506. Ocular Complications in Raynaud's Disease.

S. J. APPELBAUM and M. L. LERNER (*Amer. Journ. Ophthalmol.*, August, 1926, p. 569) describe a case of Raynaud's disease in which ocular complications developed. In a married Jewess, aged 45, dry gangrene appeared in the distal phalanx of the left index finger. She had temporary loss of memory, numbness, and pricking sensations in the fingers and feet, and attacks of "migraine." At the height of the attack bilateral papilloedema, associated with haemorrhage and exudates, occurred. This condition finally cleared up, leaving an apparently healthy fundus, but with very contracted retinal arteries. The resulting vision was 6/9 in each eye. During the illness there was much pain in the eye, but the vision was never seriously affected, even when the papilloedema was most marked.

## Therapeutics.

#### 507. Paravertebral Injections of Alcohol in Angina Pectoris.

F. BRUNN (*Nien. klin. Woch.*, September 23rd, 1926, p. 1110) has applied the principle of paravertebral blocking of the rami communicantes in the upper dorsal segment to the treatment of angina pectoris. His first patient, a man aged 67; suffered from aortic regurgitation with severe dyspnoea, and radiating pains in the cardiac region and right arm. A bilateral resection of the depressor nerves, performed six months earlier, had lost its effect a month afterwards. This patient was relieved for eleven days by a paravertebral injection of novocain. After a paravertebral injection of alcohol he lost the precordial pain and suffered only from simple cardiac asthma. Brunn refers to the earlier use of cocaine injections in the treatment of angina pectoris; a single injection into the trunk of the cervical sympathetic relieved severe thoracic and brachial pain in a case of aortic regurgitation in a man aged 70. These successes suggested the possibility of blocking the rami communicantes in the upper dorsal segment. Subsequent experience has proved the value of this treatment in angina pectoris and neuralgia. Brunn refers to the good results obtained in America by Swetlow and Schwartz from the injection of 85 per cent. alcohol, though a 60 per cent. solution of alcohol was less efficacious. Their five cases included three of angina pectoris, one of aortic regurgitation of the aorta, and one of decompensated mitral stenosis. The authors found a hyperaesthetic and hyperalgesic zone in the upper dorsal region, which indicated the region to be anaesthetized; these areas became, after injection, persistently analgesic to pain and high temperature. The patient who suffered from mitral regurgitation lived for fourteen weeks after the injection of alcohol and was free from pain. In one case of angina pectoris pulmonary oedema occurred after the injection of alcohol.

#### 508. Dietetic Treatment of Renal Impairment.

P. LOMRY, L. GILLET, and L. DUBLE (*Bruxelles Méd.*, September 26th, 1926, p. 1443) have followed up over 100 cases of renal insufficiency correlating the clinical findings and laboratory reports. They find that excessive intake of fluid is a common cause of renal insufficiency, and instead of "washing out the kidney," it over-fatigues it. The daily fluid allowance should be 1½ litres; more than this may cause rise of blood pressure, without arterio-sclerosis, and in the absence of abnormal constituents in the urine and of excess of blood urea or chlorides. In support of this they describe two cases out of many observed; in both cerebral haemorrhage was threatened, and the only cause was the excessive consumption of fluid, amounting to about three quarts daily. Uræmia may or may not be associated with hypertension, albuminuria, salt retention, or arterio-sclerosis; the clinical symptoms are practically those of simple hypertension, and the two conditions are distinguished by urinalysis, uræmia being always accompanied by tube casts. The authors add that the onset of uræmia and arterio-sclerosis is best avoided by a small protein intake; salt retention by a reduced use of salt in cooking, and the addition at table of not more than 2 to 3 drachms a day. From the age of 40 onwards the blood pressure should be watched and the urine analysed; should a rise of pressure be found without tube casts in the urine, there is no need for blood analysis. The diet should be very carefully arranged as to quantity, both of liquids and solids.

#### 509. Medicinal Treatment of Duodenal Ulcer.

DISCUSSING the treatment of early duodenal ulcer, H. C. MOFFITT (*Canadian Med. Assoc. Journ.*, September, 1926, p. 1044) warns against the excessive administration of alkalis, especially in cases of gastric retention or in coincident renal or hepatic disease. He suggests certain modifications in the Sippy treatment, including the substitution of neutral calcium or magnesium phosphate for the magnesium, sodium, or calcium compounds recommended by Sippy. Intervals between feedings may, in a few days, be increased to two hours in many cases, and a soft diet started in the second week. Moffitt finds that some patients do better on carbohydrates and eggs from the start than on a milk diet, and that the large doses of alkalis recommended by Sippy are not necessary in most cases. Tincture of belladonna is suggested as a valuable addition to the alkali treatment, while bromides or luminal are often useful to control general nervousness and to lessen reflex irritation. The author thinks that protein shock treatment is probably without value, but that x-ray treatment should be given a more thorough trial. Lavage, transfusion, control of alkali dosage, glucose by

rectum or intravenously, and the hypodermoclysis of 1 per cent. saline solution are recommended as measures which have contributed greatly to favourable operation results. Moffitt adds that post-operative treatment should include confinement to bed for three or four weeks, strict supervision for six to eight weeks, and a modified Sippy treatment with smaller doses of alkalis and less frequent feedings throughout this period. The subsequent life should be carefully regulated, and alkalis and belladonna be given if the symptoms recur.

## Obstetrics and Gynaecology.

### 510. Uncontrollable Vomiting of Pregnancy.

In a case of uncontrollable vomiting of pregnancy reported by GUYOT, J. PÉRY, and MAILHE (*Bull. Soc. d'Obstét. et de Gynecol. de Paris*, July, 1926, p. 450) there had been three previous abortions, vomiting being absent in the last two. After admission to hospital the patient had two attacks of petit mal, the crises lasting from five to ten minutes. The Wassermann reaction was negative, and nothing abnormal was found in the urine. As the vomiting, which commenced with the pregnancy, resisted other forms of treatment, onemas of milk containing 3 grams of chloral hydrate were administered thrice daily at intervals of six hours. For five days the vomiting continued, but gradually lessened, and at times consisted only of bile. After three weeks it ceased, the daily amount of chloral being reduced from 9 to 6 grams. The general state of the patient improved, and the pregnancy proceeded normally to full term. This method of treatment has been advocated also by d'Anvers.

### 511. Diathermy in Pelvic Inflammation.

R. L. IMPEY (*South African Medical Record*, September 25th 1926, p. 399), after a year's trial of diathermy in the treatment of inflammatory conditions of the female pelvis, with special reference to gonorrhoea, believes that when used in conjunction with local applications it reduces considerably the time taken in curing the condition, and is probably more effective than other measures. Diathermy raises the temperature of the subjected part, and this rise of temperature, he it only a few degrees, is prejudicial to the existence of the gonococcus, while it is followed by a local polymorphonuclear leucocytosis which increases the power of the tissues to exterminate the organisms. The technique adopted by Impey is similar to that recommended by Gumborhatch and Robinson. Both urethra and cervix are treated, and since the cervix is not sensitive to heat the thermometer must be watched lest the temperature exceed 115° F. Following each diathermy treatment local applications, such as silver nitrate, mercurochrome, picric acid, and 10 per cent. solution of protargol in glycerin, are made in order to attack the gonococcus at a time when its vitality is low. Such combined treatment is repeated two or three times a week until all clinical and bacteriological evidence of disease is absent. He cites two cases disproving the belief that when once infected a woman never gets rid of gonococcal infection, and he holds that when thoroughly treated with local applications as well as by diathermy she should recover completely without any after-effects.

### 512. Low Caesarean Section.

LE LORIER (*La Gynécologie*, July, 1926, p. 425) during the performance of low Caesarean section on seventeen occasions has not had one maternal death, and only one infant succumbed, this being prior to the start of the operation. Low Caesarean section was performed in twelve cases of pelvic deformity; in one case for placenta praevia with pelvic stricture, and in another case for simple placenta praevia; in two cases for prolapse of the cord with rupture of the membranes, and in one for ovarian cyst. One patient had previously undergone three hysterotomies, and two other patients had been twice operated upon in this way. One death occurred four hours after operation from haemorrhage due to uterine inertia, and in two other patients serious haemorrhages were controlled. In eleven cases there was pyrexia during the post-partum period. Le Lorier gives an injection of 1 c.c.m. of ergotine immediately before the commencement of anaesthesia; on one occasion pituitrin was used. The uterus is sutured in one plane with catgut. The author claims that the advantages of low Caesarean section are: the easy performance of any additional measures that may become necessary, better protection for the peritoneum, and greater security of the uterine sutures made in non-contraction tissue. The disadvantages are: the danger of rapid and profuse haemorrhage, lessened facility for the extraction of the foetus, and the risk of leaving a tumour near to and behind the ovary.

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## Pathology.

### 513. The Nature of Malignant Lymphogranuloma.

F. P. WEBER (*Strasbourg Méd.*, July 5th, 1926, p. 255) states that the majority of authors consider malignant lymphogranuloma as an infection of unknown origin attacking the lymphatic system first and commencing most often in the cervical or axillary ganglia. As the affection progresses and the infective agent multiplies, the whole of the lymphatic system is invaded and nodules appear in other organs, particularly in the liver. The lymphogranulomatous processes are able to pass through the capsules of the lymphatic ganglia and provoke a periglandular infiltration with sclerosis. In the liver necrotic areas often appear, capable of extending to neighbouring tissues. In rare cases there is a certain degree of amyloid degeneration in the spleen, kidneys, and other accessory organs. In cases of long standing the process is often associated with an intense chronic sclerosis which predominates at certain points, while at others the lymphogranulomatous process is plainly active. When the lymphadenoid tissues have been reduced by necrosis or sclerosis, the lymphocytes tend to diminish in number, although there is sometimes an excess of compensative or regenerative hyperplasia of the lymphadenoid tissue. Weber asks if the malady may sometimes assume a true sarcomatous aspect. In other words, can a sarcoma of Hodgkin develop from a granuloma of Hodgkin? Ewing believes that it can do so. The structure of the sarcoma presents an appearance ranging from a simple granuloma of Hodgkin to that of a tissue composed solely of large round cells. Large round giant cells, either polynuclear or multilobed, may predominate. The proportion of lymphocytes may be considerable, but not in the course of more obviously neoplastic processes. The histological signs of malignancy are not very marked, and it is very difficult to determine at what moment the lesions commence to become malignant. However, Ewing states that the metastatic nodules in the dura mater and lung, and also the cytological changes, prove the malignancy of the tumour. Weber describes in some detail a case of his own, and believes that in rare cases the lymphogranulomata of Hodgkin may become sarcomatous or may provoke such malignancy by chronic irritation. He suggests as being analogous the idiopathic multiple haemorrhagic sarcoma of Kaposi, which occurs among the Jews of Central Europe. This affection is considered as being inflammatory, but of unknown cause, and not sarcomatous or malignant. However, Weber adds, a true sarcoma has developed on this inflammatory condition in one or two of these cases, or some part of the inflammatory tumour has undergone sarcomatous transformation.

### 514. The Reticulo-endothelial System and Anaemia.

A. R. ELVIDGE (*Journ. Path. and Bact.*, October, 1926, p. 325) records the experimental production of blood crises and of anaemia in rabbits as the result of injections of finely divided particles of foreign matter. The first observations were made with suspensions of quartz; the size of the particles varied in different experiments, but they were usually about 1 to 7  $\mu$  in diameter. The fluid in which they were suspended was made isotonic with the blood plasma by the addition of dextrose, and was injected intravenously in a dose varying from about 5 to 50 c.c.m. A single injection caused the appearance of nucleated red cells in the circulation. These were first observed about five hours later; they increased to a maximum in twenty-four to forty-eight hours, and then gradually diminished, till after a fortnight they had completely disappeared. The majority of these cells were normoblasts, but at the height of the blood crisis macroblasts, and occasionally megaloblasts, were present. Though a single injection did not produce any alteration in the number of red cells, repeated injections led to a marked diminution, sufficient sometimes to prove fatal. In one experiment the red cells sank after three injections from about seven million to about one million per cubic millimetre. The haemoglobin decreased *pari passu*, so that the colour index remained at unity. It was thought that the anaemia might be due to a poisoning effect of the silica, but this was not borne out by experiments designed to test it. Very finely divided particles of quartz—less than 1  $\mu$  in diameter—and silicic acid gel failed to reproduce the anaemia, suggesting that this condition was due not to the chemical effect of the silica but to the physical properties of the particles. Confirmation of this was afforded by the reproduction of anaemia with particles of other substances—Indian ink and carmine. The author considers that the particles of suspended matter, provided that they are not too fine, act by blocking the cells of the reticulo-endothelial system and interfering thus with the normal generation of the red cells.

# EPITOME OF CURRENT MEDICAL LITERATURE.

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## Medicine.

515. **Differential Diagnosis of Cerebral Syphilis.**  
 J. J. MINOGUE (*Med. Journ. of Australia*, October 2nd, 1926, p. 444) divides cerebral syphilis into two groups—the meningo-vascular and central syphilis, which includes general paralysis of the insane and tabes dorsalis. In the meningo-vascular form three processes are at work: slowly advancing meningitis, gummatous formation, and linear vascular diseases. If cerebral gummata are present a clinical picture of brain tumour is present, and a diagnostic problem arises. Specific meningitis manifests itself usually in the form of cranial nerve paralysis, usually of the third nerve, and the diagnosis is simple. Specific vascular disease may be diffuse or limited in extent; the brain substance is affected, not only by the damaged circulation, but also by the syphilitic toxin; the bewildering array of nervous and mental symptoms includes all forms of paralysis, epileptic form seizures, aphasia, sensory disturbances, apoplexies, and mental deteriorations of varying degrees. In the more severe grades this mental deterioration approaches very closely to that of general paralysis of the insane, a condition known as the pseudo-paralysis of Kraepelin. In addition to these lesions Kraepelin described numerous other specific syphilitic neuritis, headaches, dizziness, transitory paralysis of various kinds, and acute hallucinatory psychoses. Minogue states that a differential diagnosis of all these lesions is impossible, but that in every nervous lesion of syphilis must be considered as a possible cause and evidence of it sought by a Wassermann test of the blood, and, if necessary, by a full examination of the cerebro-spinal fluid. The presence of an Argyll Robertson pupil is almost pathognomonic of cerebral syphilis, though its absence is fairly common. In the differential diagnosis of general paralysis of the insane it must be remembered that the ultimate result of this disease is a widespread degeneration of the cerebral cortex, and therefore only the three diseases giving rise to a similar degeneration need be considered—namely, alcoholic pseudo-paralysis. The diagnosis of general paralysis of the insane rests upon the history and a full physical and mental examination. This disease occurs in the prime of life and the typical clinical signs are the general bearing of the lips and tongue, slurring speech, and a bilabial marked cortical degeneration. After prolonged illness are rare. In general paralysis, visual hallucinations in the blood and cerebro-spinal tests. In arterio-sclerotic pseudo-paralysis, the personality is rarely so profoundly the disintegration of the personality is rarely so profound as in general paralysis, the disease occurs much later in life, there are signs of advanced arterio-sclerosis, and the blood and cerebro-spinal fluid give normal findings. The diagnosis of the pseudo-paralysis of Kraepelin is very difficult, and in the majority of cases rests upon the examination of the cerebro-spinal fluid. There is often the only criterion; the general paralysis will live as a hopeless demon; while the pseudo-paralysis will be dead in two or three years. Minogue thinks that the differential diagnosis of these four conditions is uncertain, and ultimately rests on a series of conditions: the blood and a full examination of the cerebro-spinal fluid. The latter should include a Wassermann test, a cell count (for lymphocytosis), and the globulin test, colloidal gold tests. Normal findings will at once exclude alcoholic and arterio-sclerotic insanity, and positive ones will certainly indicate the presence of syphilis. Fluids from general paralysis are much more responsive to these tests than those from patients with meningo-vascular syphilis, while the colloidal gold test would give the typical parietic curve (5555432000). In cases of doubt, the re-examination of the cerebro-spinal fluid after a few months of energetic treatment will usually decide whether the disease is of the parenchymatous or interstitial form.

## **Ventricular Extra-systoles.**

L. GALLAVARDIN (*Journ. de Méd. de Lyon*, September 20th, 1926, p. 449) draws attention to the danger of administering digitalis in certain forms of heart disease. In serious cases of valvular or myocardial origin, a special syndrome exists, while the colloidal gold test would give the typical parietic curve (5555432000). In cases of doubt, the re-examination of the cerebro-spinal fluid after a few months of energetic treatment will usually decide whether the disease is of the parenchymatous or interstitial form.

ventricular extra-systoles are always present (terminating frequently in complete arrhythmia) with complex electrical alterations; these are often polymorphic and tend to give place to series of extra-systoles, or even to more or less prolonged periods of ventricular tachycardia, leading to ventricular flutter. Ventricular fibrillation ends the series, which explains the occurrence of sudden death when these disturbances of rhythm exhaust the myocardium. Extra-systoles may occur without organic disease of the heart or in well compensated valvular disease, causing much distress for a time, but usually disappearing without leaving behind any serious symptoms or signs. Extra-systoles occurring about the fiftieth year of life indicate a latent hypertension which is about to cause trouble—such as cardiac dilatation. Since 1850, periodical arrhythmias due to digitalis have been recorded in mitral disease with advanced dilatation and administration of digitalis to healthy subjects does not produce such arrhythmia, but in serious cases does not occur usually in the last few months of life; it may appear quite suddenly after the administration of an ordinary dose of digitalis, in a patient who has been under treatment for a long period, without any irregularity having been observed. Sudden death is most frequently observed in cases of cardiac hypertrophy showing arrhythmia due to digitalis. One patient died two days after receiving 1 mg. of digitalis, and a second patient died twelve hours after, although the conditions seemed favourable and the bigeminal pulse had disappeared for several days. The author reports a number of similar cases in his own practice, although death did not occur so suddenly.

## **Artificial Pneumothorax.**

517. **Artificial Pneumothorax.**  
 ACCORDING TO J. F. FREIXAS (*Presse Med.*, October 6th, 1926, p. 1253) the three indications for artificial pneumothorax are: to diminish and even abolish the transmission of pulmonary sounds from the affected to the healthy side; to treat profuse or persistent haemoptyses; and to cause collapse of the lung in pulmonary tuberculosis. The operation, though simple, may generally pleural reflexes, changing a favourable into a bad prognosis, and it may produce large haemorrhage, infarcts at the base of the free lung, and also gas embolism. Freixas suggests the following procedure to obviate these dangers. A simple blunt platinum needle, 7 cm. long and 1 mm. in diameter, is inserted in the eighth intercostal space at the commencement of the costo-vertebral groove external to the sharp curvature of the costal arch, and pushed firmly and obliquely in a direction parallel to and contiguous with the ninth rib. After verifying the immobility of the needle, caused by the respiratory movements, the insufflation of oxygen is commenced, attention continuing to be paid to the minute oscillations. The author asserts that with this method he has had no untoward results, and that it has the double advantage over other methods of not provoking complications by the passage of the needle across the intercostal space, and also of offering the greatest chances of success from the point of view of introducing the needle between the two pleural layers.

## **Abdominal Pain after Pleurisy.**

518. **Abdominal Pain after Pleurisy.**  
 S. PLASCHEES and K. WEISS (*Wien. Klin. Woch.*, October 14th, 1926, p. 1210) report that vague gastric symptoms may have their origin in a previous adhesive pleurisy, usually of a basal or diaphragmatic type. They quote cases in their own experience and cite the literature on the subject. The symptoms are, as a rule, similar to those of a gastric ulcer, but x-rays show an elevation of the fundus due to the previous perigastritis; the stomach also is usually enlarged. The authors believe that this type of case, which is more often than not of tuberculous origin, is commoner than is generally realized.

## **Atypical Cerebro-spinal Fever.**

519. **Atypical Cerebro-spinal Fever.**  
 A. M. LITVAK (*Arch. of Pediat.*, September, 1926, p. 620) records a case of cerebro-spinal fever in a boy, aged 6 years, in whom catarrhal symptoms predominated for six days before the onset of the meningococcal syndrome. Culture of the larynx showed that the catarrh was caused by invasion by the meningococcus. The laryngitis was so marked that intubation was necessary—a very rare occurrence in cerebro-spinal fever. The boy died on the ninth day of the disease, and the necropsy revealed catarrhal laryngitis and purulent meningitis.



## Surgery.

## 520. Squamous-celled Carcinoma in the Neck.

ACCORDING to R. V. HUDSON (*Brit. Journ. Surg.*, October, 1926, p. 280) patients are occasionally seen with a tumour in the neck resembling squamous carcinoma. In such cases the diagnosis rests between a primary carcinoma of bronchiogenic origin or a carcinoma secondary to a healed or undiscovered focus somewhere in the body. Six cases of this nature are recorded; all the patients had been subjected to chronic irritation of the upper respiratory tract as a result of working in mines and with horses. In only one case was a necropsy possible, and in this the primary focus was found in the pyriform fossa; in others it appeared probable that the tumours had originated from a primary focus in the region drained by the jugulo-digestic gland. Hudson considers the surgical treatment of this condition to be invariably disappointing, owing to the difficulty of early diagnosis and the presence of the primary focus acting as a neoplastic cell depot; radium is the method of choice. The diagnosis depends principally upon the anatomical site of the tumour and its consistency. The swelling most likely to cause difficulty is the true bronchiogenic carcinoma arising in a pre-existing cyst. This tumour, however, originates lower in the neck and is cystic in parts. The presence of a unilateral painless swelling in the neck of elderly men should arouse suspicion of malignancy.

## 521. Treatment of Liver Abscess.

H. COSTANTINI (*Rev. de Chir.*, No. 6, 1926, p. 357), discussing the treatment of liver abscess, states that although the introduction of emetine has profoundly modified the views held previously, there are certain cases where surgical treatment is necessary. Operation is indicated when there is a large collection of pus which is affecting the patient's general health, also where a secondary infection is present, and where, despite emetine treatment, the pyrexia continues. Costantini advocates the treatment of liver abscess by evacuation and suture without drainage under certain conditions and where no other infection is present. The abscess is incised where best access can be obtained. If the collection is posterior, the most common situation, the tenth rib is resected and the abscess reached through the pleural cavity. If the abscess is near the gall bladder or in the left lobe the abdominal route is chosen. In ten cases treated by suture after evacuation of the pus nine were cured and one died. The author adds that, whenever possible, exploratory puncture should be avoided, as it is often unnecessary and dangerous. The clinical signs should give material for a correct diagnosis. The method described of treating this condition enables the abscess to be completely evacuated, and by closing the wound afterwards it affords the maximum of safety.

## 522. Diagnostic Errors in Severe Gastric or Intestinal Haemorrhage.

J. PETERMANN (*Zentralbl. f. Chir.*, October 9th, 1926, p. 2591), has seen, during the last two years, no fewer than six patients who exhibited such severe and persistent gastric or intestinal haemorrhage that he has abandoned the expectant form of treatment in favour of immediate operation in all cases in which the patient's life is endangered. As examples of diagnostic difficulty he cites the following cases. (1) A powerful man, aged 46, had suffered for three years from pain attributed to duodenal ulcer; in the last few months he had had several considerable attacks of melæna. Both the skiagram and the analysis of the stomach contents indicated gastric ulcer. At the operation no sign of disease, either of the stomach or duodenum, could be found. The possibility of hepatic cirrhosis induced Petermann to perform Talma's operation, but subsequent blood examination revealed thrombopenia, so that splenectomy and irradiation would have been the correct treatment. (2) A man, aged 56, had complained for a year of pains in the stomach; he had undergone several "cures" for gastric ulcer. For two months he had severe attacks of hæmatemesis almost daily. He was very debilitated and collapsed when sent to hospital for operation for gastric ulcer, but a fatal attack of hæmatemesis occurred. The necropsy revealed hepatic cirrhosis. (3) A man, aged 23, had been under treatment for gastric ulcer for eighteen months; during the last month he had had numerous attacks of hæmatemesis, the last persisting for three weeks. The only abnormality found at operation was a group of enlarged glands at the lesser curvature; there was no sign of gastric or duodenal ulcer. The patient died two months later with hepatic cirrhosis. (4) A woman, aged 35, suffered for several months from sudden attacks of epigastric pain attributed to cholecystitis (cholelithiasis) or gastric or duodenal ulcer. Shortly after the stomach had been skigraphed a severe hæmatemesis occurred, and the

patient died before an exploratory operation could be performed. The necropsy proved that it was a case of myelogenous leucæmia. There was no evidence of gastric or duodenal ulcer. (5) A man, aged 40, had suffered for three years from sudden attacks of epigastric pain. Two years previously he had had cholecystectomy performed for contraction of the gall bladder. The epigastric pain did not diminish and serious fainting fits, with frequent attacks of melæna, occurred, suggesting the presence of ulcer or carcinoma. The patient was in an exhausted state, and melæna persisted. At an operation periduodenitis and perigastritis were found, and, on the assumption that an ulcer was present, a resection of the antrum and first part of the duodenum was undertaken. The patient collapsed and died fourteen hours later. The adhesions around the stomach and duodenum were the result of the previous cholecystectomy; no ulcer was found. The necropsy proved that the cause of death was pernicious anaemia. Petermann adds that these cases show that before an operation for gastric or intestinal hæmorrhage is undertaken a thorough clinical investigation should be made and the blood should be carefully examined.

## Therapeutics.

## 523. Ultra-violet Rays in Therapeutics.

A. C. ROXBURGH (*St. Bartholomew's Hosp. Journ.*, November, 1926, p. 19) gives an account of the results obtained by the use of ultra-violet rays in a variety of conditions during a period of about twenty-one months. The types of lamp used were the large 75-ampere, short-flame, with open carbon arcs, and the air-cooled mercury vapour lamp. Of 272 patients suffering from fifty-six different diseases, 20.8 per cent. were very much improved, and 46.5 per cent. were improved. In eight cases of rheumatoid arthritis the appearance of the joints was but little altered, but the pain was diminished, movement became freer, and the patients' general health was improved. Tuberculous glands responded well, though not infrequently caseation occurred before healing commenced. In three cases of tuberculous joints the results were disappointing, though one patient gained several pounds in weight during the treatment. In lupus vulgaris the results, though useful, did not approach the over 50 per cent. of cures reported by some clinics as the result of combined treatment withinsen light and general light baths. The author thinks it is evident that most cases of lupus vulgaris require both local and general treatment. Tuberculous peritonitis responded badly to treatment, and in acne vulgaris the results were less striking than after treatment by x rays. Non-tuberculous ulcers did well, and in the case of one child with extensive necrosis of the legs of undetermined origin, ultra-violet rays induced a rapid cure, after x rays, scraping, novarsenobillon, and other agents had failed. Benefit was noticeable in cases of extensive psoriasis, chronic alopecia areata, the results of 23 being either cured or much improved, and 7 being unaffected. Roxburgh agrees that in many cases the benefit derived from ultra-violet rays is due to improvement in the general health and resistance.

## 524. Treatment of Encephalitis.

HEINICKE (*Munch. med. Woch.*, October 1st, 1926, p. 1647) thinks that in the acute form of encephalitis serum from a convalescent is the only means of treatment which appreciably reduces the death rate or minimizes the after-effects. In the pseudo-neurasthenic stage it is also of use. In addition to serum, colloidal silver, trypanflavin, and especially sodium salicylate, may be tried. Heinicke insists that treatment may prove effective even in chronic cases. The prognosis is, he thinks, best in the type of case with psychic disturbance, especially in children and young people; but these call for treatment lasting for many years. Such treatment is for the specialist and the educationist; it can, as a rule, only be made available in institutions where nervous symptoms can be treated and where, at the same time, opportunities for education on suitably and steadily graded lines are available.

## 525. Turpentine Treatment of Epididymitis.

J. O. RUSH (*Urol. and Gynæc. Rev.*, October, 1926, p. 581) records observations on 50 cases of epididymitis, 47 of which were gonorrhoeal and 3 traumatic, treated by injection of turpentine beneath the periostracum of the ilium, as recommended by Wron and Tenchaum in 1924. A 20 per cent. emulsion of rectified turpentine oil in sterile olive oil was used in doses of from 0.5 to 1.0 c.cm. at a time, the injections being repeated every other day. No other treatment was employed. Examination of the urine showed that no renal lesions followed. In some cases the pain in the testicle began to subside in from one to three hours after the first



injection. In febrile cases there was a sudden drop of the temperature, which reached normal in thirty-six hours, in marked contrast with the rise of temperature following protein injection. Rush concludes that this method is superior to any previous one for the treatment of epididymitis. The duration of treatment was markedly reduced, the pain was quickly relieved without the use of narcotics, sedatives, or analgesics, and the use of ointments, caustics, and other methods was rendered unnecessary.

#### 526. The Vaso-dilator Action of Benzyl Benzoate and Acetate.

D. SIMCI and I. MARCU (*Arch. des Mal. du Cœur, des Vaisseaux et du Sang*, October, 1926, p. 654) refer to the hypothesis that the sedative and paralyzing action of papaverine is actually due to its benzyl radical. Animal experiments have shown that benzyl benzoate has sedative properties similar to those of papaverine; it has a powerful antispasmodic action on contracted muscle. It has been employed as a hypotensor in transient or permanent arterial hypertension, in angina pectoris, and in intermittent claudication. It has also been useful in mucous-membranous enterocolitis, spastic constipation, and dysmenorrhoea. The authors have made numerous plethysmographic tracings and simultaneous sphygmomanometric observations in order to determine the pharmacodynamic action of both drugs on the vascular muscle fibres. They found that both benzyl benzoate and benzyl acetate were inert when administered orally, even in such large doses as 120 minims of a 25 per cent. solution of the benzoate; but when 30 minims of a 20 per cent. oily solution of this substance were injected intramuscularly a pronounced vaso-dilatation occurred in six minutes and persisted for forty minutes. In this case the arterial pressure remained unchanged, showing that the vaso-dilatation was purely a peripheral phenomenon, due to the direct action of the drug upon the unstriated muscular fibres of the arterial wall. A second tracing showed that after the injection of 75 minims of the same solution a very definite vaso-dilatation occurred in eight minutes, and lasted for ten minutes, after which it returned slowly to the normal. During this period the maximum and minimum blood pressures fell slightly owing to a moderate central vaso-dilatation; this disappeared on the return of the tracing to the original level. The authors conclude that alcoholic solutions of benzyl benzoate, when administered in large doses by the mouth, are practically inert; but that the drug is a powerful vaso-dilator when injected in oily solutions. Benzyl benzoate and acetate very frequently exhibit a hypotensive action on the central as well as on the peripheral vessels. The vaso-dilator and hypotensive phenomena occur in normal subjects and also in patients suffering from hypertension without arterio-sclerosis. These drugs appear to be inert in arterio-sclerosis.

## Dermatology.

#### 527. Erythema Multiforme and Erythema Nodosum.

G. BLUMER (*Boston Med. and Surg. Journ.*, September 9th, 1926, p. 515) calls attention to the febrile types of erythema multiforme and erythema nodosum and discusses their relations and the possibility that the two conditions are of similar etiology. In the febrile type of erythema multiforme there is a prodromal period with fever, and in some cases joint pains and general aching, followed by the appearance of the rash and a period of convalescence. The evidence of the occurrence of erythema nodosum as a specific disease is much more convincing than that concerning erythema multiforme, and it is the occasional occurrence of several cases in the same family and of small groups of cases in institutions and of considerable numbers in certain districts during limited periods of time that points to the existence of a definite febrile type of erythema nodosum. From his observations and from those recorded by others Blumer considers that febrile types of both conditions may exist which are not obviously secondary to preceding infections or intoxications, and that there is some evidence of an epidemiological nature, which suggests that febrile erythema multiforme and febrile erythema nodosum may be specific infectious diseases and manifestations of streptococcal infection. Although it cannot be proved, in the absence of the discovery of the etiological agent or agents, it is possible that they are both expressions of the same form of infection.

#### 528. Generalized Telangiectasia.

S. W. BECKER (*Arch. Derm. and Syph.*, October, 1926, p. 387) contributes a clinical study of generalized telangiectasia, with special consideration of its etiology and pathology; he recognizes three groups—generalized telangiectasia, non-hereditary and non-familial telangiectasia with involvement

of the mucous membranes, and livedo racemosa. Appearing in the majority of cases during the second decade, females are affected more than twice as frequently as males. The etiological classification into neurogenic, mechanical, and toxic accounts for all cases. Of seven cases specially studied Becker considered one to be an example of livedo racemosa, one of non-hereditary involvement of the mucous membranes with haemorrhage, two due to prolonged infection, two of neurogenic origin, and one of combined endocrine disturbance, infection, cardio-vascular involvement, and a tendency toward neoplasia. In most cases there appears to be a multiplicity of conditions, and the frequency with which exposed surfaces are involved points to trauma as an etiological factor. The prognosis is favourable except where there is involvement of the mucous membranes with haemorrhage, and death from anaemia has been reported. Treatment locally by astringents and eatery is merely palliative, and the ideal procedure is to recognize and, if possible, remove the underlying causative condition. Becker considers that further intensive co-operative study will eliminate the group of essential generalized telangiectasia, and he believes that capillary study is a more valuable diagnostic means than gross morphological study.

#### 529. Treatment of Eczema with Sodium Thiosulphate.

B. THIRONE, L. S. VAN DYCK, E. MARPLES, and C. N. MEYERS (*Urol. and Gynec. Rev.*, September, 1926, p. 530) treated 104 cases of eczema by injections of sodium thiosulphate in doses of half a gram three times a week. In more than 80 per cent. of the cases prompt response to the treatment was obtained and the patient was able to resume his normal activities. All the patients in the series showed an abnormally high sugar and chloride content of the blood, and it would appear that there had been a deposition of these substances in the cutaneous layers. The authors think that the vesicular weeping condition is closely associated with the chloride content of the tissues, and that the pruritus is associated with the carbohydrate content. The patients usually responded to four or five injections. During the period of treatment the carbohydrate and chloride content of the diet was restricted. The first signs of clinical improvement were disappearance of the oedematous condition of the skin, which was followed in a few days by desquamation. Six illustrative cases are recorded.

#### 530. Congenital Partial Albinism.

V. PARDO-CASTELLO (*Arch. Derm. and Syph.*, August, 1926, p. 177) records four cases of partial albinism in a woman aged 32 and three children aged 4 years, 3 years, and 8 months respectively, all white, from direct Spanish ancestors, the possibility of admixture of coloured blood being carefully excluded. All presented extensive achromic patches of similar size and shape over the chest, abdomen, legs, and arms. In the first and second children several islets of pigment were distributed irregularly over the achromic patches. On the legs the leucoderma was irregular, alternating with pigmented spots. On the centre of the forehead and adjacent part of the scalp all showed a triangular leucodermic area on which the hair was white, in contrast with the light chestnut colour of the rest of the hair. The patients were normal in all other respects. The condition could be traced back to the maternal great-grandmother. There was no procreation for either sex, five females and six males being affected in each generation. Of the sixteen members of the family in these four generations only five were unaffected. Like Darier and others, congenital leucoderma evl.

## Obstetrics and Gynaecology.

#### 531. Uterine Retrodisplacement in Pregnancy and the Puerperium.

W. C. DANFORTH and C. E. GALLOWAY (*Journ. Amer. Med. Assoc.*, September 11th, 1926, p. 826), from an analysis of 1,000 cases of women not engaged in hard work, maintain that the importance of retrodisplacement as a pathological entity has been grossly overestimated, and that far too many operations are performed for its correction. As a routine they ascertain in all pregnancies, unless gestation is far advanced, whether the uterus is displaced or not, and if so, subsequent examinations are made in order to find out if the uterus has spontaneously corrected its position and risen above the promontory. They regard this as being extremely important, since incarceration of this organ below the promontory must inevitably lead to abortion or to serious discomfort and possibly danger to the prospective mother. In women with no history of abortion nothing is done beyond

ascertaining the mobility of the retrodisplaced uterus; thereafter only periodical examinations are made to determine its ascent out of the pelvis, or its prevention from rising by the promontory. In the latter event the displacement is manually corrected. Simple manual reposition often suffices, but if this fails, the manoeuvre of Schulz is tried, and this simple means in the majority of cases is successful. After this a pessary of suitable size is employed until the uterus is too large to re-enter the pelvis; the patient remains in bed for two days, and is given half a grain of codeine at once and another in the evening, the manipulations being usually performed in the afternoon or late morning. Should this procedure fail an attempt at correction is made in the knee-chest position. When all these attempts fail anaesthesia becomes necessary. The authors claim that retrodisplacement of the uterus is not an important cause of sterility and abortion, and that surgical intervention is not warranted when no other reason for the operation exists; that these operations should not be performed without efforts to discover the cause of sterility; and that sterility may often be effectually cured by pessary treatment for a few months. Prevention and correction of retrodisplacement in the puerperium is, they add, important, and the obstetrician should supervise the process of involution. The authors describe their plan of treatment, and in a conclusion state that about one woman in five in their series had retrodisplacement during pregnancy and the puerperium, and that retrodisplacement during pregnancy need cause little trouble provided that intelligent vigilance is exercised. In 29 per cent. of the cases reposition was performed and the uterus retained by a pessary; in the remainder correction ensued spontaneously. About 14 per cent. of the patients had a backward displacement of the uterus eight weeks after parturition. Reposition and retention in the anteфлекed position aids the process of involution but does not invariably cure the displacement permanently.

532.

**Syphilis of the Uterus.**

C. AUDRY (*Paris Méd.*, October 9th, 1926, p. 277) asserts that utero-ovarian syphilis is frequent, very important, and almost always unrecognized, and that half the cases of cancer of the uterus develop in syphilitic patients. He has been surprised at the quantity of leucoplastic alterations revealed by microscopical examination of suspected metritis and cancerous cervixes. Many young females suffer from cervical or total metritis, with or without complications of the adnexa, and without any visible syphilitic symptoms or antecedents. A certain number of these patients show gonorrhoeal infection; others do not, but have instead a positive Wassermann reaction. The latter do not respond to the usual local applications for gonorrhoea, but even in the absence of all local measures specific antisyphilitic treatment is followed by rapid and complete cure, the preparation advocated by the author being novarsenobenizol. Audry lays stress on the considerable importance of syphilitic antecedents in the cases of cancer of the uterus, and believes that utero-ovarian syphilis is at least as common as, and probably more important than, urogenital syphilis in the male.

533.

**Diathermy in Cystitis and Cervicitis.**

A. WASTERLAIN (*Le Scalpel*, September 25th, 1926, p. 871) states that cystitis in the female is often associated with a cervico-metritis, which may be gonorrhoeal. Treatment by the usual methods, such as caustics and glycerin dressings, is very slow, and exposes the bladder to risks of reinfection; excellent results have been obtained by diathermy. Wasterlain uses the apparatus of Heitz-Boyer No. 11, with a graduated delivery of up to 3,000 milliamperes. The author insists that restoration of the cervix to its normal condition can be obtained by diathermy alone without electro-coagulation, and attributes the cure of cervicitis and accompanying ulcerations to the fact that the adnexa were treated in the first place. He holds that it is logical in all treatment of cervicitis to direct the diathermic applications first to the adnexa, even in the absence of pain or swelling in those organs.

**534. Inhibition of Uterine Contractions by Anaesthetics.**

M. P. RUCKER (*Anesthesia and Analgesia*, October, 1926, p. 235) draws attention to the fact that in obstetrics two individuals are anaesthetized at once, and both the mother and the child have to be safeguarded. Drugs that are commonly used to alleviate labour pains roughly fall into two groups—analgesics, which are used in the first stage of labour, and anaesthetics, used in the second stage. As a result of his studies on the changes in intruterine pressure brought about by these drugs, the author concludes that all analgesics and anaes-

thetics have some tendency to diminish uterine contractions. He ranks the analgesics in the following order in this regard: paraldehyde, magnesium sulphate, morphine, bromide, and chloral. Chloral alone has scarcely any effect, while hyoscine usually increases the force of the contractions. The general anaesthetics can be very definitely placed in the following order in reference to inhibitor action on uterine contractions: chloroform, ether, nitrous oxide-oxygen, and ethylene. Sacra-anaesthesia with novocain inhibits the contractions when combined with adrenaline, but otherwise does not do so.

**Pathology.**

535.

**The Haemoclastic Test.**

G. ALTSCHULLER (*Strasbourg Med.*, July 5th, 1926, p. 272) states that the haemoclastic test is characterized by an abrupt rupture of the physico-chemical equilibrium of the secretions of the body; that the leucopenia and fall in blood pressure are only phenomena secondary to colloidal shock; and that in special conditions a typical shock can be produced without diminution in the blood pressure or number of leucocytes. The regulating mechanism of colloidal equilibrium of the blood and secretions is very complex. The liver, lungs, and the glands of the internal secretions play an important role in the production of shock; but it seems very probable that side by side with these organs of glandular structure there is a central nervous control over the colloids and crystalloids of the organism. According to the latest researches this centre lies in the floor of the third ventricle. The usual index of haemoclastic shock is the number of leucocytes, but Altschuller states that considerable modifications of the neutrophilic table of Arneth also occur, and that this nuclear haemoclastic reaction is more constant and characteristic than the leucocytic one, and is, moreover, absolutely independent of variations in the number of leucocytes. Adrenaline and pilocarpine injected subcutaneously with the ingestion of milk provoke a leucopenia or leucocytosis without changing in the least the character of the nuclear crisis. In the place of 200 c.c.m. of milk (Widal), the author administers glucose (1.5 gram per kilo of weight). The advantage of this method is that it is possible to study the reaction more closely by estimating the consecutive glycaemia.

**536. The Relation of Bacterium pneumosintes to Influenza.**

M. W. HALL (*Journ. Exper. Med.*, October, 1926, p. 539) has obtained confirmatory evidence of the original observations of Olitsky and Gates with regard to the association of *B. pneumosintes* and influenza. In February, 1922, there was an outbreak at Fort Myer, near Washington, of clinically typical influenza. From one of the cases of this epidemic nasopharyngeal washings were collected within twenty-four hours of the onset of the disease; they were thoroughly emulsified and injected intratracheally into one rabbit and two guinea-pigs. On the second day the rabbit showed a rise of temperature, a fall of 25 per cent. in the total leucocyte count and of 40 per cent. in the mononuclear count. The rabbit was killed, and at necropsy there was found a diffuse lesion of the lungs, which corresponded in many respects to that considered by Olitsky and Gates to be characteristic of infection with *B. pneumosintes*. The two guinea-pigs died, apparently as the result of the operative procedure, but another guinea-pig, which was injected subcutaneously, showed on the fourth day a fall of 40 per cent. in the leucocyte count; this animal was found to be suffering from a similar diffuse pulmonary lesion to that encountered in the rabbit. Another guinea-pig inoculated with the emulsified lungs of this animal showed a slight rise in temperature, a fall in the mononuclears, and a well marked diffuse lesion of the lungs. Cultures made from this animal on the Smith-Noguchi medium gave a growth of minute Gram-negative coccobacilli conforming to the descriptions of *B. pneumosintes*. The organism was maintained by weekly subcultures on blood agar plates incubated anaerobically. When injected into fresh animals it gave rise to the same reactions—namely, a rise in temperature, a fall in the leucocytes, especially of the mononuclear leucocytes, and a diffuse lesion of the lungs. Experiments made with this organism suggested that when injected into animals it led to the pulmonary localization of other bacteria with the production of definite pneumonia lesions; the secondary organisms (pneumococci) were injected intravenously on the day following that on which *B. pneumosintes* had been injected. Hall believes that his findings support the opinion that this organism is the primary infecting agent in influenza.



## Surgery.

### 543. Treatment of Pyloric Spasm in Infants.

W. F. SIERMONDT (*Deut. Zeit. f. Chir.*, October, 1926, p. 340) reviews the literature and records his observations on twenty-two cases of pyloric spasm in infants—eighteen males and four females—on whom Rammstedt's operation was performed at the Leyden Surgical Clinic. Only one died, shortly after the operation, so that the mortality was 4.5 per cent. Ten were 3 to 4 weeks old, six 5 weeks, one 6 weeks, two 7 weeks, two 8 weeks, and one only 9 days. With the exception of the last seven cases, in which gas and oxygen was used, the anaesthetic employed was ether administered on an open mask. Feeding could be commenced immediately after the operation. Some children continued to vomit for the first few days after the operation, but usually the vomiting stopped in two or three days, while several children did not vomit at all. The average stay in hospital after the operation was about eleven days. The advantage of Rammstedt's operation, according to Siermondt, is that it can be unreservedly advised in all cases in which the child is still in a good state of nutrition, since conservative treatment involves more dangers, such as infection and nutritional disturbance, and also requires a much longer time. In breast-fed infants immediate operation is all the more desirable as it is extremely important for the child that this mode of feeding should be maintained. In any case the operation is indicated when no noteworthy success has attended the trial of conservative treatment for a few days. It is desirable that the after-treatment should be undertaken in conjunction with a paediatrist.

### 544. Diagnosis of Cerebellar Tumours in Children.

M. CRITCHLEY (*Brit. Journ. Child. Dis.*, July-September, 1926, p. 165) states that the four main symptoms of cerebellar growths in children are, in order of occurrence, vomiting, headache, disorders of equilibration, and visual disturbances. Another occasional symptom is the "cerebellar fit," which is preceded by no aura or premonitory symptoms, but consists in generalized tonic rigidity of the entire musculature. The physical signs may be classified into those due to actual cerebellar disturbance, such as atonia, ataxia, and asthenia; those due to pressure upon adjacent structures, such as squint and paralysis of cranial nerves; and those due to generalized hydrocephalus, which include enlargement of the cranium and separation of the sutures. Tumours primarily pontine may be distinguished from tumours primarily cerebellar by the late occurrence of drowsiness, by the absence of dysphagia until a very late stage, by the early appearance and rapid development of papilloedema, the late occurrence of cranial nerve palsies and spasticity, and the rarity of sensory loss.

### 545. A Diagnostic Skin Test for Appendicitis.

E. M. LIVINGSTON (*Arch. of Surg.*, November, 1926, p. 630) believes that the study of cutaneous hyporæsthesia can be of considerable service in the diagnosis of appendicitis. The skin is picked up between the thumb and forefinger and pulled directly away from the abdomen until discomfort is felt. The amount of tension necessary is constant for the particular patient and is much decreased over diseased areas. In this way a skin triangle for appendicitis has been mapped out in the right iliac region, the three points being (1) the highest point of the iliac crest, (2) the right pubic spine, and (3) the umbilicus. The triangle does not correspond with any specific nerve distribution. It was found to have a diagnostic value in 86 per cent. of a series of 428 consecutive cases of acute appendicitis. Appendix colic and secondary involvement of the appendix in some other abdominal affections also responded to this test occasionally. Contrasting the value of this test with other cardinal points in the diagnosis of appendicitis, the author reports typical pain present in 75 per cent., pyrexia in 67 per cent., nausea or vomiting in 70 per cent., leucocytosis in 76 per cent., and localized rigidity in 59 per cent.

### 546. Salivary Calculi.

G. R. HARRISON (*Surg., Gynecol. and Obstet.*, October, 1926, p. 431) concludes, from an experience of twenty-seven cases, that calculi of the salivary glands and ducts are not very rare, and are of interest because of the difficulty in diagnosing them and the satisfactory results following timely removal. They are usually single, but may be multiple; they occur at all ages and in any of the glands, though the submaxillary is the one most frequently involved. Harrison classifies these patients as follows: (1) those complaining of pain and swelling in the gland or duct upon the ingestion of food; (2) those giving a history of sudden pain and swelling with fever, without any previous history of recurrent swelling; and (3) those

presenting a hard swelling fixing the tissue of the involved gland or duct with, frequently, cellulitis of the neck and suppuration. X-rays give positive information in from 75 to 80 per cent. of cases after repeated and careful examination. Treatment consists in removal of the calculi through an intra-oral incision if they are situated in the sublingual duct or gland, the anterior two-thirds of the submaxillary, or the buccal portion of the parotid ducts, but through an external incision if they are in the masseteric portion of the parotid duct, the parotid gland, or the posterior third of the submaxillary duct or the submaxillary gland. If stones are situated in either the sublingual or submaxillary gland extirpation of the gland is indicated, and in order to prevent fistula formation gland removal is sometimes advisable when the calculi are located in the ducts, especially when there is accompanying inflammation. Incisions must be made with great care because of the possibility of injury to motor nerves. Stones should be removed regardless of whether they are producing symptoms, because their presence is always a potential source of danger.

### 547. Accident and Tuberculosis.

TSCHMARKE (*Zentralbl. f. Chir.*, October 2nd, 1926, p. 2540) has made the following suggestions to guide the practitioner in determining whether a case of tuberculosis is due to an accident. The accident must be proved to have happened, and to have involved a part of the body affected with tuberculosis. The accident must have been so considerable as to compel the patient to seek medical advice at once or very soon afterwards. The patient must already have had a tuberculous focus in his body at the time of the accident. Aggravation of an already existing pulmonary or extrapulmonary tuberculosis by an accident is possible, but as a general rule primary tuberculosis cannot be caused by injury to the lungs. Metastatic pulmonary tuberculosis is extremely rare, but miliary tuberculosis is possible as a result of injury to a tuberculous focus. An interval of at least four to six weeks, and at most six months, must intervene between the accident and the appearance of a tuberculous affection; miliary and ocular tuberculosis are exceptions to this rule. The course of the disease must be uninterrupted. Inoculated tuberculosis is possible and must be regarded as an accident. A careful study of the previous history, critical estimation of the statements of the patient and witnesses of the accident, and consideration of the clinical, pathological, and experimental evidence, are necessary in deciding whether tuberculosis is due to an accident.

## Therapeutics.

### 548. Dangers of Sulpharsenobenzol Injections.

M. MOLHANT (*Le Scalpel*, October 9th, 1926, p. 919) has given more than 20,000 injections of sulpharsenobenzol, and describes the local and general dangers involved. The local complications are haematoma, abscess, necrosis, septicaemia, anaphylactic oedema, sclerosing myositis, sarcoïd tumours due to foreign bodies, and post-traumatic syphilis. The author has not seen many of these complications after injections of aqueous or glucose solutions of sulpharsenobenzol. In sclerosing cystic or non-cystic myositis the muscle becomes indurated after repeated injections, and sometimes a yellowish fluid escapes when the needle is withdrawn. These symptoms usually disappear rapidly under treatment by baths and massage, and may usually be avoided by selecting fresh sites for the injections. Molhant has seen two cases of "aseptic abscess" due to the patient using too frequent and too hot baths; when these were discontinued and a few punctures made recovery was rapid. Local allergic reactions varied in intensity from a simple erythema round the site of injection to an acute indurated and extensive congestion. Some patients were found to be very intolerant of arsenobenzol, and a single minimal dose might cause such a reaction, or else nausea and pruritus. The author states that general complications may occur immediately or some hours after an injection. In the former case the patient begins to sneeze and cough; he becomes extremely distressed, with collapse, intense congestion of the skin, especially of the face, followed by pallor and vomiting. Occasionally the patient faints suddenly without warning, his colour is livid, cyanotic, pulse rapid and weak, and the extremities are cold; this is followed by vomiting. The author encountered these alarming symptoms only two or three times; they disappeared rapidly after the vomiting. He adds that they are likely to occur in goitre, particularly in the exophthalmic form; in patients subjected to a prolonged treatment with colloidal iodine, given intramuscularly; when a nervous diathesis is present with endocrino-sympathetic disturbance; in pregnancy; in febrile conditions; and in chronic erythrodermia, indicating previous arsenobenzol poisoning. Molhant



thinks that in all such cases the treatment should commence with a minimal dose, preferably in concentrated glucose solution. The doses should be repeated and very slowly increased, an effective dose being often reached only after ten or fifteen injections. The later reactions, due to chronic arsenobenzol poisoning, are delayed erythrodermia, arsenical neuritis, purpura haemorrhagica, and jaundice. Erythrodermia, which occurs in about 2 per cent. of cases, may be herpeticiform with much oedema; it may last for weeks or even months. Concentrated glucose solutions lessen the tendency to general and skin reactions. Molhanb believes that true arsenical neuritis occurs in some cases, and that the patients may also suffer from herpes zoster. Purpura haemorrhagica occurs in about 1 per cent. of all cases and jaundice only once in over 500 cases.

519.

**Pituitrin in Enuresis.**

A. I. BLAU (*Med. Journ. and Record*, October 20th, 1926, p. 492) records the results of a study of 90 cases of enuresis in which a thorough physical examination and urinalysis were made. He considers that the average case shows no definite causative abnormality, and that in only a few with some associated local or general condition does its removal result in cure. A vesicular atony, especially of the sphincter, and probably a neurosis, apparently underlies the condition, and the majority of cases fall into the category of an essential enuresis. After treatment for several months with the drugs usually considered beneficial it was found that only a few responded, and in 15 of the cases the exclusive use of atropine gave no better results. Pituitary extract was then administered orally to 75 of the cases in gradually increasing doses from 1/10 to 1/4 grain, and in 54 this was augmented by 0.5 c.c.m. of pituitrin hypodermically, three injections being given at three-day intervals. In 50 per cent. of the cases the enuresis was of more than two years' duration before treatment began. The best results were obtained in those receiving both oral and hypodermic administration, especially when three injections were given, almost 75 per cent. being either improved or cured, and since 10 of the injected patients never returned for observation it may be presumed from the experience of those who were followed up that the percentage was even higher. Of those treated orally only, about 35 per cent. were improved or cured. Blau concludes that pituitrin in the treatment of enuresis gives better results than any other therapeutic method.

550.

**Codaine and Morphine as Hypotensors.**

M. BONJOUR (*Presse Méd.*, October 13th, 1926, p. 1283) details the excellent results obtained from the use of codaine and morphine in four cases—two of heart disease, one of total insomnia, and one of incontinence of urine—which did not respond to the usual treatment. These cases demonstrated the special value of opiates as remarkably sure hypotensors where other drugs had proved inefficacious. He finds their particular value in cases of arrhythmia and pulsus alternans, but they can only be prescribed if the kidneys are healthy. The initial dose should be 1/60 to 1/30 grain a day; this is gradually increased each day or two until the desired effect is obtained. According to the conditions and the age, codaine or morphine, or a mixture of the two, is employed. This mixture was also found valuable in relieving the hypotension of the menopause, and its nervous and vasomotor troubles.

551.

**Bismuth Treatment of Neuro-syphilis.**

H. SARTRE (*Norsk Mag. f. Lægervidensk.*, September, 1926, p. 773) records his experience of the treatment by bismuth, in the form of trepol, bismogenol, and vlocin, of 79 cases of neuro-syphilis, among which were included 30 cases of tabes, 11 of general paralysis, and 4 of congenital syphilis. The total number of injections given was 2,091. The results were as follows: In general paralysis and congenital neuro-syphilis no clinical improvement was seen, the only effect being an amelioration of the findings in the cerebro-spinal fluid. Of 14 tabetic patients treated only by bismuth all but one showed great improvement, especially as regards the relief of pain, numbness, urinary disturbances, and ataxia. In two cases symptoms returned, and two proved refractory to further treatment. The Wassermann reaction in the blood was negative before treatment in 6 of the 14 cases; after treatment 12 were negative, while 2 remained positive. The spinal fluid became normal in one case, and in the others the use of bismuth reduced the reactions with persistence only of the Lange and a faintly positive Wassermann reaction in most of them. Among 12 other cases of neuro-syphilis 9 showed rapid recovery apart from pupillary disturbances and anomalies of the reflexes, and all the 9 cases but one showed negative reactions in their blood and cerebro-spinal fluid. In 38 cases bismuth was associated with other antisyphilitic remedies such as hectino or salvarsan, but the results were inconclusive.

**Neurology and Psychology.****552. Mental Deficiency and Congenital Syphilis.**

N. A. DAYTON (*Journ. Amer. Med. Assoc.*, September 18th, 1926, p. 507) from previous investigations had concluded that congenital syphilis was the cause of mental deficiency in only a few cases. A further study of the intelligence of sixty-one mentally defective patients who were subjects of congenital syphilis showed that it was definitely superior to that in 1,956 cases of mental defect due to other causes. When congenital syphilis initiated the pathological process resulting in mental deficiency, the process was less severe and a higher average of intelligence was attained than in cases of mental deficiency due to other causes. From the statistical point of view congenital syphilis does not produce large numbers of cases of mental deficiency; nor does congenital syphilis produce a low grade of defect. Dayton therefore asserts that congenital syphilis is not a serious factor in the production of mental deficiency.

553.

**General Paralysis of the Insane.**

A. SÉZARY and A. BARBÉ (*Paris Méd.*, October 2nd, 1926, p. 258) comment on the frequent variations in the progress of general paralysis of the insane. Life may be prolonged for two or three years or the disease may prove fatal in a few months. In other cases remissions occur spontaneously or after treatment. The authors find that stovarsol is far superior therapeutically to all other agents, including bismuth, and that sodium nucleinate, mesothorium, zinc oxide, camphorated oil, iodo-quinine, sodium borate, and dinitrophenol are seemingly useless. Changes in the serological reactions do not appear to reflect clinical improvement in cases of general paralysis of the insane. The symptoms may improve while the reactions become accentuated, and conversely the symptoms may become more grave while the reactions approach the normal. This appears to indicate that meningitis is of secondary importance in the etiology of general paralysis of the insane. The undoubted improvement which is produced by some treatments must be regarded only as prolonged remission. In these cases the meningeal infective process may, indeed, be aggravated. Definite and lasting attenuations of serological modifications are only found in patients who have been treated with stovarsol or with malarial parasites; this shows that even if these treatments do not cure the condition, they have an undeniable action on the morbid process in the nervous system.

554.

**Psychoses in Encephalitis.**

J. KASANIN and J. N. PETERSEN (*Journ. Nerv. and Mental Dis.*, October, 1926, p. 352) give notes of four cases of epidemic encephalitis in which a psychosis was the earliest clinical picture, neurological signs developing later. In one case an affective stupor was diagnosed, the patient being confused and wandering about in a dazed condition, refusing food, and having written farrowell letters to her children. Two other patients showed signs of the manic type characterized by overactivity, flight of ideas, and distractibility, while the fourth was diagnosed as schizophrenia. The neurological signs were varied, three of the four cases showing a divergent sign, transitory tremors, and jerky movements of the extremities. A leucocytosis varying from 10,000 to 30,000 per c.c.m. was present in all four, and the sugar content in the cerebro-spinal fluid was increased; the colloidal gold reaction showed the usual range of variation. Xanthochromia was present in one case, and the Wassermann reactions of the blood and cerebro-spinal fluid were negative in all. The authors point to the possibility that many non-fatal cases of milder onset may retain as a residuum a psychosis which on later examination may be diagnosed as dementia praecox or manic-depressive insanity, and that a review of some of the early histories of atypical cases of schizophrenia or affective disorders may reveal a previous encephalitis.

**Obstetrics and Gynaecology.****Albuminuria in Pregnancy.**

555. The albuminuria of pregnancy, pre-eclamptic toxæmia, and the clampsia are, according to A. J. GUNNINGHAM (*Med. Journ. Australia*, September 11th, 1926, p. 331), different stages of one disease, and he associates with them chronic interstitial nephritis and uræmia, so as to form three large groups—nephritis and uræmia, albuminuria of pregnancy, nephritic toxæmia, and uræmia. He describes the albuminuria of pregnancy as being a profound toxæmia of unknown origin, with an action resembling that of the poisons albumins, proteoses, and albuminoses. In toxæmia without nephritis the systolic blood pressure may be from 130 mm. of mercury, rising in pre-eclamptic and eclamptic stages even to 200 mm. It



nephritic toxæmia while the figures are similar the variations are smaller; in uræmia the pressure is higher, over 200 mm. These figures are fairly constant, but may be upset in three ways. In actual convulsions the readings will be very high in all three; after accidental hæmorrhage and in heart failure they will be lowered. Blood-pressure readings every two hours or more often are very valuable in showing the onset of pre-eclampsia and eclamptic stages, the rise of pressure in many instances occurring before the severe symptoms appear. Any rise or continuation of high pressure post partum should suggest the onset of convulsions. If the high pressure persists it indicates drainage to the kidneys, but a fall to normal may occur in spite of such a condition. A rising pressure in spite of treatment, or a sudden rise, is an indication for active intervention. The blood urea content is usually low in the later months of pregnancy, less than 20 mg. per 100 c.cm. of blood; its estimation distinguishes between the three classes of albuminuria. In a true toxæmia it is normal, 20 to 40 mg.; in nephritic toxæmia it is higher, 50 to 100 mg.; and in uræmia 250 mg. Estimation of the blood urea is in some cases the only means of assessing damage to the kidneys and of giving a prognosis. A blood urea figure of over 50 mg. is an indication for the termination of pregnancy. Careful ante-natal supervision is essential, but in spite of it induction has to be performed in a large proportion of cases even in the first stage. In the pre-eclamptic stage, if it is not possible to induce labour at once, the author uses veratrine, either alone or combined with morphine, the pulse and blood pressure being carefully watched during its administration. In the eclamptic stage Cunningham advises conservative methods and a minimum of interference; to control convulsions he uses chloroform sparingly and avoids ether because of the risk of pulmonary oedema.

#### 556. Lipiodol in Diagnosis of Female Sterility.

L. M. RANDALL (*Amer. Journ. Obstet. and Gynecol.*, September, 1926, p. 326) advocates the use of lipiodol as an adjunct to tubal inflation in the diagnosis of sterility. Inflation alone will prove whether the Fallopian tubes are normally patent, stenosed, or entirely occluded, but the actual site of the lesion can be visualized by the injection of lipiodol, a chemical compound of 40 per cent. iodine in poppy-seed oil, which is opaque to x-rays, non-caustic, and non-toxic. The injection is simple and painless, and affords a sharp shadow of the cavity of the uterine and the lumen of the tubes. Randall advises its use midway between the menstrual periods, and points out that the indications for it are the same as those for inflation, the contraindications being infection or hæmorrhage. The method seems to be particularly valuable when with non-patent tubes bimanual examination of the uterus and the history do not provide evidence of pelvic disease, and the question of surgical treatment is under consideration. Notes of three cases are given illustrating the value of the method in determining suitability for operation, and it is added that it is unjustifiable to subject apparently normal women, whose primary complaint is sterility, to an operation without giving them the benefit of as accurate a diagnosis as possible. If the site of closure can be located in a given case the value of an operation can be better determined, since the prospect of success is not good when the obstruction is in the narrowed portion of the tube, but is fair when the lesion is at the fimbriated end, which is the more common finding.

#### 557. Treatment of Post-partum Bleeding.

G. MÜLLER (*Gynéc. et Obstét.*, 1926, xiv, 3, p. 151) recommends Henkel's procedure in treating severe bleeding following childbirth. The patient is placed on her back with the lower limbs raised and abducted. A speculum is introduced to depress the fourchette and posterior vaginal wall, and the cervix is drawn downwards as far as possible towards the vulva by two volsella applied respectively to the anterior and posterior cervical lips. The cervix is now drawn forcibly to the left, and with a third volsella a wide grip is taken of the right parametrium and cervical musculature. The cervix having been drawn to the right a fourth volsella is now applied similarly on the left side. Lastly, the first two volsella are removed and the vagina is lightly packed. The purpose of the prolonged application of the third and fourth volsella is twofold: by temporarily fixing the cervix in a pulled-down position to induce a compression by angulation of the uterine arteries, and, secondly, to secure a direct compression of these vessels between the blades of the instruments. Henkel's technique is said to be specially useful in hæmorrhages following tears of the cervix or low insertion of the placenta; it is useless if a cervical tear has extended into the parametrium. Müller describes six cases of speedy arrest of hæmorrhage by Henkel's method: the volsella were removed after twenty hours, and no vesical, ureteral, or intestinal complications were noted.

## Pathology.

### 558. Focal Infection and Disease.

J. A. KOLMER (*Journ. Amer. Med. Assoc.*, September 11th, 1926, p. 824) holds that 80 to 90 per cent. of all deaths are due to some type of infection, and that acute specific infections are responsible for but a small part of these. Infections of the apices of the teeth, the nasal accessory sinuses, tonsils, and bronchi are the most important foci in adults. Even in cases of gall-bladder and bile-duct infection, infections of the upper respiratory tract are of primary importance, being followed by secondary infection of the intestinal tract and biliary passages through the swallowing of purulent material or by direct blood-stream infection of the liver. In the arthritis believed to be due to organisms or their toxins absorbed from the intestines the possibility of primary foci in the upper respiratory tract must be kept in mind. The genital organs, and particularly infections of the prostate gland and adnexa, are especially important in relation to the production of gonococcal arthritis, tenosynovitis, and endocarditis. Of all the organisms responsible for focal infection the group of streptococci is undoubtedly the most important, followed in order by the staphylococcus, pneumococcus, gonococcus, and colon bacillus, but the possible importance of the influenza and diphtheroid bacilli, as well as some of the specific organisms, as the tubercle and typhoid bacilli and the *Spirochaeta pallida*, in establishing primary foci from which distant organs may be secondarily infected, is also to be remembered. Kolmer considers that secondary foci in general are due to the presence of the organisms themselves rather than to their toxins, but that bacterial toxic substances may produce psychoses and neuroses, and be responsible in part for allergic sensitization, as in bronchial asthma, nervous rhinitis, and some skin diseases. The distribution of organisms and their toxins is largely by the blood. Absorption into the lymph draining the primary focus probably occurs first, and is responsible for secondary foci situated in the direct line of drainage, but transference to more distant organs is most certainly by way of the blood. The author holds that the importance of acquired selective tissue affinity on the part of the organism in secondary infection has been greatly overestimated, and that the main determining factors are the general virulence of the organism, local tissue immunity, hereditary influences, and trauma in a broad sense; the matter of secondary localizations or lesions in focal infection involves not only the virulence and numbers of organisms gaining access to the circulating blood, but also the kind and degree of local resistance about the primary foci, the degree of systemic humoral and cellular resistance, and the predisposition to secondary infection by anatomical defects and the presence of areas of inherited or acquired reduced tissue resistance. Exacerbation of secondary foci on the removal of primary ones is strong presumptive evidence of the relation between the two foci, and the determination of the virulence of the organism and its elective localization in the corresponding organs of some lower animal may aid in diagnosis.

### 559. Reported Isolation of *Brucella abortus* from Patients with Undulant Fever.

C. M. CARPENTER (*Journ. Infec. Dis.*, September, 1926, pp. 215 and 220) examined twenty cases of fever with symptoms suggesting Malta fever, and succeeded in cultivating from five of them a bacillus of the *Brucella* group. Tests made by direct agglutination and by absorption of agglutinins led the author to believe that the strains were not *B. melitensis* but *B. abortus*; though, since many workers have been quite unable to distinguish these organisms by these tests, it seems doubtful whether this conclusion is justifiable. The interesting point lies in their pathogenicity to cattle. The five strains were tested for virulence by intravenous injection into five pregnant heifers; all the animals aborted in from four to twenty days. The organism was recovered from the placenta and milk in each case; four of the foetuses that were examined likewise contained the bacillus. One of the cows discharged infective milk for six and a half months; she was then destroyed. A calf that was suckled by this cow remained infected for four months after its last feed, as evidenced by a high agglutinin titre and the presence of *B. abortus* in many of the glands. The virulence of these human strains would appear to be higher than of those isolated from bovine sources. Five of the patients from whom the organism was recovered were examined for serum agglutinins to *B. abortus*; in three of them a titre to this organism of 1 in 30 to 1 in 840 was found; in the other two no agglutinins were detectable. On the other hand, in two patients suffering from fever in whom the organism was not found, agglutinins to *B. abortus* were present. The author concludes that the agglutination test cannot be relied on to detect the presence of this organism in man.

# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

560. **Mechanical Treatment in Anterior Poliomyelitis.**  
C. C. CHATTERTON *Minnesota Med.*, November, 1926, p. 625

describes the treatment of anterior poliomyelitis in three stages: (1) The acute, which lasts from the time of onset until the neuritis and myositis disappear—a period of days or months; (2) the improving, beginning when the neuritis and myositis have disappeared, and extending over at least two years; and (3) the surgical, beginning at least two years after the acute attack. The author discusses in particular mechanical treatment, including physiotherapy, warmth, and exercises, in the second or improving stage. After the fever has subsided in the acute stage the patient is usually paralysed in one or more limbs, which are tender to the touch and painful on motion, while the general condition is below par. The principle of treatment should be rest and protection until all signs of tenderness have disappeared. At the end of the acute stage a full and complete test should be made of the damage to each muscle or group of muscles. If deformity is present it should be corrected gently by suitable apparatus; this should be simple and easily applied, and afford stability to the extremities and spine. Another form of apparatus is equally necessary. Massage undoubtedly increases the blood and lymph supply, carries heat to the tissues, improves muscle tone, and may prevent deformities. Extra warmth, seemed by means of additional and woollen clothing, hot baths, and radiant heat through electric lamps, is of special importance. Exercises without weight-bearing are of great value; and swimming in brine tanks and horse-back riding are often beneficial. Chatterton asserts that when the apparatus, rest, massage, extra warmth, and exercises are conscientiously used good results may be expected.

561. **Epilepsy and Spasmodic Torticollis.**  
L. MARCHAND and E. HAUSER *Soc. Neurolog.*, October, 1926, p. 310

observe that the occurrence of spasmodic torticollis among epileptics has been recognized for many years. Several cases have been reported, but only of the intermittent form, occurring at the crises and associated then with other convulsive symptoms. Cruchet distinguished three varieties of spasmodic torticollis in epileptic patients; in the first group spasmodic torticollis was only one of the localizing symptoms of the epileptic crisis; in the second group it represented an epileptic attack; in the third group spasmodic torticollis might occur in a patient who was also an epileptic, without there being any connexion between the two diseases. The majority of cases of spasmodic torticollis are of mental origin, but it may also be due to organic disease of the muscles, joints, or bones, or to certain lesions of the pyramidal tracts, especially of the cortical portions; later he came to the conclusion that the mesencephalic nuclei were involved. Pierre Marie and Léry have drawn attention to the frequent occurrence of osteo-arthritis lesions in the cervical region, causing irritation of the cervical plexus, especially of the fifth and sixth cervical roots. Other writers have suggested that cervical arthralgia is secondary to the torticollis. (1) A man, aged 34, had suffered from spasmodic torticollis since the age of 5 months, and his history of epilepsy and minor epilepsy occurred, and his mental development was that of a child aged 7. There was no family history of epilepsy, and no evidence of syphilis. He had frequent attacks of major and minor epilepsy since the age of 14, and had suffered from left spasmodic torticollis since the age of 17 months, and from epilepsy since he was 53 years old. There was no family history, except that his maternal grandfather was an inebriate, and no evidence of syphilis. He had frequent attacks of major epilepsy, and his intelligence was that of a child aged 6. The clavicular origin of the sterno-mastoid was divided, but no appreciable improvement followed. (2) A man, aged 31, had suffered from spasmodic torticollis since the age of 9 months; convulsive epilepsy commenced in his childhood he was stultish and self-willed; as an adult he could not work, and his intelligence was that of a child aged 7. His speech was hesitating and spasmodic. The reflexes were normal, but he dragged the right foot slightly

when walking. The authors observe that the three patients were males, that in two cases the torticollis affected the right side, in one the left; it was permanent and tonic. In two cases it followed infantile convulsions, in the other case there was no apparent cause. The early appearance is opposed to the theory of a mental origin, and the neurological symptoms suggested derangement of the motor tracts. All three patients exhibited advanced mental deterioration, and in each epilepsy supervened long after the torticollis appeared. The mental deterioration suggests a more or less diffuse cortical sclerosis. If there were no symptoms of a lesion of the pyramidal tracts facial contractures and spasticity of a limb suggested a mesencephalic lesion, especially of the corpus striatum.

562.

**Exanthema Subitum.**

H. BUSCHMANN *(Med. Klin.)*, July 23rd, 1926, p. 1146 records four cases in children, aged from 7 months to 3½ years, of the eruptive fever described by Veedor and Hempelmann under the name "exanthema subitum," of which only nineteen cases have hitherto been reported in German literature (von Bokay, *Lehrer, Salomon, and Engel*; see *Epitome*, December 19th, 1925, para. 558; February 27th, 1926, para. 229). The onset is acute, the temperature rising to 104.8° without much constitutional disturbance, and remaining high for three to five days. The rash, which appears as the temperature falls and affects the trunk without involving the mucous membranes to any extent. The blood picture is typical, being characterized by leucopenia (3,000 white cells), with 80 to 85 per cent. lymphocytes and no change in Arneth's formula. As soon as the temperature falls the number of leucocytes rises and the lymphocytes decrease. No special treatment is required, as the disease runs a very mild course, and no complications or sequelae have been observed.

## Surgery.

563. **Splenectomy for Purpura Haemorrhagica.**  
As E. BEER *(Annals of Surgery)*, October, 1926, p. 549 remarks,

the growth of knowledge about the forms of purpura and their treatment by splenectomy has been very rapid. The main characteristic of the disease appears to be a diminution of the number of blood platelets and the absence of contraction of the clot with the usual expression of serum. It was found that removal of the spleen both in man and animals brought about a definite increase in the number of blood platelets, and this opened the way for splenectomy in cases of purpura. The disease itself seems to take one of two very different courses. In the chronic or relapsing type splenectomy appears to be particularly useful. The acute type is more rapidly progressing and splenectomy in these cases is of questionable value. The disease is not hereditary. It occurs in the young, and haemorrhages may appear in all parts of the body as small petecchiae and external bleeding. In these patients there is a low platelet count, whereas in haemophilic the platelets are not reduced. After splenectomy the platelet count rises, but usually drops again to near the level before operation. Beer records five typical cases treated by splenectomy; four were of the chronic variety, and the results proved most gratifying. In the one acute case a fatal result followed soon after operation.

564. **Primary Tuberculosis of the Mesenteric Glands.**  
M. METTENLEITER *(Deut. Zeit. f. Chir.)*, October, 1926, p. 120

during the last ten years has seen thirty-three examples of primary tuberculosis of the mesenteric glands in children at the surgical department of the municipal hospital at Erfurt. The disease is therefore more frequent than is generally supposed, children between the ages of 10 and 15 being most frequently affected. An acute and a chronic form may be distinguished. The diagnosis can readily be made when a tumour is distinctly palpable, but a confusion between appendicitis and the acute form is possible. In chronic cases affection of the mediastinal glands is a much more likely occurrence than chronic appendicitis. The patient's general condition is an important feature in differential diagnosis. Patients suffering from appendicitis almost always show signs of being severely ill, while subjects of mesenteric tuberculosis feel well in spite of their pain. The disease usually runs a favourable course, and only slight symptoms

are caused even by considerable enlargement of the glands. Of Mettenleiter's thirty-three patients twenty-nine underwent operation, when the appendix with one exception was found to be normal; in four cases the diagnosis was made by the presence of a palpable tumour. All the patients made an uncomplicated recovery. After-treatment consisted in artificial sunlight and application of x rays.

565.

**Sciatica.**

A. E. HERTZLER (*Amer. Journ. Surg.*, October, 1926, p. 200) defines sciatica as a painful affection of the sciatic nerve due to conditions within the nerve produced by unknown causes, and lesions adjacent to the nerve. A common prelude to sciatica is a painful affection of the sacro-lumbar region. The onset often follows unusually strenuous labour or sudden movements. The pain may be explained by a synovitis of the sacro-iliac joint; since the nerve lies over this joint the joint inflammation may produce irritation of the nerve. When associated with lesions of the joint the symptoms begin with great intensity in some cases, or they may come on gradually. Before the diagnosis of sciatica is made a complete examination of the patient is necessary, and disease of the nervous system and affections causing pressure on the nerve must be excluded. Hertzler states that stretching of the nerve by the bloodless method gives only indifferent results. The injection of fluids in or about the nerve has been practised for many years, and the author finds that the use of 1 per cent. solution of quinine and urea hydrochloride is a specific for sciatica. The nerve is injected where it crosses the neck of the femur. A single injection is sometimes sufficient, but usually several are required. He adds that the condition does not recur after this form of treatment, and that complications are rarely encountered.

566.

**Spontaneous Gangrene in Syphilis.**

F. KAZDA (*Deut. Zeit. f. Chir.*, October, 1926, p. 74), who records two illustrative cases with a review of the literature, discusses the question of the influence of syphilis on the development of so-called "spontaneous gangrene." His conclusions are as follows: (1) It has not yet been determined how far syphilis is responsible for the development of an arterio-sclerosis which can lead to gangrene, although the possibility of this connexion was conceived by Virchow. (2) The influence of syphilis on the development of endarteritis obliterans was at first denied, later accepted, and recently again doubted. (3) Late syphilis has the power to produce changes in the peripheral vessels which may give rise to trophic disturbances. There is no proof that syphilis can produce a true, purely spastic Raynaud's disease. (4) Very little is known of changes in the peripheral vessels caused by syphilis in the form of non-specific mesarteritis or periarteritis, or of multiple gummata of the vessel wall leading to gangrene. (5) There are, however, vascular changes in the extremities caused by syphilis which may lead to gangrene. Anatomically two types may be described—namely, multiple gummata in the vessel wall, and infiltrations of lymphocytes and plasma cells, principally in the media and adventitia. The clinical course of such cases is characterized by short prodromes of an angio-spastic character. In a syphilitic subject, attacks of pain which are often extremely violent and of a neuralgic character, the appearance of gangrene and ulceration, rapid change in the coloration of the peripheral part of the affected extremity, simultaneous involvement of several extremities, and relative mildness of the process. The frequency of such conditions appears to be much greater than the very few cases on record suggest. Treatment consists in vigorous antisymphilitic therapy. The prospect of recovery is good in cases where large vessels have not been obliterated.

## Therapeutics.

567.

**Strophanthus and Renal Disease.**

L. GRAVIER (*Journ. de Méd. de Lyon*, October 5th, 1926, p. 491) finds that strophanthus, strophanthine, and onabaine have a direct action on the kidney, like that of cantharides; this explains the oliguria, haematuria, and lumbar pain which occasionally follow the intravenous injection, and justifies the warnings regarding the use of these drugs in cases of renal disease. Gravier states that Bright's disease is not, however, an absolute contraindication, and these patients need not be deprived of the cardiotonic effects of strophanthus or of onabaine, but it is necessary to use these drugs in minimal doses. In doses of 1/8 to 1/4 mg., onabaine may be very useful in Bright's disease, as in heart disease, although it is necessary to guard against serious effects. Neither the mode of elimination of these drugs nor their toxic action is fully understood, but the rapidity with which serious

symptoms sometimes follow the intravenous injection of strophanthine (in about thirty to sixty minutes) leaves little doubt that the renal factor plays an important part. It has been stated that these drugs cause renal hyperaemia and lesions of the cells of the convoluted tubules, similar to those produced by cantharides. Gravier describes the case of a woman, aged 59, who suffered from chronic nephritis with hypertension (240/140 mm. Hg). The patient was treated at Royat and Viehy, but on her return to Lyon, she suffered from slight attacks of pulmonary oedema and dyspnoea. She received an intravenous injection of 1/4 mg. of onabaine, and fifteen minutes later had a violent attack of lumbar pain accompanied by oliguria. The treatment was discontinued and lumbar wet cupping was substituted in addition to hot baths; this treatment produced moderate diuresis. The author concludes that for the kidney, as for the heart, the margin of safety of both strophanthus and onabaine is very narrow. The effective dose is very nearly toxic, but under careful supervision these drugs may yield good results in both cardiac and renal cases when minimal doses (1/10 to 1/4 mg.) are employed.

568.

**Iodine in Exophthalmic Goitre.**

To illustrate the good effects resulting from the use of iodine J. SLOSSE (*Bruxelles-méd.*, November 1st, 1926, p. 17) cites five cases which showed the cardinal symptoms of exophthalmic goitre—tachycardia, nervous and emotional symptoms, exophthalmos, loss of weight and energy, and increase in the respiratory exchanges. The patients' ages ranged from 22 to 61 and treatment consisted in the daily administration of 30 drops of Lugol's solution (5 per cent. iodine and 10 per cent. potassium iodide). With this method all the patients markedly improved, showing a lessening of basal metabolism, a rapid diminution of the cardiac pulsations, and an increase in weight. Slosse claims that this treatment is applicable only in cases of actual Graves's disease, and distinguishes between this and a closely related condition, toxic adenoma or adenoma with hyperthyroidism. While these two conditions have many characters in common, there are important diagnostic differences, a fundamental one being the type of nervousness. In Graves's disease there are small movements such as frequent changing of position, crossing of the legs, and adjusting of different parts of the dress—symptoms which are never exhibited in toxic adenoma. In the latter condition also, though the gland increases bilaterally, there is asymmetry in its development, and on palpation one or more resistant nodules are felt. In Graves's disease the gland not only develops bilaterally, but also symmetrically, a cardiac souffle can always be heard at the upper and lower poles of the gland, and to the palpating finger the gland feels soft and gives a thrill sensation. Finally, in Graves's disease the respiratory exchanges are more raised than in toxic adenoma. Concerning the length of treatment, the author states that in the majority of cases the nervous symptoms are ameliorated and the tachycardia and basal metabolism lessened in twelve to fifteen days, certainly in three weeks, and that this treatment is an excellent preparation for surgical intervention. Slosse adds that basal metabolism provides the criterion for the diagnosis and treatment of thyroid affections.

569.

**Congestion Treatment of Chilblains.**

L. J. C. MITCHELL (*Med. Journ. of Australia*, October 2nd, 1926, p. 449) believes that the blood state is a factor in the causation of chilblains, as is evidenced by the improvement after treatment with calcium salts, and that this condition is a vasomotor disturbance with a curious patchy distribution. The parts mostly affected are the dorsal aspects of the fingers and toes and the margin of the external ear, while the tip of the nose, the outer aspects of the fifth metatarsophalangeal joints, and the internal posterior and external aspects of the heel are more rarely attacked. At all these points there is a minimum of subcutaneous fat, the skin, tendon, and sheath being practically the only covering of the bone or cartilage. These considerations led the author to think that any method of congesting the parts would relieve the condition, and he accordingly tried Bier's congestive treatment. Congestion was obtained by applying a few turns of a 2½ in. rubber band just below the knee or just above the elbow over a stocking or the underwear, with just enough tension to be felt but not cause pain. This gave relief, and after continuous wear would clear up the most obstinate crop of chilblains. Mitchell holds that the elastic pressure in conjunction with muscular movement and with arterial pulsation provides continuous massage which keeps the blood and lymph in these areas on the move, and so the lesions are cured. Three days sufficed to banish all swelling, and the only untoward consequence was the possibility of accelerating the development of varicose veins. The author now uses gum-rubber tubing of the weight of medium surgical gloves. Lengths of ¾ to 1 in. are cut, and the band

obtained is stretched over the affected part at its greatest thickness. A sock is then put on, and the band stays in place whether the body is at rest or not. The hands are best treated by the wearing of rubber gloves at night only, but these must fit snugly. The toes can be treated by the cuff of the rubber glove worn round the foot or by a thin piece of sponge rubber held firmly in place by sticking-plaster. Pressure must be firm but not painful. Breathing of the skin does not preclude the use of this method. In this event the area is cleaned, dusted with talc powder, and covered with a thin piece of lint, over which the band is applied. Relief from the itching and throbbing is said to be instantaneous, and after a day or two the part is normal in appearance save for a little desquamation.

## Laryngology and Otolaryngology.

### Influenzal Laryngitis.

570. M. CANNAC (*Rev. de Laryngol.*, October 15th, 1926, p. 571) has drawn up the following classification of the varieties of influenzal laryngitis. (1) The acute catarrhal form presents the symptoms and course of ordinary acute catarrhal laryngitis. (2) The infiltrative oedematous form, like the first, is one of the most frequent varieties, and is characterized by a sensation of obstruction or pricking in the pharynx or larynx, and particularly by violent pain on swallowing and phonation. These symptoms increase towards 4 or 5 p.m., are accompanied by difficulty in breathing, and reach their height about midnight. Towards morning the symptoms decrease and almost completely disappear. (3) The ulcerative form is difficult to diagnose from tuberculous laryngitis; a distinction is made by the history and course of the disease and by the general condition of the patient and his antecedents. In mild cases small superficial ulcers are found at the posterior insertion or less frequently on the anterior third of the vocal cords. In the more severe forms the ulcers are deeper and may invade the whole extent of the vocal cords. The lesions are usually bilateral. This form is very refractory to treatment, especially in persons who have to make use of their voice. (4) The phlegmonous form is the first stage of an infection which will give rise to an intralaryngeal abscess; it may become absorbed or open spontaneously. (5) In the necrotic form the perichondritis may be localized to the thyroid or cricoid cartilage, or the whole of the larynx and trachea may be involved, death occurring in three or four days. Local treatment will vary in each case; in some instances both medical and surgical measures will be required.

### Local Applications of Vaccine in Otolaryngology.

571. HELMOEDT (*Le Staph.*, September 18th, 1926, p. 851) describes the treatment of furuncles of the nose and of the auditory meatus by means of vaccine, and the post-operative treatment of mastoid abscess with vaccine and with the antiseptic of Bertrand. In treating furuncles the antiseptic is first moved by applying carbolic acid in glycerin for six hours. The end of this time the cuticle can be peeled off readily. The carbolic acid acts as a disinfectant. The vaccine is then applied on pieces of cotton-wool in the depths of the furuncles. The dressing is repeated until all the furuncles have disappeared and for a short time afterwards. The vaccine is almost unknown. A number of cases are recorded in which the cavity of a mastoid operation has been dressed for a few days with balsam of Peru and then with the vaccine, with very rapid and satisfactory calcification. A more severe case developed erysipelas, and the plaques of erysipelas was patoted with the antiseptic of Bertrand (two-thirds nutrie streptococcus and one-third antistaphylococcus). An abscess formed in the deeper parts of the neck and was treated with streptococcus after being opened and drained. Recovery was rapid. No intravenous injections were given as there was no evidence of general dissemination of the infection.

### Foreign Bodies in the Upper Air Passages.

572. D. WISKOFSKY (*Arch. Internat. de Laryngol.*, November, 1926, p. 1052) gives his conclusions based on the study of twenty cases of impaction of foreign bodies in the air passages. The foreign body may cause complete obstruction, or act as a ball-valve, or produce a rigid stenosis of the bronchial tube. If inspiration is prevented, whether expiration is continued or not, it would be expected that a condition bordering on atelectasis would be produced, with consequent fixation of the diaphragm and lower ribs, and deviation of the mediastinum over to the affected side. The author states that this is, however, often not the case, and a condition of emphysema is produced, as would be expected where inspiration is still admitted and where expiration is prevented or hindered.

The ribs and diaphragm are again fixed and the mediastinum is displaced to the opposite side. In one case this condition culminated in a rupture, and a subcutaneous emphysema resulted. A violent attack of coughing appeared to be the deciding factor. Wiskovsky does not consider that the ball-valve condition is likely to persist for very long, since the inflammatory swelling of the bronchial mucosa will fix the obstructing body and probably completely close the tube. In experimental cases it is found that the air is absorbed by the blood, and the partial pressure of oxygen and carbon dioxide has become equivalent to that of the venous blood; but this does not hold good in pathological conditions in man.

573.

### Congenital Webbing of the Larynx.

R. GUASTALLA (*Arch. Ital. di Otol.*, September, 1926, p. 476) describes the case of a woman who had had a harsh unpleasant voice since infancy. At the age of 30 she began to have some dyspnoea, and on examination a triangular diaphragm was found between the anterior ends of the two vocal cords. The condition appeared to have existed from birth and there were no signs or history of tuberculous, syphilis, or diphtheria. The author states that in a similar case the diaphragm was removed and was found to consist of a mass of interlacing fibres with a few blood vessels, a very small cellular content, but no glandular elements. He has made sections of the larynx of four early human embryos and found in all of them a fold at the anterior commissure of submucous connective tissue, with one or two glandular elements at its base. The upper portion of this fold appeared to take part in the formation of the epiglottis, but the lower part disappeared. This lower part was present in embryos of 6 and 7½ cm., but only a trace was present in embryos of 8 and 9½ cm. It is suggested that when this lower part, which lies at the level of the vocal cords, persists, it gives rise to the structure known as the congenital diaphragm or web of the larynx.

## Obstetrics and Gynaecology.

574.

### Painless Childbirth.

D. DEUTSCHMAN (*Med. Journ. and Record*, October 6th, 1926, p. 421) records clinical observations on painless childbirth by the synergistic method of Gwaltney, which is based upon the interaction of magnesium sulphate, quinine, and ether shortens labour by softening the cervix and preserving the patient's strength for the stage of expulsion, without bad effects on the mother or child. The patient's eyes are roveled and the ears closed with cotton-wool to diminish external stimuli; when the os has become dilated to admit three fingers, with palms at about seven-minute intervals, an intramuscular injection of 2 c.cm. of a 50 per cent. solution of magnesium sulphate with 1/4 grain of morphine sulphate is given during one of the pains. If no sedative effect follows within twenty minutes another 2 c.cm. of the solution, without the morphine, is administered. With the advent of slight drowsiness a high retention enema is given of a warm mixture containing 20 grains of quinine, 45 minims of alcohol, and 24 oz. of ether with olive oil up to 4 oz., the rectum and entire anal region being well lubricated with oil. This is usually followed by a semi-stuporous condition, but if no analgesia results within an hour a third administration of 2 c.cm. of solution should be given. The effect lasts about four hours, but if by then labour has not been completed the whole treatment, omitting the morphine, may be repeated. In a series of cases selected at random Deutschman found that the results were uniform and highly gratifying, and he claims that the method eliminates the painful sensations associated with the uterine contractions of the greatest part of the first stage of labour, frequently corrects malpositions, is simple and safe in performance, and without liability to post-partum haemorrhage or other complications.

575.

### Calcified Myoma.

G. JEANNENEY (*Bull. Soc. d'Obstet. et de Gynecol. de Paris*, October, 1926, p. 484) remarks that calcification in a uterine myoma does not imply quiescence, and must be regarded, not as a favourable transformation, but rather as a complication which may cause a return of pain or bleeding or accidents due to compression. He records a case in which a woman, aged 48, who for ten years had been known to have a myoma of the body of the uterus (the tumour showing stony hardness for one year), came to operation for rectal obstruction. The acute symptoms were due to pressure of two intrapelvic myomas, the size of the fist, which from microscopic examination and from the findings at repeated clinical examinations were believed to have developed



between the ages of 46 and 43. Acute abdominal symptoms had been caused by the older calcifying tumour on four occasions during the four years prior to operation. According to E. WEBER (*ibid.*, p. 523), calcification in uterine myomas begins as a rule in the centre and rarely affects the whole of a large tumour. Usually the myoma is pediculated and the most common complication is the separation—due to pedicular torsion or atrophy—of the calcified tumour, leading to formation in the case of a submucous myoma of a uterine calculus, or in that of a subserous one, of an abdominal foreign body which may perforate the bladder or rectum. Weber records a case of intestinal obstruction in an 11-year aged girl. The rectum had been compressed by a pediculated subserous homogeneously calcified myoma of the fundus weighing 25½ oz., but there were no peritoneal adhesions and the stalk was not twisted.

#### 576. The Prognosis of Cervical Cancer.

A. PLAUT (*Surg., Gynecol. and Obstet.*, October, 1926, p. 450) has considered the possibility of basing the prognosis in cervical carcinoma on the type of the tumour cell present, whether spinal, transitional, or fat spindle cells, and concludes that the histological picture of this condition does not allow groups to be defined according to the type of cancer cell found. In determining prognosis constitutional factors have also to be considered and the influence of age must be remembered. Plaut therefore believes that the clinical classification of this disease remains the best prognostic aid, though the general histological aspect of the tumour may assist. His conclusions were based on the clinical and histological data of 149 cases, and he found that tumours with a very irregular form of growth were usually associated with early death. Adenocarcinoma of the cervix was excluded from the investigation.

#### 577. Repair of the Lacerated Cervix.

A. MUELLER (*Zentralbl. f. Gynäk.*, October 16th, 1926, p. 2697) describes his method of dealing with a torn cervix in a private home with or without assistance. Severe lacerations may occur spontaneously, are not uncommon, and may be suspected when unusually severe pain is observed. Mueller uses either two Winter's toothed forceps, which hold the soft cervix better than an ordinary volsellum, or Mauermöller's, in which the teeth are placed sideways. The forceps are applied to the anterior and posterior lips, and the cervix is pulled down. While one hand holds the forceps, the other investigates the direction and extent of the tear; the bleeding may be temporarily controlled by applying forceps to the apex and ends of the tear. The author uses a suture which can be easily sterilized and left in indefinitely, and large size fully curved needles to give as wide a grip as possible. If no assistance is available the suturing must commence below; the left hand pulls down the cervix and its forefinger controls the stitch from within, making sure that it goes through the whole depth of the wall. A Kocher's forceps is put on the end of each suture; the cervix is thereby pulled further down and the tear stitched upwards to its apex. The last suture is particularly important, as it must catch the torn vessels; the ureter is not likely to be included, but the possibility should be kept in mind. If an assistant is available he should hold the retractor and pull down the cervix; the suture may begin from above downwards and is controlled by the finger as before. When no instruments are at hand haemorrhage may be arrested by Dührssen's method of packing; if nothing else is available, freshly washed linen cloths, boiled or wrung out of an antiseptic solution, may be used. Before packing is performed the vulva and surroundings, and the operator's hand and forearm, should be thickly smeared with germicidal soap, which lubricates the parts and is more suitable for such manipulations than chemical antiseptics like iodine, which dry up the passages.

### Pathology.

#### 578. Effect of Heat on Serum Agglutinins.

C. A. MALLARDO (*Il Morgagni*, September 19th, 1926, p. 1185) has studied the effect of heat on serum agglutinins. An anti-coli serum of a titre of 1 in 500 was divided into four portions, which were heated at 55°, 60°, 65°, and 70° C. respectively for thirty minutes. Each portion was then put up against a suspension of *B. coli* and incubated for six hours. The titre of the serum heated to 55° was now only 1 in 400; of that heated to 60° only 1 in 200; of that heated to 65° only 1 in 100; and of that heated to 70° less than 1 in 50. The same serum was now diluted 1 in 5, so as to have a titre of 1 in 100; this diluted serum was divided into four portions as before, and each was heated for thirty minutes. The result of the agglutination test now showed that the portion heated to

55° had a titre of only 1 in 40; that heated to 60° of 1 in 20; that heated to 65° of 1 in 10; while that portion heated to 70° had no agglutinating power whatever. From these experiments it would appear that the effect of heat on the agglutinating power of a serum depends primarily on its content of agglutinins; in the case of a high titre serum exposure to heat of given intensity for a specified time will apparently be much less than in the case of a low titre serum; in the former instance the agglutinin titre will be lowered, in the latter instance it may be completely abolished. The practical conclusion is that if it is wished to compare the effect of heat on two or more different sera they should first of all be diluted till they are of the same titre. Experiments were performed to test this conclusion. Serums prepared against *V. cholerae*, *B. proteus*, and *B. pest* were diluted till the titre for their homologous antigens was the same. Each was divided into four portions, which were exposed to heat in the specified manner. When put up against their respective antigens they all gave the same readings. Thus, all those portions heated to 55° agglutinated to 1 in 40; all those heated to 60° agglutinated to 1 in 20 and so on. The author would explain the discordant results so frequently reported in the past by assuming that the serums compared were not of the same titre, and were therefore affected to different degrees by the same amount of heat.

#### 579. Topographical Selectivity of Bacteria.

A. C. NICKEL (*Joinn. Amer. Med. Assoc.*, October 2nd, 1926, p. 1117) reports a number of experiments on rabbits injected with streptococci recovered from patients suffering from arthritis, myocarditis, and lesions of the stomach, eye, and skin. The general results indicated that the organism tended to settle in those parts of the body which were attacked by disease in the patient. Thus a strain of streptococcus cultured from the teeth, tonsils, or other situation of a man suffering from arthritis was more likely to give rise to arthritis in rabbits than was a strain recovered from a patient with myocarditis or gastric ulcer. Of 328 rabbits injected with cultures from patients with arthritis 51 per cent. developed arthritis and only 5 per cent. lesions of the stomach; whereas of 190 rabbits injected with cultures from patients with gastric or duodenal ulcer 40 per cent. had lesions of the stomach and duodenum, and only 6 per cent. developed arthritis. Again, 39 per cent. of animals injected with streptococci from patients with myocarditis developed heart lesions, whereas only 3 per cent. of animals injected with strains from arthritic or gastric patients developed heart lesions. The highest incidence of specific localization was observed in cultures taken from infected teeth.

#### 580. Bactericidal Power of the Blood and Serum.

A. GEORGEVITCH (*C.R. Soc. de Biologie*, October 22nd, 1926, p. 954) has studied the bactericidal power of human serum for a number of intestinal organisms. The blood was drawn aseptically, and the serum used within the first twenty-four hours. A drop of an eighteen-hour broth culture, diluted in saline, was added to 0.5 c.c.m. of serum in a small tube; a similar drop was added to 0.5 c.c.m. of saline in another tube, which acted as a control. The number of organisms alive at the start and after varying times of incubation at 37° C. was then determined by plating on agar. The results showed that all the bacilli studied—four strains of dysentery, *B. typhosus*, *B. paratyphosus* A and B, and *V. cholerae*—were killed in six hours by a normal serum. Not all serums, however, were equally active. The actual time taken for destruction of the organisms apparently depended to some extent on the initial inoculation, but even when a considerable number of organisms were added, the mixtures were sterilized in a few hours. *B. coli* proved resistant; a few organisms perished during the first hour or two of contact, but afterwards multiplication began and increased, till in twenty-four hours the number of colonies was too great to be counted.

581. L. K. WOLFF (*Nederl. Tijdschr. v. Geneesk.*, September 25th, 1926, p. 1411), as the result of experiments on rabbits, concludes that by the intravenous injection of dead staphylococci, or by rubbing living staphylococci into the skin, it is possible to confer a bactericidal power on the blood which it did not possess previously. This acquired bactericidal power is specific, being caused by leucocytes which kill the bacteria rather than by phagocytosis. The serum or plasma itself does not appear to contribute to the formation of this bactericidal power. The blood and serum of normal and immunized rabbits agglutinate staphylococci. Wolff has not found that the addition of antistaphylococcal serum has any favourable effect on the bactericidal action on staphylococci either *in vivo* or *in vitro*. The bactericidal power of the blood is diminished or destroyed by the addition of staphylococcus toxins.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 42. Syphilitic Pleurisy in Congenital Infection.

After reviewing the literature on congenital syphilitic affections of various organs, especially the lungs, G. MACCIOTTA (*La Pediatria*, October 15th, 1926, p. 1097) describes two cases of well marked congenital syphilis with pleurisy of lactic origin. The first patient at the age of 3½ developed movements, which were relieved by lumbar puncture and rapidly cured by antisyphilitic treatment. The second case was that of an infant aged two months, with severe signs of congenital syphilis and dyspepsia, which, after resisting the usual treatment, yielded rapidly to mercury and arsenobenzol. The pleurisy which developed, bilateral in the first case, were dry at first and characterized by an unusually rasping rub. Subsequently a moderate effusion formed, the fluid not being characteristic in any way. The pleurisy apparently started in the parietal pleura. The dullness in both cases was in the shape of a triangle, with one side in the paravertebral line, and extending obliquely outwards. It was surrounded by an increasingly resonant area of irregular shape, and there was a zone of normal resonance below it. There was no evidence of involvement of the lung. The signs rapidly cleared up under treatment with mercury and arsenobenzol, after salicylates and iodides had failed. The case of the pleurisy had been accompanied by great restlessness and pain. The cough was suggestive of pertussis. A syphilitic pleurisy: extension from the lung, from a mediastinitis, from syphilitic tracheo-bronchial glands, and a primary involvement of the pleura. He places these two cases in the last class.

### Prophylaxis of Measles.

W. H. PARK and R. G. FREEMAN (*Journ. Amer. Med. Assoc.*, August 21st, 1926, p. 556) report upon the prophylactic use of measles convalescent serum from observations upon over 1,500 children who received preventive injections; in 979 cases the data as to exposure, dosage, and ultimate success were fairly accurate. The exposure was direct in 630 and indirect in 349. No bad results followed the injections. It was found that 6 c.c.m. of convalescent serum or plasma injected into a child under 3 years of age, and from 6 to 10 c.c.m. for older children, usually sufficed to prevent infection, giving immunity for about a month; if infection followed, the attack was modified and uncomplicated, and the immunity lasting three months these were still abundant though probably as in amount. They conclude that by its prompt use serious outbreaks can be prevented, with the consequent elimination of pneumonia complications. The method of preparation is described, but the difficulty of obtaining a continuous supply is in amount. The method of preparation is supply blood for the purpose. S. V. HAYS and J. BLUNT (p. 558) conducted a similar investigation upon 174 children. The plasma was collected from one-half to four after deservescence, and was stored for from one-half to four and a half months before being used. It was found that 5 per cent. of all the children were protected for three weeks and 51 per cent. for three months or more, while with plasma collected one and three months after deservescence 89 per cent. were protected for three weeks; the earlier the plasma collected after deservescence the greater was its protective value. Of the 174 children injected with plasma appeared to be very little difference in the protective value of plasma injected from the fourth to the seventh day after exposure, but if injected still later it did not protect or modify the disease. The authors found that injections of from 5 to 7 c.c.m. whole blood collected up to three months after deservescence afforded protection for two months or more in 41 per cent. of cases, and where it failed to protect it modified measles developing even two months after injection. They regard the prophylactic use of convalescent blood as valuable for institutions and in private cases in which the duration of the exposure is known.

564. J. A. TOOMEY (*Amer. Journ. Dis. Child.*, September, 26, p. 401) records his observations on the prophylactic use of measles convalescent serum at the Cleveland City Hospital,

Babies' and Children's Hospital, and in private practice. The serum was obtained from donors eight days after the rash began to disappear, was inactivated one hour at 56° C., and sealed and stored in ice, no preservative being added. In some cases the serum was left to twelve months-old and still seemed to be potent. Intramuscular injections of 3 to 10 c.c.m. of convalescent serum were given to 389 persons in all who had been exposed to measles; only 21 contracted measles—13 before and 8 after the original incubation period of fourteen days. In all the injected cases, however, the symptoms and signs of measles were attenuated.

555. S. PROGULSKI and F. REDLICH (*Klin. Woch.*, August 6th, 1926, p. 1461) report on the prophylactic measles serum prepared under Degkwitz's directions from sheep. The injection consists of 1 to 2 units (10 to 20 c.c.m.) of the serum between the seventh and tenth day of the incubation period. With the exception of Wiese, subsequent investigators with this serum, such as Knapo, Kochmann, and Mosse, could not confirm the good results obtained by Degkwitz. From trial of the animal serum Progulski and Redlich conclude that Degkwitz's serum has no power to protect children from an attack of measles; that it exercises no attenuating effect upon the course of the disease, and does not prevent serious complications; and that in most cases it causes an unpleasant serum sickness, and often has an inhibitory action on the appearance of the symptoms of measles, so that the incubation period is prolonged.

### Hyperleucocytosis in Whooping-cough.

A. G. MITCHELL and L. S. FRIEDMAN (*Arch. of Pediat.*, September, 1926, p. 617) review the literature and record a case of a male infant, aged 4 months, in the third week of whooping-cough complicated by bronchopneumonia, who had a white blood cell count of 233,608, of which 48 per cent. were polymorphonuclears, 45 per cent. lymphocytes, 3 per cent. large mononuclears, 2 per cent. transitional, and 2 per cent. unclassified cells, a few of them resembling myelocytes. The platelets seemed normal in number. No necropsy could be obtained, so that leukaemia was not absolutely excluded, but the absence of splenic or marked lymphatic enlargement, the apparently normal number of platelets, the age of the patient, and the history did not suggest that diagnosis.

## Surgery.

### Cholecystitis in Situs Transversus.

R. B. BETTMAN and H. F. BINSWANGER (*Amer. Journ. Med. Sci.*, October, 1926, p. 570) report a case of acute cholecystitis associated with transposition of the viscera. The patient, aged 49, was admitted to hospital with a history of being awakened that morning with an excruciating pain in the abdomen, radiating along the costal margin into the left scapular region. He was nauseated and vomited once. There had been two previous attacks separated by an interval of several years. He had never been jaundiced nor had he noticed clay-colored stools. On examination the sclerotics were found to be slightly icteric; the temperature was 100.6°; the white cell count was 20,500. He had severe pain in the upper part of the left side of the abdomen and there was definite tenderness and rigidity over this area. The right side of the abdomen was not tender and showed no rigidity. From the examination of the abdomen it would have been impossible to make a definite diagnosis. The most probable explanation would have been an infarct of the spleen, a left paraneuritic abscess, or perhaps a perforating ulcer of the cardiac end of the stomach. Examination of the chest showed that the heart was on the right side, with the apex beat definitely palpable in the right mammary line. There was no dullness under the right costal margin; where the usual liver dullness should have been there was very marked tympany. X-ray examination after a barium meal showed the stomach to be on the right side, the duodenum crossing over towards the left. A typical gall-bladder shadow as well as a "gall-bladder seat," or filling defect of the duodenum, was seen by radiological examination to the left of the mid-line. The day following admission to hospital the patient felt very much better, and except for a slight increase in the subicteric tint of the sclerotics was apparently well. Palpation of the

abdomen now definitely revealed the liver border under the left costal margin. Two days later the symptoms had completely disappeared except for a slight tenderness over the region of the left-sided gall bladder. The patient refused further treatment and went home the following day feeling quite well. An electro-cardiogram showed an inversion of all the deflections in Lead I, indicative of dextrocardia. The patient was right-handed; the right testis was lower than the left. The rectal examination gave no assistance in the diagnosis of transposed viscera. The patient was not a twin. The authors add that this case indicates the necessity for making a complete physical examination in all obscure abdominal conditions.

#### 588. Treatment of Diffuse Peritonitis.

THE bactericidal action of acid solutions has been attributed to the hydrogen-ion concentration, and L. SCHÖNHAUER (*Zentralbl. f. Chir.*, November 6th, 1926, p. 2834) finds that the best bactericidal results were obtained by a mixture of 4.5 c.c.m. of dilute hydrochloric acid, 1,500 c.c.m. of sterilized distilled water, and 1 gram of pepsin (digestive power 1 in 3,000). This solution has been used in the treatment of diffuse peritonitis following the perforation of gastric and duodenal ulcers. The author finds that pepsin increases the activity of the 3 per cent. hydrochloric acid solution, and that when 1 to 1.5 litres of this solution are introduced into the peritoneal cavity of healthy dogs the presence of the acid cannot be recognized after five minutes at the most. Schönhauser describes the case of a man, aged 47, with severe general peritonitis after a perforated duodenal ulcer. The abdominal cavity was irrigated with three litres of the acid pepsin solution, and the wound was closed in three layers; the patient made a complete recovery. Schönhauser states that between January, 1922, and July, 1926, 117 patients were treated by this method at Eiselsberg's clinic with a 12.8 per cent. mortality. In this clinic the death rate, following perforation of the stomach, prior to the introduction of this treatment, was 28 per cent., while among 71 cases treated with the solution the death rate fell to 9 per cent. Ten patients with perforation of the appendix, submitted to early operation and treated with the solution, recovered without a single death. Similarly, in perforation of the gall bladder, of 6 patients treated without the acid pepsin solution 3 died—a death rate of 50 per cent., while among 6 other patients suffering from the same disease there were no deaths. To summarize the results: among 164 cases in which the solution was not used there was a death rate of 34.8 per cent., as compared with 117 patients treated with the solution of whom only 15 died—a death rate of 12.8 per cent. The value of such biological antiseptics is clearly shown by the facts that there was no other variation in technique, nor were the operations performed earlier.

#### 589. Diffuse Gastric Polypsis.

H. BRUNN and F. PEARL (*Surg., Gynecol. and Obstet.*, November, 1926, p. 559) report five proven and seven probable cases of diffuse gastric polypsis (adenopapillomatosis gastrica) with a study of every case (84 in all) reported in the literature. They ignore single isolated growths and deal only with cases showing three or more benign epithelial polypoid growths of the gastric mucous membrane; 55 per cent. of the cases occurred between 50 and 70 years of age, the proportion of males to females being three to two. The condition may be either congenital in origin or arise from an inflammatory basis, and it may occur as distinct adenomatous polyps or as slightly elevated hypertrophic plaques, en masse variety, probably telangiectatic in origin. Symptoms may be entirely absent, but when present are those of any gastric disorder—namely, epigastric pain, distension, vomiting, etc. Achylia is almost always present, and this, combined with the presence of fresh blood and abundant mucus, should suggest the diagnosis. Haematemesis is rare, but occult blood is frequently present. Pedunculated masses, especially in the region of the pylorus, are more likely to produce symptoms than broad-based ones and those on the greater curvature. Radiograms properly interpreted are said to offer the most valuable aid in diagnosis, the characteristic finding being irregular defects in the margin of the shadow at the site of the tumours, which are usually upon the greater curvature; gastroscopy and examination of shreds in gastric washings are also useful diagnostic factors. Treatment is surgical, and since malignant degeneration is liable to occur, as much of the tumour area as possible should be excised and the remaining polyps be individually excised and their bases thoroughly cauterized. Local anesthesia, with or without splanchnic block, was found the most satisfactory type.

## Therapeutics.

### 590. Treatment of Typhus by Injection of Cerebro-spinal Fluid.

C. ZIELINSKI (*Paris méd.*, September 18th, 1926, p. 225) records his observations on the treatment of certain infections by subcutaneous or intravenous injection of the patient's cerebro-spinal fluid. The accumulation in it of antibodies due to some elective action of the choroid plexus (Stern) or to permeability of the vessels in morbid states (Kalka) indicated that the cerebro-spinal fluid has curative properties. When employed at the suitable moment in typhus the treatment was found to shorten the duration of the disease; it has more soothing effect than any narcotic, raises the blood pressure, increases diuresis, and facilitates deglutition. Sometimes the results were very striking, and patients who the day before the injection had been in a grave condition became convalescent the following day. Zielinski concludes that injection of the patient's cerebro-spinal fluid should be employed in all severe cases of typhus on the eighth or ninth day of disease. The treatment should also be tried in a case of meningitis and lethargic encephalitis, but only in the initial stage of the disease, since the fluid is infected late throughout the spinal canal, and its use can only rarely give rise to good results.

### 591. Treatment of Staphylococcal Infections by the Bacteriophage.

P. HAUDUROY, P. CAMUS, and R. DALSACE (*Presse Méd.*, September 22nd, 1926, p. 1195) review the work of d'Hérelle and other investigators on the action of bacteriophages in infectious diseases. They themselves concentrated on staphylococcal infections: the cases treated included cutaneous, oto-rhinological, and uro-vesical conditions. The bacteriophages used were particularly active, and were prepared according to the method of Hauduroy. The authors state that the greatest precautions should be taken to secure sterility of the bacteriophage; it should never contain even a trace of visible organized element, and rigorous control tests should be made. Before commencing treatment the authors always test *in vitro* the lytic power of the bacteriophage. They assert that the activity and polyvalence of the bacteriophage used was such that the very great majority of staphylococci were lysed *in vitro*, and that treatment is useless unless such control lysis occurs. Treatment should be both general and local. The general treatment consists of two or three injections (subcutaneous) at twenty-four-hour intervals of 2 c.c.m. of the bacteriophage. It is said to be useless to increase the dose, and under no pretext should more than

in peptone water or bouillon, the injection of which into the vein causes a grave and, possibly fatal, general reaction. Local treatment aims at carrying the curative product into contact with the infective focus. In such conditions as furunculosis and anthrax the injection is made around or into the lesion itself. If the focus is open and suppurating, compresses of lint soaked in the bacteriophage can be applied. In other cases, applications with a brush (as in mycosis), local baths, and gargles can be given. If vesical or renal infection is present, 10 to 15 c.c.m. of the bacteriophage should be introduced into the bladder or pelvis of the kidney to be retained by the patient as long as possible. Local treatment can be repeated four or five times. During the course of treatment, all medication by antiseptics or quinine salts should be stopped as these have an antibacteriophage action. The authors state that the administration of this bacterial principle produces only slight reactions and that the results are excellent and rapid, the symptoms subsiding in a few days.

### 592. Ultra-violet Rays in Tetany.

IN view of Woringer's discovery that ultra-violet rays caused rapid diminution of mechanical and galvanic excitability, and of other tonic manifestations, with a corresponding increase of the blood calcium to normal, M. MIRAGLIA (*La Pediatria*, October 15th, 1926, p. 1116) similarly treated twelve children suffering from tetany. Nine of the patients had extrinsic signs of tetany; in three of these there was also laryngospasm, in two carpopedal spasm; and in seven rickets. In the three remaining cases the tetany was latent. In all the blood calcium showed a low level varying from 58 to 80 mg. per cent. (Ward's method). Three healthy and two epileptic children were taken as controls. In these the lowest blood calcium level was 110 mg. per cent. In four other cases of simple rickets, in which no single evidence of tetany could be elicited, the lowest blood calcium was only 98 mg. per cent. No drug which could influence the spasmodic

or the blood calcium was administered during the investigation. A single exposure, lasting from a minimum of five minutes to a maximum of thirty-five minutes, was made on alternate days, increasing by five minutes. A human lamp at one metre distance was used. Miraglia concludes that hypocalcaemia is a constant finding in tetany, and that its absence in cases of other convulsive disorders is of value in the differential diagnosis. There is no correspondence between the hypocalcaemia level and the degree of manifestation of the tetany. Ultra-violet rays are capable of raising the blood calcium level to normal over a long period. With the return to normal the clinical signs of spasmodophilia disappear first and then the mechanical and electrical phenomena.

593. **Treatment of Eczema with Intravenous Saline.**  
J. SEELIG, T. BANSKY, and E. LITNER (*Med. Klin.*, October 15th, 1926, p. 1610), having noted the good effect of intravenous injections of 10 per cent. sodium bromide on moist eczematous conditions, conducted experiments to determine whether this was due to the sodium or to the bromine ion. They came to the conclusion that the former was concerned, and they therefore gave sodium chloride in 10 c.cm. doses daily for six to nine days with equally good if not better results. In the treatment of twenty-eight cases, including both chronic and acute types, only five patients did not improve, and in no cases did any ill effects follow the treatment. The authors remark that it was an old custom to treat skin conditions by the subcutaneous or intravenous injection of large quantities of normal saline solution, and that their method is merely a simplification of this procedure. They offer no explanation as to the rationale of the treatment.

## Radiology.

594. **Radiography in Fracture of the Pelvis.**  
VERGÓZ (*Rev. de Chir.*, No. 5, 1926, p. 273) observes that radiography has shown that pelvic fractures are far more common than has been believed hitherto; when the fracture is not accompanied by gross displacements or visceral injuries it may not be recognized, but be diagnosed as contusion of the hip. Single skiagrams often fail to reveal certain forms of fracture, especially when situated in the posterior arch of the pelvic girdle. Vergó therefore maintains that stereoscopic radiographs should always be obtained in cases of injuries to the pelvis of uncertain nature. The patient's pelvis is immobilized on a couch fitted with drawers, in which the films are introduced. The distance between the anticathode and the film is 60 cm. After having carefully placed the film 2.5 cm. towards the right, and in that position the first skiagram is taken; the tube is then carried 2.5 cm. to the left of the centre and a second skiagram is taken. The author cites numerous examples of various kinds of pelvic fractures in support of his contention that stereoscopic photographs are essential for accurate diagnosis of the site and nature of these injuries.

## Radiation Therapy in Carcinoma.

595. **Radiation Therapy in Carcinoma.**  
G. W. HOLMES (*Boston Med. and Surg. Journ.*, August 26th, 1926, p. 393) remarks that during the past five years important data have been obtained with regard to the therapeutic use of radium and of x-rays. The complete destruction of diseased tissue by radiation is unlikely unless the lesion is superficial or so accessible that radium can be brought directly in contact with it. The most favourable results are obtained in cancer of the uterine cervix and in cancer of the mouth or in cancer of the testis when complete destruction of malignant cells is attempted. For this reason curable cases are treated by heavily filtered rays, but this is sometimes impracticable, as when the lesion is deeply seated or resistant. In these cases interstitial radium may be necessary. This may be employed by implanting glass seeds containing radium needles shut off the caustic beta rays, and more complete destruction of malignant tissue results with less discomfort to the patient. Movable cases may be divided into two groups—primary and post-operative recurrences; in both, the treatment is necessarily only palliative. Holmes believes that it is seldom advisable to use prolonged or very heavy dosage, since this may result in radiation sickness, producing lymphocyte and swift reduction of the number of circulating lymphocytes, which are of great importance in combating the advance of a malignant growth. There is

considerable evidence of the value of small stimulating doses in the treatment of these cases, and Holmes considers that there is no scientific basis for the theory that small repeated doses stimulate malignant tumours. It is more probable that if heavy radiation fails to destroy all malignant tissue the surrounding healthy tissue is so damaged that it offers little resistance to the growth of the remaining cancer cells. Radiation probably does more harm than good to patients who are definitely cachectic. The author thinks that pre-operative irradiation is rather generally used, especially in borderline cases or in those of a very malignant type. Though post-operative irradiation may relieve excessive pain, irradiation that prevents recurrence or prolongs life. Holmes concludes that most curable cases are better treated surgically; a radical cure should not be attempted when complete removal is impossible; such cases are better treated by radiation only. Pre-operative radiation properly used probably increases the chance of surgical cure. Post-operative radiation has failed to prevent recurrence, and when prolonged has caused permanent damage to the skin. In the treatment of recurrent and of inoperable cases the main object should be the relief of distressing symptoms.

596. **Erythrocythaemia Successfully Treated by X Rays.**  
G. MILANI (*Il Policlinico*, Sez. Med., October 1st, 1926, p. 547) reports a case of erythrocythaemia in a woman aged 30. The disease started about five years ago with unusual redness of the face and lips, outbreaks of urticaria, severe headache, palpitation, cyanosis, and enlarged spleen. The red corpuscles numbered 12,000,000 per c.mm. and the white 12,000. The von Pirquet test was negative. By watching the effect of x-rays on the spleen or bone marrow the author concluded that the disease was not due to diminished erythrolysis or to a primary splenic lesion. When the x-rays were directed to the long bones only, the red corpuscles diminished and at the same time the spleen decreased in size. Milani thinks that, although the spleen is not primarily at fault in this condition, it probably plays a secondary part in this patient's blood was injected into a child suffering from pernicious anaemia, without producing any improvement. Irradiation of the tibiae and knees caused a diminution of the erythrocytes and also an improvement in the symptoms, which has lasted for a year. After treatment the erythrocyte count dropped to 6,400,000, leucocytes to 5,000, haemoglobin 110 per cent., and the patient was able to work comfortably. The main feature in the treatment was irradiation of the bones and not the spleen.

597. **Ultra-violet Rays in the Treatment of Psoriasis.**  
F. TALBOT (*Brit. Journ. of Dental Science*, October, 1926, p. 295) describes the treatment of psoriasis by means of erythema doses of ultra-violet rays administered to the skin of the trunk with the object of mobilizing the defence powers of the body against bacterial infection. He states that the small number of cases treated with apparent success by vascubes show a very high ratio of relapse. After eighteen months' experience of the value of treatment by ultra-violet rays the author claims that it deserves to be regarded as a specific cure in cases of psoriasis with systemic infection. Early cases of this type clear up after two or three doses, and the health of the sockets can, in his opinion, be maintained by monthly erythema doses from natural or artificial sources, but this cannot be looked for in those who are subject to ultra-violet rays. In some cases the low resistance of the health has been maintained without a repetition of the treatment; throughout the winter to an inadequate exposure to sunlight. The work of H. K. Box of Toronto is adduced as evidence that regeneration of alveolar bone may occur under the advantageous conditions induced by ultra-violet medication.

## Obstetrics and Gynaecology.

598. **Caesarean Section in Two Stages.**  
LAFONT, HOLLÉ, DUBOUCHÉ, and JANIER (*Ann. Soc. d'Obst. et de Gynéc. de Paris*, October, 1926, p. 473) report two cases of the operation of Portes, in which the uterus, drawn out of the abdomen as a preliminary to Caesarean section in infected patients, is left in the same situation at the end of the operation and returned to the pelvis at a later intervention (see *Epitome*, 1924, vol. ii, para. 454, and 1925, vol. i, para. 250 and 327). To the few recorded fatalities the present authors add another in a primipara, aged 22, with a breech presentation and prolapse of the cord. Extraction was impeded by a partly eretic and partly solid tumour of the child's axilla, and was found impossible even after

division of the tumour by scissors. After abdominal corporal hysterotomy the uterus was left outside the wound, but the uterine suture did not hold, and a slough formed which was irrigated with Dakin's solution. The exteriorized uterus became gangrenous; Porro's hysterectomy was performed without anaesthesia on the eighth day, but the patient succumbed. In another case a young two-para with a generally contracted pelvis, who had undergone conservative Caesarean section a year previously, was admitted to hospital at term with a temperature of 102°, a tonically contracted uterus with an incompletely dilated cervix, and a living foetus presenting by the vertex. After the operation of Porro the uterus sloughed in the neighbourhood of the incision, but good union was eventually obtained after prolonged suppuration. The uterus was returned to the pelvis fifty-seven days after its exteriorization, and, on the patient's discharge eighteen days later, the organ, although not freely movable, was of approximately normal size and antverted. The child survived.

#### 599. Epilepsy and Pregnancy.

C. CLEMMESSEN (*Ugeskrift for Læger*, October 31st, 1926, p. 939) has studied the effects on each other of epilepsy and pregnancy in two series of cases. The first consisted of 43 epileptic patients treated in the Aarhus maternity hospital between 1910 and 1926, during which period there were about 13,000 confinements. These 43 patients gave birth either in the maternity hospital or elsewhere to a total of 97 children. The second series consisted of 22 patients who had undergone a total of 61 pregnancies, and were admitted to a hospital for epilepsy in 1925 and 1926. In the first series of 43, there were 6 women who had aborted nine times, but in the second series there was no instance of the disease having a direct effect on the pregnancy. With regard to the influence of the pregnancy on the epilepsy, it was noteworthy in this series that in as many as 7 cases the epilepsy recurred during pregnancy after the patients had been without symptoms for several years. In 107 pregnancies taken from both series, accurate data were obtained with regard to the influence of the pregnancy on the disease, and in 54 it was found that the attacks of epilepsy had started or become more frequent in connexion with the pregnancy. In 28 cases the pregnancy had not affected the disease, in 18 the disease had shown signs of improvement during the pregnancy, and, finally, in 7 cases the disease had become worse at the beginning of pregnancy and had shown improvement towards its end. As for the fate of the children born to these epileptic mothers, accurate information was lacking in several cases for want of "follow-up" investigations, but details were obtained about 60 infants born alive to 29 epileptic mothers. Twelve of these infants had died young, 6 dying in convulsions. The author concludes that pregnancy often stirs up afresh an epilepsy which has been latent, or renders already existing epilepsy more serious; he recommends hospital treatment for every epileptic pregnant woman throughout her pregnancy.

#### 600. Visceroptosis in Women.

G. CARAJANNOPOULOS (*Rev. de Chir.*, 1926, No. 7, p. 535) considers that the obscure condition of visceroptosis depends on a loss of tone and atrophy of the muscles of the abdominal wall and pelvic floor. This, he thinks, is the result of deficiency of the internal secretion of the ovary acting through the sympathetic system. In the great majority of women affected with visceroptosis there is a history of menstrual trouble due to a loss of ovarian secretion. Many of these patients have had a previous attack of some acute infection, such as typhoid fever, or give a history of old pelvic infection due to metritis. This has resulted in atrophy or degeneration of the ovary, associated with visceroptosis; there may be certain functional troubles, such as palpitation, flushings, and other examples of vasomotor instability, which often accompany disorders of menstruation. It is suggested that the loss of ovarian secretion acts on the muscular system through the sympathetic nerves, and as the result of loss of muscle tone general visceroptosis is produced.

#### 601. Oöphoralgia Erotica.

M. POROSZ (*Urol. and Cutan. Rev.*, October, 1926, p. 592), in 1900 described under the name of "epididymitis sympathica" a clinical phenomenon resembling epididymitis, but in which there was no infection and the urethra and prostate were not inflamed. The epididymis was swollen, but the pain connected with it ceased after ejaculation, and the condition subsided. The symptom usually came on after sexual excitement which was not satisfied, or not followed by ejaculation, but it might also be caused by nervous apprehension or by the passage of a hard motion from the bowels. Porosz has recently observed a corresponding condition in the female sex. The subjects were mostly young women who had been married for one to seven years; they complained of pain on

both sides of the lower part of the abdomen. On examination the ovaries were found to be entirely free from adhesions, b tender to the touch; the vagina, urethra, and cervix were quite free from tenderness. No signs of acute or chronic gonorrhoeal or catarrhal lesions were detected. Treatment by warm sitz baths, salt baths, Priesnitz packs, and other balneological measures was ineffective. The condition was found to be due to the failure of the husband, through sexual neurasthenia caused by atony of the prostate, to produce orgasm in the wife. Treatment, therefore, in such cases should be directed towards improving the husband's condition.

## Pathology.

#### 602. A Simple Method of Demonstrating Tubercle Bacilli

G. MAXER (*Centralbl. f. Bakt.*, October 8th, 1926, p. 10) has worked out a simple method for demonstrating tubercle bacilli when these are present in only small numbers in pathological fluids. The sputum, for example, is collected in a glass vessel, which is then nearly filled with Knezyński Standard 1 bouillon; a woollen plug is inserted and the fluid is incubated at 37° C. for three days, being shaken frequently. The upper clear layer is then decanted, and the remainder centrifuged for one hour. Films are made from the sediment and stained in the usual way. This method provides the bacilli with a suitable culture medium in which they are able to multiply, so that in a few days' time they can be demonstrated without difficulty. The method, with slight modifications, is said to be suitable for demonstrating the bacilli in urine, faeces, pus, pleural fluid, and other pathological material.

#### 603. Food Value of Vegetable Juices.

EVA M. DAVIS and HANNAH A. STILMAN (*Amer. Journ. Di. Child.*, October, 1926, p. 524) report the results of a series of experiments planned to show the comparative growth-promoting qualities of some of the fruit and vegetable juices recommended as cheap substitutes for orange juice in infant and child feeding. The juices most commonly recommended are tomato, cabbage, spinach, and carrot. All these compare favourably with orange in their mineral content, and, with the possible exception of carrot, they appear to be similar able to prevent scurvy. Young albino rats were used for the experiment. It was found that the minimum amount of orange or tomato juice which would support normal growth in the rat was 9 c.c.m. The same quantity of spinach or carrot juice gave equally good results. While winter cabbage was not satisfactory, fresh summer cabbage was found to be comparable in growth-promoting power with the other juices used.

#### 604. The Haematology of Congenital Syphilis.

G. ZANCA (*Arch. de Méd. des enfants*, September, 1926, p. 505) who reports forty-five illustrative cases, states that apart from anaemia it is usual to find one or more of the following blood changes in congenital syphilis: the haemoglobin value is rarely normal, but is either above or below the normal; it is almost a rule for the number of red cells to be below normal leucocytosis is frequent; the leucocyte formula, which is always abnormal, is characterized by a mononucleosis of the lymphocytic type and the frequent presence of abnormal elements, which are usually the mother cells of the granulocytic series. Like Tixier and Weissenbach, Zanca divides syphilitic anaemia in the infant into two separate groups—namely simple anaemia, in which the number of red cells keeps above two million, and severe anaemia, in which the number of red cells is usually below two million. The course is rapid and the constitutional disturbance severe. Severe anaemia may be subdivided into two principal types—namely, severe anaemia of the pernicious type, and splenic or pseudo-leukaemic anaemia. Of the pernicious type of anaemia the following four varieties of the plastic form may be distinguished: (1) pernicious anaemia of the orthoplastic form or with a normoblastic reaction, shown by the normal myeloid reaction; (2) pernicious anaemia of the metaplastic form, shown by an embryonic myeloid reaction; (3) pernicious anaemia of hypoplastic form characterized by an attenuated reaction in the circulating blood in contrast with the well marked reaction in the bone marrow; (4) aplastic anaemia, very rare in infancy, which is characterized by the absence of any myeloid reaction. Four varieties of pseudo-leukaemic anaemia are described: (1) A myeloid form, which is much the commonest, characterized by increase of the polymorphonuclears and the presence of myelocytes, mostly of the neutrophil type, in the proportion of 2 to 10 per cent.; (2) a lymphoid form, in which the lymphocytes predominate; (3) a mixed form characterized by an equally marked proliferation of granulocytes and lymphocytes; (4) an eosinophilic form with a high percentage of eosinophils.

